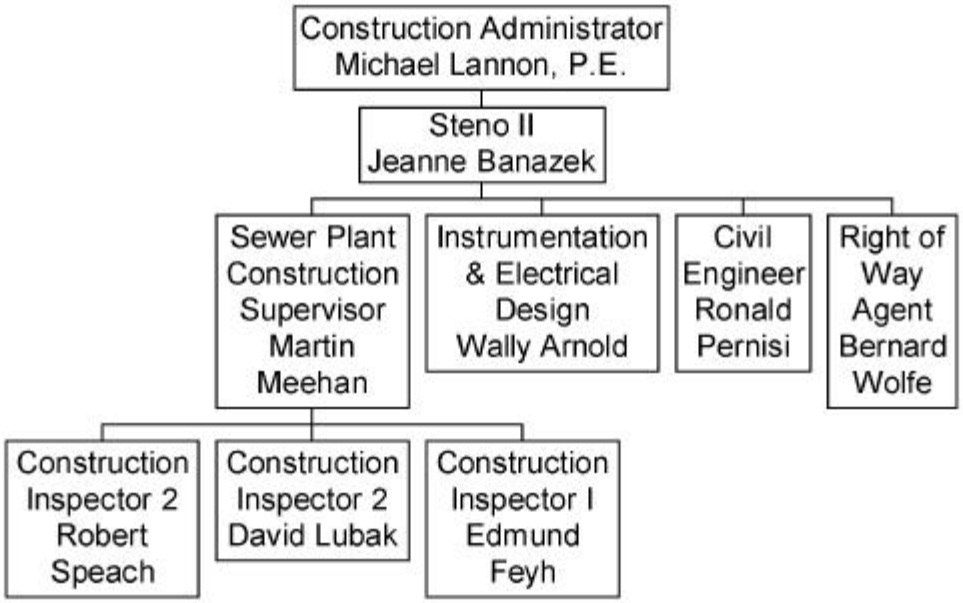
CONSTRUCTION



Chapter 6

Construction

6.1 Introduction

The mission of the Construction Division is to administer, manage and coordinate the construction of new facilities and the repair, rehabilitation or improvement of existing facilities, from preliminary planning, through final design and construction to startup. The goal is to provide facilities which cost-effectively meet the requirements of the operating sections for performance, reliability, operability and maintainability.

During 2002, the Construction Division accomplished its mission with a staff of nine (9), under the direction of the Construction Administrator. Construction inspection activities were performed by three Construction Inspectors, under the Construction Supervisor. Design services within the Division are currently provided by a Wastewater Facilities Design Engineer. The Right-Of-Way Agent supports the real estate needs of all department divisions, including the Lake Improvement Project Office. Administrative and clerical support is provided by a Steno II. The only personnel change occurred in December 2002 with the retirement of Wallace Arnold, who served as an Instrumentation/Electrical Engineer for over eight (8) years.

Division Construction Inspectors act in one of two capacities for a given construction project: oversight inspection services or full-time inspection. In the former case, they provide liaison, oversight, coordination, and administrative functions. For full-time inspection, the inspector assigned to the project is responsible for documenting and monitoring all field work activities associated with the project. In both instances, oversight or full-time inspection, the assigned inspector attends all meetings; review, negotiate and process modifications, change orders and progress payments; coordinate the review of various project documentation, such as equipment manuals; coordinate contractors' activities with department operations and maintenance personnel; and generally act as the department's eyes and ears on the project, representing the County's interests and ensuring that consultants and contractors are performing in accordance with their respective contracts.

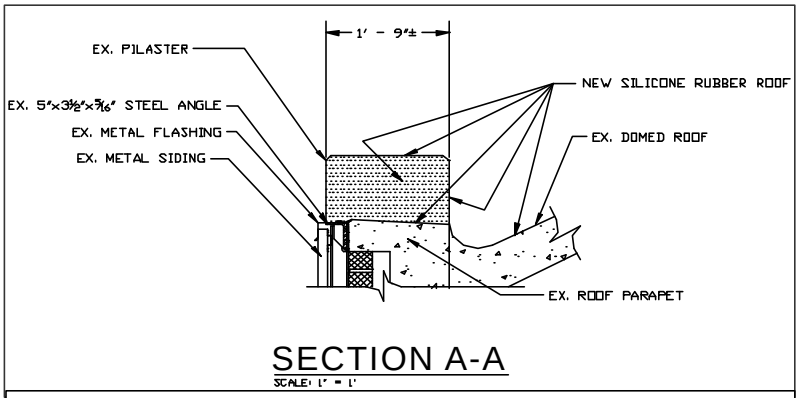
6.2 Construction Projects Completed in 2002

6.2.1 Metro WWTP - Digester #2 Re-roofing

This project provided a new spray-applied roof system to the Metro WWTP Digester #2 roof. Work involved the removal and repair of all blistered areas of the existing foam insulation, and subsequent application of a new silicone rubber roof system. Henderson Johnson Company, Inc., of Syracuse, New York completed this project in September 2002 at a cost of $34,800. Pictures 1, 2, and 3 below respectively illustrate: 1) the disrepair of the roof prior to the project; 2) a design detail of the project drawings as prepared by in-house design personnel; and 3) the application of the new system.

This project was designed and inspected in-house.

Picture 1 – Metro WWTP Digester No. 2 roof prior to repair



Picture 2 – Design detail for new roofing system for Metro WWTP Digester No. 2

Picture 3 – Application of new roofing system for Metro WWTP Digester No. 2

6.2.2 Metro WWTP - FRP Drywell Covers

This was a $266,000.00 project to construct a fiberglass reinforced plastic (FRP) cover for the Dry Well located in the New Screen and Grit Building. A new ventilation system was also provided as part of this project to provide proper ventilation and heat for the area beneath the FRP cover (see pictures 4 and 5). This project also included minor modifications to the grit piping from the settling tanks to grit cyclones and new handrails adjacent the Primary Distribution Structure. Construction began and was completed in 2002. Project drawings and specifications were prepared by Construction Division personnel and released for public bid.

This project was designed and inspected in-house.

Picture 4 – New H & V unit for Metro WWTP NSG drywell

Picture 5 – New FRP cover system for Metro WWTP NSG drywell

6.2.3 Metro WWTP - Grit Isolation Gates at New Screen & Grit Room

This project provided for six (6) new aluminum isolation gates on the effluent channel of the New Screen & Grit Room. Also included were two (2) lifting beams - one for each channel. This project was completed in May 2002 for a final cost of $25,552 by Henderson Bros. Contracting of Central Square, New York.

This project was designed and inspected by in-house personnel.

6.2.4 Metro WWTP - Laboratory Muffle Furnace Hood Exhaust Improvements

This project consisted of improvements to the existing exhaust hood at the Department's laboratory in the Plant Operations Building at Metro. Specifically, a new exhaust fan and ductwork was provided to more efficiently remove fumes from the laboratory's muffle furnace. A new intake to the Plant Operations Building HVAC system was also installed as part of this project to eliminate water seepage into the building during the winter months. Viking

Mechanical System of Syracuse, New York was awarded this contract for $13,950. The work was completed in March 2002.

This project was designed and inspected in-house.

6.2.5 Metro WWTP and Oak Orchard WWTP – New HVAC Systems

To improve working conditions for Department employees, a new HVAC system for the Metro and Oak Orchard Stockrooms was installed. This project involved the installation of a new ground level HVAC unit at each facility with new duct work and exhaust grilles to provide proper ventilation to the facilities' stockrooms (see picture 6 below). Edward Joy Company of Syracuse, New York completed in project in April 2002 at a cost of $215,000.

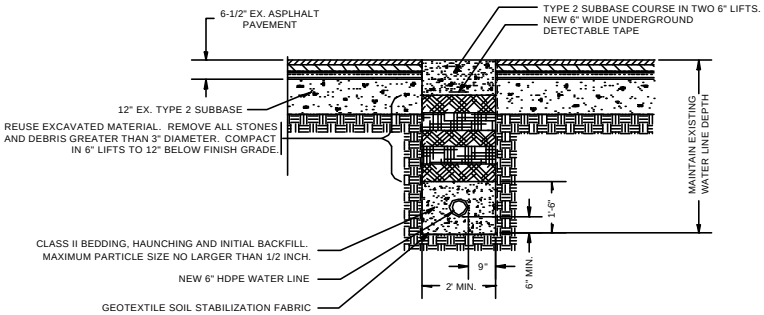
This project was designed and inspected in-house.

Picture 6 – New HVAC unit for Metro WWTP – Plant Maintenance Building

6.2.6 Metro WWTP – Potable Water Line Replacement

This was an $11,000 project to replace approximately 80 linear feet of an existing 6-inch diameter cast iron potable water line located between the Sludge Process Building and Sludge Dewatering Facility. Due to soil conditions that hastened the deterioration of the existing iron pipe, a high-density polyethylene (HDPE) pipe was used for this project. This project began in January 2002 and was completed within a week, including sampling and analysis of the water after completion, thereby minimizing any inconvenience to Department personnel. Pictures 7 and 8 below illustrate a project drawing prepared by in-house design personnel and actual installation of the water line, respectively.

This project was designed and inspected in-house.



TRENCH DETAIL
SCALE 1/2" = 1'

Picture 8 – Installation of new potable water line at Metro WWTP

6.2.7 Metro WWTP - Secondary Clarifier Modifications

The purpose of this project was to improve the secondary clarification of the treated water by providing new weir leveling beams for Secondary Clarifiers 1, 2, 3, and 4. Additionally, the project served to readjust and level of all four tanks weir systems to a common elevation. Picture 9 illustrates the new system installation. An experimental energy dissipating system was also tried on Clarifier No. 2. The project's contract was awarded to C. O. Falter of Syracuse, New York. This project was completed in November of 2002 for a final cost of approximately $595,466.

Picture 9 – New weir leveling system for secondary clarifiers at Metro WWTP

This project was designed by Stearns & Wheler, LLC, and inspected by Stearns & Wheler and in-house personnel.

6.2.8 Syracuse-GeddesConveyances Improvement Project

This project consisted of two separate contracts. The work involved under Contract No. 1 included the rehabilitation of four trunk sewers including the Genesee, Onondaga and Tompkins, and Fayette. Contract No. 2 consisted of installation of a 125 kW diesel generator at the Hillcrest Pump Station. Moreover, that contract included complete replacement and upgrading of the Haywood Road Pump Station. A new flow regulating device was also installed for the Haywood Pump Station. Contract No. 1 was awarded to

Picture 10 – Bypass pumping operations for rehabilitation of Genesee Trunk Sewer

Insituform Technologies USA, Inc. for $3,362,614 and was completed in December 2002. Picture 10 describes a temporary wastewater bypass system that Insituform used to allow for rehabilitation work on the aforementioned trunk sewers. Contract No. 2 was awarded to Ridley Electric Co., Inc. of Syracuse, New York for $272,994 and was completed in December 2002.

This project was designed by O'Brien & Gere Engineers and inspected by O'Brien & Gere and in-house personnel.

6.2.9 Job Order Contracts

Onondaga County enters into several job order contracts on a yearly basis, allowing Departments within the County to utilize these contractors to repair their facilities as required. The Department utilized these contracts at the following locations

Paving: Paving repairs and replacements were competed at Metro WWTP for the cost of $5,316 by Cornerstone Paving of Syracuse, New York.

Roofing: Josall-Syracuse Roofing completed roofing repairs and replacements at Oak Orchard WWTP for a total cost of $5,352. Roofing repairs and replacements were completed at Metro WWTP for a total cost of $25,744 by Josall-Syracuse Roofing and Diamond Roofing Company, both of Syracuse, New York.

Lightning Protection: There was no lightning protection work done under our contract with Crowley Lightning Protection Co. of Auburn, New York.

These jobs were designed and inspected in-house.

6.2.10 Emergency Repairs

The Construction Division assists other OCDWEP Divisions with repairs to Department facilities during the course of the year. These repairs are made to insure the safe working conditions of all employees and to minimize the disruption of services to the general public. In 2002, the Construction Division coordinated and inspected the emergency repairs at the following locations.

Liverpool Electronics Parkway Trunk Sewer Repair

A contractor working for the New York State Highway Department damaged a section of the Liverpool Electronics Parkway Trunk Sewer during the construction of a related storm sewer system. This repair consisted of the excavation around the damaged section of the trunk sewer and replacement with a new section of cast iron line. Joseph J. Lane Construction, Inc. of Syracuse, New York performed this repair in July 2002 for $3,095.

Metro Sewer Maintenance Building Sanitary Line Replacement

Due to the ongoing construction at the Metro WWTP, high traffic flow and related settlement, the sanitary drain line within the Sewer Maintenance Building collapsed, requiring repair. The project consisted of removing a section of floor slab, rerouting of electrical interference, replacement of the sanitary and drain line, and the remedial restoration of the floor slab to its original condition. This repair was awarded to Joseph J. Lane Construction, Inc. of Syracuse, New York in July 2002 for $11,667 and was completed in early September 2002.

Westside Pump Station Exhaust Fan Replacement

The existing exhaust fan at the station was rendered inoperable, which lead to the accumulation of high levels of hydrogen sulfide within the station, presenting a safety concern for entry into the facility. The repair involves the procurement and replacement of a 20,000 scfm exhaust fan air handling unit. In September of 2002, a contract was awarded to Airside Technology of Syracuse, New York for $19,714. The project is scheduled for completion in December 2002.

6.3 New and Ongoing Construction Projects for 2002

6.3.1 Baldwinsville/Seneca Knolls WWTP - Odor Control Improvements

This general contract was awarded to C. O. Falter of Syracuse, New York. The project includes a new screen room odor exhaust blower and ductwork that leads to a new bio-filter bed for controlling odors (see pictures 11 and 12). As a major component of the odor control system, a new stainless steel digester vent line to the aeration tank was also installed. At the time of this writing, the installed system was being put through a standard testing period. Final costs are estimated to be approximately $270,000. The project is scheduled to be completed in January 2003.

This project was designed by Sear-Brown Engineers and is being inspected by in-house personnel.

Picture 12 – New odor control system media bed for Baldwinsville/Seneca Knolls WWTP

Picture 11 – New odor control system fan at Baldwinsville/Seneca Knolls WWTP

6.3.2 Harbor Brook Athletic Fields

This project involves cutting and filling the southeast corner of the Harbor Brook Drainage area for two full-size athletic fields. Each field will be approximately 230 feet by 360 feet, allowing for practice of soccer or lacrosse. To expedite use of the fields and ensure a suitable playing surface, an athletic-field-grade sod will be placed on the fields. The side slopes will be hydroseeded. The project also includes constructing a 150 foot by 20 foot gravel parking area, fencing on the south and east sides of the fields, and resurfacing the entrance to the facility. Picture 13 below illustrates the field preparation prior to installation of sod. In October 2002, the contract was awarded to Lan-Co Development of North Syracuse, New York for $208,780.

The project was designed by C & S Engineers and is being inspected in-house.

Picture 13 – Site work for new Athletic Fields at Harbor Brook Drainage area

6.3.3 Harbour Heights Trunk Sewer and Pump Stations

In response to a NYSDEC consent order, OCDWEP commissioned the design of a new wastewater transport system to convey wastewater from Harbour Heights WWTP, currently scheduled for demolition, to the Baldwinsville/Seneca-Knolls WWTP.

Picture 14 – Existing Harbour Heights WWTP, to be decommissioned

Contract 1A involves the construction of two new pumping stations in the Baldwinsville area. The first station will be located at the site of the existing WWTP at Commune Road; the second station will be built on Canton Street. The pumping stations consist of masonry block buildings, precast concrete wet wells, meters pits and valve pits, piping, valves, pumps, controls and appurtenances, and associated site work. Force main installation consists of approximately 10,800 feet of 8- and 10-inch piping, and approximately 7,200 linear feet of 15- and 18-inch gravity sewer pipe. This contract was awarded to Adhan Piping Company, Inc. of Cortland, New York for $1,924,627.

Picture 15 – New sanitary sewer installation for Harbour Heights project

Contract 1B will furnish and install piping meters, valves and appurtenances for new water and gas services for each of the pump stations. This contract was awarded to LaFrance Plumbing & Heating of Syracuse, New York for $12,963. Contract 1C will furnish and install ventilation louvers, exhaust fans and gas-fired unit heaters for both stations; as awarded to Rosenthal-Chadwick, Inc. of Syracuse, New York for

$23,950. Contract 1D, awarded to Allied Electric Company of Syracuse, New York for $123,754, will entail installation of electrical equipment including the furnishing of emergency generators for both stations. Pictures 14 and 15 below respectively illustrate the existing Harbour Heights WWTP and installation of new sewer pipe for the project.

This project was designed by Barton and Loguidice and is being inspected by Barton and Loguidice.

6.3.4 Meadow Brook Drainage District Channel and Culvert Improvements

The project involves constructing channel improvements to Meadow Brook within the Meadow Brook Drainage District in the Town of DeWitt and City of Syracuse. Improvements shall include channel widening and bank stabilization along approximately 1.25 miles of Meadow Brook, and replacement of six (6) concrete box culverts and associated utility relocations (see picture 16). The contract was awarded to Slate Hill Constructors, Inc. of Warners, New York in February of 2002 for $2,479,546 and is scheduled for completion in the spring of 2003.

This project was designed by Barton and Loguidice and is being inspected by Barton and Loguidice.

Picture 16 – Installation of new culvert system for Meadow Brook Channel project

6.3.5 Metro WWTP - Modifications to Primary Effluent Bypass

This project was awarded to Henderson Bros. Contracting of Central Square, New York. Work includes demolition of existing overflow weir and launder assemblies as well as installation of

new overflow weirs and launders. Work began in December 2002 and is scheduled to conclude in March 2003. Estimated construction cost is $223,000.

This project was designed by Stearns & Wheler, LLC and is being inspected by in-house personnel.

6.3.6 Variable Speed Drive Upgrades

This project serves to provide a more energy-efficient operation by replacing outdated, inefficient pumps, drives, and motors. Specifically, the variable speed drive systems (wound rotor and DC) will be replaced with new, variable frequency AC drive systems and variable speed DC drive systems. The project includes the replacement of existing electric motors, replacement of selected pumps, and related electrical and mechanical work. Picture 17 illustrates a typical new pump installation. Project work is taking place at seven (7) different County facilities. Project contracts were awarded to Patricia Electric for $956,300 and Dudley Construction for $583,195, both of Syracuse, New York, for a total cost of $1,539,495.

This project was designed by O'Brien & Gere Engineers and is being inspected by in-house personnel.

Picture 17 – New pump installation for VFD project

6.3.7 Velasko Road Landscaping

This project involves planting 20 large deciduous trees, 50 medium-sized deciduous trees, 35 small-sized deciduous trees, and 105 deciduous shrubs. The project is located at the Harbor Brook Drainage District at Velasko Road Detention Basin, bordered by Grand Avenue and Velasko Road. It is noted that this project borders the Harbor Brook Athletic Field project. As such, these two projects will act in concert to make significant improvements to the subject area. In August 2002, this contract was awarded to Diffindale Landscaping of West Monroe, New York for $34,255.

This project was designed in-house and is being inspected by in-house personnel.

6.4 Projects in Design

In addition to those projects referenced above as in-house designs, Construction Division personnel are, at the time of this writing, involved in the design of the following projects (these projects will soon proceed to actual construction).

6.4.1 Brewerton WWTP - Effluent Pressure Booster System

In-house personnel are preparing project documents for the replacement of the effluent water pressure booster system located in the Raw Sewage Pump Station Building at Brewerton WWTP. This project involves the replacement of the original system with a new, more efficient and suitable system. This project is scheduled for public bid in February 2003.

6.4.2 Metro WWTP - Loading Platform and Stair Repair for Existing Screen and Grit Building

In-house personnel are investigating the repair or possible replacement of the exterior loading dock and stairs located off of the upper landing at the Existing Screen and Grit Building. Project documents will be prepared for public bid in 2003.

6.5 Other Construction Division Activities

In addition to the activities described above, Construction Division personnel performed the following activities in support of Department operations and maintenance during 2002.

1. Prepared and submitted requests to the New York State Environmental Facilities Corporation for disbursement of State Revolving Fund Loans for several projects.

2. Provided on-going and general support and consultation to Operations, I/E, and Maintenance personnel as needs and questions arose.

3. Parcel research, owner contact, parcel valuation, negotiation, historical searches, resolutions, and ancillary activities for all Department required land acquisitions and right-of-ways.

4. Assisted in the design review of several projects, including the Baldwinsville Odor Control Project, Four Pump Station Project, Liverpool Pump Station Storage System, Jamesville Trunk Sewer, Harbour Heights WWTP and Sewer Project, and several others.

5. Participated in the evaluation of proposals for engineering and/or construction services.

6. Provided drafting services in AutoCAD format to several Department divisions.

7. Participated in the procurement and administration of annual contracts for roofing, paving, and lightning protection.

8. Prepared construction estimates for a variety of projects.

9. Developed a draft policies and procedures manual for the Construction Division.