

Roof Drainage & Paving Improvements at the Former Essex Plant 5

Prepared for
The Essex Specialty Chemical Company

Issued To:
Bidding Subcontractors

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1 Acronyms and Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
AHA	Activity Hazard Analysis
CH2M	CH2M HILL
H&S	health and safety
HAZWOPER	hazardous waste operations and emergency response
HSE	Health, Safety, and Environment
NYSDEC	New York State Department of Environmental Conservation
NYDOT	New York Department of Transportation
OSHA	Occupational Safety and Health Administration
PVC	polyvinyl chloride
RFI	Request for Information
SOW	Scope of Work
SSC	site safety coordinator
STAC	Safety Task Analysis Card
VOC	volatile organic compound

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SECTION 1

Overview of Scope of Services

On behalf of the Essex Specialty Chemical Company (Essex), CH2M HILL (CH2M) is seeking construction services for minor roof drainage and paving improvements at the former Essex-Hope Site Plant 5. The Essex-Hope site (Site) is located at 125 Blackstone Avenue in Jamestown, New York, and comprises approximately 4.7 acres. The site is presently owned by Custom Production Manufacturing. Industrial operations at the Site since the early 1900s have resulted in the contamination of soil and groundwater beneath and near the site by various volatile organic compounds. The site was listed under the State Superfund Program managed by the New York State Department of Environmental Conservation (NYSDEC) in 1988.

Despite multiple remedial actions, elevated levels of volatile organic compounds (VOCs) remain in groundwater and soil. Areas where the scope of services will be occurring have historically observed elevated concentrations of trichloroethene (TCE) and subsequent daughter products, acetone, cumene, toluene, ethylbenzene, and xylenes (cTEX).

A summary of the scope of services includes the following.

- Mobilization and Demobilization
- Building Scope of Work
 - Cut and remove sections of roof cast iron drainage pipe from four existing roof drains. Cap and abandon downstream vertical pipe and make any cuts into the roof water tight.
 - Install new polyvinyl chloride (PVC) schedule 40 drainage pipe hung from the interior roof to collect runoff from the roof drains.
 - Core through the exterior of the east wall and route the PVC diagonally down the wall at a 45 degree angle.
- Civil Scope of Work
 - Cut and cap the four buried cast iron pipes from the roof drains along the south building wall.
 - Remove the remaining exterior and below grade drainage piping and dry wells. Route the below grade drainage pipes to the existing City catch basin.
 - Backfill drywell excavation with suitable materials (i.e., certified clean and as per drawings).
 - Construct new below grade drainage lines and precast structure.
 - Install new asphalt pavement.
 - Provide a gravel shoulder north of the pavement.

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SECTION 2

Technical Scope of Work

This section specifies the technical requirements of this scope of services. Design drawings are presented in Appendix A and referred to herein.

2.1 General

The subcontractor shall provide all labor, personnel, lodging/per diem, lower-tier subcontractors, equipment, tools, materials (unless otherwise noted), and services necessary to complete the work as described in the design drawings, specifications, and as outlined in this Scope of Work (SOW). The subcontractor is responsible for reading and understanding all the information contained in the SOW. If the subcontractor has any questions or concerns, it is the subcontractor's responsibility to contact CH2M for clarification. In addition, if the subcontractor believes that CH2M HILL has not included all pertinent information or if the subcontractor has an alternate method for completing a task, it is the subcontractor's responsibility to notify CH2M to obtain written approval and documentation of any scope modification before implementing the modified scope.

The subcontractor shall carefully examine the site during the mandatory site walk and make all inspections necessary to determine the full extent of the work required to make the completed work conform to the SOW requirements. The subcontractor shall satisfy itself as to the nature and location of the work, conditions, the conformation and condition of the existing facility, and the condition of equipment and facilities needed for the execution of the work. Any inaccuracies or discrepancies between the actual field conditions and the SOW or other reference documents must be brought to CH2M's attention to clarify the exact nature of the work included in the SOW requirements and pricing.

The work shall be performed in accordance with this SOW, the design drawings, technical specifications.

All work shall be completed in compliance with current federal, state, and local regulations and in accordance with standard industry practice. The most stringent of these regulations shall apply in any situation regarding clarification. The subcontractor shall comply with all site entry/exit requirements, haul routes, health and safety, permitting, work schedule, and any other requirements that may be set by CH2M and Essex.

2.2 Design Package

The design package containing the design drawings and specifications (located on the drawings) for the Roof Drainage & Paving Improvements at the Former Essex Plant 5, dated September 16, 2015 are attached in Appendix B for reference.

2.3 Project Intent

It is the intent of this SOW that all equipment and devices, furnished and/or installed, be properly connected and interconnected with other equipment to render the installations complete for successful operation, regardless of whether all the connections and interconnections are specifically mentioned in the specifications or shown in the design package.

The sequence of activities across the site may require the Subcontractor to perform some construction activities simultaneously with other activities to consolidate the overall construction schedule. A preliminary schedule is presented later in this scope of services; however, Subcontractor can provide recommendations, with their bid, to improve upon the schedule timeframe.

2.4 Licensing and Permits

The Subcontractor will be responsible for obtaining any licenses required to work within the City. Additionally, the Subcontractor will be required to obtain applicable permits associated with the construction services detailed within this scope. Based on past discussions with the City of Jamestown, at a minimum a construction permit will be required to tie into the existing catch basin.

2.5 Utility Locate

Prior to mobilization, the Subcontractor will be required to contact Dig Safely New York at 811 and provide proper documentation to CH2M. In addition to Dig Safely New York, the Subcontractor will be required to locate and mark existing utilities within the construction zone prior to commencement of work. Non-intrusive measures such as a geophysical survey will be required and the approach should be defined in the response to this scope of services.

2.6 Performance Bonds

The subcontractor will be required to provide payment and performance bonds for the full contract value of the project once a subcontract agreement is in place. The subcontractor shall include Essex as third party on all bonds.

2.7 Pre-construction Submittals

The subcontractor shall submit construction submittals outlined in Section 3.11 to CH2M for review within 5 business days after subcontract award. All submittals must be accepted by CH2M personnel prior to mobilization.

2.8 Mobilization and Site Preparation

2.8.1 Mobilization

The Subcontractor will mobilize all resources necessary to safely, efficiently, and completely perform this scope of service. The resources include, but are not limited to, personnel, equipment, materials, supplies, and lower-tier subcontractor's services.

The following mobilization criteria apply:

- Store equipment and materials within the designated staging area identified by CH2M and the facility. Subcontractor personnel will be responsible for coordinating all deliveries of equipment and materials and for notifying CH2M of the delivery schedule.
- Equipment and tools mobilized to the site will be clean and in safe and proper working order. Equipment not meeting these requirements will be replaced by the Subcontractor at no cost to CH2M.

2.8.2 Dry Decontamination Stations

To ensure that no material or uncontaminated soil is tracked out or deposited outside of approved work areas (e.g., roads, public and private), the subcontractor shall set up and operate a dry decontamination station at the construction entrances and work areas to remove materials from trucks and tires leaving the site. Decontamination equipment may include shovels and brooms.

2.8.3 Temporary Environmental Controls

The Subcontractor will provide the following during the execution of this scope of services:

- Provide methods, means, and facilities to control stormwater on the roof and the site during construction activities.

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- Provide methods, means, and facilities required to prevent contamination of soil, water, or atmosphere by the discharge of noxious substances during construction.
 - Provide equipment and personnel to perform emergency measures (if required) to contain and correct any spillages.
 - Take special measures to prevent harmful substances from entering public waters by preventing the disposal of wastes, effluents, chemicals, or other such substances in or adjacent to streams, or in sanitary or storm sewers.
 - All Subcontractors' equipment used as part of construction activities will conform to all current federal, state, and local laws and regulations.

2.9 Scope of Work

2.9.1 Roof Drain Modification

The subcontractor shall provide all labor, materials, equipment and incidentals required to remove sections of cast iron pipe of the four roof drains within the interior of the building just below the roof of the concrete block building, in accordance with the details shown on Drawing C-02 of the design package.

2.9.2 Improved Roof Drain Construction

The subcontractor shall provide all labor, materials, equipment and incidentals required to install the above grade components of the improved roof drainage system as detailed on drawings C-01 and C-02 of the design package.

2.9.3 Dry Well Removal/Backfill

The subcontractor shall provide all labor, materials, equipment and incidentals required to cut and cap the three existing 8-inch cast iron drain lines that penetrate the south side of the building. Remove the remaining drain lines and three existing drywells. Backfill the excavations with subbase materials in accordance with the State of New York Department of Transportation (NYDOT) standard specifications. Clear and grub the area to be paved. All backfill should be certified clean.

2.9.4 Roof Drainage System Installation

The subcontractor shall provide all labor, materials, equipment and incidentals required to install the above grade and below grade components of the new roof drainage system shown and detailed in the attached design package.

2.9.5 Asphalt Pavement

The subcontractor shall provide all labor, materials, equipment and incidentals required to excavate the existing materials within the asphalt area to be paved to a depth of 10.5 inches below the final pavement grade and prepare the subgrade. Subcontractor will sawcut the edge of the north edge of the existing concrete pavement, elevate the two existing monitoring wells to finished grade, and construct a finished asphalt surface as detailed on drawing C-03 of the design package.

2.9.6 Gravel Placement

The subcontractor shall provide all labor, materials, equipment and incidentals required to install Type 2B gravel north of the pavement to transition the grade to the existing grade along the fence at the north property line.

2.9.7 Waste Handling

The Subcontractor shall provide all materials and equipment to provide for proper onsite management and containerization of all wastes produced as part of this SOW. Waste characterization, off-site transport and disposal will be provided by others.

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2 **2.10 Site Restoration and Demobilization**

3 Upon completion and acceptance of the work by CH2M, the subcontractor will remove all equipment,
4 debris, unused materials, and other miscellaneous items resulting from or used to complete this scope of
5 services. Perform a final cleanup of areas affected by Subcontractor activities to the satisfaction of CH2M. If
6 the Subcontractor cannot complete the work in the time permitted, or leaves the site on their own accord,
7 the Subcontractor will not be compensated for additional mobilization or demobilization.

8 Subcontractor, solely at their expense, will restore any equipment, road, ground surface, or structure
9 damaged by the Subcontractor during the course of performing the work.

SECTION 3

General Requirements

The following subsections in this scope of services discuss the general requirements.

3.1 Health and Safety

All Subcontractors' site personnel including lower-tiered subcontractors must abide by these requirements.

The Subcontractor shall conduct all work in conformance with all applicable federal and state occupational safety and health regulations, client requirements, and CH2M HILL's requirements (including the site-specific Health and Safety Plan). In addition to the minimum requirements specified below, Subcontractor is responsible for providing all labor, materials, equipment, supplies, training, medical surveillance, and personal protective equipment, as may be required to complete all work in a safe manner and in accordance with regulatory requirements. Additionally, staff will be required to have 40-hour HAZWOPER (29 CFR 1910.120), 8-hour HAZWOPER refresher training, and any other applicable training required by OSHA. Verification of training will be submitted to CH2M HILL Project Manager (Kyle Block at kblock@ch2m.com) prior to mobilization.

The Subcontractor is required to submit all required documents and records identified below prior to the start date defined in the Subcontract. Delays in commencing work due to failure by Subcontractor to provide such records and documents will not be considered a just cause for delay, as identified in the Subcontract terms. Subcontractor will be fully responsible for all losses, costs, expenses, and damages incurred by CH2M HILL and Subcontractor due to any work delays relating to such failure.

The CH2M HILL Project Manager (PM) for this work is Kyle Block.

This site is considered a Legacy site. There are active facilities around the Site.

3.1.1 Site-specific Training and Medical Surveillance

The following site-specific training and medical surveillance are required.

- CH2M site-specific Health, Safety, and Environment (HSE) Chartering is to be successfully completed before start of fieldwork.
- For personnel, 40-hour hazardous waste operations and emergency response (HAZWOPER) (29 CFR 1910.120), 8-hour HAZWOPER refresher training, and any other applicable training required by the Occupational Safety and Health Administration (OSHA) is required. Subcontractors must provide training documentation of training to the Site Safety Coordinator (SSC) at least 1 week prior to mobilization. Records must be available at the work site prior to mobilization and throughout the duration of work. Subcontractors should be prepared to present documentation to the SSC upon request.
- Medical surveillance is to be provided as required by 29 CFR 1910.120, other applicable OSHA regulations, and safety state standards. Subcontractors must provide documentation of medical surveillance to the SSC at least 1 week prior to mobilization. Records must be available at the work site prior to mobilization and throughout the duration of work. Subcontractors should be prepared to present documentation to the SSC upon request.
- Verification of training for use of air purifying and air supplying respirators, quantitative fit testing, and medical clearance to wear a respirator will be submitted to the SCC at least 1 week prior to mobilization. Records must be available at the work site prior to mobilization and throughout the

duration of work. Subcontractors should be prepared to present documentation to the SSC upon request.

3.1.2 Personal Protective Equipment

The Subcontractor will provide all personal protective equipment required for its employees working on the site. At a minimum, hard hat, safety glasses, safety goggles, work gloves, steel-toed shoes, long sleeve shirts and pants, and hearing protection in designated areas will be required. Hearing protection is also required while operating equipment.

Personal Protective Equipment Level D

- Coveralls: Work clothes are to be worn at all times including long-sleeved shirts and pants.
- Boots: Steel-toed, leather work boots
- Gloves: Gloves are to be worn at all times; the type of glove (for example, cut-resistant Kevlar gloves, leather work gloves, or nitrile gloves) is dependent on the task being performed.
- Hardhat: Splash-shield areas are to be identified by the CH2M SSC.
- Safety glasses
- Hearing protection: Hearing protection should be worn when conversations cannot be held at distances of 3 feet or less without shouting.
- Tyvek may be required if unable to keep work clothing free of contaminated soils from soil cuttings.

3.1.3 Health Safety and Environment Plan

Prior to mobilization, the Subcontractor will be briefed on the CH2M project HSE plan and Environmental Plan (E-Plan). The HSE plan and E-Plan will be available onsite during construction activities.

3.1.4 Activity Hazard Analyses

The Subcontractor must submit activity hazard analyses (AHAs) for all tasks identified in the scope to the CH2M SSC for H&S review and acceptance at least 1 week prior to mobilization. The SSC will coordinate review with the CH2M HSE manager. The HSE manager must accept all AHAs prior to mobilization. Examples of previously accepted AHAs are available upon request.

Field Safety

- Subcontractor personnel are to sign and agree to follow the HSE plan for the project.
- Subcontractor personnel are to participate in daily safety briefings.
- Subcontractor personnel are to document interventions when unsafe conditions or behaviors are observed.
- Subcontractor personnel are to conduct self-inspections as required by OSHA, industry standard, Union Carbide Corporation, and/or CH2M's HSE plan.
- Subcontractor personnel are to submit learning experiences to the CH2M SSC as they occur.
- Subcontractor personnel are to report all incidents, including near misses, to the CH2M SSC immediately upon occurrence.
- Subcontractor agrees to submit equipment inspection sheets weekly.
- Subcontractor must submit field hours to the CH2M SSC on a minimum monthly basis.
- As requested by CH2M, personnel will complete an H&S survey.

Miscellaneous

- No presence of weapons, including firearms, is allowed.
- No alcoholic beverages or illegal drugs are allowed.
- Cell phones cannot be used while driving on the property or driving to and from the jobsite.
- CH2M will inform the Subcontractor on cell phone use during the site orientation meetings held by CH2M on the first day an individual is mobilized to the site.
- No smoking is allowed on the property.
- Obey posted speed limits. If caught speeding, you can be barred from the work site.
- Seat belts must be worn at all times when traveling in vehicles.
- No compressed gas cylinders are allowed in office buildings.

3.2 Waste Management

The Subcontractor will provide for proper onsite management and containerization of all wastes produced as part of this scope of services. Anticipated wastes include excess construction debris, materials from excavation, decontamination fluids, and personnel protective equipment. Subcontractor shall provide the following equipment and services:

Subcontractor will provide 55-gallon steel drums or a roll-off bin (if necessary) to containerize waste. Drums shall be clean USDOT-approved 55-gallon steel drums with proper fitting lids. All containers shall be staged by Subcontractor in an area designated by CH2M.

When delivered to the site, drums/containers/ roll-off will be inspected by CH2M. Any drums/containers/roll-offs considered inadequate (with holes, improper fitting lids, etc) at CH2M's sole discretion will be turned away with associated costs borne by the Subcontractor. CH2M will not be responsible for any costs associated with any delays caused by delivery of inadequate trucks or equipment.

The Transportation Company shall adhere to and be in compliance with regulatory requirements under 49 CFR.

Subcontractor shall prevent contamination of soil, water, or atmosphere by the discharge of noxious substances resulting from their activities; prevent the tracking of soil and debris from the work areas to other facility locations as well as off-site; and perform emergency measures (if required) to contain and address any releases resulting from Subcontractor operations. Subcontractor should report any releases to the CH2M site contact. Should Subcontractor cause a release, Subcontractor will be held financially responsible for removal (to be conducted by others) of impacted material, sampling and analysis of waste for disposal purposes (to be conducted by others), and disposal (to be conducted by others) costs associated with the release.

Subcontractor will containerize all personal protective equipment and disposable sampling equipment in drums with soil.

Subcontractor will perform any vehicle fueling, lubrication, and maintenance utilizing drip pans and only within designated areas.

At the end of each field day, Subcontractor shall be responsible for loading, transport, and placement of drums at a location designated by CH2M.

Waste characterization, off-site transport and disposal will be provided by others.

3.3 Onsite Facilities/Utilities

3.3.1 Power

The Subcontractor will assume that no power source will be available at the site. The Subcontractor will be required to provide its own electricity source (for example, generator) to complete this scope of service.

3.3.2 Lighting

Work will only occur during daylight hours to support safe work.

3.3.3 Portable Facilities

Portable construction office trailers are not permitted in the facility. CH2M will provide and maintain lavatory facilities in the onsite treatment building. A small trailer should be used onsite to store and secure equipment each night.

3.3.4 Telephone Service

The use of cellular telephones is allowed at the immediate project site. The use of cellular telephones (including hands-free devices) is prohibited when driving within the facility.

3.4 Site Management/Housekeeping

Subcontractor shall be responsible for taking all precautions and actions necessary to protect the work and all public and private property and facilities from damage. To prevent damage, injury, or loss, Subcontractor's actions shall include, but not be limited to, the following:

- Store apparatus, materials, supplies, and equipment in an orderly, safe manner that will not interfere with the progress of the work or the work of any other subcontractors or current onsite activities.
- Provide suitable storage facilities, as necessary at the project site, for all materials that are subject to damage by exposure to weather, theft, breakage, or otherwise.
- Clean up all refuse, rubbish, scrap materials, and debris daily. Keep the work area clean and orderly.
- Provide and maintain adequate barricades and guardrails systems around excavations and other hazardous areas.
- Assume full responsibility for the preservation of all private property.
- Be responsible for protecting all subsurface utilities/process lines, structures and all other property during operations and in and around the work area.
- Plan work so that equipment contact with third party owned property is avoided.
- All chemicals brought to the site by the Subcontractor will be accompanied by safety data sheets (SDS), copies of all SDS will be given to the-CH2M Site Safety Coordinator. Subcontractor will responsible for properly storing and handling all chemicals they bring on site in accordance with the SDS. Any onsite chemical releases should be reported to the CH2M HILL.

Subcontractor will control access to the immediate work area throughout the duration of the project and will be responsible for directing their personnel. Subcontractor will secure heavy equipment, storage areas and will be responsible for proper equipment staging in accordance with industry standards and facility expectations.

3.5 General Quality Assurance/Quality Control Requirements

The Subcontractor will comply with all applicable federal, state, county, and local laws and regulations and Essex requirements. The Subcontractor will obtain all permits required to conduct this work.

Workmanship

All work will be performed in a safe, neat, and workmanlike manner. CH2M reserves the right to withhold approval that a task has been completed if it does not meet the criteria described in this scope of services or was finished in a poor manner.

Requests for Information

When information/direction is required, the Subcontractor will submit requests for information (RFIs) in writing to CH2M to document a specific problem, question, or concern, and the answer or direction obtained in response to the RFI. The RFI will include, at a minimum, a complete description of the problem/question/concern, a reasonable response date, and the Subcontractor's signature. CH2M will answer and sign the RFI and return the RFI to the Subcontractor.

3.6 Changes in Scope and Technical Direction

The Subcontractor will submit in writing (along with an estimate of the cost of the change) any notice of change in this scope of services or recommendations to optimize an aspect of the design prior to initiating the change. Any work performed by the Subcontractor outside the approved scope without CH2M's prior written acceptance will not be considered for compensation.

If CH2M approves a change in scope/technical direction, CH2M will generate a field change notice to document the implementation of the approved change. CH2M and Subcontractor field leads will receive a copy of the document and will sign it acknowledging that they have been communicated this change and understand the new scope.

3.7 Standby Time and Down Time

Provide on the bid form (Attachment A) a daily and hourly standby rate for the entire crew and equipment in the event that CH2M requests the Subcontractor to hold on standby for a reason other than that caused by the Subcontractor, weather, or a health and safety stand-down. Should the contractor work more than 6 hours in a day, it is considered a full day and no standby time will be allowed. Subcontractor must be delayed at a minimum of 2 hours to claim standby. The CH2M and Subcontractor project manager will discuss all standby time before any payment, standby time, or compensation occurs.

3.8 Project Supervision

The subcontractor shall identify a project manager to manage the project from subcontract award through project completion. The project manager shall be the primary point of contact for correspondence related to cost, schedule, and scope, as well as for providing all required submittals.

During construction, the subcontractor shall maintain adequate onsite supervision at all times when work is being performed. A designated site superintendent shall be identified whose sole responsibility shall be the field execution and safety of all work being conducted. The site superintendent must be onsite at all times during work activities. **The site superintendent must not operate equipment, perform manual labor tasks or drive trucks.** If the site superintendent must leave the site, the onsite CH2M HILL representative must be informed who the replacement is and that person must abide by the same requirements.

Both the project manager and site superintendent shall be conversant in English (both speaking and writing) or have onsite translation services available at all times. Resumes for the project manager and site superintendent shall be provided with the proposal, and shall demonstrate a minimum of 5 years experience

for each person managing and overseeing similar construction projects. Personnel changes of the project manager and site superintendent shall only be made after prior approval from CH2M HILL. If the project supervision personnel are not performing the duties as required, CH2M HILL will ask that the person be replaced within 5 working days at no additional cost to CH2M HILL.

3.9 Project Meetings

The project meetings shall include, but are not limited to, a preconstruction meeting before mobilization, weekly update meetings and daily safety tailgate meetings. At a minimum, the subcontractor's project manager and site superintendent shall attend the preconstruction meeting. At a minimum, the subcontractor's project manager and site superintendent shall attend weekly progress meetings. The project manager may attend via teleconference. The site superintendent, site safety operator (SSO), and all onsite workers shall attend the daily tailgate safety meetings. All meetings will have meeting minutes prepared by CH2M HILL, and reviewed and approved by the subcontractor's project manager or site superintendent within 2 days of receiving the minutes.

3.10 Work Schedule

The subcontractor shall be allowed access to the facility during normal operational hours (**7 a.m. to 5 p.m., Monday through Friday**), except federal holidays. Equipment, supplies and materials shall be received or shipped during these defined work hours. Work performed during other hours may be allowed, as approved by CH2M HILL.

The subcontractor shall determine what their work hours will be and state in its bid the estimated duration for performing each of the SOW activities. Extended work hours or different work hours shall be coordinated and approved by CH2M HILL and the facility at least 48 hours prior to start of work. No extended work hours will be allowed without prior approval.

Depending on the magnitude of adverse weather and its potential impact to the project schedule, time lost during the scheduled workweek may be made up on an accelerated schedule (including evenings and weekends) at the discretion of CH2M HILL at no additional cost.

3.11 Project Submittals

The following sections discuss required Subcontractor submittals to CH2M. One copy each of the submittals will be sent to the points of contact specified in this scope of services. To expedite approval, legible copies of the submittals may also be emailed or faxed. Original hard copies must follow within 2 days to those individuals as well.

Proposal Submittals

Subcontractor will include the following technical submittals with their bid package:

- Acknowledgement of services to be completed by Subcontractor and the names and qualifications of lower-tier subcontractors to be utilized
- Recommendations for alternative scope approaches accompanied with a basis for the change and potential cost implications relative to the original design specified herein
- Payment schedule form (Appendix C)

Payment Schedule Form

The Subcontractor will adhere to and provide prices for equipment and labor as requested on the payment schedule form (Appendix C), which is structured to evaluate the cost-effectiveness of the bid. No changes will be made to the wording of the form, and failure to provide appropriate defined prices may result in rejection of the bid. In the case of discrepancy between unit prices and totals, unit prices will prevail.

Additional materials or equipment required to complete the work as specified, although not specifically addressed herein, will be included in the appropriate associated line item. Fully describe any necessary additional work included at the bottom of the payment schedule form. All blank spaces on the attached payment schedule form must be completed.

Pre-construction Submittals

The following submittals will be required prior to mobilization:

- Work plan detailing approach and schedule of the project
- All necessary training documentation
- Welding certifications as required in the specifications
- Site crew's background checks and drug-testing documentation
- Documentation that tooling has met Essex calibration requirements (for example, torque wrench calibration)
- AHAs
- Construction schedule

Construction Submittals

The Subcontractor will maintain a daily log of work activities.

The Subcontractor will provide CH2M with the following:

- Daily production report (CH2M will provide a template if requested)

3.12 Measurement and Payment

Measurement and payment for the work described in this scope of service will be based on a daily log kept by the Subcontractor and a payment schedule form maintained by CH2M based on the Subcontractor's site superintendent's daily construction report. At the end of each day, representatives of both CH2M and the Subcontractor will review and agree to the daily report and payment schedule form.

Payment for all work and materials specified herein will be on a not-to-exceed based on quantities and amounts stated on the Subcontractor's attached payment schedule form for work successfully completed. Additional materials or equipment required to complete the work as specified, although not specifically addressed, will be included in the amount stated for mobilization and clean-up. Fully describe any additional work included at the bottom of the payment schedule form.

Upon completing all work under the contract, the Subcontractor will notify CH2M in writing that the work is complete and that final payment is appropriate. If the work has been completed to the extent of the subcontract, CH2M will accept the completed work and make payment of the final amount due.

3.13 Points of Contact

Questions and one copy of the proposal submittal should be sent to each of the following:

Contractual Contact	Project Manager
Ms. Susie Stallworth	Mr. Kyle Block
CH2M	CH2M
135 South 84th Street Suite 400	kyle.block@ch2m.com
Milwaukee, WI 53214 Suite 201A	Phone: (617) 626-7013
Susie.Stallworth@ch2m.com	
Phone : (414) 847-0408	
Fax: (414) 454-8837	
Phone: (414) 847-0408	

To expedite approval, legible copies of the submittals may also be emailed or faxed to the addresses and numbers listed above. Original hard copies must follow to the addresses above.

1 **SECTION 4**

2 **Project Schedule**

3 The anticipated schedule for the work is as follows:

- 4 • Bid Response Requested – October 2, 2015
- 5 • Bid Award – October 15, 2015
- 6 • Mobilization – November 1, 2015
- 7 • Completion of all SOW components by **November 26, 2015**

8 The Bidder will identify and provide any variances or exceptions to this schedule to CH2M with the proposal

9 at the bottom of the Subcontractor's Payment Schedule Form (Appendix C).

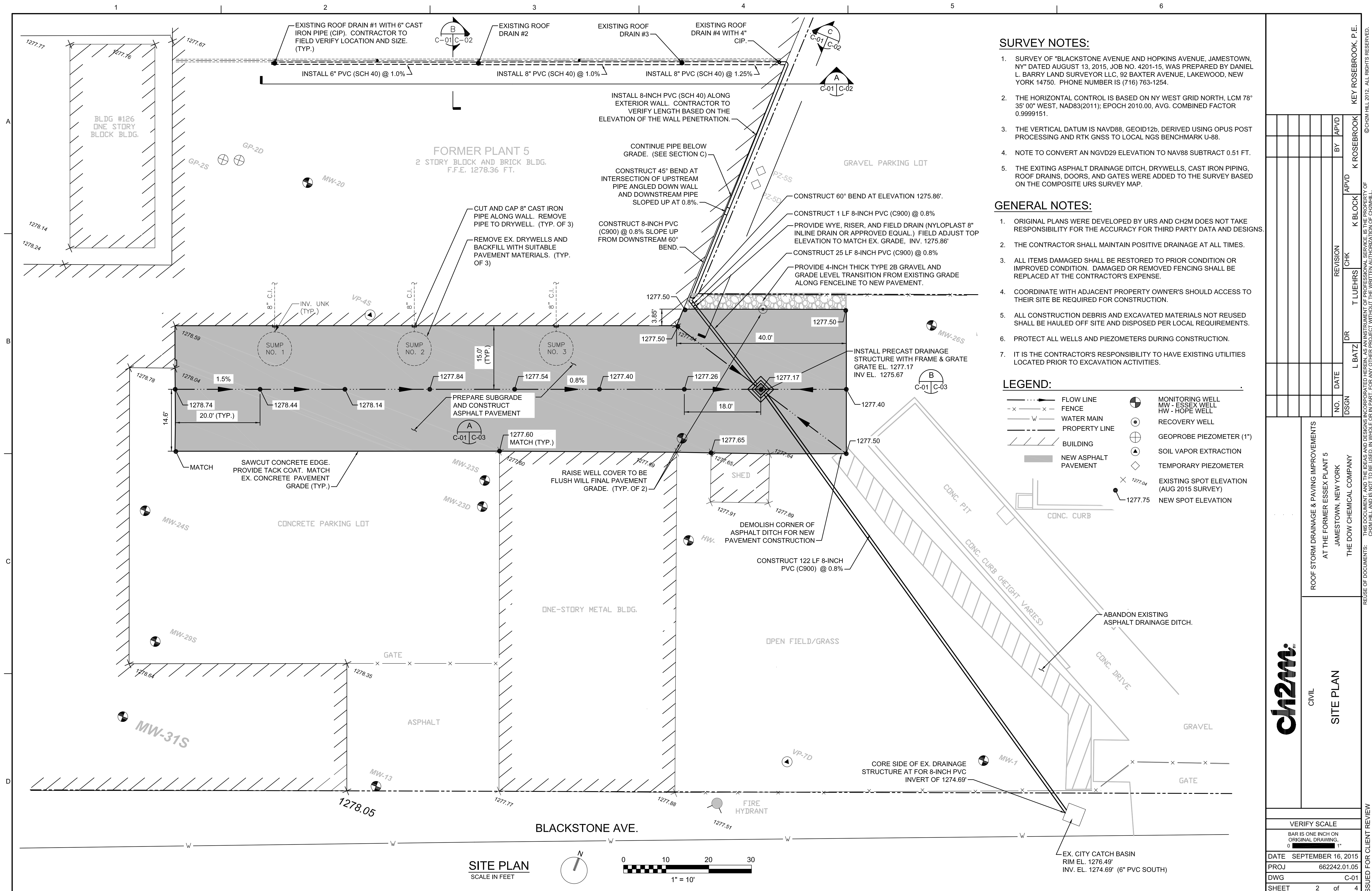
10 The Subcontractor will provide all resources to complete this Scope of Services according to the schedule

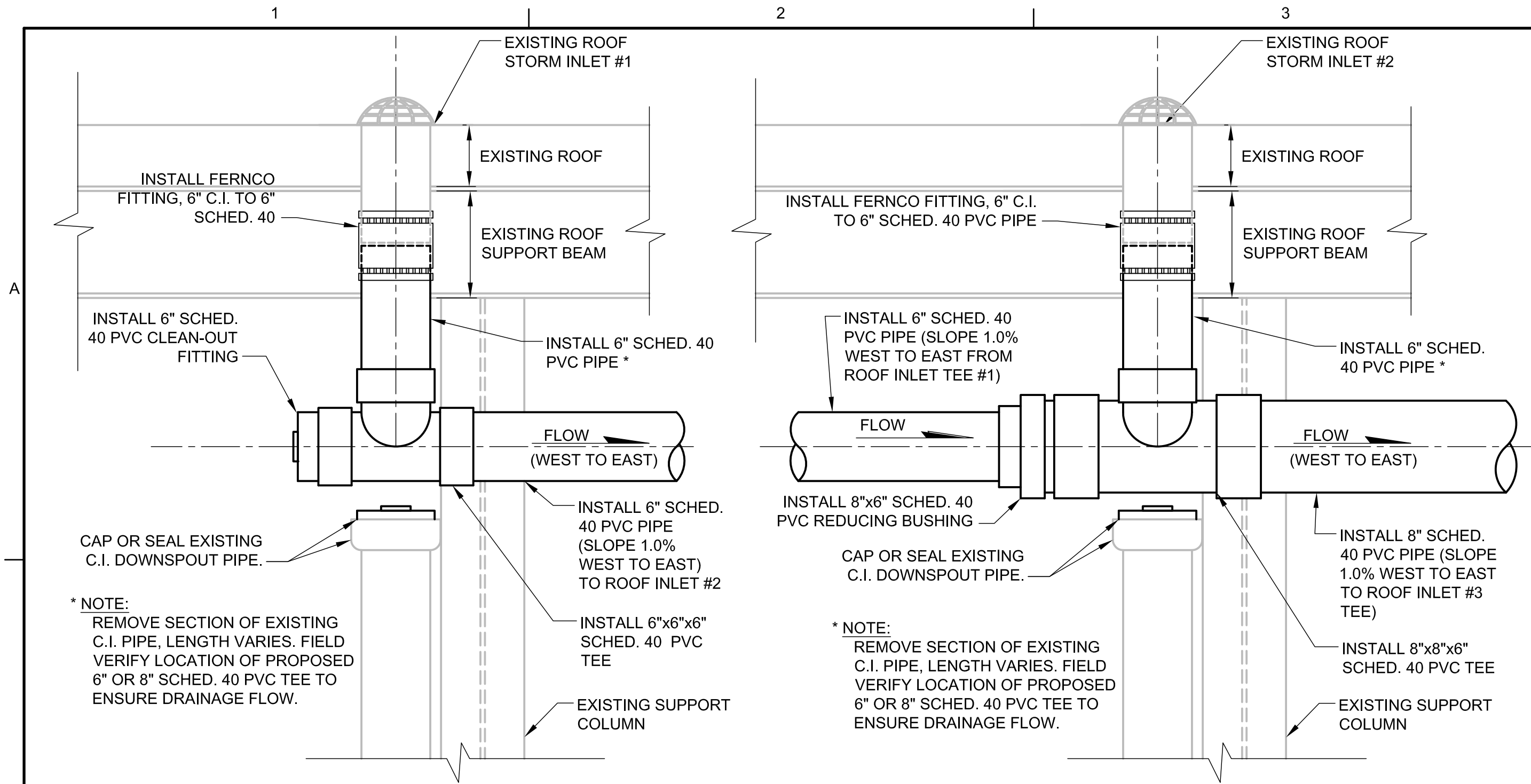
11 described herein or an alternate schedule approved by CH2M.

1
2
3

Appendix A Design Drawings

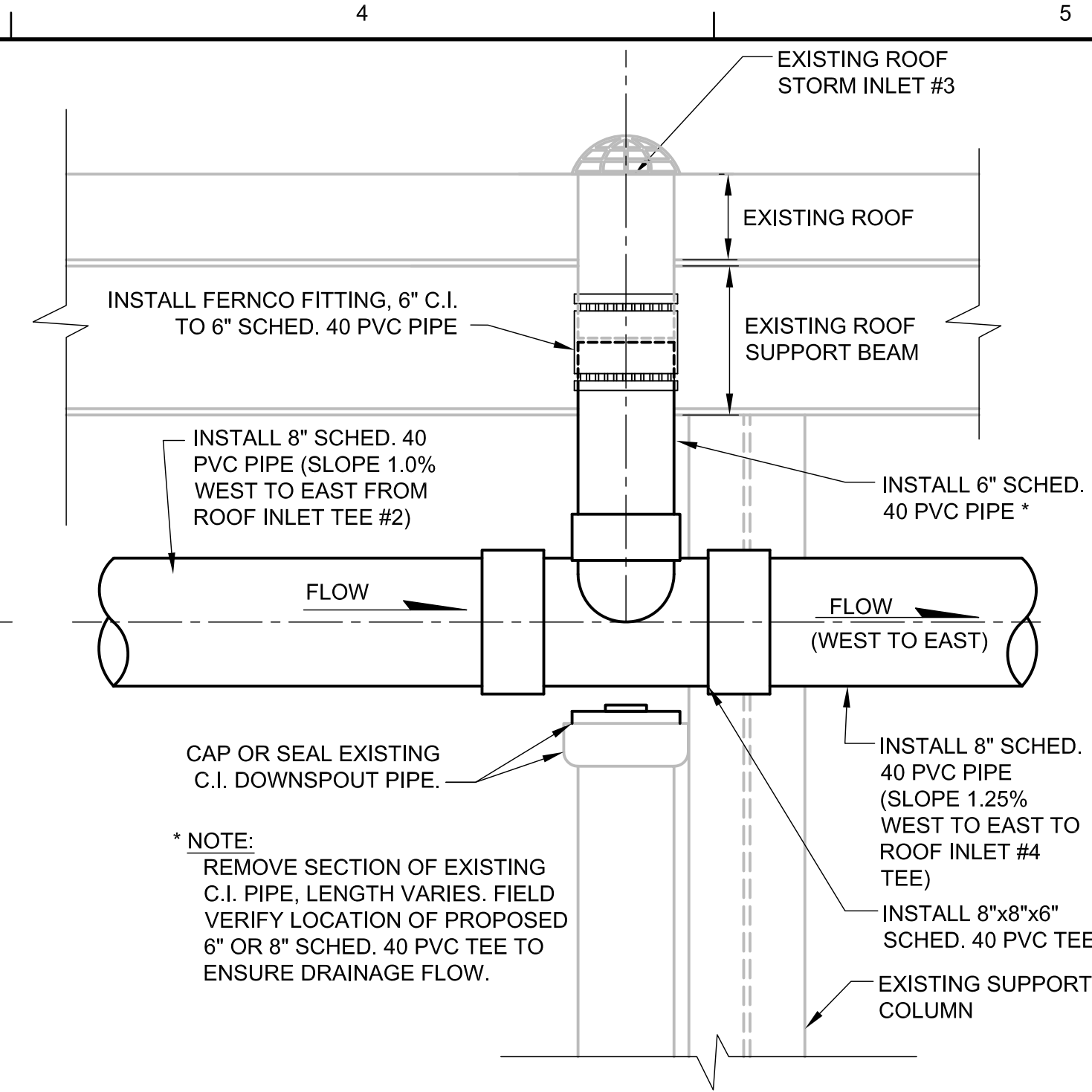
1	Table of Contents	
2	o	G-00 Cover Sheet, Vicinity Map, and Index to Drawings
3	o	C-01 Site Plan
4	o	C-02 Piping Section, Details, and Specifications
5	o	C0-03 Paving & Drainage Sections and Details



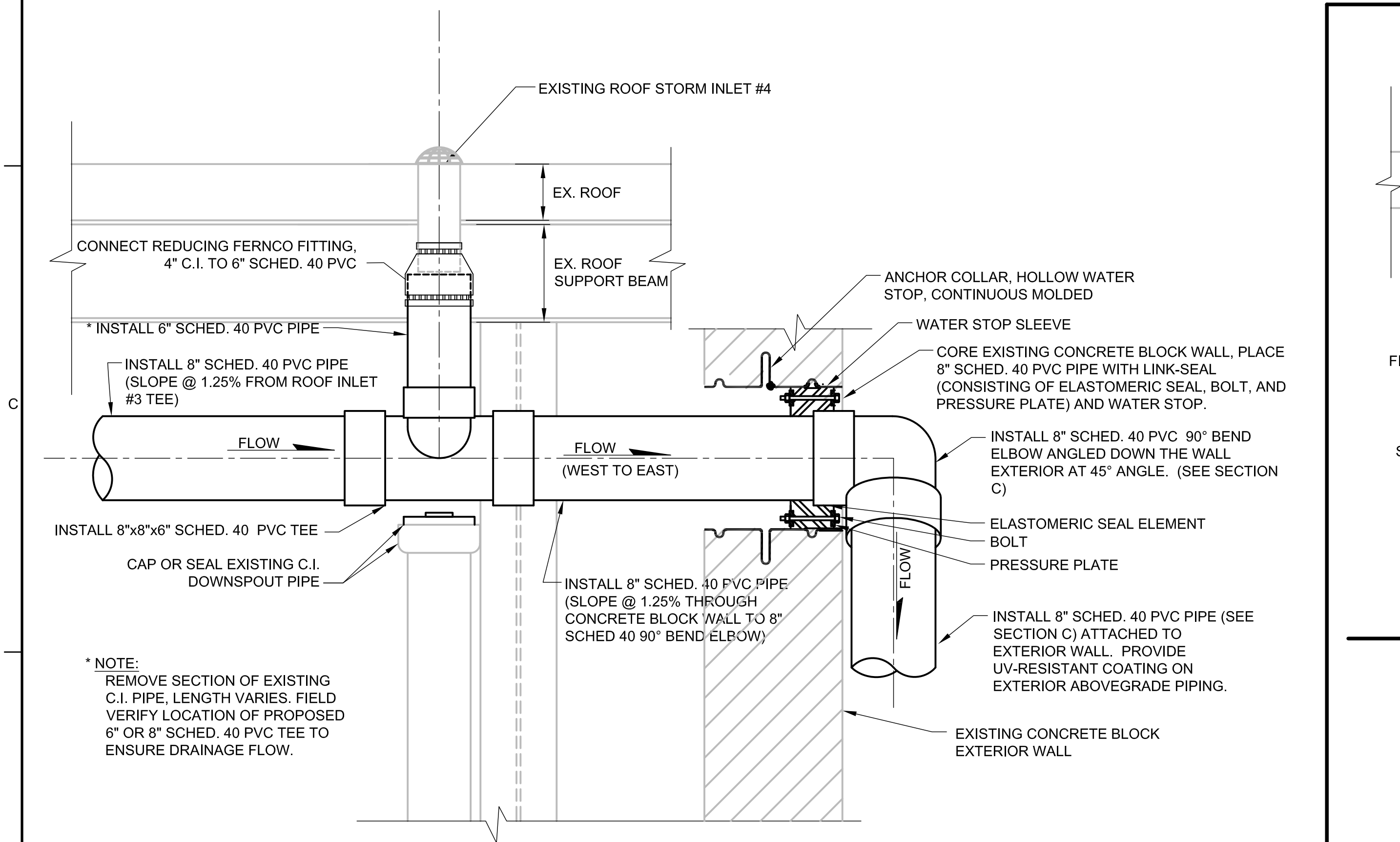


ROOF DRAIN #1

ROOF DRAIN #2

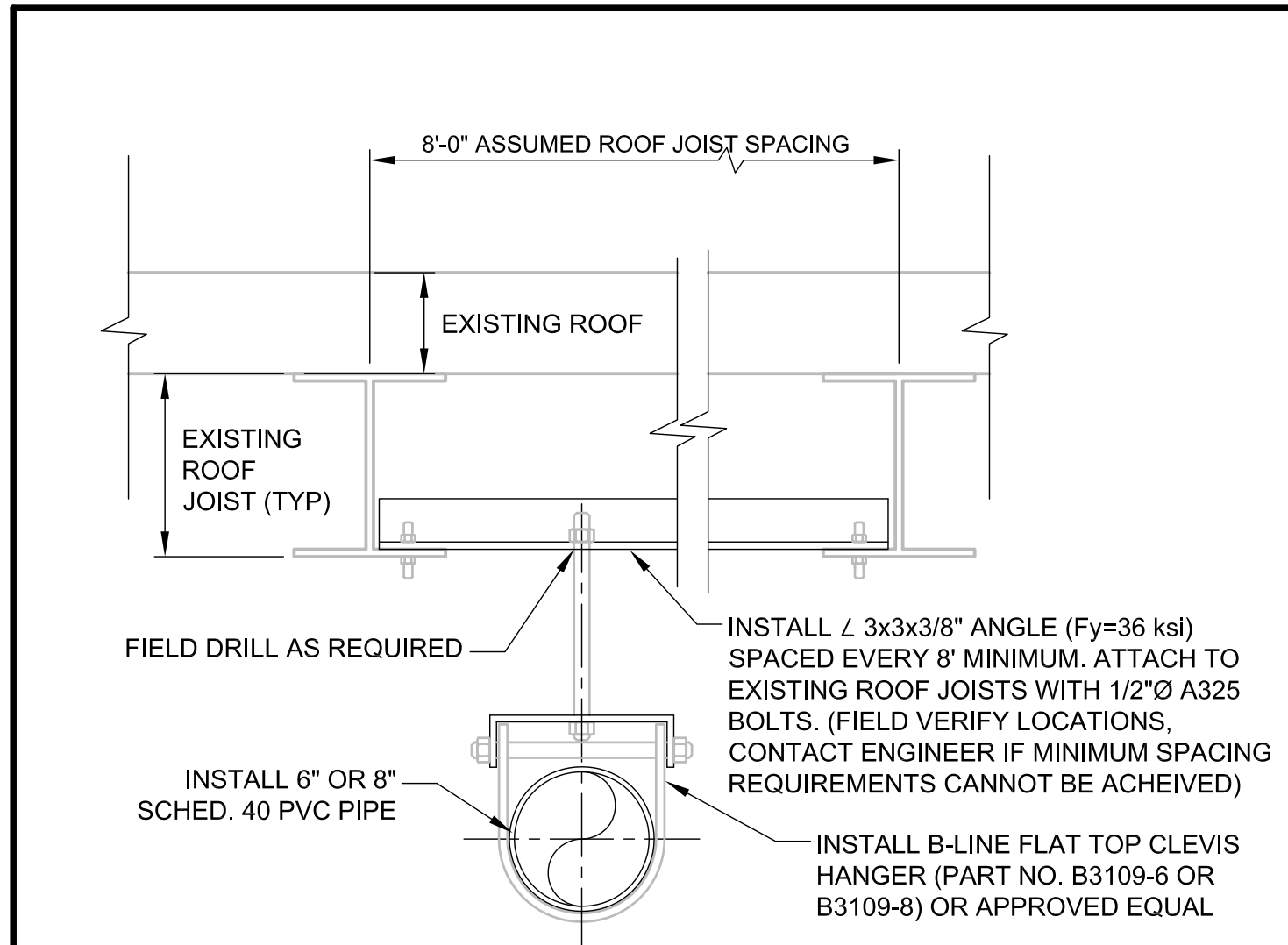


ROOF DRAIN #3

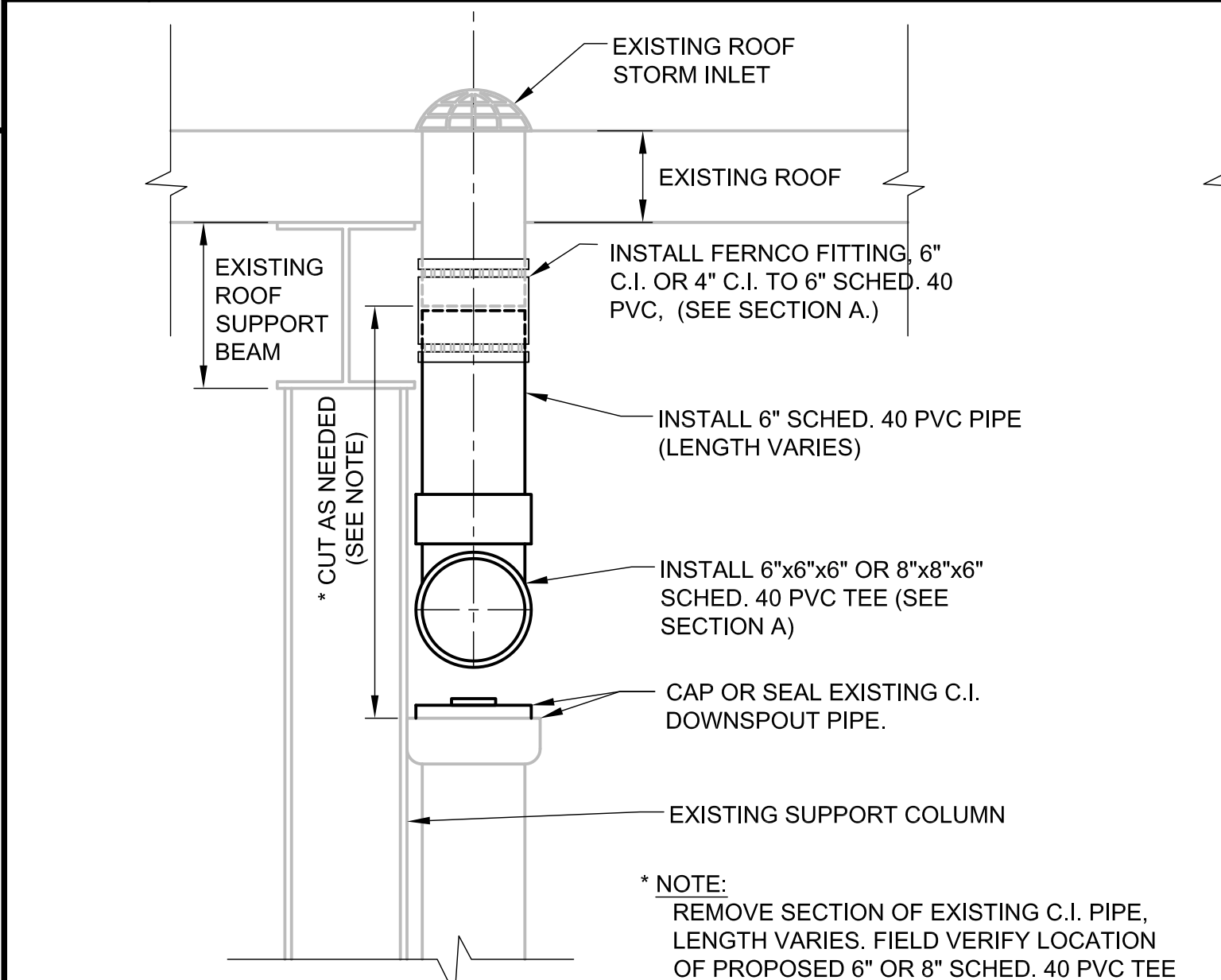


ROOF DRAIN #4

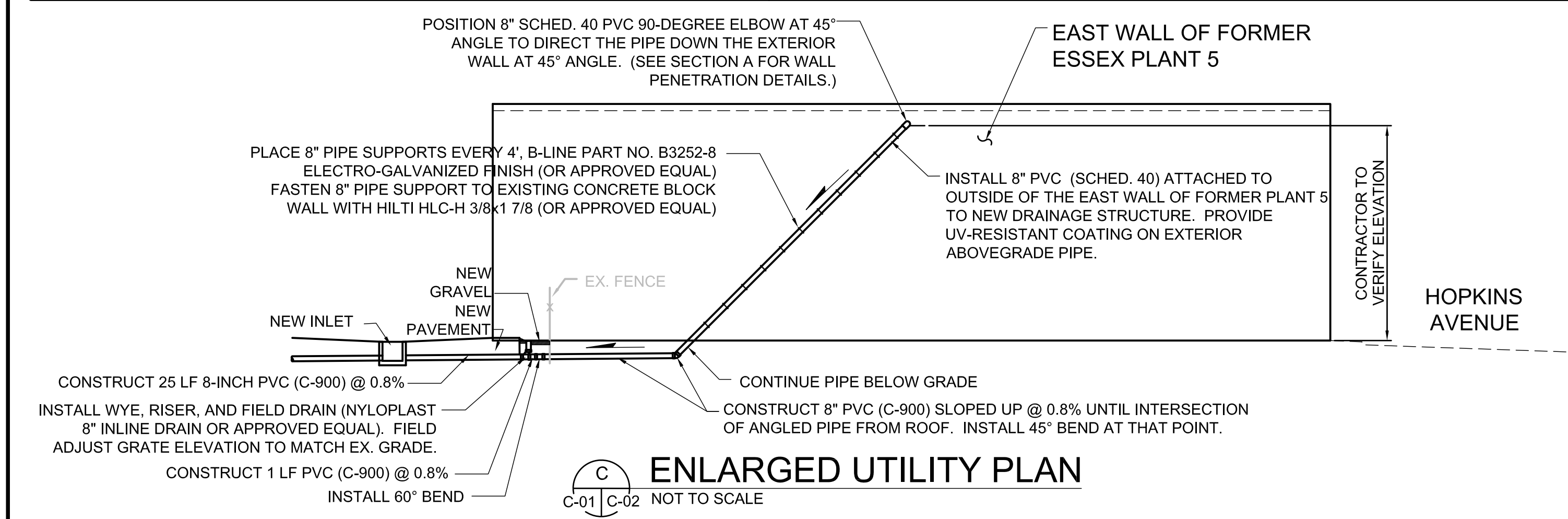
INTERIOR PIPING PROFILE



TYPICAL INTERIOR PIPE HANGER



CAST IRON TO PVC PIPE CONNECTION



ENLARGED UTILITY PLAN

PVC PIPE SPECIFICATIONS :

THIS SPECIFICATION OUTLINES MINIMUM MANUFACTURING REQUIREMENTS FOR POLYVINYL CHLORIDE (PVC) FOR ABOVE GRADE AND BELOW GRADE APPLICATIONS. THIS PIPE IS INTENDED FOR USE IN APPLICATIONS WHERE THE FLUID CONVEYED DOES NOT EXCEED 140°F. THE PIPE SHALL MEET OR EXCEED THE INDUSTRY STANDARDS AND REQUIREMENTS AS SET FORTH BY THE REFERENCED STANDARDS FROM THE AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM), NATIONAL SANITATION FOUNDATION (NSF), AND THE AMERICAN WATER WORKS ASSOCIATION (AWWA.)

ABOVE GRADE APPLICATIONS:

ALL PVC PIPE TO BE INSTALLED INSIDE THE BUILDING OR ALONG THE BUILDING WALL ABOVE GRADE SHALL BE SCHEDULE 40 PIPE MANUFACTURED FROM A TYPE I, GRADE I POLYVINYL CHLORIDE (PVC) COMPOUND WITH A CELL CLASSIFICATION OF 12454 PER ASTM D1784. THE PIPE SHALL BE MANUFACTURED IN STRICT COMPLIANCE TO ASTM D1785 AND D2665, CONSISTENTLY MEETING AND/OR EXCEEDING THE QUALITY ASSURANCE TEST REQUIREMENTS OF THESE STANDARDS WITH REGARD TO MATERIAL, WORKMANSHIP, BURST PRESSURE, FLATTENING, AND EXTRUSION QUALITY. THE PIPE SHALL BE MANUFACTURED IN THE USA, USING DOMESTIC MATERIALS, BY AN ISO 9001 CERTIFIED MANUFACTURER. STANDARD LENGTHS OF PIPE SIZES 6" AND LARGER SHALL BE BEVELED EACH END BY THE PIPE MANUFACTURER. ALL PIPE SHALL BE STORED INDOORS AFTER PRODUCTION AT THE MANUFACTURING SITE UNTIL SHIPPED FROM FACTORY.

PRODUCT MARKING SHALL MEET THE REQUIREMENTS OF ASTM D1785 AND ASTM D2665 AS APPLICABLE AND SHALL INCLUDE: THE MANUFACTURER'S NAME (OR THE MANUFACTURER'S TRADEMARK WHEN PRIVATELY LABELED); THE NOMINAL PIPE SIZE; THE MATERIAL DESIGNATION CODE; THE PIPE SCHEDULE AND PRESSURE RATING IN PSI FOR WATER @ 73°F; THE ASTM DESIGNATION D1785; THE ASTM DESIGNATION D2665 (WHEN DUAL MARKED); THE INDEPENDENT LABORATORY'S SEAL OF APPROVAL FOR POTABLE WATER USAGE; AND THE DATE AND TIME OF MANUFACTURE. THIS PIPE SHALL CARRY THE NATIONAL SANITATION FOUNDATION (NSF) SEAL OF APPROVAL FOR POTABLE WATER APPLICATIONS AND BE MARKED AS SUCH. THIS PIPE SHALL HAVE A FLAME SPREAD RATING OF 0-25 WHEN TESTED FOR SURFACE BURNING CHARACTERISTICS IN ACCORDANCE WITH CANULC-S102-2-M88 OR EQUIVALENT. THE EXTERIOR ABOVE GRADE PIPE SHALL BE PAINTED WITH AN UV-RESISTANT COATING.

BELOW GRADE APPLICATIONS:

ALL PVC TO BE INSTALLED BELOW GRADE SHALL BE PRESSURE PIPE WITH CAST IRON PIPE EQUIVALENT OUTSIDE DIAMETER CLASS 235 (DR 18) CONFORMING TO AWWA SPECIFICATION C900 AND WILL BE BLUE OR WHITE IN COLOR. THE PIPE SHALL BE MANUFACTURED IN THE USA, USING DOMESTIC MATERIALS, BY AN ISO 9001 CERTIFIED MANUFACTURER. ALL PIPE SHALL BE STORED INDOORS AFTER PRODUCTION AT THE MANUFACTURING SITE UNTIL SHIPPED FROM THE FACTORY. PIPE WILL BE IN STANDARD 20-FOOT LENGTHS. ALL JOINTS WILL BE OF THE ELASTOMERIC-GASKET TYPE WITH THICKENED, INTEGRAL SOLID-WALL BELL OR COUPLING WITH THE SAME DR AS THE BARREL. ALL PVC C900 PIPE AND COUPLINGS SHALL BEAR THE UL LABEL AND NSF APPROVAL FOR POTABLE WATER.

KEY ROSEBROOK, P.E.

APVD K ROSEBROOK

BY

REVISION

CHK

T LUEHRS

DR

L BATZ

NO.

DATE

DGN

ROOF STORM DRAINAGE & PAVING IMPROVEMENTS
AT THE FORMER ESSEX PLANT 5
JAMESTOWN, NEW YORK
THE DOW CHEMICAL COMPANY

CIVIL
PIPING SECTION, DETAILS,
AND SPECIFICATIONS

VERIFY SCALE
BAR IS ONE INCH ON
ORIGINAL DRAWING.
0 1"

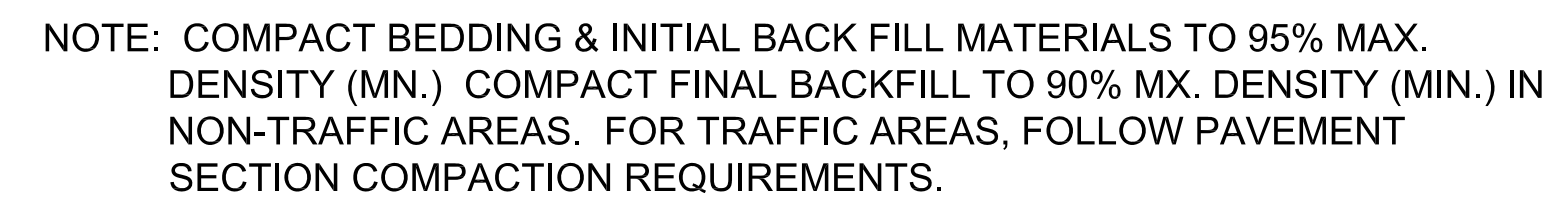
DATE SEPTEMBER 16, 2015
PROJ 662242.01.05
DWG C-02
SHEET 3 of 4

ISSUED FOR CLIENT REVIEW

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NOT TO SCALE

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