

**ADDENDUM #1
RESPONSE TO QUESTIONS
Liberty Hills Sanitary Sewer Rehabilitation Project**

QUESTION

1. Are you able to provide any additional information on schedule goals for this project? I see a goal to initiate tree clearing this winter to avoid impacting the bats. What do you see for the timing of a notice of award on this project to meet this goal as I see a 60%, 90%, and 100% plan set needed prior to bid but a goal to have any tree clearing occur between 10/1/25 and 3/31/26 (with a completion of next fall).

ANSWER

THE SCHEDULE IS FLEXIBLE AND WE ARE OPEN TO SUGGESTIONS FROM THE CONSULTANTS ON HOW BEST TO REACH OUR GOAL OF SEWER CONSTRUCTION COMPLETE BY FALL OF 2026. OPTIONS MAY INCLUDE, BUT ARE NOT LIMITED TO, A SEPARATE BID PACKAGE FOR TREE CLEARING OR REDUCED DELIVERABLES. NOTICE OF AWARD IS ANTICIPATED BY AUGUST 29TH, ASSUMING NO INTERVIEWS ARE NECESSARY.

QUESTION

2. Can you please confirm the scope of the project? The RFP notes 2,829 of sewer and 5 manholes requiring rehabilitation. It appears this includes the 27" sewer from MH 13-12-11-10, correct (MH 11 to MH 10 not part of the DLZ report)? MH 01 to 13 (18") is not included. MH rehab is included on the 15" and 18" pipes. Can you confirm those manholes were not previously cementitiously lined? MH 01 and MH 13 appear to be original concrete in the inspections while MH 02, 03, and 04 appear to have some form of cementitious lining already applied, though the inspections state otherwise.

ANSWER

YES, THE RFP REFERENCE IS TO THE 27" SEWER MANHOLE 13-12-11-10. THE SEWER PIPE BETWEEN MANHOLES 01 TO MH 13 WAS NOT INCLUDED IN THE PRELIMINARY ASSESSMENT BECAUSE IT HAS NOT BEEN TELEVISED, BUT THE COUNTY WOULD BE OPEN TO UPSIZING AND/OR REHAB ON IT BEING ADDED TO THIS SEWER REHAB PROJECT.

MANHOLES 02, 03, AND 04 HAVE NOT BEEN PREVIOUSLY REHABBED. THE LIGHT-COLORED MATERIAL COATING THE MANHOLE WALLS AND STEPS IN THE APPENDIX C INSPECTION PHOTOS IS THE PRODUCT OF MICROBIAL-INDUCED CONCRETE CORROSION.

QUESTION

3. Can record plans for the 18" Falcon Ridge Section 4 tie-in to MH 01 be provided?

ANSWER

YES – SEE ATTACHMENT 1 TO THIS RESPONSE TO QUESTIONS.

QUESTION

4. Can record plans for the 27" concrete sewer inside of the 60" casing pipe be provided?

ANSWER

YES – SEE ATTACHMENT 2 TO THIS RESPONSE TO QUESTIONS.

QUESTION

5. Is there any hydraulic modeling information that can be provided on the flows through the 27" sewer for normal flow as well as overall capacity goals? Can an HGL be provided from MH 10 upstream to MH 05? History of WIBs?

ANSWER

SWMM MODEL RESULTS FOR THE EXISTING CONDITION, 25-YEAR 24-HOUR DESIGN STORM (THE COUNTY'S TARGET LEVEL OF SERVICE) INDICATE THAT THE 27" SEWER IS OVER ITS FULL FLOW CAPACITY AND SURCHARGING. HOWEVER, THERE ARE NO KNOWN WATER IN BASEMENTS (WIBs) OR SANITARY SEWER OVERFLOWS (SSOs). THE COUNTY IS CURRENTLY IMPLEMENTING SEPARATE LONG-TERM PROJECTS TO REDUCE FLOW TO THE 27" SEWER BY (A) DIVERTING THE GOLF VILLAGE FORCE MAIN TO A NEW TRUNK SEWER TO BE CONSTRUCTED BY A COUNTY ENGINEER ROADWAY PROJECT ALONG HOME ROAD, AND (B) PERFORMING ADDITIONAL FLOW MONITORING AND INVESTIGATIONS IN THE TRIBUTARY AREA OF THE 18" SEWER TO IDENTIFY AND REDUCE INFILTRATION AND INFLOW.

QUESTION

6. Are the peak flows in the DLZ report measured flows or are they modeled flows for a specific event?

ANSWER

THE PEAK FLOWS IN TABLE 3 OF THE PRELIMINARY ENGINEERING REPORT ARE MODELED, PEAK HOURLY FLOWS FOR THE 1-YEAR 24-HOUR DESIGN STORM.

QUESTION

7. If the 1147 feet of sewer downstream of MH 11 is being added, has this been CCTV'ed? Can the CCTV data on the MH 13 to MH 12 to MH 11 be provided?

ANSWER

YES IT WAS CCTV'ED. ALL CCTV WILL BE PROVIDED TO THE SELECTED CONSULTING FIRM AFTER THE NOTICE OF AWARD.

QUESTION

8. Environmental assessments are requested for areas impacted by bypass pumping. Is the Tylers Run stream bank mitigation desired to be part of this project as well?

ANSWER

YES. THE MITIGATION SHOULD BE PART OF THE PROJECT AND WE WOULD RELY ON OUR CONSULTANTS TO DETERMINE THE SCHEDULE BASED ON THE REQUIRED ENVIRONMENTAL ASSESSMENTS AND IF THIS IS BEST TO DESIGN/BID/CONTRACT OUT SEPARATELY OR IN CONJUNCTION WITH THE SEWER CONSTRUCTION.

QUESTION

9. Can you please provide the details of the \$2M construction cost estimate? The DLZ Report (Section 2.0) alludes to the recommendations and costs being included, but the report did not contain any of these costs.

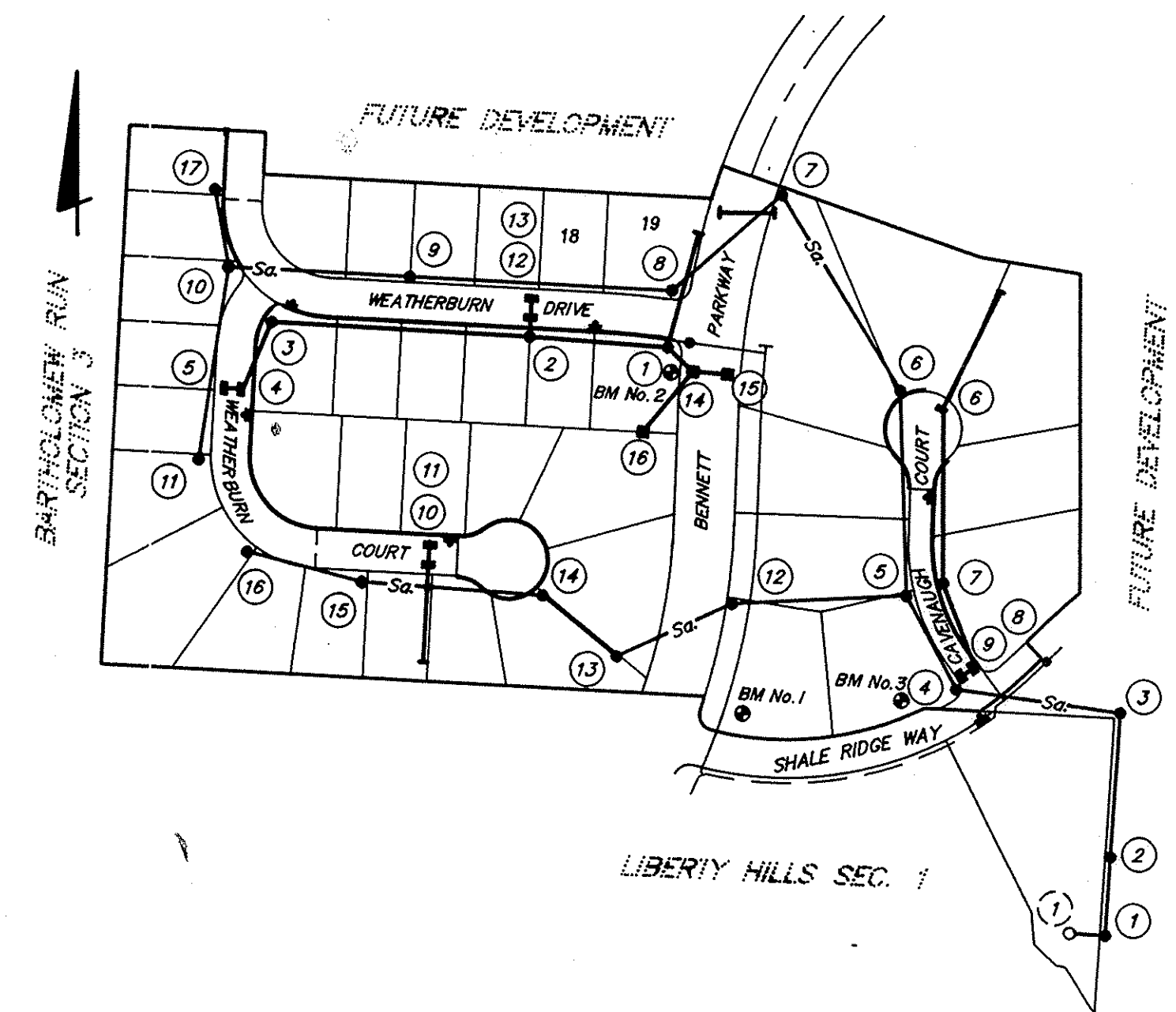
ANSWER

COST ESTIMATES WERE NOT INCLUDED IN THE SCOPE OF THE PRELIMINARY ENGINEERING REPORT AND THE REFERENCE IN SECTION 2 IS A TYPOGRAPHICAL ERROR. THE \$2M CONSTRUCTION COST IS AN INTERNAL PLANNING ESTIMATE FOR 2026 BUDGETING PURPOSES.

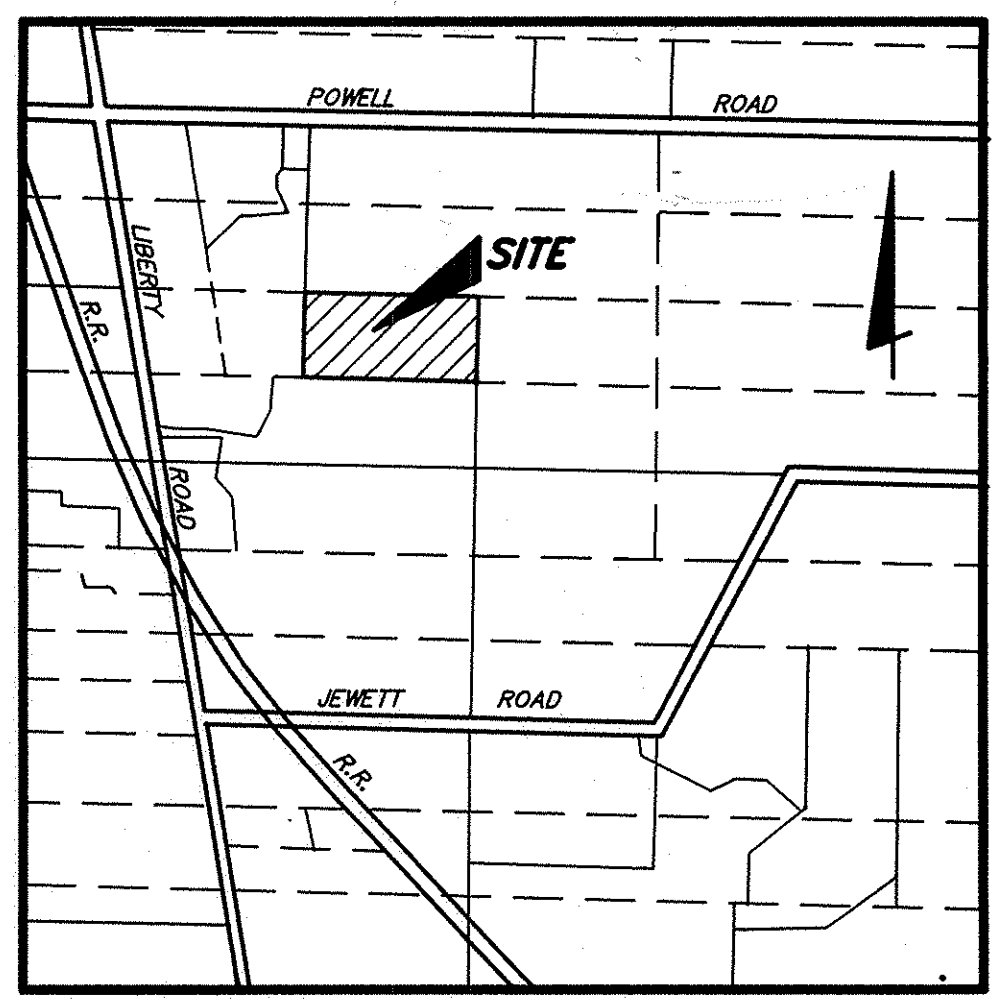
ATTACHEMENT 1

VILLAGE OF POWELL, OHIO
STREET, STORM SEWER, SANITARY SEWER,
LIGHTING & WATER IMPROVEMENT
FALCON RIDGE
SECTION 1
1992

ESTIMATE OF QUANTITIES			
ITEM	QUANT	UNIT	STREET
203	12140	C.Y.	Excavation Including Embankment Construction (Granular Base) Δ
301	225	C.Y.	Bituminous Aggregate Base Δ Δ
304	2780	C.Y.	Aggregate Base Δ Δ
305	2100	S.Y.	7" Concrete Base-Arterial (Alternate) Δ
306	6075	S.Y.	5" Concrete Base-Residential (Alternate) Δ
402	390	C.Y.	Asphalt Concrete
404	360	C.Y.	Asphalt Concrete Δ Δ
407	820	Gal.	Tack Coat (Alternate) Δ
605	5520	L.F.	4" Pipe Underdrain Δ
609	4080	L.F.	Standard Curb and Gutter Δ
Spec.	3	Each	Temp. Barricades
Spec.	100	L.F.	Expansion Joints Δ
STORM			
601	42	C.Y.	R.C.P., Type B Δ
602	2.6	C.Y.	Concrete Masonry Δ
603	207	L.F.	12" Concrete Pipe, Type "B", 706.02
603	1255	L.F.	12" Concrete Pipe, Type "C", 706.01 Δ
603	29	L.F.	15" Concrete Pipe, Type "B", 706.02
603	299	L.F.	15" Concrete Pipe, Type "C", 706.01
603	30	L.F.	30" Concrete Pipe, Type "C", 706.02
603	73	L.F.	36" Concrete Pipe, Type "B", 706.02
604	9	Each	Curb and Gutter Inlet
604	3	Each	Catch Basin
604	4	Each	Manhole Type "A"
605	Lump	Sum	Erosion and Sediment Control
WATER			
755	L.F.	2" Water Main and Appurtenances	
300	L.F.	6" Water Main and Appurtenances	
1540	L.F.	8" Water Main and Appurtenances Δ Δ	
805	L.F.	12" Water Main and Appurtenances Δ Δ	
5	Each	6" Valve w/Box (Including Hydrant Valves)	
4	Each	8" Valve w/Box Δ	
1	Each	12" Valve w/Box	
6	Each	1" Service, Complete (Short) Δ Δ **	
15	Each	1" Service, Complete (Long) Δ Δ **	
5	Each	Fire Hydrant	
1	Each	10" x 12" Tapping Sleeve and Valve Δ	
15	S.Y.	Pavement Replacement (Permanent), Std. Dwg. ST-52	
SANITARY			
2055	L.F.	8" Sanitary Sewer	
1290	L.F.	18" Sanitary Sewer Δ	
1610	L.F.	12" Force Main C-900 Δ	
20	L.F.	6" San. Service (Outside R/W)	
31	Each	8"x6" Wyes	
9	Each	18"x6" Wyes Δ	
14	Each	Precast Concrete Manhole	
3	Each	Precast Concrete Manhole w/Outside Drop	
70	L.F.	Risers Δ	
740	L.F.	6" Sanitary Service (Inside R/W), 2 per Trench	
125	L.F.	6" Sanitary Service (Inside R/W), 1 per Trench Δ	
1	Each	1 1/2" Air Release	
MISCELLANEOUS			
150	L.F.	Utility Trench	
Lump	Sum	Street Lighting (3 Standards and 3 Control Sites)* Δ	
Lump	Sum	Pavement Marking (Bennet Parkway Crosswalks and Stop Bars)	
Lump	Sum	Permanent and Temporary Traffic Signage	
203	4355	C.Y.	Pond Excavation Including Embankment Construction Δ
1	Each	1" Air Release for 12" Waterline Δ	



VICINITY MAP
SCALE: 1"=200'



LOCATION MAP
SCALE: 1"=1320'

PREPARED BY
EVANS, MECHWART, HAMBLETON & TILTON, INC.
CONSULTING ENGINEERS & SURVEYORS
GAHANNA, OHIO

By Cynthia J. Jundt 8/28/92
Registered Engineer Date
Village of Powell
Robert J. Schuch 9/17/92
Village Engineer Date
E. Jane Van Jaarsveld 9-17-92
Mayor Date
David M. Papp 9/17/92
Planning & Zoning Commission Date
For Water Distribution Only:
Thomas E. Steward 10-23-92
General Manager, Del.-Co. Water Co. Date
For Sanitary Sewers Only:
Jack Smoller 9/8/92
Delaware County Sanitary Engineer Date
Ray Jackson 9-8-92
Delaware County Commissioner Date
Ray Jackson 9-8-92
Delaware County Commissioner Date

STANDARD DRAWINGS
The Standard Drawings listed on these plans shall be considered a part thereof.

- | | |
|-------|-------|
| ST-1 | ST-51 |
| ST-3 | ST-52 |
| ST-9 | ST-54 |
| ST-10 | ST-49 |
| ST-13 | ST-60 |
| ST-34 | ST-61 |

Subdivider: Scioto Run Associates
370 South Fifth Street
Columbus, Ohio 43215

- BENCHMARKS**
- BM No. 1 Spike in S.W. root of 15" Tree 100' E. of Bennett Parkway & 40'± N. of Shale Ridge Way Elev. = 887.85
- BM No. 2 Spike in W. side of 24" Hickory Tree 60' S. of Weatherburn Drive and 50' W. of Bennett Parkway Elev. = 884.48
- BM No. 3 Spike in N. side of 12" Walnut Tree 100' W. of the intersection of Shale Ridge Way and Cavanaugh Court Elev. = 888.38

- Δ Revisions made to sheets 1, 3, 4 & 5. 9-25-92
- Δ Revisions made to sheets 1, 2, 3, 4, 5 & 6. 10-8-92
- Δ Revisions made to sheet 8. 10-27-92
- Δ Revisions made to sheets 1, 3 & 5. 11-23-93

** Service Line Spec., All water services shall be 1" in pipe size Δ
7200 P.S.I. Phillips Drisco pipe (polyethylene) connection to main shall be with a Powerseal tapping saddle or approved equal.

* Street light control sites and street light cable alignment to be coordinated with Columbus Southern Power electric distribution print and subject to approval of Village Engineer.

INDEX OF SHEETS

Title Sheet	1
Street and Sanitary General Notes	2
Street Plan and Profiles	4-5
Typical Sections	3
Storm Profiles	6
Sanitary Plan and Profiles	7-10
Grading Plan	11
Sedimentation and Erosion Control	12-13
Composite Utility Plan	14
Preliminary and Final Development Plan	15
Offsite Crosswalk Marking and Signage Plan	15a

STREET AND STORM SEWER GENERAL NOTES

The Requirements of the Village of Powell, Ohio together with specifications of the State of Ohio, Department of Transportation, including all supplements thereto in force on January 1, 1991, shall govern all materials and workmanship involved in the improvements shown on these plans. Special attention should be be paid to table 107-I of the Village of Powell Development Regulations.

The Contractor shall investigate and locate all utilities prior to construction.

The Contractor shall notify the Village Engineer's office seventy-two (72) hours prior to any construction.

Contractor shall post "Construction Traffic 25 mph" signs and provide periodic street sweeping. Should existing pavement surface of Bennett Parkway be damaged due to construction traffic, surface treatment of roadway will be required.

The proposed elevations and locations of inlets, catch basins, and pipes and the estimated lengths of pipes may be adjusted by the Engineer during the entire improvement of this project. Basis of payment for possible adjustments shall be included in the unit price bid for various storm sewers to be adjusted.

Unless otherwise noted on the plans, all storm sewers shall be as hereafter specified: (1) All sizes of storm sewer located within or across proposed or existing pavement areas shall be types "A" & "B" conduit, 706.02 (2) Storm sewers located outside pavement areas shall be Type E conduit, 706.01 or 706.02.

All Type "A" & "B" conduit shall have joints as per State of Ohio Specifications 706.10.

Class "B" Bedding shall be provided for all type "A" & "B" conduit per State of Ohio Spec. 603.04.

All pipe outside the R/W shall have a cover of 2.0 feet minimum. Wherever this is not the case, embankment shall be placed to provide a minimum cover.

Transverse storm sewer and utility lines within the pavement area shall be backfilled with compacted granular material to within (6) inches of the subgrade or existing ground or backfilled with #8 stone (2' behind curb).

Longitudinal storm sewers and utility lines under pavement or driveways shall be backfilled with compacted granular material or backfilled with #8 stone, and all other remaining lengths to be backfilled as per Item 203. All structures and pipe within right-of-way outside of pavement areas shall be backfilled with suitable excavated material compacted to a density equal to the undisturbed trench.

Storm structures are to be per the Village of Powell, Ohio standards.

Sanitary structures are to be as per the Delaware County Sanitary standards.

Roadway items are to be as per the O.D.O.T. standards.

The Contractor shall include in the unit price bid for Item 603 all trenching, backfilling as per plan, and the removal and disposal of brush, trees, and stumps within the area of excavation of the trench.

The Contractor shall include in the unit price bid for Item 203 excavation the removal and disposal of all trees, brush and stumps within the limits of the R/W.

Storm sewer pipe shall be located in the sides of Catch Basins and rectangular or square inlets and shall not encroach into the corners of structures.

Where utilities are under or within five (5) feet of proposed streets, roads or drives the trench backfill shall be compacted granular material to within six inches of the proposed finish grade or to the subgrade in accordance with Item 310 ODOTS.

All utilities shall be installed under existing paved streets by boring or jacking unless open cutting is specifically approved by the Village Engineer.

All streets and storm sewer shall be thoroughly cleaned prior to final acceptance.

CONSTRUCTION LAYOUT: All construction layout shall be performed by an engineer or surveyor, registered in the State of Ohio, at no cost to the Village. Cut sheets shall be prepared for all sewers and waterlines following the format established by the Village. At least one (1) copy of all cut sheets shall be delivered to the Village engineer two (2) working prior to beginning any work.

CONSTRUCTION TRAFFIC: Construction traffic shall be confined within a development as described herein and routed though the Village as directed by the Village Engineer. During construction of, and prior to the final acceptance of the streets which are to become public, construction traffic shall be controlled as follows:

(a) The trucks used to deliver base and surface paving materials shall be routed to minimize the length of travel on the prepared and accepted sub-grade and base materials, respectively.

(b) All traffic shall stay off the concrete base for 7 days, the asphaltic base for 2 days, the asphaltic surface course for 2 days and the concrete surface course for 14 days after placement. After this time the base course and the surface courses can be used for construction traffic.

(c) The Developer shall post signs at entry points of a major development directing construction traffic in accordance with this section.

PROJECT MAINTENANCE: During the development of Falcon Ridge Sec. 1, the Developer will be responsible for maintaining the project site in a clean and orderly manner i.e. keeping the overall site free of construction debris with particular attention being given to the Bartholomew Run area and minimizing the amount of dirt on streets via a street cleaning program as required.

The Developer of Falcon Ridge Sec. 1 will preserve as many existing trees as possible during the course of construction on Falcon Ridge Sec. 1. To prevent mechanical and compaction injury to existing trees not exempt under Article XXIII Landscaping - per Village of Powell Zoning Code, the Developer will require the Contractor and Builders to install snow fencing or barrier around a tree or group of trees to protect the trees and forest floor. Tree protection shall be placed before any construction or grading is begun and shall be maintained in repair during construction. The fencing shall be located as far out from the trunk as the dripline to restrict construction within that area.

PIPE UNDERDRAIN NOTE

Underdrains shall be installed and backfilled to sub-grade elevations immediately prior to construction of the subbase.

However, where subsurface conditions are such that improvement of unstable sub-grade can be accomplished through drying action of underdrains, the Engineer may authorize or require the Contractor to delay construction of the subbase as necessary.

Immediately prior to the construction of curbs, the material located above and within the underdrain trench shall be removed to a depth necessary to expose clean stone. Backfill the trench so the excavated area shall be backfilled with clean stone.

Reinforced ends shall be provided for the exposed ends of all corrugated metal type "F" used for all underdrain outlets if the exposed pipe ends are unprotected by headwalls, catch basins or manholes.

Payment for reinforced ends shall be included in the price bid for the pertinent pipe items.

WATERLINE CONSTRUCTION

Waterline pipe 3" and larger shall be Class 160, SDR 26 conforming to the latest revisions of ASTM D2241 or Ductile Iron Class 52 cement lined. All fittings 6" and larger shall be ductile iron. All P.V.C. fittings shall be manufactured by Scepter. All 2" P.V.C. waterlines shall be Class 200, SDR 21.

Written approval from Del-Co Water of the material and manufacturers shall be obtained before construction begins.

The Contractor shall provide concrete blocking for bends, elbows, and tees and valve supports for gate valves in accordance with Del-Co Water Company Standard Drawings.

Connections to existing water main shall be made by Del-Co Water Company at the Contractor's expense. The Contractor shall coordinate this work with Del-Co Water Company, Telephone (614) 548-7746.

Minimum depth of cover shall be 42 inches to the top of pipe from final grade.

All water mains shall be tested and disinfected in accordance with Del-Co Water Company Specifications prior to acceptance of water main. It shall be the Contractor's responsibility to provide all necessary equipment and perform a pressure test and disinfection of Water Mains. All water main construction will be inspected by Del-Co Water Company. As built drawings of the water main location shall be presented to Del-Co before final acceptance.

All Water Mains shall be separated a minimum of 10 feet horizontally and 1.5 feet vertically from all parallel Sanitary Sewers.

No water shall be put into water lines nor shall any pressure test begin until Del-Co Water is notified and has given permission to do so. Before waterlines are connected to the existing Del-Co Water System, easements to Del-Co Water Company, Inc., on all lots of the project shall be required.

Pipe Manufacturers recommendations for assembly of gasketed joints shall be adhered to during construction & special care shall be taken to insure the joints are not inserted too far.

All valve boxes including curb stops shall be marked using a 5' steel fence post. All hydrant tees shall be anchor tees.

SEEDING

Rates of application of 659 items shall be as follows:
Seed: 3Lb./1,000 Sq. Ft.
Fertilizer: 20 Lbs./1,000 Sq. Ft. (12-12-12).
Mulch (Straw): 2 Tons/Acres

Permanent Seeding shall be done between March 15 and October 15. If any seeding is done between October 15, and March 15, it shall be classified as "Temporary Seeding" (100% Annual Rye Grass). Seed Mixtures shall be approved by Village Engineer prior to placement. Fescue seed will not be permitted.

The Seeding (either permanent or temporary) shall be commenced within 10 days after the overland street and lot grading is completed.

Based on construction start up date, and Contractor's schedule of events, the seeding mixture and sediment control may be change by the Village Engineer, due to a nongrowing season at time of start up.

A preconstruction conference shall be held at the Village Engineer's office at least 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 3 days prior to this meeting.

SURVEY GENERAL NOTES

The bearings shown on this plan are based on the same meridian as the bearing shown on the plat of Bartholomew Run Section 3, of record in Plat Book 21, Page 154, Records Office, Delaware County, Ohio.

Sources of recorded survey data are the records of the Delaware County, Ohio, Recorder referenced in the plan and test of this plat.

Iron pins, where indicated on the plat, unless otherwise noted, are to be set and are thirteen sixteenths (13/16) inch I.D., thirty-six (36) inches long with a plastic plug placed in the top bearing the initials E.M.H.T., INC.

Permanent markers, where indicated on the plat, unless otherwise noted, are to be set and are one (1) inch I.D., thirty-six (36) inches long, buried one (1) foot in depth with a plastic plug placed in the top bearing the initials E.M.H.T., INC.

STREET LIGHT NOTES

Street light cable shall be constructed two feet behind back of curb and a minimum two feet below curb.

The developer shall install a street lighting system as described herein:

(a) Street lights shall be installed with electrical material and equipment so that each is ready for service and in conformity with Village Standard Construction Drawings.

(b) Unless otherwise shown on the Standard Construction Drawings or modified by these specifications, all materials and workmanship shall conform to Item 625, ODOTS.

(c) The Developer for the particular area under development shall obtain all permits required by the Columbus and Southern Ohio Electric Company.

(d) Prior to acceptance and following the installation of the electric and gas lines, excluding the service entrances or lines, the Contractor shall operate the lighting system, including automatic control equipment and other apparatus, from sunset to sunrise for ten (10) consecutive days without interruption or failure. If a cable is broken or damaged, the cable shall be repaired and the burn test resumed for the remainder of the test period or five days, whichever is longer. If a lamp or a ballast should fail during any of the burn test period, it shall be immediately replaced and the ten day burn test shall be required to be restarted.

(e) All energy lines leading to the light poles shall be underground unless otherwise permitted by the Village Engineer in previously developed areas. Except as described below, all underground cable shall be installed in PVC plastic pipe meeting the requirements of 713.07 ODOT specifications, sized in accordance with the National Electric Code requirements. Unit type Duct-Cable systems, ODOT 612.15, are allowed in lieu of using PVC plastic conduit. If Duct-Cable is used, PVC conduit must be extended from the street light foundation per Powell Standard Drawing, St. 60. Unless approved by the Engineer the energy lines shall be one continuous cable between poles. When a connection is approved in the underground cable, this connection shall be installed in a plastic pull box meeting the requirements of 718.08 ODOTS.

(f) All cable shall meet the requirements of Item 713.02 and 713.17 ODOTS, as modified herein. All cable shall be #6 AWG stranded copper wire with 600 volt insulation, or #4 stranded aluminum wire with 600 volt insulation. The insulation for all cable, except the cable in the aluminum pole, shall be suited for direct burial.

(g) All cable runs in excess of 200 feet shall have a three percent (3%) voltage drop derating factor applied. No cable runs shall be smaller than #6 AWG copper conductors or #4 AWG aluminum conductors, and all cable shall be for direct burial.

(h) Unless otherwise shown, trenches shall conform to Item 625.12 ODOTS. Plastic tape marked "electric wire" or "electric cable" shall be laid one (1) foot above the conduit during the trench backfill operation.

(i) A galvanized rigid conduit sleeve sized in accordance with the requirements of the National Electric Code shall be installed under all public roadways and existing driveways and sidewalks in excess of five (5) feet in width.

(j) All cable lighting structures and appurtenances shall be located within a public right-of-way or easement. The design of the system will be coordinated with the Columbus and Southern Ohio Electric Company.

(k) All connections to secondary service locations shall be made by the Columbus and Southern Ohio Electric Company.

(l) No street shall be accepted before the street lighting system has been completely installed, tested and is ready for use.

(m) All street lighting design shall be approved by the Columbus and Southern Ohio Electric Company. Two drawings of the "as built" street lighting layout shall be presented to the Columbus and Southern Electric Company for record purposes.

EXISTING UTILITIES

The identity and location of the existing underground utility facilities known to be located in the construction area have been shown on the plans as accurately as provided by the Owner of the utility. Delaware County and/or Engineer assumes no responsibility as to the accuracy or the depths of the underground facilities shown on the plans.

Support, protection and restoration of all existing utilities and appurtenances shall be the responsibility of the Contractor. The cost of this work shall be included in the price bid for the various items.

The Contractor shall cause notice to be given to the Ohio Utilities Protection Service (phone-800/362-2764 - toll free) and to Owners of utility facilities shown on the plans who are not members of a registered underground protection service, in accordance with Section 153.64 of the Revised Code. Notice shall be given at least 48 hours prior to start of construction.

The following utilities are located within the work limits of this project and the Owners do not subscribe to a registered underground utility service:

UTILITY	OWNER	TELEPHONE
Water Mains	Delco Water Co. 6773 Olentangy River Road Delaware, Ohio 43015	614/548-7746
Sanitary Sewers	Delaware County 50 Channing Street Delaware, Ohio 43015	614/548-7313
Storm Sewers	Village of Powell	614/885-5380
In addition, the following utilities are located within the project area:		
UTILITY	OWNER	TELEPHONE
Gas	Columbia Gas 950 Goodale St. Columbus, Ohio 43215	614/460-2161
Electric	Columbus and Southern Power 215 N. Front St. Columbus, Ohio 43215	614/464-7422

UTILITY	OWNER	TELEPHONE
Phone	Ohio Bell Telephone Co. 150 E. Gay Street, Room 7A Columbus, Ohio 43215	614/223-6984
CATV	Warner Cable Communications 1266 Dublin Rd. Columbus, Ohio 43215	614/481-5263

SANITARY GENERAL NOTES

The County of Delaware requirements, together with the Specifications of the State of Ohio, Department of Transportation, including all supplements thereto, shall govern all construction items that are a part of this plan. The Contractor shall refer to the "Standard Plans and Specifications for Construction of Sanitary Facilities in Delaware County, Ohio" for all necessary construction details and specifications.

The Contractor and Subcontractor shall be solely responsible for complying with all federal, state and local safety requirements, together with exercising precautions at all times for the protection of persons (including employees) and property. It is also the sole responsibility of the Contractor and Subcontractor to initiate, maintain and supervise all safety requirements, precautions and programs in connection with the work.

Sewer trenches shall be de-watered to 2" below bell of pipe prior to installation of pipe.

Roof drains, foundation drains and other clean water connections to the sanitary sewer system are prohibited on this project.

Any field tile disturbed during construction shall be replaced as directed by the County with ABS pipe spanning the trench. The trench shall be filled with compacted granular backfill. Cost to be included in the unit price bid for the various sewer items.

The Contractor shall provide and install wye poles at all wye locations as constructed. Wye poles shall extend above existing or proposed grade, whichever is higher, a minimum of 2'-0".

The Contractor shall include for payment the cost of removal and disposal of all trees, brush and stumps within the work of the project. No trees or brush shall be removed without prior approval of the Engineer.

All items of work for which no specific method of payment is provided, including the restoration of disturbed or damaged property to its original state, shall be performed by the contractor and the cost of same shall be included in the price for the various related bid items.

The Contractor shall obtain all necessary permits.

The Contractor is responsible to coordinate the relocation of any utilities as required by the plan with the utility company

Access to all adjoining properties shall be maintained at all times.

Finish grade at all sanitary manholes shall be 6" below top of casting to avoid unnecessary infiltration into the Sanitary Sewer System.

Service risers shall be installed where depth from wye fitting to the existing or proposed surface elevation exceeds 10 feet. Top of riser shall be 9 1/4" below existing or proposed surface, whichever is higher unless otherwise noted on plan.

All Sanitary Main 6" thru 15" shall be Vitrified Clay Pipe meeting the requirements of ASTM C-700, if the entire length between adjacent manholes is 28' deep or less P.V.C. Sewer Pipe ASTM D-3034 may be used. Sanitary Sewers 18" thru 21" shall be P.V.C. Sewer Pipe meeting the requirements of ASTM D-679 or Concrete Sewer Pipe meeting the requirements of ASTM C76, Wall B. All Sanitary Sewer services 6 inches shall be in compliance with ASTM D-2680.

The Sanitary Sewer shall be tested by the exfiltration method. Allowable leakage shall not exceed 200 gallons per inch of pipe diameter per mile of pipe per 24 hours. Contractor shall cooperate with Delaware County Engineer and provide all necessary equipment to perform sewer test.

All sanitary sewer line installed on this project using PVC pipe will be subject to deflection testing by pulling an approved Mandrel equal in diameter to 95% of the pipe diameter through the pipe after pipe is backfilled and a sufficient amount of time is allowed for weight transfer of the backfill to the pipe and bedding.

BACKFILL: * 95% of maximum dry laboratory weight at plus or minus 2% of optimum moisture for all Sanitary trenches outside of Right-of-Way. Materials as noted- Soils as defined by O.D.O.T. Specifications Number 203 Which have a dry weight of 100 pounds or better.

BACKFILL: ** 98% of maximum dry laboratory weight at plus or minus 1.5% of optimum moisture for all Sanitary trenches under road pavement starting at a distance of five feet from the edges of pavement, and extending one foot in distance for each one foot in depth. Materials as noted- Granular material as defined by O.D.O.T. Specifications Number 304.

BACKFILL: Specifications of O.D.O.T. 203.12 for "Embankment Soil Compaction Requirements" for utility trenches that run parallel to the pavement and are in the area of influence of embankments or pavements. Materials as noted- Granular material as defined by O.D.O.T. Specifications Number 304.

Rock blasting, if required, will be subcontracted by the Owner.

No downspouts, surface inlets, foundation drains, subsurface drains or any other source of ground or surface water shall be connected, either directly or indirectly, to or discharge into any part of the sanitary sewage system. Such drains, inlets and downspouts shall be constructed as to drain or be pumped into the street, gutter, ditch or storm sewer.

PAVEMENT MARKING AND TRAFFIC SIGNAGE

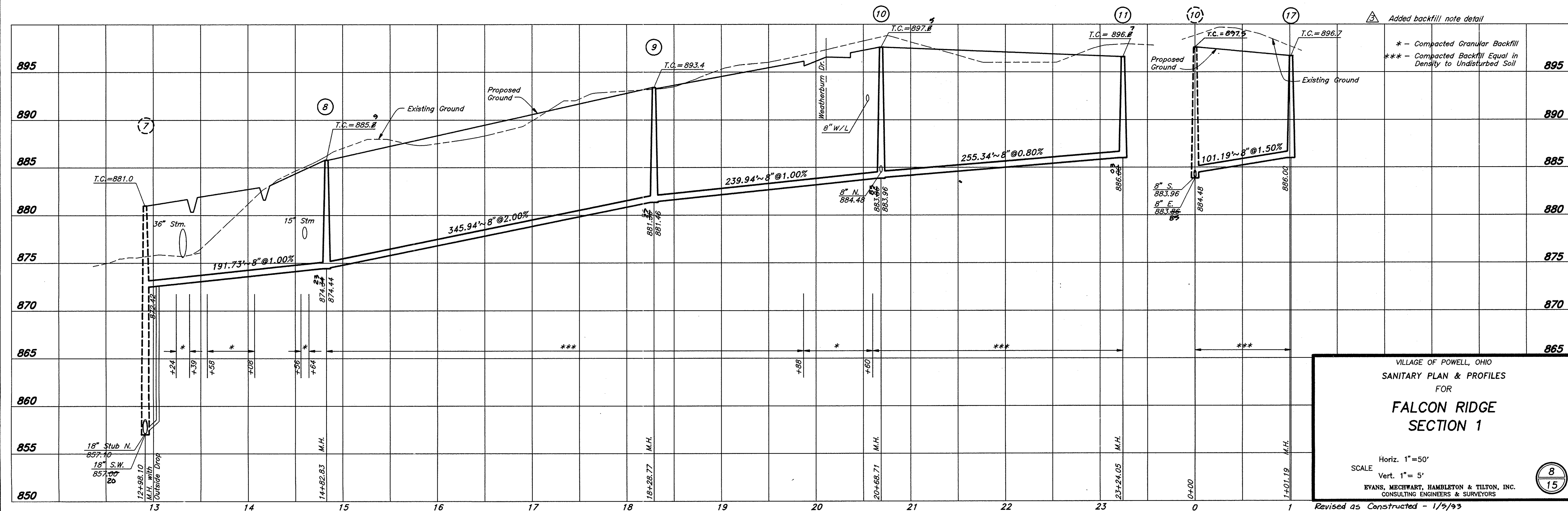
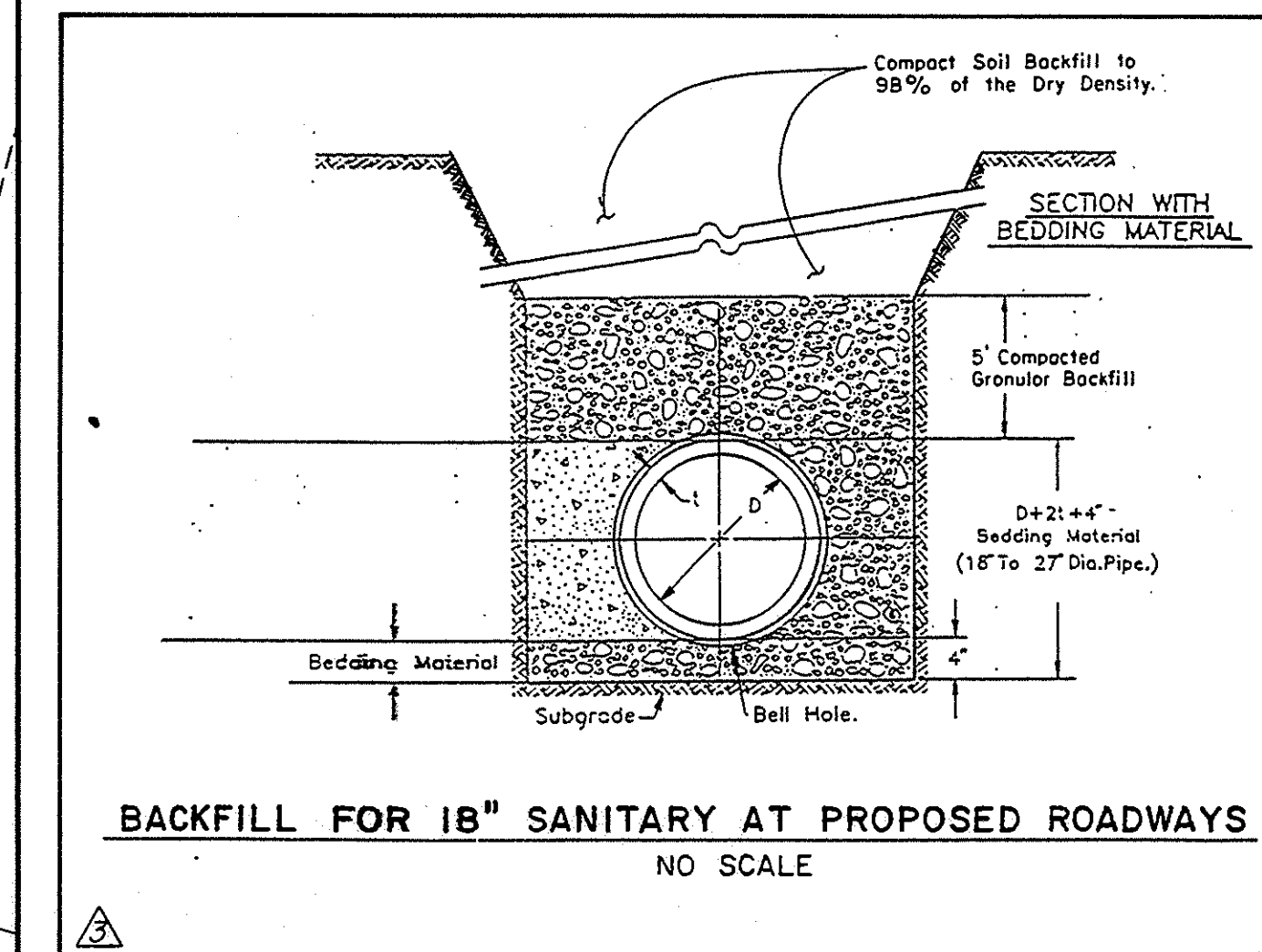
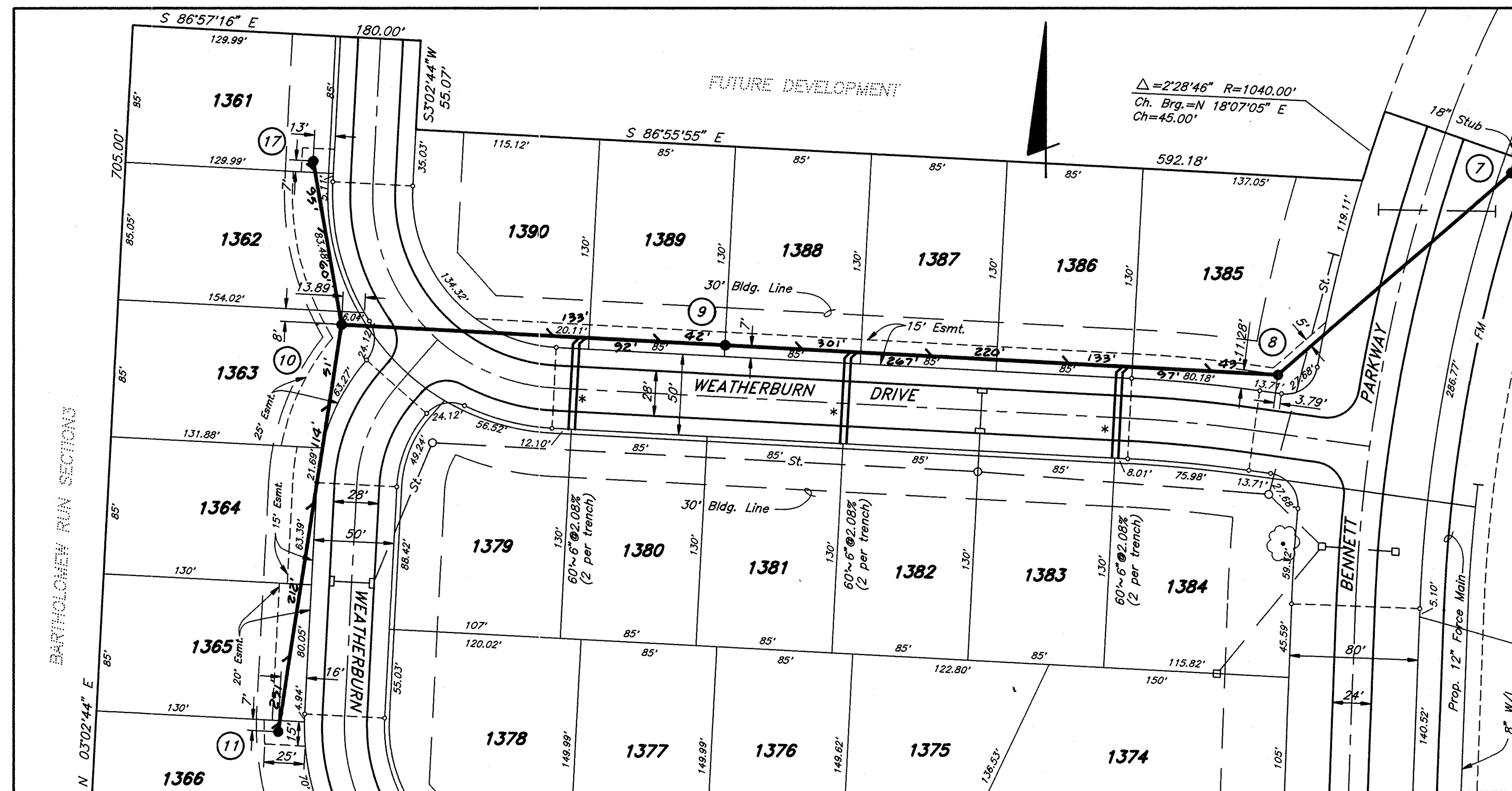
Pavement markings shall be installed at locations shown on the plans per O.D.O.T. Construction and Material Specifications (C.M.S.) Items 640, 641 and 642. Traffic signage shall be installed at the locations shown on the plans per O.D.O.T. C.M.S. Item 630 and the Ohio Manual of Uniform Traffic Control Devices parts 2 & 6.

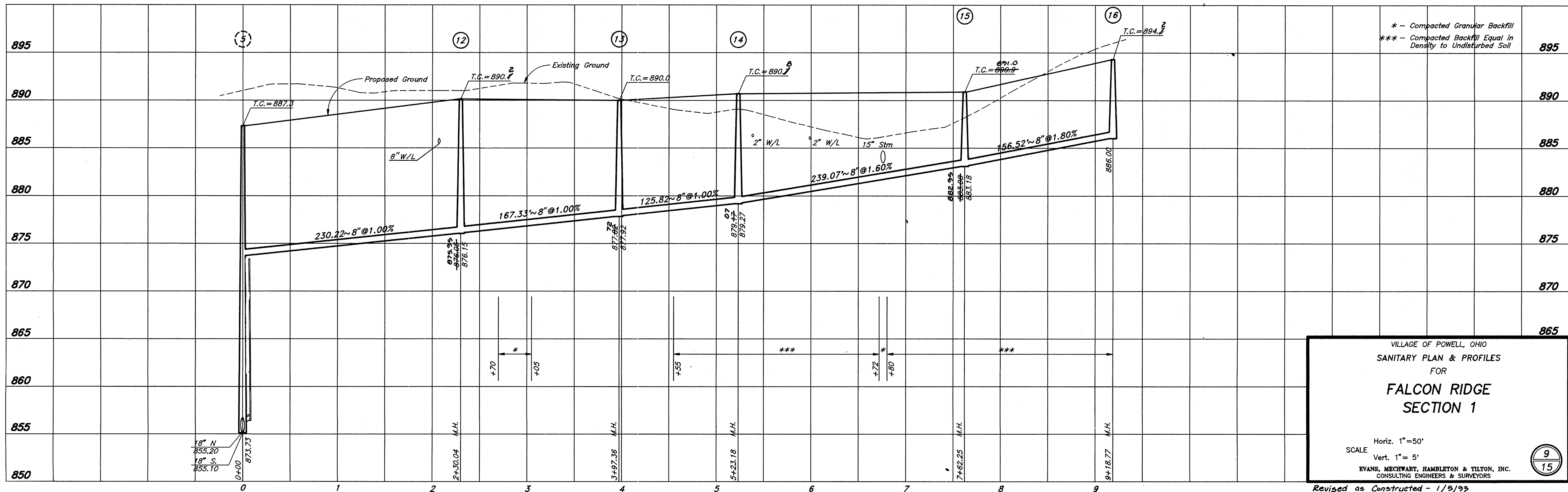
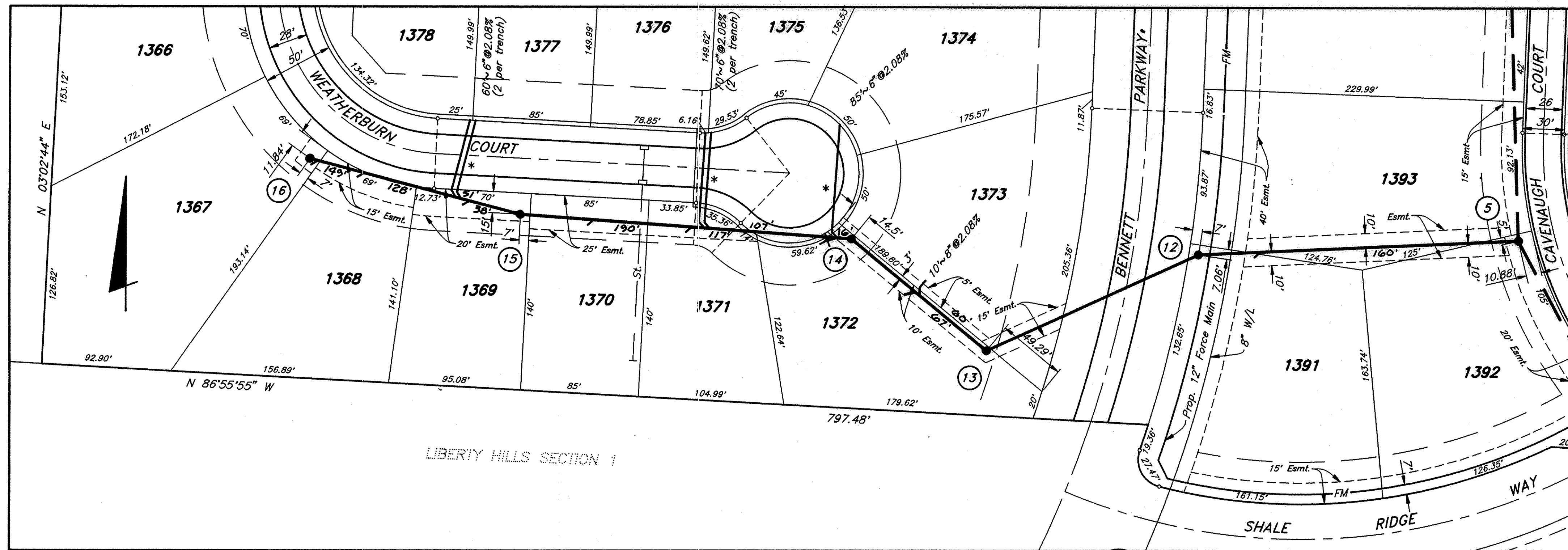
Minor revisions to Waterline Construction Notes. - 10-8-92.

VILLAGE OF POWELL, OHIO
STREET, STORM & WATER IMPROVEMENT
FOR
FALCON RIDGE
SECTION 1

SCALE: AS SHOWN

EVANS, MECHWART, HAMBLETON & TILTON, INC.
CONSULTING ENGINEERS & SURVEYORS





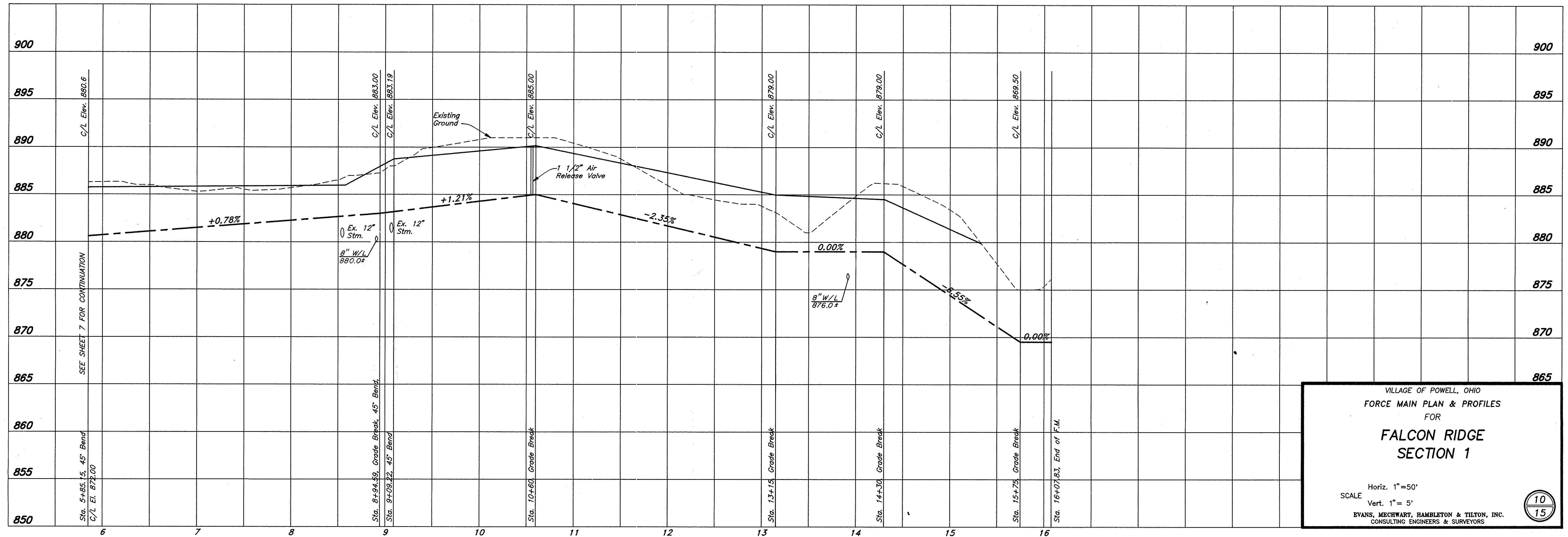
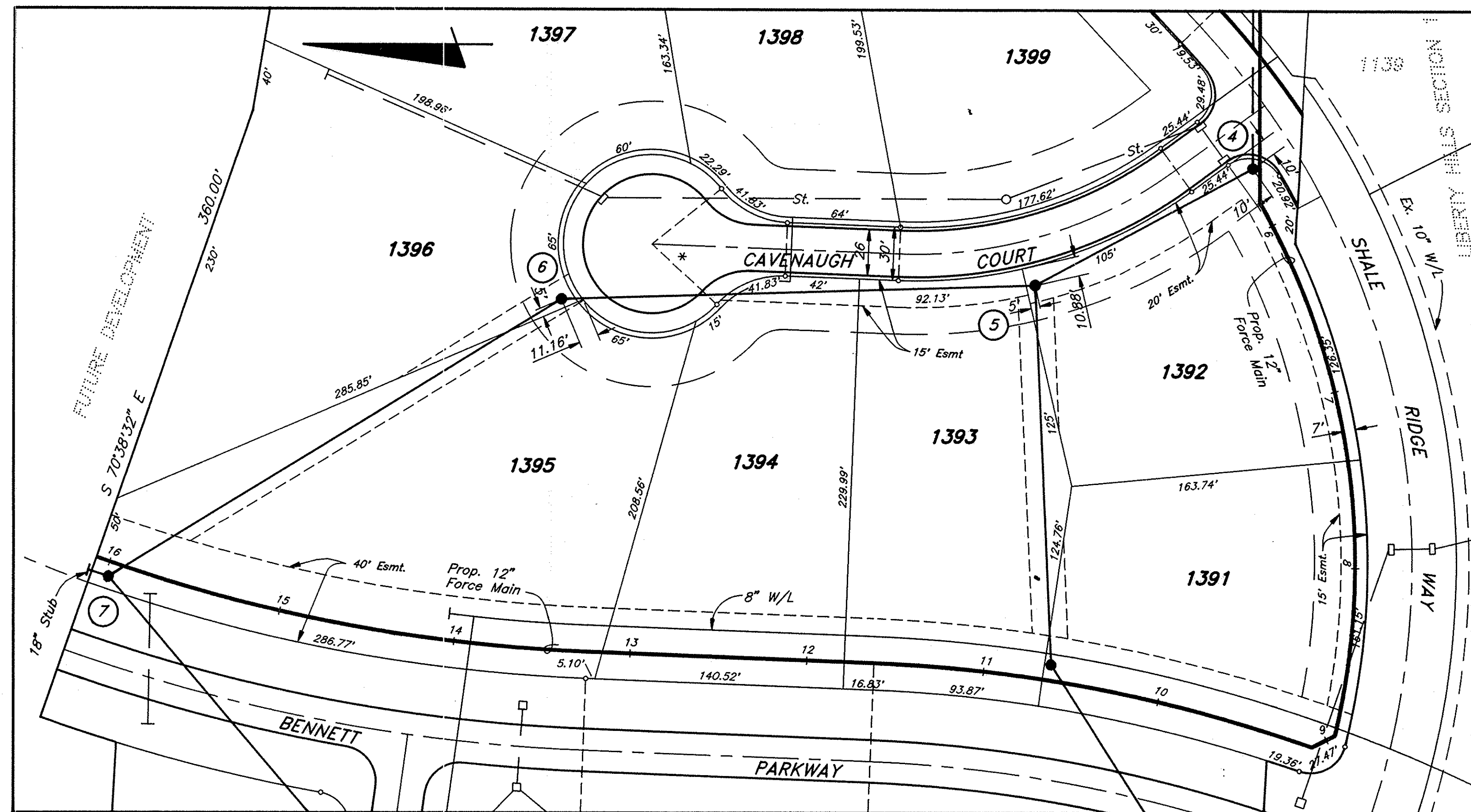
VILLAGE OF POWELL, OHIO
 SANITARY PLAN & PROFILES
 FOR
**FALCON RIDGE
 SECTION 1**

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

EVANS, MECHWART, HAMBLETON & TILTON, INC.
 CONSULTING ENGINEERS & SURVEYORS

9
15

C:\DRAWINGS\F-RIDGE\PR-JSAM.dwg - SEPT 04, 1992 - 20:05:13



VILLAGE OF POWELL, OHIO
 FORCE MAIN PLAN & PROFILES
 FOR
**FALCON RIDGE
 SECTION 1**

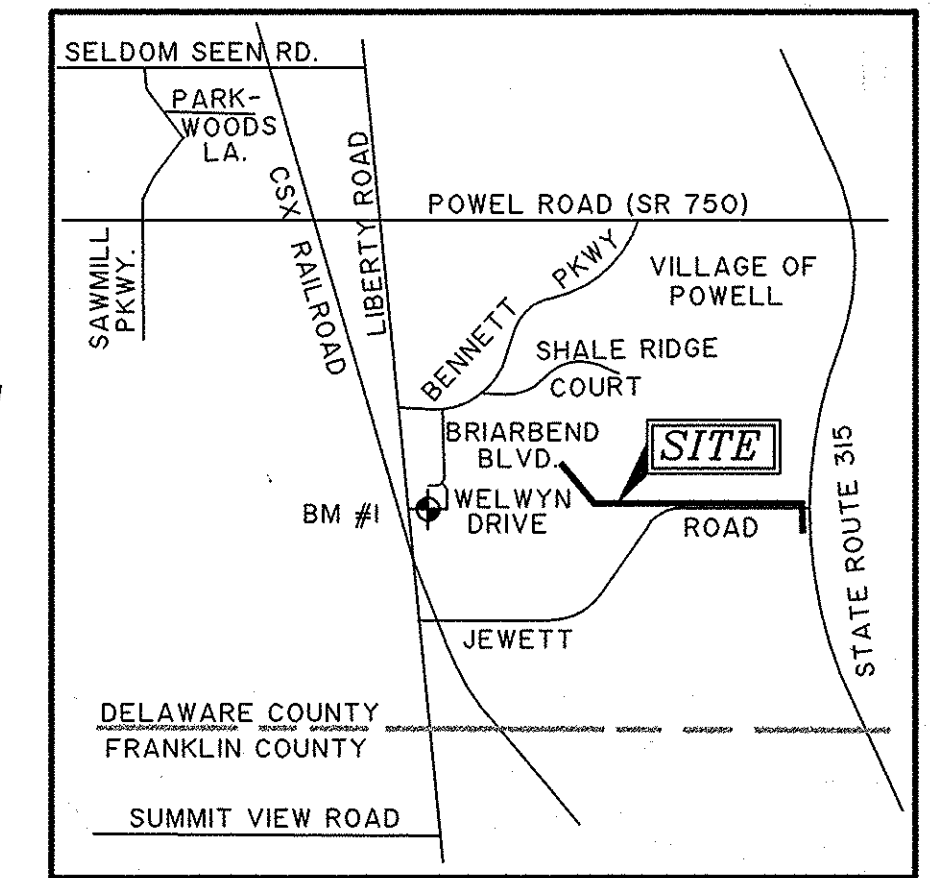
Horiz. 1"=50'
 SCALE
 Vert. 1"= 5'

EVANS, MECHWART, HAMBLETON & TILTON, INC.
 CONSULTING ENGINEERS & SURVEYORS

10
15

ATTACHEMENT 2

DELAWARE COUNTY, OHIO
JEWETT ROAD
SANITARY TRUNK MAIN IMPROVEMENTS
FARM LOTS 1, 2, 3, 4, 5, 6, 7 AND 8, SECTION 2, TOWNSHIP 3, RANGE 19
FARM LOTS 37 AND 38, SECTION 4, TOWNSHIP 3, RANGE 19



VICINITY MAP
(NOT TO SCALE)

BENCH MARKS

SOURCE BENCH MARK:

- RAILROAD SPIKE IN SOUTH SIDE OF 8" LOCUST, 350' WEST OF WELWYN DRIVE, LIBERTY HILLS SUBDIVISION.

ELEV 897.63

- CHISLED " " ON TOP OF N.E. CORNER OF THE BLACK BARN CONCRETE FOUNDATION AT THE S.W. CORNER OF JEWETT ROAD AND S.R. 315

ELEV 933.55

- S.E. CORNER OF LIMESTONE DRIVE BLOCK, WEST SIDE OF DRIVE & HOUSE #1493.

ELEV 830.52

- PK NAIL IN NORTH SIDE OF 12" SHAG BARK, 250' WEST OF THE NORTHERLY ANGLE POINT IN JEWETT ROAD, 10' NORTH OF FENCE LINE AND 100' EAST OF THE EASTERLY LINE OF LOT 16 BARTHOLOMEW LAKE ESTATES.

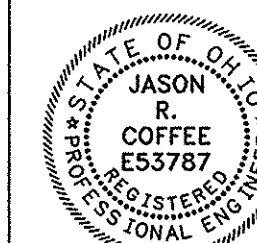
ELEV 864.86

PREPARED FOR:
CHARLES A. VINCE
1515 LAKE SHORE DRIVE
COLUMBUS, OHIO 43204

THIS IS TO CERTIFY THAT GOOD ENGINEERING PRACTICES HAVE BEEN UTILIZED IN THE DESIGN OF THIS PROJECT AND THAT ALL MINIMUM STANDARDS AS DELINEATED IN THE DELAWARE COUNTY ENGINEERING AND SURVEYING STANDARDS FOR SUBDIVISION DEVELOPMENT HAVE BEEN MET, INCLUDING THOSE STANDARDS GREATER THAN MINIMUM WHERE, IN MY OPINION, THEY ARE NEEDED TO PROTECT THE SAFETY OF THE PUBLIC.

PREPARED BY:

R.D. Zande & Associates, Inc.
1237 Dublin Road, Columbus, Ohio 43215
(614) 486-4285 1-800-540-2743
FAX (614) 486-4387



Jan 8, 2001
REGISTERED ENGINEER

E53787

12/20/2000
DATE

APPROVALS

APPROVED THIS 23 DAY OF JAN., 2001

Robert S. Cape D.V.M.
LIBERTY TOWNSHIP TRUSTEE

APPROVED THIS 23 DAY OF JAN., 2001

Jim [Signature]
LIBERTY TOWNSHIP TRUSTEE

APPROVED THIS 23 DAY OF January, 2001

John C. Warner
LIBERTY TOWNSHIP TRUSTEE

APPROVED THIS 17th DAY OF Jan., 2001

Jack Smelter
DELAWARE COUNTY SANITARY ENGINEER

APPROVED THIS 17th DAY OF JANUARY, 2001

Chris E. [Signature]
DELAWARE COUNTY ENGINEER

APPROVED THIS 29 DAY OF Jan., 2001

Donald [Signature]
DELAWARE COUNTY COMMISSIONER

APPROVED THIS 29 DAY OF JAN., 2001

James D. Ward
DELAWARE COUNTY COMMISSIONER

APPROVED THIS 29 DAY OF Jan., 2001

Robert B. [Signature]
DELAWARE COUNTY COMMISSIONER

INDEX MAP
SCALE: 1"=300'

INDEX OF SHEETS

COVER SHEET	1
GENERAL NOTES & DETAILS	2
SANITARY PLANS AND PROFILES	3-7
DRIVEWAY DETAILS & NOTES	8
TRAFFIC DETOUR PLANS	8A-8B

STANDARD DRAWINGS

THE DELAWARE COUNTY STANDARD DRAWINGS LISTED ON THIS PLAN SHALL BE CONSIDERED A PART THEREOF.
01 SEWER INSTALLATION
02 TYPICAL SERVICE CONNECTION
03 BRANCH CONNECTION AND RISER PIPE
04 OPTIONAL DUAL LATERAL EXTENSIONS
05 MANHOLE CHANNEL DETAIL
06 MANHOLE TYPE "A"

THE SIGNATURES BELOW SIGNIFY ONLY CONCURRENCE WITH GENERAL PURPOSES AND GENERAL LOCATION OF THE PROJECT. ALL TECHNICAL DETAILS REMAIN THE RESPONSIBILITY OF THE ENGINEER PREPARING THE PLANS.

VILLAGE OF POWELL APPROVALS

APPROVED THIS 22 DAY OF JAN., 2001

Robert E. [Signature]
VILLAGE OF POWELL SERVICE DIRECTOR/ENGINEER

APPROVED THIS 22 DAY OF JAN., 2001

David [Signature]
VILLAGE OF POWELL DIRECTOR OF DEVELOPMENT

APPROVED THIS 24 DAY OF Jan., 2001

Mark [Signature]
VILLAGE OF POWELL MAYOR

CHANGE ORDER SCHEDULE

CHANGE	PREPARED	DATE OF CHANGE	DESCRIPTION OF CHANGE	SHT NO	APPROVED	DATE OF APPROV.
Δ	KDK	3/7/01	REVISED ALIGNMENT OF SEWER TO CENTER OF NORTH LANE, ADDED EROSION CONTROL, AND ADDED SERVICES AT MH 2-10.	2-8	JES	3-15-01
Δ	MES	3/21/01	ADDED TRAFFIC DETOUR PLANS.	8A & 8B	CEB	3-30-01

TUNNELING NOTES PROVIDED BY CAPITAL TUNNELING

TUNNELING FOR SANITARY SEWER

DESCRIPTION OF WORK

THIS WORK SHALL CONSIST OF INSTALLATION OF SANITARY SEWER PIPE BY TUNNELING IN ACCORDANCE WITH THE PROVISIONS OF THESE SPECIFICATIONS AND IN CLOSE CONFORMITY TO THE LINES AND GRADES SHOWN ON THE PLANS. THE FOLLOWING SECTIONS OF THE CITY OF COLUMBUS "CONSTRUCTION AND MATERIAL SPECIFICATIONS" SHALL COMPLEMENT THIS SECTION:

908.01 - DESCRIPTION 908.06 - TUNNEL LINING
908.02 - MATERIALS 908.09 - DEWATERING
908.03 - GENERAL 908.10 - GROUTING
908.05 - TUNNEL SHIELDS 908.11 - FILL MATERIAL

SHOULD CONFLICTS ARISE BETWEEN THE WRITTEN SPECIFICATIONS AND THE CITY OF COLUMBUS SPECIFICATIONS, THE WRITTEN SPECIFICATION SHALL HAVE PRECEDENCE OVER THE CITY OF COLUMBUS.

MATERIALS

STEEL LINER PLATES. THE BASE MATERIAL FOR STEEL LINER PLATES SHALL CONFORM TO ASTM A 569, WITH A TENSILE AND YIELD STRENGTH OF 42,000 PSI AND 28,000 PSI RESPECTIVELY. ENLARGEMENT SHALL NOT EXCEED 30% IN 2 INCHES. THE LINER PLATE INSTALLED SHALL PROVIDE STRENGTH COMMENSURATE WITH THE TUNNEL DIAMETER AND DEPTH OF COVER, LIVE LOADING, AND IN ACCORDANCE WITH THE DESIGN REQUIREMENTS OF THE PRIVATE OR PUBLIC AUTHORITY INVOLVED. IT IS THE RESPONSIBILITY OF THE TUNNELING CONTRACTOR TO PROVIDE DETAILED CALCULATIONS AND DRAWINGS SHOWING THE DETAILS OF THE PROPOSED LINER PLATE PRIOR TO INSTALLATION. THE CALCULATIONS MUST BE STAMPED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF OHIO. BOLTS AND NUTS USED FOR THE PROPOSED LINER PLATE SHALL BE IN ACCORDANCE WITH ASTM A 307, GRADE A, AND SHALL BE QUICK ACTING COARSE THREAD AND NOT LESS THAN 1/2 INCH IN DIAMETER.

CONCRETE. A CONCRETE PAD SHALL BE POURED IN THE INVERT OF THE TUNNEL TO FACILITATE THE THREADING OPERATION. IT SHALL BE EQUIVALENT TO ODOT CLASS C CONCRETE WITH A MINIMUM SLUMP OF 3 INCHES AND MAXIMUM OF 6". THE CONTRACTOR SHALL SUBMIT A MIX DESIGN FOR APPROVAL PRIOR TO POURING THE PAD.

GROUT. THE GROUT USED TO FILL AND VOIDS CREATED BETWEEN THE EXCAVATED EARTH AND THE OUTSIDE OF PROPOSED LINER SHALL BE 1 PART PORTLAND CEMENT TO 3 PARTS SAND (MASON OR CONCRETE). IT SHALL BE MIXED TO A CONSISTENCY SUITABLE FOR PUMPING BETWEEN 10 AND 115 PSI. WATER USED FOR THE GROUT MIX IN NOT REQUIRED TO BE POTABLE.

ANNULAR SPACE BACKFILL. THE MATERIAL USED TO BACKFILL THE ANNULAR SPACE BETWEEN THE INNER SURFACE OF THE LINER AND EXTERIOR OF THE CARRIER PIPE SHALL BE LOW STRENGTH FLOWABLE FILL. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SUBMIT MIX DESIGNS PRIOR TO THE BACK-FILLING PROCEDURE. FLOW-ABLE GROUT FILL SHALL BE SUITABLE FOR BOTH GRAVITY FILLING AND PUMPING IF REQUIRED.

EXECUTION OF WORK

GENERAL. SEWER PIPES SHALL BE CONSTRUCTED BY TUNNELING ONLY AT THOSE LOCATIONS AND WITH IN THE LIMITS SHOWN ON THE PLANS. INSTALLATION SHALL BE MADE IN SUCH A MANNER THAT IT WILL NOT INTERFERE WITH ANY FACILITIES OTHER THAN THOSE NOTED ON THE PLANS. IF ANY UTILITIES ABOVE OR ADJACENT TO THE TUNNEL IS ENDANGERED OR HAS BEEN DAMAGED BECAUSE OF THE METHOD OF INSTALLATION, THE OWNER OF THE UTILITY IS TO BE NOTIFIED AND ACCESS GRANTED FOR THEIR CREWS TO MAKE THE NECESSARY REPAIRS OR ADJUSTMENTS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATION AND PROTECTION OF ALL UTILITIES. IF PUBLIC PROPERTIES ARE DAMAGED OR ENDANGERED, AS A DIRECT RESULT OF THE TUNNELING OPERATION, THEY TO SHALL BE REPAIRED AT NO ADDITIONAL EXPENSE TO THE OWNER.

DEWATERING. PRIOR TO COMMENCING, THE TUNNELING CONTRACTOR SHALL FURNISH AND OPERATE ALL NECESSARY PUMPING AND EQUIPMENT OF AMPLE CAPACITY TO KEEP SHAFTS, TUNNELS, AND PITS FREE OF EXCESSIVE WATER DURING CONSTRUCTION. THE RESPONSIBLE PARTY MUST SATISFACTORILY DISPOSE OF THE WATER, INCLUDING BUT NOT LIMITED TO SILT AND EROSION PROTECTIONS.

LINE AND GRADE. LINE AND GRADE SHALL BE CHECKED DAILY BY THE TUNNELING CONTRACTOR. THE CONTRACTOR'S PROFESSIONAL LAND SURVEYOR SHALL OCCASIONALLY VERIFY THE TUNNELING CONTRACTOR'S ELEVATIONS AND LINES NOT MORE THAN EVERY 300 FEET OR AS DETERMINED BY THE CONTRACTORS, ENGINEER, AND THE OWNER. MINOR ADJUSTMENTS AT THE END OF EACH SECTION WILL BE PERMITTED AS NEEDED TO COMPENSATE FOR SLIGHT DEVIATIONS FROM THE PLAN LINE AND GRADE OF THE INSTALLED TUNNELED SECTIONS.

SAFETY. ALL WORK SHALL CONFORM WITH APPLICABLE SUBSECTIONS OF THE HEALTH STANDARDS FOR THE CONSTRUCTION INDUSTRY AND 29 CFR, PART 1926. ALL PERSONS ENTERING WORK AREAS MUST HAVE THE REQUIRED PPE AS DESIGNATED BY THE TUNNELING CONTRACTOR.

WORKING HOURS. WORK HOURS ARE NOT RESTRICTED AND MAY PROGRESS 24 HOURS PER DAY, MONDAY THROUGH SATURDAY. ONLY UNDER EXTREME CIRCUMSTANCES SHALL ANY WORK BE PERFORMED ON SUNDAYS AND HOLIDAYS. THE CONTRACTOR SHALL PROVIDE ADEQUATE SAFETY PRECAUTIONS FOR WORK DONE AT NIGHT, INCLUDING LIGHTING, WATCHMEN, BARRICADES, ECT. EQUIPMENT THAT PRODUCES EXCESSIVE NOISE LEVELS SHALL BE USED AT A MINIMUM TO REDUCE THE POSSIBILITY OF A NUISANCE. (SEE VILLAGE OF POWELL, WORK HOURS SUBMITTALS). THE FOLLOWING ITEMS ARE TO BE SUBMITTED TO THE ENGINEER FOR THEIR REVIEW AND APPROVAL PRIOR TO THE START OF CONSTRUCTION:

EXPERIENCE STATEMENT AND METHOD OF INSTALLATION

1. TUNNEL EXCAVATIONS

2. SHAFT EXCAVATIONS

CALCULATIONS

1. TUNNEL LINER PLATE SUBMITTAL

2. ACTUAL VS. ALLOWABLE SHIELD STRESSES

3. SHAFT LINER SUBMITTAL

MATERIALS

1. LINER PLATES INCLUDING SHAFT PLATES

2. ANNULAR BACKFILL MATERIAL

3. CONCRETE INVERT MATERIAL

4. SHAFT BACKFILL MATERIAL

SHAFT CONSTRUCTION

GENERAL. WORKING SHAFTS SHALL BE CONSTRUCTED TO THE SIZE AND DEPTH REQUIRED TO SUPPORT THE TUNNELING OPERATIONS, AND STRUCTURES, AND AT THE LOCATIONS SHOWN ON THE PLANS. ALL SHAFTS SHALL BE LIGHTED AND BARRICADED TO PREVENT UNAUTHORIZED PERSONNEL FROM ENTERING. THE DIMENSIONS SHALL BE DETERMINED BY THE CONTRACTOR AND A DETAILED DRAWINGS WITH CALCULATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR THEIR APPROVAL. THE METHOD OF EXCAVATION SHALL BE UP TO THE CONTRACTOR, HOWEVER THE CONTRACTOR MUST SUBMIT A DETAILED WORK PLAN TO THE ENGINEER FOR THEIR APPROVAL. THE SHAFTS CONSTRUCTED SHALL BE CONSIDERED A "NON PERMITTED CONFINED SPACE ENTRY".

AFTER THE SEWER LINES ARE IN PLACE IN THE TUNNELS, THE SHAFTS ARE TO BE REMOVED, FILLING THE ANNULAR VOID WITH GRANULAR MATERIAL (57) OR CDF AS APPROVED BETWEEN THE SHAFT LINER AND THE MANHOLE RISER WITH APPROVED MATERIAL FOR BACK-FILLING. SHAFTS LOCATED IN ROAD RIGHT OF WAYS SHALL BE BACK-FILLED WITH CDF.

TUNNEL CONSTRUCTION

GENERAL. THE CONTRACTOR SHALL CARRY OUT THE WORK OF TUNNELING AND SUPPORTING THE TUNNEL FACE, ROOF, WALL, AND FLOORS SO THAT FLOW, CAVING, OR HEAVING OF THE EARTH OR OTHER MATERIALS WILL BE KEPT TO A MINIMUM. IF THERE SHOULD BE ANY FALL OR MOVEMENT OF THE EARTH INTO THE TUNNEL AT ANY TIME, THE CONTRACTOR SHALL PROCEED WITH THE WORK WITH ALL NECESSARY PRECAUTIONS AND IN SUCH A MANNER AS WILL ENSURE THE SAFETY OF LIFE AND OF ALL SEWERS, UTILITIES, PRIVATE AND PUBLIC PROPERTIES ABOVE AND ADJACENT TO THE TUNNEL EXCAVATION.

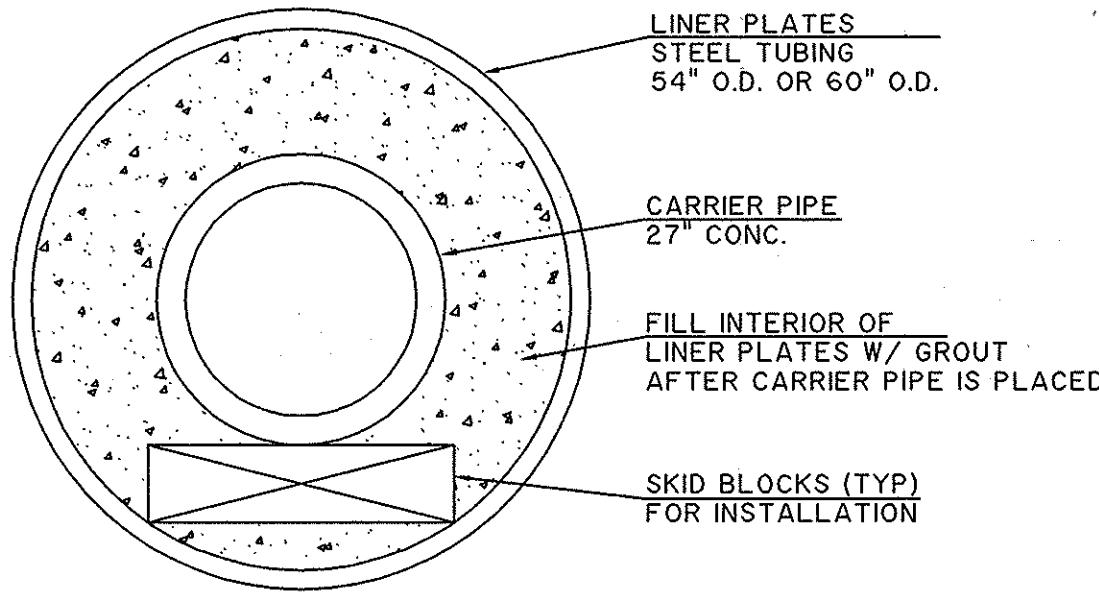
THE CONTRACTOR SHALL FURNISH, PLACE, AND MAINTAIN ALL NECESSARY SHEETING, BRACING, OR LINING REQUIRED TO SUPPORT THE EXCAVATION UNTIL THE CARRIER PIPE IS IN PLACE AND BACK-FILLED SECURELY. THE LINER IS TO REMAIN IN PLACE AFTER CONSTRUCTION. CARE SHALL BE USED IN EXCAVATION OF SPOILS AS TO NOT CREATE VOIDS BETWEEN THE EXTERIOR OF THE LINER AND THE EARTH. IF VOIDS CAUSED BY THE MINING OPERATIONS SHOULD DEVELOP, THEY WILL BE GROUTED USING THE MIX SUBMITTED. THE FREQUENCY OF GROUTING AS WELL AS THE SPACING SHALL BE AT THE DISCRETION OF THE TUNNELING CONTRACTOR. HOWEVER, AT NO TIME SHOULD THE GROUT PLUGS BE LOCATED MORE THAN 6 FEET APART AND THE PORTION OF UN-GROUTED TUNNEL EXCEED 100 FEET.

CONVENTIONAL TUNNELING METHODS SHOULD BE USED TO EXCAVATE THE TUNNELS. THESE INCLUDE, BUT ARE NOT LIMITED TO, HAND MINING, MINING MACHINES, SMALL DIAMETER BORING MACHINES, AND CONTROLLED BLASTING. WHEN BLASTING OCCURS, THE CONTRACTOR SHALL ABIDE BY AND WORK THE LAWS AND LIMITS AS OUTLINED BY THE LOCAL GOVERNING AUTHORITIES. SHOULD BLASTING BE REQUIRED, A DETAILED PLAN MUST BE SUBMITTED TO THE ENGINEERS, OWNER, AND DELAWARE COUNTY.

IMMEDIATELY FOLLOWING THE INSTALLATION OF THE TUNNEL LINER, THE CONTRACTOR SHALL CLEAN THE TUNNEL, POUR A CONCRETE INVERT, AND THREAD THE CARRIER PIPE INTO PLACE. THE CARRIER IS TO BE BLOCKED TO PLAN LINE AND GRADE USING EITHER TREATED WOOD BLOCKS OR STEEL STRAPPING. ONCE THE CARRIER IS IN PLACE, BRICK AND MORTAR BULKHEADS WITH A MINIMUM THICKNESS OF 12 INCHES SHALL BE CONSTRUCTED AT EACH END, AND THE ANNULAR SPACE IS TO BE FILLED WITH THE APPROVED MATERIAL. AT THE CONTRACTOR DISCRETION AND UPON APPROVAL FROM THE ENGINEERS, THE INTERVALS OF WHICH THE TUNNEL IS THREADED AND BACK-FILLED MAY VARY. CARE SHALL BE TAKEN BY THE CONTRACTOR TO PROTECT THE CARRIER PIPE DURING THE INSTALLATION PROCESS.

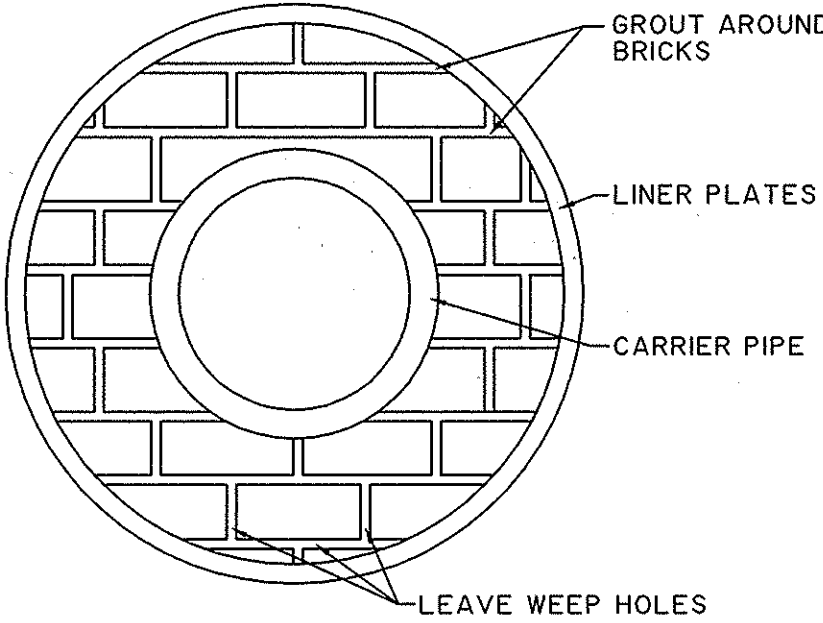
TYPICAL PIPE SECTION

NOT TO SCALE



MASONRY PLUG DETAIL

NOT TO SCALE



EROSION CONTROL

ALL BARREN AREAS WHICH REMAIN IDLE IN EXCESS OF 21 DAYS MUST BE PROTECTED FROM EROSION WITHIN SEVEN DAYS OF THE LAST EARTH DISTURBING ACTIVITIES.

ALL SHAFT LOCATIONS SHALL PROVIDE SILT FENCE AROUND ANY AREA THAT WILL BE USED AS A TEMPORARY STOCK PILE FOR MATERIAL REMOVED FROM THE TUNNEL.

THERE SHALL BE NO TURBID DISCHARGES TO WATERS OF THE STATE OR TO CONVEYANCES TO WATERS OF THE STATE RESULTING FROM ANY DEWATERING ACTIVITIES.

CARRIER PIPE CONSTRUCTION IN TUNNEL

OSHA REQUIREMENTS

METHODS AND PROCEDURES SHALL CONFORM TO OSHA STANDARDS 1926.800 TUNNELS AND SHAFTS.

HOISTING EQUIPMENT

APPROVED HOISTING EQUIPMENT SHALL BE PROVIDED, INSTALLED, AND USED FOR HOISTING MATERIAL. CAGES WILL NOT BE REQUIRED BY THE ENGINEER BUT IF USED SHALL BE OF FIREPROOF CONSTRUCTION AND PROVIDED WITH APPROVED PROTECTIVE ROOFS AND MEET THE REQUIREMENTS HEREIN SPECIFIED.

CAGES SHALL BE EQUIPPED WITH SAFETY CATCHES OF THE BEST DESIGN WITH BUSHED BEARINGS, LANDING DOGS AT ALL LANDINGS, EFFECTIVE DEVICES TO PREVENT OVERWINDING, AND LOW SPEED REGULATORS. THE ADEQUACY OF ALL DEVICES SHALL BE ESTABLISHED BEFORE CAGES ARE PLACED IN SERVICE, AND AT LEAST EVERY TWO MONTHS THEREAFTER.

NOT MORE THAN ONE PERSON TO EACH 4 SF OF FLOOR SPACE SHALL BE CARRIED ON A CAGE AT ONE TIME AND, WHEN THE CAGE IS LOADED WITH CARS, TOOLS, OR OTHER MATERIALS, NO PERSON SHALL BE PERMITTED TO RIDE EXCEPT FOR HANDLING THE SAME.

EFFECTIVE AND RELIABLE SIGNALING DEVICES OF AN APPROVED DESIGN SHALL BE MAINTAINED AT ALL TIMES, SIGNS SHOWING THE APPROVED SIGNALS SHALL BE POSTED AT THE TOP AND FOOT OF EACH SHAFT AND IN THE HOIST ROOM.

SAFETY AND ENVIRONMENTAL CONDITIONS

POWER AND LIGHTING. ALL POWER MACHINERY AND TOOLS USED IN SHAFTS AND TUNNELS SHALL BE OPERATED BY ELECTRICITY OR COMPRESSED AIR. NO ELECTRIC VOLTAGE IN EXCESS OF 440 VOLTS WILL BE PERMITTED. TRANSFORMERS, IF USED, SHALL BE MOUNTED ON PLATFORMS OR IN AN APPROVED ENCLOSURE. THE USE OF GASOLINE FOR POWER IN SHAFTS OR TUNNELS IS PROHIBITED.

ALL MACHINERY AND EQUIPMENT USED IN TUNNEL HEADINGS OR SHAFTS UNDER GASEOUS CONDITIONS SHALL BEAR THE APPROVAL PLATE OF THE UNITED STATES BUREAU OF MINES.

ALL TUNNEL WORK SHALL BE LIGHTED WITH ELECTRICITY AT THE EXPENSE OF THE CONTRACTOR, A SUFFICIENT NUMBER OF LIGHTS BEING PROVIDED TO PROPERLY ILLUMINATE ALL PARTS OF THE WORK. ALL LIGHTING CIRCUITS SHALL BE THOROUGHLY INSTALLED AND KEPT SEPARATE FROM POWER CIRCUITS. IN GASEOUS CONDITIONS ALL LAMPS SHALL BE MOUNTED IN PROTECTED GAS AND VAPORPROOF FIXTURES.

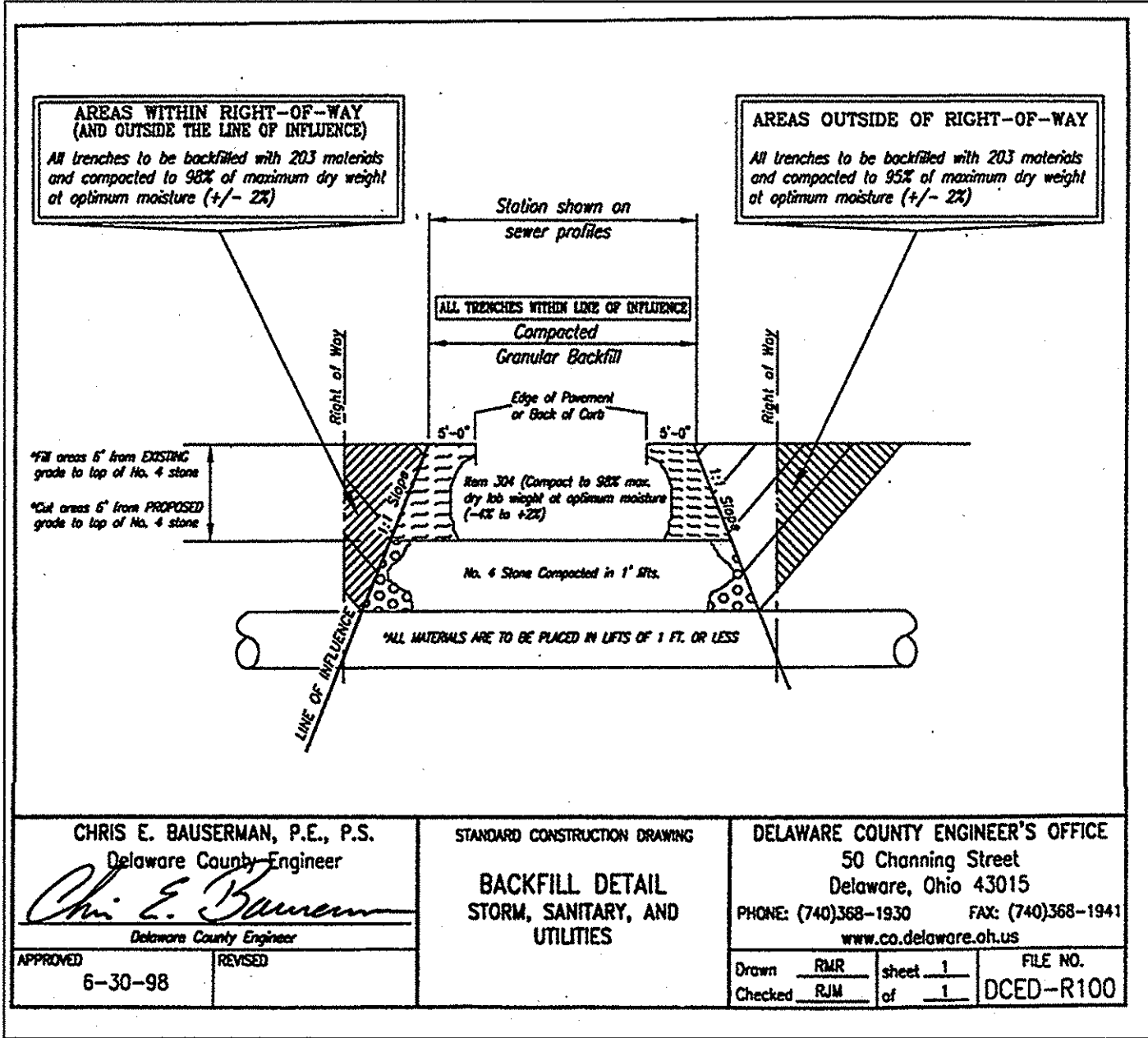
VENTILATION. THE CONTRACTOR SHALL KEEP THE TUNNEL AIR IN A CONDITION SUITABLE FOR THE HEALTH OF THE MAN. A SUFFICIENT SUPPLY OF FRESH AIR FOR THE SAFETY AND EFFICIENCY OF WORKMEN AND ENGINEER SHALL BE PROVIDED AT ALL TIMES THROUGH THE LENGTH OF THE TUNNELS AND ESPECIALLY AT WORKING FACES AND IN ALL PLACES WORKING UNDERGROUND, AND PROVISION SHALL BE MADE FOR THE QUICK REMOVAL OF GASES.

OPEN FLAMES AND COMBUSTIBLE MATERIALS. UNLESS EXPRESSLY PERMITTED, NO OPEN FLAME LIGHT, OR OTHER OPEN LIGHT, SHALL BE USED IN THE TUNNEL HEADING OR THE SHAFT AFTER TUNNELING OPERATIONS HAVE COMMENCED. SMOKING IN THE SHAFTS OR TUNNEL HEADINGS SHALL BE PROHIBITED. THE CONTRACTOR SHALL PLACE SUFFICIENT SUITABLE SIGNS ON THE WORK PROHIBITING SMOKING AND THE USE OF OPEN FLAMES.

NO GASOLINE, INFLAMMABLE OILS, OR ANY OTHER HIGH COMBUSTIBLE MATERIAL SHALL BE STORED IN THE TUNNEL HEADINGS, SHAFT, OR WITHIN 100 FT OF THE SHAFT. THE STORAGE OF GASOLINE SHALL BE SUBJECT TO LOCAL GOVERNMENTAL REGULATIONS.

PROTECTION

DRAINAGE. THE CONTRACTOR SHALL FURNISH, INSTALL, AND MAINTAIN ALL FACILITIES FOR COLLECTING, CONVEYING, AND DISPOSING OF WATER IN CONDUITS AND SHAFTS UNTIL THE COMPLETIONS OF THE WORK. THE CONTRACTOR SHALL HAVE ON HAND AT ALL TIMES SUFFICIENT MACHINERY FOR EMERGENCIES THAT ARE LIKELY TO ARISE ON WORK OF THIS CHARACTER AND SUCH MACHINERY SHALL BE KEPT IN GOOD WORKING ORDER. THE PUMPING AND POWER SUPPLY TO THE PUMPS SHALL BE UNDER THE DIRECT CHARGE OF COMPETENT MECHANICS. EFFECTIVE AND CONTINUOUS CONTROL OF WATER DURING THE PLACING OF CONCRETE WILL BE REQUIRED.



CHRIS E. BAUSERMAN, P.E., P.S.

Delaware County Engineer

6-30-98

STANDARD CONSTRUCTION DRAWING

BACKFILL DETAIL

STORM, SANITARY, AND UTILITIES

DELAWARE COUNTY ENGINEER'S OFFICE

50 Channing Street

Delaware, Ohio 43015

PHONE: (740)368-1930 FAX: (740)368-1941

www.co.delaware.oh.us

Drawn by: RLM sheet: 1 of 1

FILE NO. DCED-R100

ESTIMATE OF QUANTITIES

ITEM	QTY.	UNIT	DESCRIPTION
SPEC 1445	418	LF	18" SANITARY SEWER PIPE W/ TYPE I BEDDING (<8' DEEP)
SPEC 236		LF	18" SANITARY SEWER PIPE W/ TYPE I BEDDING (8'-16' DEEP)
603	3645	EA	27" CONDUIT TYPE B CLASS II (< 8' DEEP)
603	500	LF	27" CONDUIT TYPE B CLASS III (8' - 16' DEEP)
603	500	LF	27" CONDUIT TYPE B CLASS IV (>16' DEEP)
603	72	LF	27" CONDUIT TYPE B CLASS V (>16' DEEP)
604	I	EA	MANHOLE, TYPE E
604	II	EA	MANHOLE, TYPE A
604	I	EA	MANHOLE, TYPE A WITH OUTSIDE DROP
901	6058	LF	6" SANITARY SERVICE
SPEC 487		LF	54" LINER PLATE
SPEC 2830		LF	60" LINER PLATE
SPEC 3		EA	6" SANITARY CONNECTION, COMPLETE
SPEC 3		EA	6" SANITARY CLEANOUT

GENERAL NOTES

THE COUNTY OF DELAWARE REQUIREMENTS, TOGETHER WITH THE SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION INCLUDING ALL SUPPLEMENTS THERETO, SHALL GOVERN ALL CONSTRUCTION ITEMS THAT ARE A PART OF THIS PLAN. THE CONTRACTOR SHALL REFER TO THE "STANDARD PLANS AND SPECIFICATIONS FOR CONSTRUCTION OF SANITARY FACILITIES IN DELAWARE COUNTY, OHIO" FOR ALL NECESSARY CONSTRUCTION DETAILS.

APPROVAL OF THESE PLANS IS CONTINGENT UPON ALL REQUIRED SANITARY SEWER EASEMENTS BEING APPROVED BY THE COUNTY AND RECORDED PRIOR TO CONSTRUCTION.

THE CONTRACTOR SHALL NOTIFY THE COUNTY SANITARY ENGINEER'S OFFICE AND/OR THE VILLAGE OF POWELL, ENGINEER OFFICE FORTY-EIGHT (48) HOURS PRIOR TO CONSTRUCTION.

ANY MODIFICATIONS TO THE WORK AS SHOWN ON THESE DRAWINGS MUST HAVE PRIOR WRITTEN APPROVAL BY THE COUNTY SANITARY ENGINEER.

THE CONTRACTOR IS RESPONSIBLE FOR THE INVESTIGATION, LOCATION, SUPPORT, PROTECTION, AND RESTORATION OF ALL EXISTING UTILITIES AND APPURTENANCES WHETHER SHOWN ON THESE PLANS OR NOT. THE CONTRACTOR SHALL EXPOSE ALL UTILITIES OR STRUCTURES PRIOR TO CONSTRUCTION TO VERIFY THE VERTICAL AND HORIZONTAL EFFECT ON PROPOSED CONSTRUCTION. THE CONTRACTOR SHALL CALL, TOLL FREE, THE OHIO UTILITIES PROTECTION SERVICE (1-800-362-2764) 72 HOURS PRIOR TO CONSTRUCTION AND SHALL NOTIFY ALL UTILITY COMPANIES AT LEAST 48 HOURS PRIOR TO WORK IN THE VICINITY OF THEIR UNDERGROUND LINES.

THE IDENTITY AND LOCATION OF THE EXISTING UNDERGROUND UTILITY FACILITIES KNOWN TO BE LOCATED IN THE CONSTRUCTION AREA HAVE BEEN SHOWN ON THE PLANS AS ACCURATELY AS PROVIDED BY THE OWNER OF THE UNDERGROUND UTILITY. THE COUNTY OF DELAWARE AND/OR ENGINEER ASSUME NO RESPONSIBILITY AS TO THE ACCURACY OF THE UNDERGROUND FACILITIES SHOWN ON THE PLANS.

THE FOLLOWING UTILITIES AND OR OWNERS ARE LOCATED WITHIN THE WORK LIMITS OF THIS PROJECT AND DO NOT SUBSCRIBE TO A REGISTERED UNDERGROUND UTILITY PROTECTION SERVICE.

UTILITY	OWNER	TELEPHONE
WATER MAINS	DEL-CO WATER COMPANY, INC. 6773 OLENTANGY RIVER ROAD DELAWARE, OHIO 43015	(740) 548-7746
STORM SEWERS	DELAWARE COUNTY 50 CHANNING STREET DELAWARE, OHIO 43015 (CONTACTING AGENT ONLY)	(740) 833-2400
SANITARY SEWERS	DELAWARE COUNTY 50 CHANNING STREET DELAWARE, OHIO 43015	(740) 833-2240
VILLAGE OF POWELL	47 HALL STREET POWELL, OHIO 43065	(614) 885-5380

ALL WATER MAINS SHALL BE SEPARATED A MINIMUM OF 10 FEET HORIZONTALLY AND 1.5 FEET VERTICALLY FROM ALL PARALLEL SANITARY SEWERS.

WHENEVER A WATER MAIN AND SEWER MUST CROSS, THE WATER MAIN SHALL BE AT SUCH AN ELEVATION THAT THE CROWN OF THE SEWER IS AT LEAST 18", MEASURED BETWEEN THE OUTSIDE PIPE WALLS, BELOW THE BOTTOM OF THE WATER MAIN.

ALL SANITARY MAINS (8" - 18" AND SERVICES (6") SHALL BE PVC PIPE MEETING THE REQUIREMENTS ASTM D-3034, UNLESS OTHERWISE NOTED. ALL SANITARY MAINS LARGER THAN 18" OR DEPTHS GREATER THAN 28' SHALL BE CONCRETE OR DIP.

ROOF DRAINS, FOUNDATION DRAINS, AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER ARE PROHIBITED.

THE CONTRACTOR AND SUB-CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR COMPLYING WITH ALL FEDERAL, STATE AND LOCAL SAFETY REQUIREMENTS TOGETHER WITH EXERCISING PRECAUTIONS AT ALL TIMES FOR THE PROTECTION OF PERSONS INCLUDING EMPLOYEES AND PROPERTY. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SUB-CONTRACTOR TO INITIATE, MAINTAIN AND SUPERVISE ALL SAFETY REQUIREMENTS, PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK.

ANY FIELD TILE DISTURBED DURING CONSTRUCTION SHALL BE REPLACED AS DIRECTED BY THE COUNTY WITH PVC PIPE SPANNING THE TRENCH. THE TRENCH SHALL BE FILLED WITH COMPACTED GRANULAR BACKFILL.

FINISH GRADE AT ALL SANITARY MANHOLES SHALL BE AT LEAST 6" (INCHES) BELOW TOP OF CASTING TO AVOID UNNECESSARY INFILTRATION INTO THE SANITARY SEWER SYSTEM.

BACKFILLING (PER DELAWARE COUNTY ENGINEER STANDARD DRAWING DCED-R100)

FINAL CONNECTION SHALL NOT BE MADE TO THE RECEIVING SANITARY SEWER SYSTEM UNTIL THE PHASE PROJECT HAS BEEN FULLY INSTALLED.

SANITARY SEWERS SHALL BE TESTED BY THE EXFILTRATION METHOD. ALLOWABLE LEAKAGE SHALL NOT EXCEED 100 GALLONS PER LINEAL FOOT OF PIPE PER 24 HOURS. CONTRACTOR SHALL COOPERATE WITH DELAWARE COUNTY ENGINEER AND PROVIDE ALL NECESSARY EQUIPMENT TO PERFORM SEWER TEST. AIR TESTING WILL BE PERMITTED PROVIDED ALL MANHOLES ARE VACUUM TESTED.

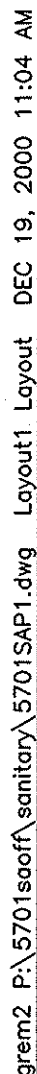
WHEN P.V.C. PIPE IS USED, A DEFLECTION TEST SHALL BE PERFORMED. PIPE DEFLECTION SHALL NOT EXCEED 5%. ALL INSTALLED PIPE SHALL BE TESTED FOR DEFLECTION (60) DAYS OR MORE AFTER THE TRENCH HAS BEEN BACKFILLED TO FINISH GRADE. THE METHOD OF TESTING SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER. IF RIGID BALLS OR MANDRELS ARE USED TO TEST THE PIPE DEFLECTION, NO MECHANICAL PULLING DEVICES SHALL BE USED. ANY LINES WHICH FAIL THE TEST MUST BE REPAIRED AND RETESTED.

REVISED ALIGNMENT OF SEWER TO CENTER OF NORTH LANE, ADDED EROSION CONTROL, AND ADDED SERVICES AT MH 2 - 10. 3/7/01

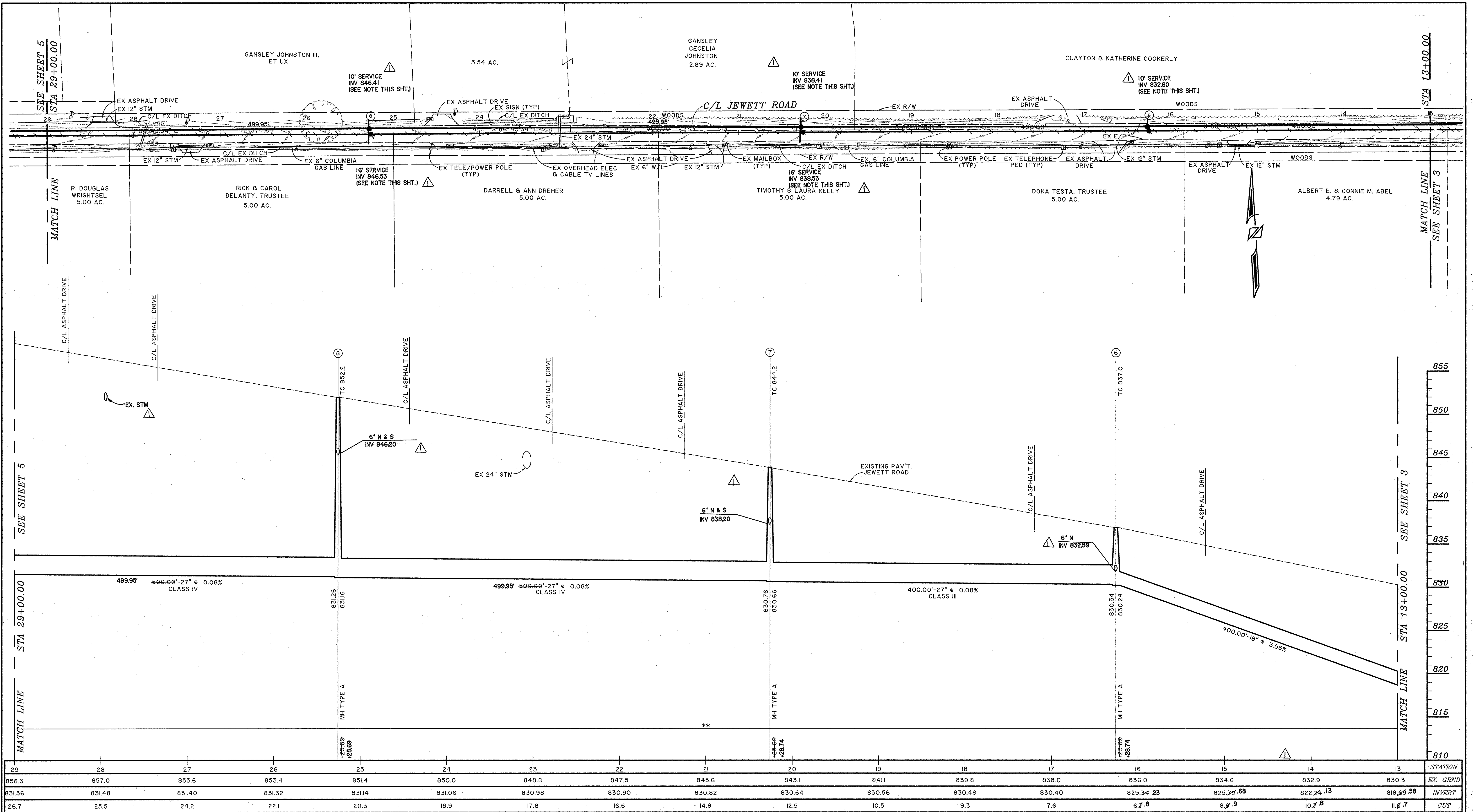
DELAWARE COUNTY, OHIO
JEWETT ROAD
SANITARY TRUNK MAIN IMPROVEMENTS
GENERAL NOTES, QUANTITIES & DETAILS

R.D. Zande & Associates, Inc.
1237 Dublin Road Columbus, Ohio 43216
(614) 496-4383 1-800-340-2743
FAX (614)-488-4887

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△ REVISED ALIGNMENT OF SEWER TO CENTER OF NORTH LANE, ADDED EROSION CONTROL, ADDED SERVICES AT MH 2-10. 3-07-01

** COMPACTED GRANULAR BACKFILL
SEE GENERAL NOTES.

△ NOTE:
INSIDE DROP PER DELAWARE COUNTY STANDARDS
SHALL BE INSTALLED BY THE LOT OWNER AT THE
TIME OF CONNECTION.

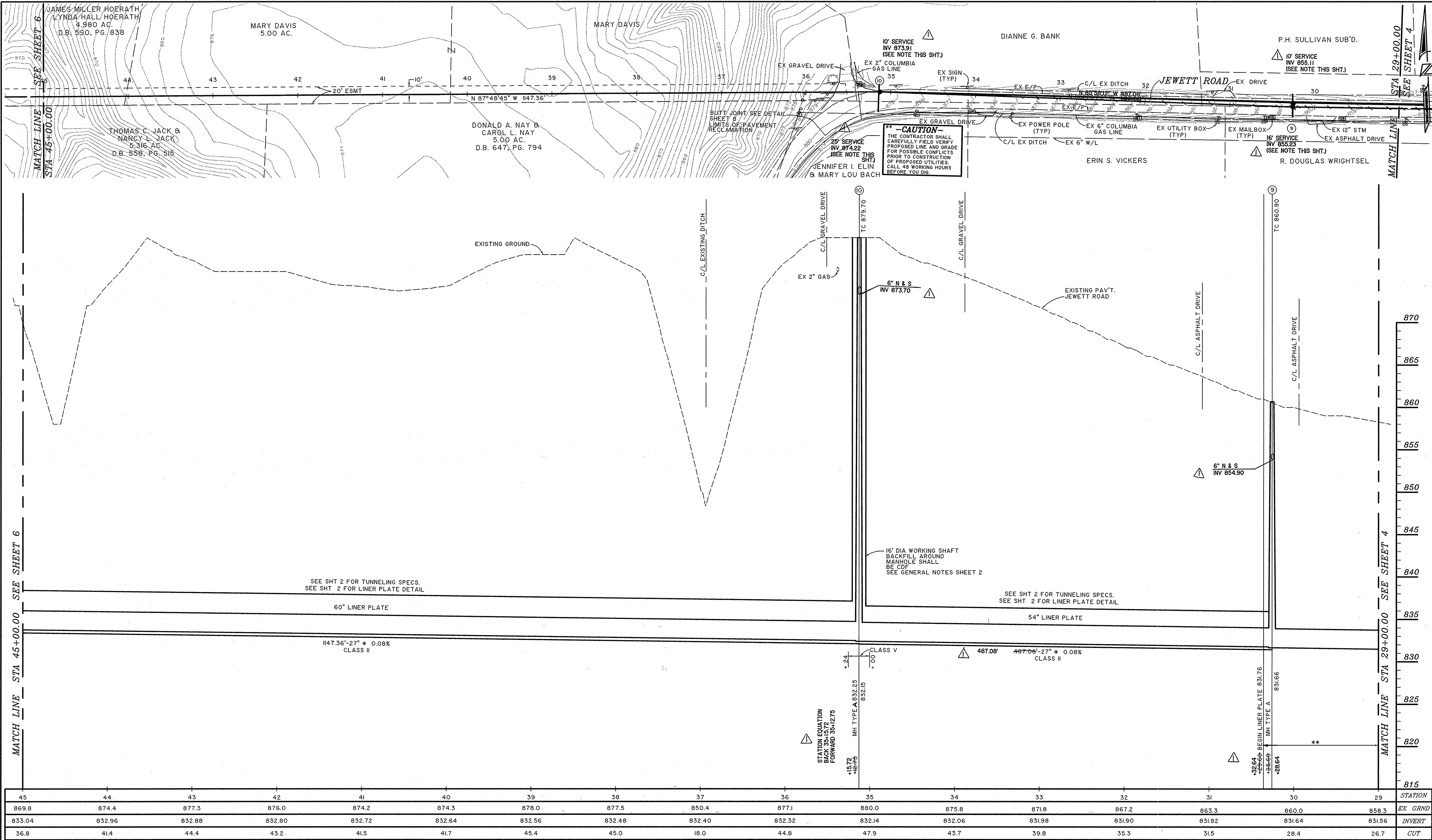
DELAWARE COUNTY, OHIO
JEWETT ROAD
SANITARY SEWER IMPROVEMENTS
STA 13+00.00 TO STA 29+00.00

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

R.D. Zande & Associates, Inc.
1337 Dublin Road Columbus, Ohio 43215
(614) 486-4383 1-800-340-2743
FAX (614)-486-4387

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NOTE:
INSIDE DROP PER DELAWARE COUNTY STANDARDS
SHALL BE INSTALLED BY THE LOT OWNER AT THE
TIME OF CONNECTION.

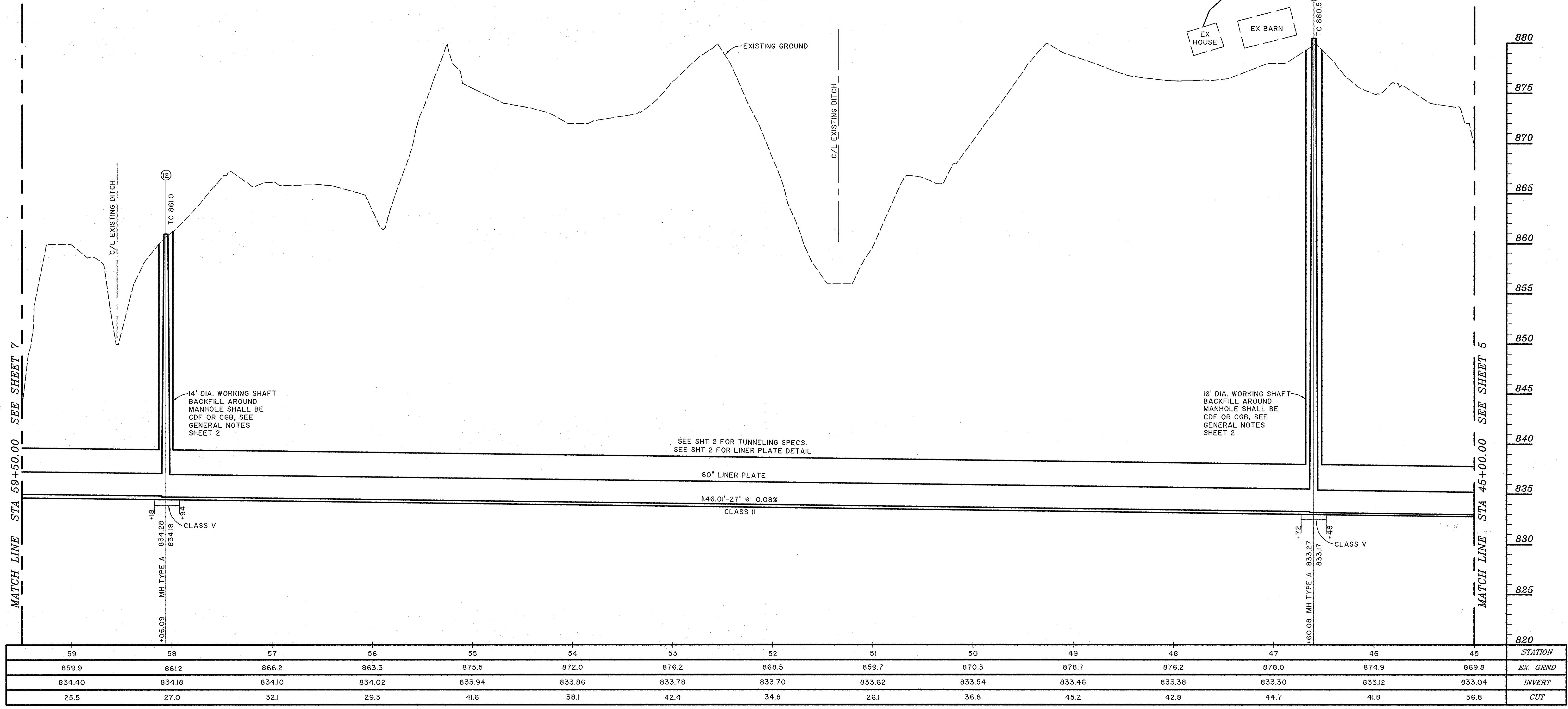
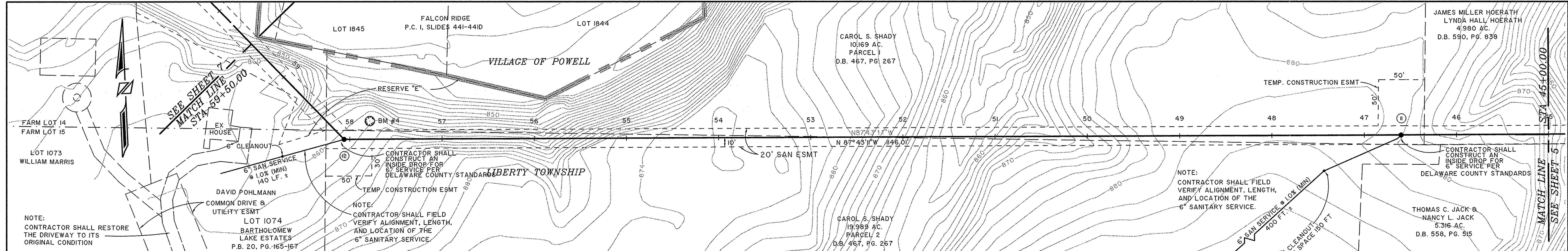
REVISED ALIGNMENT OF SEWER TO CENTER OF NORTH LANE,
ADDED EROSION CONTROL, AND ADDED SERVICES AT MH 2-10.
3/07/01

DELAWARE COUNTY, OHIO
JEWETT ROAD
SANITARY SEWER IMPROVEMENTS
STA 29+00.00 TO STA 45+00.00

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

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(614) 488-4385 1-800-340-2743
FAX (614) 488-4387

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59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	STATION
859.9	861.2	866.2	863.3	875.5	872.0	876.2	868.5	859.7	870.3	878.7	876.2	878.0	874.9	869.8	EX GRND
834.40	834.18	834.10	834.02	833.94	833.86	833.78	833.70	833.62	833.54	833.46	833.38	833.30	833.12	833.04	INVERT
25.5	27.0	32.1	29.3	41.6	38.1	42.4	34.8	26.1	36.8	45.2	42.8	44.7	41.8	36.8	CUT

DELAWARE COUNTY, OHIO

JEWETT ROAD

SANITARY SEWER IMPROVEMENTS

STA 45+00.00 TO STA 59+50.00

SCALE: HORIZ. 1"=50'

VERT. 1"=5'

R.D. Zande & Associates, Inc.

1237 Dublin Road, Columbus, OH 43215

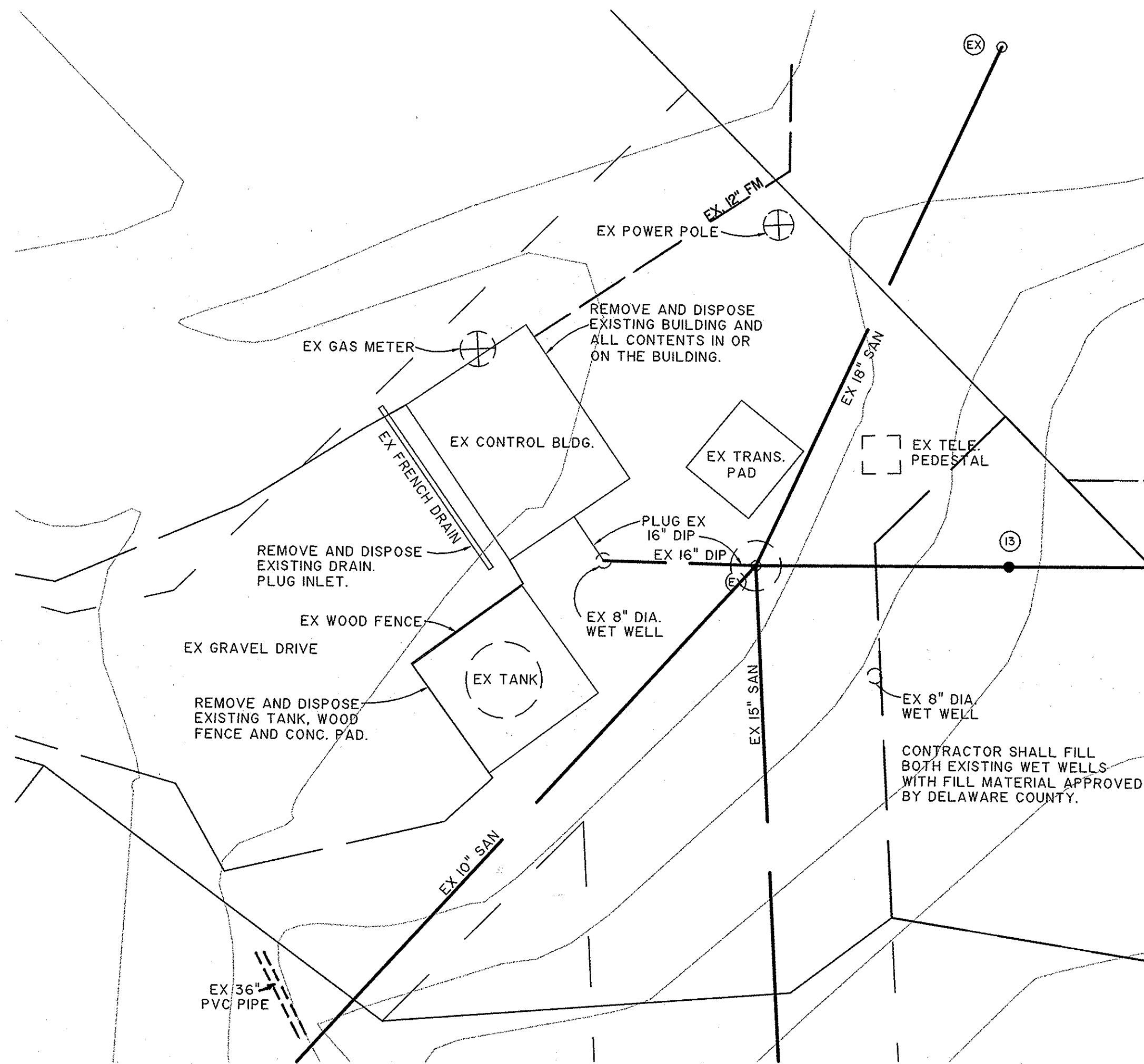
(614) 486-4393 1-800-840-2743

FAX (614)-486-4397

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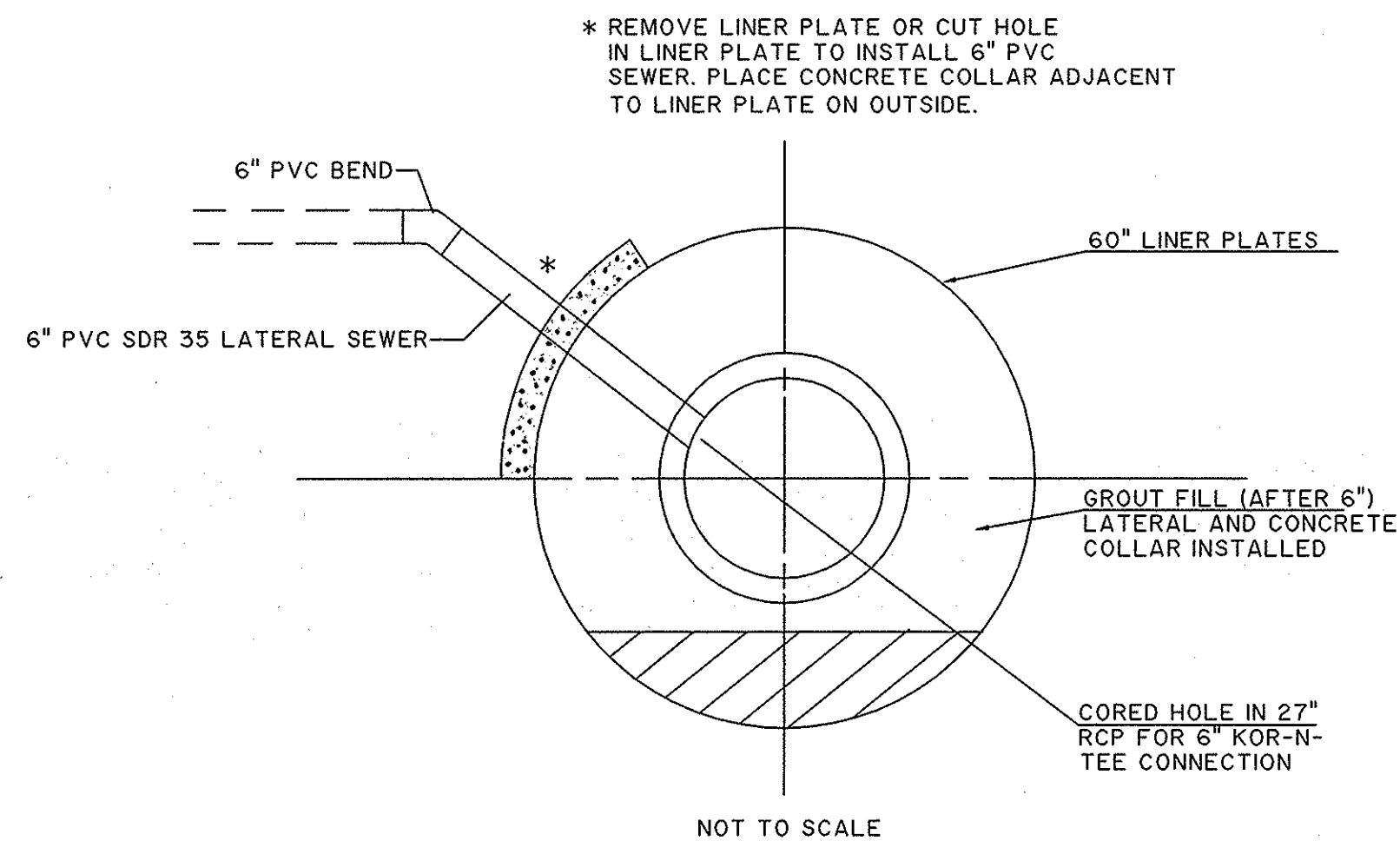
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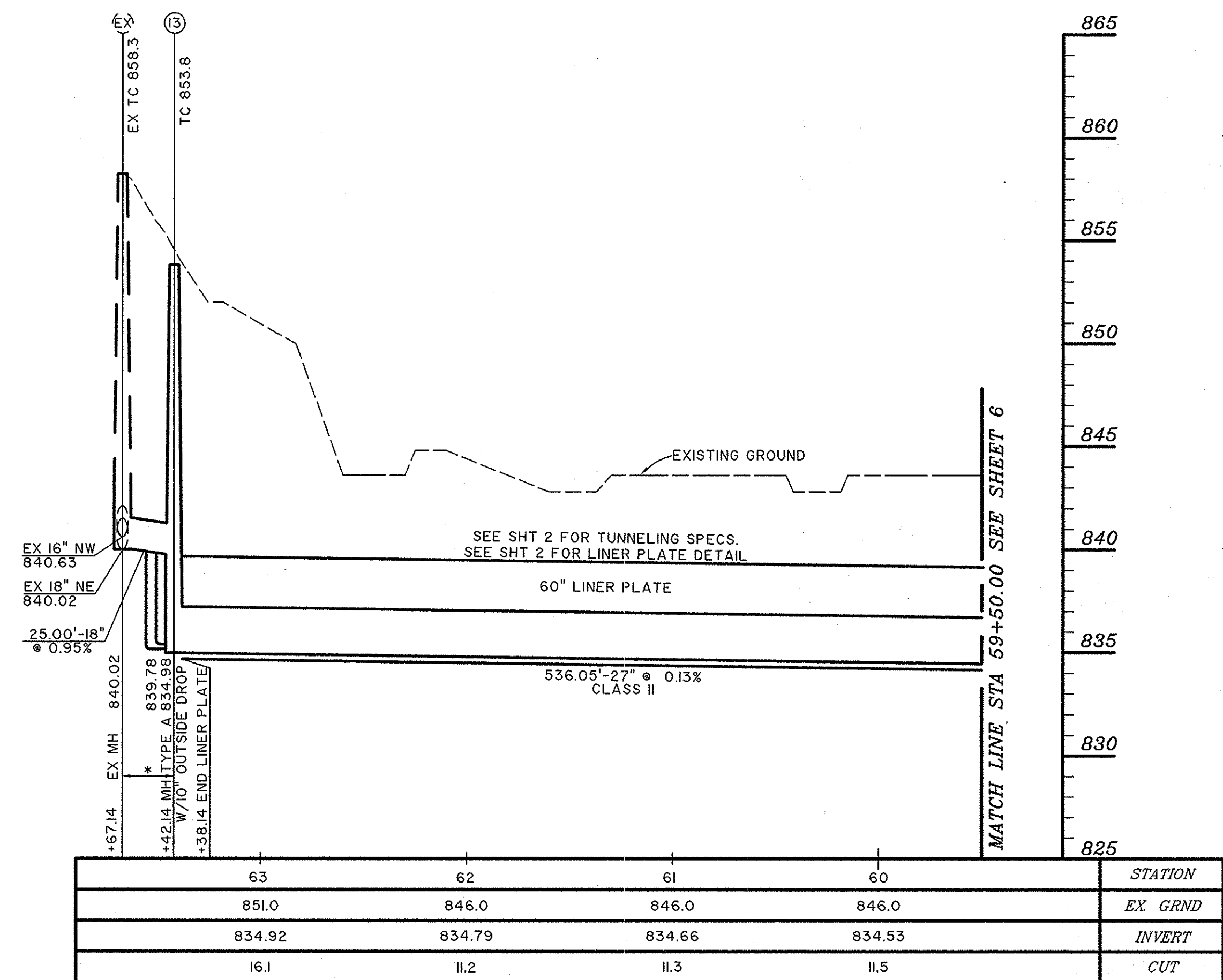
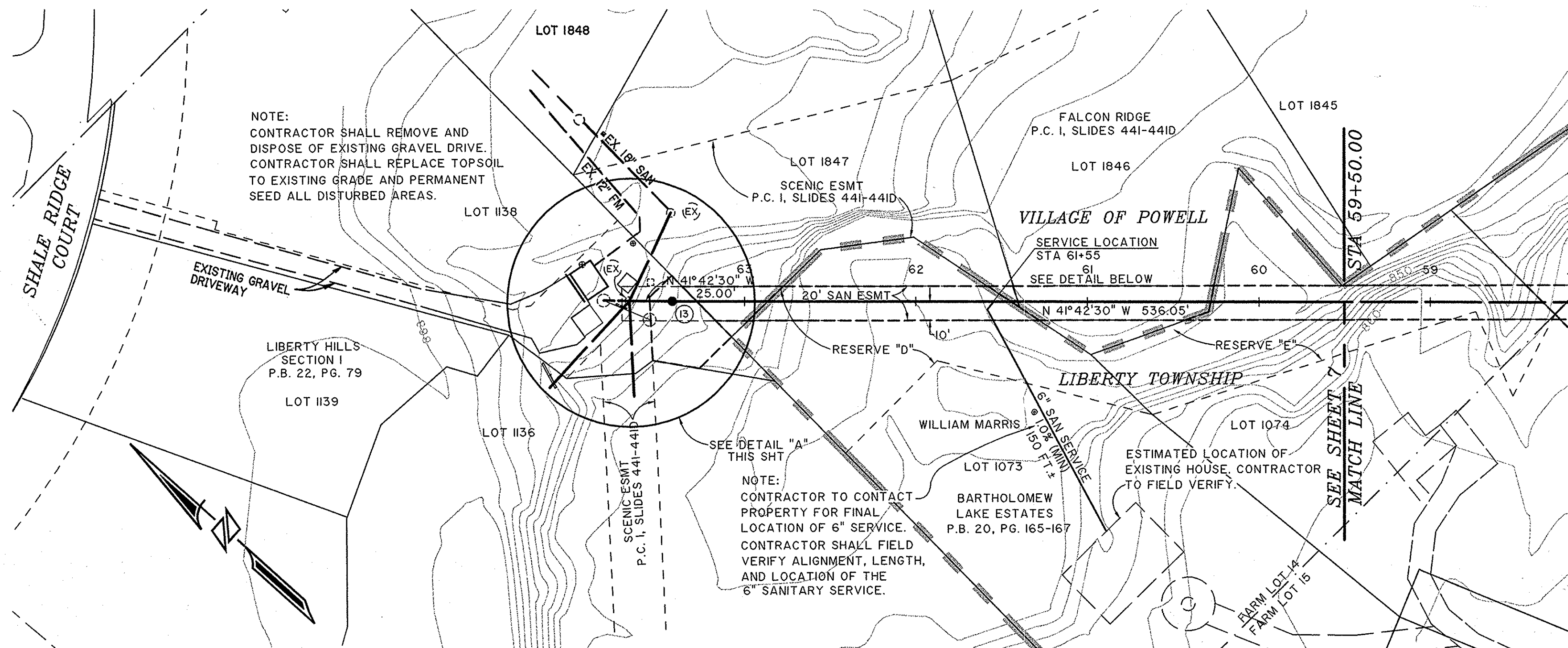


DETAIL "A"
SCALE: 1" = 10'

NOTE:
ALL MECHANICAL AND ELECTRICAL COMPONENTS
OF THE FALCON RIDGE PUMP STATION WILL
REMAIN THE PROPERTY OF DELAWARE COUNTY.



NOT TO SCALE



DELAWARE COUNTY, OHIO
JEWETT ROAD
SANITARY SEWER IMPROVEMENTS
STA 59+50.00 TO STA 63+67.14

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

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