

TROTTERS GAIT SUBDIVISION

SANITARY SEWER IMPROVEMENT

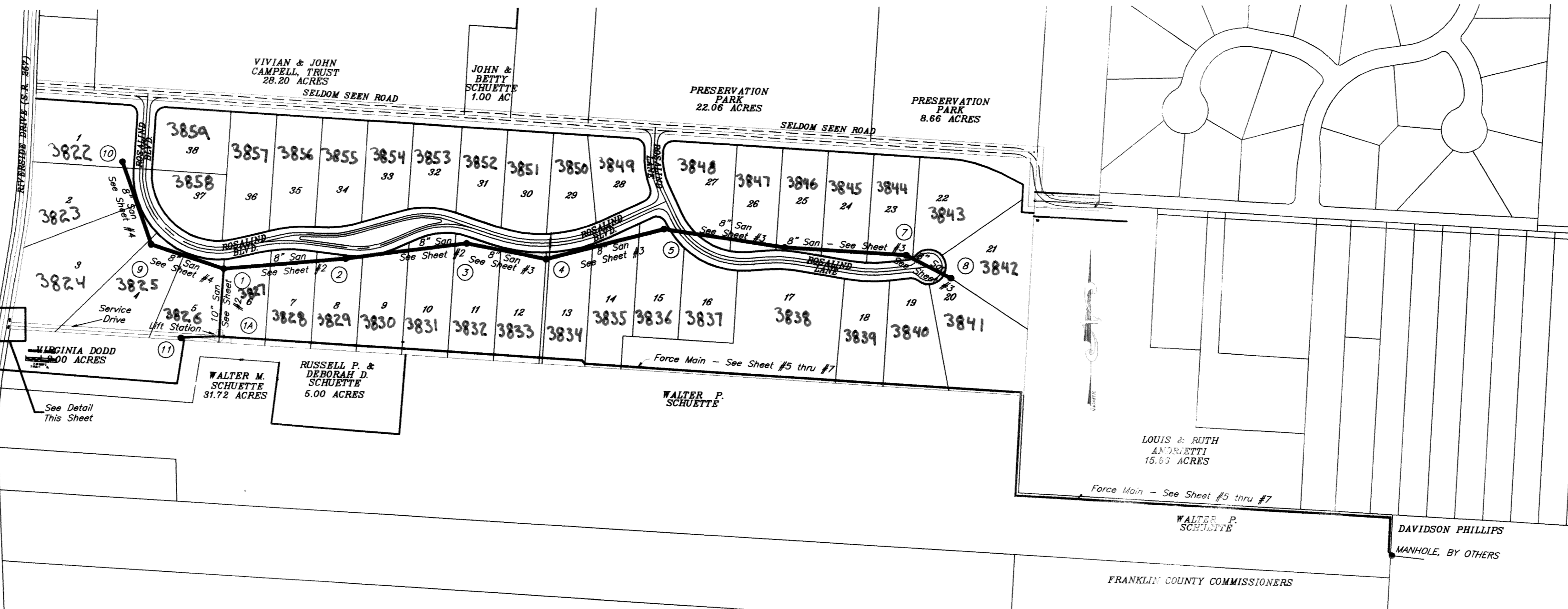
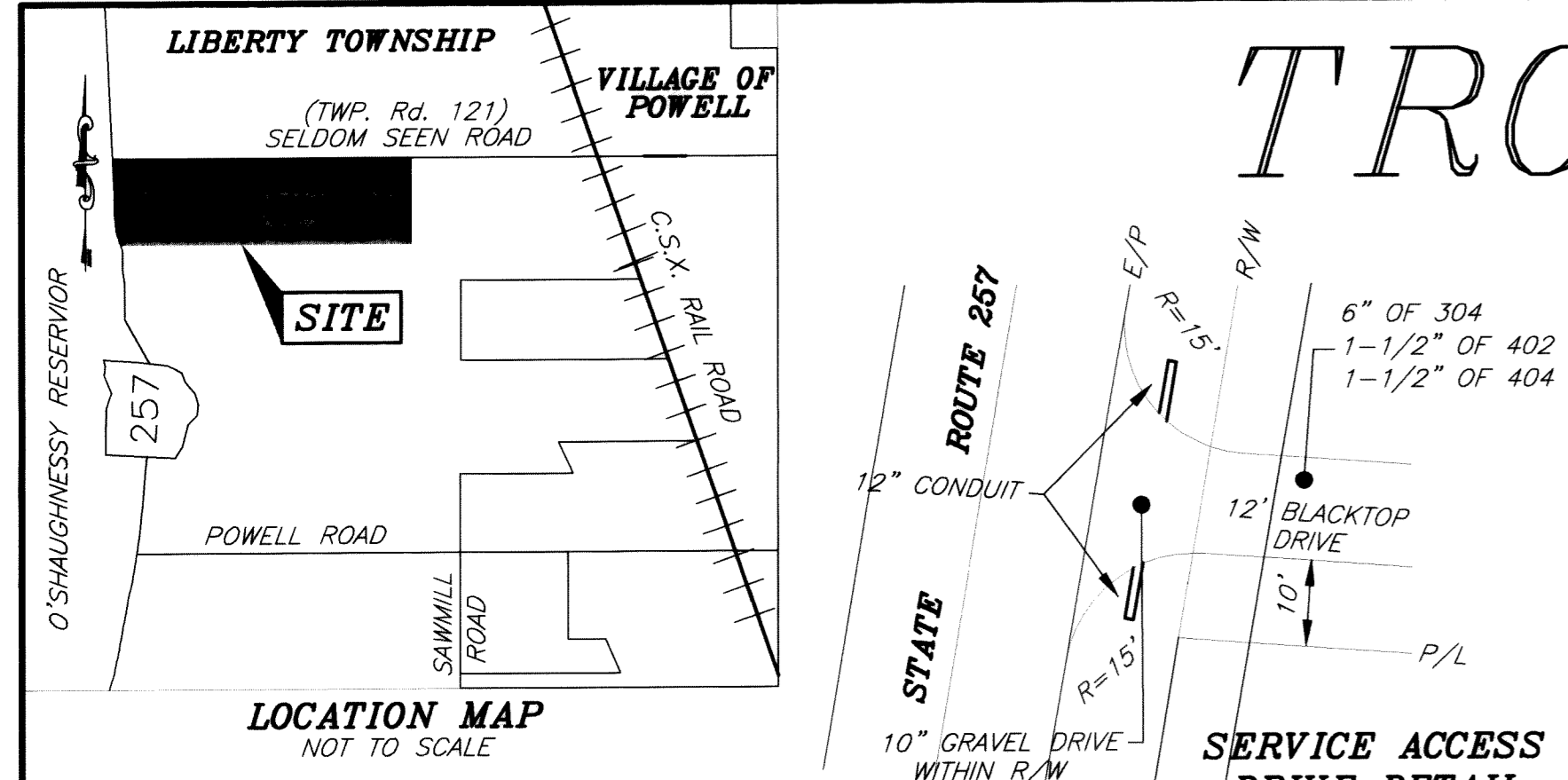
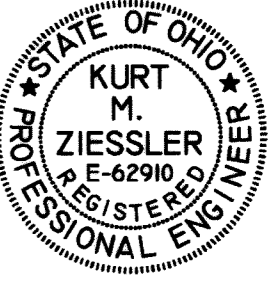
Delaware County, Ohio

RPC #37-00
FINAL ENGINEERING PLAN

DESIGN ENGINEER

THIS IS TO CERTIFY THAT GOOD ENGINEERING PRACTICES HAVE BEEN UTILIZED IN THE DESIGN OF THIS PROJECT AND IN OUR OPINION AND TO THE BEST OF OUR KNOWLEDGE THAT ALL MINIMUM STANDARDS AS DELINEATED IN THE DELAWARE COUNTY "DESIGN, CONSTRUCTION AND SURVEYING STANDARDS MANUAL" HAVE BEEN MET, INCLUDING THOSE STANDARDS GREATER THAN MINIMUM WHERE, IN OUR OPINION, THEY ARE NEEDED TO PROTECT THE SAFETY OF THE PUBLIC. ANY VARIANCES TO THE ABOVE STANDARDS ARE CONSISTENT WITH SOUND ENGINEERING PRACTICES AND ARE NOT DETRIMENTAL TO THE PUBLIC SAFETY AND CONVENIENCE. THESE VARIANCES HAVE BEEN LISTED HEREIN AND HAVE BEEN APPROVED BY THE DELAWARE COUNTY ENGINEER.

Kurt M. Ziessler
REGISTERED ENGINEER NO. 62910 DATE 5-31-01



- GENERAL NOTES**
- A PRECONSTRUCTION CONFERENCE SHALL BE HELD AT THE COUNTY ENGINEER'S OFFICE AT LEAST FIFTEEN (15) CALENDAR DAYS BEFORE ANY WORK IS BEGUN. REPRESENTATIVES OF THE OWNER, DESIGN ENGINEER AND CONTRACTOR SHALL BE IN ATTENDANCE. A SCHEDULE OF SEQUENCE OF EVENTS, DURING CONSTRUCTION, MUST BE SUBMITTED FOR REVIEW AT LEAST SEVEN (7) DAYS PRIOR TO THIS MEETING.
 - THE REQUIREMENTS OF DELAWARE COUNTY, TOGETHER WITH THE CURRENT SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING ALL SUPPLEMENTS THERETO IN FORCE, SHALL GOVERN ALL MATERIALS AND WORKMANSHIP INVOLVED IN THE IMPROVEMENTS SHOWN ON THESE PLANS. ONE METHOD OF PAYMENT, AS SPECIFIED THEREIN SHALL BE SUPERSEDED BY THE UNIT PAY ITEMS IN THE DRAWINGS AND SPECIFICATIONS. ALL ITEMS OF WORK NOT SPECIFICALLY LISTED ON THE DRAWINGS AS PAY ITEMS SHALL BE INCLUDED IN ASSOCIATED WORK ITEMS FOR PAYMENT.
 - THE CONTRACTOR SHALL NOTIFY THE COUNTY ENGINEER'S OFFICE FORTY EIGHT (48) HOURS PRIOR TO ANY CONSTRUCTION.
 - THE CONTRACTOR'S BID SHALL BE COMPREHENSIVE AND INCLUDE ALL LABOR AND MATERIALS NECESSARY TO COMPLETE ALL IMPROVEMENTS ACCORDING TO THE ENGINEERING PLANS AND SPECIFICATIONS.
 - THE CONTRACTOR SHALL LOCATE ALL UTILITIES OR UNDERGROUND STRUCTURES PRIOR TO CONSTRUCTION AND NOTIFY EACH RESPECTIVE UTILITY OWNER FORTY EIGHT (48) HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION. CONTACT O.U.P.S. AT 1-800-362-2764.
 - IF A DISCREPANCY EXISTS BETWEEN THE PLANS AND SPECIFICATIONS THE OWNER'S ENGINEER SHOULD BE NOTIFIED BEFORE THE WORK IS COMMENCED.
 - IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO EXERCISE SAFETY PRECAUTIONS AND TO PROVIDE ALL SAFETY EQUIPMENT TO SAFEGUARD WORKMEN AND ALL PERSONS ON OR NEAR THE WORK SITE.
 - THE CONTRACTOR SHALL CAREFULLY EXAMINE THE WORK SITE OF HIS CONTRACT AND SHALL SATISFY HIMSELF AS TO THE CHARACTER, QUALITY AND QUANTITIES OF THE WORK TO BE PERFORMED.
 - HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING FEATURES WITHIN THE SUBDIVISION ARE APPROXIMATE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF EXISTING FEATURES SHOWN ON THE PLANS, SUCH AS GAS LINES, WATER LINES AND FIELD TILE, TO PROPERLY EXECUTE THE WORK OF HIS CONTRACT. IT SHALL FURTHER BE THE RESPONSIBILITY OF THE CONTRACTOR TO EXERCISE DUE CARE AROUND EXISTING COMPLETED WORK ON THE SITE.
 - THE CONTRACTOR SHALL REPAIR OR REPLACE ANY AND ALL EXISTING WORK DAMAGED DURING OR DUE TO THE EXECUTION OF THIS CONTRACT AT HIS OWN EXPENSE. ALL SAID WORK TO BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE OWNER AND ENGINEER.
 - SITE CLEARING SHALL COMPLY WITH O.D.O.T. ITEM 201. REMOVAL OF EXISTING PIPE, PAVEMENT, STRUCTURES AND OTHER OBSTRUCTIONS SHALL COMPLY WITH O.D.O.T. ITEM 202.
 - THE DELAWARE COUNTY ENGINEER OR HIS DESIGNATED REPRESENTATIVE SHALL INSPECT AND APPROVE ALL SUB-BASE MATERIALS AND COMPACTION IN FILL AREAS.
 - THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE DELAWARE COUNTY ENGINEER OR HIS DESIGNATED REPRESENTATIVE IF CONSTRUCTION STAKES ARE DISTURBED.
 - THE CONTRACTOR SHALL MAINTAIN ALL EXISTING DRAINAGE PIPES OR TILES AND, IF DAMAGED, REPLACE THEM WITH THE SAME SIZE AND QUALITY OF MATERIALS AS FOUND.
 - NON ORGANIC SITE SOILS ARE ACCEPTABLE AS USE FOR STRUCTURAL FILL, PROVIDED THEY MEET ALL REQUIREMENTS OF O.D.O.T. ITEM 203. MOISTURE ADJUSTMENT MAY BE REQUIRED AND SHALL BE PERFORMED BY THE CONTRACTOR.
 - THE CONTRACTOR SHALL PROVIDE AND INSTALL WYE POLES AT ALL WYE LOCATIONS AS CONSTRUCTED. WYE POLES SHALL BE A MINIMUM OF 2"x2" CONSTRUCTION AND SHALL EXTEND ABOVE EXISTING OR PROPOSED GRADE, WHICH EVER IS GREATER, A MINIMUM OF TWO (2) FEET.

ESTIMATE OF QUANTITIES

ITEM	QUAN	UNIT	DESCRIPTION
SANITARY SEWERS			
604	2	Each	Sanitary Manhole, Type A, 10' to 12' Deep
604	3	Each	Sanitary Manhole, Type A, 12' to 14' Deep
604	5	Each	Sanitary Manhole, Type A, 14' to 16' Deep
604	2	Each	Sanitary Manhole, Type A, w/ Outside Drop
707	631	Lin Ft	8" Sanitary Sewer Pipe (PVC) 10' to 12' Deep
707	665	Lin Ft	8" Sanitary Sewer Pipe (PVC) 12' to 14' Deep
707	2013	Lin Ft	8" Sanitary Sewer Pipe (PVC) 14' to 16' Deep
707	221	Lin Ft	10" Sanitary Sewer Pipe (PVC) 16' to 18' Deep
707	56	Lin Ft	6" Diameter Pipe Risers (PVC)
707	1773	Lin Ft	6" Laterals (PVC)
915	39	Each	8"x6" Diameter Wye Fitting
915	1	Each	Pump Station (Complete) Including Building & Electric Service, Service Drive, Etc.
919	125	S.Y.	Water Course Protection
Spec	4341	Lin Ft	6" Force Main
Spec	2	Each	Air Release Valve (Automatic) Standard Drawing No. 25
Spec	1	Each	Bioxide System Complete Including 2" Line, Containment Wall, Fence
Spec	2	Each	Air Release Valve Manhole per Standard Drawing No. 25

ESTIMATED QUANTITIES ARE LISTED FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR(S) SHALL CONSTRUCT THE PROJECT IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. IT IS RECOMMENDED THAT THE CONTRACTOR(S) ESTABLISH QUANTITIES RELATED TO THE PLANS AND NOT SOLELY RELY ON HOCKADEN AND ASSOCIATES, INC. QUANTITY LISTS.

BEDDING AND GRANULAR BACKFILL

- THE CONTRACTOR(S) SHALL INCLUDE THE COST OF BEDDING AND GRANULAR BACKFILL IN O.D.O.T. ITEMS 603 AND 604. THE UNIT COST SHALL INCLUDE ANY BACKFILL REQUIRED, EITHER SHOWN ON THE PLANS OR AS DEEMED NECESSARY BY THE ENGINEER OR INSPECTOR. GRANULAR BACKFILL IS SHOWN ON THE PLANS ONLY TO ASSIST THE BIDDER. THE QUANTITY ESTIMATED BY HOCKADEN AND ASSOCIATES, INC. IS BASED ON IDEAL CONDITIONS AND CONSTRUCTION PROCEDURES. HOCKADEN AND ASSOCIATES, INC. IS NOT RESPONSIBLE FOR PAYMENT TO BE MADE FOR ANY EXTRA GRANULAR BACKFILL RELATED TO FIELD CONDITIONS.

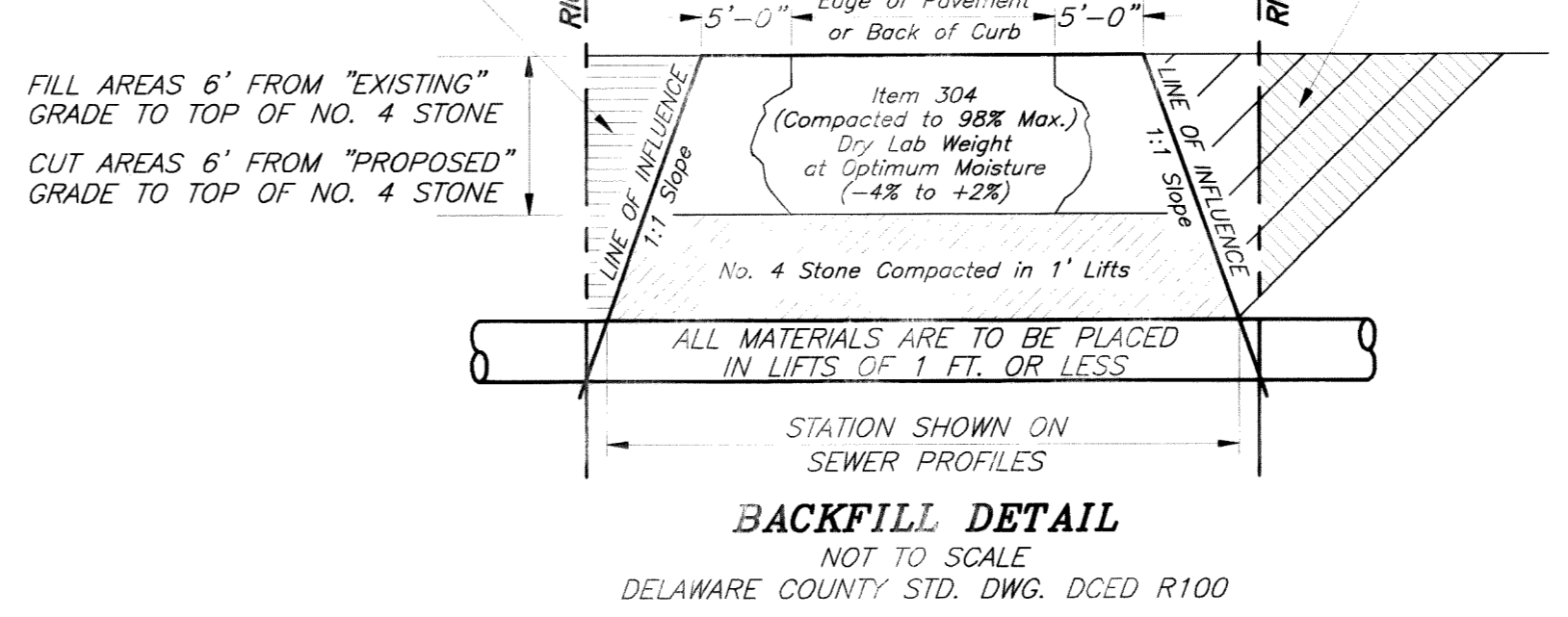
BACKFILLING

- UTILITY TRENCHES OUTSIDE THE RIGHT-OF-WAY ARE TO BE BACKFILLED WITH SOILS MEETING THE REQUIREMENTS OF ITEM 203 (100 PCF OR GREATER). THESE TRENCHES ARE TO BE COMPACTED TO 95% OF MAXIMUM DRY LABORATORY WEIGHT AT ± 2% OF OPTIMUM MOISTURE.
- ALL UTILITY TRENCHES IN THE RIGHT-OF-WAY RUNNING PARALLEL TO THE PAVEMENT AND ARE NOT OVER FIVE (5) FEET IN DEPTH ARE TO BE BACKFILLED ACCORDING TO DELAWARE COUNTY STANDARD DRAWING DCED R100.
- ALL UTILITY TRENCHES UNDER ROAD PAVEMENT, STARTING AT A DISTANCE OF FIVE (5) FEET FROM THE EDGES OF THE PAVEMENT AND EXTENDING ONE (1) FOOT IN DISTANCE FOR EACH ONE (1) FOOT IN DEPTH ARE TO BE BACKFILLED WITH COMPACTED GRANULAR MATERIAL AS NOTED IN THE BACKFILL DETAIL (APRIL 1 TO SEPTEMBER 30) OR LOW STRENGTH MORTAR BACKFILL. (BACKFILL DETAIL AS PER DELAWARE COUNTY STANDARD DRAWINGS DCED R100)
- ALL UTILITY TRENCHES OVER FIVE (5) FEET IN DEPTH WHICH RUNS PARALLEL TO THE PAVEMENT OR THAT ARE IN THE AREA OF INFLUENCE SHALL BE AS PER DELAWARE COUNTY STANDARD DRAWING DCED R100.
- THE CONTRACTOR SHALL INCLUDE IN THE UNIT PRICE BID FOR UNDERGROUND UTILITY PIPE, ALL TRENCHING, BACKFILLING AS PER PLAN, AND REMOVAL AND DISPOSAL OF BRUSH, TREES, AND STUMPS WITHIN THE AREA OF EXCAVATION OF THE TRENCH.
- THE CONTRACTOR SHALL REFER TO THE UTILITY PLAN AND PROFILE SHEETS TO DETERMINE CRITICAL UTILITY CROSSINGS.
- UNDER PAVEMENT, SIDEWALK, AND IN UTILITY CROSSING AREAS THE BACKFILL SHALL BE COMPACTED GRANULAR MATERIAL PER O.D.O.T. ITEM 304, AND ALL OTHER REMAINING AREAS TO BE BACKFILLED PER O.D.O.T. ITEM 603.0B.
- THE CONTRACTOR SHALL RESTORE OFF-SITE CONSTRUCTION AREAS TO AN EQUAL OR BETTER CONDITION THAN THAT EXISTING PRIOR TO COMMENCEMENT OF CONSTRUCTION.

VARIANCE OR DESIGN EXCEPTIONS

CHANGE	INITIAL DATE	DESCRIPTION	APPROVED DATE
1	KZ	10-12-01 Revising Force Main Layout, Sheets 5, 6 & 7	

AREAS WITHIN RIGHT-OF-WAY (AND OUTSIDE THE LINE OF INFLUENCE) All Trenches to be Backfilled with 203 Materials and Compacted to 95% of Maximum Dry Weight at Optimum Moisture (+/- 2%)



STANDARD DRAWINGS

DELAWARE COUNTY STANDARD CONSTRUCTION DRAWINGS SHALL BE CONSIDERED A PART OF THIS SET THE TOP:

Dwg. No. 01	Dwg. No. 04	Dwg. No. 13
Dwg. No. 02	Dwg. No. 05	Dwg. No. 14
Dwg. No. 03	Dwg. No. 06	Dwg. No. 25

SHEET INDEX

TITLE SHEET & GENERAL NOTES	1
SANITARY SEWER ~ PLAN & PROFILE	2-4
SANITARY FORCE MAIN	5-7
LIFT STATION DETAILS & NOTES	8/9

As Built Plans

DELAWARE COUNTY SANITARY ENGINEER

Jack Smelker
JACK SMELKER - P.E. DATE 6-7-01

DELAWARE COUNTY COMMISSIONERS

Donald W. Wurf DATE 6-18-01
James D. Wood DATE 6-18-01
Robert B. Mast DATE 6-18-01

DELAWARE COUNTY ENGINEER

Chris E. Bauserman
CHRIS BAUSERMAN - P.E., P.S. DATE 6-11-01

BENCH MARKS

BENCH MARK No. 1
SPIKE IN POWER POLE No. 1301-75 OR D17A77- SOUTH SIDE OF SELDOM SEEN ROAD
ELEVATION=872.81

BENCH MARK No. 2
SPIKE IN POWER POLE No. 1301-69 SOUTH SIDE OF SELDOM SEEN ROAD @ ±240' EAST OF S.R. 257.
ELEVATION=855.11

DEVELOPER: Timberlock LLC
3360 Tremont Road
Upper Arlington, Ohio 43221
(614) 442-8801

UTILITY COMPANIES

AMERICAN ELECTRIC POWER
MR. ROBIN HAND
850 TECH CENTER DRIVE
GAHANNA, OHIO 43302
(614) 883-0551

COLUMBIA GAS OF OHIO
LYNN ALEXANDER
920 WEST GOODALE AVE.
COLUMBUS, OHIO 43212
(614) 460-2166

GTE NORTH INCORPORATED
JACK ROBERTS
550 LEADER STREET
MARION, OHIO 43302
(740) 383-0551

DEL-CO WATER COMPANY
MR. SHANE CLARK
6773 OLENTANGY RIVER RIAD
DELAWARE, OHIO 43015
(740) 548-7746

WARNER CABLE
KEVIN RICH
1206 DUBLIN ROAD
COLUMBUS, OHIO 43216
(614) 481-5263

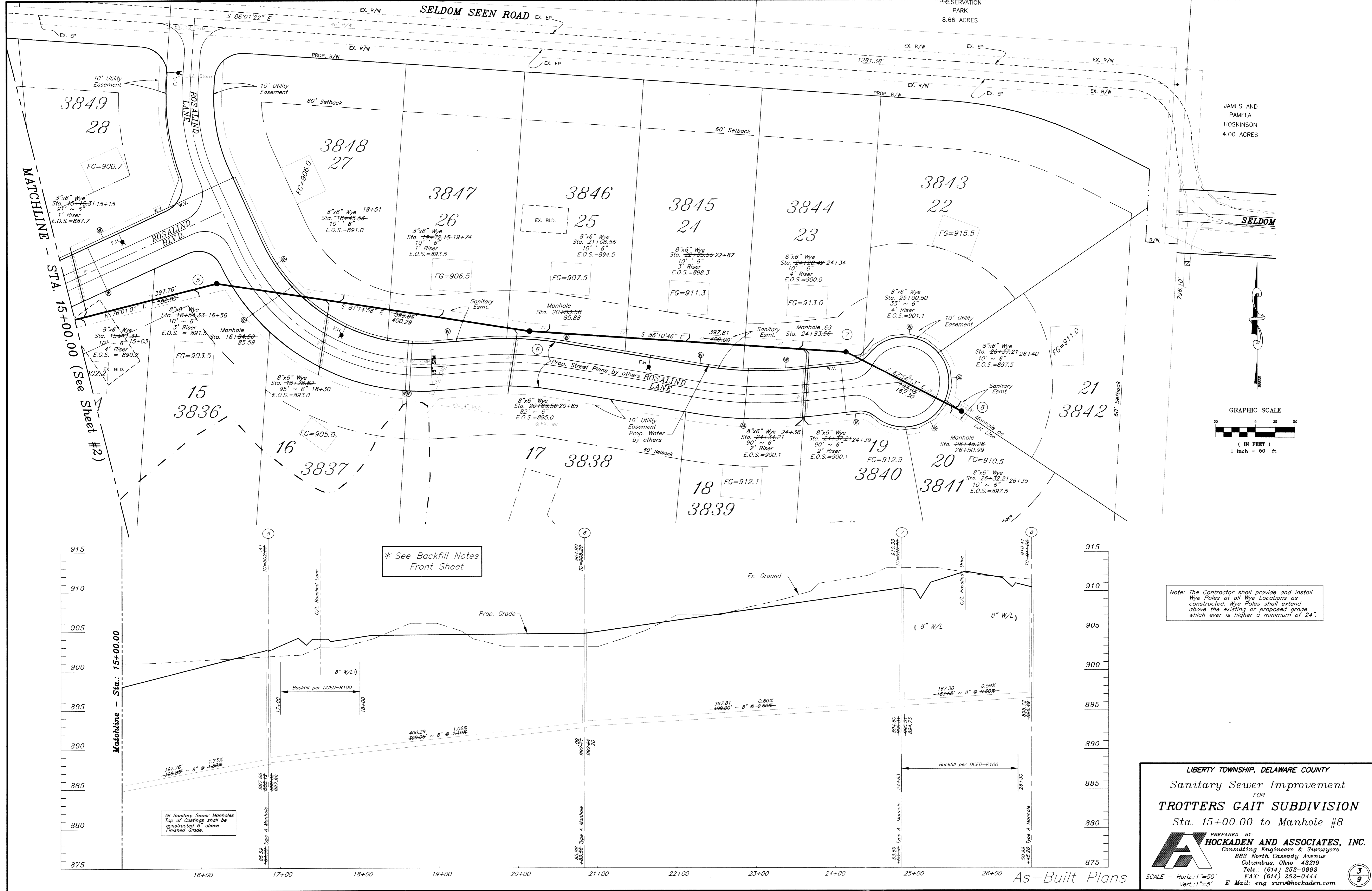
DELAWARE COUNTY ENGINEER
MR. CHRIS BAUSERMAN
50 CHANNING STREET
DELAWARE, OHIO 43015
(740) 368-1930
(STORM AGENT)

LIBERTY TOWNSHIP, DELAWARE COUNTY, OHIO
Sanitary Sewer Improvement

TROTTER'S GAIT
TITLE SHEET & GENERAL NOTES

PREPARED BY:
HOCKADEN AND ASSOCIATES, INC.
Consulting Engineers & Surveyors
883 North Cassady Avenue
Columbus, Ohio 43219
Tele: (614) 252-0993
FAX: (614) 252-0444
E-Mail: eng-survey@hockaden.com

SCALE: AS NOTED



Note: The Contractor shall provide and install Wye Poles at all Wye Locations as constructed. Wye Poles shall extend above the existing or proposed grade which ever is higher a minimum of 24".

* See Backfill Notes Front Sheet

All Sanitary Sewer Manholes Top of Castings shall be constructed 8" above Finished Grade.

LIBERTY TOWNSHIP, DELAWARE COUNTY
 Sanitary Sewer Improvement
 FOR
TROTTERS GAIT SUBDIVISION
 Sta. 15+00.00 to Manhole #8

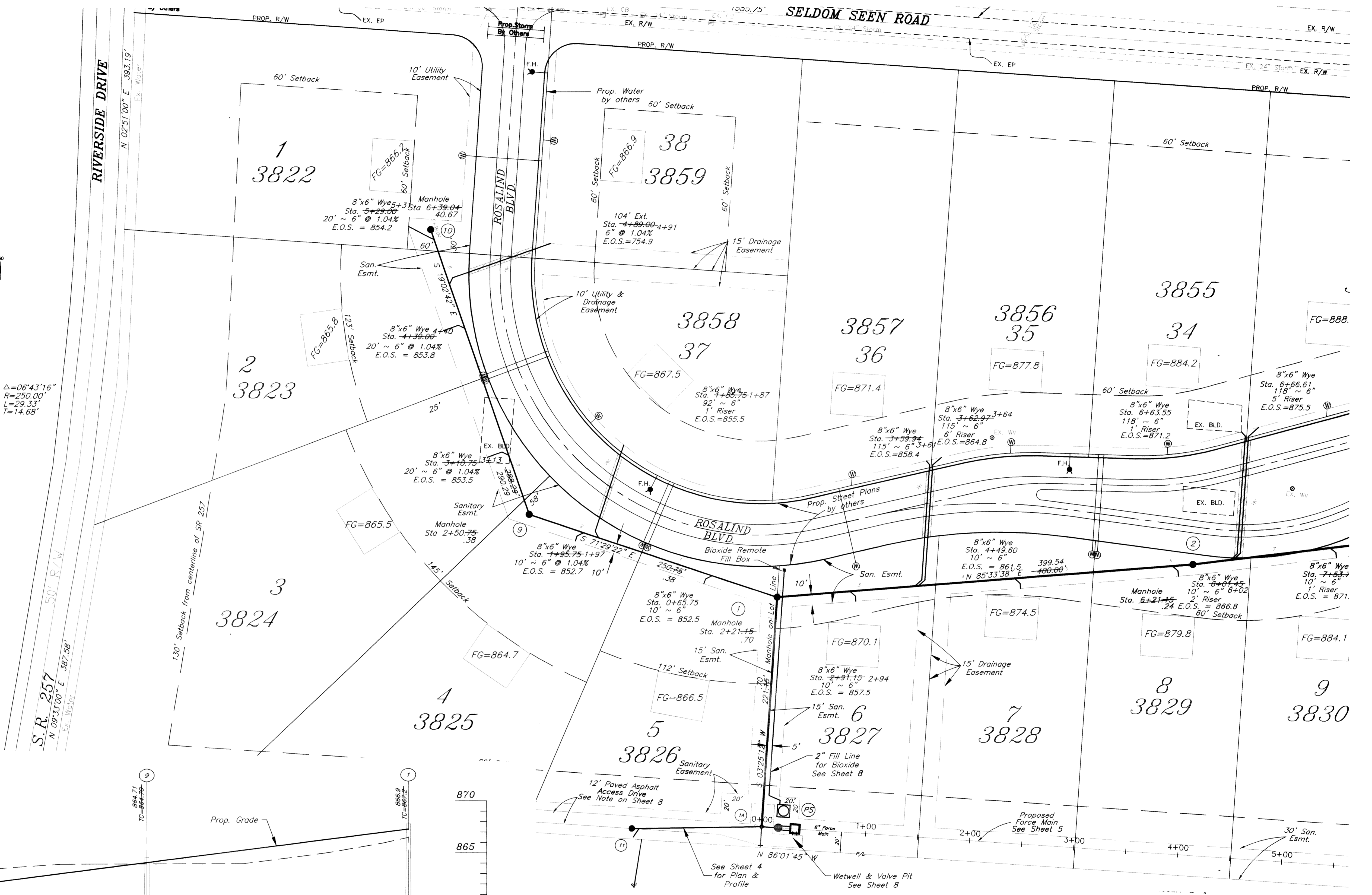
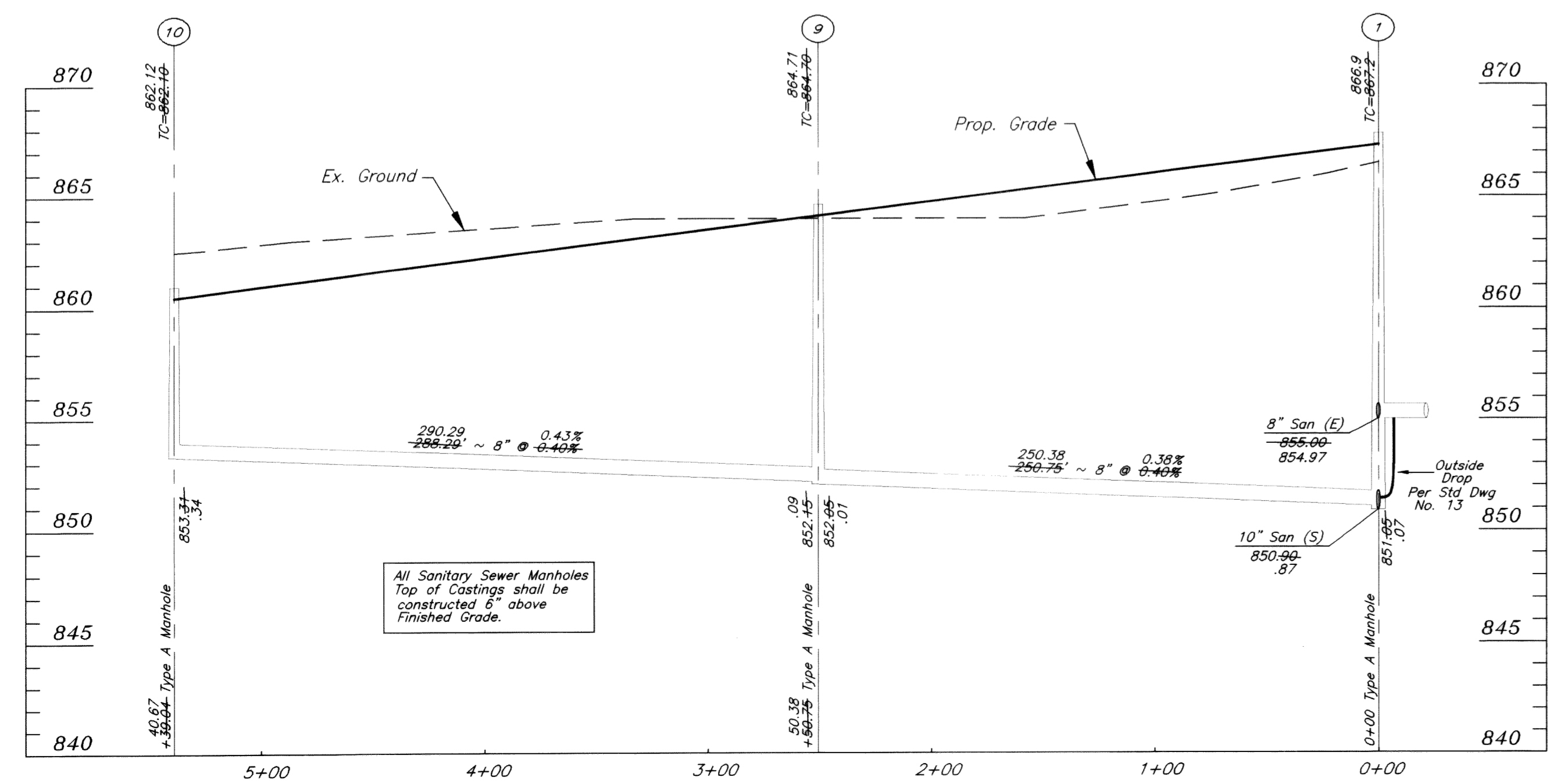
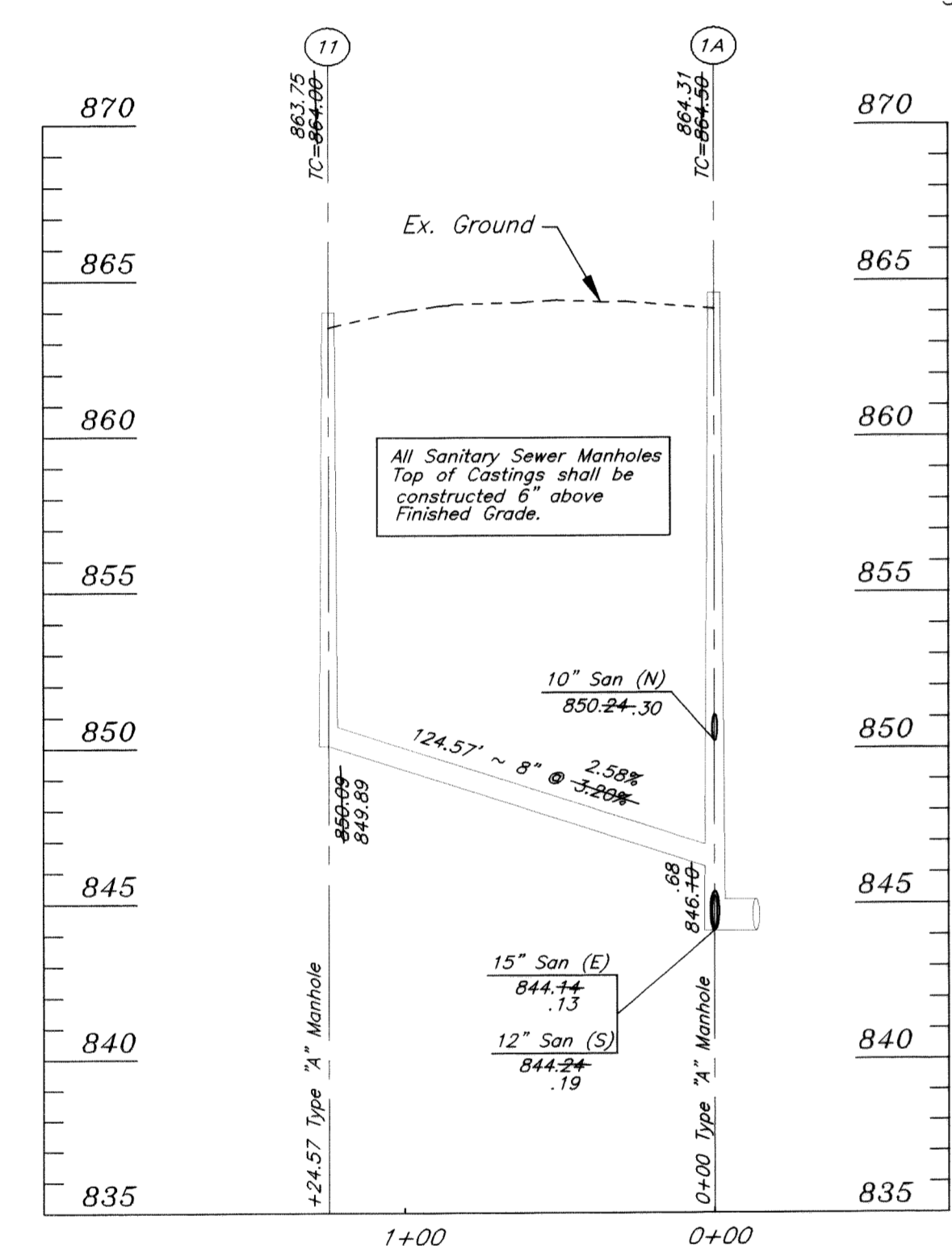
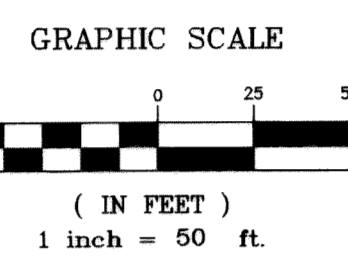
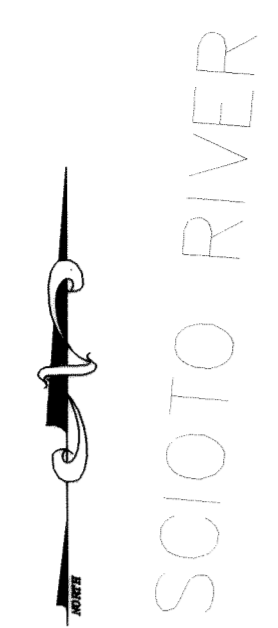
PREPARED BY:
HOCKADEN AND ASSOCIATES, INC.
 Consulting Engineers & Surveyors
 883 North Cassady Avenue
 Columbus, Ohio 43219
 Tele.: (614) 252-0993
 FAX: (614) 252-0444
 E-Mail: eng-surv@hockaden.com

SCALE - Horiz.: 1"=50'
 Vert.: 1"=5'

3/9

As-Built Plans

E:\1100\Drawings\PLAN\ANS_05\02\SubdivSAN-SHEETS-7-T0-4.DWG, 03/06/02 02:38:47 PM, KZ@hockaden.com



All Sanitary Sewer Manholes Top of Castings shall be constructed 6" above Finished Grade.

All Sanitary Sewer Manholes Top of Castings shall be constructed 6" above Finished Grade.

* See Backfill Notes on Front Sheet

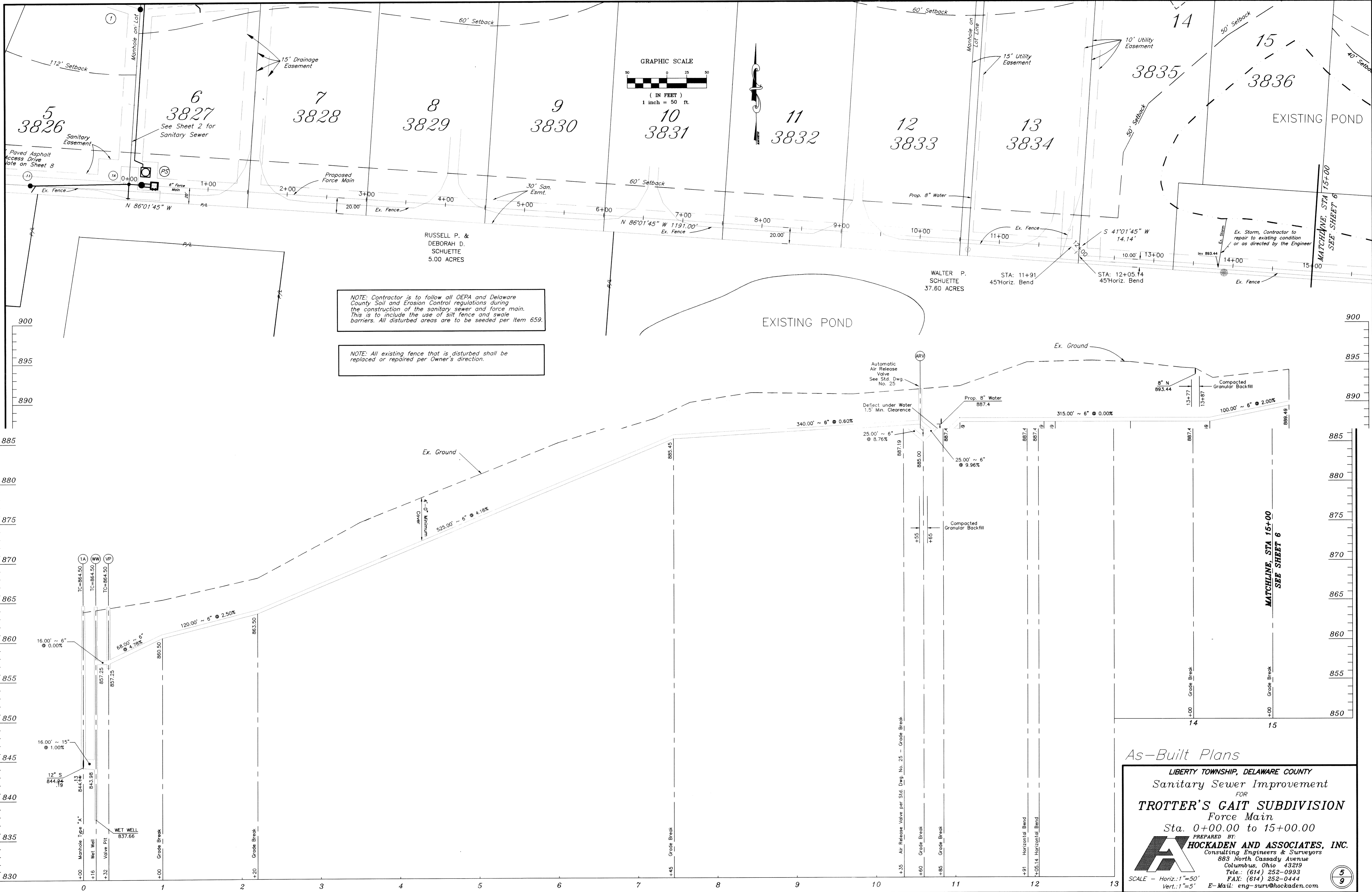
Note: The Contractor shall provide and install Wye Poles at all Wye Locations as constructed. Wye Poles shall extend above the existing or proposed grade which ever is higher a minimum of 24".

As Built Plans

LIBERTY TOWNSHIP, DELAWARE COUNTY
 Sanitary Sewer Improvement
 FOR
TROTTERS GAIT SUBDIVISION
 Manhole #1 to Manhole #10
 Manhole #1A to Manhole #11

PREPARED BY:
HOCKADEN AND ASSOCIATES, INC.
 Consulting Engineers & Surveyors
 883 North Cassady Avenue
 Columbus, Ohio 43219
 Tele.: (614) 252-0993
 FAX: (614) 252-0444
 E-Mail: eng-surr@hockaden.com

SCALE - Horiz.: 1"=50'
 Vert.: 1"=5'



NOTE: Contractor is to follow all ODEPA and Delaware County Soil and Erosion Control regulations during the construction of the sanitary sewer and force main. This is to include the use of silt fence and swale barriers. All disturbed areas are to be seeded per Item 659.

NOTE: All existing fence that is disturbed shall be replaced or repaired per Owner's direction.

As-Built Plans

LIBERTY TOWNSHIP, DELAWARE COUNTY

Sanitary Sewer Improvement

FOR

TROTTER'S GAIT SUBDIVISION

Force Main

Sta. 0+00.00 to 15+00.00

PREPARED BY:

HOCKADEN AND ASSOCIATES, INC.

Consulting Engineers & Surveyors

883 North Cassady Avenue

Columbus, Ohio 43219

Tele.: (614) 252-0993

FAX: (614) 252-0444

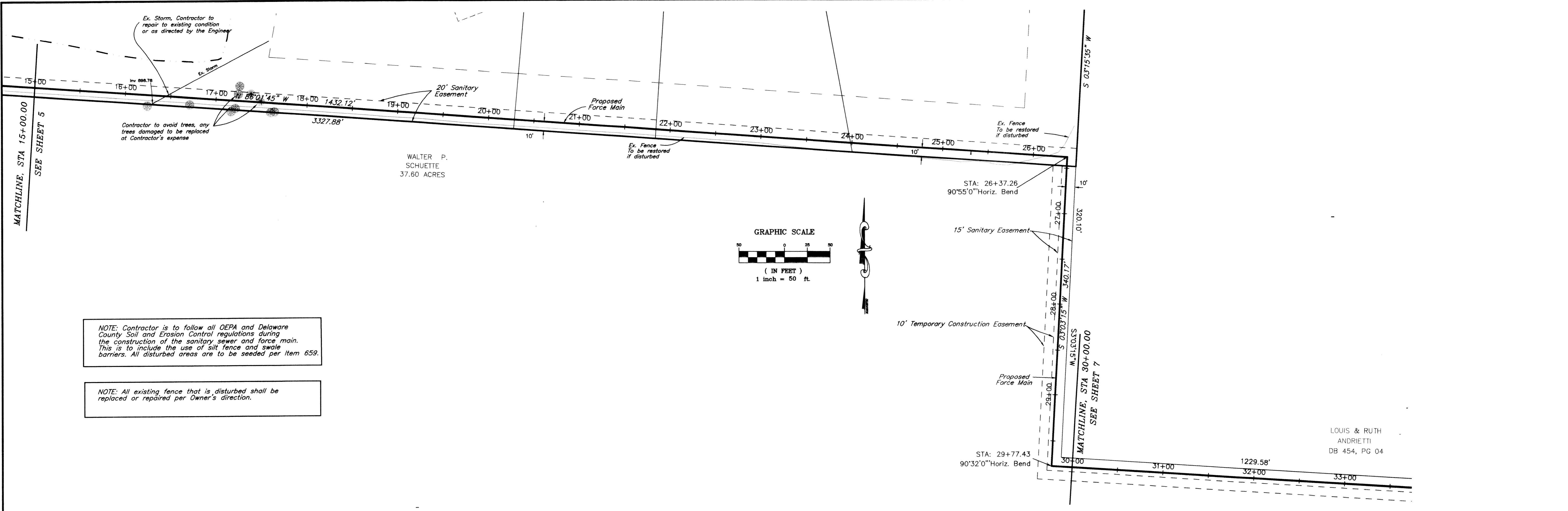
E-Mail: eng-surr@hockaden.com

SCALE - Horiz.: 1"=50'

Vert.: 1"=5'

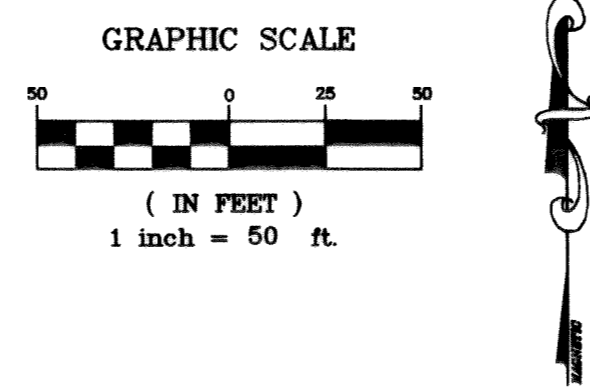
5/9

E:\1608\dwg\SANPLANS\1_05-02A\BH\SH\SH\BET-5.dwg, 03/06/02 03:01:22 PM, KZ@hockaden.com & Associates, Inc.

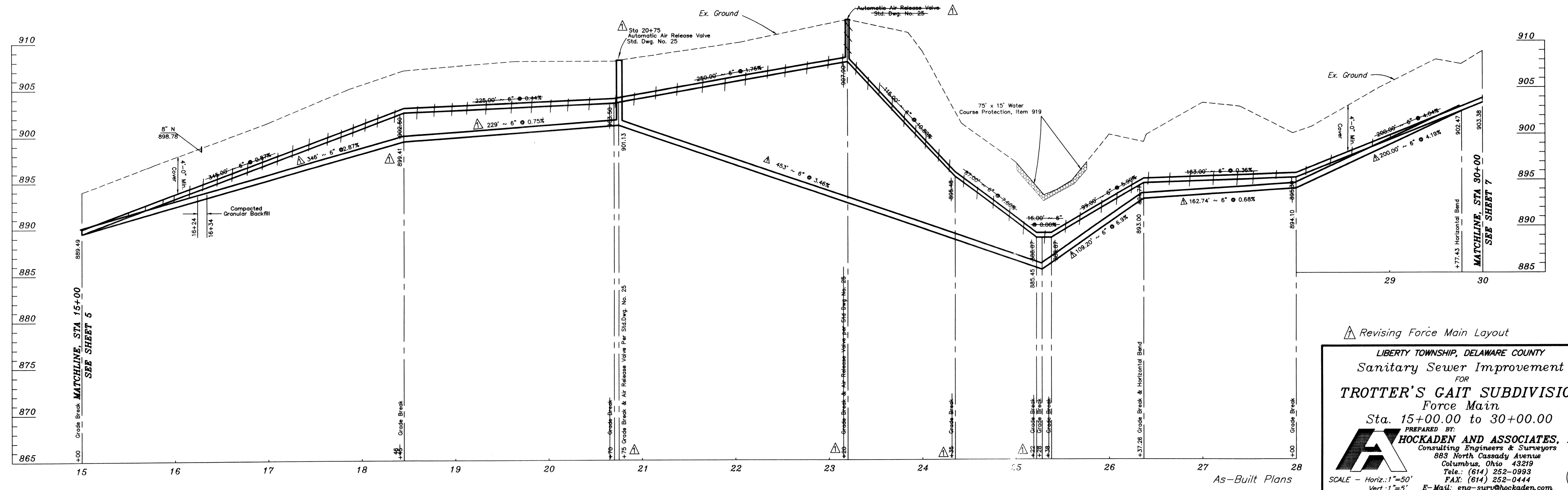


NOTE: Contractor is to follow all ODEPA and Delaware County Soil and Erosion Control regulations during the construction of the sanitary sewer and force main. This is to include the use of silt fence and swale barriers. All disturbed areas are to be seeded per Item 659.

NOTE: All existing fence that is disturbed shall be replaced or repaired per Owner's direction.



LOUIS & RUTH ANDRIETTI
DB 454, PG 04



△ Revising Force Main Layout

LIBERTY TOWNSHIP, DELAWARE COUNTY
Sanitary Sewer Improvement
FOR
TROTTER'S GAIT SUBDIVISION
Force Main
Sta. 15+00.00 to 30+00.00

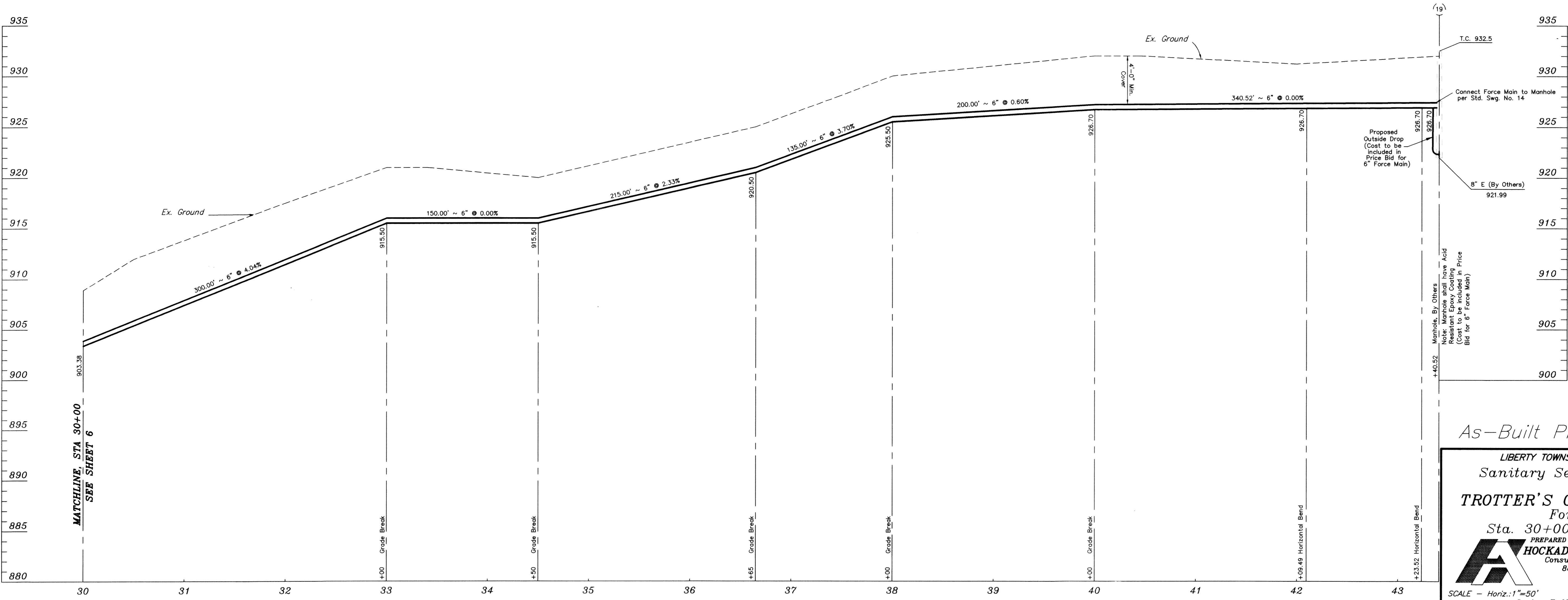
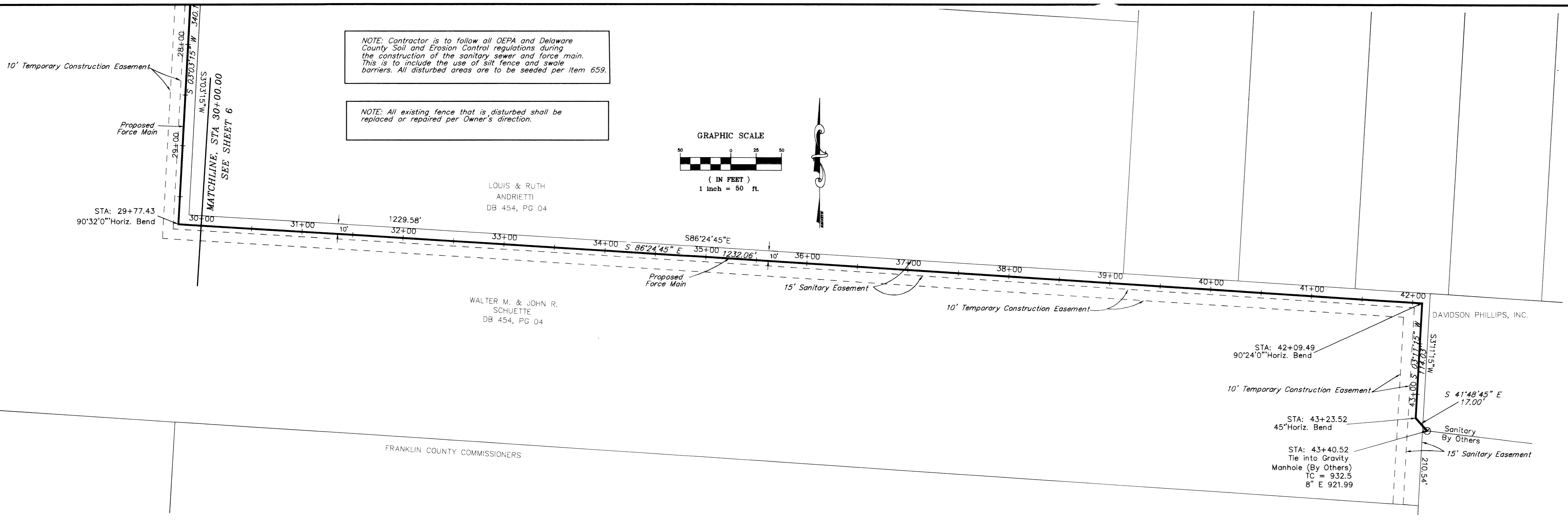
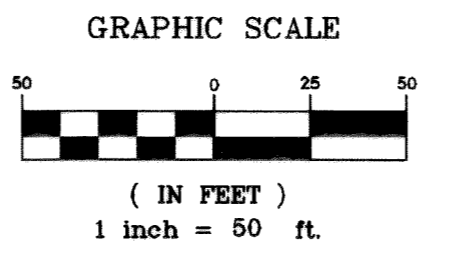
PREPARED BY:
HOCKADEN AND ASSOCIATES, INC.
Consulting Engineers & Surveyors
883 North Cassady Avenue
Columbus, Ohio 43219
Tele.: (614) 252-0993
FAX: (614) 252-0444
E-Mail: eng-surv@hockaden.com

SCALE - Horiz.: 1"=50'
Vert.: 1"=5'

SANPLANSHEET.dwg, Force Main, 10/29/2001 12:28:15 PM, V:\hockaden & Associates, Inc.

NOTE: Contractor is to follow all OEPA and Delaware County Soil and Erosion Control regulations during the construction of the sanitary sewer and force main. This is to include the use of silt fence and swale barriers. All disturbed areas are to be seeded per Item 659.

NOTE: All existing fence that is disturbed shall be replaced or repaired per Owner's direction.



As-Built Plans

LIBERTY TOWNSHIP, DELAWARE COUNTY
 Sanitary Sewer Improvement
 FOR
TROTTER'S GAIT SUBDIVISION
 Force Main
 Sta. 30+00.00 to 43+40.52

PREPARED BY:
HOCKADEN AND ASSOCIATES, INC.
 Consulting Engineers & Surveyors
 883 North Cassady Avenue
 Columbus, Ohio 43219
 Tele.: (614) 252-0993
 FAX: (614) 252-0444
 E-Mail: eng-surr@hockaden.com

SCALE - Horiz.: 1"=50'
 Vert.: 1"=5'

LIFT STATIONS - GENERAL

General: Lift Stations will be dealt with on an individual basis. The OWNER/DEVELOPER shall check with the DELAWARE COUNTY SANITARY ENGINEER prior to beginning of design of any Lift Station for the latest requirements.

Pumps: Pumps shall be the submersible type designed for either wet or dry pit application depending upon the use. Pumps shall be manufactured by FLYGT or GORMAN-RUPP. A "stainless steel" rail system and lift chain, and pitless adapter, shall be provided for removing the pump without entering the Wet Well. All FLYGT submersible pumps shall be "7" or "CP" series and include a flush valve. FLYGT Multirode NTPC Controller and Monitor Pro Monitoring/Modbus System shall also be provided. Pump monitoring shall include FLYGT GLS and FLYGT SUBMEG-D. All Pumps and control panel shall be from a single source.

Wet Well: The Wet Well shall be constructed of poured in place reinforced concrete or pre-cast concrete sections in the diameter required on the individual plans but in no case less than eight (8) feet. The Wet Well shall be covered by a concrete slab with an "aluminum" access door and minimum four (4) inch diameter vent with insect screen. The access doors shall be lockable with handles and hold open devices. The pool level will be detected using both an ultrasonic transducer manufactured by Mitronics and through the use of the FLYGT multirode Monitoring System.

Sewage Grinder: A hydraulic powered grinder (Muffin Monster) as manufactured by JWC Environmental shall be provided. The installation of the grinder shall include a stainless steel frame and retrieval system mounted on the interior wall of the wet well at the invert of the influent line. All controls and hydraulic power supply will be installed complete as part of the grinder installation.

Junction Box: A NEMA 4 Electrical junction box shall be placed on or adjacent to the Wet Well for disconnecting the pump, at the direction of the SANITARY ENGINEER, prior to installation.

Fasteners: All nuts and bolts used shall be "stainless steel".

Hoist: Pumps shall be removed by means of a 750 lb. removable hoist assembly. A stationary base, which accepts the portable hoist shall be permanently mounted on the top of the Wet Well. The hoist is to be provided.

Valve Pit: The Valve Pit shall be constructed of concrete cast in place or precast concrete sections covered by a concrete slab with an access opening as shown on the plans (3 ft. x 5 ft. min.). The minimum dimensions of the valve pit shall be 8 ft. wide x 7 ft. deep. A building shall be placed over the Valve Pit as shown on the plans. The building is to be insulated and the inside wall covered with 1/2 inch flake board. An aluminum access ladder shall be provided. The access opening is to be covered by grating mounted flush with the top of slab. An explosion proof light fixture shall be furnished in pit area. Ventilation will be provided by an electric fan with closable shuttered louvers with screens. The ventilation fan should be able to overturn the volume of air in the valve pit a minimum of 6 times an hour.

Building: A Building will be provided over the valve pit and will house all of the electronic/electrical components for the control of the pump, monitoring system, and sewer grinder. The building shall be a minimum of 9'-8" x 9'-8" x 8', insulated with the inside walls and ceiling covered with 1/2 inch flake board and heated with a model MUH-35 heater manufactured by QMARK. Ventilation will be provided for the attic area and shuttered louvers with screens. A 110-volt GFCI duplex outlet and lighting for the work area shall also be included. A GE #C746G470 W/175 WMV with photocell and switch inside the building shall be installed to provide light to the wet well area.

Control Panel: A control box shall be furnished consisting of a NEMA 12 enclosure, removable mounting panel supporting circuit breakers, pump alternator, and control circuits. Hand-Off automatic switches, elapsed time meters, and indicating lights shall be provided for each pump. Motor starters shall consist of overload relays and ALLEN-BRADLEY SMC Controllers. The control panel shall be supplied by pump supplier.

Telemetering: By Westerman Companies.

- a. One (1) - Westerman CT - 400 Microprocessor board or equal
- b. Three (3) - Westerman UO-4480 Input/Output board or equal
- c. One (1) - Westerman I/O-4240 Analog input board or equal
- d. One (1) - Melicom Spread Spectrum data radio, model 20043 or equal
- e. One (1) - Westerman CA-1511 9600 Baud Modem or equal
- f. One (1) - Fabricated Back Panel
- g. One (1) NEMA 4/12 enclosure
- h. One (1) - Wooden Pole if required and Onini antenna
- i. All-Related conduit, wire, cabling, and installation
- j. One (1) - Power Sonic 10 AH battery
- k. One (1) - Enclosure strip heater
- l. All - Crydan style relays

Emergency: A receptacle for an emergency generator is to be provided. The receptacle, mounted outside building, is to be CROUSE-HINDS CAT #AR1041-M72 male, NO SUB. A transfer switch is to be provided in the building. A 1 inch male quick connect pump by-pass shall be provided in the Wet Well and Valve Pit. Plumbing for the by-pass in the valve pit shall be to the outside of the building.

Pressure: A pressure gauge shall be provided on the force main in the Valve Pit at the location shown on the plans.

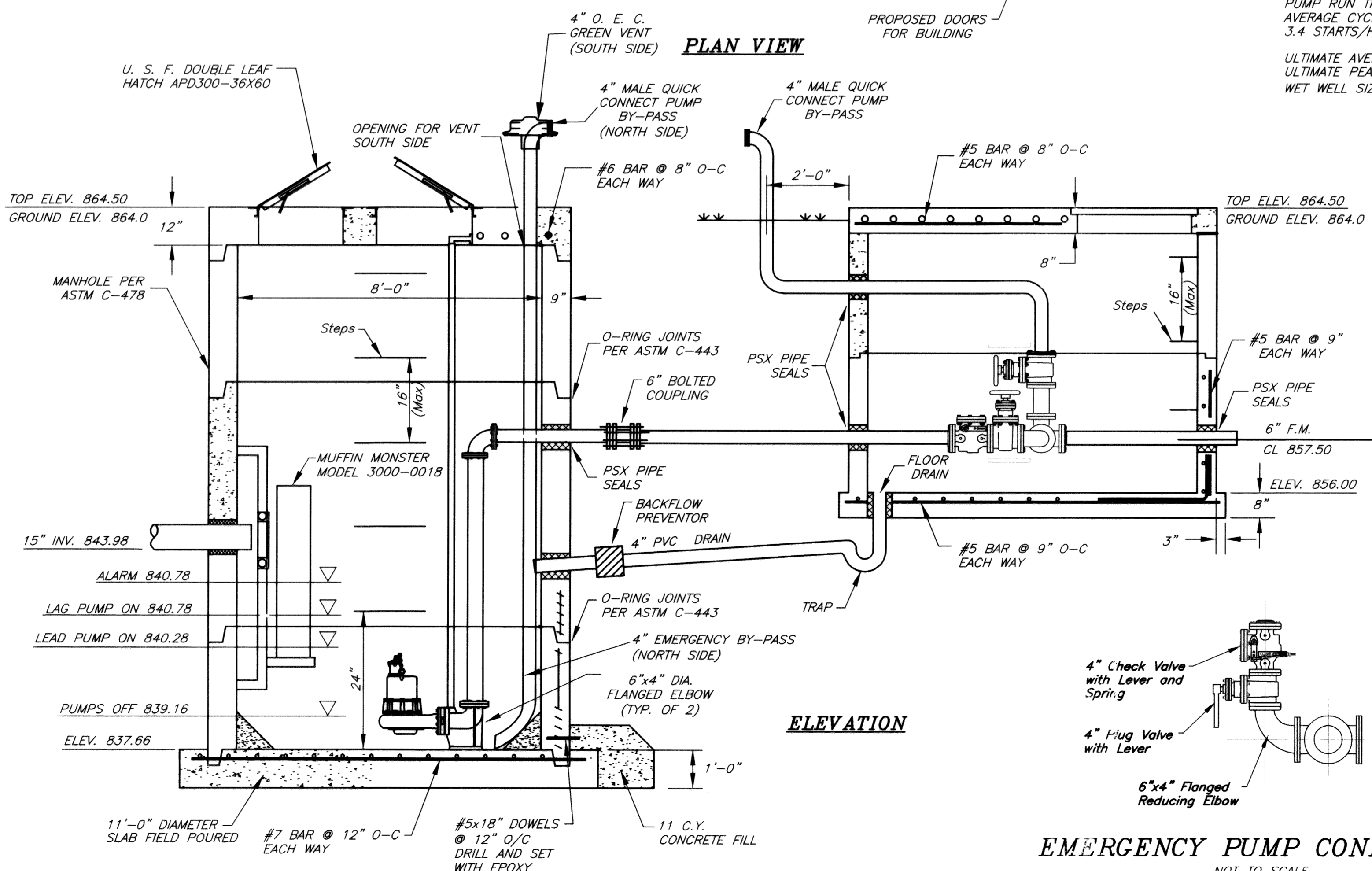
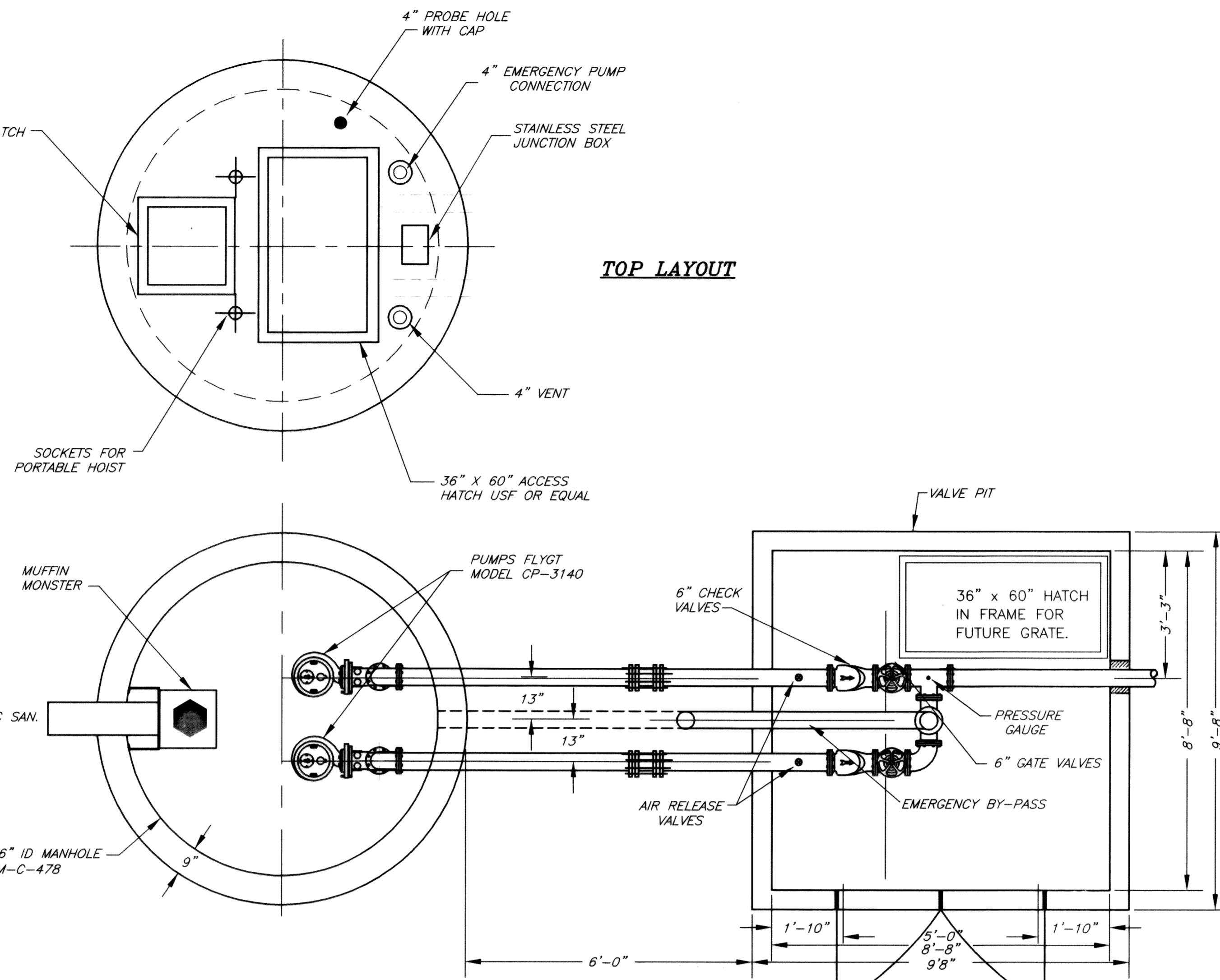
Vacuum Breaker: A vacuum breaker shall be provided in the Valve Pit, tapped onto the top of each force main between the pump and check valve.

Odor Control: A BIOXIDE feed system shall be designed by US Filter and installed as per the approved drawings. The odor control system shall contain the following:

- One (1) storage tank
- Spill/Storage tank failure containment system constructed of 3000 psi concrete
- Drainage from containment system shall be directed to wet well
- Concrete foundation
- Stainless Steel Control Panel
- All piping, valves, fittings, gages, and electronics necessary for complete operation
- 1,000 ml in-line graduated cylinder for pump calibration
- US Filter/Davis Process Chemical Feed Pumps
- Stainless Steel pipe support stand
- 2" PVC fill lines with ball valve and quick connect coupling
- All miscellaneous piping, fittings, filters, etc. to complete the system

Access Drive/Walk Way: A paved asphalt access drive shall be provided with a minimum pavement section of 6 inches of ODOT #304 aggregate and 1 1/2 inch of ODOT 402 and 1 1/2 inch of ODOT 404 asphaltic cement.

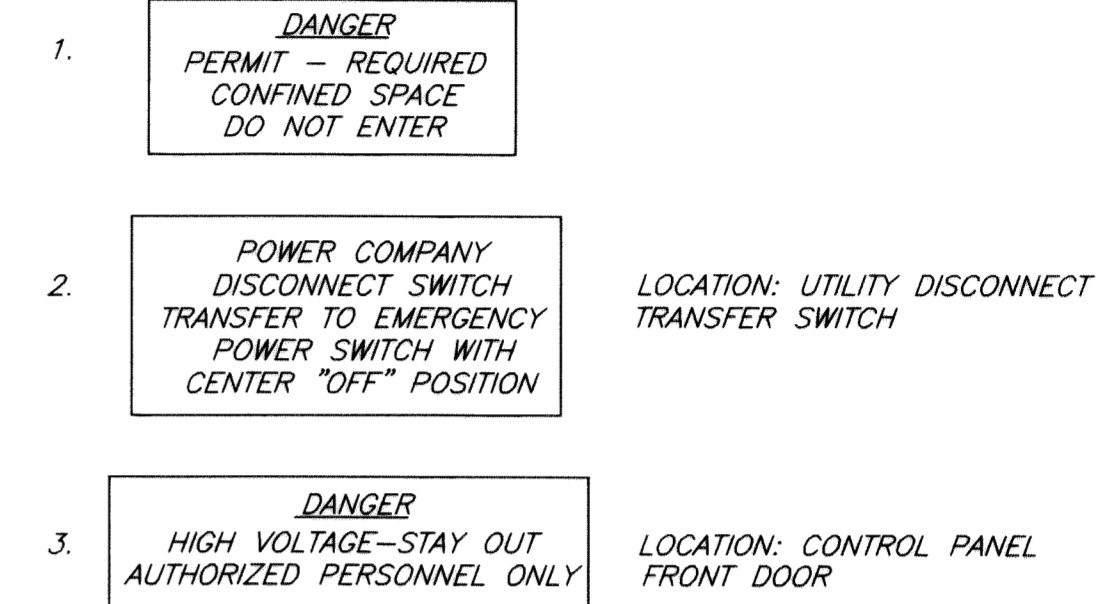
Pavement width shall be minimum of 12 feet wide and a turn around area (either a circular area or "T") for a full size truck and auxiliary pump trailer be provided. Walk area from access drive to valve pit and wet well shall be provided and constructed from a minimum of 4" of 3000 psi concrete.



REQUIREMENTS FOR THE CONTROL PANEL MATERIALS AND INSTALLATION.

ITEM 1.07 ~ CONFINED SPACE ENTRY SIGNS

- A. CONFINED SPACE ENTRY SIGNS SHALL BE PROVIDED AND INSTALLED AT BOTH SIDES OF ENTRY DOORS AT THE FOLLOWING LOCATIONS:
 - 1. WET WALL
 - 2. VALVE CHAMBER
- B. SIGNS SHALL MEET THE REQUIREMENTS OF ITEM 6.30 (CMSC) AND BE AS FOLLOWS:
 - 1. SIGN MATERIAL SHALL BE 0.063" THICK ALUMINUM.
 - 2. PAINT COLORS SHALL BE RED AND BLACK ON WHITE, NON-REFLECTIVE.
 - 3. APPROXIMATE SIGN SIZE: 11"x16" WIDE.
 - 4. TEXT AND STYLE: AS FOLLOWS:



- C. SIGN POSTS SHALL BE 4"x4" (NOMINAL) MEETING THE REQUIREMENTS OF ITEM 710.14 (CMS) ~ 7'-0" PRESSURE TREATED LUMBER.
- D. INSTALLATION
 - 1. POSTS - INSTALL POSTS ON THE OPPOSITE SIDES OF EACH STRUCTURE NEAR EACH ACCESS OPERATOR AS DIRECTED ON SITE BY THE ENGINEER. POSTS TO BE PLACED IN 8" DIAMETER HOLES AND DEPTHS OF 3.0' (MIN) BELOW FINISHED GRADE. POSTS SHALL BE SET PLUMB, CENTERED IN HOLES WITH CONCRETE AROUND THEM TO WITHIN 6" OF FINISH GRADE.
 - 2. SECURE EACH SIGN NEAR TOP OF POSTS THAT EXTEND 4' ABOVE FINISHED GRADE; USE 2-3/8"x3" CADMIUM PLATED LAG SCREWS AND WASHERS FOR ATTACHMENT. SIGNS SHALL BE READABLE FROM SIDES FACING AWAY FROM STRUCTURES. A TOTAL OF FOUR SIDES ARE REQUIRED.

TROTTERS GAIT SUBDIVISION LIFT STATION RUN AND CYCLE TIMES

AVERAGE "Q" = 36 GPM (TROTTERS GAIT ONLY)
 PEAK "Q" = 140 GPM (TROTTERS GAIT ONLY)
 WET WELL DIAMETER = 96"
 LEAD PUMP ON = ELEV 840.28
 PUMP OFF = ELEV 839.16
 STORAGE VOLUME = @ 379 GAL./PER FT.
 TOTAL = 424 GAL.
 FILL TIME @ Q AVERAGE = 11.78 MIN.
 PUMP DOWN @ 140 GPM=3.03 MIN.
 PUMP RUN TIME = 5.69 MIN.
 AVERAGE CYCLE TIME = 17.47 MIN
 3.4 STARTS/HOUR

NOTE:
 THE PROPOSED PUMPS ARE DESIGNED TO SERVE THE TROTTERS GAIT 38 LOT SUBDIVISION. WHEN THE PROPOSED DEVELOPMENT TO THE SOUTH OF TROTTERS GAIT IS CONNECTED TO THE LIFT STATION TO SERVE THE REMAINING TRIBUTARY AREA, THE PUMPS WILL NEED REPLACED TO HANDLE THE ADDITIONAL FLOWS.

ULTIMATE AVERAGE "Q" = 144 GPM (TOTAL TRIBUTARY, PUMPS WILL NEED REPLACED))
 ULTIMATE PEAK "Q" = 498 GPM (TOTAL TRIBUTARY, PUMPS WILL NEED REPLACED)
 WET WELL SIZED FOR TOTAL TRIBUTARY AREA

TROTTERS GAIT LIFT STATION PUMPS

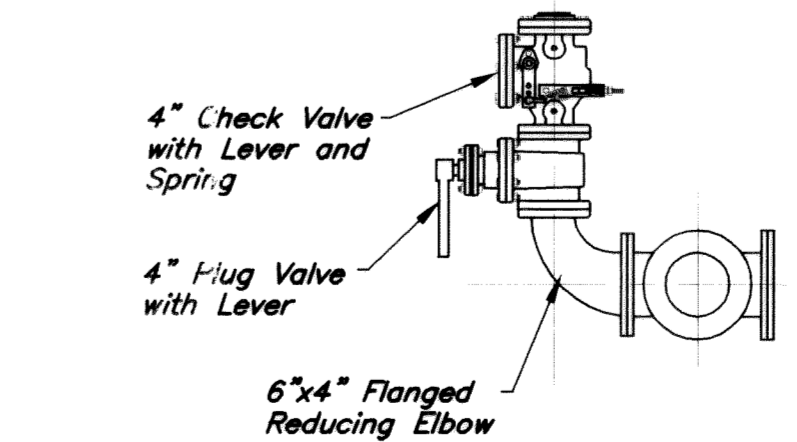
	SIZE	WEIGHT WATER (DISP) LBS.	WEIGHT CONC., LBS.
BASE SLAB	11'-0" DIA	5,940	13,328
8" ID MH.	9'-6" x 25.34'	112,273	73,266
TOP SLAB	9'-6" x 12"	0 (ABOVE GRADE)	9,940
FILL CONC.	MASS, 11 CY.	18,533	41,580
		136,746	138,114

+INDICATES BOUYANT FORCE -INDICATES RESISTING FORCE

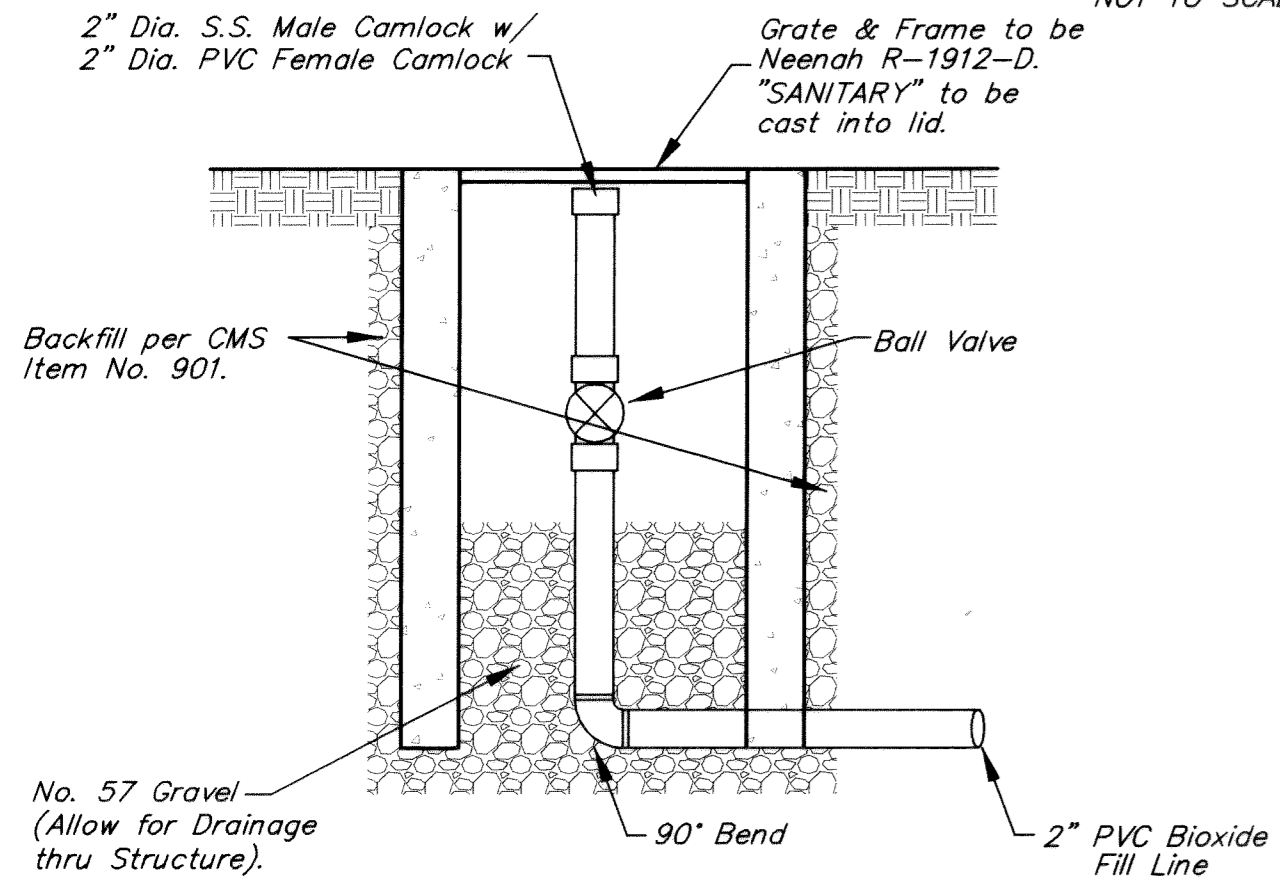
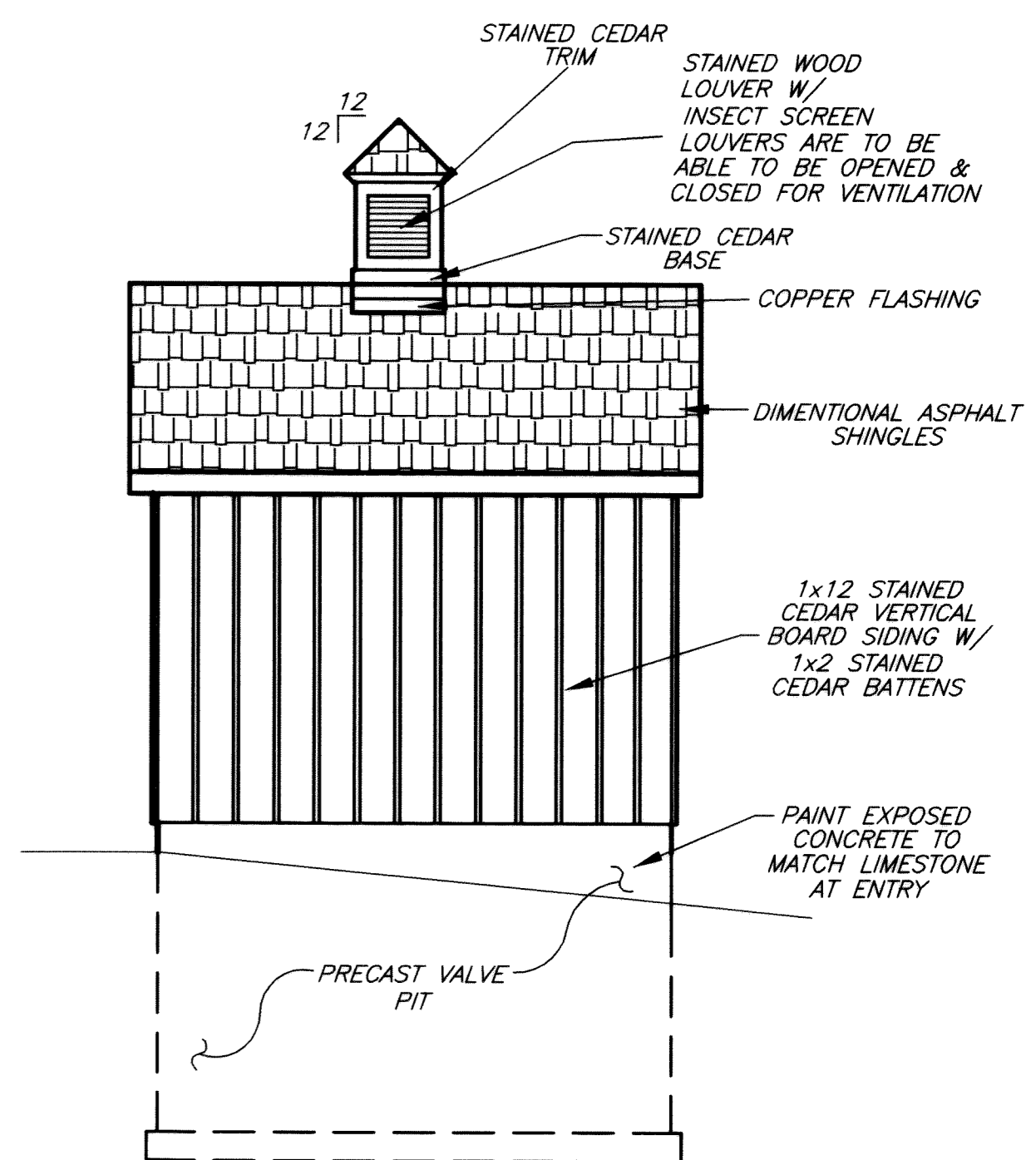
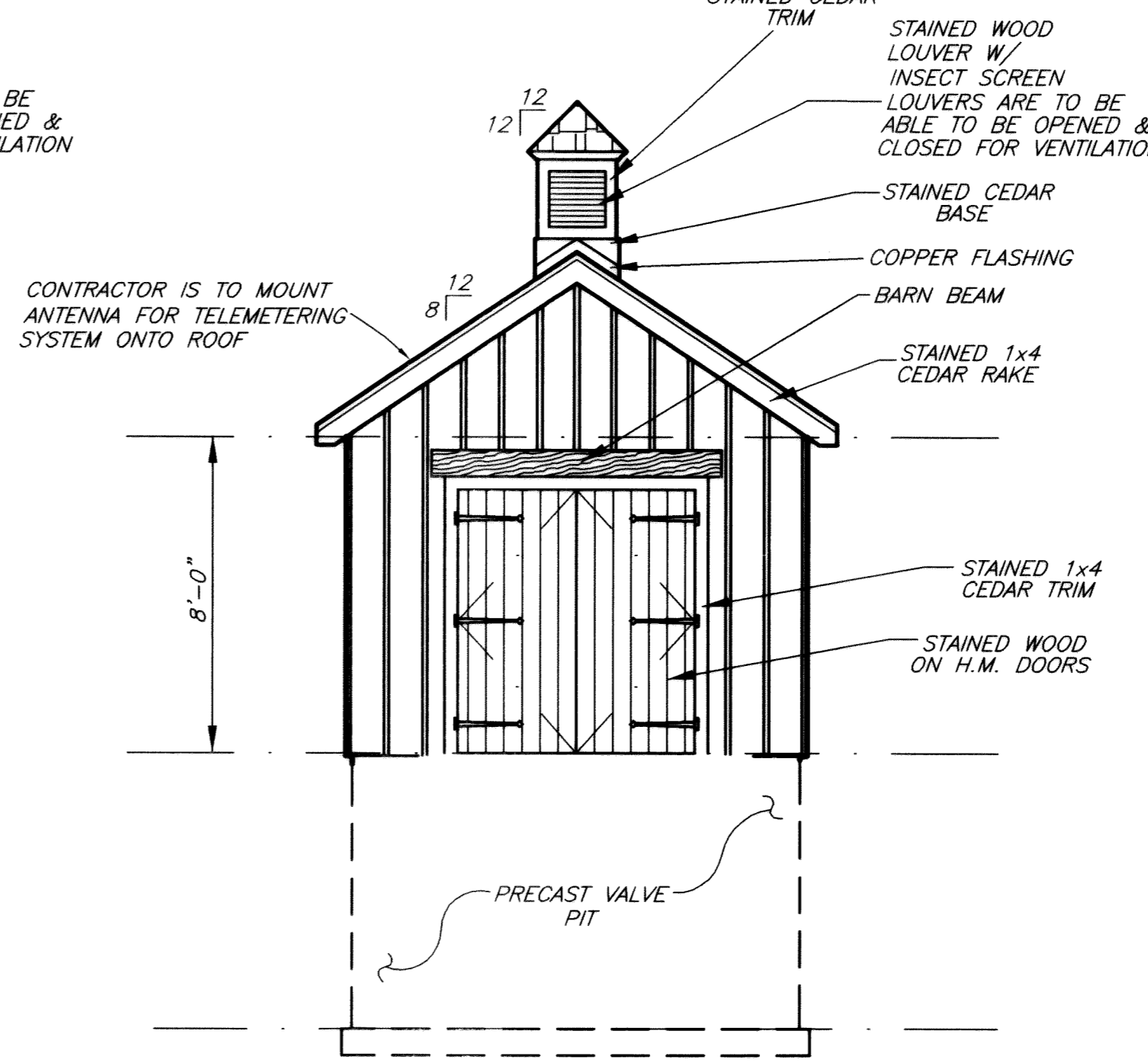
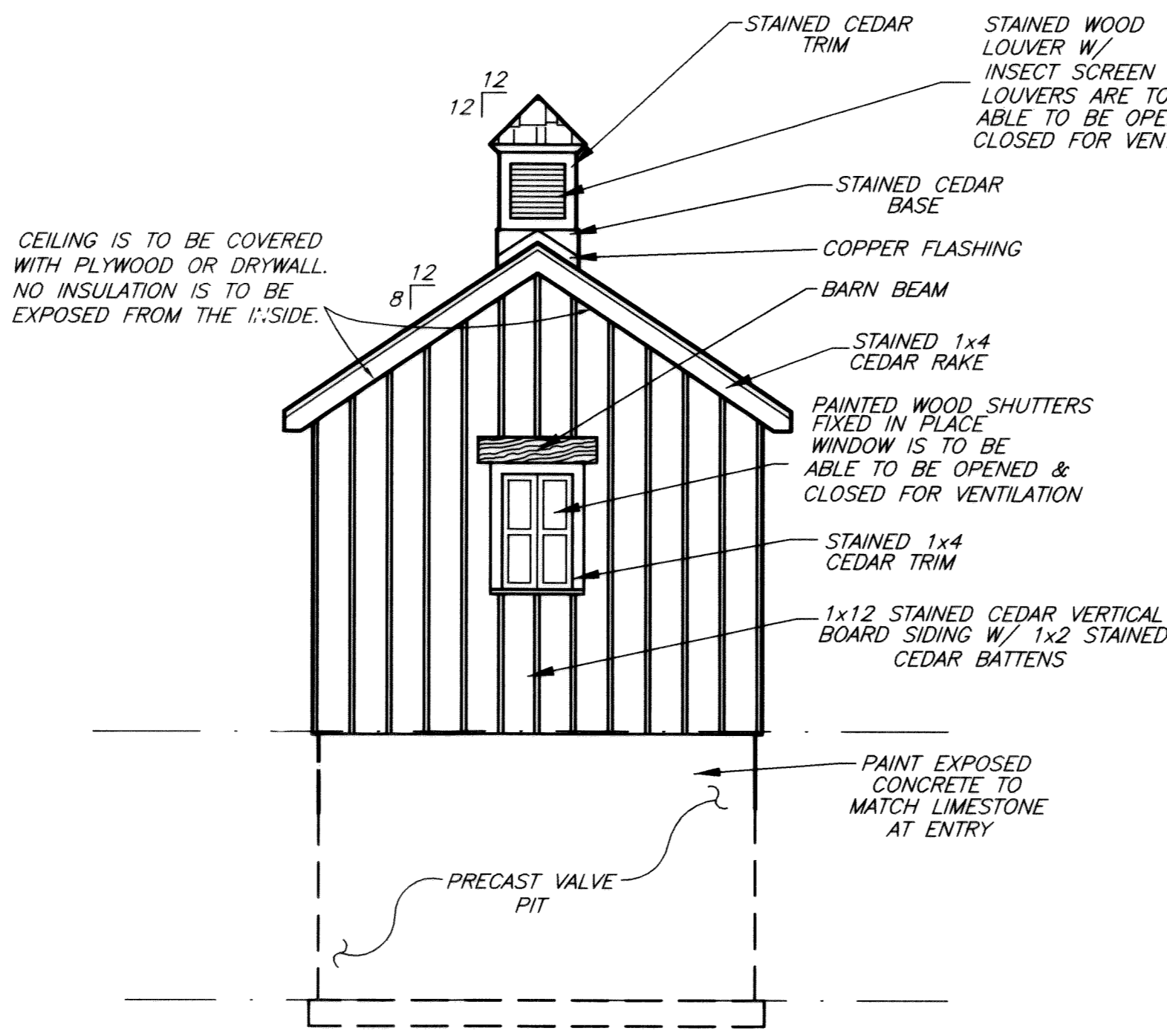
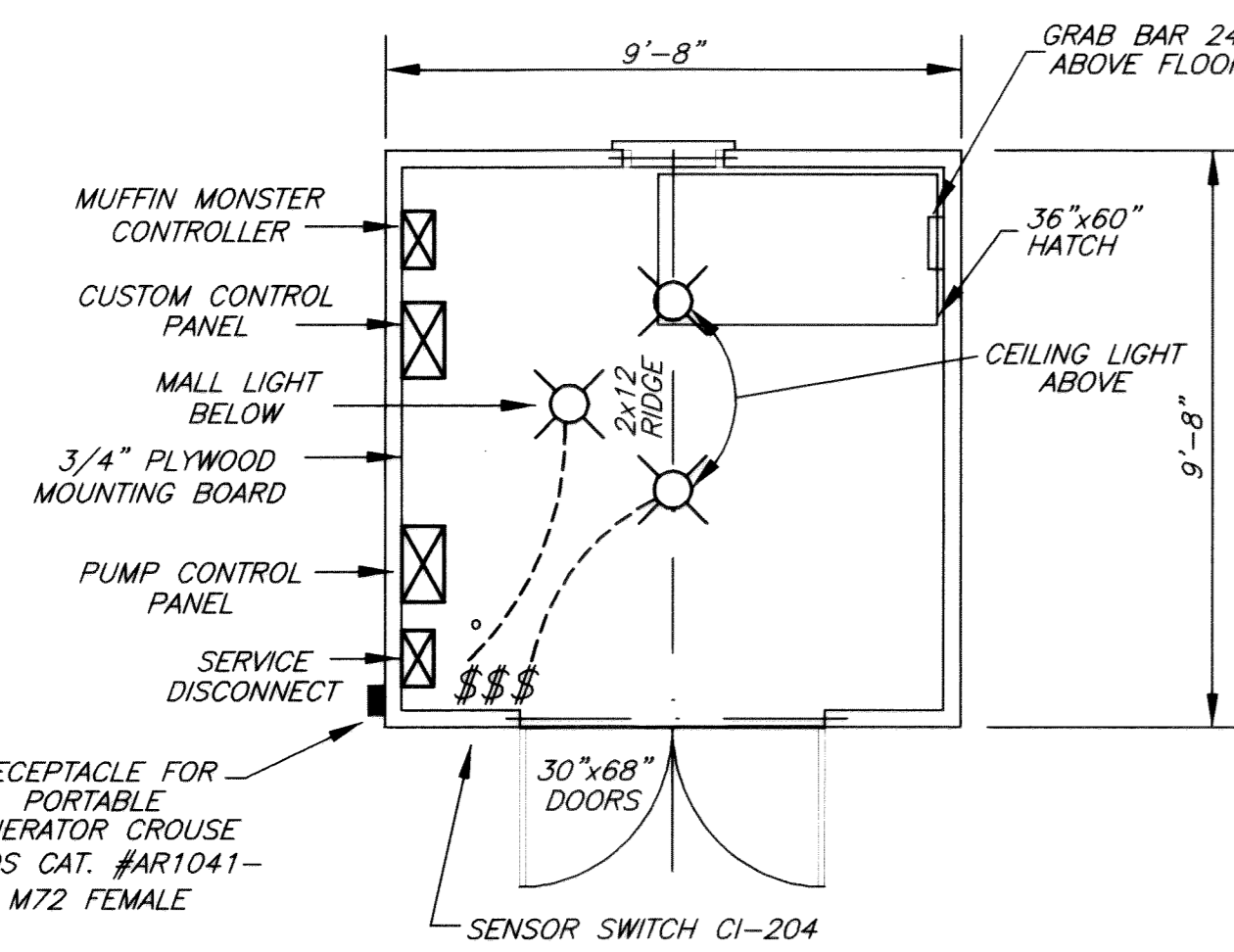
NOTE - SHOP DRAWINGS
 THE CONTRACTOR SHALL SUBMIT THREE (3) COPIES OF SHOP DRAWINGS FOR THE PUMP STATION TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

As-Built Plans
 LIBERTY TOWNSHIP, DELAWARE COUNTY
 Sanitary Sewer Improvements
 FOR
TROTTERS GAIT SUBDIVISION LIFT STATION DETAILS

PREPARED BY:
HOCKADEN AND ASSOCIATES, INC.
 Consulting Engineers & Surveyors
 883 North Cassady Avenue
 Columbus, Ohio 43219
 Tel.: (614) 252-0993
 FAX: (614) 252-0444
 E-Mail: kziesler@hockaden.com



EMERGENCY PUMP CONNECTION
 -NOT TO SCALE-



RETAINING WALL NOTES

CONCRETE SHALL CONFORM TO CITY OF COLUMBUS CONSTRUCTION AND MATERIALS SPECIFICATIONS ITEM 511, CLASS "C", F'C = 4000 P.S.I.

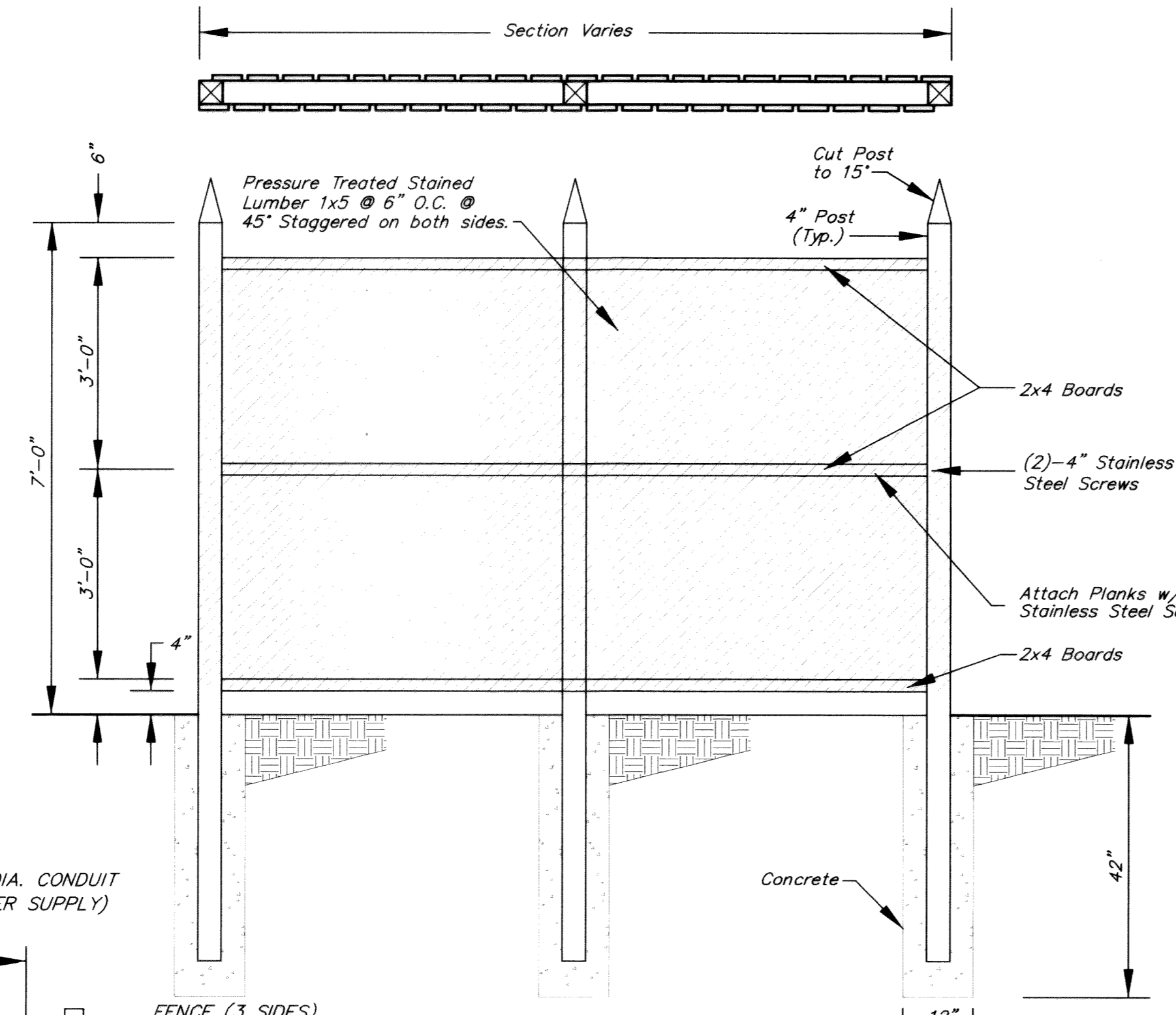
REINFORCING STEEL SHALL CONFORM TO CITY OF COLUMBUS CONSTRUCTION SPECIFICATIONS ITEM 509, ASTM A615, A616 OR A617, GRADE 60.

ALL EXPOSED NON-REENTRANT CORNERS OF CONCRETE SHALL BE CAST WITH A 2"x2" CHAMFER.

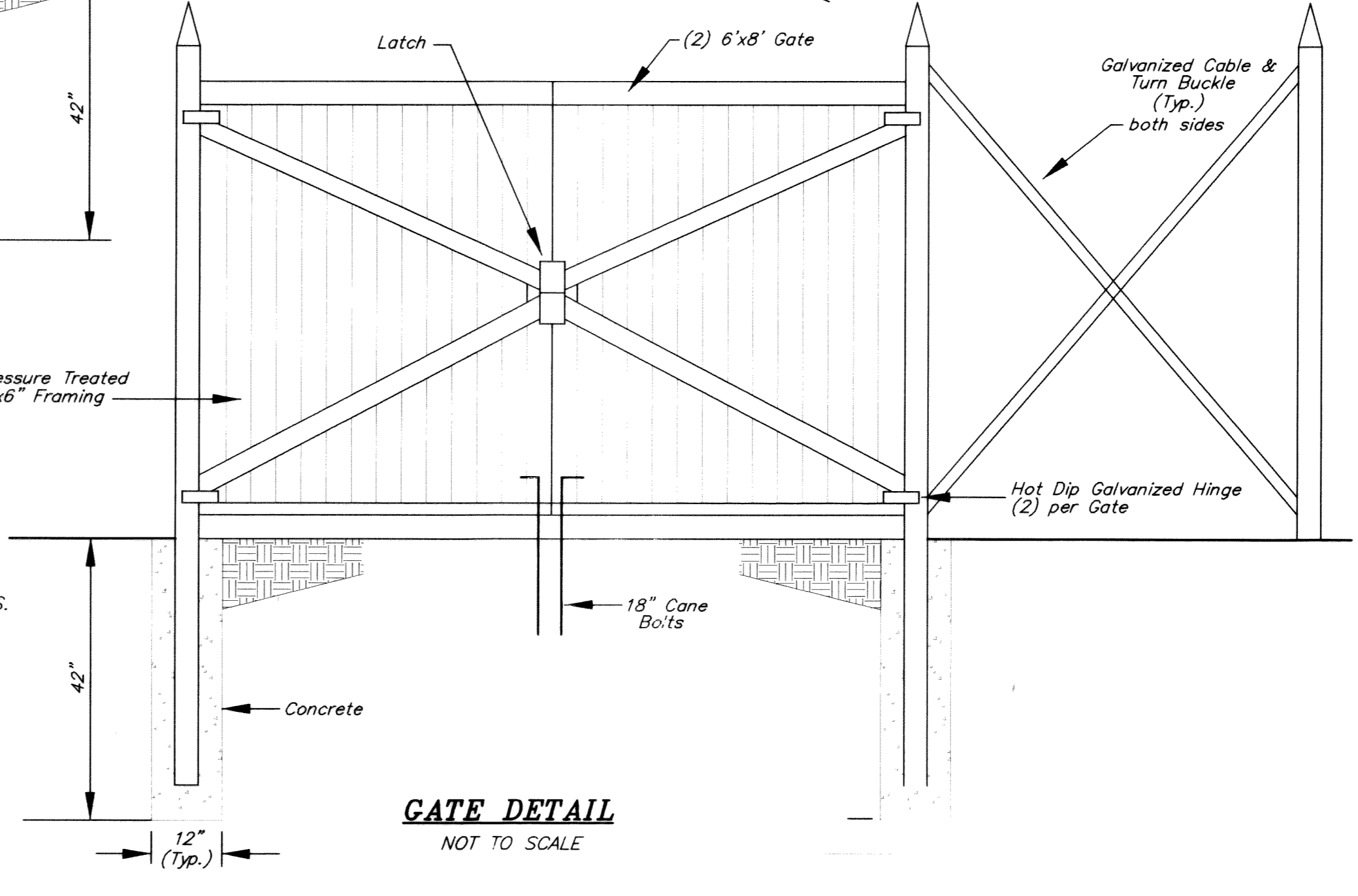
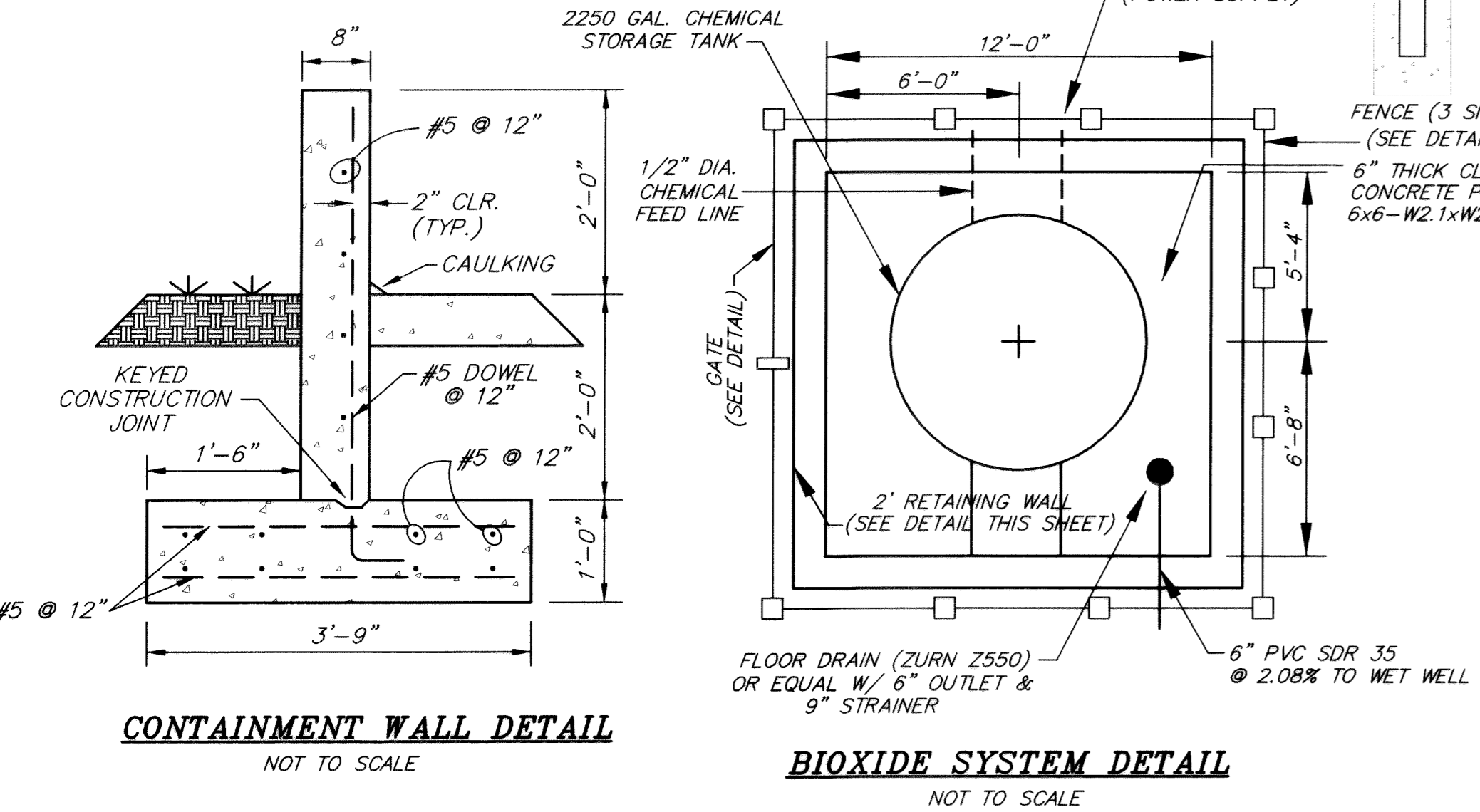
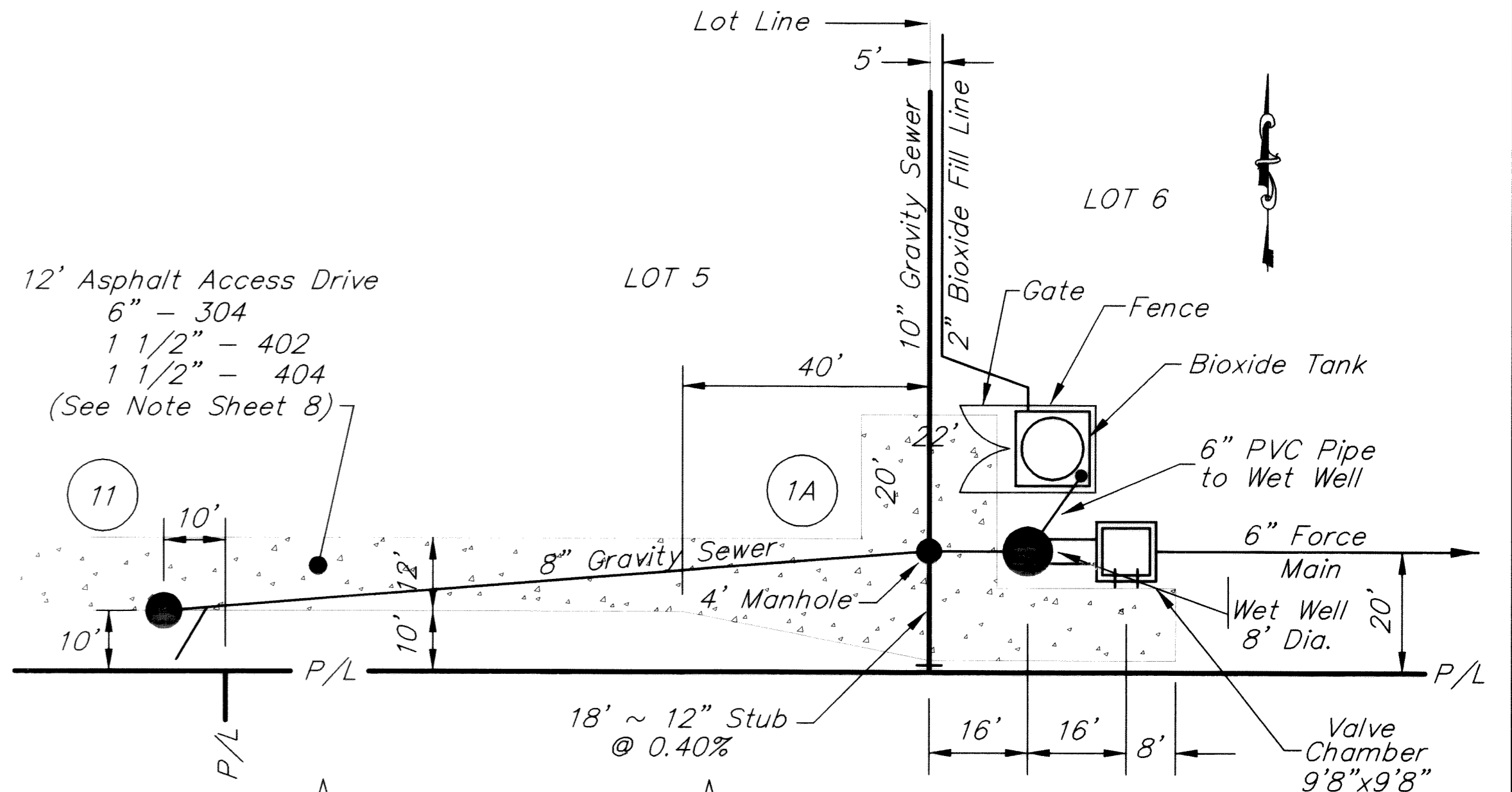
ALL EXISTING DRAINAGE COURSES SHALL BE MAINTAINED DURING CONSTRUCTION AND PLACEMENT OF THE PROPOSED STRUCTURE. THE CONTRACTOR SHALL SUBMIT TO THE COUNTY A SCHEDULE OF SEQUENCE AND METHOD OF MAINTAINING THE WATERCOURSE. SPECIAL ATTENTION SHALL BE OBSERVED TO INSURE THAT ALL EROSION CONTROL FEATURES ARE INSTALLED AND MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT.

THE FOUNDATION, AS DESIGNED, WILL PRODUCE A BEARING PRESSURE OF LESS THAN 1 1/2 TON PER SQUARE FOOT (2,000 PSF). BOTTOM OF FOOTINGS SHALL BE CAST AGAINST UNDISTURBED EARTH.

IF UNSUITABLE BEARING MATERIAL OCCURS AT THE BOTTOM OF THE FOOTING ELEVATION, THE FOOTING SHOWN SHALL BE DEEPENED OR WIDENED TO ACCOMMODATE THE CHANGED CONDITION. A REGISTERED SOIL ENGINEER EMPLOYED BY THE COUNTY SHALL VERIFY THE SUITABILITY OF THE BEARING MATERIAL. THE ENGINEER MUST APPROVE ANY CHANGES IN THE FOOTING.



- NOTES**
1. U.S. FILTER SHALL PROVIDE 2,250 GALLON BIOXIDE SYSTEM.
 2. CONTRACTOR TO FURNISH CONCRETE PAD WITH ALL IN-SLAB PIPING.
 3. ALL PIPING AND APPURTENANCES SHALL BE PVC, SCH 80.
 4. ALL ELECTRICAL CONDUIT AND WIRING BY CONTRACTOR.
 5. UTILIZE SWEEPS ONLY (NO ELBOWS) FOR CONDUIT DIRECTIONAL CHANGES.
 6. CONTRACTOR TO FURNISH AND INSTALL ALL NECESSARY SLAB OPENINGS, SLEEVES AND SEALANT.
 7. CONTRACTOR TO FURNISH AND INSTALL ALL NECESSARY HANGERS, SUPPORTS, AND BLOCKING FOR PIPING.
 8. ALL HARDWARE REQUIRED FOR INSTALLATION SHALL BE STAINLESS STEEL, FURNISHED AND INSTALLED BY CONTRACTOR.
 9. SEE SUPPLEMENTAL STANDARD DETAILS FOR CHEMICAL FEED UNIT, CALIBRATION PEDESTAL, PIPING SUPPORT, STORAGE TANK, LEVEL GAUGE AND VARIOUS OTHER COMPONENTS.



As-Built Plans

LIBERTY TOWNSHIP, DELAWARE COUNTY
Sanitary Sewer Improvements
FOR
TROTTERS CAIT SUBDIVISION
FOUNDATION DETAILS

PREPARED BY:
HOCKADEN AND ASSOCIATES, INC.
Consulting Engineers & Surveyors
883 North Cassady Avenue
Columbus, Ohio 43219
Tele.: (614) 252-0993
FAX: (614) 252-0444
E-Mail: kziessler@hockaden.com

SCALE: AS NOTED

9