

DELAWARE COUNTY, OHIO

SANITARY SEWER IMPROVEMENT PLAN

FOR

LOWER SCIOTO WATER RECLAMATION FACILITY

PROPOSED EFFLUENT LINE

2007

INDEX OF SHEETS

Title Sheet	1
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STANDARD CONSTRUCTION DRAWINGS

The Standard Drawings listed on these plans shall be considered a part thereof: "Preliminary Standard Plans and Specifications" for Construction of Sanitary Facilities in Delaware County, Ohio

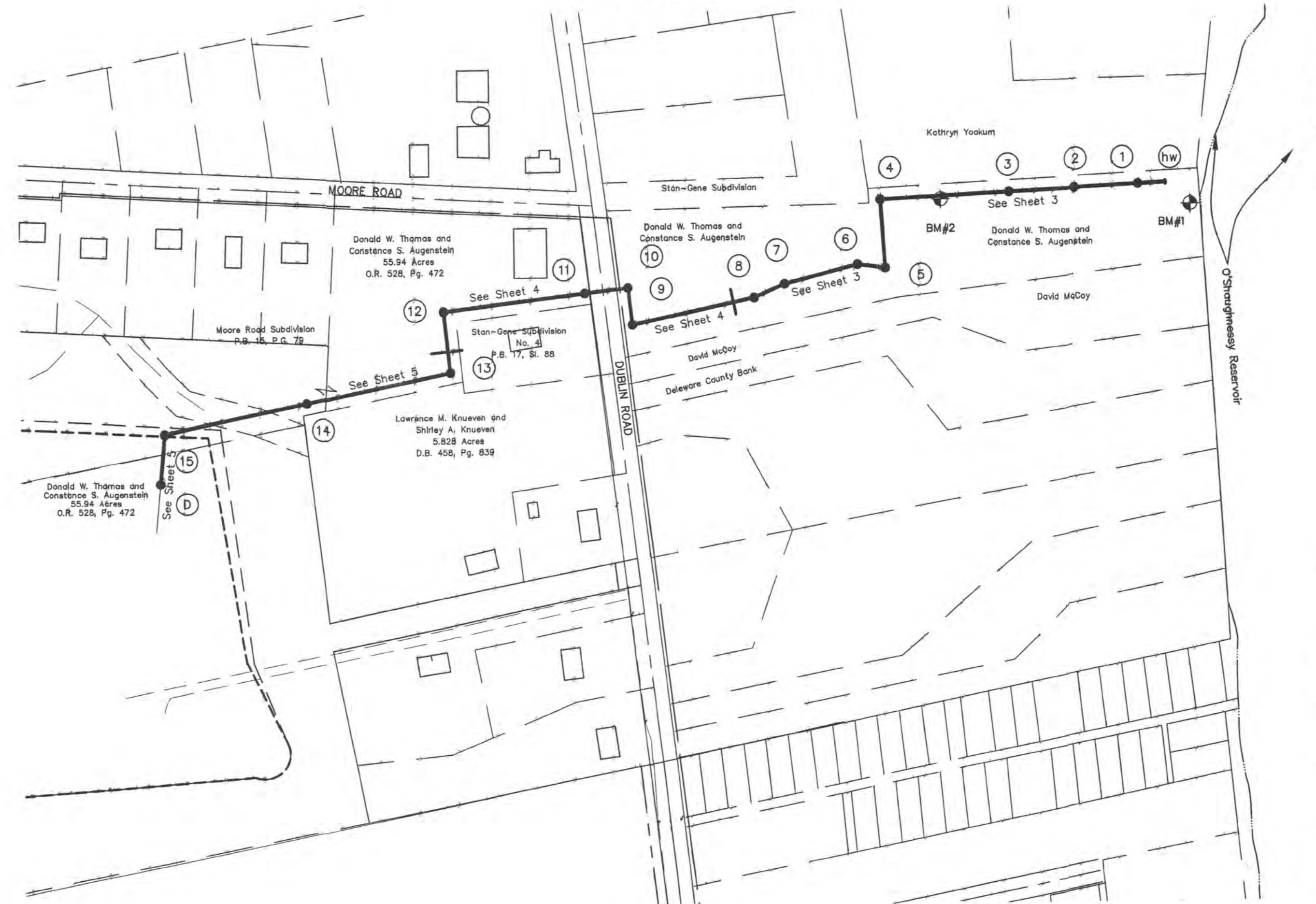
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	34	

BENCH MARKS

N.A.V.D. 88

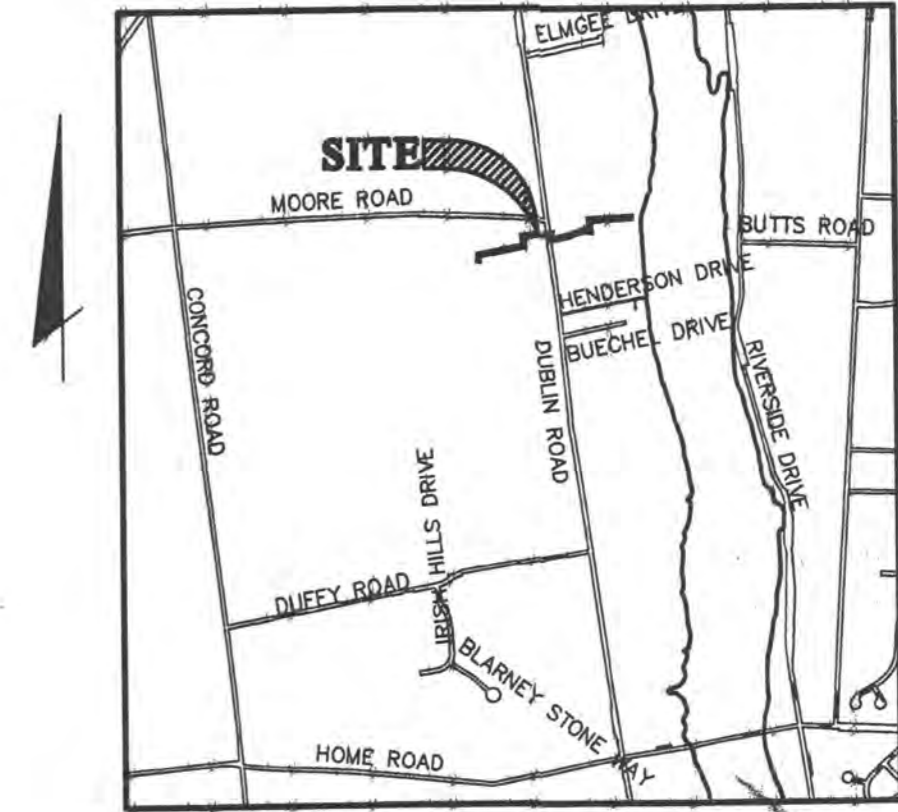
BM #1
Top of railroad spike set in the northwest side of a 20 inch walnut tree located 63 feet south of a woven-wire fence and 25 feet west of the edge of the west top of bank of the O'Shaughnessy Reservoir.
Elev. = 851.19

BM #2
Top of railroad spike set in the south side of a wooden utility pole located 15 feet north of the north edge of pavement of a very long driveway running east from Dublin Road (SR 745). The fifth pole east of Dublin Road along the driveway for residence 6565 Dublin Road.
Elev. = 903.30



INDEX MAP
Scale: 1"=200'

2 WORKING DAYS
BEFORE YOU DIG
CALL TOLL FREE 800-362-2764
OHIO UTILITIES PROTECTION SERVICE



LOCATION MAP
SCALE: NONE

OWNER/DEVELOPER

VILLAGE COMMUNITIES REAL ESTATES INC.
470 Old Worthington Rd. Ste. 100
Westerville, Ohio 43082
Contact: Amy Flinn
Ph. (614) 540-2414

The Delaware County signatures on this plan signify only concurrence with the general purposes and location of the proposed improvement. All technical details remain the responsibility of the Professional Engineer who prepared and certified these plans.

Approved this 12th day of December, 2007 *Jack Smelke*
Delaware County Sanitary Engineer

Approved this 17 day of Dec., 2007 *James D. Ward*
County Commissioner

Approved this 17 day of Dec., 2007 *Steven G. Fran*
County Commissioner

Approved this 17 day of Dec., 2007 *Kristopher W. Jule*
County Commissioner

Approved this 12th day of Dec., 2007 *Chris E. Bann*
Delaware County Engineer

EMHT
Evans, Mechwart, Hamplenton & Tilton, Inc.
Engineers • Surveyors • Planners • Scientists
5500 New Albany Road, Columbus, OH 43254
Phone: 614.775.4200 Fax: 614.775.4800

STATE OF OHIO
CRAIG A. BOHNING
E-54300
REGISTERED PROFESSIONAL ENGINEER

Craig A. Bohning
Registered Engineer No. 54300
Date: 12/12/07

Job No.	2007-1558	Date	August, 2007	Sheet	1 of 6
			Scale	1" = 200'	
DELAWARE COUNTY, OHIO SANITARY SEWER IMPROVEMENT PLAN FOR LOWER SCIOTO WATER RECLAMATION FACILITY PROPOSED EFFLUENT LINE					
DATE	DESCRIPTION				
2/6/08	REVISED SANITARY ALIGNMENT PER RECORDED EASEMENT AND WATER LINE ALIGNMENT; ADDED SHOP DRAWINGS.				
2/10/08	REMOVED WATER FLOW MASTERS, REVISED SEDIMENTATION AND EROSION CONTROL PLAN.				

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

The Contractor shall obtain all necessary permits.

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

All Sanitary Sewers shall be PVC Pipe meeting the requirements of ASTM D-1784 and F-679, SDR 35, Cell Class 12454.

The Sanitary Sewer shall be tested by the exfiltration method. Allowable leakage shall not exceed 100 gallons per inch of pipe diameter per mile of pipe per 24 hours. Contractor shall cooperate with Delaware County Sanitary Engineer and provide all necessary equipment to perform sewer test. Air testing of the pipes and vacuum testing of the manholes will also be accepted.

All sanitary sewer line installed on this project using PVC pipe will be subject to deflection testing by pulling an approved Mandrel (30 day mandrel=28.21 inches, 90 day mandrel=27.46 inches) through the pipe.

No connection shall be made to the receiving sanitary system until the project has been fully installed, tested and approved.

The Delaware County Sanitary Engineer's office shall have authority over all sanitary sewer items associated with this plan.

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.

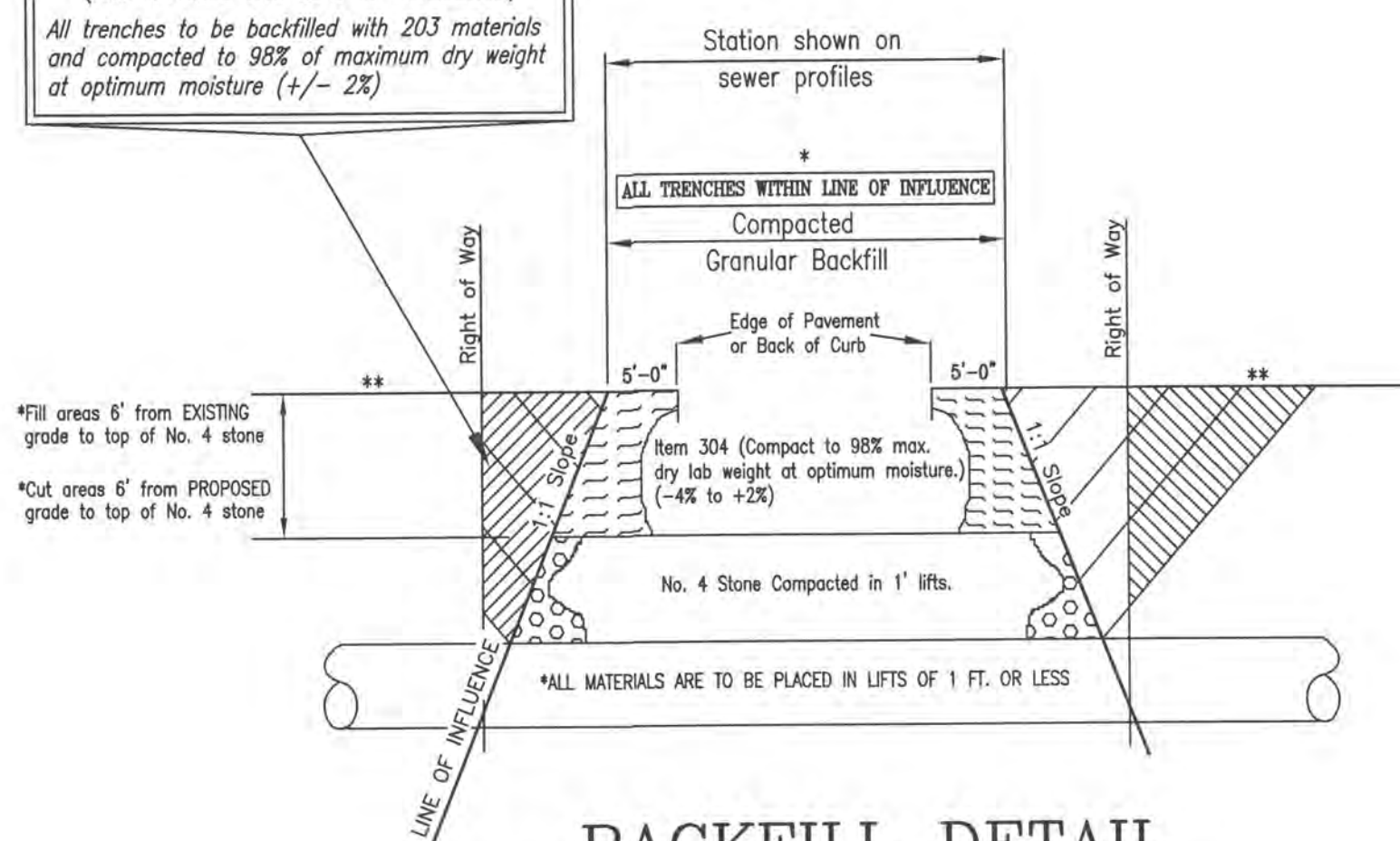
Support, protection and restoration of all existing utilities and appurtenances shall be the responsibility of the Contractor. The cost of this work shall be included in the price bid for the various items.

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	Del-Co Water Co. 6773 Olenangy River Road Delaware, Ohio 43015	740/548-7746
Storm Sewers	Delaware County 50 Channing Street Delaware, Ohio 43015	740/833-2400
Sanitary Sewers	Delaware County Sanitary Engineer 50 Channing Street Delaware, Ohio 43015	740/833-2240

**AREAS WITHIN RIGHT-OF-WAY
(AND OUTSIDE THE LINE OF INFLUENCE)**
All trenches to be backfilled with 203 materials and compacted to 98% of maximum dry weight at optimum moisture (+/- 2%)



BACKFILL DETAIL

DCED STD-R100 No Scale

ESTIMATE OF QUANTITIES		
QUANTITY	UNIT	DESCRIPTION
5	Each	Manhole, Type A w/ Bolted Lid
1	Each	Manhole, Type B w/ Bolted Lid & Outside Drop
6	Each	Manhole, Type C w/ Bolted Lid
3	Each	Manhole, Type D w/ Bolted Lid & Outside Drop
2,790	Lin.Ft.	30" Sanitary Pipe w/ Type I Bedding
1	Each	30" Flap Valve
1	Each	Headwall 30" Pipe (DCED-S168)
20	Sq.Yds.	Pavement Replacement (Type "C")
80	Lin.Ft.	48" Steel Casing Pipe (Jack and Bored)
60	C.Y.	Water Course Erosion Protection (Dumped Rock Fill, Type B)
For Erosion Quantities See Sheet 6		
Calculated By: RA	Date: 10-11-07	Checked By: RA Date: 10-24-07

The quantities shown on this plan are the Engineers best determination of the work to be performed. The Contractor, in making his bid, should make his own determination of the quantities and discuss any differences with the Engineer prior to bidding.

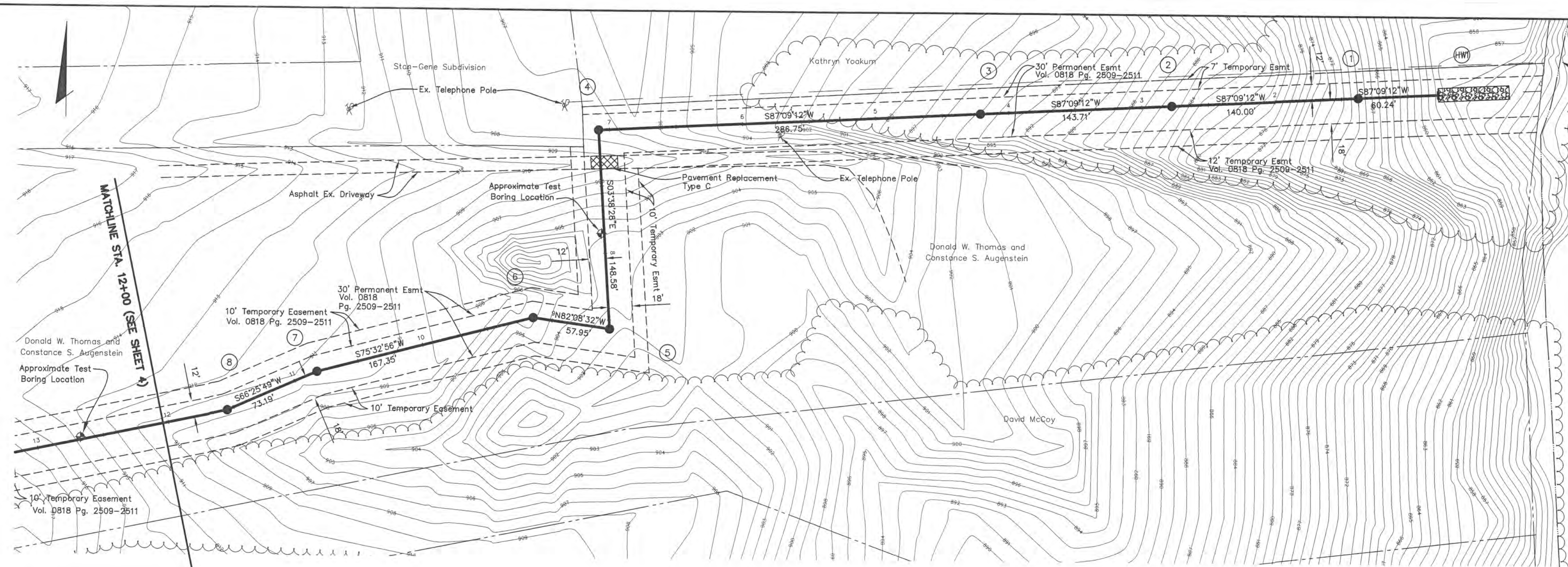
- REVISD SANITARY ALIGNMENT PER RECORDED EASEMENT AND WATER LINE ALIGNMENT; ADDED SHOP DRAWINGS. 2/6/08
- REMOVED VORTEX FLOW INSERTS & ADDED DROP MANHOLES. REVISED SEDIMENT AND EROSION CONTROL PLAN & NOTES. 02/22/10

COUNTY OF DELAWARE, OHIO
SANITARY SEWER IMPROVEMENT PLAN
FOR
**LOWER SCIOTO WATER
RECLAMATION FACILITY**
PROPOSED EFFLUENT LINE

<p>Evans, Mechwart, Hornblaton & Tilton, Inc. Engineers • Surveyors • Planners • Scientists 3550 New Albany Road, Columbus, OH 43054 Phone: 614-773-8500 Fax: 614-773-4800</p>	Date: August, 2007
	Scale: AS NOTED
	Job No: 2007-1558
	Sheet: 2 of 6

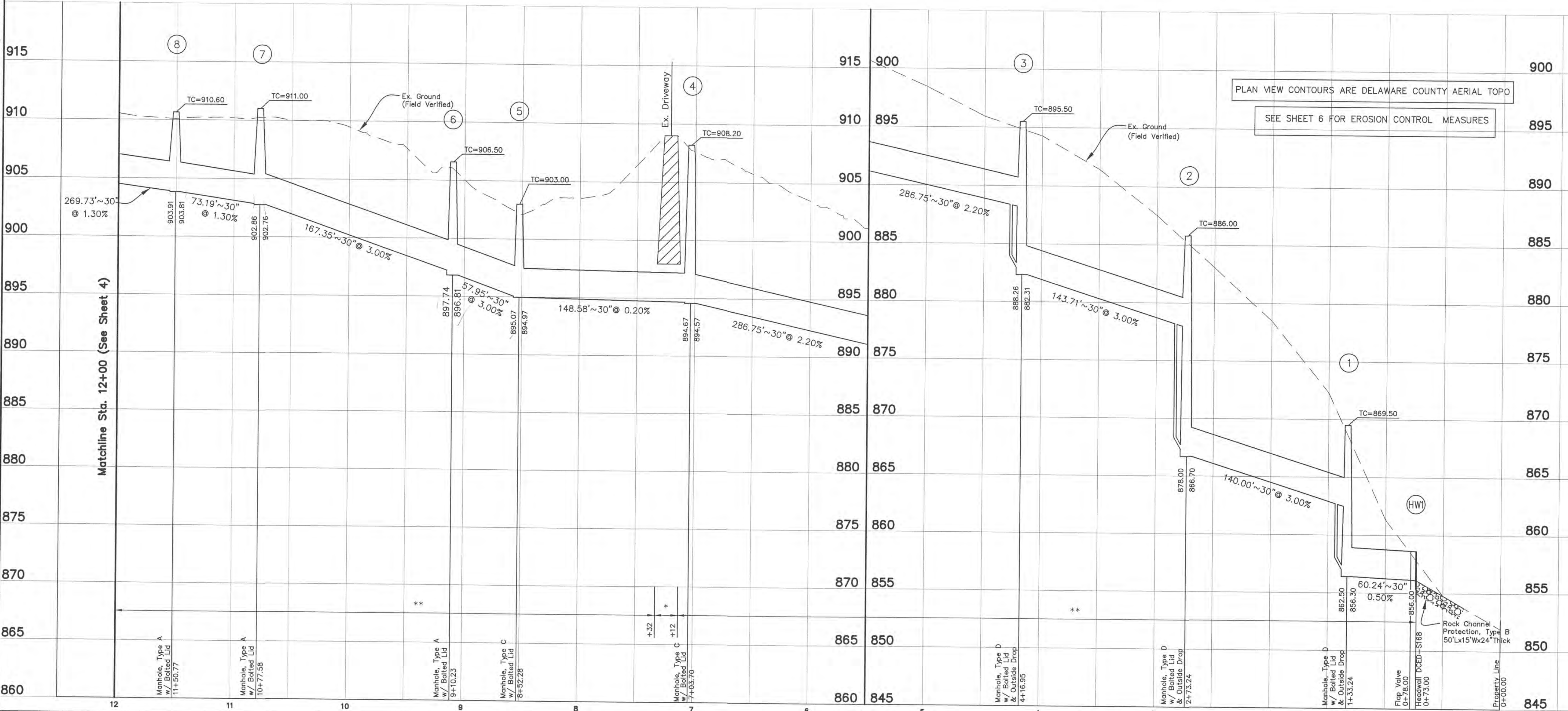
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WATERSHED PROTECTION

This work is being performed within the direct drainage area of a major drinking water supply for the greater Columbus Metropolitan Area. It is essential that all activities associated with this work be performed in a manner consistent with Best Watershed Management Practices, including but not limited to: appropriate erosion control/containment of disturbed areas; hazardous/toxic materials shall only be stored on-site as necessary to perform this work, and if stored on-site (within the watershed), shall be double contained; all equipment repairs, maintenance and mechanical work that could result in the release of hazardous/toxic materials shall be performed outside the Scioto River/O'Shaughnessy Reservoir Watershed. The CONTRACTOR shall be fully responsible for informing all subcontractors and other agents of these responsibilities, precautions and prohibitions.



PLAN VIEW CONTOURS ARE DELAWARE COUNTY AERIAL TOPO
SEE SHEET 6 FOR EROSION CONTROL MEASURES

* Compacted Granular Backfill, As Per DCED-R100 See Note Sheet 2.
** Backfill shall be compacted in horizontal lifts, with loose thicknesses not exceeding 24 inches. Each lift shall be compacted to at least 98% of the maximum dry density as determined by the "Standard" compaction test (ASTM D-698).

Limits of Granular Backfill

MH#	Northing	Easting
MH#D	200576.4300	1786339.3200
HW#1	201216.2555	1788554.1536
MH#1	201213.2639	1788493.9918
MH#2	201206.3109	1788354.1645
MH#3	201199.1735	1788210.6310
MH#4	201184.9320	1787924.2320
MH#5	201036.6486	1787933.6678
MH#6	201044.5714	1787876.2612
MH#7	201002.8090	1787714.2065
MH#8	200973.5448	1787647.1266
MH#9	200918.7543	1787383.0237
MH#10	200992.6251	1787374.3563
MH#11	200981.2646	1787277.5329
MH#12	200945.0725	1786969.0738
MH#13	200812.0778	1786982.9777
MH#14	200746.0917	1786663.5653
MH#15	200681.1168	1786349.0480

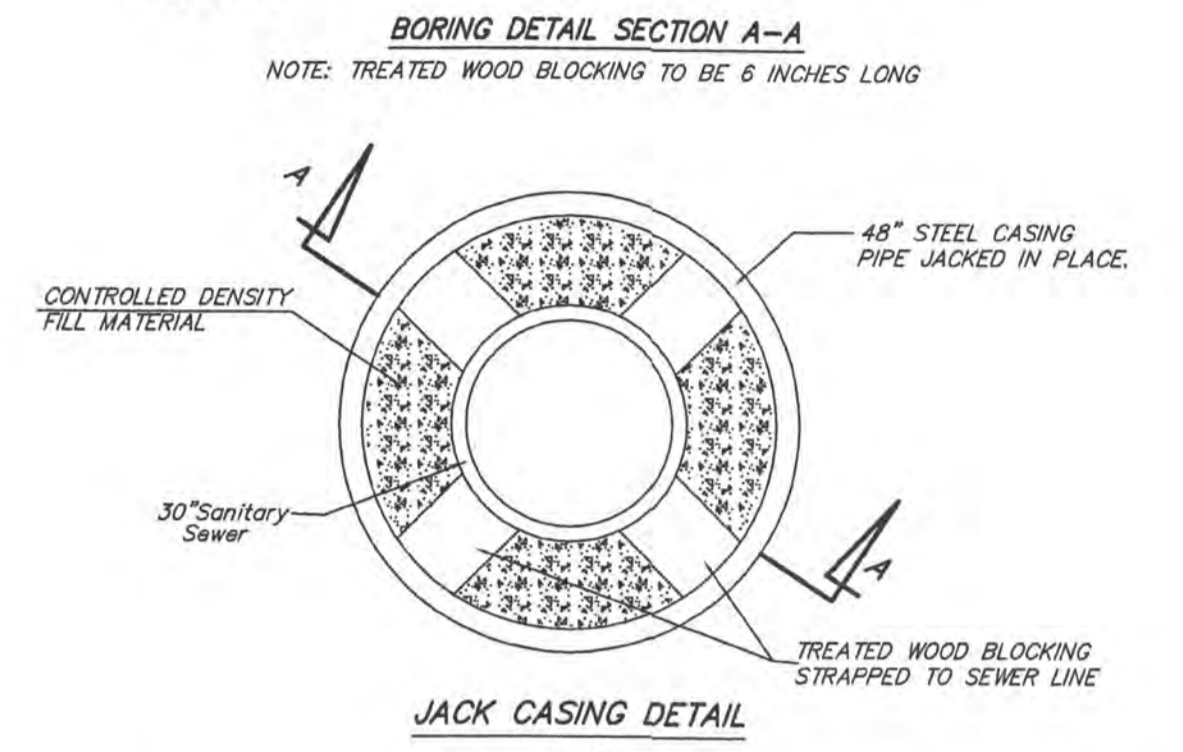
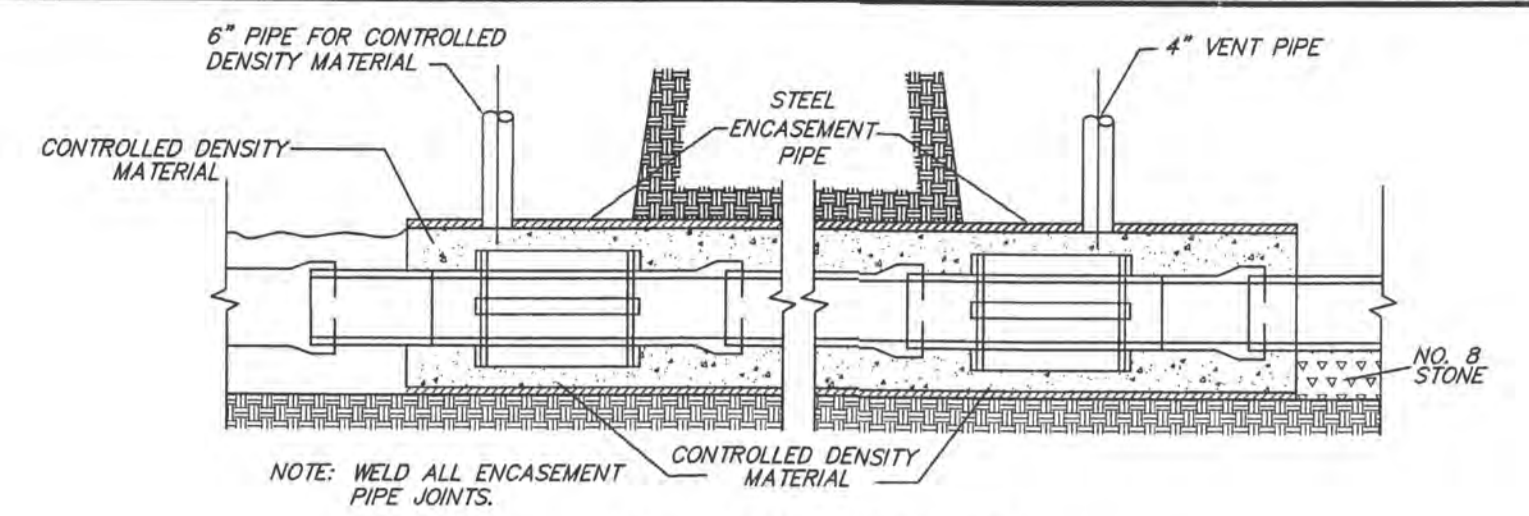
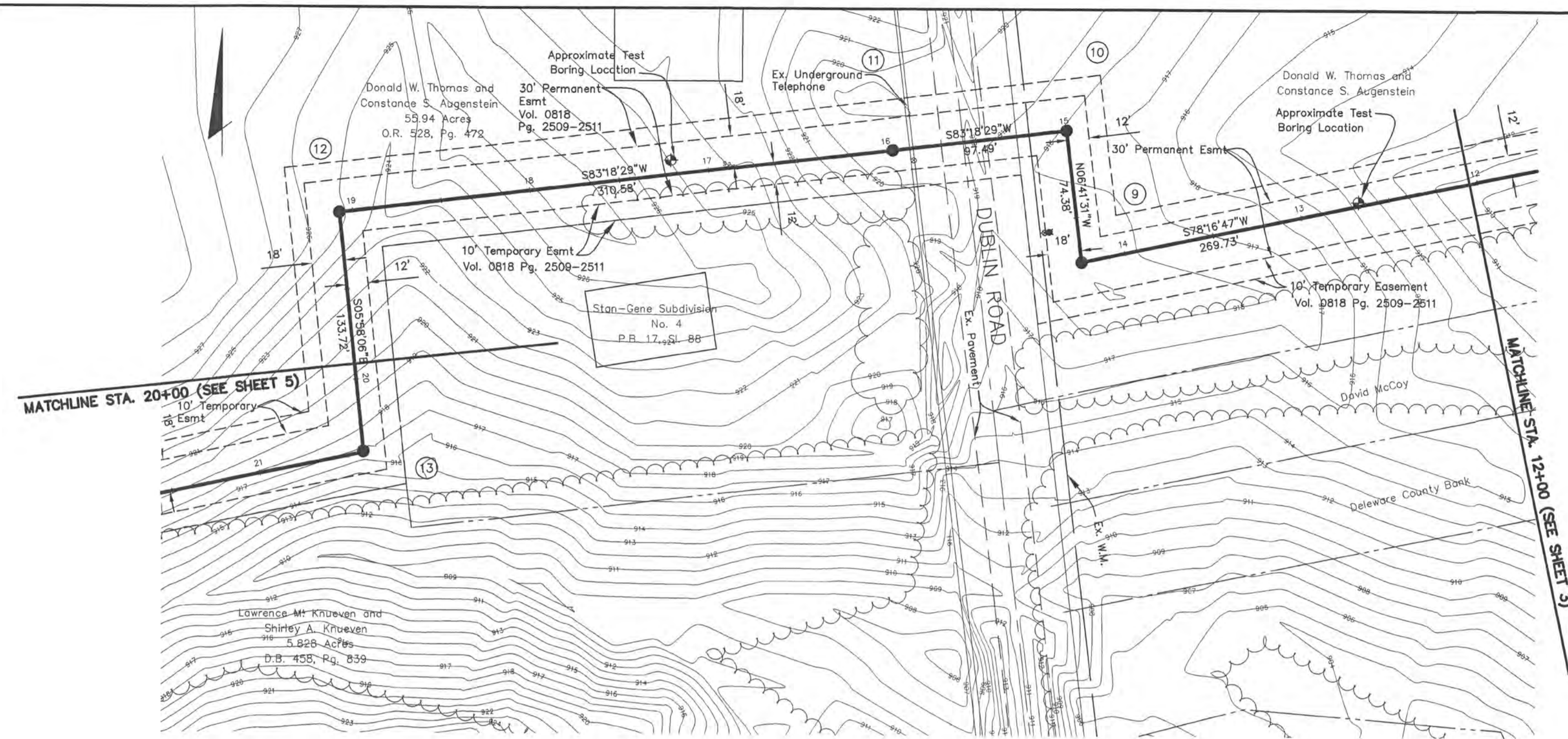
△ REVISED SANITARY ALIGNMENT PER RECORDED EASEMENT AND WATER LINE ALIGNMENT; ADDED SHOP DRAWINGS. 2/6/08
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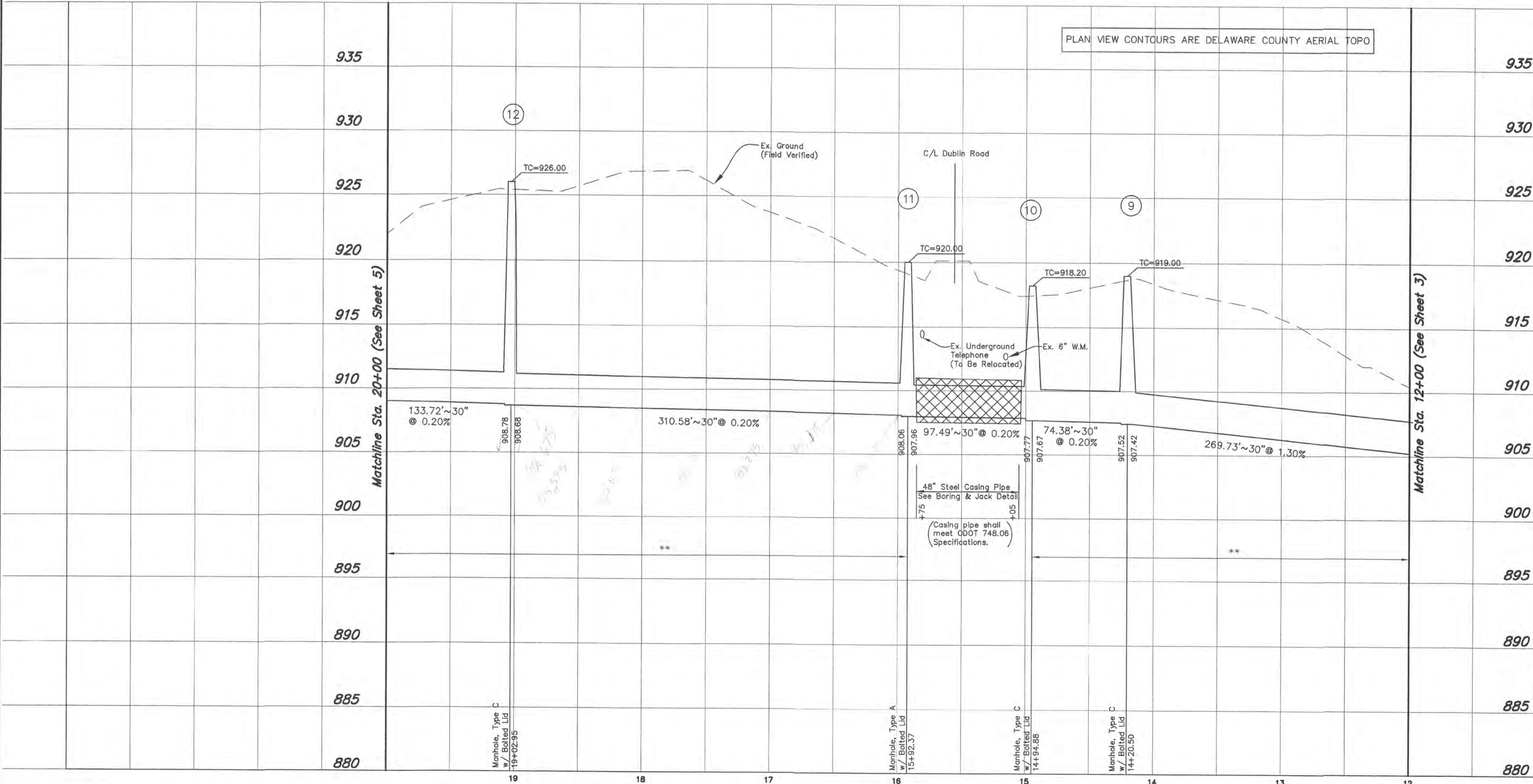
Evans, Mechwart, Hamilton & Tilton, Inc.
 Engineers • Surveyors • Planners • Scientists
 5500 New Albany Road, Columbus, OH 43254
 Phone: 614.775.4500 Fax: 614.775.4800

Date: August, 2007
 Scale: Hor: 1" = 50' Ver: 1" = 5'
 Job No: 2007-1558
 Sheet: 3 of 6

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- NOTES:
- TREATED WOOD BLOCKING TO BE 6 INCHES LONG BANDED TO EACH LENGTH OF PIPE, 6"-0" MAXIMUM C/C. ALLOW 1 INCH MAXIMUM CLEARANCE BETWEEN BLOCKS AND CASING PIPE.
 - STEEL CASING PIPE TO BE 48" UNLESS APPROVED IN WRITING BY THE ENGINEER. CASING PIPE SHALL MEET ODOT 748.06 SPECIFICATIONS.



- ODOT RIGHT-OF-WAY AND WORK ZONE NOTES**
- All materials and equipment shall be removed fully from the ODOT R/W any time it is not being used. Material storage, equipment and vehicle parking will not be permitted on the ODOT R/W.
 - All bore pits and excavations shall be located entirely outside of the ODOT right of way.
 - Bore pits and trenches must be protected in accordance with ODOT's Plan-Insert-Sheet (PIS) 2010190 "Dropoffs in Work Zones", see sheet 9A. A pit/trench 12 to 30 feet from the edge of traveled lane and greater than 24 inches deep must have drums during the day and PCB at night unless securely plated or backfilled to within 24 inches.
 - The length of the trench which is open at any one time shall be held to a minimum and shall at all times be subject to approval of the engineer.

* Compacted Granular Backfill, As Per DCED-R100 See Note Sheet 2.
 ** Backfill shall be compacted in horizontal lifts, with loose thicknesses not exceeding 24 inches. Each lift shall be compacted to at least 98% of the maximum dry density as determined by the "Standard" compaction test (ASTM D-698).
 [Hatched Box] Limits of Granular Backfill

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MH#12	200945.0725	1786969.0738
MH#13	200812.6778	1786982.9777
MH#14	200746.0917	1786663.5653
MH#15	200681.1168	1786349.0480

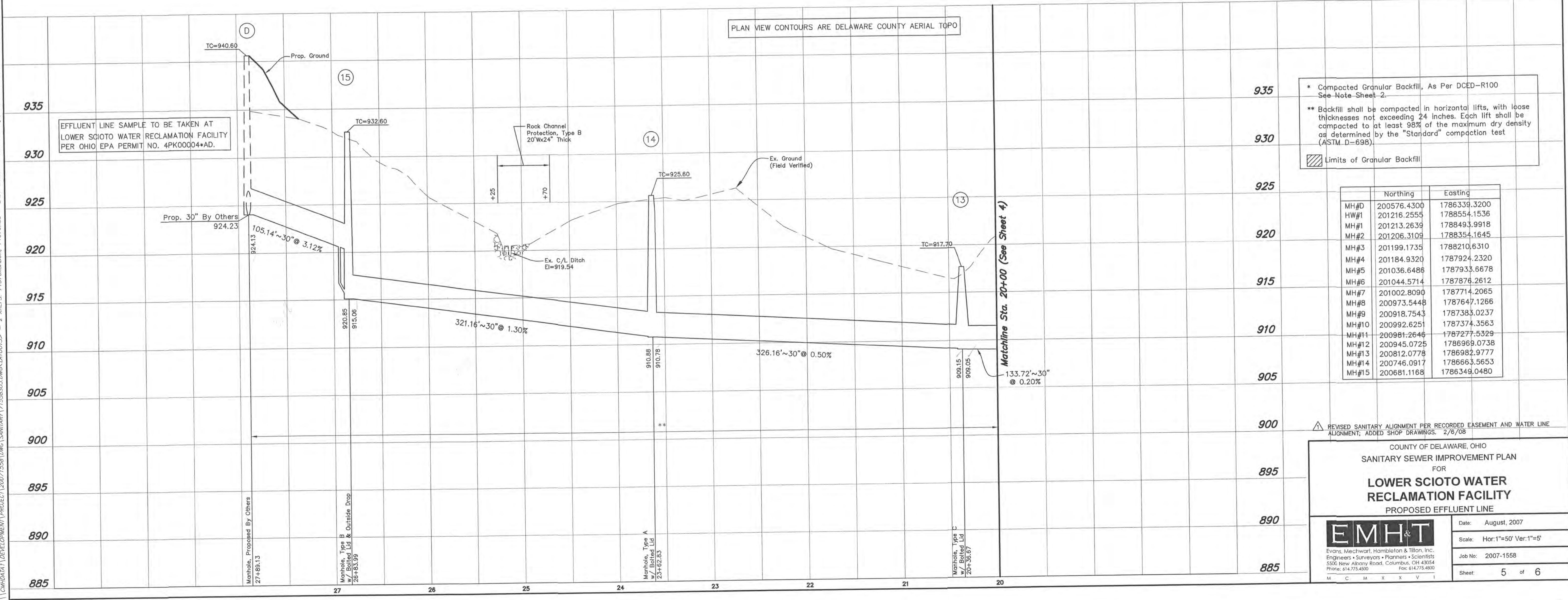
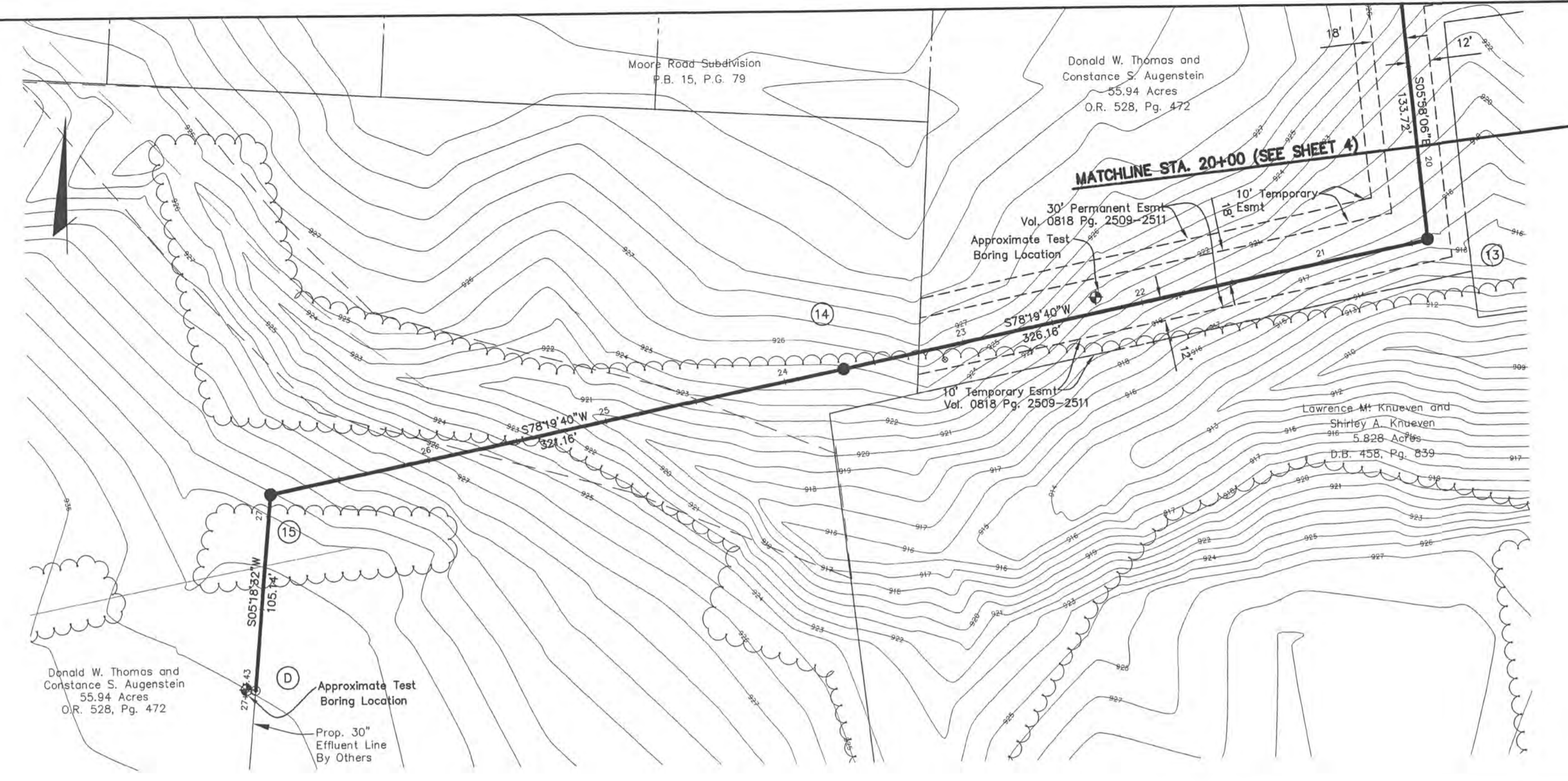
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 Engineers • Surveyors • Planners • Scientists
 5500 New Albany Road, Columbus, OH 43054
 Phone: 614.775.4000 Fax: 614.775.4000

Date: August, 2007
 Scale: Hor: 1"=50' Ver: 1"=5'
 Job No: 2007-1558
 Sheet: 4 of 6

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EFFLUENT LINE SAMPLE TO BE TAKEN AT LOWER SCIOTO WATER RECLAMATION FACILITY PER OHIO EPA PERMIT NO. 4PK00004+AD.

- * Compacted Granular Backfill, As Per DCED-R100 See Note Sheet 2.
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- ▨ Limits of Granular Backfill

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REVISION SANITARY ALIGNMENT PER RECORDED EASEMENT AND WATER LINE ALIGNMENT; ADDED SHOP DRAWINGS. 2/6/08

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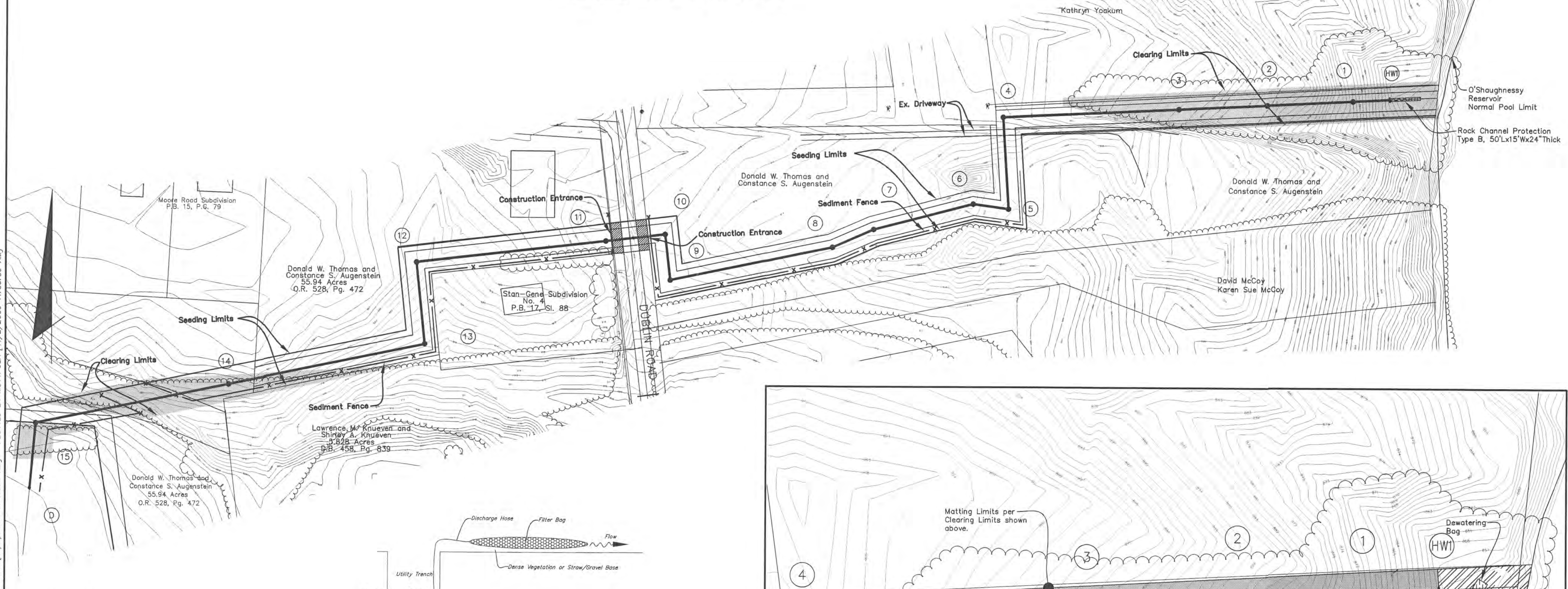
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LEGEND

	Seeding Limits		Construction Entrance
	Clearing Limits		Erosion Control Matting, Type D
	Sediment Fence		Erosion Control Matting, Type E



ESTIMATE OF QUANTITIES

ITEM	QUANTITY	UNIT	DESCRIPTION
207	2,150	Lin.Ft.	Sediment Fence
207	2	Each	Stabilized Construction Entrance
659	15,000	S.Y.	Temporary Seeding & Mulching
659	25,000	S.Y.	Permanent Seeding & Mulching
659	1,500	S.Y.	Repair Seeding & Mulching
659	3	Ton	Commercial Fertilizer
659	70	M Gal.	Water
670	2,720	S.Y.	Erosion Control Matting Per Item 712.11 Type D
670	498	S.Y.	Erosion Control Matting Per Item 712.11 Type E

MAINTENANCE: It is the Contractor's responsibility to maintain the sediment control features used on this project. The site shall be inspected periodically and within 24 hours of a significant rainfall. Records of these inspections shall be kept and made available to jurisdictional agencies if requested. Any sediment or debris which has reduced the efficiency of a structure shall be removed immediately. Should a structure or feature become damaged, the Contractor shall repair or replace at no additional cost to the Owner. Not all details shown on this sheet may be required for this project. Reference Sediment Control Plan.

CONTRACTOR RESPONSIBILITY: Details have been provided on the plans in an effort to help the Contractor provide erosion and sedimentation control. The details shown on the plan shall be considered a minimum. Additional or alternate details may be found in the ODMR Manual "Rainwater and Land Development." The Contractor shall be solely responsible for providing necessary and adequate measures for proper control of erosion and sediment runoff from the site along with proper maintenance and inspection in compliance with the NPDES General Permit for Storm Water Discharges Associated with Construction Activity.

Prior to Construction Operations in a particular area, all sedimentation and erosion control features shall be in place. Field adjustments with respect to locations and dimensions may be made by the Engineer.

Additional erosion and sediment control shall be installed as directed by Delaware County. It may become necessary to remove portions of the barrier during construction to facilitate the grading operations in certain areas. However, the barrier shall be in place in the evening or during any inclement weather.

The limits of seeding and mulching are as shown within the plan. Seeding has been assumed to be all disturbed area. All areas not indicated shall remain under natural ground cover. Those areas disturbed outside the seeding limits shall be seeded and mulched at the Contractor's expense.

Temporary Seeding: Any disturbed areas not at final grade shall be temporarily stabilized within 7 days of the most recent activity if the areas are to be dormant for more than 21 days. Areas that are at final grade shall be permanently seeded and mulched within 7 days of the most recent activity. If permanent seeding is not applied at this time, temporary seeding shall be done which shall consist of fertilizing, watering and seeding at the rates indicated under item 659. Seed shall be oats from December 1 to June 1 and annual rye from June 1 to December 1.

Permanent seeding shall be done between March 15 and September 15. If seeding is done between September 15 and March 15, it shall be classified as Temporary Seeding. Permanent seed shall be 40% Kentucky Bluegrass, 40% Creeping Red Fescue, 20% Annual Ryegrass. Permanent seeding shall consist of fertilizing, watering and seeding rates indicated under item 659.

Rates of application of item 659:

Seed:	2 lbs./1,000 Sq.Ft.
Fertilizer:	20 lbs./1,000 Sq.Ft.
Mulch (Straw or Hay):	2 tons/acre

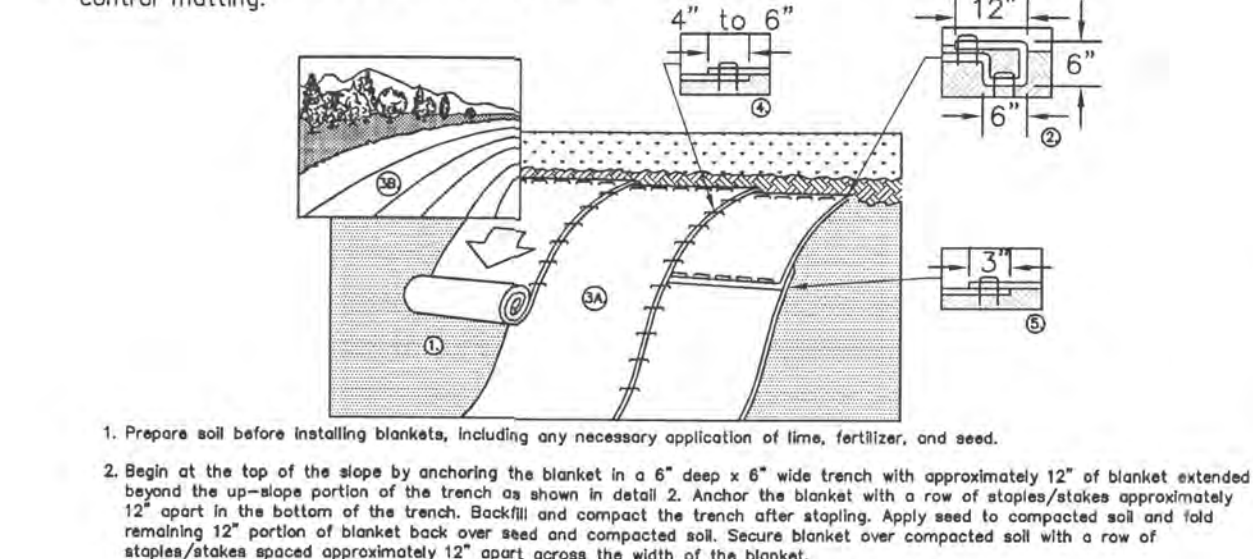
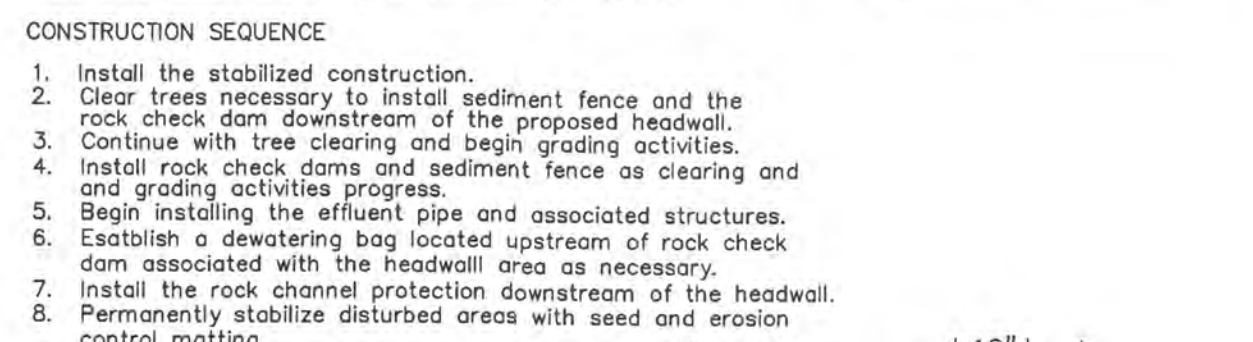
The cost for temporary channels, sediment dams, sediment basins, and other appurtenant earth-moving operations shall be included in the price bid for erosion and sedimentation control quantities.

Due to the nature of this site, an on-site meeting will be required prior to any clearing and/or grubbing activities associated with this site. The Delaware County Erosion and Sediment Control Inspector will be required to be in attendance.

CONSTRUCTION SEQUENCE

1. Install the stabilized construction.
2. Clear trees necessary to install sediment fence and the rock check dam downstream of the proposed headwall.
3. Continue with tree clearing and begin grading activities.
4. Install rock check dams and sediment fence as clearing and grading activities progress.
5. Begin installing the effluent pipe and associated structures.
6. Establish a dewatering bag located upstream of rock check dam associated with the headwall area as necessary.
7. Install the rock channel protection downstream of the headwall.
8. Permanently stabilize disturbed areas with seed and erosion control matting.

NOTE: The contractor shall be responsible for submitting a Sediment and Erosion Control Plan, and obtaining approval from the County of Delaware.



CROSS SECTION VIEW

INSTALLATION: The Contractor shall pump muddy water encountered within the utility trench into a filter fabric bag. The bag shall be placed within a level undisturbed area as far away from the receiving stream as possible (minimum 50 ft.). Perimeter controls such as rock check dams or sediment fence shall be utilized along the downstream side of the bag. The perimeter controls shall be installed to ensure that the water flowing out of the bag does not flow around the ends of the controls. Upon completion, the bag shall be removed to an area away from the stream and opened. The accumulated sediment shall be spread out to allow to dry and stabilized with vegetation. Filterbag shall be JMD Enviro-Protection Filter Bag, size 15'x15' or equal.

Maintenance: The filter bag shall be replaced when the bag is half filled with sediment. The Contractor shall contact the project inspector/engineer for consultative services if dewatering activities overwhelm the filter bag and perimeter controls.



TRENCH DEWATERING FILTER BAG
No Scale



SEDIMENT FENCE DETAIL
No Scale

SCALE: 1"=60'

ROCK OUTLET PROTECTION
SCALE: NONE

NOTE: The contractor shall be responsible for submitting a Sediment and Erosion Control Plan, and obtaining approval from the County of Delaware.

CLASS 1 WORN OR NONWORN MONO FILAMENT YARN.

STABILIZED CONSTRUCTION ENTRANCE
CONSTRUCTION SPECIFICATIONS

1. Stone Size - Use 2" stone, or reclaimed or recycled concrete equivalent.
2. Length - As required.
3. Thickness - Not less than six (6) inches.
4. Width - Ten (10) foot minimum, but not less than the full width of points where ingress or egress occurs.
5. Filter Cloth - will be placed over the entire area prior to placing of stone.
6. Surface Water - All surface water flowing or diverted toward construction entrances shall be piped across the entrance. If piping is impractical, a moundside berm with 5:1 slopes will be permitted.
7. Maintenance - The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto public right-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or removal of any measures used to trap sediment. All sediment applied, dropped, washed or tracked onto public rights-of-way must be removed immediately.
8. Washing - Waste shall be cleaned to remove sediment prior to entrance onto public right-of-way. When washing is required, it shall be done on an area stabilized with stone and which drains into an approved sediment trapping device.
9. Periodic inspection and needed maintenance shall be provided after each rain.

EROSION CONTROL BLANKET (SLOPE INSTALLATION)
No Scale

REMOVED VORTEX FLOW INSERTS & ADDED DROP MANHOLES. REVISED SEDIMENT AND EROSION CONTROL PLAN & NOTES. 02/22/10

COUNTY OF DELAWARE, OHIO
SANITARY SEWER IMPROVEMENT PLAN
FOR
LOWER SCIOTO WATER RECLAMATION FACILITY
PROPOSED EFFLUENT LINE

EMHT
Evans, Mechwart, Hambleton & Tilton, Inc.
Engineers + Surveyors + Planners + Scientists
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Date: August, 2007
Scale: 1"=100'
Job No: 2007-1558
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