TANK SYSTEM
DESIGN ASSESSMENT REPORT
FOR
FAC POND 5 TANK T-9001

[*NOTE: To be added to the Permit in its entirety*]

Tank System Design and Assessment Report for Fac Pond 5 Tank T-9001

CWM Chemical Services, LLC
Model City, New York

April 2013
(Revised August 2013)
(Revised November 2013)

Prepared by

EnSol, Inc.
Environmental Solutions

EnSol, Inc.
Environmental Solutions

661 Main Street
Niagara Falls, NY 14301

Professional Engineering • Business Consulting

Ph (716) 285-3920 • Fx (716) 285-3928
E-Mail bshiah@ensolinc.com

Transmitted Via Electronic Mail and Hand Delivery

November 7, 2013

Mr. Stephen Rydzyk
Maintenance Manager / Engineer
CWM Chemical Services, LLC
1550 Balmer Road, P.O. Box 200
Model City, New York 14107

Re: Tank System Design and Assessment Report for Fac Pond 5
Tank T-9001
Model City, New York
EnSol Project #: 13-7006

Dear Mr. Rydzyk:

Enclosed please find two copies of the Final Report titled, *Tank System Design and Assessment Report for Fac Pond 5 Tank T-9001* dated April 2013 (revised August 2013 and November 2013), as prepared by EnSol, Inc. (EnSol). This report is provided to present applicable design and construction information for the proposed Tank T-9001 system, as described herein, to allow for storage of collected water from the secondary containment system of proposed Fac Pond 5.

The report includes an assessment and review of the structural integrity of the proposed tank system and compatibility of the materials of construction with the material expected to be handled. This assessment is intended to satisfy the State and Federal Regulations listed under 6 NYCRR Part 373-2.10(c), and 40 CFR 264.192, respectively, with regards to design and installation of new tank systems or components.

The intent of this report is to provide sufficient information to the New York State Department of Environmental Conservation (NYSDEC) for review of the proposed system design and usage, and for subsequent approval to construct and operate the tank system.

If you have any questions or require additional information, please contact me at (716) 285-3920, ext. 212.

Sincerely,

ENSOL, INC.

Brian D. Shiah, P.E.
President

Enclosures

Tank System Design and Assessment Report for Fac Pond 5 Tank T-9001

CWM Chemical Services, LLC
Model City, New York

April 2013
(Revised August 2013)
(Revised November 2013)

Prepared by
EnSol, Inc.
661 Main Street
Niagara Falls, New York 14301

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Appendices

1. Introduction

1.1 General Site Information

CWM Chemical Services, LLC (CWM) owns and operates a commercial hazardous waste treatment, storage, and disposal facility (TSDF) in Model City, Niagara County, New York. This TSDF began operating in 1972 as ChemTrol Pollution Services, Inc. Due to corporate acquisitions and name changes, CWM, a subsidiary of Waste Management, Inc., is the present owner and operator of the facility. Waste Management, Inc. is based in Houston, Texas.

The facility is located on Balmer Road in Model City, New York, approximately 1.9 miles east of New York State Route 18 (Creek Road), and occupies land in the towns of Lewiston and Porter. A Regional Location Map and Facility Location Detail are presented in Figures 1 and 2, respectively. All existing waste management units on the site are located within the Town of Porter. The contiguous property along Balmer Road is also the location of offices for the Administrative, Sales and Marketing, Data Processing, Accounting, Environmental, and Engineering Departments.

The CWM Model City facility is permitted as a TSDF under the Resource Conservation and Recovery Act (RCRA). Numerous units at the site are used to store, treat, and dispose of a variety of liquid and solid organic and inorganic hazardous wastes. Storage, treatment, and disposal capabilities include an Aqueous Wastewater Treatment System (AWTS) utilizing chemical, physical, and biological treatment processes from which treated wastewater is discharged to the Niagara River in accordance with the facility's State Pollutant Discharge Elimination System (SPDES) Permit; secure landfilling of approved waste solids and semisolids, including polychlorinated biphenyls (PCBs); waste stabilization; container and tank storage; transformer decommissioning; and PCB treatment and storage. Figure 3 presents a Facility Layout Plan.

1.2 Project Purpose and Objective

The purpose of this report is to present applicable design and construction information for the proposed Fac Pond 5 secondary containment storage tank (SCS Tank), and to document the results of an assessment conducted by EnSol, Inc. (EnSol) for this tank system. The proposed SCS Tank is a double walled pre-manufactured High Density Linear Polyethylene (HDLPE) storage tank, to be located in the Fac Pond Riser House at Fac Pond 5. Fac Pond 5 will be a newly constructed surface impoundment constructed with a double liner system. This will include leachate collection and removal system between such liners. Any liquids that reach the secondary containment will drain to a low point or sump and be pumped into the proposed SCS Tank. The SCS Tank will be housed within a Riser House at the top of the perimeter embankment of the fac pond. The proposed tank will be known as T-9001. It is intended that this report be used by CWM to aid in obtaining an approval from the New York State Department of Environmental Conservation (NYSDEC) as per 6 NYCRR 373-2.10(c) to install the tank, piping, and appurtenances, and to operate the SCS Tank system for the purpose stated above.

The objective of the assessment is to satisfy the applicable State and Federal Regulations for the installation of new tank systems as required by CWM's Sitewide Part 373 Permit #9-2934-020022/00097. As required by 6 NYCRR 373-2.10(c)(1), the owner or operator of a new tank system must obtain and submit to the NYSDEC a written assessment attesting that the tank system has sufficient structural integrity and is acceptable for storing hazardous waste.

The following information is included in this report for the proposed SCS Tank system: location, configuration, design parameters, operating procedures, materials of construction, provisions for secondary containment and leak detection, and the results of EnSol's assessment.

1.3 Tank Inspection/Assessment Requirements and Guidelines

An assessment of the subject tank system is required by State and Federal Regulations listed under 6 NYCRR 373-2.10(c) and 40 CFR 264.192, respectively, pertaining to Hazardous Waste Management Facilities. These regulations identify the assessment requirements to be met and associated activities to be performed related to the design and installation of new tank systems or components. The assessment procedure also requires an evaluation of the system design, as it pertains to the containment and detection of releases, in accordance with State and Federal Regulations listed under 6 NYCRR 373-2.10(d) and 40 CFR 264.193, respectively. Additional site-specific permit requirements may also be developed between the owner and the regulatory agencies, such as the CWM Tank and Sump Assessment Schedule included in CWM's Sitewide Permit.

In addition to general regulations and/or site-specific permit requirements, there are several recommended or applicable guidance documents pertaining to tank inspections, assessments, and design. EnSol personnel have used the primary guidance documents referenced below to conduct previous site inspections, assessments, and designs for tank systems, and to aid in the design and assessment contained herein.

i. *Guide for Inspection of Refinery Equipment, Chapter XIII, Atmospheric and Low Pressure Storage Tanks,* American Petroleum Institute (API) publication, 4th edition, 1991.

ii. *Tank Inspection, Repair, Alteration, and Reconstruction,* API Standard 653, 3rd Edition, December 2001.

iii. *Requirements for Tank and Container Storage*, NYSDEC, Technical and Administrative Guidance Memorandum No. 3019, April 23, 1991.

iv. *Concrete Secondary Containment for Tank and Container Storage*, NYSDEC, Technical and Administrative Guidance Memorandum No. 3021, March 11, 1991.

v. *Chemical Plant and Petroleum Refinery Piping*, American Society of Mechanical Engineers (ASME) Standard B31.3-1990

2. Tank Location and Description

2.1 Location

The SCS Tank will be located in the proposed Fac Pond Riser House located along the perimeter berm of Fac Pond 5. Fac Pond 5 will be constructed new as part of the RMU-2 development project. Fac Pond 5 will be located between closed landfills SLF 12 and SLF 7 to the north of the existing Leachate Tank Farm. The location of the fac pond is shown on the set of design drawings by Arcadis included in Appendix A.

2.2 Dimensions and Capacity

The SCS Tank will be a single chamber, dual walled, cylindrical vessel with a flat bottom and a flat roof, with exterior dimensions of 6 feet - 4 inches diameter x 8 feet - 10 inches high. The design capacity of the tank is 1,100 gallons.

2.3 Structural Support and Foundation

The tank will be a free standing flat bottomed tank which will be supported by a 6-inch thick reinforced concrete slab system within the Riser House. The concrete slab will be underlain with a minimum 6-inch thick layer of compacted stone. The tank will not require additional supports or tie-downs as it will not be subject to any wind, snow, significant seismic, or other external loads, however, as an added measure, tie-downs will be included to anchor the tank to the Riser House floor slab using the manufacturer provided cable restraint system or an or-equal approved system..

2.4 Materials of Construction

The SCS Tank is a 1,100 gallon High Density Linear Polyethylene (HDLPE) tank manufactured by Snyder Industries, Inc. The design shell thickness will be a minimum 0.187 inches (3/16 inch). Refer to Appendix B for additional design and construction specifications and manufacturers information.

2.5 Miscellaneous Attachments

As shown on the reference drawings in Appendix A, the SCS Tank will have one inlet and one outlet on the top of the tank and one top vent opening with breather valve. Nozzle diameters will all be 2-inches. The tank will also include an 18-inch top manway.

2.6 Process Description, Piping, and Pumping System

The proposed use of the SCS Tank will be for the storage of liquid generated from the secondary collection sump in Fac Pond 5. The liquid will be pumped up the 18-inch diameter HDPE sideslope riser pipe from the secondary collection sump via a submersible pump. The pump will be connected to the tank piping using a 2-inch diameter chemical flex hose. The tank will be equipped with a 2-inch diameter HDPE inlet pipe and flow meter to measure any liquid that is pumped into the tank. The tank will store the liquid until it can be pumped out of the tank via vacuum truck utilizing the 2-inch dip tube on the top of the tank. This liquid will then be transferred to the on-site AWTS for processing.

2.7 Overpressure/Vacuum and Overfill Protection

Primary overpressure/vacuum protection, under normal operating conditions (i.e., tank filling, content withdrawal, and diurnal breathing), will be provided by a 2-inch diameter pipe vent open to the atmosphere.

Overfill protection for the tank is provided by a high level float switch inside the tank. This switch will inhibit the inlet pump and signal an alarm light on the exterior of the building.

2.8 Protective Coatings

The tank is constructed of HDLPE resin and is inherently resistant to corrosion or chemical degradation by the anticipated liquids (Fac pond water) without the addition of any protective coatings. Chemical analysis of Fac Pond water was provided by CWM and is included in Appendix B. The tank will be housed within the Riser House, which is a heated structure; therefore, the tank will not require any additional external coatings to protect it from UV degradation or other environmental factors. Manufacturer's Specifications, including chemical resistance data and chart are included in Appendix B.

2.9 Secondary Containment and Leak Detection

Secondary containment for the SCS Tank is provided by a double walled tank construction. In the event of a leak from the primary tank, the liquid would be contained within the secondary tank. The tank's double walled design meets all volume requirements for secondary containment and will provide a minimum of 100% of the normal fill capacity of the primary tank.

Leak detection for the SCS Tank will be provided by an electronic moisture sensor placed within the interstitial space of the double walled tank. This sensor will activate a visible alarm (light) on the exterior of the Riser House which will be seen by visual means through daily inspection by CWM personnel. The tank sides, top, nozzles, and system piping are all visible for easy inspection. A drain valve located near the bottom of the secondary containment tank wall will also be available to check for liquids in the secondary containment area as an additional measure.

3. Assessment and Certification

EnSol conducted an assessment and review of the proposed SCS Tank system components at CWM's Model City facility in order to assess the integrity and to confirm the compatibility of the components with materials that are to be handled.

3.1 Design and Record Information

EnSol reviewed available design and record information that were provided by CWM and/or the various equipment and tank manufacturers. Information regarding design standards, materials of construction, structural supports, hazardous characteristics of the waste stream to be handled, and corrosion protection systems (internal and external) was obtained from these sources. EnSol did not perform compatibility studies or materials testing for the proposed system components, however; a close review and comparison of the system's specific materials of construction compared to available manufacturers published chemical compatibility and resistance data, tables, charts, and test results clearly indicates adequate compatibility with the materials expected to be handled and no chemical compatibility issues are expected. It is also noted that EnSol's extensive familiarity and experience with these materials (see Appendix C) in similar applications at CWM and elsewhere, combined with our knowledge of the materials/liquids expected to be handled within the Fac pond allows EnSol to judge the tank materials of construction to be compatible with the waste to be stored.

3.2 Summary and Conclusions

The SCS Tank system is to be used by CWM for the storage of liquids generated from the secondary containment sump in proposed Fac Pond 5. Chemical analysis of the Fac pond water typically handled, provided by CWM, does not contain constituents or concentrations harmful to the tank or piping systems. The proposed tank was specified and designed as a chemical-resistant tank that will provide maximum performance, within the specified limits, to contain aggressive chemicals at atmospheric pressures. The tank is expected to meet or exceed the conditions it will be exposed to.

In accordance with the requirements listed under 6 NYCRR 373-2.10(c)(2), the new tank system will be inspected by an independent, qualified, installation inspector or registered New York Professional Engineer prior to placing the system in use. During start up CWM will visually inspect the system components to insure they are free of leaks and any deficiencies immediately addressed.

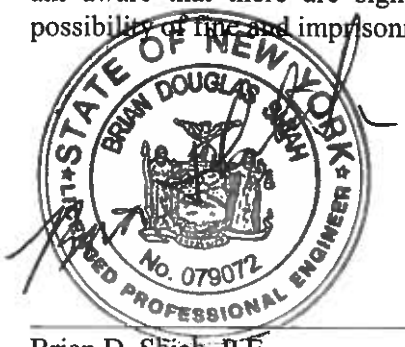
The assessment for the proposed SCS Tank system, as prepared by EnSol and presented in this report, includes consideration of the proposed tank's foundation, structural supports, secondary containment, leak detection, tank design standards, proposed equipment, and existing conditions. EnSol considers each of these items to be adequately designed and/or constructed for the intended use and, where applicable, to have sufficient structural strength. Proposed materials of construction for the systems appear to be sufficiently compatible with the materials expected to be handled. Considering the proposed use and service, the proposed tank system identified herein were judged by EnSol to be adequate for its intended service, providing the tank system operating temperature and chemical exposure limitations are not exceeded.

TANK SYSTEM DESIGN AND ASSESSMENT REPORT FOR FAC POND 5 TANK T-9001

CWM Chemical Services, LLC
Model City, New York Facility

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

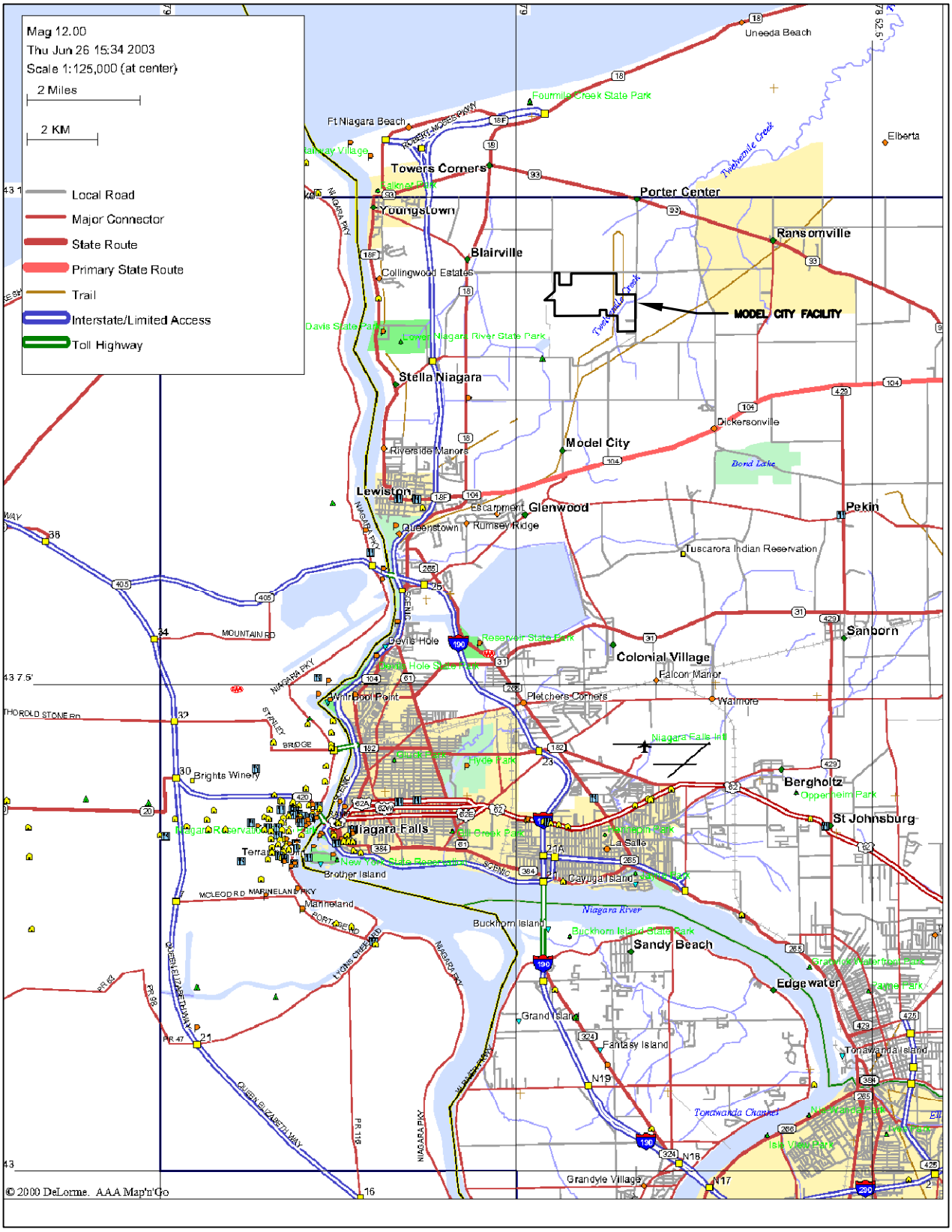


Brian D. Shiah, P.E.
ENSOL, INC.

11/7/13
Date

Figures

EnSol, Inc.



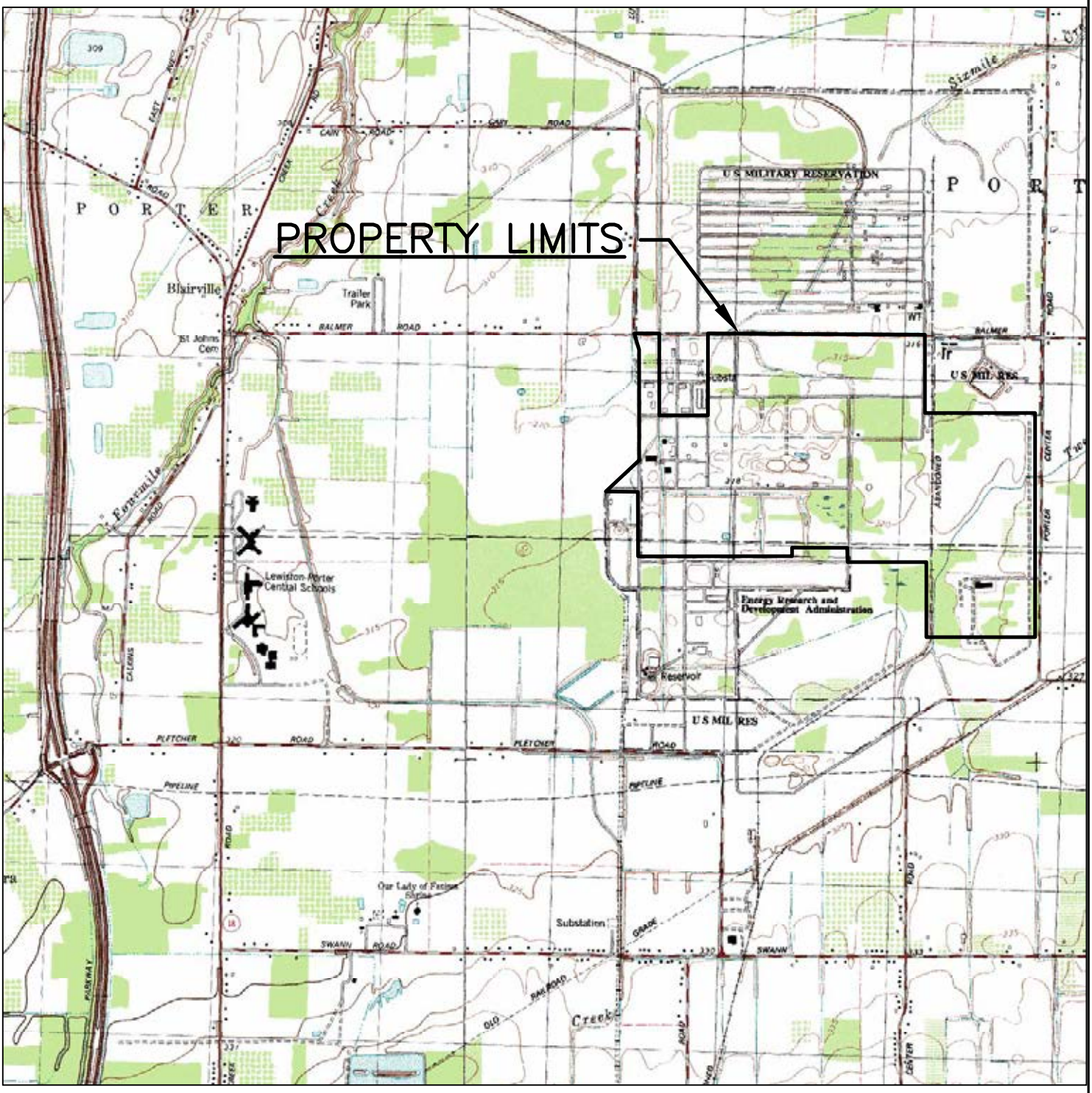
X:\AAAp\CWM\Record Site Figures, Drawings, and Documents\Report Figures (EnSol)\Fig 1_Regional Location.dwg, 8.5x11 UPDATED TITLE BLOCK, 12/4/2008 1:47:00 PM, Keith Pellerin, EnSol Inc., Letter, 1:1

EnSol, Inc.
Environmental Solutions
661 MAIN STREET
NIAGARA FALLS, NY 14301
PHONE (716) 285-3920
FAX (716) 285-3928

REGIONAL LOCATION MAP

CWM CHEMICAL SERVICES, LLC.
MODEL CITY, NY

FIGURE
1



REFERENCE: BASE MAP USGS QUADS.,7.5 MINUTE SERIES RANSOMVILLE AND LEWISTON, NY 1980.

NOTES:
1. PROPERTY LINES ARE APPROXIMATE.
2. NO DRINKING WATER WELLS EXIST WITHIN ¼ MILE OF THE FACILITY.
3. THE TREATED EFFLUENT DISCHARGE IS LOCATED AT THE NIAGARA RIVER (SHOWN ON USGS LEWISTON QUADRANGLE).
4. 710 TOTAL ACRES
5. 630 RCRA PERMITTED ACRES.

2500' 0 2500'

APPROXIMATE SCALE: 1" = 2500'

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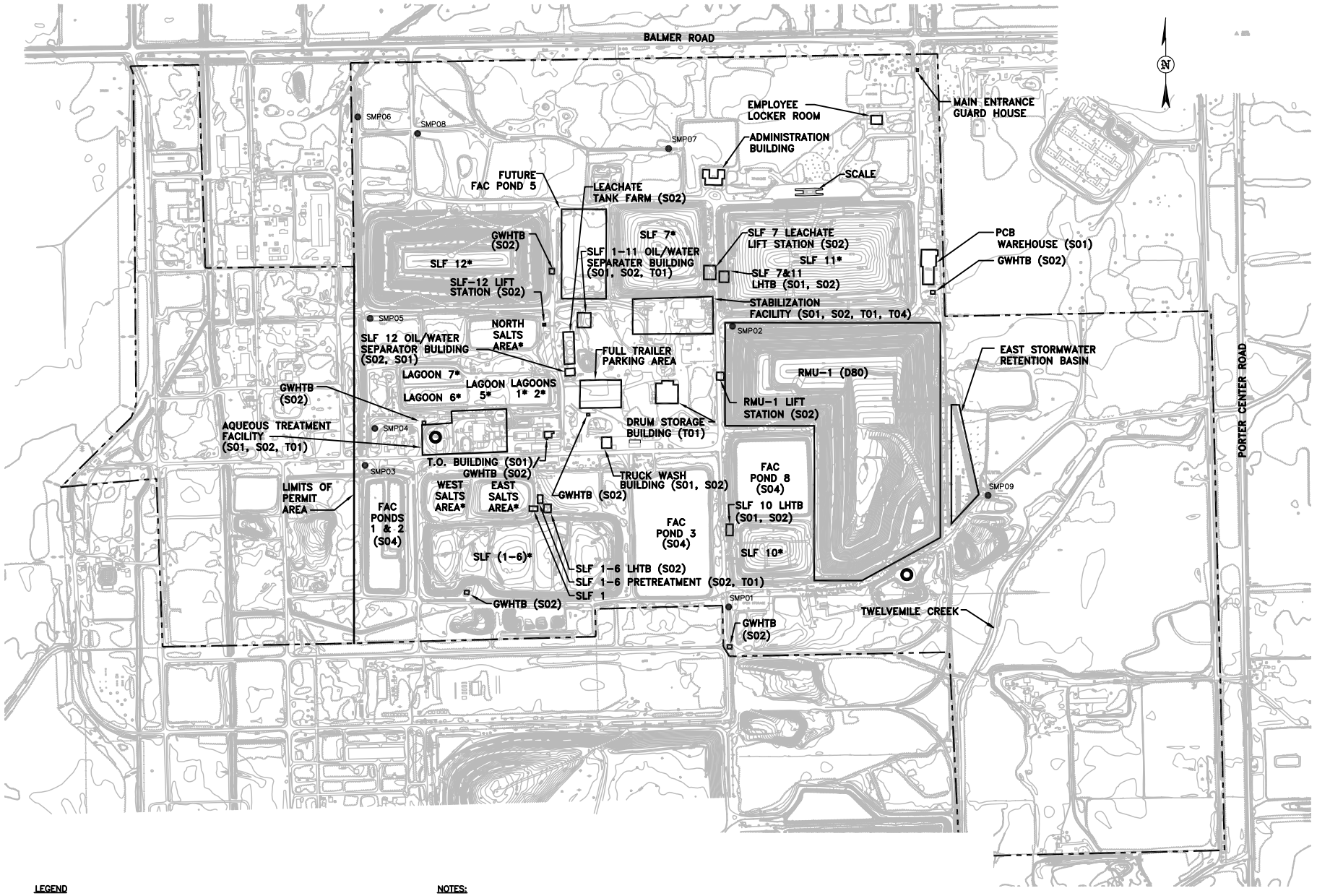
FACILITY LOCATION MAP

CWM CHEMICAL SERVICES, LLC.
MODEL CITY, NY

FIGURE
2



NYSDEC OHMS Document No: 201469232-00047

X:\AAApj\CWM\13-7006 Fac Ponds 1-2 & 5 Tank Design Assessments (Task 1)\Report\Fig 3_Facility Layout.dwg, 2/11/2013 11:32:46 AM

LEGEND

- SLF = SECURE LANDFILL
- FAC = FACULTATIVE
- LAG = LAGOON
- * = INACTIVE
- LHTB = LEACHATE HOLDING TANK BUILDING
- GWHTB = GROUNDWATER COLLECTION HOLDING TANK BUILDING
- D80 = LANDFILL
- S01 = CONTAINER STORAGE
- PROPERTY LINE
- LIMITS OF ACTIVE LANDFILL
- S02 = TANK STORAGE
- S04 = SURFACE IMPOUNDMENTS
- T01 = TANK TREATMENT
- T04 = OTHER TREATMENT
- SMP09 = SURFACE MONITORING POINT (SMP)

NOTES:

1. THIS MAP COMPILED BY PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHY DATED 5-31-01. (AIR SURVEY CORP. PROJECT NO.71010503)
2. VERTICAL DATUM BASED ON NGS MEAN SEA LEVEL.
3. GRID BASED ON LOCAL COORDINATE SYSTEM.
4. CONTOUR INTERVAL 2 FT.
5. DASHED CONTOURS INDICATE THAT GROUND IS PARTIALLY OBSCURED BY VEGETATION OR SHADOWS. THESE AREAS MAY NOT MEET STANDARD ACCURACY AND REQUIRE FIELD TESTING COMPLETION.
6. PROPERTY LINES ARE APPROXIMATE.
7. 630 PERMITTED ACRES.
8. 710 TOTAL ACRES.
9. LOCATION OF SMPs ARE APPROXIMATE.

500' 0' 500' 1000'

EnSol, Inc.
Environmental Solutions
661 MAIN STREET
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PHONE (716) 285-3920
FAX (716) 285-3926

FACILITY LAYOUT PLAN

CWM CHEMICAL SERVICES, LLC.
MODEL CITY, NY

FIGURE 3

Appendix A

Proposed Fac Pond 5 Permit Drawings (Arcadis)

EnSol, Inc.

PERMIT DRAWINGS

FAC POND 5 PERMIT DRAWINGS

CWM CHEMICAL SERVICES, LLC
MODEL CITY, NIAGARA COUNTY
NEW YORK

FEBRUARY 2013

WASTE MANAGEMENT

INDEX TO DRAWINGS

CITY: SYRACUSE, NY DIV/GROUP: ENVCAD DB: K.DAVIS LD: K.DAVIS PIC: W. POPHAM PM: W. RANKIN TM: B. STONE LYR: ON=*;OFF=*REF*
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NOT TO SCALE

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No.	Date	Revisions	By	Ckd
⚠	11/2013	REMOVED FAC POND 1/2 RECONSTRUCTION	GND	BMS

Professional Engineer's Name: JOSEPH MOLINA
Professional Engineer's No.: 072644
State: NY | Date Signed: 11/5/13 | Project Mgr.: TJF
Designed by: BMS/PTO | Drawn by: | Checked by: BMS

STATE OF NEW YORK · JOSEPH MOLINA III · 072644 · LICENSED PROFESSIONAL ENGINEER

ARCADIS

ARCADIS OF NEW YORK, INC.

CWM CHEMICAL SERVICES, LLC • MODEL CITY, NEW YORK
FAC POND 5 PERMIT DRAWINGS

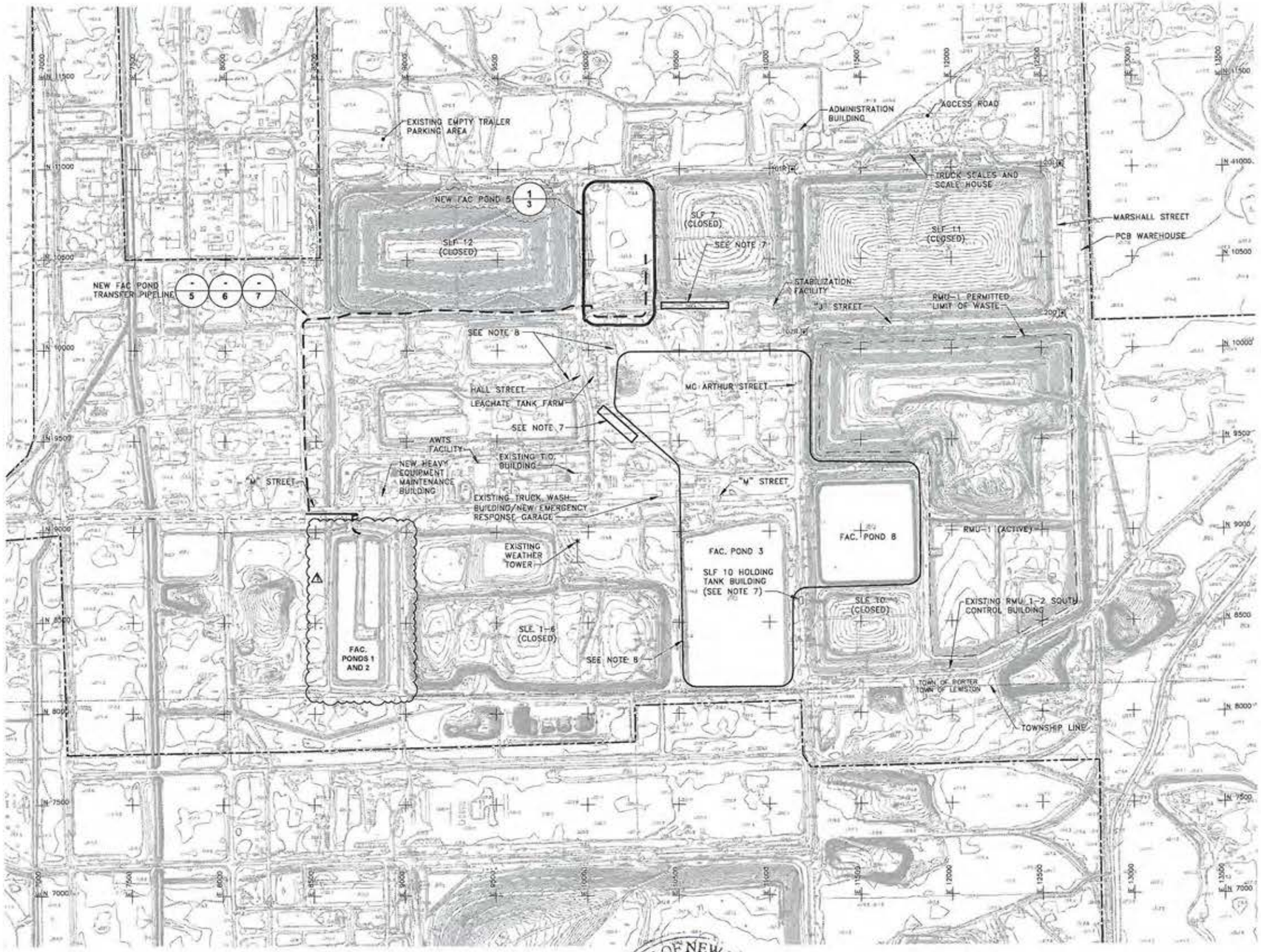
TITLE AND INDEX

GENERAL

ARCADIS Project No. B0023725.2013.00003

Date FEBRUARY 2013

ARCADIS of New York, Inc
6723 Towpath Road
P.O. Box 66
Syracuse, New York
TEL. 315.446.9120



LEGEND:

—	BRUSHLINE	•	SIGN
•	CABLE MARKER	✱	SWAMP
▬	CATCH BASIN	✚	TRAFFIC LIGHT
•	DROP INLET	○	TREE
—	FENCE	~	TREELINE
▸	FIRE HYDRANT	•	UNIDENTIFIED OBJECT
–	GUARD RAIL	▬	UTILITY POLE
✕	LIGHT POLE	▬	VALVE
•	MISCELLANEOUS POLE	———	WATER LINE
▲	MONUMENT	———	EXISTING CONTOUR
•	POST	———	EXISTING GRADEBREAK
—	RAILROAD TRACKS	– – –	PROPERTY LINE

200 ⊕ CONTROL MONUMENT (SEE TABLE BELOW)

1/3 — DETAIL REFERENCE NUMBER / DRAWING REFERENCE NUMBER

E 13500 N 7000 COORDINATE GRID (SEE NOTE 3)

RMU-1/RMU-2 CONTROL MONUMENTS

MONUMENTS	ELEVATION	CWM PLANT GRID		RMU-1 GRID		NY STATE PLANE COORDINATES (NAD-27)		NGVD-29 ELEVATION
		NORTHING	EASTING	NORTHING	EASTING	NORTHING	EASTING	
102R	319.72	100+94.55	111+87.56	100+94.55	11+87.56	1,175,430.46	396,380.12	319.66
200	318.33	101+89.56	126+13.77	101+89.56	26+13.77	1,175,488.28	397,808.18	318.27
101R	316.01	109+94.28	111+23.09	----	----	1,176,331.436	396,339.034	315.92
201	316.62	110+17.82	126+3.49	----	----	----	----	----

CONTROL MONUMENTS NOTE:

1. RMU-1 EASTING GRID COORDINATES ARE SIMPLIFIED PLANT GRID COORDINATES. SUBTRACTING 10,000 FROM THE CWM PLANT GRID EASTING COORDINATE WILL CONVERT THE CWM PLANT GRID TO THE RMU-1 GRID. NOTE THAT NO CONVERSION IS REQUIRED FOR NORTHING COORDINATES.

NOTES:

1. TOPOGRAPHIC BASE MAP CONSISTS OF COMBINATION OF DATA COMPILED BY PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHY DATED 5/31/01 BY AIR SURVEY CORP. (PROJECT NO.71010503). AND AN AUGUST 2008 SURVEY BY ENSOL, INC.
2. VERTICAL DATUM BASED ON NGS MEAN SEA LEVEL.
3. GRID COORDINATES SHOWN ARE CWM PLANT GRID.
4. CONTOUR INTERVAL 2 FT.
5. DASHED CONTOURS INDICATE THAT GROUND IS PARTIALLY OBSCURED BY VEGETATION OR SHADOWS. THESE AREAS MAY NOT MEET STANDARD ACCURACY AND REQUIRE FIELD VERIFICATION.
6. PROPERTY LINE IS APPROXIMATE. EASEMENTS AND RIGHT-OF-WAYS NOT SHOWN.
7. REFER TO DRAWINGS IN ATTACHMENT D-1 OF THE OVERALL SITE/RMU-1 PERMIT FOR FURTHER DETAIL.
8. REFER TO DRAWINGS IN ATTACHMENT J FOR FURTHER DETAIL.

CITY: SYRACUSE, NY DIV/GROUP: ENVCAD DB: K. DAVIS PIC: W. POPHAM PM: W. RANKIN TM: B. STONE LYR: ON=*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACT\B0023725\2013\00003\DWG\CONTRACT\FAC5POND\23725002.dwg LAYOUT: 2 SAVED: 11/1/2013 11:20 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: — PLOTSTYLETABLE: PLTCONT1.CTB PLOTTED: 11/1/2013 11:20 AM BY: DAVIS, KATH
XREFS: 23725X02 23725X01 23725X00 IMAGES: PROJECTNAME: —

300' 0 300' 600' 1"=300'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE.

No.	Date	Revisions	By	Ckd
1	11/2013	REMOVED FAC POND 1/2 RECONSTRUCTION	GNC	BMS

Professional Engineer's Name: JOSEPH MOLINA
Professional Engineer's No.: 072644
State: NY
Date Signed: 11/5/13
Designed by: BMS/PTO
Drawn by: SJK
Checked by: BMS
Project Mgr: TJF

STATE OF NEW YORK JOSEPH MOLINA 072644 PROFESSIONAL ENGINEER

ARCADIS
ARCADIS OF NEW YORK, INC.

CWM CHEMICAL SERVICES, LLC • MODEL CITY, NEW YORK
FAC POND 5 PERMIT DRAWINGS

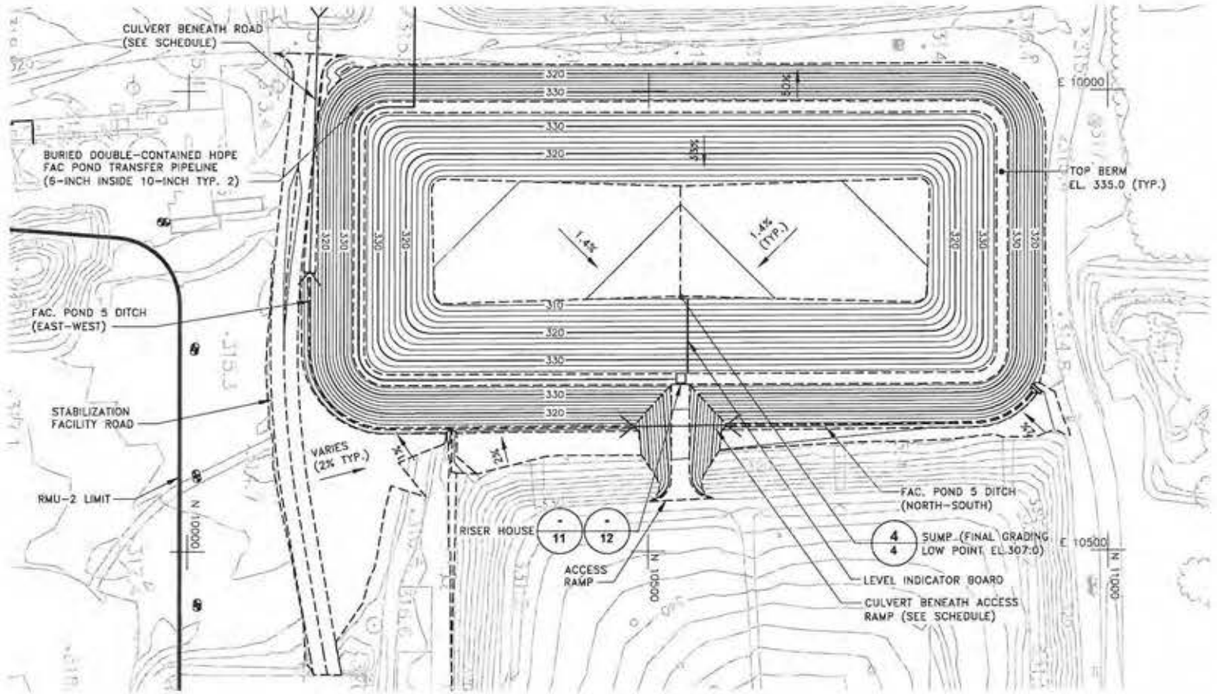
SITE PLAN

GENERAL

ARCADIS Project No.: B0023725.2013.00003
Date: FEBRUARY 2013

ARCADIS of New York, Inc.
6723 Towpath Road
P.O. Box 66
Syracuse, New York
TEL: 315.446.9120

2



FAC POND 5 PLAN (1) △

SCALE: 1"=80'

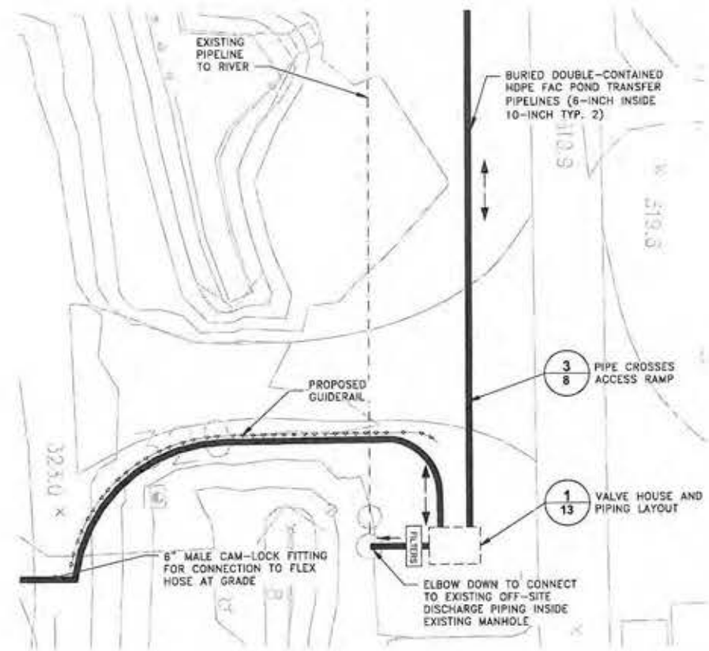
LEGEND:

- WATER LINE
- EXISTING CONTOUR
- EXISTING GRADE BREAK
- PROPERTY LINE
- 320 — PROPOSED INDEX ELEVATION CONTOUR
- PROPOSED INTERMEDIATE ELEVATION CONTOUR
- PROPOSED GRADE BREAK
- 31/3 — DETAIL REFERENCE NUMBER / DRAWING REFERENCE NUMBER
- N 8000 / E 8500 — COORDINATE GRID

NOTES:

1. SEE DRAWING 2 FOR BASEMAP INFORMATION.
2. PROPOSED GRADES REPRESENT FINAL GRADING (TOP OF BALLAST LAYER ON FLOOR AND TOP OF PRIMARY LINER ON INTERIOR SIDESLOPES).

CULVERT ID	SIZE	SLOPE %
BENEATH ACCESS RAMP	24"	0.3%
BENEATH ROAD	36"	0.3%



FAC POND 1 TRANSFER PIPELINE CONNECTION TO FILTER AND OFF-SITE DISCHARGE PIPING (2) △

SCALE: 1"=20'

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
△	11/2013	REVISED FAC POND 1/2 RECONSTRUCTION	GNC	BMS

Professional Engineer's Name: JOSEPH MOLINA
Professional Engineer's No: 072644
State: NY
Date Signed: 11/5/13
Designed by: BMS/PTO
Drawn by: SJK
Project Mgr: TJR
Checked by: BMS

ARCADIS

ARCADIS OF NEW YORK, INC.

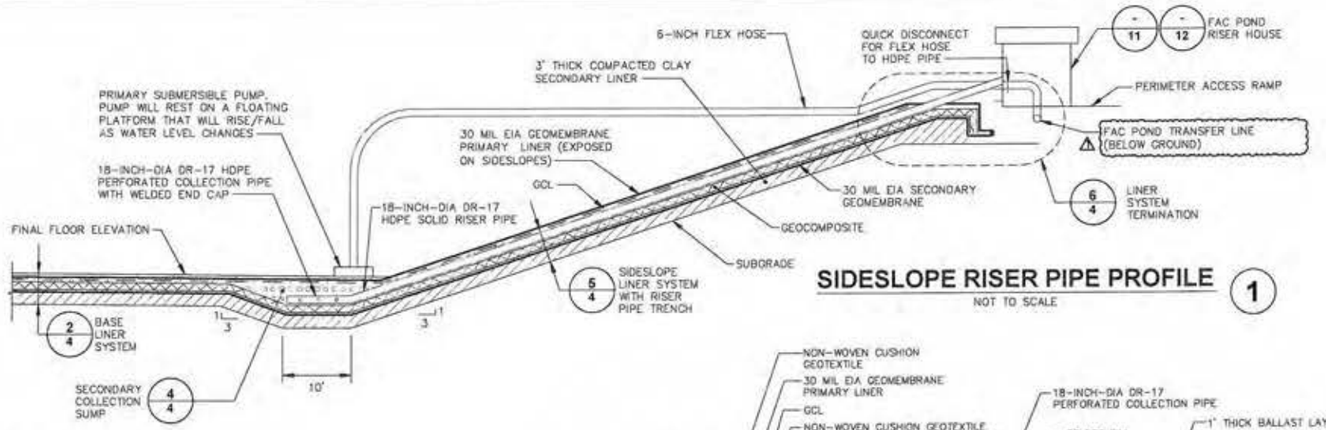
CWM CHEMICAL SERVICES, LLC • MODEL CITY, NEW YORK
FAC POND 5 PERMIT DRAWINGS

FAC POND GRADING PLAN

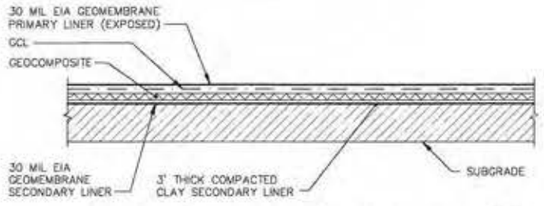
GENERAL

ARCADIS Project No: B0023725.2013.00003
Date: FEBRUARY 2013
ARCADIS of New York, Inc
6723 Towpath Road
P.O. Box 66
Syracuse, New York
TEL: 315.446.9120

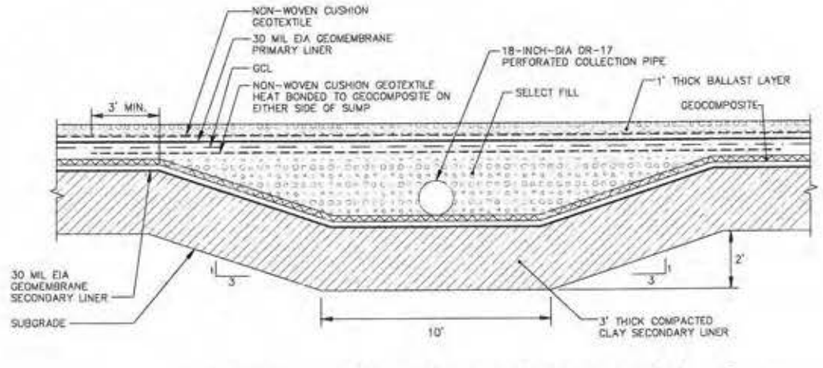
3



SIDESLOPE RISER PIPE PROFILE (1)
NOT TO SCALE



SIDESLOPE LINER SYSTEM (3)
NOT TO SCALE



SECONDARY COLLECTION SUMP SECTION (4)
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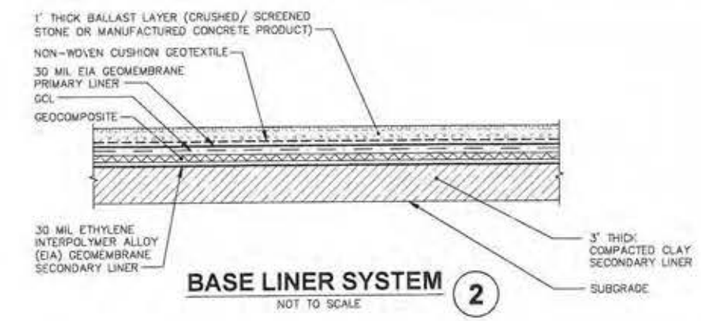
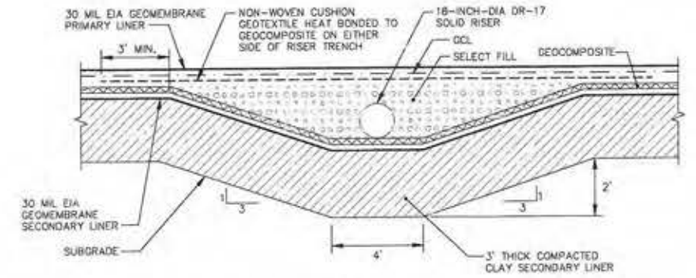
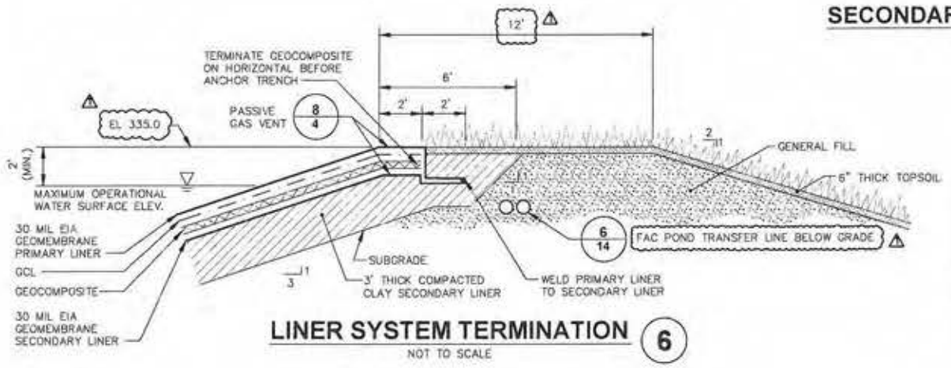


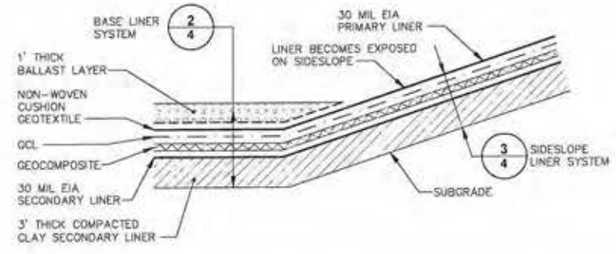
BASE LINER SYSTEM (2)
NOT TO SCALE



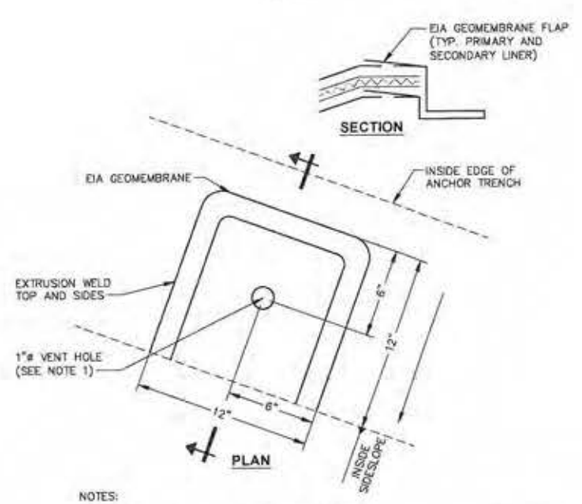
SIDESLOPE LINER SYSTEM WITH RISER PIPE TRENCH (5)
NOT TO SCALE



LINER SYSTEM TERMINATION (6)
NOT TO SCALE

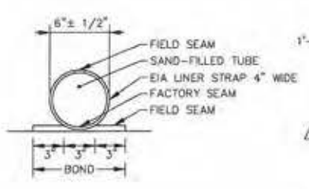


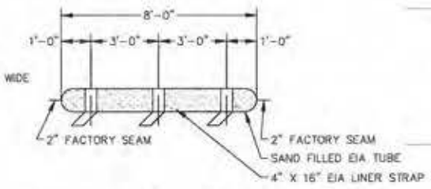
FLOOR TO SIDESLOPE TRANSITION (7)
NOT TO SCALE



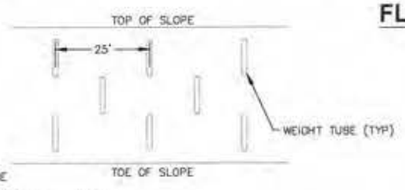
NOTES:
1. VENT POCKETS SHALL BE INSTALLED EVERY 200 FEET ALONG TOP OF SLOPE OF LINER SYSTEM.
2. AT EACH VENT POCKET LOCATION BOTH UPPER AND LOWER GEOMEMBRANES SHALL BE VENTED.

VENT POCKET DETAIL (8)
NOT TO SCALE





WEIGHT TUBE DETAIL (9)
NOT TO SCALE



NOTE:
1. WEIGHT TUBE SHALL BE PLACED EVERY 25' ALONG FAC POND SIDESLOPES.

GENERAL NOTE:
1. GEOSYNTHETICS ARE SHOWN AT AN EXAGGERATED SCALE IN CERTAIN DETAILS FOR CLARITY.

NOT TO SCALE

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE.

No.	Date	Revisions	By	Ckd
1	11/7/2013	REMOVED FAC POND 1/2 RECONSTRUCTION	GNG	BMS

Professional Engineer's Name: JOSEPH MOLINA
Professional Engineer's No.: 072644
State: NY
Date Signed: 11/5/13
Designed by: GNG
Drawn by: LAF
Checked by: BMS

ARCADIS
ARCADIS OF NEW YORK, INC.

CWM CHEMICAL SERVICES, LLC • MODEL CITY, NEW YORK
FAC POND 5 PERMIT DRAWINGS

FAC POND SECTIONS AND DETAILS

GENERAL

ARCADIS Project No: B0023725.2013.00003
Date: FEBRUARY 2013

ARCADIS of New York, Inc.
6723 Towpath Road
P.O. Box 66
Syracuse, New York
TEL: 315.446.9120

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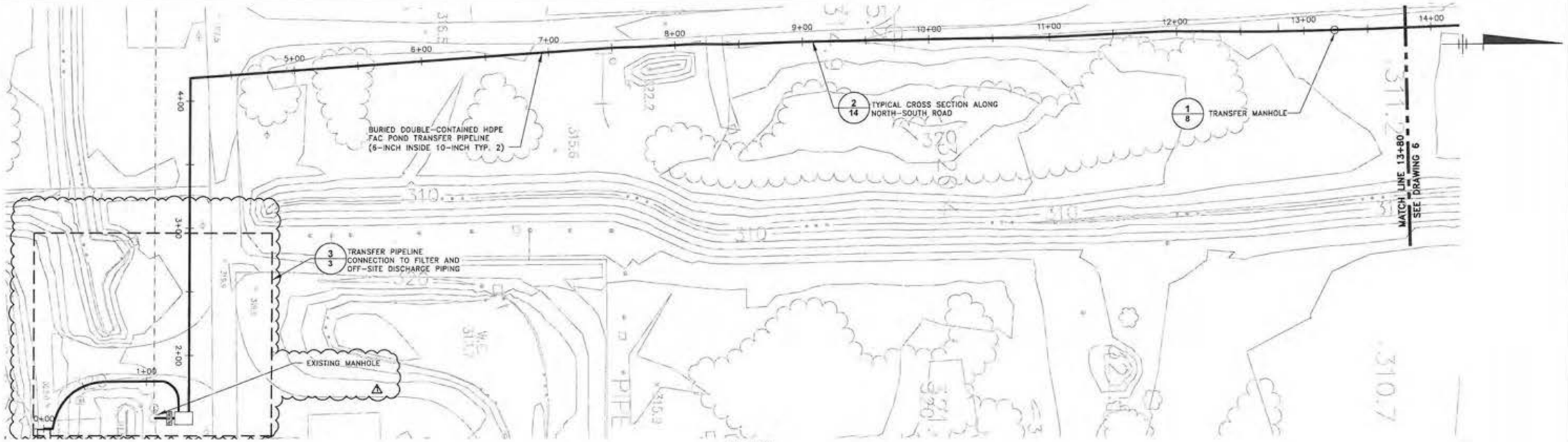

PLAN

0 40' 80'
SCALE: 1"=40'

PROFILE

0 50' 100'
HORIZONTAL SCALE: 1"=50'
0 10' 20'
VERTICAL SCALE: 1"=10'

NOTES:

1. ADDITIONAL PIPING (NOT SHOWN) WILL BE INSTALLED WITHIN EXISTING MANHOLE TO CONNECT NEW TRANSFER PIPELINES TO EXISTING OFF-SITE DISCHARGE PIPING.
2. ELEVATIONS REFERENCED REPRESENT INVERT OF THE CONTAINMENT PIPE (OUTER), EXCEPT WHERE SINGLE-CONTAINED PIPE IS INDICATED.
3. DUCTILE IRON SLEEVE PIPE SHALL BE USED TO PROTECT HDPE PIPE AT ALL ROAD CROSSINGS.

STATE OF NEW YORK JOSEPH MOLINA 072644 LICENSED PROFESSIONAL ENGINEER

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
1	11/2013	REMOVED FAC POND 1/2 RECONSTRUCTION	GNC	BMS

Professional Engineer's Name: JOSEPH MOLINA
Professional Engineer's No.: 072644
State: NY
Date Signed: 11/15/13
Designed by: TJF
Drawn by: SJK
Checked by: BMS

ARCADIS
ARCADIS OF NEW YORK, INC.

CWM CHEMICAL SERVICES, LLC • MODEL CITY, NEW YORK
FAC POND 5 PERMIT DRAWINGS

FAC POND TRANSFER PIPELINE

GENERAL

ARCADIS Project No.: B0023725.2013.00003
Date: FEBRUARY 2013
ARCADIS of New York, Inc.
6723 Towpath Road
P.O. Box 66
Syracuse, New York
TEL: 315.446.9120

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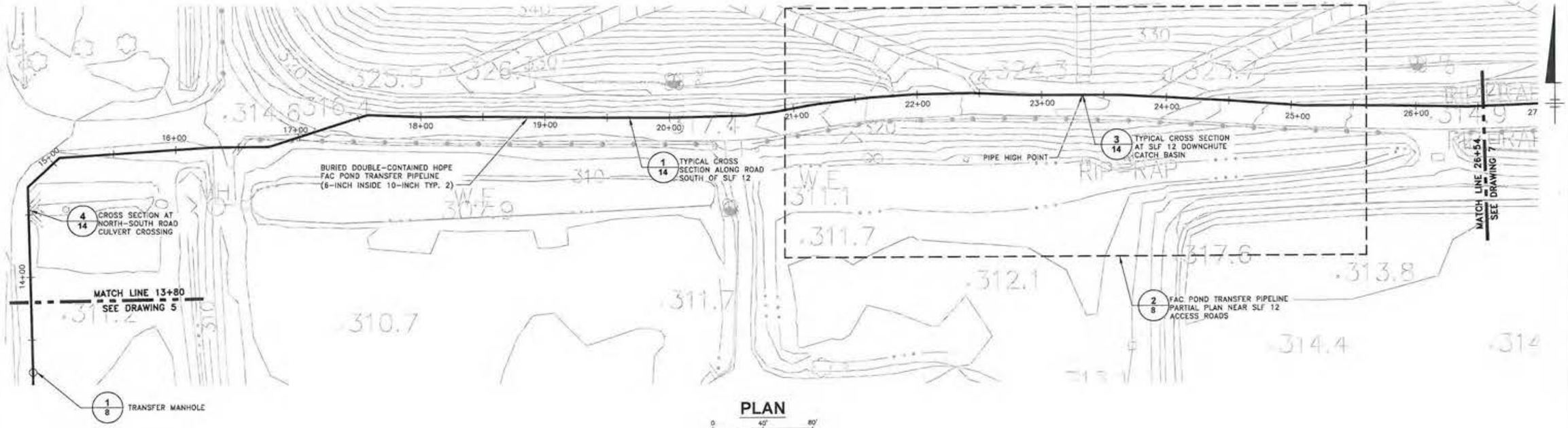
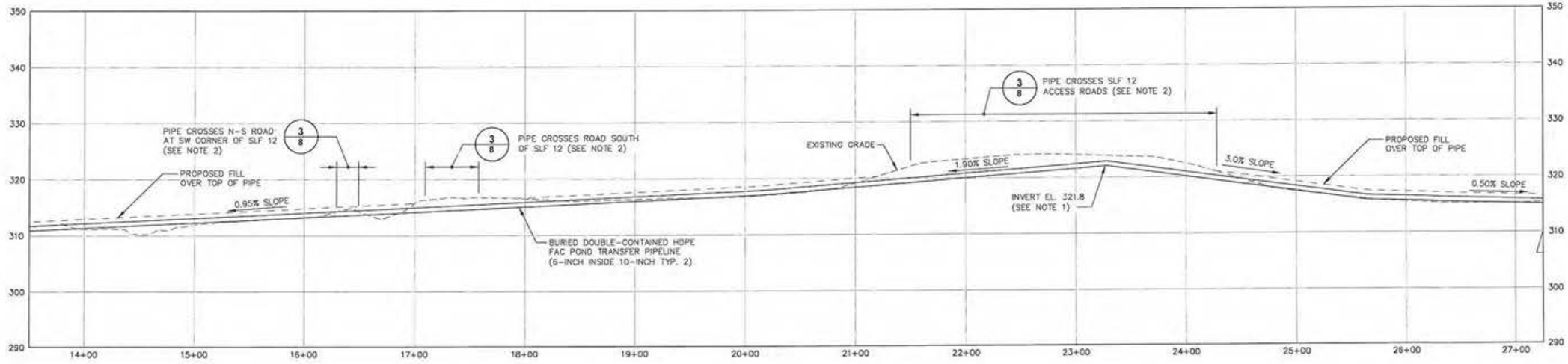


PLAN

0 40' 80'

SCALE: 1"=40'



NOTES:

1. ELEVATIONS REFERENCED REPRESENT INVERT OF THE CONTAINMENT PIPE (OUTER).
2. DUCTILE IRON SLEEVE PIPE SHALL BE USED TO PROTECT HDPE PIPE AT ALL ROAD CROSSINGS.

PROFILE

0 50' 100'

HORIZONTAL SCALE: 1"=50'

0 10' 20'

VERTICAL SCALE: 1"=10'

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Chk

Professional Engineer's Name: JOSEPH MOLINA
Professional Engineer's No.: 072644
State: NY
Date Signed: 11/5/13
Project Mgr: TJF
Designed by
Drawn by: SJK
Checked by: BMS

STATE OF NEW YORK JOSEPH MOLINA 072644 LICENSED PROFESSIONAL ENGINEER

ARCADIS

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CWM CHEMICAL SERVICES, LLC • MODEL CITY, NEW YORK
FAC POND 5 PERMIT DRAWINGS

FAC POND TRANSFER PIPELINE

GENERAL

ARCADIS Project No.: B0023725.2013.00003
Date: FEBRUARY 2013

ARCADIS of New York, Inc.
6723 Towpath Road
P.O. Box 66
Syracuse, New York
TEL: 315.446.9120

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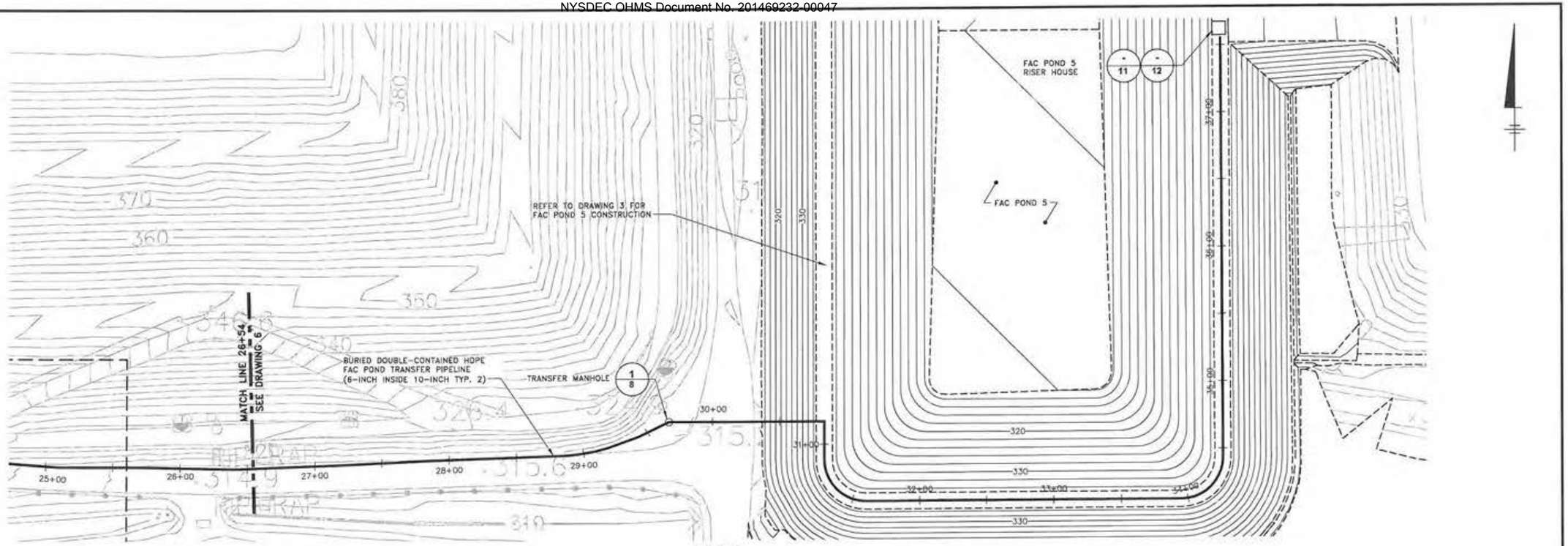
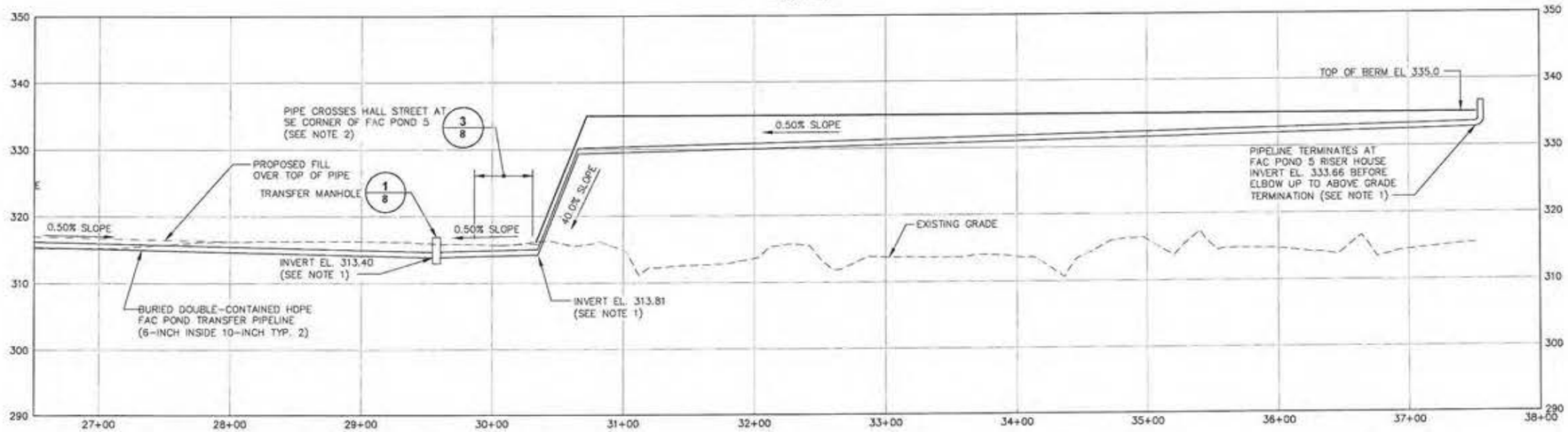


PLAN

SCALE: 1"=40'



PROFILE

HORIZONTAL SCALE: 1"=50'
VERTICAL SCALE: 1"=10'

NOTES:

1. ELEVATIONS REFERENCED REPRESENT INVERT OF THE CONTAINMENT PIPE (OUTER).
2. DUCTILE IRON SLEEVE PIPE SHALL BE USED TO PROTECT HDPE PIPE AT ALL ROAD CROSSINGS.

XREFS: 23725X02 23725X01 23725X12 23725X09
IMAGES:
PROJECTNAME: —

CITY: SYRACUSE_NY DIV/GROUP: ENVICAD DB: K DAVIS PIC: W POPHAM PM: W RANKIN TM: B STONE LYR: ON=*;OFF=*REF*
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SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: JOSEPH MOLINA
Professional Engineer's No.: 072644
State: NY
Date Signed: 11/5/13
Designed by: TJF
Drawn by: SJK
Checked by: BMS

STATE OF NEW YORK JOSEPH MOLINA III 072644 PROFESSIONAL ENGINEER

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FAC POND 5 PERMIT DRAWINGS

FAC POND TRANSFER PIPELINE

GENERAL

ARCADIS Project No.: B0023725.2013.00003
Date: FEBRUARY 2013

ARCADIS of New York, Inc.
6723 Towpath Road
P.O. Box 66
Syracuse, New York
TEL. 315.446.9120

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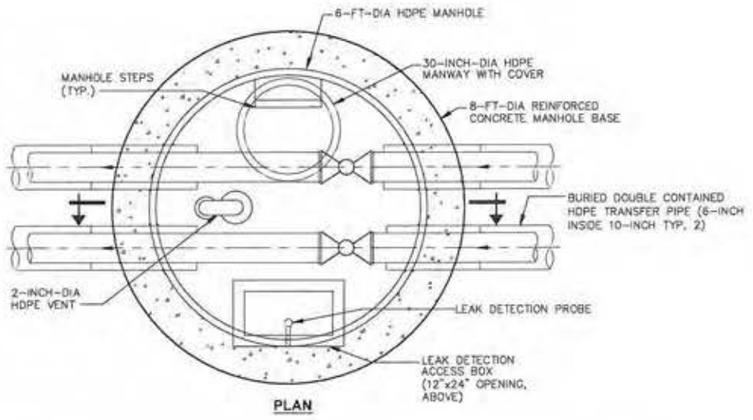
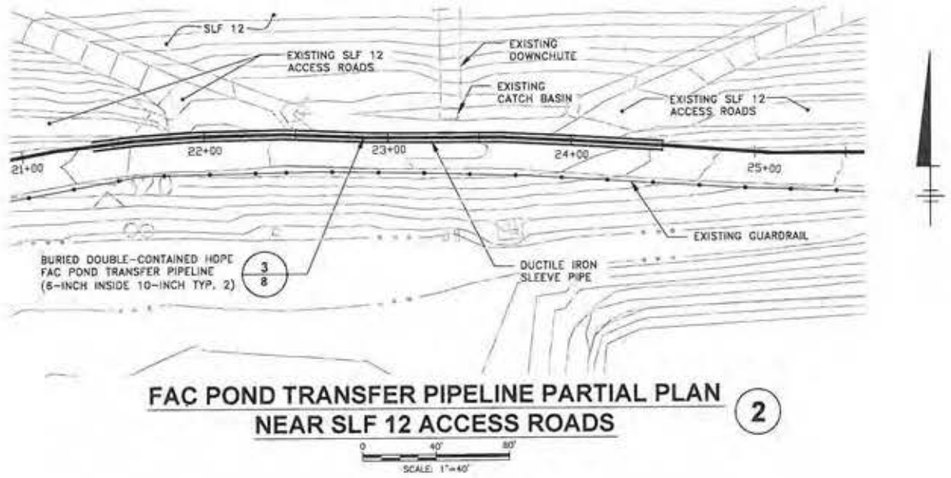
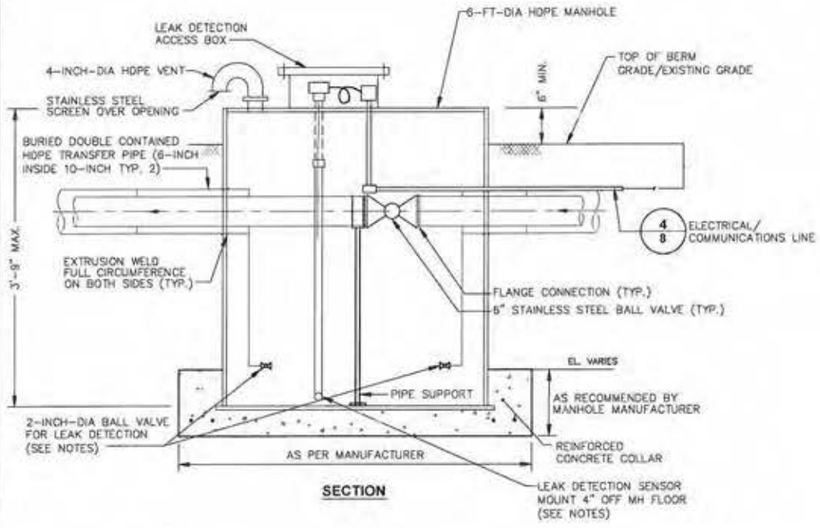


PLAN



FAC POND TRANSFER PIPELINE PARTIAL PLAN NEAR SLF 12 ACCESS ROADS (2)



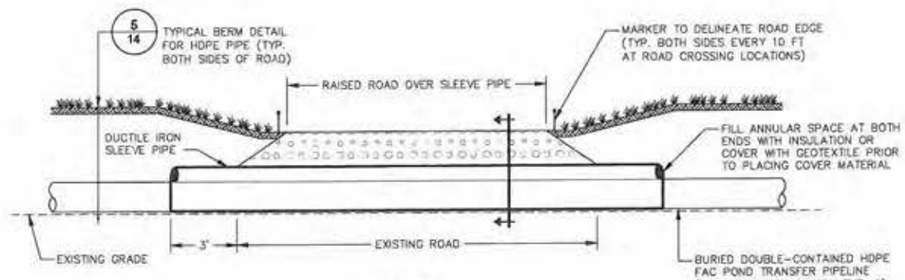
SECTION

NOTES:

1. INSTALL LEAK DETECTION VALVES AT LOW POINTS ONLY.
2. SEAL END OF SECONDARY TRANSFER HDPE PIPE FOR TESTING PURPOSES. 1" THICK FLATSTOCK RING TO BE EXTRUSION WELDED TO BOTH PRIMARY AND SECONDARY PIPES.
3. ELECTRONIC LEAK DETECT SENSORS WIRED TO FAC POND TRANSFER PUMPS TO AUTOMATICALLY SHUT OFF PUMPS WHEN ACTIVATED.

TYPICAL TRANSER MANHOLE (1)

NOT TO SCALE



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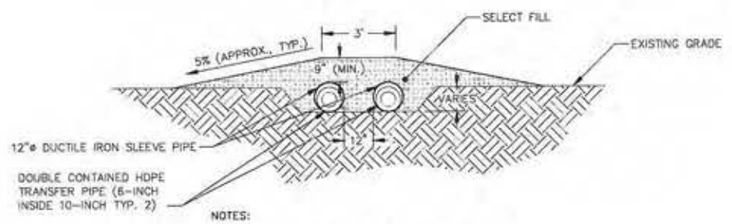


NOTES:

1. DUCTILE IRON SLEEVE PIPE SHALL BE USED TO PROTECT HDPE PIPE AT ALL ROAD CROSSINGS.
2. DUCTILE IRON PIPE SHALL HAVE MINIMUM WALL THICKNESS OF 0.50 INCHES.
3. PIPE DEPTH BELOW GROUND VARIES DEPENDING ON LOCATION.

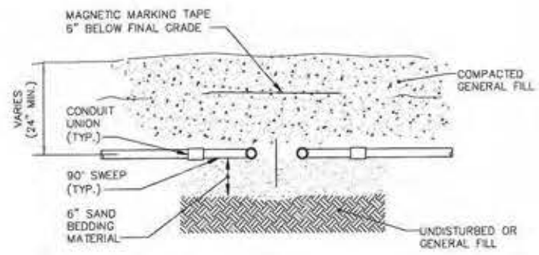
SECTION

FAC POND TRANSFER PIPELINE ROAD CROSSING (3)

NOT TO SCALE

GENERAL NOTE:

1. ALL HDPE PIPING SHALL BE DR-11.



NOTES:

1. NUMBER AND SIZE OF CONDUITS MAY VARY.
2. CONDUITS TO BE SPACED 6" APART MINIMUM.
3. POWER CONDUITS: RIGID STEEL PVC COATED (PLASTI-BOND), SIZE MAY VARY.
4. I/O COMM CONDUIT: 1" RIGID STEEL PVC COATED (PLASTI-BOND).

TYPICAL UNDERGROUND CONDUIT INSTALLATION DETAIL (4)

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: JOSEPH MOLINA
Professional Engineer's No.: 072644
State: NY | Date Signed: 1/15/13 | Project Mgr: TJF
Designed by | Drawn by: BKD | Checked by: BMS

ARCADIS

ARCADIS OF NEW YORK, INC.

CWM CHEMICAL SERVICES, LLC • MODEL CITY, NEW YORK
FAC POND 5 PERMIT DRAWINGS

FAC POND TRANSFER PIPELINE DETAILS

GENERAL

ARCADIS Project No.: B0023725.2013.00003
Date: FEBRUARY 2013
ARCADIS of New York, Inc. 6723 Towpath Road P.O. Box 66 Syracuse, New York TEL: 315.446.9120

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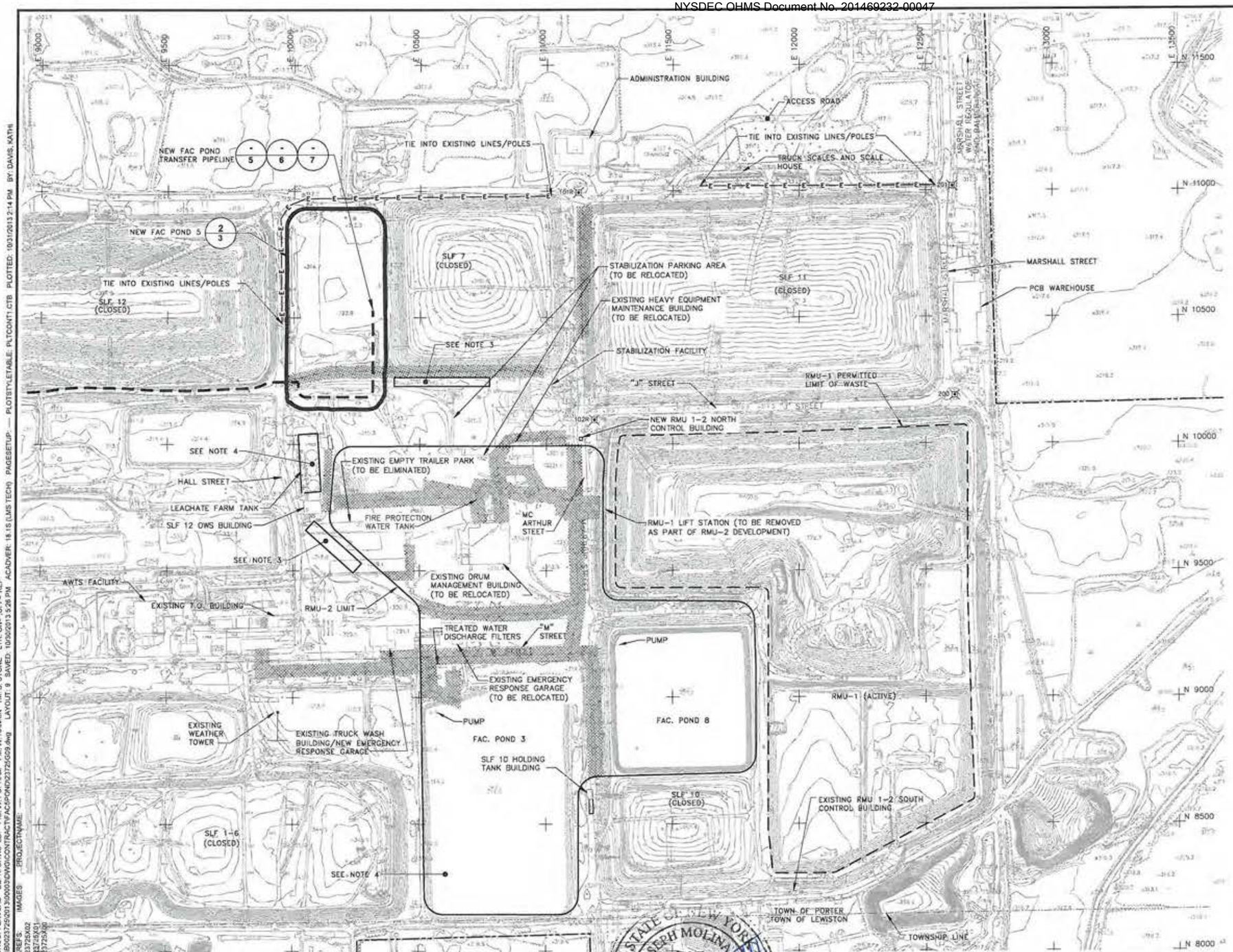

LEGEND:

- BRUSHLINE
- CABLE MARKER
- CATCH BASIN
- DROP INLET
- FENCE
- FIRE HYDRANT
- GUARD RAIL
- LIGHT POLE
- MISCELLANEOUS
- POLE
- MONUMENT POST
- RAILROAD TRACKS
- SIGN
- SWAMP
- TRAFFIC LIGHT
- TREE
- TREELINE
- UNIDENTIFIED OBJECT
- UTILITY POLE
- VALVE
- WATER LINE
- EXISTING CONTOUR
- EXISTING GRADEBREAK
- PROPERTY LINE
- ELECTRICAL UTILITIES TO BE REMOVED
- ABOVE-GROUND ELECTRICAL UTILITIES
- UNDERGROUND ELECTRICAL UTILITIES
- PROPOSED ABOVE-GROUND ELECTRICAL UTILITIES
- 200 CONTROL MONUMENT (SEE TABLE BELOW)
- 2/33 DETAIL REFERENCE NUMBER / DRAWING REFERENCE NUMBER
- E 13500 N 7000 COORDINATE GRID (SEE NOTE 3)

NOTES:

1. REFER TO DRAWING NO. 2 FOR ADDITIONAL BASEMAP INFORMATION.
2. ELECTRICAL UTILITIES SHOWN ARE APPROXIMATE AND ARE BASED ON SITE OBSERVATIONS MADE IN 2003 BY BLASLAND, BOUCK & LEE, INC. (NOW KNOWN AS ARCADIS) AND INPUT FROM CWM. POINT OF CONNECTION BETWEEN EXISTING AND PROPOSED UTILITIES ARE APPROXIMATE.
3. REFER TO DRAWINGS IN ATTACHMENT D-1 OF THE OVERALL SITE/RMU-1 PERMIT FOR FURTHER DETAIL.
4. REFER TO DRAWINGS IN ATTACHMENT J FOR FURTHER DETAIL.

CITY: SYRACUSE, NY DIV/GROUP: ENVCAD DB: K DAVIS LD: PIC: W. POPHAM PM: W. RANKIN TM: B. STONE LYR: ON=*;OFF=*REF* G:\ENVCAD\SYRACUSE\ACTIVE\60023725\2013\0003\CWG\CONTRACT\FACPOND\23725D09.dwg LAYOUT: 9 SAVED: 10/30/2013 5:26 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTCONT1.CTB PLOTTED: 10/31/2013 2:14 PM BY: DAVIS, KATHI

XREFS: 23725X02 23725X01 23725X00 IMAGES: PROJECTNAME:

1"=200' (200' 0 200' 400')

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE.

No	Date	Revisions	By	Ckd

Professional Engineer's Name	JOSEPH MOLINA
Professional Engineer's No.	072644
State	NY
Date Signed	11/5/13
Project Manager	TJF
Designed by	BMS/NWF
Drawn by	SJK
Checked by	BMS

STATE OF NEW YORK JOSEPH MOLINA 072644 LICENSED PROFESSIONAL ENGINEER

ARCADIS

ARCADIS OF NEW YORK, INC.

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FAC POND 5 PERMIT DRAWINGS

SITE ELECTRICAL FEED RELOCATION PLAN

GENERAL

ARCADIS Project No.	B0023725.2013.00003
Date	FEBRUARY 2013

ARCADIS of New York, Inc.
6723 Towpath Road
P.O. Box 66
Syracuse, New York
TEL: 315.446.9120

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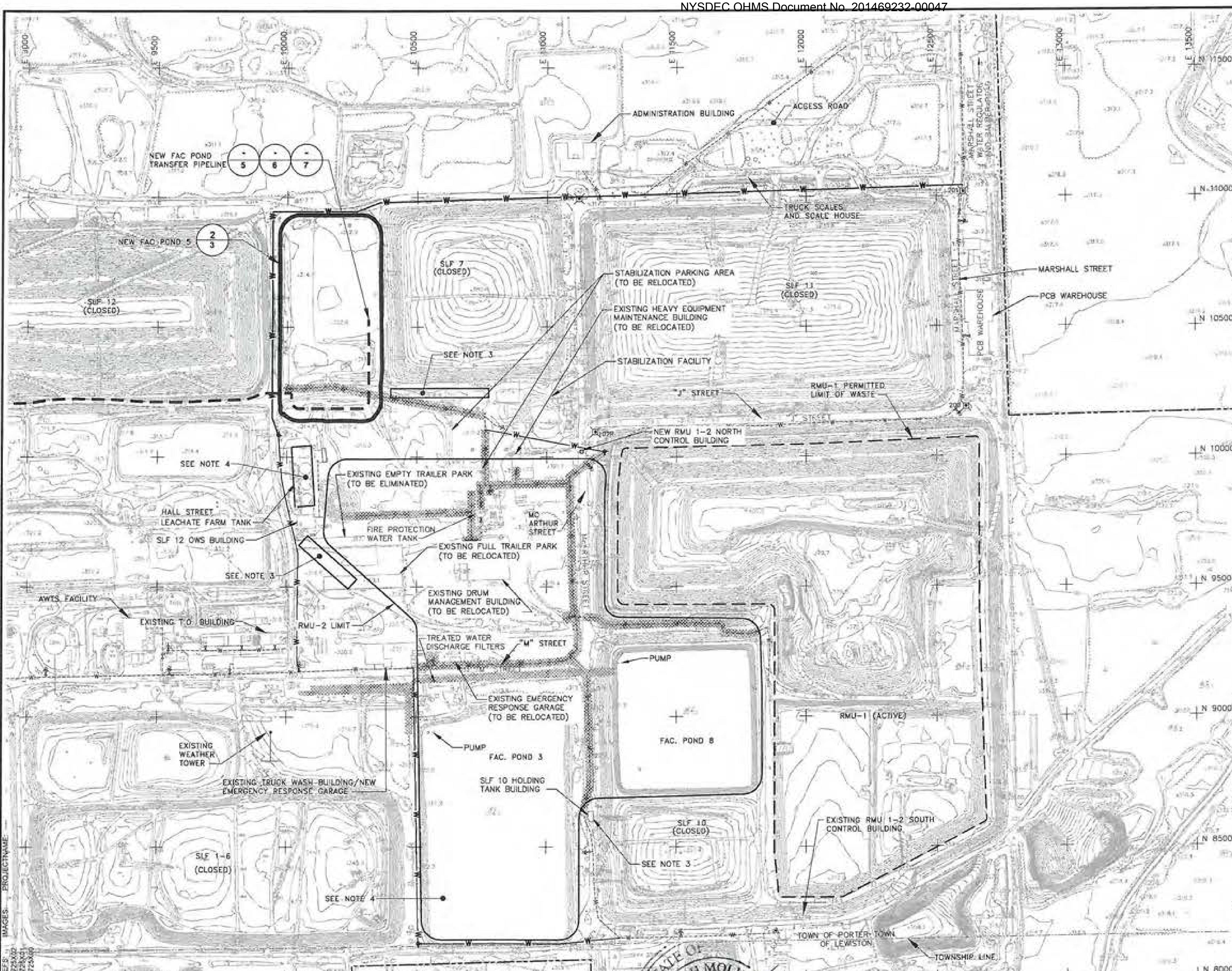

LEGEND:

- BRUSHLINE
- CABLE MARKER
- CATCH BASIN
- DROP INLET
- FENCE
- FIRE HYDRANT
- GUARD RAIL
- LIGHT POLE
- MISCELLANEOUS
- POLE
- MONUMENT POST
- RAILROAD TRACKS
- SIGN
- SWAMP
- TRAFFIC LIGHT
- TREE
- TREELINE
- UNIDENTIFIED OBJECT
- UTILITY POLE
- VALVE
- POTABLE WATER
- REROUTE OF WATER SUPPLY
- NEW WATERLINE
- EXISTING CONTOUR
- EXISTING GRADEBREAK
- PROPERTY LINE
- ACTIVE WATER SUPPLY LINES TO BE DISCONNECTED AND ABANDONED IN PLACE AND/OR REMOVED
- 200 CONTROL MONUMENT
- 2 / 33 — DETAIL REFERENCE NUMBER / DRAWING REFERENCE NUMBER
- E 13500 N 7000 COORDINATE GRID

NOTES:

1. REFER TO DRAWING NO. 2 FOR ADDITIONAL BASEMAP INFORMATION.
2. WATER SUPPLY LINES SHOWN ARE APPROXIMATE AND ARE BASED ON SITE OBSERVATIONS MADE IN 2003 BY BLASLAND, BOUCK & LEE, INC. (NOW KNOWN AS ARCADIS) AND INPUT FROM CWM. POINT OF CONNECTION BETWEEN EXISTING AND PROPOSED WATER SUPPLY LINES ARE APPROXIMATE.
3. REFER TO DRAWINGS IN ATTACHMENT D-1 OF THE OVERALL SITE/RMU-1 PERMIT FOR FURTHER DETAIL.
4. REFER TO DRAWINGS IN ATTACHMENT J FOR FURTHER DETAIL.

CITY: SYRACUSE, NY DIV/GROUP: ENVCAD DB: K. DAVIS LD: PIC: W. POPHAM PM: W. RANKIN TM: B. STONE LYR: ON=*;OFF=*REF* PLOTSTYLETABLE: PLTCONT/.CTB PLOTTED: 10/31/2013 2:15 PM BY: DAVIS, KATHI

200' 0 200' 400'
1"=200'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

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Professional Engineer's Name: JOSEPH MOLINA
Professional Engineer's No.: 072644
State: NY | Date Signed: 11/5/13 | Project Mgr.: TJF
Designed by: BMS/NWF | Drawn by: LAF | Checked by: BMS

STATE OF NEW YORK · JOSEPH MOLINA · 072644 · LICENSED PROFESSIONAL ENGINEER

ARCADIS
ARCADIS OF NEW YORK, INC.

CWM CHEMICAL SERVICES, LLC • MODEL CITY, NEW YORK
FAC POND 5 PERMIT DRAWINGS

SITE WATER SUPPLY RELOCATION PLAN

GENERAL

ARCADIS Project No. B0023725.2013.00003
Date: FEBRUARY 2013
ARCADIS of New York, Inc. 6723 Towpath Road P.O. Box 66 Syracuse, New York TEL 315.446.9120

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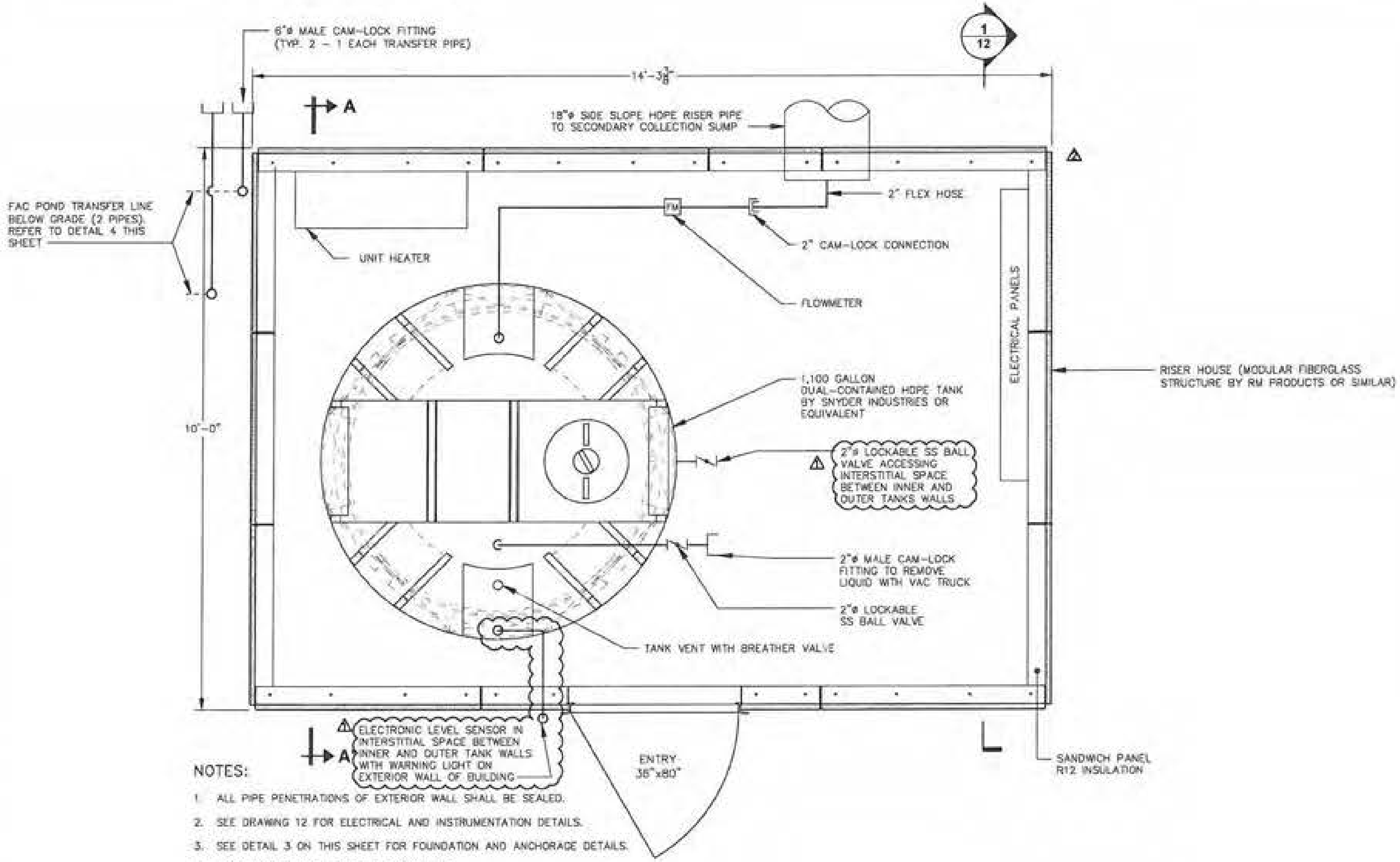
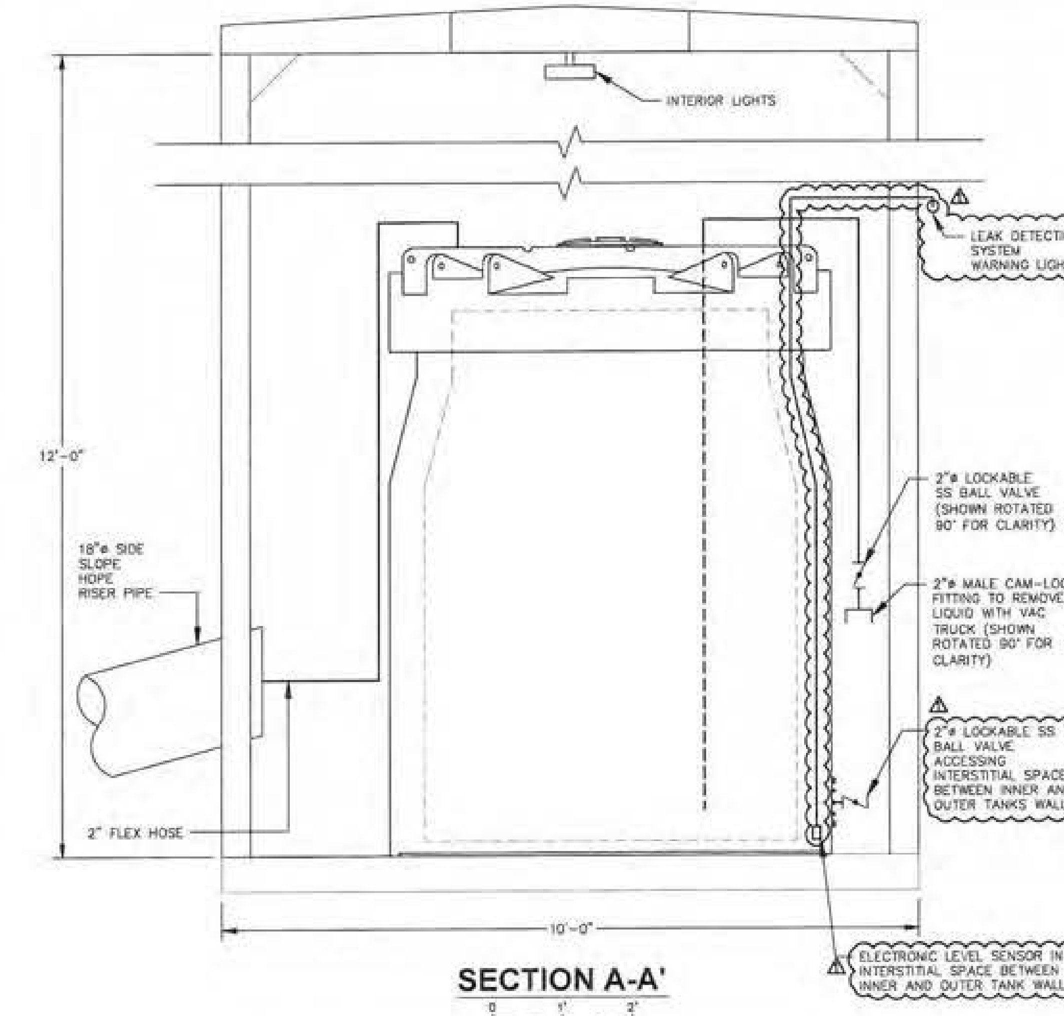


NOTES:

1. ALL PIPE PENETRATIONS OF EXTERIOR WALL SHALL BE SEALED.
2. SEE DRAWING 12 FOR ELECTRICAL AND INSTRUMENTATION DETAILS.
3. SEE DETAIL 3 ON THIS SHEET FOR FOUNDATION AND ANCHORAGE DETAILS.
4. END OF SIDESLOPE RISER TO REMAIN OPEN.

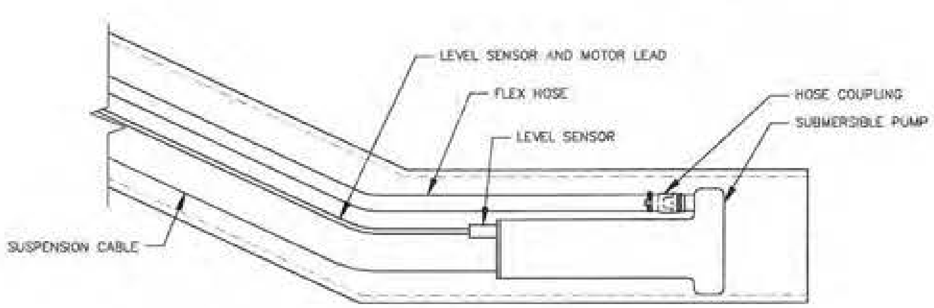
PLAN (1)

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



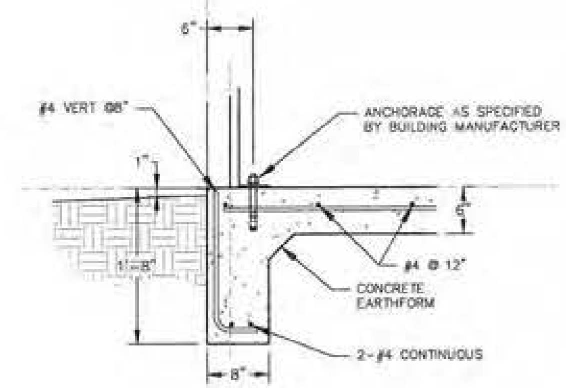
SECTION A-A'

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



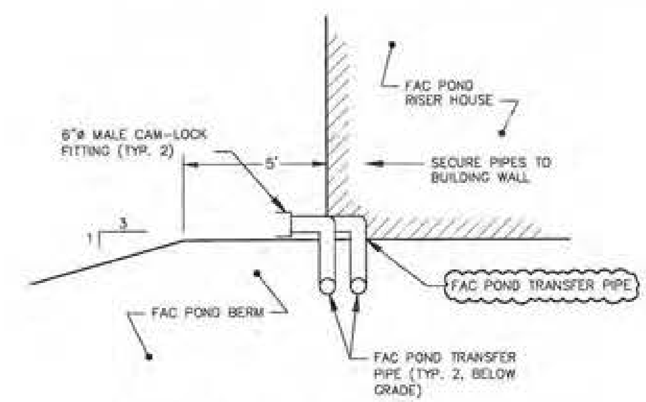
SECONDARY COLLECTION SUMP PUMP INSTALLATION DETAIL (2)

NOT TO SCALE



PROPOSED RISER HOUSE FOUNDATION (3)

SCALE: 1"=1'-0"



FAC POND TRANSFER PIPELINE TERMINATION (4)

NOT TO SCALE

NOT TO SCALE

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd
2	11/2013	REMOVED FAC POND 1/2 RECONSTRUCTION	GNG	BMS
1	10/2013	ADDED ELECTRONIC LEAK DETECTION AND WARNING LIGHT	PTD	BMS

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Professional Engineer's Name: JOSEPH MOLINA
Professional Engineer's No.: 072644
State: NY | Date Signed: 11/5/13 | Project Mgr.: TJF
Designed by: CDL | Drawn by: SJK | Checked by: BMS

STATE OF NEW YORK · JOSEPH MOLINA · 072644 · PROFESSIONAL ENGINEER

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FAC POND RISER HOUSE MECHANICAL INSTALLATION DETAILS

GENERAL

ARCADIS Project No. B0023725.2013.00003
Date: FEBRUARY 2013
ARCADIS of New York, Inc.
6723 Towpath Road
P.O. Box 66
Syracuse, New York
TEL. 315.446.9120

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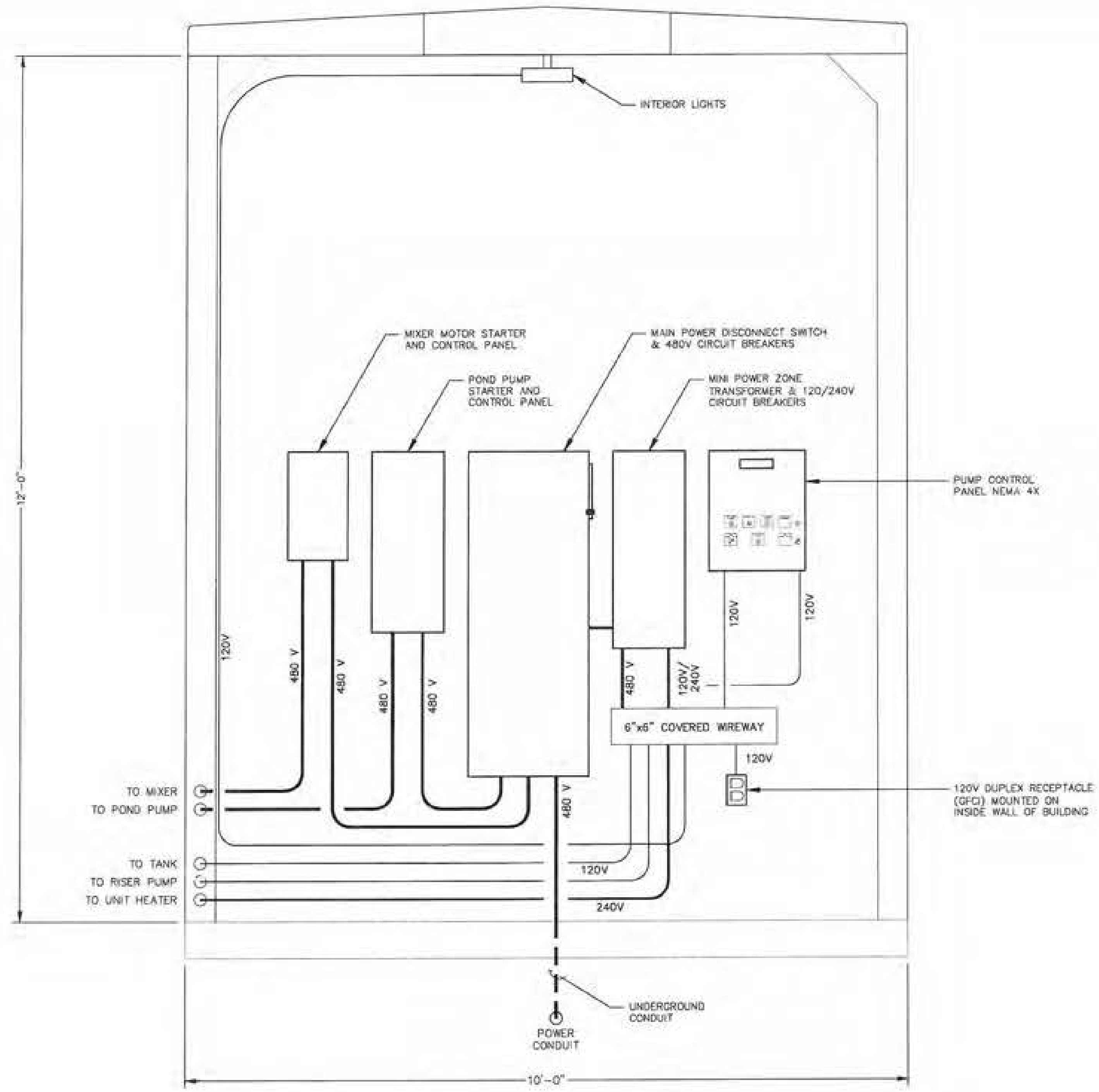

ELECTRICAL SECTION (1)

SCALE: 1"=1'-0"

NOT TO SCALE

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No.	Date	Revisions	By	Ckd

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State: NY | Date Signed: 11/5/13 | Project Mgr.: TJF
Designed by: CDL | Drawn by: SJK | Checked by: BMS

STATE OF NEW YORK · JOSEPH MOLINA III · 072644 · LICENSED PROFESSIONAL ENGINEER

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FAC POND RISER HOUSE ELECTRICAL INSTALLATION DETAILS

GENERAL

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Date: FEBRUARY 2013
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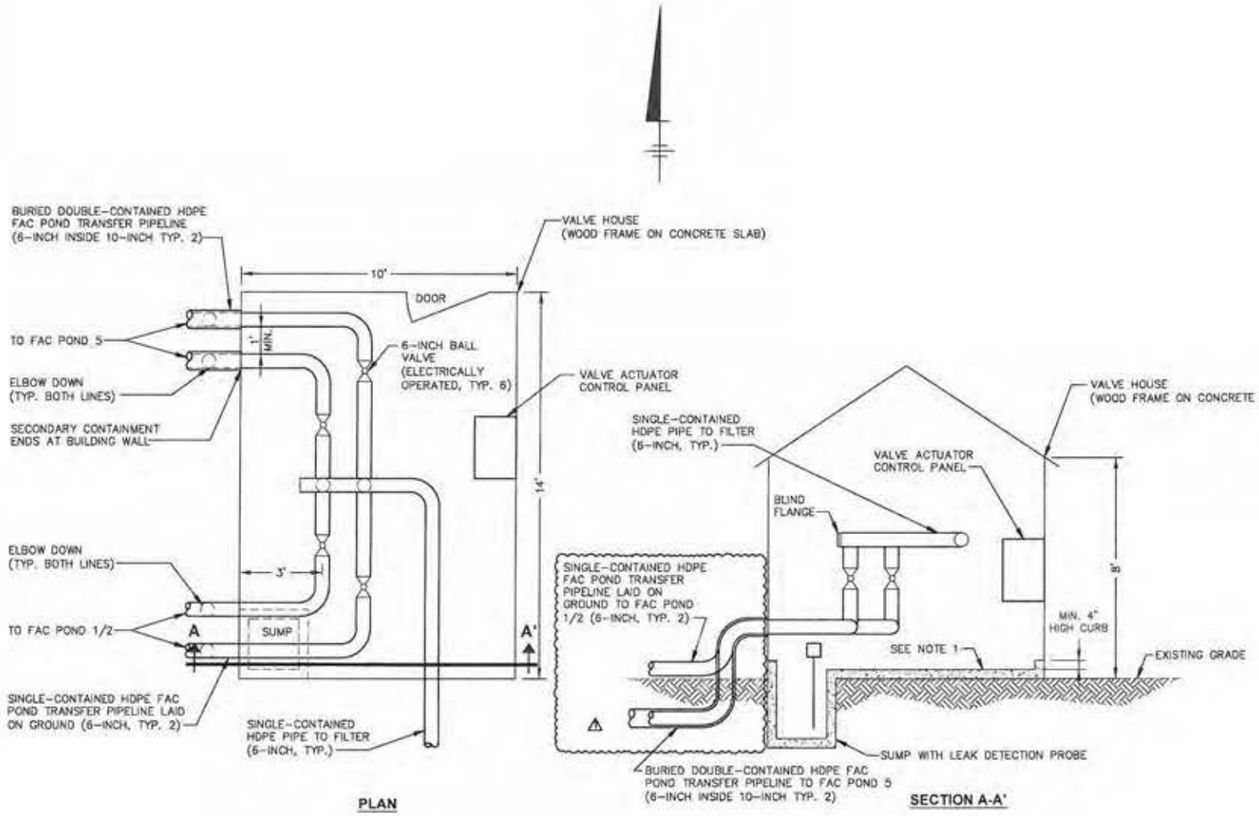


PLAN

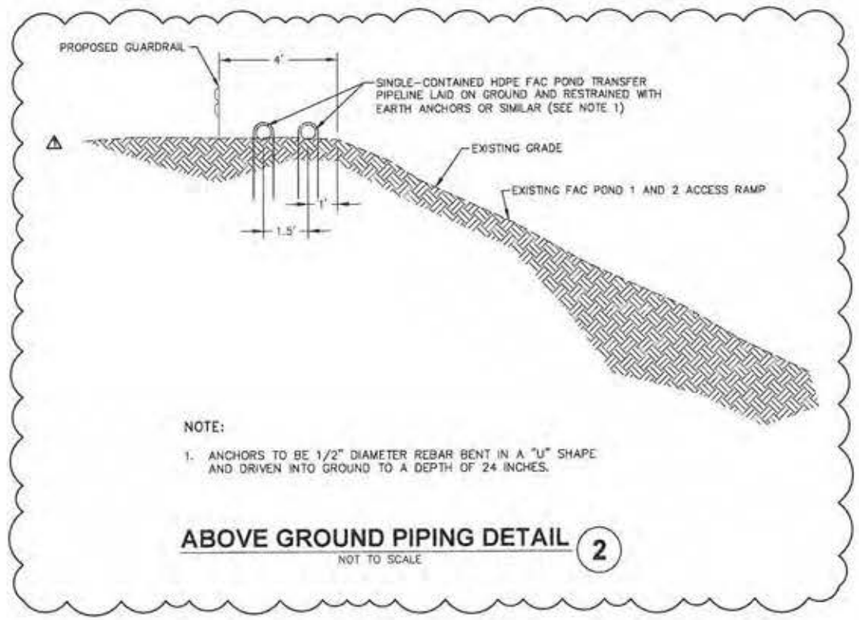
SECTION A-A'

NOTE:

1. CONCRETE FLOOR, SUMP, AND CURB TO BE A MONOLITHIC POUR TO ELIMINATE JOINTS.

VALVE HOUSE AND PIPING LAYOUT (1)

SCALE: 3/8"=1'-0"



NOTE:

1. ANCHORS TO BE 1/2" DIAMETER REBAR BENT IN A "U" SHAPE AND DRIVEN INTO GROUND TO A DEPTH OF 24 INCHES.

ABOVE GROUND PIPING DETAIL (2)

NOT TO SCALE

SCALE(S) AS INDICATED

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No.	Date	Revisions	By	Ckd
1	11/2013	REMOVED FAC POND 1/4 RECONSTRUCTION	ENG	BMS

Professional Engineer's Name: JOSEPH MOLINA
Professional Engineer's No.: 072644
State: NY
Date Signed: 11/5/13
Designed by: TJF
Drawn by: SJK
Checked by: BMS

STATE OF NEW YORK JOSEPH MOLINA 072644 LICENSED PROFESSIONAL ENGINEER

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VALVE HOUSE DETAILS

GENERAL

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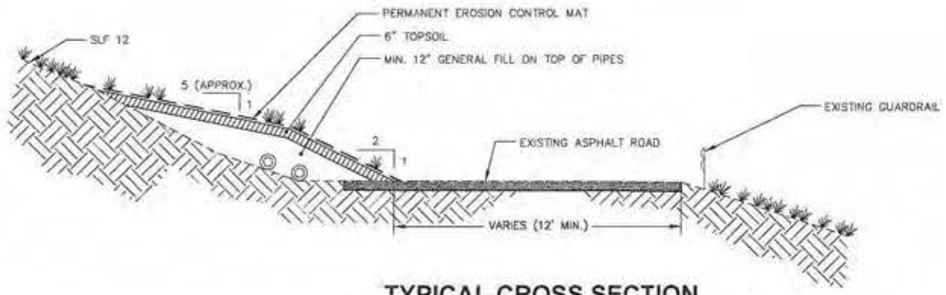
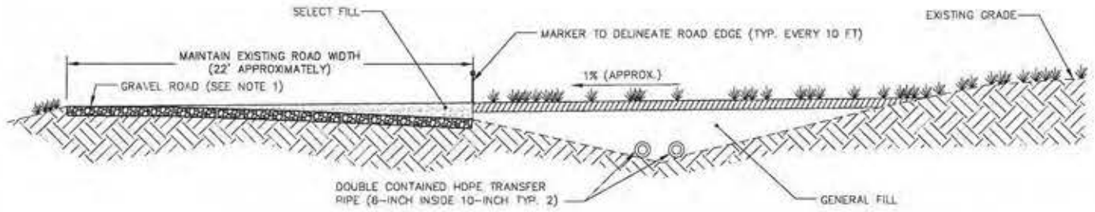


TYPICAL CROSS SECTION ALONG ROAD SOUTH OF SLF 12 (1)

NOT TO SCALE

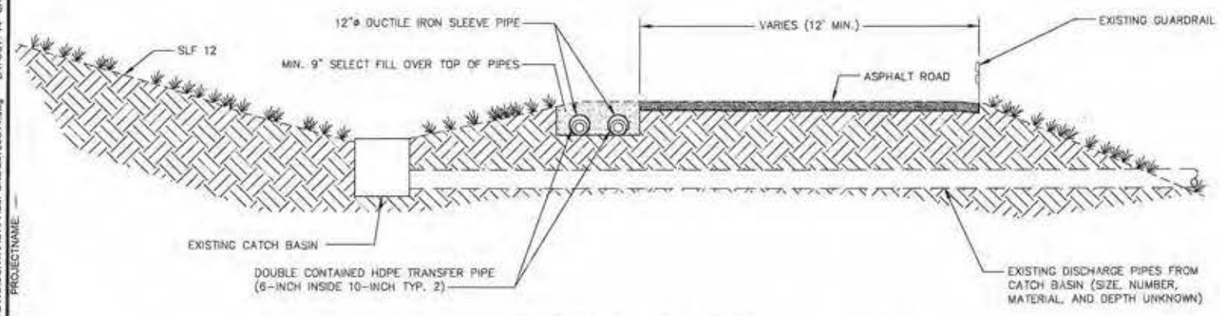


NOTE:

1. EXISTING ROAD SURFACE TO BE REGRADED AS NEEDED TO DRAIN TOWARDS THE WEST.

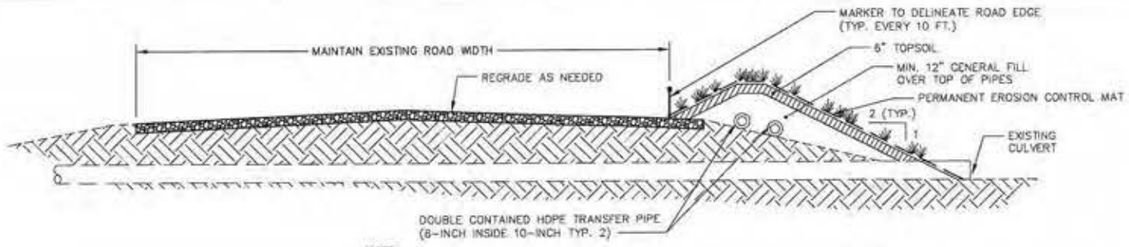
TYPICAL CROSS SECTION ALONG NORTH-SOUTH ROAD (2)

NOT TO SCALE



CROSS SECTION AT SLF 12 DOWNCHUTE CATCH BASIN (3)

NOT TO SCALE

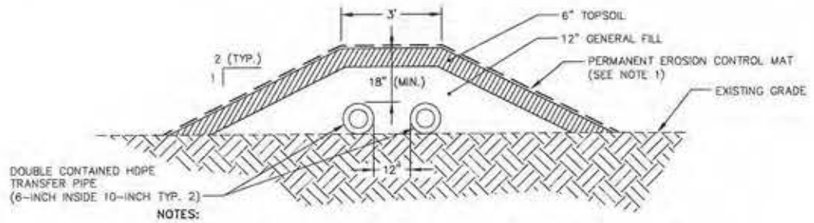


NOTE:

1. EXISTING ROAD SURFACE TO BE REGRADED AS NEEDED TO DRAIN TOWARDS THE WEST.

CROSS SECTION AT NORTH-SOUTH ROAD CULVERT CROSSING (4)

NOT TO SCALE

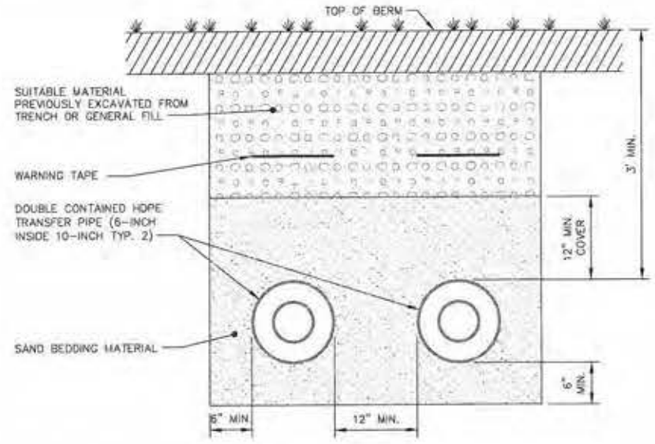


NOTES:

1. PERMANENT EROSION CONTROL MAT SHALL BE INSTALLED IN LOCATIONS WHERE PROPOSED BERM IS SUBJECT TO RUNOFF FROM UPGRADIENT AREAS (SUCH AS SLF 12) OR IS ADJACENT TO CONCENTRATED FLOWS (SUCH AS CULVERTS, CATCH BASINS, OR DITCHES). PERMANENT EROSION CONTROL MAT SHALL NOT BE REQUIRED IN OTHER BERM LOCATIONS.
2. DETAIL SHOWN IS FOR PIPES LAID ON GRADE. OVERALL BERM HEIGHT AND WIDTH MAY DEVIATE IN LOCATIONS WHERE PIPELINE IS PARTIALLY ENTRENCHED OR WHERE FILLING IS NEEDED. MINIMUM COVER AND MAXIMUM SIDESLOPE GRADIENT SHALL BE ADHERED TO IN ALL CONDITIONS.

TYPICAL BERM DETAIL FOR HDPE PIPE (5)

NOT TO SCALE



TYPICAL TRENCH DETAIL FOR HDPE PIPE ALONG FAC POND 5 BERM (6)

NOT TO SCALE

GENERAL NOTE:

1. ALL HDPE PIPING SHALL BE DR-11.

SCALE(S) AS INDICATED

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No.	Date	Revisions	By	Ckd

Professional Engineer's Name: JOSEPH MOLINA
Professional Engineer's No.: 072644
State: NY | Date Signed: 11/5/13 | Project Mgr: TJF
Designed by | Drawn by: SJK | Checked by: BMS

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FAC POND TRANSFER PIPELINE DETAILS

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