DESIGN & CONSTRUCTION GROUP
THE GOVERNOR NELSON A. ROCKEFELLER
EMPIRE STATE PLAZA
ALBANY, NY 12242

ADDENDUM NO. 3 TO PROJECT NO. 46063

CONSTRUCTION, HVAC, PLUMBING, AND ELECTRICAL WORK
PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS
DOT REGION 9, BROOME COUNTY
ROUTE 26
VESTAL, NY 13850

February 7, 2024

NOTE: This Addendum forms a part of the Contract Documents. Insert it in the Project Manual. Acknowledge receipt of this Addendum in the space provided on the Bid Form.

CONTRACTING REQUIREMENTS – COMMON DOCUMENTS

1. DOCUMENT 007310 SUPPLEMENTRAY CONDITIONS SUPERVISION: Discard the Document bound in the Project Manual and substitute the accompanying Document (pages 007310-1 thru 007310-3) noted "Revised 2/7/2024".

GENERAL REQUIREMENTS – COMMON DOCUMENTS

2. DOCUMENT 015000 CONSTRUCTION FACILITIES & TEMPORARY CONTROLS: Discard this Section bound in the Project Manual and substitute the accompanying Section (pages 015000 – 1 thru 015000 – 7) noted "Revised 2/7/2024".

GENERAL REQUIREMENTS – CONSTRUCTION WORK

3. DOCUMENT 014100 REGULATORY REQUIREMENTS: Discard this Section bound in the Project Manual and substitute the accompanying Section (pages 014100 – 1 thru 014100 – 4) noted "Revised 2/7/2024".

4. DOCUMENT 015213 STATE FIELD OFFICE: Discard this Section bound in the Project Manual and substitute the accompanying Section (pages 015213 – 1 thru 015213 – 5) noted "Revised 2/7/2024".

GENERAL REQUIREMENTS – ELECTRICAL WORK

5. DOCUMENT 014100 REGULATORY REQUIREMENTS: Discard this Section bound in the Project Manual and substitute the accompanying Section (pages 014100 – 1 thru 014100 – 3) noted "Revised 2/7/2024".

CONSTRUCTION WORK SPECIFICATIONS

6. SECTION 075323 ADHERED EPDM ROOFING SYSTEM: Discard this Section bound in the Project Manual and substitute the accompanying Section (pages 075323 – 1 thru 075323 – 17) noted "Revised 2/7/2024".

7. SECTION 087100 FINISH HARDWARE: Discard this Section bound in the Project Manual and substitute the accompanying Section (pages 087100 – 1 thru 087100 – 15) noted "Revised 2/7/2024".

8. SECTION 107501 FLAGPOLES: Add the accompanying Section (pages 107501 – 1 thru 107501 – 2) to the Project Manual noted "Addendum #3 2/7/2024".

9. SECTION 231326 ABOVE-GROUND LIQUIFIED-PETROLEUM GAS CONTAINERS: Discard this Section bound in the Project Manual and substitute the accompanying Section (pages 231326 – 1 thru 231326– 10) noted "Revised 2/7/2024"

10. SECTION 323113 CHAIN LINK FENCE: Add the accompanying Section (pages 323113 – 1 thru 323113 – 5) to the Project Manual noted "Addendum #3 2/7/2024".

HVAC WORK SPECIFICATIONS

11. SECTION 230923 DIRECT DIGITAL BUILDING CONTROL SYSTEM: Discard this Section bound in the Project Manual and substitute the accompanying Section (pages 230923 – 1 thru 230923 – 13) noted "Revised 2/7/2024".

12. SECTION 233113 METAL DUCTWORK: Discard this Section bound in the Project Manual and substitute the accompanying Section (pages 233113 – 1 thru 233113 – 9) noted "Revised 2/7/2024".

13. SECTION 234500 GAS DETECTION AND ALARM SYSTEM: Discard this Section bound in the Project Manual and substitute the accompanying Section (pages 234500 – 1 thru 234500 – 12) noted "Revised 2/7/2024".

PLUMBING WORK SPECIFICATIONS

14. SECTION 221120 MIXING VALVES: Discard this Section bound in the Project Manual and substitute the accompanying Section (pages 221120 – 1 thru 221120 – 3) noted "Revised 2/7/2024".

15. SECTION 221520 COMPRESSED AIR OVERHEAD REELS: Add the accompanying Section (pages 221520 – 1 thru 221520 – 2) to the Project Manual noted "Addendum #3 2/7/2024".

16. SECTION 223301 DOMESTIC WATER HEATERS: Discard this Section bound in the Project Manual and substitute the accompanying Section (pages 223301 – 1 thru 223301 – 3) noted "Revised 2/7/2024".

ELECTRICAL WORK SPECIFICATIONS

17. SECTION 263214 OVERHEAD REELS: Add the accompanying Section (pages 263214 – 1 thru 263214 – 2) to the Project Manual noted "Addendum #3 2/7/2024".

18. SECTION 265119 LED INTERIOR LIGHTING: Add the accompanying Section (pages 265119 – 1 thru 265119– 5) to the Project Manual noted "Addendum #3 2/7/2024".

19. SECTION 271524 COMMUNICATION CABLES AND HARDWARE: Add the accompanying Section (pages 271524 – 1 thru 271524 – 8) to the Project Manual noted "Addendum #3 2/7/2024".

CONSTRUCTION WORK DRAWINGS

20. Revised Drawings:
    a. Drawings Nos. G-003, G-006, G-007, C-001, C-002, C-003, C-102, C-103, C-104, C-205, C-207, C-209, C-507, C-508, C-512, C-513, C-514, L-101, S-101, S-301, S-501, A-101, A-102, A-202, A-300, A-401, A-501 noted "REVISED DRAWING 2/7/2024" accompany this Addendum and supersede the same numbered originally issued drawings.

HVAC WORK DRAWINGS

21. Revised Drawings:
    a. Drawings Nos. M-001, M-201, M-601, noted "REVISED DRAWING 2/7/2024" accompany this Addendum and supersede the same numbered originally issued drawings.

PLUMBING WORK DRAWINGS

22. Revised Drawings:
    a. Drawings Nos. P-001, P-201, P-203, P-301, P-501, P-502, P-701 noted "REVISED DRAWING 2/7/2024" accompany this Addendum and supersede the same numbered originally issued drawings.

ELECTRICAL WORK DRAWINGS

23. Revised Drawings:
    a. Drawings Nos. E-100, E-101, E-201, E-202, E-301, E-601, E-701, E-801 noted "REVISED DRAWING 2/7/2024" accompany this Addendum and supersede the same numbered originally issued drawings.

END OF ADDENDUM

Brady M. Sherlock, P.E.
Director, Division of Design
Design & Construction

DOCUMENT 007310

SUPPLEMENTARY CONDITIONS - CONTRACTOR'S SUPERVISION

This supplement modifies the General Conditions. Where any part of the General Conditions is modified by this supplement, the unaltered provisions of that part shall remain in effect.

ARTICLE 6 - CONTRACTOR'S SUPERVISION

ARTICLE 6 Delete this Article in its entirety and replace with the following:

6.1 The Contractor shall designate in writing, competent supervision and/or management representatives as required below to represent the Contractor at all times with authority to act for the Contractor. All direction given to the Contractor's representatives shall be as binding as if given to the Contractor. A superintendent or project manager shall be classified as management representatives included in the Contractor's overhead and shall perform management, supervisory and/or administrative tasks (non labor) only. Individuals listed under this Article shall have the ability to effectively communicate (verbal and written) with all parties associated with the administration/supervision of this contract.

6.1.1 For contracts awarded up to $1,000,000 the Contractor shall provide a supervisor, for the Contractor's staff, who shall be in attendance at the Site throughout the active performance of the Work, including active performance of the Work by subcontractors.

6.1.2 For contracts awarded from $1,000,001 to $10,000,000, the Contractor shall provide a superintendent, for the Contractor's staff, who shall be in attendance at the Site throughout the active performance of the Work until Substantial Completion. Upon Substantial Completion the Contractor shall provide a supervisor who shall be in attendance at the Site throughout the active performance of the Work until Physical Completion. The superintendent's responsibilities include, but are not limited to, directing and scheduling the Work, attending all Project meetings, coordinating and controlling the Work of subcontractors, ensuring full compliance with the Contract documents. The Contractor shall also provide a project manager for the Contractor's staff from award through Substantial Completion. The Project Manager's responsibilities shall include, but are not limited to, developing and maintaining the submittal system and project schedules, attending Project meetings, making purchasing and cost decisions on behalf of the Contractor, Orders on Contract responses and negotiations, and closeout and warranty documentation. The Contractor shall provide required information to the Director's Representative for the Project schedule.

6.1.3 For contracts awarded for more than $10,000,000, in addition to the requirements set forth in Article 6.1.2, if at any time the Contractor has more than five subcontractors performing Work on the Site simultaneously, the Contractor shall provide an additional Superintendent to coordinate the Work of the subcontractors.

6.2 Should the Director deem any employees of the Contractor not satisfactory or unfit for their duty, the Contractor shall dismiss them and they shall not again be employed on the Work.

6.2.1 Infractions that are dismissible for project managers, superintendents, or supervisors include, but are not limited to, the failure to develop and maintain Project schedules, failure to comply and enforce safety regulations, failure to schedule inspections or provide adequate notice as required by Contract Documents, failure to attend and adequately prepare for meetings as required by Contract Documents, and failure to follow directions regarding the Work provided by the Director's Representative.

6.3 The experience levels noted below in this Article will be used in evaluating the qualifications and experience of the supervisors, superintendents, and Project Managers, as applicable.

6.3.1 Supervisors, required by paragraph 6.1.1, shall have a minimum of five years of experience in the role of supervisor with a minimum of three projects of similar size and scope, and shall be subject to review and written approval by the Director's Representative before commencing the Work, and subsequently during the course of the Project if the supervisor is replaced after Work has commenced. The Contractor will provide references to validate qualifications of the proposed supervisor upon request.

6.3.2 Superintendents, required for any contracts awarded above $1,000,000 as set forth in Article 6.1.2, shall have a minimum of five years of experience in the role of Superintendent with a minimum of three projects of similar size and scope, and shall be subject to review and written approval by the Director's Representative before commencing the Work, and subsequently during the course of the Project if the Superintendent is replaced after Work has commenced. The Contractor will provide references to validate qualifications of the proposed Superintendent upon request.

6.3.3 The Project Manager, required for any contracts awarded above $1,000,000 as set forth in Article 6.1.2, shall have a minimum of five years of experience in the role of Project Manager with a minimum of three projects of similar size and scope, and shall be subject to review and written approval by the Director's Representative before commencing the Work, and subsequently during the course of the Project if the Project Manager is replaced after Work has commenced. The Contractor will provide references to validate qualifications of the proposed Project Manager upon request.

6.4 No subcontractor shall be allowed at the Work Site before approval by the Director and the Contracting Officer. Before any part of the Contract shall be sublet or material purchased, the Contractor shall submit to the Director in writing the name of each proposed subcontractor and supplier and obtain the Director's written consent to such subcontractor and supplier. The names shall be submitted in ample time to permit acceptance or rejection of each proposed subcontractor and supplier by the Director or Contracting Officer without causing delay in the Work of the Project. The Contractor shall promptly furnish such information as the Director or Contracting Officer may require concerning the proposed subcontractor's and supplier's ability and qualifications, and certification status as a Minority- and Women-Owned Business Enterprises and/or Service-Disabled Veteran-Owned Business. Each request for approval of a subcontractor whose subcontract will be valued at $10,000 or more shall also be accompanied by a NYS Vendor Responsibility Questionnaire - For-Profit Construction properly completed and executed by the proposed subcontractor.

6.5 The Contractor's use of subcontractors shall not diminish the Contractor's obligations to complete the Work in accordance with the Contract. The Contractor shall control and coordinate the Work of its subcontractors.

6.6 The Contractor shall be responsible for informing its subcontractors and suppliers of all the terms, conditions and requirements of the Contract Documents including, but not limited to, the General Conditions, Supplementary Conditions, the Drawings and Specifications, Appendix A, and changes made by Addenda and Orders on Contract.

END OF DOCUMENT

SECTION 015000

CONSTRUCTION FACILITIES & TEMPORARY CONTROLS

PART 1 GENERAL

1.01 DESCRIPTION

A. Provide construction facilities and temporary controls necessary for the Work, unless otherwise indicated.
   1. The construction facilities and temporary controls specified to be provided by a particular Contract shall be kept operational by that Contractor for the Work of all related Contracts at all times Work is being performed by a Contractor.
   2. The construction facilities and temporary controls specified to be provided by a particular Contractor shall be installed as soon after award of the Contract as necessary to enable the Work of each Contract to proceed on schedule, and maintained until completion of the Work of all related Contracts unless otherwise directed in writing.
   3. Any Contractor who requires additions to the construction facilities and temporary controls specified to be provided by another Contractor, shall provide and maintain them.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Construction Heat and Temporary Heat: Section 015123.
B. Disposal of Asbestos-Containing materials: Section 028213 (Construction Work Contract Only)

1.03 TEMPORARY LIGHT AND POWER

A. Electrical Work Contract:

   1. Make necessary arrangements with the facility to connect to the utility line at the access road that supplies power to provide a 600 ampere, 1 phase, 120-240-volt temporary electrical service to power construction activities. E-Contractor is responsible for provision and maintenance of this line until work of all contractors is completed. The facility will pay for the temporary electricity cost.
   2. Provide portable source of electricity for temporary light and power of adequate capacity to supply the needs of all contractors for the performance of their Work until the temporary electrical service can be utilized for temporary light and power.
   3. Provide a pole line for temporary light and power. Install minimum Class 4 poles of height required to maintain at least 25 feet ground clearance under wires. Space wires on cross arms to suit voltage.
   4. Provide wiring and other equipment within the building for temporary light and power.

a. Wiring for temporary light and single phase power shall, in general, consist of 3 wire, 120/240 volt or 4 wire, 120/208 volt feeders, with branch circuits of #12 conductors minimum.
   1) Install branch circuits with suitable fluorescent fixtures or incandescent lampholders for temporary lighting as required to maintain a minimum of 10 foot candles in the work areas. Equip fixtures and lampholders with guards. Fixtures and lampholders installed in damp or wet locations shall be of the weatherproof type.
   2) Install branch circuits with fused grounding type receptacle outlets for single phase power (for power tools, etc.).

b. Install 2 circuits with fluorescent fixtures or incandescent lampholders in corridors. Space fixtures or lampholders no more than 30 feet apart in corridors. Also install one fixture or lampholder in each boiler room and mechanical equipment room (connect to the corridor lighting circuits).

6. Provide site lighting for security purposes.
7. Provide a fused sealed service entrance switch for corridor lighting circuits and site lighting circuits. Locate switch adjacent to and connect to line side of temporary light and power service entrance switch. Stencil cover "CORRIDOR LIGHTING & SITE LIGHTING".
8. Provide lamps and fuses including replacements required.
9. Provide power service to the State Engineer's Office, the Director's Representative Office, the salt shed, and the temporary diesel fuel system. Refer to drawings.

B. All Contracts:
1. Any Contractor requiring additional lighting shall provide additional fluorescent fixtures or LED lamp holders (with lamps), but in no case shall the load on any branch circuit or feeder exceed its rated capacity.
2. Install materials for temporary light and power in conformance with the National Electrical Code.
3. Materials for temporary light and power need not be new if they are in satisfactory operating condition.
4. Provide ground-fault protection for personnel (such as portable plug-in type ground-fault circuit-interrupters) on single phase 15 and 20 ampere receptacle outlets which are in use.
5. Receptacle outlets, portable cord connectors and attachment plugs shall have standard NEMA configurations.
6. As the progress of the Work allows, and as approved, completed portions of the permanent wiring and electrical service may be utilized for temporary light and power.

1.04 TEMPORARY WATER

A. Construction Contract: Provide water in above ground or truck mounted water tanks or portable containers for the use by Contractor's and subcontractors employees. Prevent waste of water.

1.05 TEMPORARY TOILETS

A. Construction Work Contract: Provide toilet facilities for Contractor's and subcontractors employees engaged on the Project, including employees of other contractors. Locate toilets where directed and maintain them in a sanitary condition.

NUMBER OF EMPLOYEES	MINIMUM NUMBER OF FACILITIES*
20 or less	1 toilet
20 or more	1 toilet and 1 urinal per 40 employees
200 or more	1 toilet and 1 urinal per 50 employees

*Toilet/Urinal Combinations shall count as only one facility.

1. Locate toilet facilities no more than 1000 feet from any work location.

1.06 TEMPORARY CLOSURES FOR EXTERIOR WALL OPENINGS

A. Construction Work Contract:
1. Whenever necessary, after the building is enclosed, to maintain proper temperatures for the performance of the Work, provide and maintain temporary closures for all openings in exterior walls that are not closed with permanent materials.
2. During the period when plastering is being done and continuing thereafter until the plaster is properly cured, provide exterior window and door openings with temporary closures, regardless of the time of year.
3. Construct temporary closures of 2 x 4 framing sheathed with plywood, waferboard, or 6 mil polyethylene attached to wood frames, as approved and to suit job requirements.
4. Provide closures so that they will afford convenient means of entrance and exit for persons having business within the building, afford ample light to permit continued progress of the Work, and exclude inclement weather.

1.07 PROTECTION OF WORK AND EXISTING PROPERTY

A. Protect installed Work and existing property during performance of the Work.

B. Maintain the building in a watertight condition during performance of the Work.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Provide protective coverings at wall projections, jambs, sills, and soffits of openings.

E. Protect finished floors and other surfaces from traffic, dirt, wear, damage, and movement of heavy objects by covering them with durable sheet materials.

F. Protect smoke detectors from airborne dust and debris.
   1. At the beginning of each work day, provide protective coverings over smoke detectors in areas where airborne dust and debris will be generated by the Work.
   2. At the end of the work day, clean the areas in which the smoke detectors are located by whatever means necessary to assure that airborne dust and debris will not contaminate the smoke detectors, then remove protective coverings.
   3. Provide signs, instructions and alternate methods for reporting a fire during the periods that the smoke detectors are covered.
   4. Notify the Director's Representative and have procedures approved.

G. Prohibit traffic or storage upon waterproofed and roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

H. Protect existing trees and plants during performance of the Work unless otherwise indicated. Box trees and plants within the grading limit lines. Do not deposit excavated materials or store building materials around trees or plants. Do not attach guy wires to trees.

I. Prohibit traffic from landscaped areas.

J. Cleaning tools of cementitious and other insoluble materials:
   1. Do not wash tools in sinks or other sanitary drainage systems. Protect all drainage systems from debris that can clog or damage piping and fixtures.
   2. Take all precautions necessary to prevent cementitious and other insoluble materials from flowing into floor drains.
   3. Dispose of excess cementitious and other insoluble debris with the other rubbish.

1.08 BARRIERS AND ENCLOSURES

A. All Contracts: Provide barriers during performance of the Work to:
   1. Prevent unauthorized entry to work areas.
   2. Allow for State's occupancy of areas adjacent to the Site.
   3. Protect existing facilities and adjacent properties from damage.
   4. Protect vehicular and pedestrian traffic.

B. Construction Work Contract:
   1. Scaffolding, Hoist, and Equipment Barriers: Provide temporary fence enclosures as required to prevent unauthorized persons from coming in contact with ground supported scaffolding, hoists, and equipment.

C. Construction Work Contract:
   1. Maintain the temporary fence enclosure throughout the life of the Contract, or until directed to be removed. Replace all items or portions of fence enclosure damaged or destroyed.

1.09 WATER CONTROLS

A. Provide and maintain pumping equipment necessary to keep the work areas free from water. Discharge water into existing storm drainage systems or otherwise disperse as directed.

1.10 FIRE PREVENTION

A. Take precautions necessary to prevent fires.

B. Fuel for cutting and heating torches shall be acetylene or LP-gas only, and shall be contained in Underwriters Laboratory or Federal Department of Transportation approved containers.

C. Furnish and maintain a currently inspected 20 pound capacity multi-class ABC fire extinguisher in the immediate vicinity where welding tools or torches are in use.

D. Do not use flammable liquids, other than those specified, within a building without the written approval from the Director's Representative.

E. Tarpaulins shall be flameproof and shall be securely anchored when attached to scaffolding or when used to enclose any portion of a building.

F. If required by the nature of the work and facility regulations, the Contractor shall obtain from the facility and pay all costs associated with "Hot Work Permits" including fire watches to execute the work of its contract. Perform hot work in accordance with the Fire Code of New York State and the Hot Work Program approved for the work**.** Prior to, during and after performing hot work, inspect the hot work area for compliance with the requirements of the permitted Hot Work Program.
   1. Post signage "Caution: Hot Work In Progress - Stay Clear" in conspicuous locations warning others before they enter a hot work area where the area is accessible to persons other than the operator of the hot work equipment.

1.11 ACCESS ROADS

A. Routes of ingress and egress on the premises to the location of the work areas shall be as directed.

B. Keep designated access roads clear of dirt and debris resulting from the Work.

C. Provide means of removing mud from vehicle wheels before entering paved roads.

1.12 TEMPORARY ROADS

A. Construction Work Contract:
   1. Provide and maintain temporary roads for the use of all persons lawfully frequenting the site.

2. From the start of construction, provide and maintain adequate temporary roads which access all areas of the site requiring work under this and all related contracts. Provide a temporary road section sufficient to carry the heaviest construction traffic wheel loads resulting from this and all related contracts. Also provide an access spur from the nearest temporary road to the State Field Office parking lot.
3. Crown or slope the surface of temporary roads for adequate drainage. Provide temporary drainage, including swales, ditches, culverts and pumps as required, to maintain the temporary roads and prevent ponding water on the roads or on the site.
4. Permanent roads are not designed or intended for construction equipment use. Continually maintain temporary roads for construction traffic use until no longer needed. Maintenance shall include, but not be limited to, grading and compacting to remove ruts and depressions, removal of snow and ice, and measures to control dust.
5. Prior to placing the permanent asphalt concrete and/or Portland cement concrete paving required by this Contract, provide uncontaminated specified materials necessary to meet full sections and grades.

1.13 PARKING

A. Parking is allowed on in the designated temporary staging area on the Contract Drawings. Ingress and egress is allowed only as shown on the Contract Drawings.
   a. Keep designated parking areas clear of dirt and debris resulting from the Work.
   b. If requested, register vehicles which are to be parked at the Facility with the Facility Safety/Security Department.
   c. Remove ignition key from unattended vehicles and lock doors.

B. Construction work contract- Remove snow from parking areas allocated to all Contractors.

1.14 RUBBISH REMOVAL

A. All Contracts: Clean up and containerize the rubbish (refuse, debris, waste materials, and removed materials and equipment) resulting from the Work at least once a day and more often if the rubbish interferes with the work of others or presents a hazard. Leave work areas broom clean, except where more stringent cleaning is specified, at the end of each day. Locate containerized rubbish on the Site where directed.
   1. Burning of rubbish will not be permitted.

B. Construction Work Contract: Provide a dumpster for rubbish collection located per direction from Director's Representative. Remove rubbish from State property at least once a week and more often if the rubbish presents a hazard. Properly dispose of the rubbish.

1.15 RELOCATION AND REMOVALS

A. Should a change in location of any construction facilities and temporary controls be necessary in order to progress the work properly, remove and relocate such items as directed.
   a. Electrical work contract. Frequently relocated/revise the temporary lighting as contractors progress the work of the contracts causing changes to the condition of the building (installation or relocation of walls, partitions, ceilings, equipment, etc.). Keep pace with the changes and maintain a minimum of 10 foot candles in each recomposed work area.

B. Remove the construction facilities and temporary controls when they are no longer required. Restore permanent facilities used for or connected to temporary facilities to their original condition or better.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 014100

REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 COMPLIANCE

A. Comply with applicable regulatory requirements and various codes referenced in these specifications. Where conflicts exist between local, State, and/or Federal regulatory requirements, codes, or these specifications advise the Director's Representative. The Director's Representative will assist in resolving the conflicts to the satisfaction of the regulatory agencies prior to commencing the Work.

1.02 UNIFORM CODE, ENERGY CODE, AND CONTRACTOR QUALIFICATIONS

A. All Work shall comply with OSHA (including site-specific safety plans required on all projects), and the New York State Uniform Fire Prevention and Building Code (the "Uniform Code"), which includes the publications incorporated by reference in Title 19 NYCRR Part 1219 through 1228:
   1. 2020 Building Code of New York State (the "Building Code")
   2. 2020 Plumbing Code of New York State (the "Plumbing Code")
   3. 2020 Mechanical Code of New York State (the "Mechanical Code")
   4. 2020 Fuel Gas Code of New York State (the "Fuel Gas Code")
   5. 2020 Fire Code of New York State (the "Fire Code")
   6. All other standards referenced in 19 NYCRR Parts 1219 through 1228.

B. The contractor shall be aware of, and comply with, contractor requirements identified in the above-referenced codes and standards; for example, but not limited to:
   1. OSHA (Occupational Safety and Health Administration).
   2. 2020 Building Code Chapter 33 Safeguards During Construction.
   3. 2020 Existing Building Code Chapter 15 Construction Safeguards.
   4. 2020 Fire Code Chapter 33 Fire Safety During Construction and Demolition
   5. 2020 Fire Code Chapter 35 Welding and Other Hot Work (which governs safety during construction).

C. All Work shall comply with the 2020 Energy Conservation Construction Code of New York State ("Energy Code") promulgated pursuant to Article 11 of the New York State Energy Law. The Energy Code is contained in 19 NYCRR, Part 1240, and in the publications incorporated by reference in 19 NYCRR Part 1240. The publications incorporated by reference in 19 NYCRR Part 1240 include:
   1. The publication entitled "2020 Energy Conservation Construction Code" published by International Code Council, Inc.
   2. The publication entitled "ANSI / ASHRAE / IES Standard 90.1-2016, "Energy Standard for Buildings Except Low-Rise Residential Buildings" published by American Society of Heating, Refrigeration and Air-Conditioning Engineers, Inc.

3. The other referenced standards mentioned and/or referred to in 19 NYCRR Part 1240.

D. Electrical Work: Conform to the requirements of the National Electrical Code (NEC), as referenced in the Uniform Code, unless otherwise shown or specified. The Director will be the sole judge of the interpretation of these rules and requirements.

1.03 STATE-REQUIRED PERMITS AND INSPECTIONS

A. No Work shall commence without a Construction Permit issued by the OGS Division of Codes and Construction Permitting. Contractors shall not file for and not pay for Construction Permits for Work located on New York State property.

B. A New York Board of Fire Underwriters inspection or certificate is not required.

C. The Contractor or subcontractor performing site work which disturbs the site shall submit an executed and completed SWPPP Contractor Certification Statement to the Director's Representative prior to the commencement of work. This required document is found in the Appendix. The failure to execute this required document may result in the Contract being considered for Termination for Cause under the provisions of Article 13 of the General Conditions.

1.04 LISTINGS

A. Equipment and materials for which Underwriters' Laboratories, Inc. (UL) provides product listing service, shall be listed and bear the listing mark.
1. Alternately, any product listed and bearing the mark from one of the other Nationally Recognized Testing Laboratories (NRTL – as recognized by OSHA) shall be an acceptable alternative to being UL listed and marked, if the listed product has been tested to the applicable standard.

1.05 FIRE-RESISTANT CONSTRUCTION MATERIALS AND ASSEMBLIES

A. Conform to the fire rating classifications based upon the test methods and acceptance criteria in the "Standard for Fire Tests of Building Construction and Materials" for which Underwriters' Laboratories, Inc. (UL) provides listings.
1. Materials and assemblies shall comply with the acceptance criteria, detailed description of the assembly, its performance in the fire test, and other pertinent details such as specification of materials, Classification coverage, and alternate assembly details.
2. Alternatively, fire resistance rating classifications by other issuing organizations listed in the New York State Uniform Fire Prevention and Building Code are acceptable.

1.06 UTILITIES

A. Underground Utilities:

1. Locate existing underground utilities prior to commencing excavation work. Conform to all requirements of NYCRR 16 Part 753, including the following:
    a. Notify Dig Safely New York at least 48 hours in advance, not counting the date of contact.
        1) Statewide: 800-962-7962.
        2) Website: www.digsafelynewyork.com
    b. Refer to Project Manual Section 023313 "Underground Utility Locator Service" to locate all utilities on facility and/or private property.
    c. Determine exact utility locations by hand-excavated test pits. Contractor will be responsible for the proper support and protection of all utilities to remain in service.

B. Coordination with Municipality for Water Connection:
1. Comply with the municipal requirements for the connection of water lines to the municipal utility services. Obtain and pay for all necessary permits from municipal water department. Obtain authority to connect to their existing water mains. The municipal utility company is the Town of Vestal (701 Vestal Pkwy W, Vestal, NY 13850).
    a. Make necessary connections to existing municipal water mains under supervision of water department's representative.
    b. Connections to existing municipal water mains will be made by the municipal water department. Pay the water department's charges for the connections.
    c. Connection Control Unit: Install Reduced Pressure Zone Devices (RPZDs) and meters to comply with municipal standards. Obtain meters per municipal requirements.

C. Coordination with Municipality for Sanitary Sewer Connection:
1. Comply with the municipal requirements for the connection of sanitary sewer lines to the municipal utility services. Obtain and pay for all necessary permits from municipal sewer department. Obtain authority to connect to their existing sanitary sewers. The municipal utility company is the Town of Vestal (701 Vestal Pkwy W, Vestal, NY 13850).
    a. Make necessary connections to existing municipal sewer lines under the supervision of sewer department's representative.
    b. Connections to existing municipal sanitary sewers will be made by the municipal sewer department. Pay the sewer department's charges for the connections.

D. Utility Work Within State Highway Right-Of-Way:
1. Utility Work, either overhead or underground, within the boundaries of the state highway right-of-way, shall conform to procedures set forth in the following NYS Department of Transportation publications:
    a. "Department Rules and Regulations Governing the Accommodation of Utilities Within State Highway Right-of-Way" (Part 131 - Title 17 Transportation).
    b. Manual of Administrative Procedures - "Issuance of Highway Work Permits" 7.12-2.

1.07 MATERIALS WITH TRACE AMOUNTS OF ASBESTOS

A. Perform Work required to remove, disturb, or repair any material that contains less than 1 percent by weight of asbestos (trace) in accordance with all applicable OSHA regulations (29 CFR Part 1926.1101).

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 015213

STATE FIELD OFFICE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. All provisions outlined in the specification are to be provided by the Construction Work Contract.

B. Provide and maintain two separate field offices comprised of new custom built mobile or relocatable office units, new furniture, and new equipment, stairs and ramps for State personnel. Include temporary services and accessories necessary for use of the items specified. The State Engineer's Office will be for the sole use of the Director's Representative and staff and the Temporary State Facility Office will be for the sole use of NYSDOT Region 9 personnel supporting State critical operations at the project site during the construction work period.

1.02 SUBMITTALS

A. Waiver of Submittals: The "Waiver of Certain Submittal Requirements" in Section 013300 does not apply to this Section.

B. Shop Drawings:
   1. Site Plan: Show location of field office where directed. Indicate holding tank, utility services, connections and accessible stairs and ramps.

C. Product Data: Catalog sheets, specifications, and installation instructions, for all major items of the field office including furnishings and equipment. Submit within 15 days after award of Contract.

1.03 SCHEDULING

A. Provide units, ready for occupancy by the Director's Representative and staff, within 30 days after shop drawings specified above are approved.

1.04 QUALITY ASSURANCE

A. Accessibility Requirements: Provide fully accessible units including stairs and ramps that comply with ICC/ANSI A117.1 as referenced by the Building Code of New York State.

B. Provide units and all related utility connections in accordance with the NYS Uniform Fire Prevention and Building Code.

C. Provide certification insignia from New York Department of State that certifies trailer unit is code compliant.

PART 2 PRODUCTS

2.01 MOBILE OR RELOCATABLE OFFICE UNITS

A. Manufacturers/Companies:
   1. ModSpace, 1620 Route 9, Clifton Park, NY 12065-0511, (518) 371-0384, www.modspace.com.
   2. Williams Scotsman, Corporate Headquarters, 8211 Town Center Dr., Baltimore, MD 21236, (800) 782-1500, www.willscot.com.
   3. Anchor Modular Buildings, PO Box 100, Medford, NJ 08055, (866) 396-0227, www.anchormodular.com.

B. Number, Approximate Size and Model:
   1. State Engineer's Office: One, 60 x 12 feet, office unit with two entrance doors on one side; 2 offices and interior bathroom.
   2. Temporary State Facility Office: One, 60 x 12 feet, office unit with two entrance doors on one side; 2 offices and interior bathroom.

C. Office Unit Requirements:
   1. Ceiling Height: 8'-0" minimum.
   2. Insulation: Exceed code required minimums for insulation. If wood frame construction, exceed the following values, walls > R - 11, floor > R – 25 and roof > R – 25. Provide code requirements and provided insulation values.
   3. Exterior Doors: Minimum 2, minimum 34 inches wide, with key-in-lever locksets (U-factor to exceed 0.7).
   4. Windows: Approximately 7 percent of exterior wall area with insect screens (U-factor to exceed 0.7).
   5. Complete ducted heating, ventilating, and air conditioning system with sufficient capacity to maintain a summer office temperature of 75 degrees F and a winter office temperature of 70 degrees F.
   6. Electric Water Heater: 6 gal minimum.
   7. VCT or sheet vinyl floor finish.
   8. Interior partitions to be wood 2 x 4 framing with ½" vinyl covered gypsum board.
   9. Fluorescent lights in all rooms as required to maintain a minimum of 60-foot candles at desktop level.
   10. Bulletin board (4 feet x 6 feet).
   11. Toilet room with toilet, grab bars, toilet tissue dispenser, lavatory, built-in medicine cabinet, paper towel dispenser and mirror.
   12. Self-contained water supply with a holding tank for potable water.
   13. Self-contained sanitary system with a holding tank for waste.
   14. Insulated skirting from bottom of units to grade, around entire unit. Skirting is to be 2' x 4' wood framing with 2" rigid insulation type SM and white ventilated vinyl siding to match unit.
   15. Pre-wire unit for voice and data (5 connections each). The owner provides final data and voice connections.
   16. Pre-wire power distribution to a power panel. Provide disconnect for single point power connection by the Electric Work Contract.
   17. Electrical work contract is responsible for paying all temporary electrical charges associated with the power to the trailers, salt shed, and temp diesel system.

18. Temporary State Facility Office: provide six (6) weather-rated GFCI power outlets (120V, 20A each, with a weather-proof while-in-use cover) on the exterior of the trailer for powering truck block heaters in winter months. Confirm exact number of required outlets and locations with NYSDOT prior to order.

2.02 FURNITURE AND EQUIPMENT

A. State Engineer's Office Furniture:
1. Two swivel type chairs with arms suitable for use at office desks.
2. Twelve (12) straight back stackable chairs.
3. Two lockable metal office desks, 30 x 60 inches, double pedestal type with keys.
4. One drafting table, 37 x 60 inches.
5. One "Planhold" plan rack, adjustable height, floor supported cantilever type, with plan clamps or plan rack sticks.
6. Two lockable 4-drawer letter size file cabinets.
7. One 4'x 6' wall mounted dry erase board.
8. Two 8'x 2' folding resin tables.

B. State Engineer's Office Equipment:
1. One multifunction Printer - HP Laser Jet Printer. Provide one-year service agreement, paid in advance.
2. One copier - Sharp Laser Digital Copier
   a. Supplies: paper, sizes as directed and toner cartridges for the duration of the project.
3. One refrigerated bottled water dispenser,(Hot & Cold Type) with cups, bottled water and necessary supplies. Provide water and cups for duration of contract.
4. One first aid kit.
5. One 3 cubic foot refrigerator, EnergyStar energy efficient model.
6. Fire Extinguisher: Multipurpose Dry-Chemical Type in Steel Container UL-rated 20-A:120-B:C, 20-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.

C. Temporary State Facility Office Furniture:
1. Two swivel type chairs with arms suitable for use at office desks.
2. Eight straight back stackable chairs.
3. Two lockable metal office desks, 30 x 60 inches, double pedestal type with keys.
4. One conference table, 44 x 96 inches.
5. Three lockable 4-drawer letter size file cabinets.
6. Two 4'x 6' wall mounted dry erase boards.

D. Temporary State Facility Office Equipment:
1. One multifunction Printer - HP Laser Jet Printer. Provide one-year service agreement, paid in advance.
2. One copier - Sharp Laser Digital Copier
   a. Supplies: paper, sizes as directed and toner cartridges for the duration of the project.

3. One refrigerated bottled water dispenser,(Hot & Cold Type) with cups, bottled water and necessary supplies. Provide water and cups for duration of contract.
4. One first aid kit.
5. One 15 cubic foot refrigerator, EnergyStar energy efficient model.
6. Fire Extinguisher: Multipurpose Dry-Chemical Type in Steel Container UL-rated 20-A:120-B:C, 20-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container

PART 3 EXECUTION

3.01 INSTALLATION

A. Install units where directed. Remove wheels and store them where directed. Properly secure and provide blocking to level the units as required.

B. Provide rod and helix anchors for tie downs into the compacted gravel/fill substrate and provide stabilizer plates. Provide 6 ties downs for the State Engineer's Office and 8 tie downs for the Temporary State Facility Office.

C. Provide manufacturer's stair with platform at one exterior door and ramp with platform(s) at one exterior entrance.

D. Provide parking area and maintain for the duration of the contract including snow removal.

E. Retain and pay for a potable water supplier to fill and maintain the potable water system for the duration of the project.

F. Retain and pay for a sanitary sewer company to pump and maintain the sanitary system for the duration of the project.

3.02 MAINTENANCE AND CLEANING

A. Maintain and clean the office units for the duration of this Contract. Include the following:
1. Daily removal of rubbish.
2. Daily cleaning of toilet room, including the plumbing fixtures. Replenish toilet room supplies as needed.
3. Daily mopping of floors.
4. Weekly dusting of offices and other rooms.

B. Maintain approaches free of mud and snow.

C. Protect water lines from freezing.

D. Check and refill potable water tank on a weekly schedule.

E. Check and pump sanitary holding tank on a weekly schedule.

3.02 OWNERSHIP

A. The State Engineer's Office trailer will be rented by the contractor for the duration of the project, no less than 20 months.

B. The Temporary State Facility Office trailer will be rented by the contractor for the duration of the project, no less than 12 months.

3.03 REMOVALS

A. Remove the units, furniture, and equipment when directed. Restore permanent facilities used for or connected to field office to their original condition or better.

END OF SECTION

SECTION 014100

REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 COMPLIANCE

A. Comply with applicable regulatory requirements and various codes referenced in these specifications. Where conflicts exist between local, State, and/or Federal regulatory requirements, codes, or these specifications advise the Director's Representative. The Director's Representative will assist in resolving the conflicts to the satisfaction of the regulatory agencies prior to commencing the Work.

1.02 UNIFORM CODE, ENERGY CODE, AND CONTRACTOR QUALIFICATIONS

A. All Work shall comply with OSHA (including site-specific safety plans required on all projects), and the New York State Uniform Fire Prevention and Building Code (the "Uniform Code"), which includes the publications incorporated by reference in Title 19 NYCRR Part 1219 through 1228:
   1. 2020 Building Code of New York State (the "Building Code")
   2. 2020 Plumbing Code of New York State (the "Plumbing Code")
   3. 2020 Mechanical Code of New York State (the "Mechanical Code")
   4. 2020 Fuel Gas Code of New York State (the "Fuel Gas Code")
   5. 2020 Fire Code of New York State (the "Fire Code")
   6. All other standards referenced in 19 NYCRR Parts 1219 through 1228.

B. The contractor shall be aware of, and comply with, contractor requirements identified in the above-referenced codes and standards; for example, but not limited to:
   1. OSHA (Occupational Safety and Health Administration).
   2. 2020 Building Code Chapter 33 Safeguards During Construction.
   3. 2020 Existing Building Code Chapter 15 Construction Safeguards.
   4. 2020 Fire Code Chapter 33 Fire Safety During Construction and Demolition
   5. 2020 Fire Code Chapter 35 Welding and Other Hot Work (which governs safety during construction).

C. All Work shall comply with the 2020 Energy Conservation Construction Code of New York State ("Energy Code") promulgated pursuant to Article 11 of the New York State Energy Law. The Energy Code is contained in 19 NYCRR, Part 1240, and in the publications incorporated by reference in 19 NYCRR Part 1240. The publications incorporated by reference in 19 NYCRR Part 1240 include:
   1. The publication entitled "2020 Energy Conservation Construction Code" published by International Code Council, Inc.
   2. The publication entitled "ANSI / ASHRAE / IES Standard 90.1-2016, "Energy Standard for Buildings Except Low-Rise Residential Buildings" published by American Society of Heating, Refrigeration and Air-Conditioning Engineers, Inc.

3. The other referenced standards mentioned and/or referred to in 19 NYCRR Part 1240.

D. Electrical Work: Conform to the requirements of the National Electrical Code (NEC), as referenced in the Uniform Code, unless otherwise shown or specified. The Director will be the sole judge of the interpretation of these rules and requirements.

1.03 STATE-REQUIRED PERMITS AND INSPECTIONS

A. No Work shall commence without a Construction Permit issued by the OGS Division of Codes and Construction Permitting. Contractors shall not file for and not pay for Construction Permits for Work located on New York State property.

B. The Contractor or subcontractor performing site work which disturbs the site shall submit an executed and completed SWPPP Contractor Certification Statement to the Director's Representative prior to the commencement of work. This required document is found in the Appendix. The failure to execute this required document may result in the Contract being considered for Termination for Cause under the provisions of Article 13 of the General Conditions.

1.04 LISTINGS

A. Equipment and materials for which Underwriters' Laboratories, Inc. (UL) provides product listing service, shall be listed and bear the listing mark.
   1. Alternately, any product listed and bearing the mark from one of the other Nationally Recognized Testing Laboratories (NRTL – as recognized by OSHA) shall be an acceptable alternative to being UL listed and marked, if the listed product has been tested to the applicable standard.

1.05 FIRE-RESISTANT CONSTRUCTION MATERIALS AND ASSEMBLIES

A. Conform to the fire rating classifications based upon the test methods and acceptance criteria in the "Standard for Fire Tests of Building Construction and Materials" for which Underwriters' Laboratories, Inc. (UL) provides listings.
   1. Materials and assemblies shall comply with the acceptance criteria, detailed description of the assembly, its performance in the fire test, and other pertinent details such as specification of materials, Classification coverage, and alternate assembly details.
   2. Alternatively, fire resistance rating classifications by other issuing organizations listed in the New York State Uniform Fire Prevention and Building Code are acceptable.

1.06 UTILITIES

A. Underground Utilities:
   1. Locate existing underground utilities prior to commencing excavation work. Conform to all requirements of NYCRR 16 Part 753, including the following:

a. Notify Dig Safely New York at least 48 hours in advance, not counting the date of contact.
   1. Statewide: 800-962-7962.
   2. Website: www.digsafelynewyork.com
b. Refer to Project Manual Section 023313 "Underground Utility Locator Service" to locate all utilities on facility and/or private property.
c. Determine exact utility locations by hand-excavated test pits. Contractor will be responsible for the proper support and protection of all utilities to remain in service.

B. Coordination with Electric Utility Company:
   1. Comply with the utility company requirements for the new or modified incoming electric service. Pay the utility company's charges in connection with the installation of the incoming service. (An allowance for the utility company's charges is included in Section 012100.) The utility company is New York State Electric and Gas Corporation (NYSEG).

C. Coordination with Telecommunications Organization:
   1. Contact the on-site telecommunications coordinator at the facility and arrange for the removal and relocation of existing phone and/or internet service equipment.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 075323

ADHERED EPDM ROOFING SYSTEM

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. Wood Nailers and Blocking: Section 061053.

B. Flashing and Trim: Section 076000.

1.02 DEFINITIONS

A. Company Field Advisor; An individual meeting the requirements of either subparagraph below:
   1. An employee of the company producing or manufacturing the system (or the company which lists and markets the primary components of the system under their name) who is certified in writing by the company to be technically qualified in design, installation, and servicing of the required products, and has experience in the installation of the required products. Personnel involved solely in sales do not qualify. Employees of the Contractor or the Subcontractor do not qualify.
   2. An individual employed by an organization (other than the company producing or manufacturing the system), certified in writing by the company producing or manufacturing the system, that the individual is technically qualified in design, installation and servicing of the required products and is capable to act as company field advisor in their behalf, and has experience in the installation of the required products. Personnel involved solely in sales do not qualify. Employees of the Contractor or the Subcontractor do not qualify.

1.03 SYSTEM DESCRIPTION

A. Type C Adhered EPDM System: EPDM fully adhered coverboard with bonding adhesive, and the insulation and/or underlayment board mechanically attached to the structural deck.

1.04 SUBMITTALS

A. Waiver Of Submittals:
   1. "Named Brand" Roofing Systems: The "Waiver Of Certain Submittal Requirements" in Section 013300 applies to this Section only if a "Named Brand" roofing system is furnished.
   2. "Or Equal" Roofing Systems: The "Waiver Of Certain Submittal Requirements" in Section 013300 does not apply to this Section if an "or equal" is submitted.

B. "Named Brand" Submittals: Submit for approval, one of the "named brand" roofing systems and any proposed deviations from the Contract Documents.

Submit Product Data, Samples, Applicator's Certification, and Material's Certification, to the Director's Representative at the site for information purposes only.

C. "Or Equal" Submittals: Submit for approval, product data, samples, quality control submittals, and any proposed deviations from the Contract Documents.

D. Approvals: Approval of a "named brand" or "or equal" roofing system is with the understanding that the requirements of the Contract Documents will be met. Approval of a roofing system does not constitute blanket approval of the manufacturer's installation specifications or details.
   1. If the requirements of the Contract Documents differ from or are more stringent than the requirements of the approved roof system manufacturer, the Contract Documents have precedence over the requirements of the approved manufacturer.

E. Proposed Deviations from the Contract Documents: Submit for approval proposed deviations when the roofing system is submitted. Proposed deviations submitted after the roofing system has been approved will not be considered for approval and may be cause for rejection of the previously approved roofing system.
   1. Manufacturer's Details: Do not use or submit manufacturer's standard details unless there is an omission or a proposed deviation from the Contract Documents. In such instances, submit the revised detail for approval. Label each revised detail with the words "PROPOSED DEVIATION".
   2. Manufacturer's Specifications and Installation Instructions: When there is a proposed deviation from the Contract Documents, submit the proposed deviation for approval. Label each specification and instruction revision with the words "PROPOSED DEVIATION".

F. Product Data: Catalog sheets, specifications, installation instructions for each material specified.

G. Samples:
   1. Sheet Membrane: One 6 inch square piece.
   2. Sheet Flashing: One 6 inch square piece.
   3. EPDM Cover Tape: One 12 inch square piece.
   4. Inseam Tape: One piece 3 inches wide by 12 inches long.
   5. Fasteners: Two each type.
   6. Insulation: One 3 inch square piece.
   7. Coverboard: One 3 inch square piece.

H. Quality Control Submittals:
   1. Fire Hazard Certification: Written certification that the roof system, including the specific insulation, has been tested in conjunction with the type of structural roof deck and roof slope applicable to the project and has achieved an Underwriters Laboratories Class A external fire resistance rating.

a. Acceptable Certification: Letter from Underwriters Laboratories, or a copy of the Underwriters Laboratories classification listing for the roofing system.

2. Wind Uplift Certification: Submit written certification that the roof system, including the specific insulation and fasteners, has been tested in conjunction with the type of structural roof deck applicable to this project, and has achieved a Factory Mutual Class 1-90 Wind Uplift rating.
   a. Acceptable Certification: Letter from Factory Mutual, or a copy of the Factory Mutual Approval Report for the roofing system.
3. Material Certification: Written certification from the roofing membrane manufacturer certifying that the insulation, insulation fasteners (if any), flashings and accessory products provided by the membrane manufacturer are approved for use with the roofing system and is included in the full system warranty.
4. Membrane Manufacturer's Certification:
   a. Written certification that the manufacturer has been actively marketing the submitted system for the past 5 years.
   b. Names and addresses of 5 previous EPDM roofing projects installed within the past 5 years. Include the type and size of each project, and name and telephone number of a contact person at the project locations.
5. Installer's Certification:
   a. Written certification from the membrane manufacturer certifying that the installer is licensed or approved to install the roof system.
   b. Names, addresses, and telephone numbers of 3 buildings where the installer has installed EPDM sheet membrane roof systems that have had the manufacturer's warranty issued. Include the types of EPDM systems installed, the manufacturer's names, and the warranty numbers.
   c. Written certification that the job supervisor or crew chief and at least one other member of the roofing crew have installed at least 3 EPDM sheet membrane roof systems and are thoroughly familiar with all aspects of the installation.
6. Warranty: Sample copy of the full system warranty specified.

I. Contract Closeout Submittals:
   1. Warranty: Warranties as specified.

J. Material Safety Data Sheets (MSDS): Do not include the MSDS in the Submittals Package. Submit the MSDS to the Director's Representative at the Pre-Installation Conference.

K. Submit all items, except contract closeout submittals and MSDS, at one time as a complete package. Partial submittals will not be considered.

1.05 QUALITY ASSURANCE

A. Fire Hazard Classification: The sheet membrane roof system shall have an Underwriters Laboratories Class A External Fire Resistance rating, as determined

by tests conducted in conformity with UL-790 "Tests for Fire Resistance of Roof Covering Materials".

1. The roof system, which includes a specific generic type of insulation, and in some instances a specific name brand insulation, shall have been tested in conjunction with the type of structural roof deck and roof slope applicable to the project.

B. Material Classification Identification: Materials delivered to the site that are a component of the roofing system shall bear the UL Classification mark.

C. Membrane Manufacturer's Qualifications:

1. The manufacturer shall have been actively marketing an EPDM roof system in the United States for a minimum of 5 years.
2. The manufacturer shall have the technical expertise and qualified technical representatives to resolve questions or problems that may arise both during and after the Work is completed.
3. The manufacturer shall furnish the names, addresses, and telephone numbers of at least 5 previous projects of comparable size, scope, and complexity as the Work of this Section.
4. The manufacturer shall require that the roof system be installed by a licensed or approved applicator.

D. Installer's Qualifications: The installation of the roofing system shall be performed by an installer licensed or approved by the membrane manufacturer. The installer shall have previously installed at least 5 EPDM sheet membrane systems for which the manufacturer's warranty was issued. The roofing company shall, upon request, provide evidence of having a minimum of ten years of successful experience installing single-ply roofing systems and having installed at least ten roofing applications of equal size and scope.

1. Workers: The supervisor or crew chief and at least one other member of the roofing crew shall have installed at least 5 EPDM sheet membrane roof systems and shall be thoroughly familiar with all aspects of the installation.

E. Pre-Installation Conference: Before the roofing work is scheduled to commence, a conference will be called by the Director's Representative at the site for the purpose of reviewing the Drawings and the Specifications and discussing requirements for the Work. The conference shall be attended by the Contractor, the authorized roofing applicator, and the Company Field Advisor.

1.06 ROOFING MANUFACTURER'S COMPANY FIELD ADVISOR

A. The manufacturer of the roofing system, issuing the final system guarantee on this roofing project, must supply a Company Field Advisor, as a technical representative, with the following minimum qualifications:

1. Documentation of 5 years of field experience on the same type of roofing system.
2. Documentation of 5 projects where role was a Company Field Advisor; include contact names and phone numbers for each project.
3. Documentation of attendance at a roof specific instructional seminar within the last two years.

B. Secure the services of the Company Field Advisor for a minimum of four (4) days at a minimum of four (4) hours per day to inspect the workmanship of the roofing system installer.

C. Company Field Advisor Duties and Responsibilities:
   1. Become familiar with the Contract Documents and approved submittals prior to the pre-roofing conference.
   2. Attend the pre-roofing conference and the beginning of the actual membrane installation for the purpose of:
      a. Rendering technical assistance to the Contractor regarding installation procedures of the system.
      b. Familiarizing the Director's Representative with all aspects of the system including inspection techniques.
      c. Answering questions that might arise.
   4. Be objective, unbiased and impartial in each inspection, recommendation, conversation, action and written report.
      a. Inspect the existing substrate, flashing, blocking, and related materials as being acceptable for the installation of the roofing system.
      b. Ensure proper fastening patterns and fastener sizes of wood blocking, insulation, edge flashing, and related components.
   5. Immediately report non-compliant conditions, if any, to the Director's Representative.
   6. Provide to the Director's Representative a written report, submitted prior to leaving the Project Site each day the Company Field Advisor is present. Each daily written report shall contain at a minimum:
      a. Date of report and inspection.
      b. Weather conditions at the start, middle, and end of the work day.
      c. Work performed including Contractor activity, contractor crew size, supervisor's name, area of activity, and progress and quality of the work as observed.
      d. Discussions with Contractor regarding work anomalies and resolution.
      e. Conditions that are not in compliance with the Contract documents.
         1) Continue documenting non-compliance issues in subsequent reports until the issue has been resolved. Document resolution of non-compliance issues when resolved.
   7. Report to the Director's Representative in writing failure or refusal of the Contractor to correct unacceptable practices called to the Contractor's attention.
   8. Confirm, after completion of the roofing work and based on the Company Field Advisor's inspections and tests, that the Company Field Advisor has observed no applications procedures in conflict with the specifications other than those that may have been previously reported and corrected.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to the site in the manufacturer's labeled, unbroken containers.

B. Storage and Handling: Store materials in a dry, well-ventilated place protected from the weather.
   1. Do not store materials so as to overload the deck or structural assembly.
   2. Store all materials on raised platforms covered with properly secured breathable water resistant covers. Slit shrink wrapping to not permit condensation and cover with breathable tarp.
   3. Remove all materials that become wet from the site.
   4. Store volatile liquids in a separate storage building or trailer, or removed from the site at the end of each workday.
      a. Store volatile liquids at temperatures recommended by the manufacturer.
   5. Do not remove materials from factory packaging until ready for use.
   6. Store adhesives, and sealants at temperatures between 60 degrees F and 80 degrees F.

1.08 PROJECT CONDITIONS

A. Unless otherwise directed, do not execute the work of this Section if the Director's Representative is not present.

B. Do not execute the work of this Section unless the substrate is dry and free of dirt and debris.

C. Moisture Protection:
   1. Cover, seal or otherwise protect the roof and flashings so that water cannot accumulate or flow under completed portions. When and where necessary to accomplish this, provide temporary water cut-offs in accordance with the membrane manufacturer's written specifications.

D. Do not smoke or use open flames near volatile materials.

1.09 WARRANTY

A. Warranty Extension: The one year period required by Paragraph 9.8 of the General Conditions is extended to 2 years for the Work of this Section. Refer to Supplementary Conditions 007306.

B. Manufacturer's Warranty: In addition to the 2 year period specified above, furnish the membrane manufacturer's printed 20 Year Full System Warranty, covering workmanship, materials, and wind related damage, for the Work of this Section.
   1. The warranty shall include, but not be limited to, repair of leakage and the repair and/or replacement of the roofing system as necessary to correct defects or damage caused by; materials, workmanship, or wind speeds less than 72 MPH.
      a. Materials shall include the membrane, insulation, fasteners, adhesives and tapes, flashing originally provided by the manufacturer, and all accessory products.

b. Repair and/or replacement of the roofing system shall include the replacement of wet insulation. For the purpose of this specification, insulation will be considered wet if either of the following exists:
   1) Free water is visible when the insulation is compressed.
   2) No free water is visible when the insulation is compressed, but the insulation is damp to the touch over a large enough area, as determined by the Director's Representative, to jeopardize the integrity of the roof system and any of it's components, or to significantly lower the specified R value of the insulation.

PART 2 PRODUCTS

2.01 EPDM SHEET MEMBRANE, SHEET FLASHING, AND RELATED PRODUCTS

A. The EPDM sheet membrane shall be visually free of streaks, particles of foreign matter, undispersed raw material, pinholes, cracks, tears, and shall be uniform in thickness. When unrolled in a relaxed position, the membrane shall be free of wrinkles, distortions, and blisters.

B. EPDM (Ethylene, Propylene, Diene, Monomer) Sheet Membrane:
   1. One of the following types as required to achieve a UL Class A external fire rating for the slope of the roof system:
      a. 60 mil, unreinforced, EPDM membrane.
   2. The following systems are listed in the UL Materials Directory as having a UL Class A Exterior Fire Rating when installed with the type of deck, insulation, and roof slope applicable to this Project.
      a. "Sure Seal Adhered Roofing System" by Carlisle Syntec Systems, P.O. Box 7000, Carlisle, PA 17013, (800) 479-6832, www.carlisle-syntec.com
      b. "Adhered Rubbergard Roofing System" by Firestone Building Products Company, 525 Congressional Blvd., Carmel, IN 46032, (800) 428-4442, www.firestonebpco.com
      c. "GenFlex Fully Adhered Roofing System", by Genflex Roofing Systems, P.O. Box 637, Maumee, OH 43537, (800) 443-4272, www.genflex.com
      d. "VersiGard Fully Adhered Roofing System" by Versico Incorporated, P.O. Box 6424, Akron, OH 44312, (800) 992-7663, www.versico.com

C. Sheet Flashing: Membrane manufacturer's cured and uncured EPDM as specified.

D. Inseam Tape: Membrane manufacturer's minimum 6 inch wide self adhering tape consisting of cured butyl double sided adhesive tape, for inseam splicing of rubber to rubber.

E. Cured EPDM Cover Tape: Membrane manufacturer's minimum 6 inch wide self adhering tape consisting of cured butyl adhesive laminated to cured EPDM, for

installation over EPDM seams, cuts in field membrane, and for stripping in metal work.

F. Uncured EPDM Cover Tape: Membrane manufacturer's minimum 6 inch wide self adhesive tape, consisting of, cured butyl adhesive laminated to uncured EPDM, for installation over base flashing corners, inside and outside corners, pipe flashings and other detail work.

G. Related Products: Membrane manufacturer's bonding adhesive, splicing cement, lap sealant, water cut-off mastic, nite seal, pourable sealer, splice joint cleaning agent and primer, insulation adhesive, and all other products related to the sheet membrane system. All adhesives, primers, and cleaners must comply with the current New York State VOC OTC regulations.

2.02 INSULATION

A. The indicated insulation thickness is nominal, allowing for differences in insulating properties of various name brands. Minor variation in thickness is acceptable, provided the specified thermal value and other requirements of this Contract are met.

B. Approval of the insulation is contingent upon certification by the membrane manufacturer that the insulation is approved for use with the specified roof system and that the insulation is included in the full system warranty specified.

C. Uniform Thickness isocyanurate insulation and Tapered isocyanurate insulation: Membrane manufacturers approved closed cell isocyanurate foam core insulation skinned on both sides with factory applied fiberglass facers suitable for installation with hot asphalt and cold adhesive. ASTM C1289-02, Type II, Class 1, Grade 2. UL Classified and Factory Mutual Approved for direct application over steel deck. Minimum LTTR : 5.7 per inch thickness.

1. Board Size:
   a. Adhesively Secured Insulation: Maximum board size 4 feet x 4 feet.
   b. Mechanically Fastened Insulation: Minimum board size 4 feet x 8 feet.

D. Tapered Insulation System: Membrane manufacturer's approved 1/4 inch per foot factory tapered polyisocyanurate insulation.

E. Tapered Edge Strips: Membrane manufacturer's approved 1/2 inch per foot factory tapered isocyanurate insulation conforming to ASTM C 1289.

2.03 COVERBOARD

A. Coverboard: 1/2 inch thick gypsum roof board composed of a silicone treated gypsum core with fiberglass facers.

1. Acceptable Product: "Dens-Deck" by Georgia-Pacific Corporation, Gypsum Division, 133 Peachtree Street, N.E., Atlanta, GA 30303, (800) 225-6119, www.gp.com

2. Securock Roof Board, 3/8 inch thick by USG, 550 West Adams Street, Chicago, IL 60661-3676, (312)-0436-4000, www.usg.com.
3. Adhesively Attached Coverboard: Maximum board size 4 feet x 4 feet.

2.04 FASTENERS

A. Insulation and Membrane Fasteners: Approval of fasteners is contingent upon certification by the membrane manufacturer that the fasteners are approved for use with the specified roof system and that the fasteners are included in the full system warranty specified.

1. Steel Decks: Membrane manufacturer and Factory Mutual approved, hardened, self-tapping, anti-backout, Phillips pan head screws with round, square or hexagonal steel stress plates. Plate size as recommended by the membrane manufacturer.
   a. Minimum penetration 1 inch, minimum pull out resistance from deck 400 pounds unless specified otherwise by the membrane manufacturer.

B. Base Flashing Fasteners (use along top edge of base, beneath in-wall cap flashings):
1. Sheet Metal Surfaces: Hardened, self tapping, #10 sheet metal screws through 1 inch minimum sheet metal discs.

C. Termination Bar and Fasteners:
1. Termination Bar: Factory fabricated one inch wide x .098 inches thick mill finish extruded aluminum pre-punched 6” on center with a caulking and stiffening flange, as provided by the membrane manufacturer.
2. Fasteners:
   a. Concrete Or Masonry Surfaces: Slotted hex washer head masonry screws or zinc alloy hammer driven expansion anchors. Length as required to securely hold the compression bar tight against the wall surface.
   b. Wood and Sheet Metal Surfaces: Hardened, self-tapping, slotted hex washer head screws.

D. EPDM Anchor Strips: 6 inch wide reinforced EPDM.

2.05 BITUMEN

A. Bitumen: Steep asphalt; ASTM D 312, Type III.

2.06 INSULATION ADHESIVE

A. Coverboard, Insulation And Underlayment Board Adhesive:
1. Two-part, low rise polyurethane foam adhesive, supplied by the membrane manufacturer to satisfy warranty requirements.
2. One-part, solvent-free, moisture curing, cold fluid-applied, bituminous-urethane adhesive, supplied by the membrane manufacturer to satisfy warranty requirements.

2.07 MISCELLANEOUS MATERIALS

A. Pipe Flashing: Membrane manufacturer's cured pre-molded EPDM pipe boot.

B. Compression Clamp (for factory fabricated flashings only): Stainless steel or cadmium plated steel worm drive clamp.

C. Roof Drain Membrane Clamping Collar: Universal cast iron membrane clamping collar and mounting hardware.
   1. Acceptable Products:
      a. Universal Membrane Clamping Collar Model No. 1002 by Jay R. Smith Mfg. Co., P.O. Box 3237, Montgomery, AL 36109, 334-277-8520, www.jrsmith.com
      b. Universal clamping ring, By Marathon Roofing Products Inc. 367 Nagel Drive, Buffalo, NY, 14225-4732, (800) 828-8424, www.marathondrains.com

D. Sealant: One-part, low modulus, silicone sealant: Dow Corning's 790, General Electric's Silpruf, Pecora's 864, or Tremco's TremPro 646.

PART 3 EXECUTION

3.01 SURFACE PREPARATION

A. Ensure roof drain strainers are in place and secured during removal of insulation and other debris. Do not allow removal debris to enter drains.

B. Cleaning: Before the roofing installation commences, sweep and/or vacuum all surfaces as required to remove all dirt, dust, loose aggregate, foreign matter, and debris.

3.02 PREPARATION

A. Testing Existing Roof Drains and Conductor Pipes: Before commencing with the Work of this Section, water test existing roof drains and conductor pipes and submit a written report to the Director's Representative indicating which drains or conductors, if any, are not functioning properly. Repair of existing drains and conductors is not included in the Work. Repair work (if any) may, at the Director's option, be accomplished by an Order on Contract.

B. Testing Pull Out Resistance of Fasteners: Before commencing with the roofing work, in the presence of the Director's Representative, conduct fastener pull out tests to determine if the pull out values meet the requirements of the Contract Documents and the membrane manufacturer.
   1. Conduct the tests at representative locations and/or where selected by the Director's Representative as follows:
      a. Up to 5,000 square feet: 3 tests.
      b. 5,000 to 10,000 square feet: 6 tests.
      c. 10,000 to 50,000 square feet: 10 tests.
      d. 50,000 to 100,000 square feet: 20 tests.

2. Patch holes at the test locations.
3. Do not proceed with the roofing work if the pull out resistance of the fasteners is less than specified in this Section.

3.03 HEATING BITUMEN

A. Strictly regulate the heating process for positive temperature control by means of an automatic thermostatic control of an approved type. Kettles or tankers shall be the immersion tube type, fired by liquid LP gas, and shall have 100 percent safety shutoff.

B. Equip each kettle or tanker with a recording thermometer that will graphically indicate and record on a chart the maximum and minimum temperatures to which materials have been heated. Recording thermometers shall be capable of accurately recording temperatures as high as 600 degrees F and as low as 0 degrees F. The thermometers shall be properly maintained at all times. Kettles or tankers without recording thermometers in good working conditions shall not be used. At the end of each workday, turn the chart from the thermometer on each kettle or tanker over to the Director's Representative. If any bitumen is overheated, remove it from the site in the presence of the Director's Representative. If any underheated or overheated bitumen has been applied on the roof, remove that portion of the roof.

C. Do not locate heating kettles on the roof. Move hot asphalt onto roofs with hot tanks 55 gallon maximum.

D. Heating Asphalt:
1. Heat the bitumen in accordance with the Equiviscous Temperature information furnished by the bitumen manufacturer for that specific run of bitumen.
2. In no case shall the asphalt be heated to or above the actual COC Flash Point (ANSI/ASTM D 92); or the finished blowing temperature for more than 4 hours.
3. Maintain the temperature of the bitumen at the point of application within the Equiviscous Temperature Range. Use insulated pipes, buckets, luggers, and other insulated roofers equipment as required by the field conditions.
4. If the Equiviscous Temperature information is not furnished by the bitumen manufacturer, heat the bitumen as follows:
    a. Steep Asphalt, Type III: Do not heat the asphalt above 500 degrees F. The temperature at the point of application shall be between 375 degrees F and 475 degrees F.

3.04 INSTALLING UNDERLAYMENT BOARD

A. Install underlayment board over all combustible decks.
1. Steel Decks: Install underlayment board so that the long dimensions, if rectangular, bear directly on bearing surfaces or top flanges. Do not allow edges of boards to cantilever over open steel deck flutes. Stagger end joints. Butt edges and ends snugly.

B. Installing Mechanically Fastened Underlayment Board:
   1. Install the underlayment board over the deck with the long joints running in a continuous straight line with end joints staggered. Butt edges and ends snugly so there are no gaps between the boards.
   2. Mechanically attach underlayment board in accordance with FM Loss prevention Data 1-28 including enhanced perimeter and corner fastener spacing. Set the fasteners with sufficient force to hold the insulation firmly against the deck surface. Check each fastener to insure that it is securely anchored to the deck, penetrating the top flute only. Do not allow the fastener to damage the underlayment board. Remove loose or defective fasteners.

3.05 INSTALLING INSULATION

A. Keep insulation absolutely dry at all times. Discard insulation that contains moisture. Install the insulation in a minimum of two layers, top layer joints staggered and offset from the joints of the insulation below. Cut base layer of insulation to a 2 foot width as a starter. Butt edges and ends snugly so that there are no gaps between the insulation boards.
   1. Install only as much insulation as can be covered with roofing membrane the same day.
   2. Discard all units with broken corners or similar defects.
   3. At roof drains, terminate the insulation with tapered edge strips so that all flashing and coverstrip joint laps can be made within the tapered portion.

B. Installing Mechanically Attached Insulation: Mechanically attach insulation in accordance with FM Loss prevention Data 1-28 including enhanced perimeter and corner fastener spacing. Set the fasteners with sufficient force to hold the insulation firmly against the deck surface. Check each fastener to insure that it is securely anchored to the deck, penetrating the top flute only. Do not allow the fastener to crush the insulation. Remove loose or defective fasteners.

C. Installing Insulation with Asphalt: Set insulation boards, in a full hot mopping of Type III steep asphalt applied at the rate of 30 pounds per square. Press insulation into the bitumen to a firm and uniform bearing.

D. Installing Insulation with Adhesive: Set each board in ribbons of insulation adhesive 6 inches on center and 4 inches on center at the perimeter and corners or as an alternative fully spray insulation adhesive over the entire roof area. Press insulation into the adhesive immediately and as necessary thereafter to assure proper bonding.

E. Installing Tapered Insulation System: Set boards per manufacturer's layout in ribbons of insulation adhesive 6 inches on center and 4 inches on center at the perimeter and corners or as an alternative fully spray insulation adhesive over the entire roof area. Install each layer of insulation with joints staggered. Butt edges and ends snugly so that there are no gaps between the insulation boards. Press insulation into the adhesive immediately and as necessary thereafter to assure proper bonding.

3.06 INSTALLING COVERBOARD

A. Install coverboard over the insulation to provide protection from insulation facer delamination and to provide protection from foot traffic, etc. Stagger and offset joints of coverboard from the insulation below, staggering end joints. Butt edges and ends snugly.

B. Installing Mechanically Fastened Coverboard:
   1. Loose lay the coverboard over the insulation with the long joints running in a continuous straight line. Secure the coverboard and the insulation at the same time with the same fastener.
   2. Mechanically attach coverboard in accordance with FM Loss prevention Data 1-28 including enhanced perimeter and corner fastener spacing. Set the fasteners with sufficient force to hold the insulation firmly against the deck surface. Do not allow the fastener to crush the insulation. Check each fastener to insure that it is securely anchored to the deck. Remove loose or defective fasteners.

C. Install coverboard over the uniform thickness, tapered and cricket insulation.

3.07 INSTALLING EPDM ROOF MEMBRANE

A. Install the membrane with the minimum number of field formed joints. Use the largest size factory formed sheets as is practicable.
   1. If possible start at high points of the roof and work towards the low points. Lap sheets so the flow of water is not against the edges of the sheet.
   2. Position the membrane so it is free of buckles or wrinkles. Do not stretch the membrane. Lay the sheets with a minimum 6-inch lap.
      a. When the edges of the EPDM sheet are not straight so that the inseam tape and cover tape can be applied without distortion, snap a chalk line on the edge of the top sheet and cut the sheet so that the edge is straight.
   3. Allow the membrane to relax for a minimum of 1/2 hour before securing or splicing. When installing membrane in cold weather, allow the membrane to relax for a longer period of time as recommended by the manufacturer.

B. Adhering Roofing Membrane To The Substrate:
   1. Adhere the roofing membrane to the substrate with the manufacturer's bonding adhesive. Mating surfaces must be clean and dry before adhering the membrane.
   2. Apply a uniform coating of bonding adhesive to both mating surfaces at the rate recommended by the manufacturer. Do not leave "skips" or "holidays". Do not allow the bonding adhesive to puddle.
   3. Do not allow bonding adhesive to come in contact with areas to be spliced.
   4. Allow the adhesive to dry until it does not stick to the dry finger touch. Do not attempt to adhere the membrane if the bonding adhesive is wet to the touch.

5. Adhere the membrane to the substrate so it is free of wrinkles, fishmouths, or voids.
6. Broom the membrane to achieve maximum adhesion. Do not try to reposition the sheet once it has been adhered to the substrate.

C. Splicing EPDM Roof Membrane Lap Joints:
1. Splice side and end lap joints of the sheet membrane with the manufacturer's inseam splicing tape and seam cover tape. Do not use splicing cement.
2. Mark the bottom sheet along the edge of the top sheet with a marking crayon.
3. Cleaning and Preparing The Lap Joint:
   a. Remove dirt and dust. Detergent-wash the splice area where dirt has adhered to the membrane. Rinse with clean water and allow to dry thoroughly.
   b. Solvent wash surfaces that will be in contact with inseam tape and cover tape with natural fiber rags soaked in the manufacturer's recommended cleaning agent. Clean the splice area until the sheet is clean and black, with no streaks, and there is no trace of talc or foreign matter left in the splice area. Change rags frequently to avoid spreading the talc or dirt.
   c. The solvent wash is mandatory and cannot be eliminated regardless of the manufacturer's requirements.
4. Installing Inseam Splicing Tape:
   a. Apply the manufacturer's primer to surfaces that will be in contact with the inseam tape. Allow the primer to dry completely before completing the splice.
   b. Position the tape on the bottom sheet with the edge aligned with the previously made markings. Roll the surface of the tape to insure good adhesion.
   c. Fold the top sheet over the tape. Trim the sheet as necessary so that 1/4-inch of the tape is exposed.
   d. Remove the release paper from the top surface of the tape and allow the membrane to come in contact with the tape as the paper is being removed.
   e. Roll the surface of the splice to insure good adhesion.
5. Installing Cover Tape:
   a. Apply the manufacturer's primer to surfaces that will be in contact with the cover tape. Allow the primer to dry completely before completing the splice.
   b. Apply the cover tape centered over the seam. Roll the tape into position while the release paper is being removed.
   c. Adhere the tape to the underlying sheet so it is free of wrinkles, fishmouths and voids.
   d. Roll the surface of the splice to insure good adhesion.

D. Securing EPDM Roof Membrane At Base Of Walls and Sloped Intersections:
1. At base of walls, and at sloped intersections with inclines greater than 2 inches to the foot, turn the EPDM roofing membrane up onto the vertical surface so that it is self flashing.

2. Before turning the membrane up onto the vertical or inclined surface, install a minimum 6 inch wide reinforced EPDM membrane strip over the roof insulation. Fully adhere the strip to the insulation with bonding adhesive. Mechanically fasten the strip thru the insulation to the structural deck or to the base of the wall as shown on the Contract Drawings with screws and stress plates one foot on center.
    a. Adhere the roof membrane to the EPDM strip with splicing cement.
3. Work the membrane into the intersection of the deck and the vertical or inclined surface so that there is no bridging. Adhere the membrane to the vertical or inclined surface with bonding adhesive.
4. If wrinkles or loose membrane develop on the vertical surface, cut the membrane so that it will lay flat and tight to the surface. Adhere a one-foot wide patch of EPDM over the cut membrane.
    a. Apply lap sealant around the perimeter of the patch.

E. Sealing "T" Joints In The EPDM Roof Membrane:
1. Where two spliced seams ("T" joints) running perpendicular or on a bias to each other intersect, apply lap sealant at the edges of the cover tape. Extend the lap sealant a minimum of 6 inches beyond each intersecting corner.

3.08 INSTALLING EPDM FLASHINGS

A. Splicing EPDM Flashing:
1. Remove dirt and dust. Detergent wash mating surfaces where dirt has adhered to the membrane. Rinse with clean water and allow to dry thoroughly.
2. Solvent wash mating surfaces with natural fiber rags soaked in the manufacturer's cleaning agent. Clean the splice area until the sheet is clean and black, with no streaks, and there is no trace of talc or foreign matter left in the splice area. Change rags frequently to avoid spreading the talc or dirt.
    a. Brush-apply a uniform coating of splicing cement to both mating surfaces at the rate recommended by the manufacturer. Do not leave any "skips" or "holidays". Do not allow the splicing cement to puddle.
    b. Allow the splicing cement to dry until it does not stick to the dry finger touch. Do not complete the splice if the splicing cement is wet.
    c. Adhere the top sheet to the underlying sheet so it is free of wrinkles, fishmouths, and voids.
    d. Roll the splice with a steel roller to insure good adhesion.
    e. Apply a bead of lap sealant along exposed edges and tool to a slightly convex surface. Lap sealant must be applied the same day the splice is completed.

B. Adhering EPDM Flashings To The Substrate:
1. Adhere the flashings to the substrate with the manufacturer's bonding adhesive. Mating surfaces must be clean and dry and smooth before

adhering the membrane. Do not adhere membrane directly to masonry surfaces.

2. Apply a uniform coating of bonding adhesive to both mating surfaces at the rate recommended by the manufacturer. Do not leave any "skips" or "holidays". Do not allow the bonding adhesive to puddle.
3. Do not allow bonding adhesive to come in contact with areas to be spliced.
4. Allow the adhesive to dry until it does not stick to the dry finger touch. Do not attempt to adhere the flashing if the bonding adhesive is wet to the touch.
5. Adhere the flashing to the substrate so it is free of wrinkles, fishmouths, or voids.
6. Roll the surface of the flashings to achieve maximum adhesion. Do not try to reposition the flashing once it has been adhered to the substrate.

C. Installing EPDM Base Flashing At Equipment Curbs, Skylight Curbs, and At Walls Where The Roof Membrane Cannot Be Turned Up In One Piece:

1. Complete the splice between the sheet flashing and the roof membrane before bonding the flashing to vertical surfaces. Extend the splice a minimum of 3 inches beyond fastener plates that secure the membrane.
2. Apply bonding adhesive to the substrate. Roll the flashing into the bonding adhesive so there are no wrinkles and no bridging at the base of the flashing. Work the surface of the flashing to insure good adhesion.
3. At inside and outside corners cut and fold the membrane around the corner as recommended by the manufacturer. Apply uncured EPDM corner patches.
4. Apply lap sealant at edges and ends of the flashing.
5. If the base flashing terminates beneath a cap flashing, secure the top edge of the flashing with fasteners 12 inches on center.

D. Installing Termination Bar:

1. Where base flashing does not terminate beneath a cap flashing, seal the top edge as follows:
    a. Set the top one-inch of the flashing in water cut off mastic.
    b. Install a continuous metal termination bar over the flashing and secure one foot on center.
    c. Apply a bead of lap sealant along the top edge.

E. Installing Flashing At Snap On Cant Type Gravel Stops:

1. Install the canted water dam portion of the gravel stop over the roofing membrane.
2. Strip in the water dam with one strip of sheet flashing set in splicing cement. Extend the flashing over the front edge of the water dam a minimum of 3 inches and out past the base of the cant a minimum of 3 inches. Apply lap sealant along the splice edge and at splice joints.
    a. Install the fascia portion of the gravel stop.

F. Flashing New Cast Drains:

1. Apply the manufacturer's water cut-off mastic around the perimeter of the drain body in the location of the clamping ring. Embed the membrane into the mastic. Install the clamping ring and strainer.

G. Installing Roof Drain Clamping Collar: Remove the existing drain clamping ring and bolts. Check the cast parts of the drain body for high or rough edges; file or sand to remove. Clean contaminates from drain body. Drill new bolt holes if necessary, remove filings. Apply water-block sealant around the drain bowl flange in a continuous bead. Lightly rub the membrane into the sealant and set the clamping ring evenly over the flange. Secure the clamping ring by tightening the bolts finger tight then snug the bolts in alternating sequence to evenly compress the sealant.

3.09 PHASING OF MEMBRANE INSTALLATION

A. At the end of each working day temporarily seal the loose edge of the membrane so that water does not flow beneath the covered portion. Spud off existing aggregate (if any) in the area to be sealed, remove dirt, dust, and foreign matter. Unless instructed otherwise, provide temporary seals in the presence of the Director's Representative. Install the temporary seal using one of the following methods:

1. Method 1: Apply a 12 inch wide application of hot bitumen over the area to be sealed. While hot, embed the EPDM membrane into the bitumen. Before the Work resumes cut off and discard portions of the membrane that have been embedded in the hot bitumen.
2. Method 2: Apply the membrane manufacturer's nite seal over the area to be sealed. Embed the EPDM membrane into the nite seal. Apply a continuous weight over the membrane and nite seal. Before the Work resumes cut off and discard portions of the membrane that have been embedded in the nite seal.
3. Install flashings as the membrane is being installed (same working day). If the flashing cannot be completely installed in one day, progress the installation until the flashing is in a watertight condition.

3.10 FIELD QUALITY CONTROL

A. As the joints are completed or at the end of each workday, in the presence of the Director's Representative closely examine joints in the membrane and flashing. Cut out and repair areas of the joints that are not fully bonded or that contain "fishmouths" or "wrinkles". Repair the membrane so it is restored to its full waterproof integrity. Lap patches a minimum of 6 inches beyond cuts.

END OF SECTION

SECTION 087100

FINISH HARDWARE

PART 1 GENERAL

1.01 RELATED WORK IN OTHER SECTIONS

A. Composite Sectional Overhead Doors: Section 083325.

B. Aluminum Framed Storefronts: Section 084313.

1.02 REFERENCES

A. NFPA 80 Fire Doors and Windows (2007).

B. NFPA 101 Life Safety Code (2006).

C. Building Code of New York State (2010).

D. ICC/ANSI A117.1-2003 Accessible and Usable Buildings and Facilities.

E. ANSI/BHMA Standard A156.1 Butts and Hinges (2006).

F. ANSI/BHMA Standard A156.4 Door Controls – Closers (2008).

G. ANSI/BHMA Standard A156.6 Architectural Door Trim (2005).

H. ANSI/BHMA Standard A156.7 Template Hinge Dimensions (2009).

I. ANSI/BHMA Standard A156.8 Door Controls – Overhead Stops and Holders (2005).

J. ANSI/BHMA Standard A156.13 Mortise Locks and Latches Series 1000 (2005).

K. ANSI/BHMA Standard A156.16 Auxiliary Hardware (2008).

L. ANSI/BHMA Standard A156.18 Materials and Finishes (2006).

M. ANSI/BHMA Standard A156.22 Door Gasketing Systems (2005).

N. ANSI/BHMA Standard A156.26 Continuous Hinges (2006).

O. DHI - Door and Hardware Institute.

P. NAAM Standard HMMA 800-96- Hollow Metal Manufacturers Association.

Q. NAAM Standard HMMA 831-97 Recommended Hardware Locations for Custom Hollow Metal Doors and Frames.

R. 2010 Standards for State and Local Government Facilities: Title II.

1.03 DEFINITIONS

A. ~~Architectural Hardware Consultant (AHC): A Door and Hardware Institute certified expert in complex architectural openings requiring advanced knowledge of model building codes and safety standards, ADA requirements, access control knowledge and installation expertise.~~

B. Architectural Hardware Distributor: A company that regularly purchases architectural hardware from manufacturers and specializes in the sale, service and support of that hardware to contractors and/or end users.

C. Company Field Advisor(s): Hardware manufacturers' representatives who are certified in writing by manufacturer to be technically qualified in design, installation, and servicing of products.

D. Installation Supervisor: Designated supervisor/installer, who has a minimum three years experience in finish hardware installation, and is qualified and responsible to ensure approved finish hardware is installed, adjusted, and operates properly.

E. Benchmark: Finish hardware installed on full size door and frame assembly that is constructed on-site. Benchmarks are constructed to verify qualities of materials and execution; to review coordination between frames, doors, and architectural hardware; to show interface between partitions and frames; and to demonstrate compliance with specified installation tolerances. Benchmarks are not samples. Unless otherwise indicated, approved benchmarks establish the standard by which the Work will be judged. The approved benchmark may be incorporated into the work of this section.

1.04 SUBMITTALS

A. Waiver of Submittals: The Waiver of Certain Submittal Requirements in Section 013300 does not apply to this Section.

B. Re-Evaluation Fee: In accordance with the General Conditions 007213 Article 4.7.

C. Submittal Package Cover Sheets: The Hardware Distributor shall provide a cover sheet, which identifies each package by:
1. OGS project number.
2. Project name.
3. Facility name and location.
4. Submittal Package name.
5. Specification section name and number.

6. Construction Contractor's company name, address, e-mail address, and telephone number.
7. Finish Hardware Distributor's company name, address, e-mail address, and telephone number.
8. ~~Certified Architectural Hardware Consultant's name, company name, address, e-mail address, and telephone number.~~
9. Submittal Date.

D. Submittal Packages
1. Quality Control Package: Do not submit balance of packages until this package is approved.
   a. ~~Architectural Hardware Consultant Data:~~
      1) ~~Provide name, business address, and telephone number of DHI certified Architectural Hardware Consultant.~~
      2) ~~Submit photocopy of Door and Hardware Institute's certificate demonstrating individual is an Architectural Hardware Consultant.~~
   b. Company Field Advisor Data:
      1) Provide name, business address, and telephone number of Company Field Advisor(s) for continuous hinges, door bolts, locksets, overhead stops, door closers, and gaskets.
      2) List services and products for which company field advisor(s) is/are certified by manufacturer. Provide written certifications.
   c. Hardware Distributor's Qualification Data:
      1) Provide the Finish Hardware Distributor's company name, address, e-mail address, and telephone number.
      2) Provide the hardware distributor's company history, including number of years in the hardware distribution business, the number of AHC's employed, and the number of employees. Describe the distributor's major market.
      3) Include the names and contact information of physical plant managers for 3 facilities, similar to this project, for which the distributor has furnished architectural hardware within the past 2 years.
   d. Supervisor's/Installer's Qualification Data:
      1) Name of Supervisor and each installer performing Work, and employer's name, business address and telephone number.
      2) Names and addresses, and contact information of physical plant managers for 3 facilities, similar to this project, on which each installer has worked on during past 2 years.
2. Finish Hardware Package:
   a. Finish Hardware Schedule: Use vertical format and indicate finish hardware items, both mechanical and electrical in one document, required to complete Work of this section. Submit Hardware Schedule that includes complete hardware sets for each door and frame shown on Door Schedule.
      1) Preface schedule with following:

a) ~~Certified Architectural Hardware Consultant's statement of preparation of/or certification of, Finish Hardware Schedule.~~
b) Index.
c) List of manufacturers.
d) List of finishes.
e) Explanation of abbreviations.
f) Keying instructions and key schedule.

2) Create hardware groups, each group consisting of similar doors and hardware. Do not combine labeled and non-labeled openings. Do not combine doors and frames with dissimilar door sizes and/or materials.

3) For each opening include the following:
a) Door and frame materials and dimensions.
b) Fire rating.
c) Door number, location and handing.
d) Degree of opening required for closer and/or overhead stop.
e) Installation and detailing notes.

4) Under each group heading, list hardware items in detail, required for ordering. For each hardware item include:
a) Type (Hinges).
b) Quantity (Hinges 3ea).
c) Manufacturers' name (Hinges 3ea Stanley).
d) Catalog number (Hinges 3ea Stanley FBB199).
e) Size (Hinges 3ea Stanley FBB199 4 ½ x 4 ½).
f) Options or accessories (Hinges HTFBB199 4 ½ x 4 ½).
g) Finish (Hinges HTFBB199 4 ½ x 4 ½ x 630).
h) Fasteners (Hinges HTFBB199 4 ½ x 4 ½ x 630 x torx with center security pin).
i) Indicate location of protection plates: Push side or pull side.
j) Installation Notes, as written in this section, for each hardware group.

5) Use a separate hardware group in Hardware Schedule that lists attic stock hardware items, key cabinets, key control system, special tools required to install hardware, lubricants, and Operations and Maintenance Manuals.

b. Product Data: Furnish six copies of manufacturers' catalog sheets, specifications, sizing charts, and installation instructions, for each item specified. Highlight information pertaining specifically to product (s) submitted.

c. Submit samples as requested.

3. Closeout Submittals Package: Submit as a complete package.

a. Operation and Maintenance Manuals: Furnish 2 hardcover three ring binders with the project name and number displayed on the front cover and spine. Include:
1) List of Manufacturers.
2) Approved Finish Hardware Schedule.

3) Approved Manufacturers' Product Data Sheets.
4) Manufacturer's operation, installation, maintenance, and repair instructions for each type of hardware furnished.
5) Templates for kind of hardware furnished.
6) Parts List for each type of finish hardware furnished.
7) Manufacturers' dated written warranty for each type of finish hardware furnished.
8) Certifications: Written certification from Company Field Advisors that their products are installed according to manufacturers' printed installation instructions, are operating properly, and manufacturers' written warranty will be in effect upon physical completion of the Work.
9) Special Tools: List of special tools required to install hardware, and their purpose.

b. Special Tools:
1) At conclusion of finish hardware installation, turn over to Director's Representative 2 of each special tool required to install hardware together with a list of these tools and their purpose.

1.05 TEMPLATES

A. After receipt of approved submittals, furnish templates to affected trades, to enable fabricators to make provision for finish hardware without delaying the Work of the Project.

1.06 DELIVERY AND STORAGE

A. Coordinate delivery to avoid delay.

B. Clearly label each item for identification and installation location as it corresponds to the approved Finish Hardware Schedule and subsequent information bulletins.

C. Deliver hardware to the jobsite in the manufacturers' original packages complete with fasteners, parts, installation instructions, and templates required for proper installation.

D. Inventory hardware at jobsite to identify shortages or backorders. Resolve delivery shortages and damaged items prior to installing hardware.

E. Store finish hardware where directed by Director's Representative. Provide locked, dry storage for finish hardware.

1.07 QUALITY ASSURANCE

A. Hardware Distributor's Qualification:
1. Hardware Distributor who has been in the business of furnishing, and/ or installing finish hardware for a minimum of three years.

2. ~~Hardware Distributor shall have the DHI certified Architectural Hardware Consultant prepare or certify the Finish Hardware Submittal meets specification requirements, and the schedule is written accurately and in accordance with DHI recommendations, and requirements of this specification.~~

B. Company Field Advisors: Employ advisor(s) for continuous hinges, door bolts, mortise locksets, surface overhead stops, door closers, and gaskets.

C. Installation Supervisor: Employ a qualified Installation Supervisor who will be responsible to ensure approved finished hardware is installed, adjusted and operates properly.

D. Installers: Employ experienced finish hardware installers who have been regularly employed by a Company installing finish hardware for a minimum of 5 years.

E. Pre-submittal Conference: Before Finish Hardware Submittals are written for submission, the Director's Representative will call a teleconference to review Finish Hardware Submittal requirements including but not limited to format, cover sheet, headings, hardware sets, level of detail, installation notes, description of operation, keying, and product data sheets. The Contractor, the Finish Hardware Distributor, the Finish Hardware Detailer, and consulting hardware designer, and OGS Designers shall attend. The OGS Finish Hardware Reviewer shall conduct the conference.

F. On Site Pre-installation Conference: Before finish hardware installation begins, the Director's Representative will call a conference at the site to review Finish Hardware Specifications, approved Finish Hardware Submittals, and to discuss requirements for the Work including:
1. Hardware delivery and storage.
2. Hardware labeling by door number.
3. Hardware locations.
4. Potential location conflicts.
5. Hardware installation sequence and responsibility.
6. Required accessories and fasteners.
7. Continuous hinge installation.
8. Surface overhead stops and closer template and adjustments.
9. Special tools and maintenance items.
10. Hardware Closeout requirements.
11. Hardware Warranties.

G. Pre-installation Conference Attendance: The Construction Contractor, Company Field Advisors, authorized Finish Hardware Installers, and the Finish Hardware Distributor~~'s Architectural Hardware Consultant~~ shall attend the conference. OGS's Finish Hardware Reviewer conducts the meeting. OGS designers and facility personnel may attend. The Company Field Advisors will present installation instruction and advice.

H. Pre-Benchmark-Construction Meeting: Prior to the construction of the mock-up, a meeting will be held at the site to review the requirements, and discuss the

intent of the mock-up. The meeting will be scheduled by the Director's Representative and conducted by the Hardware Designer. The meeting shall be attended by the Director's Representative, the Hardware Designer, the Contractor's onsite foreman, the person supervising this phase of the Work (if different), and the person (people) who will be performing the work.

I. Construction of Benchmark: Before installing portions of the Work requiring benchmarks, install benchmarks for each form of construction required to comply with the following requirements, using materials indicated for the completed Work.
   1. Build hardware benchmark in door and frame assembly, specified in sections 081102 and 081743, in locations as directed, and include continuous hinge, lockset, closer, surface overhead stop and gaskets.
   2. Notify the Director's Representative in advance of dates and times when benchmark will be constructed.
   3. Install benchmark with supervisor oversight and workers who will be employed during the construction of the Work.
   4. Construct benchmarks using the exact materials, products, methods, and workmanship that were approved for the Work.
   5. Obtain Director's Representative's approval of benchmarks before starting work, fabrication, or construction.
   6. Maintain benchmarks during construction in an undisturbed condition as a standard for judging the completed Work.
   7. Failure to maintain this standard of quality will be cause for rejection of the Work.
   8. Benchmark may be used in the Work unless otherwise indicated.

J. Uniformity of Hardware and Single Source Responsibility: For each kind of hardware provide product(s) of a single manufacturer.

K. Size Variations: Manufacturers' products may vary slightly from sizes specified except where minimum size or thickness is specified.

1.08 WARRANTY

A. Manufacturer's Warranty: Ten year minimum warranty for door closers.

B. Manufacturer's Warranty: Three year minimum for locksets.

1.09 MAINTENANCE

A. Special Tools: At the conclusion of finish hardware installation, turn over to Director's Representative 2 sets of each special tools required for proper installation and adjustment of hardware, together with a list of these tools and their purpose.

B. Lubricants: Provide manufacturer's recommended lubricants for locksets and closers sufficient for 1 year of maintenance. Turn over to Director's Representative.

PART 2 PRODUCTS

2.01 ACCESSORIES

A. Provide brackets, plates, arms, spacers, and special templates to mount door closers in combination with overhead stops and coordinators, on narrow top rails and for special ceiling and jamb conditions.

B. Provide curved lip strikes, with wrought boxes, specific to individual lock functions. Universal strikes that fit a variety of lock functions are not acceptable.

2.02 FASTENINGS

A. Provide fasteners that harmonize with finish hardware material and finish.

B. Provide machine screws for hardware secured to metal; and machine screws and metal expansion shields for attachment to masonry substrates. Self-tapping or self-drilling screws are not acceptable.

C. Provide undercut shallow head torx center pin security fasteners where necessary for proper seating.

E. Attach door closers and overhead stops with sex bolts.

2.03 MATERIALS AND FINISHES

A. General: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of finish hardware are indicated in this section and in the Hardware Groups.

B. Continuous Hinges
   1. Full height barrel-type manufactured from 14-gauge 304 stainless steel.
   2. .25” diameter stainless steel pins.
   3. Provide hinges without covers.

C. Locks, Latches and Bolts
   1. Provide Mortise Locksets.
   2. Comply with UL requirements for throw of bolts and latch bolts on rated fire openings.
   2. Provide 3/4” minimum throw on other latch bolts.
   3. Provide 1” minimum throw deadbolts.

D. Closers and Door Control Devices
1. Closer bodies: Provide closer bodies with the same hole template pattern regardless of type or application. All closers shall have cast iron bodies.
2. Closer arms: Non-handed forged steel.
3. Closer size: Provide sized closers.
4. Provide all-weather fluid to eliminate seasonal adjustment of closer speed.
5. Powder coat closer body, arm, and adapter plate or pre-treat closer body, arm, and adapter plate with rust-inhibiting coating before painted finish is applied.

2.04 FINISH HARDWARE

A. HW SET: 001

DOORS:

101-1 101-2 101-3 101-4 102-1 102-2
102-3 102-4

EACH TO INCLUDE:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	RET TEMP RGA	50-231		626	SCH
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	FSIC CORE	23-030 CKC EV29 T		626	SCH
1			BALANCE OF HARDWARE BY DOOR SUPPLIER			

B.

HW SET: 002

EACH TO INCLUDE:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	700CS SECHM		441	IVE
1	EA	PANIC HARDWARE	100-99Er-70 Elec Keypad Lever		626	VON
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	FSIC CORE	23-030 CKC EV29 T		626	SCH
1	EA	90 DEG OFFSET PULL	8190EZHD 12" STD SEC SCREWS		630-316	IVE
1	EA	SURFACE CLOSER	4111 SCUSH SRI TORX		689	LCN
1	EA	CUSH SHOE SUPPORT	4110-30 SRI SEC SCREWS		689	LCN
1	EA	BLADE STOP SPACER	4110-61 SRI SEC SCREWS		689	LCN
1	EA	RAIN DRIP	142AA SEC SCREWS		AA	ZER
1	EA	PERIMETER GASKET	BY DOOR/FRAME MANUFACTURER			
1	EA	DOOR SWEEP	8198AA SEC SCREWS		AA	ZER
1	EA	THRESHOLD	545A-223		A	ZER

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1		BALANCE OF HARDWARE BY DOOR SUPPLIER		

C. HW SET: 003

EACH TO INCLUDE:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	700CS SECHM		441	IVE
1	EA	PANIC HARDWARE	CDSI-98-NL-SEC		626	VON
2	EA	RET TEMP RGA	50-231		626	SCH
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	MORTISE CYLINDER	20-061 ICX XQ11-948		626	SCH
2	EA	FSIC CORE	23-030 CKC EV29 T		626	SCH
1	EA	SURFACE CLOSER	4111 SCUSH SRI TORX		689	LCN
1	EA	CUSH SHOE SUPPORT	4110-30 SRI TORX SCREWS		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS TKTX		630	IVE
1	EA	RAIN DRIP	142AA		AA	ZER
1	EA	GASKETING	188SBK PSA		BK	ZER
1	EA	DOOR SWEEP	8198AA SEC SCREWS		AA	ZER
1	EA	THRESHOLD	545A-223		A	ZER

D. HW SET: 003A

EACH TO INCLUDE:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	700CS SECHM		441	IVE
1	EA	PANIC HARDWARE	100-99Er-70 Elec Keypad Lever		626	VON
2	EA	RET TEMP RGA	50-231		626	SCH
1	EA	RIM CYLINDER	20-057 ICX		626	SCH
1	EA	MORTISE CYLINDER	20-061 ICX XQ11-948		626	SCH
2	EA	FSIC CORE	23-030 CKC EV29 T		626	SCH
1	EA	SURFACE CLOSER	4111 SCUSH SRI TORX		689	LCN
1	EA	CUSH SHOE SUPPORT	4110-30 SRI TORX SCREWS		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS TKTX		630	IVE
1	EA	RAIN DRIP	142AA		AA	ZER
1	EA	GASKETING	188SBK PSA		BK	ZER
1	EA	DOOR SWEEP	8198AA SEC SCREWS		AA	ZER
1	EA	THRESHOLD	545A-223		A	ZER

E. HW SET: 004

EACH TO INCLUDE:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 SEC		652	IVE
2	EA	RET TEMP RGA	50-231		626	SCH
1	EA	OFFICE/ENTRY LOCK	L9050T 06A		626	SCH
1	EA	FSIC CORE	23-030 CKC EV29 T		626	SCH
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS TKTX		630	IVE
1	EA	WALL STOP	WS406/407CCV		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

F. HW SET: 005

EACH TO INCLUDE:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP SEC		652	IVE
1	EA	PUSH PLATE	8200 4" X 16" TORX		630	IVE
1	EA	PULL PLATE	8302 10" 4" X 16" TORX		630	IVE
1	EA	SURFACE CLOSER	4011 TORX		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS TKTX		630	IVE
1	EA	MOP PLATE	8400 4" X 1" LDW B-CS TKTX		630	IVE
1	EA	WALL STOP	WS406/407CCV		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

G. HW SET: 006

EACH TO INCLUDE:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 SEC		652	IVE
2	EA	RET TEMP RGA	50-231		626	SCH
1	EA	STOREROOM LOCK	L9080T 06A TORX		630	SCH
1	EA	FSIC CORE	23-030 CKC EV29 T		626	SCH
1	EA	SURFACE CLOSER	4011 TORX		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS TKTX		630	IVE
1	EA	WALL STOP	WS406/407CCV		630	IVE
1	EA	GASKETING	188SBK PSA		BK	ZER

H. HW SET: 007

EACH TO INCLUDE:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	CONT. HINGE	700CS SECHM		441	IVE
1	EA	PUSH/PULL BAR	9190HD-12"-NO		619	IVE
1	EA	SURFACE CLOSER	4111 SCUSH TORX		689	LCN
1	EA	CUSH SHOE SUPPORT	4110-30 SEC SCREWS		689	LCN
1	EA	BLADE STOP SPACER	4110-61 SEC SCREWS		689	LCN
1	EA	WALL STOP	WS406/407CCV		630	IVE
1	EA	PERIMETER GASKET	BY DOOR/FRAME MANUFACTURER			

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	DOOR SWEEP	8192AA SEC SCREWS SEC SCREWS		AA	ZER
1	EA	THRESHOLD	545A-223		A	ZER
1			BALANCE OF HARDWARE BY DOOR SUPPLIER			

I. HW SET: 008

EACH TO INCLUDE:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	700CS SECHM		441	IVE
1	SET	CONST LATCHING BOLT	FB51P SEC SCREWS		630	IVE
1	EA	DUST PROOF STRIKE	DP2		626	IVE
2	EA	RET TEMP RGA	50-231		626	SCH
1	EA	STOREROOM LOCK	L9080T 06A TORX SHORT LIPPED STRIKE		630	SCH
1	EA	FSIC CORE	23-030 CKC EV29 T		626	SCH
1	EA	COORDINATOR	COR X FL SEC SCREWS		711	IVE
2	EA	MOUNTING BRACKET	MB		689	IVE
2	EA	SURFACE CLOSER	4111 SCUSH TORX		689	LCN
2	EA	CUSH SHOE SUPPORT	4110-30 TORX		689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS TKTX		630	IVE
1	EA	GASKETING	188SBK PSA		BK	ZER
2	EA	DOOR SWEEP	8192AA SEC SCREWS SEC SCREWS		AA	ZER
1	EA	ATTACHED FLAT STEEL ASTRAGAL	DO NOT NOTCH FOR LOCK STRIKE. PROVIDE SHORT LIPPED STRIKE.		TBD	TBD
1	EA	NOTE: INSTALL GASKET TO UNDERSIDE OF ASTRAGAL	ADD SMOKE SEAL TO ASTRAGAL		TBD	ZER

J. HW SET: 009

EACH TO INCLUDE:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP SEC		652	IVE
2	EA	RET TEMP RGA	50-231		626	SCH
1	EA	CLASSROOM LOCK	L9070T 06A TORX		626	SCH

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
1	EA	RET TEMP RGA	50-231		626	SCH
1	EA	FSIC CORE	23-030 CKC EV29 T		626	SCH
1	EA	SURFACE CLOSER	4111 SCUSH TORX		689	LCN
1	EA	CUSH SHOE SUPPORT	4110-30 TORX		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS TKTX		630	IVE
1	EA	GASKETING	488SBK PSA		BK	ZER
1	EA	DOOR SWEEP	8192AA SEC SCREWS		AA	ZER

K. HW SET: 010

EACH TO INCLUDE:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 SEC		652	IVE
2	EA	RET TEMP RGA	50-231		626	SCH
1	EA	STOREROOM LOCK	L9080T 06A TORX		630	SCH
1	EA	FSIC CORE	23-030 CKC EV29 T		626	SCH
1	EA	SURFACE CLOSER	4011 TORX		689	LCN
1	EA	ARMOR PLATE	8400 16" X 2" LDW B-CS TKTX		630	IVE
1	EA	WALL STOP	WS406/407CCV		630	IVE
1	EA	GASKETING	188SBK PSA		BK	ZER

L. HW SET: 011

EACH TO INCLUDE:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 SEC		652	IVE
2	EA	RET TEMP RGA	50-231		626	SCH
1	EA	STOREROOM LOCK	L9080T 06A TORX		630	SCH
1	EA	FSIC CORE	23-030 CKC EV29 T		626	SCH
1	EA	SURFACE CLOSER	4011 TORX		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS TKTX		630	IVE
1	EA	WALL STOP	WS406/407CCV		630	IVE
1	EA	GASKETING	188SBK PSA		BK	ZER

L. In addition to the finish hardware sets, furnish a quantity of 1 (one) as follows:
   1. 50 Key Blanks cut as directed during keying conference.
      a. 6 (six) control keys to be cut.
   2. 1 set Special Tools: See paragraph 1.09 A.
   3. Lubricants: See paragraph 1.09 B.
   4. 2ea Maintenance and Operations Manuals.

2.05 KEYING

A. Continue existing Department of Transportation standard key system established for Facility.
   1. Stamp key symbol on one side of key, and "Do Not Duplicate" on other side of key.
   3. Furnish one copy of factory bitting list to facility.
   4. Factory key cylinders.
   5. Furnish 3 cut keys for each master key.
   6. Furnish 7 cut keys for each keyed lockset.
   7. These cut key quantities are for bidding purposes only. Actual number of cut keys required will be determined at keying meeting.
   8. When lockset and cylinder are by different manufacturers, identify and furnish correct cylinder cam to operate lockset.
   9. Provide compression rings and spacers to achieve proper spacing relationship between cylinder and face of door.

B. Keying Conference
   1. Immediately following contract award, Director's Representative will schedule a keying conference to develop a written key schedule that reflects Facility's specific keying requirements. Facility Representative(s), Hardware Distributor, Consulting Hardware Designer, and OGS's Hardware Designer will attend.
   2. Incorporate this schedule in Finish Hardware Submittals for approval.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine doors and frames and related items for conditions such as, but not limited to, incorrect handing, hardware preparation, misaligned lock and strike preparations, that would prevent proper application of finish hardware. Do not proceed until defects are corrected.

B. Report conditions or hardware applications that are incorrect to the Director's Representative.

3.02 INSTALLATION

A. Do not proceed with installation of finish hardware prior to attending referenced pre-installation conference.

B. Installation Sequence: Use proper installation sequence, i.e., install coordinators, and overhead stops and holders before surface mounted door closers.

C. Install hardware in accordance with manufacturer's printed installation instructions, and adjust for smooth operation, free of sticking, binding or rattling.
   1. Template surface overhead stops and holders for proper operation
   2. Template and adjust closers for proper operation.

3. Provide Owner with any required special tools to remove security fasteners.

D. Use proper tools and methods to prevent scratches, burrs or other defacement.

E. Threshold Installation:
1. Drill holes 3 inches from each end of threshold and intermediate holes 12 inches maximum o.c. for required fasteners. Prepare holes for countersunk fasteners.
2. Level and align thresholds with frames and doors. Where required, use non-corrosive shims.
3. Exterior Doors: Set thresholds in a solid bed of Type 3 sealant.
4. Secure thresholds to substrate with countersunk fasteners.

F. Door Bottom Installation:
1. Mount sweep type door bottom protection/drip caps on exterior side of doors.
2. Before mounting apply Type 2 sealant on the back side of bearing surface. Secure to door with required fasteners.

G. Gasket Installation:
1. Install continuous stripping at each opening without unnecessary interruptions.
2. Where fasteners are required, secure fasteners for stripping and seals so they will not work loose during door operation. Exposed heads of fasteners shall be free of sharp edges.
3. Coordinate meeting stile gasket with hardware before installation.
4. Install units plumb and level at the optimum location to maintain a permanent effective seal.
5. Install smoke seals beneath door astragals.

H. After installation, cover and protect hardware to prevent damage during remaining construction. Remove protection upon completion of construction.

3.03 LOCATIONS

A. Locate hardware as follows:
1. Door Closers: Template for maximum door swing allowed by wall placement and jamb conditions. Where overhead stop prevents door from swinging to wall, template the closer to exceed degree of opening allowed by overhead stop.
2. Protection Plates: 1/8 inch from door bottom.
3. Wall Stops: Centerline of bumper to match centerline of locking trim.

3.04 FIELD QUALITY CONTROL

A. Post Installation Review: After hardware is adjusted for proper operation, Director's Representative will hold a Post-Installation Review with the Contractor, Hardware Designer, Company Field Advisors, Hardware Distributor and Hardware Installers.

1. Physically inspect to verify proper application, installation, adjustment and operation of finish hardware, and in particular that:
    a) Latches engage freely without binding. Filing of strike plates to relieve latch bind is not acceptable.
    b) Closers are adjusted for proper spring power; sweep speed, latching speed; and hydraulic back check.
    c) Locations and proper attachment of installed protective hardware are as specified.
    d) There is no field modification of fasteners.
    e) Damaged fasteners are replaced.
2. Defective hardware is repaired or replaced.
3. Hardware is to be left clean and free from disfigurement.

B. Turn referenced Operations and Maintenance Manuals over to Facility through Director's Representative.

END OF SECTION

SECTION 107501

FLAGPOLES

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. Concrete Base: Section 033000.

1.02 SUBMITTALS

A. Shop Drawings: Show fabrication details and connections to adjacent Work.

B. Product Data: Catalog sheets, specifications, and installation instructions for flagpoles specified.

C. Contract Closeout Submittals:
   1. Operation and Maintenance Data: Deliver 2 copies, covering the installed products, to the Director's Representative.

PART 2 PRODUCTS

2.01 COMPANIES

A. Morgan-Francis Flagpoles & Accessories, 9850 East 30th Street, Indianapolis, IN 46229, (800) 814-9568, www.morgan-francis.com.

B. Colonial Flag & Specialty Co., 9390 South 300 West, Sandy, UT 84070, (800) 782-0500, www.colonialflag.com.

C. Eagle Mountain Flag & Flagpole Co., P.O. Box 500, Wimberley, TX 78676, (800) 385-5605, www.eaglemountainflag.com.

2.02 FLAGPOLES

A. Flagpoles:
   1. Style: Round Tapered Aluminum.
   2. Halyard Type: Internal halyard system with stainless steel winch and revolving internal truck with stainless steel ball bearings, stainless steel aircraft cable, and flush access door with cylinder lock, key and crank
   3. Exposed Height: 30 feet.
   4. Base Diameter: 6 inches.
   5. Wall Thickness: .188 inch.
   6. Finish: Brushed Satin.
   7. Shoe Base / Collar: Cast metal with anchor bolts. Color, size and finish to match flagpole.
   8. US Flag: 5 x 8 feet nylon.107501.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install the Work of this Section in accordance with the manufacturer's printed instructions, unless otherwise indicated.

END OF SECTION

SECTION 231326

ABOVE-GROUND LIQUIFIED-PETROLEUM GAS CONTAINERS

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. Through Penetration Firestops: Section 078400.

B. Sealants: Section 079200.

C. Outdoor and Below-Ground Liquified-Petroleum Gas Piping: Section 231126.

D. Earthwork: Section 310000.

1.02 DELEGATED DESIGN RESPONSIBILITY:

A. The Drawings for the Liquified-Petroleum Gas (LPG, Also Propane) Containers, Piping, Supports, hardware, fasteners, and Appurtenances are schematic in nature.

B. The specifications are a guide for the system requirements and performance required to meet the project intent and building loads and may not be fully inclusive of every item, accessory, or appurtenances that may be required to provide a complete working system.

C. Responsibility for the design of all LPG Containers, supports, hardware, fasteners, valves, gauges, tank level monitoring, and appurtenances is delegated to the contractor, in conjunction with state approved contract LPG supplier, for compliance with all applicable requirements of NFPA 58-2017.

D. The Contractor as part of the delegated design shall submit certified tank drawings (with ASME Pressure Vessel Code Calculations), sealed and signed by a Licensed Professional Engineer, Registered in the State of New York.

1.03 REFERENCES

A. ASME Boiler and Pressure Vessel Code, Section VIII, Division 1 - 2019

B. NFPA 30-2018 – Flammable and Combustible Liquids Code.

C. NFPA 58-2017 – Liquified Petroleum Gas Code.

D. NFPA 70-2017 – National Electric Code.

E. Underwriter's Laboratories (UL).

F. ETL Testing Laboratories (ETL).

G. Steel Tank Institute (STI).

H. Factory Mutual Engineering and Research (FM).

I. NYS Department of Environmental Conservation Regulations.

J. US Environmental Protection Agency Regulations.

1.04 DEFINITIONS

A. LPG: Liquified Petroleum Gas known as Propane.

B. Container (Also, LPG Container, Propane Container, or Propane Tank may be used interchangeably): ASME, Section VIII, Division 1 code-stamped pressure vessel for storing LPG liquid and evaporate vapor to be drawn off the top of the container.

1.05 SUBMITTALS

A. Waiver of Submittals: The "Waiver of Certain Submittal Requirements" in Section 013300 does not apply to this Section.

B. Submittals Package: Submit the Product Data, and Quality Control Submittals specified below at the same time as a package.

C. Product Data: Catalog sheets, specifications, illustrations, wiring diagrams, equipment, accessories, hardware, appurtenances, and installation instructions for each item specified for each type of system. Submit the following at the minimum:

1. LPG Tank, including ASME, Pressure Vessel Code Stamp.
2. Tank Supports.
3. Tank Accessories Appurtenance.
4. Tank Level Float Gauges and Integral Level Detection System with Gauge Sender.
5. Liquid Level Gauge.
6. Float Gauge.
7. Bleeder Valve.
8. Vapor Service Valve.
9. Propane Fill Valve.
10. Liquid Withdrawal Valve.
11. Pressure Relief Vent and Valve.

D. Delegated Design: Contractor in conjunction with the state approved contract LPG Supplier is fully responsible for design of entire system, including all components that may be required for full functionality:

1. Final Container / Tank Drawings and accompanying ASME Code Calculations shall be sealed and signed by a Licensed Professional Engineer, Registered in the State of New York.

E. Refer to specification section 231126 for piping, valves, pipe appurtenances, supports, anodeless risers, flexible tank connectors, and LPG pressure regulators.

F. Quality Control Submittals:

1. Tank Installation Contractor's Qualifications Data:
   a. Name of Contractor or Contractor's Propane Supplier, business address and telephone number.
   b. Names and addresses of 3 similar projects that the Contractor / Contractor's Propane Supplier has worked on during the past 5 years.

2. Pipe Installer's Qualifications Data:
   a. Name of each person who will be performing the Work and their employer's name, business address and telephone number.
   b. Names and addresses of 3 similar projects that installer has completed.
   c. Copy of certification from pipe manufacturer(s).

3. Factory Pressure Test Certificate: For each tank.

4. Company Field Advisor Data:
   a. Name, business address and telephone number of Company Field Advisor secured for the required services.
   b. Certified statement from the Company listing the qualifications of the Company Field Advisor.
   c. Services and each product for which authorization is given by the Company, listed specifically for this project.

G. Operational and Maintenance (O&M) Manuals, including all maintenance required to preserve tank warranty.

1.06 QUALITY ASSURANCE

A. Qualifications – Tank Installation Contractor:

1. The contractor and employees performing the Work of this Section shall have been regularly engaged in the installation and maintenance of above ground LPG Containers for a minimum of 5 years, with at least 3 similar projects completed.

B. Listings:

1. Components of the system(s) for which Underwriters' Laboratories, Inc. (UL) provides product listing service, shall be listed and bear the listing mark.

2. Components of the system(s) for which ASME Code Stamps are required shall have a permanent stamp / metal nameplate affixed.

C. Regulatory Requirements:

1. Systems for storing LPG liquid and vapor shall comply with the applicable requirements of NFPA 58-2017 and NFPA 30.
2. Applicable sections of New York State Department of Environmental Conservation Bulk Storage Regulations 6 NYCRR Parts 612, 613, and 614.

3. Applicable sections of New York State Department of Environmental Conservation Petroleum and Volatile Organic Liquid Storage and Transfer 6 NYCRR Part 229.

D. Company Field Advisor:

1. Secure the services of a Company Field Advisor of the manufacturer of the tank level monitoring system for a minimum of 6 hours for the following:
   a. Inspect installation and witness initial startup of system.
   b. Train facility personnel in the operation and maintenance of the system (minimum of two, 2-hour training sessions). Schedule training sessions with the Owner's Representative.

1.07 WARRANTY

A. Warranty: Ten-year manufacturer's warranty for each tank, excluding failure due to lack of maintenance prescribed in the Operation and Maintenance Manuals.

1.08 MAINTENANCE

A. Spare Parts:

1. Two keys for each padlock.

2. Four, 5-Gallon, sealed containers of Paint to match tank, for facilty's use in tank maintenance.

B. Special Tools:

1. Two tools for each type and size vandal resistant fastener.

PART 2 PRODUCTS

2.01 STORAGE CONTAINERS

A. Origin of Manufacture: The LPG Container and major Accessory Components shall be sourced from a manufacturer located in the United States of America.

1. U.S. supply houses / vendors offering foreign made products do not meet the intent of this requirement.

2. Multi-National Manufacturer's, even those operating or headquartered in the United States; when offering products manufactured in a foreign country, do not meet the intent of this requirement.

B. Description: Factory fabricated, complying with requirements in NFPA 58 and ASME Boiler and Pressure Vessel Code, Section VIII, Division 1; and bearing the ASME label. Tanks shall be rated for 250-psig minimum working pressure.

C. Manufacturers: Tanks shall be supplied by the state approved contract LPG supplier as part of the C-contract. Manufacturers are subject to compliance with requirements, provide products by one of the following, or comparable product:

1. American Welding & Tank Co., LLC
   4718 Old Gettysburg Road Suite 300
   Mechanicsburg, PA 17055, United States
   1-717-763-5080
   www.awtank.com
2. Trinity Containers / Trinity Industries, Inc.
   2525 N. Stemmons Freeway 5th Floor
   Dallas, TX 75207, United States
   1-888-558-8225
   www.trinitycontainers.com
3. Quality Steel Corporation
   721 Graham Dr.
   Fremont, OH 43420, United States
   1-419-334-2664
   www.qualitysteelcorporation.com
4. Roy Hanson Jr. Mfg.
   1600 E. Washington Blvd
   Los Angeles, CA 90021, United States
   1-213-747-7514
   www.hansontank.com
5. Manchester Tank
   1000 Corporate Drive Suite 300
   Franklin, TN 37067, United States
   1-800-670-6327
   www.mantank.com

D. Tank Finish:

1. Either powder coated with TGIC polyester or primed with liquid epoxy, an intermediary coat of epoxy, and coated with liquid urethane top coat.

2. Painted dome with hinged, locking cover, matching paint system of container.

3. Color: White or “Battleship” Gray.

E. All vessels are shipped vacuum pre-purged to enable simplified first-fill of the vessel.

F. Liquid outlet and vapor inlet and outlet connections shall have shutoff valves with excess-flow safety shutoff valves and bypass and back-pressure check valves with smaller than 0.039-inch drill-size hole to equalize pressure. Liquid-fill connection shall have backflow check valve.

1. Provide integral bleeder valve to allow for efficient tank filling operation.

2. Provide vapor return connection and valve.

3. Connections: Color-code and tag valves to indicate type:
   a. Liquid fill and outlet: Red.
   b. Vapor inlet outlet, and return: Yellow.

G. Service Valves shall be provided to allow isolation of each container.

H. Container pressure gage: Minimum 4-1/2” Diameter, unbreakable lens and either stainless steel, chrome-plated bronze, or painted aluminum and complying with NFPA 58. Gages must be rated for outdoor use.

I. Level gages shall indicate current level of liquid in the container. Gages shall also indicate storage container contents; "Propane":

1. Liquid Level Gauge: Provided by LPG tank provider; integral to tank for fuel supplier utilization during tank filling.

2. Float Gauge:

   a. Float Gauge is Rochester-Style float gauge with integral magnetic, remote-read, level sender. Float gauge is connected to the internet via cellular network and shall be provided and configured by the state approved contract LPG supplier.

J. Pressure relief valves, type and number as required by NFPA 58, connected to vapor space and having discharge piping same size as relief-valve outlet and long

enough to extend vertically a distance required by NFPA 58. Identify relief valves as follows:

1. Discharge pressure in psig.
2. Rate of discharge for standard air in cfm.
3. Manufacturer's name.
4. Catalog or model number.

K. For outdoor installation, exposed metal surfaces mechanically cleaned, primed, and painted for resistance to corrosion.

L. Ladders for access to valves or container connections more than 72 inches aboveground.

M. Stainless-Steel Nameplate: Attach to aboveground storage container or to adjacent structure for underground storage container.

1. Name and address of supplier or trade name of container.
2. Water capacity in gallons and liters.
3. Design pressure in psig and kPa.
4. Consult with container manufacturer for maximum pressure to insert in first subparagraph below.
5. Statement, "This container shall not contain a product having a vapor pressure in excess of 250 psig from -20 to 125 deg F" and capable of full vacuum (-14.7 psig); also include equivalent metric units.

    a. If manufacturer's standard offering is rated for higher pressures, list manufacturer's ratings instead.

6. Outside surface area in sq. ft.
7. Year of manufacture.
8. Shell thickness in inches.
9. Overall length in feet.
10. OD in decimal feet.
11. Manufacturer's serial number.
12. ASME Code label.

N. Felt support pads and two concrete or painted-steel saddles per storage container.

1. Corrosion protection and dielectric separation is required at points of container-to-felt contact.

O. Tie straps for each saddle.

P. Asphalt-based coating for corrosion protection.

Q. Propane Delivery Schedule: Once per week or as needed.

2.02 FASTENERS

A. Vandal Resistant Fasteners: Stainless steel, Torx or Allen head, both with center post security feature.

2.03 FUEL FOR TESTING AND INITIAL FILL

A. Provide for the delivery and full tank filling for each LPG Container to allow for testing and to provide for initial building fuel consumption.

1. The cost of the initial fueling shall be paid by the contractor:

a. Completely full Containers shall be turned over to the state.

2. The facility will be responsible for procuring future delivery of fuel.

PART 3 EXECUTION

3.01 PREPARATION

A. Testing Prior to Installation:

1. Before placing the tank in place, plug all openings and pressure test tank in accordance with manufacturer's printed test instructions, unless otherwise specified.
2. Tanks should not be pressurized beyond manufacturer's specified limits.
3. The tank must hold the test pressure for 30 minutes.
4. Check fitting connections, and seams in tank by applying a soap suds solution.
5. Reject any leaking tanks.

3.02 STORAGE CONTAINER INSTALLATION

A. Install the Work of this section in accordance with the item manufacturer's printed installation instructions, unless otherwise shown or specified.

B. Contractor accepting Delegated Design responsibility shall design, install, test, provide first full fuel delivery, and put into service, a complete working propane storage and LPG Vapor delivery system.

1. The contractor shall procure all required construction permits and file any Tank (LPG Container) permits that may be required by the Federal Government, US EPA, New York State, or the County, or Local Municipality.

C. Fill storage container to at least 80 percent capacity with propane.

D. Install piping connections with swing joints or flexible connectors to allow for thermal expansion and contraction of container and connected piping.

E. Ground containers according to NFPA 780. Grounding is specified in Section 260526 "Service Grounding and Bonding."

F. Set storage containers on felt pads on top of steel saddles. Mount saddles to concrete pad and secure to pad with concrete fasteners / anchors. Install corrosion protection at container-to-felt contact.

3.03 TANK ACCESSORIES

A. Fuel Identification: Attach laminated plastic nameplate to each tank fill pipe to identify the fuel in the tank.

B. Tank Identification: Affix tank identification label, or plate permanently to tanks and fill ports.

C. Install padlocks on all lockable caps on fill and vapor recovery piping.

D. Terminate vent lines with vent caps.

E. Overfill Alarm Device Sign: Mount sign adjacent to alarm horn in a location easily readable from ground level.

F. Vent Caps:

1. Install vent caps at end of vent piping minimum of 12 feet above finished grade.

3.04 FIELD QUALITY CONTROL

A. Testing: After installation of tank and piping, test the system in the presence of the Director's Representative, as follows:

1. Piping: Before painting, plug ends and test with air at 5 psi and hold for two hours without leaking.

2. Tanks: Pressure test tank in accordance with manufacturer's printed test instructions, unless otherwise specified.

   a. Tanks should not be pressurized beyond manufacturer's specified limits.
   b. The tank must hold the test pressure for 30 minutes.
   c. Check fitting connections, and seams in outermost tank by applying a soap suds solution.

3. Test Remote Read Level Monitoring panels to ensure they display levels verified with manual level readings taken during initial tank fill.

   a. Simulate low tank level and observe operation of alarm.

B. LPG Containers, Piing, and Accessories will be considered defective if the component / system does not pass tests and inspections.

C. Prepare test and inspection reports.

D. Provide Operation and Maintenance Manuals, printed double-sided, and placed into a 3-ring binder with cover sheet.

3.17 DEMONSTRATION

A. Engage a Company Field Advisor to train Facility's maintenance personnel to adjust, operate, and maintain LPG equipment.

B. Provide a minimum of two, 2-hour long sessions.

END OF SECTION

SECTION 323113

CHAIN LINK FENCE

PART 1 GENERAL

1.01 REFERENCES

A. Comply with ASTM A 53 for requirements of Schedule 40 piping.

1.02 DEFINITIONS

A. Height of Fence: Distance measured from the top of concrete footing to the top of fabric. Fences with buried fabric measured from finished grade to the top of fabric.

1.03 SUBMITTALS

A. Shop Drawings: Complete detailed drawings for each height and style of fence and gate required. Include separate schedule for each listing all materials required and technical data such as size, weight, and finish, to ensure conformance to specifications.

B. Product Data: Manufacturer's catalog cuts, specifications, and installation instructions for each item specified.

C. Samples:
   1. Fence Fabric: Minimum one square foot.
   2. Fence and Gate Posts: Two each, one foot long, if requested.
   3. Miscellaneous Materials and Accessories: One each, if requested.

1.04 QUALITY ASSURANCE

A. Comply with standards of the Chain Link Fence Manufacturer's Institute.

B. Provide steel fence and related gates as a complete compatible system including necessary erection accessories, fittings, and fastenings.

C. Posts and rails shall be continuous without splices.

D. Concrete batching plants shall be currently approved as concrete suppliers by the New York State Department of Transportation.

PART 2 PRODUCTS

2.01 MATERIALS

A. Class B Steel Tubing (Option):
   1. SS-40 Fence Pipe by Allied Tube & Conduit Corp., 16100 S. Lathrop Ave., Harvey, IL, 60426, (800) 882-5543.

2. Tuf-40 Fence Framework by American Tube and Pipe Co., Inc., 2525 N. 27th Ave., Phoenix, AZ 85009, (800) 669-8823.

2.02 STEEL FRAMEWORK

A. End Posts, Corner Posts and Pull Posts:
   1. Pipe: 2.875 inches OD, 5.79 pounds per linear foot (Schedule 40).
   2. Class B Steel Tubing: 2.875 inches OD, 4.64 pounds per linear foot.

B. Line Posts:
   1. Pipe: 2.375 inches OD, 3.65 pounds per linear foot (Schedule 40).
   2. Class B Steel Tubing: 2.375 inches OD, 3.11 pounds per linear foot.

2.03 STEEL FABRIC

A. One-piece widths for fence height 7'-0".

B. Chain link, 2-inch mesh, No. 9 gauge

C. Selvages: Bottom edge knuckled.

2.04 SWING GATE POSTS

A. Single width of gate:
   1. Pipe: 4.50 inches OD, 10.79 pounds per linear foot (Schedule 40).

2.05 SWING GATE FRAMES

A. Height: 7'-0" (not including barbed wire).
   1. Pipe: 1.90 inches OD, 2.72 pounds per linear foot (Schedule 40).
   2. Class B Steel Tubing: 1.90 inches OD, 2.28 pounds per linear foot.

B. Assemble gate frames by welding or with special steel fittings and rivets for rigid connections. Install mid-height horizontal rails on gates over 10 feet high. When width of gate leaf exceeds 10 feet, install mid-distance vertical bracing of the same size and weight as frame members.

2.06 SWING GATE HARDWARE

A. Hinges: Non-lift-off type, offset to permit 180 degree swing, and of suitable size and weight to support gate. Provide 1-1/2 pair of hinges for each leaf over 6 feet high.

B. Latch: Forked type for single gates 10 feet wide or less. Drop bar type with keeper for double gates and single gates over 10 feet wide complete with flush plate set in concrete. Drop bar length shall be 2/3 the height of the gate. Padlock eye shall be an integral part of latch construction.

C. Holdbacks for Vehicle Gates: Type which automatically engages the gate leaf and holds it in open position until manually released.

2.07 MISCELLANEOUS MATERIALS AND ACCESSORIES

A. Rails and Post Braces:
   1. Pipe: 1.660 inches OD, 2.27 pounds per linear foot (Schedule 40).
   2. Class B Steel Tubing: 1.660 inches OD, 1.84 pounds per linear foot.

B. Fittings and Post Tops: Steel, wrought iron, or malleable iron.
   1. Fasteners: Tamper-resistant cadmium plated steel screws.

C. Stretcher Bars: One piece equal to full height of fabric, minimum cross-section 3/16 inch by 3/4 inch.

D. Metal Bands (for securing stretcher bars): Steel, wrought iron, or malleable iron.

E. Wire Ties: Conform to American Steel Wire gauges.
   1. For tying fabric to line posts, rails and braces: 9 gauge (.1483 inch) steel wire.
   2. For tying tension wire to fabric: 11 gauge (.1205 inch) steel hog rings.

F. Truss Rods: 3/8 inch diameter.

G. Concrete: Portland Cement concrete having a minimum compressive strength of 4000 psi at 28 days.

H. Spiral Paper Tubes:
   1. Sonotube by Sonoco Products Co., North Second St., Hartsville, SC 29550, (800) 377-2692.
   2. Sleek/tubes by Jefferson Smurfit Corp., P.O. Box 66820, St. Louis, Mo 63166, (314) 746-1100.

I. Cold Galvanizing Compound: Single component compound giving 93 percent pure zinc in the dried film, and meeting the requirements of DOD-P-21035A (NAVY).

J. Tension Wire: 7 gauge coiled spring steel wire.

2.08 BARBED WIRE

A. Two strand 12-1/2 gauge steel wire, with 14 gauge 4-point steel barbs spaced 5 inches oc.

B. Extension Arms: Pressed steel, wrought iron, or malleable iron, complete with provision for anchorage to posts (including light posts) and attaching 3 rows of barbed wire to each arm.
   1. Type: Single vertical arm; one for each post.

2.09 FINISHES

A. Steel Framework:

1. Pipe: Galvanized in accordance with ASTM A 53, 1.8 ounces zinc per square foot.
2. Class B Steel Tubing: Exterior; 1.0 ounces zinc per square foot plus chromate conversion coating and clear polyurethane. Interior; zinc rich organic coating.

B. Fabric; one of the following:
1. Galvanized Finish: ASTM A 392 class II zinc coated after weaving, with 2.0 ounces per square foot.
2. Aluminized Finish: ASTM A 491 aluminum coated with 0.40 ounces per square foot.

C. Fence and Gate Hardware, Miscellaneous Materials, Accessories:
1. Wire Ties: Galvanized Finish, ASTM A 90 1.6 ounces zinc per square foot, or aluminized finish, ASTM A 809 0.40 ounces per square foot.
2. Hardware and Miscellaneous Items: Galvanized Finish, ASTM A 153 (Table 1).
3. Extension Arms: Hot-dip galvanized after fabrication, ASTM 123, 2.0 ounces zinc per square foot.

D. Tension Wire; one of the following:
1. Galvanized Finish: ASTM A 121 class 3, 0.80 ounces per square foot.
2. Aluminized Finish: ASTM A 585 class 2, 0.30 ounces per square foot.

PART 3 EXECUTION

3.01 PREPARATION

A. Clear and grub along fence line as required to eliminate growth interfering with alignment. Remove debris from State property.

B. Do not begin installation of fence in areas to be cut until finished grading has been completed.

3.02 INSTALLATION

A. Space posts equidistant in the fence line with a maximum of 10 feet on center. For fences 16 feet and higher space posts a maximum of 8 feet on center.

B. Setting Posts in Earth: Drill holes for post footings. If existing grade at the time of installation is below finished grade, provide spiral paper tubes to contain concrete to finish grade elevation. Set posts in center of hole and fill hole with concrete. Plumb and align posts. Vibrate or tamp concrete for consolidation. Finish concrete in a dome shape above finish grade elevation to shed water. Do not attach fabric to posts until concrete has cured a minimum of 7 days.

C. Locate corner posts at corners and at changes in direction. Use pull posts at all abrupt changes in grade and at intervals no greater than 500 feet. On runs over 500 feet, space pull posts evenly between corner or end posts. On long curves, space pull posts so that the strain of the fence will not bend the line posts.

D. Install top rail continuously through post tops or extension arms, bending to radius for curved runs. Install expansion couplings as recommended by fencing manufacturers.

E. Install bottom rails in one piece between posts and flush with post on fabric side using special offset fittings where necessary.

F. Diagonally brace corner posts, pull posts, end posts, and gate posts to adjacent line posts with truss rods and turnbuckles.

G. Attach fabric to security side of fence. Maintain a 2 inch clearance above finished grade except when indicated otherwise. Thread stretcher bars through fabric using one bar for each gate and end post and 2 for each corner and pull post. Pull fabric tight so that the maximum deflection of fabric is 2 inches when a 30 pound pull is exerted perpendicular to the center of a panel. Maintain tension by securing stretcher bars to posts with metal bands spaced 15 inches oc. Fasten fabric to steel framework with wire ties spaced 12 inches oc for line posts and 24 inches oc for rails and braces. Bend back wire ends to prevent injury. Tighten stretcher bar bands, wire ties, and other fasteners securely.

H. Position bolts for securing metal bands and hardware so nuts are located opposite the fabric side of fence. Tighten nuts and cut off excess threads so no more than 1/8 inch is exposed. Peen ends to prevent loosening or removal of nuts.
1. Secure post tops and extension arms with tamper-resistant screws.

I. Install gates plumb and level and adjust for full opening without interference. Install ground-set items in concrete for anchorage, as recommended by fence manufacturer. Adjust hardware for smooth operation and lubricate where necessary.

J. Tension Wire: Support bottom edge of fabric with tension wire. Weave tension wire through fabric or fasten with hog rings spaced 24 inches oc. Tie tension wire to posts with 9 gauge wire ties.

K. Wire brush and repair welded and abraded areas of galvanized surfaces with one coat of cold galvanizing compound.

L. Restore disturbed ground areas to original condition. Topsoil and seed to match adjacent areas.

END OF SECTION

SECTION 230923

DIRECT DIGITAL BUILDING CONTROL SYSTEM

PART 1 GENERAL

1.01 OVERVIEW

A. The intent of this specification is to provide a peer-to-peer, networked, stand-alone, distributed control system by companies in the HVAC control field.

B. BACnet communication protocols will be used as the primary communication network for communications between multi-BAS/EMS vendors systems in a non-proprietary manner. Project implementation, as specified, requires transferring, receiving and controlling information that resides in multi-BAS/EMS Vendors' "equipment controllers".

C. **This Section includes control equipment for HVAC systems. All equipment is to be provided with factory-provided packaged controls and user interface. A central BMS system is not included in the design except for the purpose of monitoring status and to notify the user that there is an alarm to be addressed. The detail of an alarm does not need to be identified at the user interface.**

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Basic Electrical Materials and Methods for Direct Digital Building Control System: Section 260502.

B. Wiring for Motors and Motor Controllers: Section 260523.

C. Ductwork Accessories: Section 233300.

D. General Commissioning Requirements: Section 019113.

E. Commissioning Process: Section AGCP in Appendix.

1.03 REFERENCES

A.	ASHRAE Standard 135 - 2020	BACnet - A Data Communication Protocol for Building Automation and Control Networks
B.	ASHRAE Guideline 13 - 2015	Specifying Building Automation Systems
C.	NFPA 70	(2020) National Electric Code
D.	UL 916	(2015) Energy Management Equipment
E.	UL UUKL 864	(2014); Smoke Control Equipment

1.04 ABBREVIATIONS AND ACRONYMS

CSIP	Control System Interface Panel
BAS	Building Automation System
DCP	Distributed Control Processors
DDC	Direct Digital Control
EEPROM	Electrically Erasable Programmable Read Only Memory
EMS	Energy Management System
EPROM	Erasable Programmable Read Only Memory
FAIP	Fire Alarm Interface Panel
FSCS	Fire Fighter's Smoke Control System
GDU	Graphic Display Unit
HOA	Hand-Off-Automatic
OS	Operating System
PCP	Digital Plant Control Processors
POS	Primary Operator Station
POT	Portable Operators Terminal
RAP	Remote Access Panel
SCAP	Status and Command Annunciator Panel
TEC	Terminal Equipment Controllers
TP	Time Programs
VAV	Variable Air Volume

1.05 SYSTEM DESCRIPTION

A. The system shall operate as an integrated Building Automation System (BAS).

1. Controls contractor is to provide a complete system that operates as specified within this Section. Provide new control equipment and accessories as needed to meet prescribed functionality. Manufacturer's products, including design, materials, fabrication, assembly, erection, examination, inspection, and testing shall be in accordance with ASHRAE Guideline 13 - 2015, ASME B31.1 and NFPA 70, except as modified herein or indicated otherwise.
2. Each HVAC system (HRU, DOAS, in-floor radiant, hot water heaters) shall be controlled by a dedicated standalone terminal equipment controller (TEC) provided by the equipment manufacturer. The TEC will be pre-configured to operate the system it serves as per specified sequences and will be compatible with external BACnet communication.
3. Primary Operators Station (POS) shall be provided in Office 104 and shall monitor all HVAC systems' controllers in the facility for alarms via BACnet communications. Provide POS complete with software, applicable graphics, and programming.
4. Secondary networks managed by the DCPs may be employed to monitor status of terminal equipment controllers (TECs).

1.06 DESIGN REQUIREMENTS

A. The system shall be designed by the engineering staff of the Company producing the system or the engineering staff of a Company that specializes in the design of Building Automation Systems.

1.07 SUBMITTAL

A. Waiver of Submittal: The "Waiver of Certain Submittal Requirements" in Section 013300 does not apply to this Section.

B. Submittal Package: Submit the shop drawings, product data, and quality control submittal specified below at the same time as a package.
   1. Certification of interoperability is required for each device submitted for the project.

C. Shop Drawings:
   1. Provide a system architecture drawing that diagrammatically shows all DCPs, their locations, how they connect to the overall communication riser, and the specified HVAC systems they each serve. The system architecture wiring layout must match specific site requirements.
   2. Sketches of all graphics.
   3. Graphic penetration tree showing all graphics and all points.
   4. Composite wiring and/or schematic diagrams of the complete system as proposed to be installed (standard diagrams will not be acceptable).
      a. Include wiring diagrams showing interconnection with other Contractors systems.
   6. Scaled floor plan and elevation drawings showing location of all major components associated with the system.
   7. Scaled drawings of each distributed control processor (DCP) showing layout of, and indicating the function of each module and accessory.

D. Product Data:
   1. Catalog sheets, specifications and installation instructions.
   2. Bill of materials.
   3. Detailed description of system operation.
   4. Point description, program list, and sequences.
   5. Data from the Company producing the system, proving that:
      a. The system is UL listed.
   6. Total electrical load of the system which will be connected to the uninterruptible power supply system.
   7. Name, address and telephone number of nearest fully equipped service organization.

E. Quality Control Submittal:
   1. Installer's Qualifications Data:
      a. Name of each person who will be performing the Work and their employer's name, business address and telephone number.
      b. Names and addresses of 3 similar projects that each person has worked on during the past 3 years.
   2. Company Field Advisor Data: Include:

a. Name, business address and telephone number of Company Field Advisor secured for the required services.
b. Certified statement from the Company listing the qualifications of the Company Field Advisor.
c. Services and each product for which authorization is given by the Company, listed specifically for this project.

F. Commissioning Submittals:
1. Completed Pre-functional Checklists.
2. Signed off and completed Functional Testing documentation.

G. Contract Closeout Submittal:
1. System acceptance test report.
2. Certificates:
a. Affidavit, signed by the Company Field Advisor and notarized, certifying that the system meets the contract requirements and is operating properly.
3. Operation and Maintenance Data: Deliver 2 copies, covering the installed products, to the Director's Representative. Include:
a. Operation and maintenance data for each product installed in system.
b. Original licensed versions of all software loaded into the system, with disks and manuals.
c. Complete point to point wiring diagrams of entire system as installed. Identify all conductors and show all terminations and splices. (Identification shall correspond to markers installed on each conductor.)
d. Name, address, and telephone number of nearest fully equipped service organization.
4. Provide (2) DVD backup of all software programs and configurations as the system exists at final acceptance.
a. Deliver one set of back-up disks to the Directors Representative for turnover to the facility.
b. Deliver one set of back-up DVDs to:
Office of General Services
Facilities Services Unit
Service Team Leader
34th Floor, Corning Tower
Albany, NY 12242
c. Upon closeout with the first year, send updated DVD to the above listed personnel.
5. Provide all revisions and/or upgrades made to the system software during the one-year guarantee warranty period, at no additional cost to the State.

1.08 QUALITY ASSURANCE

A. Equipment Qualifications For Products Other Than Those Specified:

1. At the time of submission provide written notice to the Director of the intent to propose an “or equal” for products other than those specified. Make the “or equal” submission in a timely manner to allow the Director sufficient time to review the proposed product, perform inspections and witness test demonstrations.
2. If products other than those specified are proposed for use furnish the name, address, and telephone numbers of at least 5 comparable installations that can prove the proposed products have performed satisfactorily for 3 years. Certify in writing that the owners of the 5 comparable installations will allow inspection of their installation by the Director's Representative and the Company Field Advisor.
    a. Make arrangements with the owners of 2 installations (selected by the Director) for inspection of the installations by the Director's Representative. Also obtain the services of the Company Field Advisor for the proposed products to be present. Notify the Director a minimum of 3 weeks prior to the availability of the installations for the inspection, and provide at least one alternative date for each inspection.
    b. Only references from the actual owner or owner’s representative (Security Supervisor, Maintenance Supervisor, etc.) will be accepted. References from dealers, system installers or others, who are not the actual owners of the proposed products, are not acceptable.
        1) Verify the accuracy of all references submitted prior to submission and certify in writing that the accuracy of the information has been confirmed.
3. The product manufacturer shall have test facilities available that can demonstrate that the proposed products meet the contract requirements.
    a. Make arrangements with the test facility for the Director's Representative to witness test demonstrations. Also obtain the services of the Company Field Advisor for the proposed product to be present at the test facility. Notify the Director a minimum of 3 weeks prior to the availability of the test facility, and provide at least one alternative date for the testing.
4. Provide written certification from the manufacturer that the proposed products are compatible for use with all other equipment proposed for use for this system and meet all contract requirements.

B. UL Listing: The system shall be UL listed for Energy Management UL 916.

C. Qualifications: The persons installing the Work of this Section and their Supervisor shall be personally experienced in building control system work and shall have been regularly employed by a Company installing direct digital building control systems for a minimum of 3 years.

D. Company Field Advisor: Secure the services of a Company Field Advisor for a minimum of 16 working hours for the following:
1. Render advice regarding installation and final adjustment of the system.
2. Assist in initial programming of the system.

3. Render advice on the suitability of each monitor and control device for its particular application.
4. Witness final system test and then certify with an affidavit that the system is installed in accordance with the contract documents and is operating properly.
5. Train facility maintenance personnel in operation, programming and routine maintenance of the system.
    a. Provide the services of competent instructors to instruct designated personnel in the adjustment, operation and maintenance, including pertinent safety requirements, of the equipment and system specified. The training shall be oriented toward the installed system rather than being a general (canned) training course. Each instructor shall be thoroughly familiar with all aspects of the subject matter they are to teach.
    b. Submit for OGS review and approval, at least four weeks in advance of each phase of the training, the following:
        1) A detailed proposed outline of training, including timing.
        2) All printed materials, visual aids and hands-on material.
        3) All other training aids.
        4) Qualifications of all proposed training personnel.
    c. Training must include quizzes, tests, and exercises that compel trainees to demonstrate understanding of the system's most important concepts.
    d. The overall training approach shall be interactive and encourage students to discuss concepts, ask questions of the instructor and share experiences among one another.

6. Explain available service programs to facility supervisory personnel for their consideration.

1.09 MAINTENANCE

A. Service Availability: A fully equipped service organization capable of guaranteeing response time within 8 hours to service call shall be available 24 hours a day, 7 days a week to service the completed Work.

PART 2 PRODUCTS

2.01 MATERIALS

A. General:
1. Control diagrams shown on the drawings, in general, indicate the equipment required for the control sequences specified. Variations in the selection of temperature control equipment, which will produce the required control sequences may be submitted for approval.
2. All equipment shall be the standard product of one manufacturer, unless otherwise specified.
Acceptable manufacturers: Johnson Controls, Snyder Electric (Andover), Siemens, or Approved Equal.

3. Components and system capacity parameters specified are minimum and shall be increased as required by the Company producing the system to enable the system to perform the functions specified and indicated on the drawings.

B. Standard utility grade power will be available for operation of the system. If power conditioning is required for proper operation of the system, all equipment

and labor required to provide conditioned power shall be provided as part of the system.

2.02 PRIMARY OPERATORS STATION (POS)

A. Furnish (1) PC based operator workstation in Office 104. The operator interface shall reside on the Enterprise-wide network, which is same high-speed communications network as the Terminal Equipment Controllers (TEC). The Enterprise-wide network will be provided by the owner and supports the Internet Protocol (IP).

1. Each PC based operator interface shall include the following:

   a. Hardware type (choose one):

      1) Desktop PC with Monitor, Keyboard & Mouse
      2) Laptop

   b. Operating Systems

      1) Windows 10 or better

   c. Minimum Hardware

      1) Intel i3 or better 64-bit microprocessor
      2) 4 GB RAM or better
      3) 250 GB or better solid-state drive space
      4) Internet Browser compatible with operator interface requirements outlined in the operator interface section
      5) Computer shall contain network certified interfaces and drivers for the BACnet and Ethernet networks.
      6) Monitor with minimum 19" display area and 1920x1080 display resolution with colored graphics.

B. Operator Interface

1. The operator interface shall be accessible via a web browser.
2. The operator interface shall support the following Internet web browsers:

   a. Internet Explorer latest version
   b. Firefox latest version
   c. Chrome latest version

C. System Security

1. Each operator shall be required to login to the system with a username and password in order to view, edit, add, or delete data.
2. User Profiles shall restrict the user to only the objects, applications, and system functions as assigned by the system administrator.
3. Each operator shall be allowed to change their user password
4. The System Administrator shall be able to manage the security for all other users

5. The system shall include pre-defined “roles” that allow a system administrator to quickly assign permissions to a user.
6. User logon/logoff attempts shall be recorded.
7. The system shall protect itself from unauthorized use by automatically logging off following the last keystroke. The delay time shall be user definable.
8. All system security data shall be stored in an encrypted format.

D. Database

1. Database Save. A system operator with the proper password clearance shall be able to archive the database on the designated operator interface PC.
2. Database Restore. The system operator shall also be able to clear a panel database and manually initiate a download of a specified database to any panel in the system.

E. System Diagnostics

1. The system shall automatically monitor the operation of all network connections, building management panels, and controllers.
2. The failure of any device shall be annunciated to the operators

F. Equipment & Application Pages

1. The operator interface shall include standard pages for all equipment and applications. These pages shall allow an operator to obtain information relevant to the operation of the equipment and/or application, including:
2. Animated Equipment Graphics for each major piece of equipment and floor plan in the System. This includes all scheduled equipment.

    a. These graphics shall show all points dynamically as specified in the points list
    b. Animation capabilities shall include the ability to show alarm status of various monitored TEC’s.

3. Alarms relevant to the equipment or application without requiring a user to navigate to an alarm page and perform a filter.
4. Historical Data for the monitored equipment or application.

G. System Graphics. Operator interface shall be graphically based and shall include at least one graphic per piece of equipment.
1. Alarm Indication. Indicate areas or equipment in an alarm condition using color or other visual indicator.
2. Format. Graphics shall be saved in an industry-standard format such as BMP, JPEG, PNG, or GIF. Web-based system graphics shall be viewable on browsers compatible with World Wide Web Consortium browser standards. Web graphic format shall require no plug-in (such as HTML and JavaScript) or shall only require widely available no-cost plug-ins (such as Active-X and Macromedia Flash)

H. Engineering Units on this project shall be IP

I. Trend logs

1. Trend Logs Definition

a. The operator interface shall allow a user with the appropriate security permissions to define a trend log for any data in the system.
b. The operator interface shall allow a user to define any trend log options as described in the Application and Control Software section

2. Trend Log Viewer

a. The operator interface shall allow Trend Log data to be viewed and printed.
b. The operator interface shall allow a user to view trend log data in text-based (time –stamp/value).

J. Alarm/Event Notification

1. An operator shall be notified of new alarms/events as they occur while navigating through any part of the system via an alarm icon.
2. Alarm/Event Log. The operator shall be able to view all logged system alarms/events from any operator interface.
   a. Alarm/event messages shall use full language, easily recognized descriptors.
   b. An operator with the proper security level may acknowledge and clear alarms/events.
   c. All alarms/events that have not been cleared by the operator shall be stored by the building controller.
   d. The alarm/event log shall include a comment field for each alarm/event that allows a user to add specific comments associated with any alarm.

2.03 DISTRIBUTED CONTROL PROCESSORS (DCPs)

A. For BACnet System Architectures DCPs shall be BACnet certified devices.

B. Microprocessor based, with operating system (OS) and energy management system (EMS) programs, data file and control programs, 72 hour battery backed real time clock.

C. DCPs shall operate stand alone and independent of a central computer for all specified control applications.

D. DCPs not utilizing “Smart Devices”, shall be modular and configured to accommodate analog and digital input and output boards to meet specific application requirements, including spares as specified.

E. The DCPs including accessory devices such as relay, power supplies, etc., shall be factory mounted, wired and housed in a steel enclosure with a hinged door panel. LEDs and switches shall be visible without opening the panel door, but not accessible without opening the panel door.

F. DCPs shall be equipped with LEDs for indication of power and operational status, status of each input and output, and diagnostic LED indicators.

2.04 ROUTER AND GATEWAYS

A. Provide certified Router and/or Gateway devices which connect two or more physical BACnet compatible equipment as required.

B. Routers or Gateways if required, shall be a microprocessor based communication device designed to provide seamless, two-way translation between two or more standard or non-standard network layer protocols.

C. UL Listing: UL 916 required as a minimum.

2.05 TERMINAL EQUIPMENT CONTROLLERS (TEC)

A. Terminal Equipment Controllers (TEC) shall be microprocessor-based DDC controllers which through hardware or firmware designed to monitor specified equipment. They are not user programmable, but are customized for operation within the confines of the equipment they are designed to serve.

B. The TECs shall be factory mounted on the equipment, wired, and housed in a steel enclosure.

C. Zone Controllers are controllers that operate equipment that control the space temperature of single zone

D. Software

1. To meet the sequence of operation for each zone control, the controller shall use programs developed and tested by the controller manufacturer that are either factory loaded or downloaded with service tool to the controller.
2. Stand-Alone Operation: Each piece of equipment identified in the drawing schedules to have stand-alone controllers shall be controlled by a single controller and provide stand-alone control in the event of communication failure. In case of communications failure stand-alone operation shall use default values or last values for remote sensors read over the network such as outdoor air temperature.
3. For controlling ancillary devices and for flexibility to change to sequence of operation in the future, the controller shall be capable running custom programs written in a graphical programming language

E. Environment: Controller hardware shall be suitable for the anticipated ambient conditions

1. Storage: -55 to 203 ^{0}F (-48 to 95^{0}C) and 5 to 95% Rh, non-condensing.

2. Operating: -40 to 158 ^{0}F (-40 to 70 ^{0}C) and 5 to 95% Rh, non-condensing.

3. Controllers used indoors shall be mounted in a NEMA 1 enclosure at a minimum
4. Controllers used outdoors and/or in wet ambient shall be mounted within NEMA 4 type waterproof enclosures, and shall be rated for operation at -40 F to 158 F

F. Input/Output

1. For flexibility in selection and replacement of valves, the controllers shall be capable of supporting all of the following valve control types 0-10VDC, 0-5VDC, 4-20mA, 24VAC floating point, 24VAC - 2 position (Normally Open or Normally Closed).
2. For flexibility in selection and replacement of sensors, the controllers shall be capable of reading sensor input ranges of 0 to10V, 0 to 20mA, pulse counts, and 200 to 20Kohm.
3. For flexibility in selection and replacement of binary sensors, the controller shall support dry and wetted (24VAC) binary inputs.
4. For flexibility in selection and replacement devices, the controller's shall have binary output which are able to drive at least 12VA each.
5. For flexibility in selection and replacement of motors, the controller shall be capable of outputting 24VAC (binary output), DC voltage (0 to 10VDC minimum range) and PWM (in the 80 to 100 Hz range).
6. For future needs, any I/O that is unused by functionality of equipment control shall be available to be used by custom program on the controller and by another controller on the network.

G. Serviceability – The controller shall provide the following in order to improve serviceability of the controller

1. Diagnostic LEDs shall indicate correct operation or failures/faults for all of the following: power, sensors, protocol communications, and I/O communications bus.
2. All binary output shall have LED's indicating the output state.
3. All wiring connections shall removable without the use of a tool.
4. Software service tool connection through all of the following methods: direct cable connection to the controller, connection through another controller on protocol link and through the controller's zone sensor.
5. For safety purposes, the controller shall be capable of being powered by a portable computer for the purposes of configuration, programming, and testing programs so that this work can be accomplished with the power off to the equipment.

6. Capabilities to temporarily override of point values with built-in time expiration in the controller.
7. Mack Address shall be set using decimal (0-9) based rotary switches.
8. Configuration change shall not be made in a programming environment, but rather by a configuration page utilizing dropdown list, check boxes, and numeric boxes.
9. Trending objects resident on controller

    a. Minimum of 20,000 trending points total on controller
    b. Shall be capable of trending all points used by controller
    c. Shall be capable of 1 second sample rates on all points

H. Software Retention: All Controller operating parameters, setpoints, BIOS, and sequence of operation code must be stored in non-volatile memory in order to maintain such information for at least 12 months without power.

I. Transformer for the controller must be rated at minimum of 115% of ASC power consumption, and shall be fused or current limiting type. 24 VAC, +/- 15% nominal, 50-60 Hz, 24 VA plus binary output loads, for a maximum of 12 VA for each binary output.

J. Agency Approval: The controller shall have meet the Agency Compliance:

1. UL916 PAZX, Open Energy Management Equipment
2. UL94-5V, Flammability
3. FCC Part 15, Subpart B, Class B Limit

2.06 THERMOSTAT/TEMPERATURE SENSOR GUARDS

A. Model TG Series 16 by Shaw Perkins:
    1. Cover: Top, front and bottom, 16 gauge perforated steel, 1/8 inch perforations on 3/16 inch centers.
    2. Sides and mounting frame: 14 gauge steel.
    3. Fastener: 1/4x3/8 inch tamper resistant torx or allen head center post.
    4. Finish: Baked enamel finish.

2.07 WIRING

A. See Section 260502.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install the system in accordance with the Company's printed instructions unless otherwise indicated.

3.02 FIELD QUALITY CONTROL

A. Preliminary System Test:

l. Preparation: Have the Company Field Advisor adjust the completed system and then operate it long enough to assure that it is performing properly.
2. Run a preliminary test for the purpose of:
   a. Determining whether the system is in a suitable condition to conduct an acceptance test.
   b. Checking and adjusting equipment.
   c. Training facility personnel.
3. Also perform a witnessed validation demonstration consisting of:
   a. Display graphics, demo update.
   b. Demonstrate scan, update, and alarm responsiveness.

B. System Acceptance Test:
l. Preparation: Notify the Director's Representative at least 3 working days prior to the test so arrangements can be made to have a Facility Representative witness the test.
2. Make the following tests:
   a. Test system operational functions step by step as summarized in the detailed description of system operation.
   b. Test monitor and control devices.
   c. Test all remote devices such as valve and damper actuators to demonstrate full range of motion in the "controllable range".
4. Submit written report of test results signed by Company Field Advisor and the Director's Representative. Mount a copy of the written report and in a Plexiglas enclosed frame assembly adjacent to the POS.

3.04 POINT DESCRIPTION, PROGRAM LIST, AND SEQUENCES

A. General:
1. All alarms shall be logged. All equipment start/stops shall be logged.

END OF SECTION

SECTION 233113

METAL DUCTWORK

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. General Commissioning Requirements: Section 019113.

B. Commissioning Process: Section AGCP in Appendix.

C. Non-Fibrous, Closed Cell, Outdoor Ductwork: Section 233115.

1.02 REFERENCES

A. American Conference of Governmental Industrial Hygienists (ACGIH).

B. National Fire Protection Association (NFPA).

C. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA).

1.03 SUBMITTALS

A. Shop Drawings:

1. Layouts for areas in which it may be necessary to deviate substantially from layout shown on the Drawings. Show major relocation of ductwork and major changes in size of ducts. Minor transitions in ductwork, if required due to job conditions, need not be submitted as long as the duct area is maintained.
2. Details of intermediate structural steel members required to span main structural steel for the support of ductwork.
3. Method of attachment of duct hangers to building construction.
4. Coordinate shop drawings with related contracts prior to submission.

B. Submit an Environmental Product Declaration (EPD) from the manufacturer for steel this specification section, if available. A statement of the contractor's good faith effort to obtain the EPD shall be provided if not available.

1. Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services.*

C. Product Data: Material, gage, type of joints, sealing materials, and reinforcing for each duct size range, including sketches or SMACNA plate numbers for joints, method of fabrication and reinforcing. Include ACGIH figure numbers for hoods if applicable.

1.04 QUALITY ASSURANCE

A. SMACNA: Gages of materials, fabrication, reinforcement, sealing requirements, installation, and method of supporting ductwork shall be in accordance with the following SMACNA manuals, unless otherwise shown or specified:

1. HVAC Duct Construction Standards.

B. Conform to the applicable requirements of NFPA 90A, 90B, 91, 96, and 101.

PART 2 PRODUCTS

2.01 MATERIALS

A. Sheet Metal:

1. Galvanized Steel: ASTM A653, Class LFQ (lock forming quality), coating designation G-90.

B. Duct Hangers:

1. Strap Hangers: Same material as ducts.
2. Rod Type Hangers: Mild low carbon steel, unless otherwise specified; fully threaded or threaded each end, with 2 removable nuts each end for positioning and locking rod in place. Unless stainless steel, galvanized or cadmium plated; shop coat with metal primer.

C. Miscellaneous Fasteners and Upper Hanger Attachments:

1. Sheet Metal Screws, Machine Bolts and Nuts: Same material as duct, unless otherwise specified.
2. Concrete Inserts: Steel or malleable iron, galvanized; continuously slotted or individual inserts conforming with MSS SP-58, Types 18 & 19, Class A-B.
3. C Clamps: Fee & Mason Co.'s 255L with locking nut, and 255S with retaining strap.
4. Metal Deck Ceiling Bolts: B-Line Systems, Inc.'s Fig. B3019.
5. Welding Studs: Erico Fastening Systems, capacitor discharge, low carbon steel, copper flashed.
6. Structural (carbon) Steel Shapes and Steel Plates: ASTM A36, shop primed.
7. Stainless Steel Shapes and Plates: ASTM A276 and ASTM A666.
8. Machine Bolt Expansion Anchors:
   a. Non-caulking single unit type: FS FF-S-325, Group II, Type 2, Class 2, Style 1.
   b. Non-caulking double unit type: FS FF-S-325, Group II, Type 2, Class 2, Style 2.
   c. Self-drilling type: FS FF-S-325, Group III, Types 1 and 2

2.02 SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS

A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.

B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-1, "Rectangular Duct/Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-2, "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

D. Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 4, "Fittings and Other Construction," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.03 SINGLE-WALL ROUND DUCTS AND FITTINGS

A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 3, "Round, Oval, and Flexible Duct," based on indicated static-pressure class unless otherwise indicated.

1. Acceptable Manufacturers:
    a. Lindab Inc.
    b. McGill AirFlow LLC.
    c. SEMCO Incorporated.
    d. Sheet Metal Connectors, Inc.

B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-1, "Round Duct Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

1. Transverse Joints in Ducts Larger Than 60 Inches (1524 mm) in Diameter: Flanged.

C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-2, "Round Duct Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

1. Fabricate round ducts larger than 90 inches (2286 mm) in diameter with butt-welded longitudinal seams.
2. Fabricate flat-oval ducts larger than 72 inches (1830 mm) in width (major dimension) with butt-welded longitudinal seams.

D. Tees and Laterals: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.04 SEALANT AND GASKETS

A. General Sealant and Gasket Requirements: Surface-burning characteristics for sealants and gaskets shall be a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.

B. Two-Part Tape Sealing System:

1. Tape: Woven cotton fiber impregnated with mineral gypsum and modified acrylic/silicone activator to react exothermically with tape to form hard, durable, airtight seal.
2. Tape Width: 3 inches (76 mm).
3. Sealant: Modified styrene acrylic.
4. Water resistant.
5. Mold and mildew resistant.
6. Maximum Static-Pressure Class: 10-inch wg (2500 Pa), positive and negative.
7. Service: Indoor and outdoor.
8. Service Temperature: Minus 40 to plus 200 deg F (Minus 40 to plus 93 deg C).
9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum.
10. For indoor applications, sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

C. Water-Based Joint and Seam Sealant:

1. Application Method: Brush on.
2. Solids Content: Minimum 65 percent.
3. Shore A Hardness: Minimum 20.
4. Water resistant.
5. Mold and mildew resistant.
6. VOC: Maximum 75 g/L (less water).
7. Maximum Static-Pressure Class: 10-inch wg (2500 Pa), positive and negative.
8. Service: Indoor or outdoor.

9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.

D. Flanged Joint Sealant: Comply with ASTM C 920.

1. General: Single-component, acid-curing, silicone, elastomeric.
2. Type: S.
3. Grade: NS.
4. Class: 25.
5. Use: O.
6. For indoor applications, sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

E. Flange Gaskets: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and Coordination Drawings.

B. Install ducts according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.

C. Install round and flat-oval ducts in maximum practical lengths.

D. Install ducts with fewest possible joints.

E. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch connections.

F. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.

G. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.

H. Install ducts with a clearance of 1 inch (25 mm), plus allowance for insulation thickness.

I. Route ducts to avoid passing through transformer vaults and electrical equipment rooms and enclosures.

J. Where ducts pass through non-fire-rated interior partitions and exterior walls and are exposed to view, cover the opening between the partition and duct or duct insulation with sheet metal flanges of same metal thickness as the duct. Overlap openings on four sides by at least 1-1/2 inches (38 mm).

K. Where ducts pass through fire-rated interior partitions and exterior walls, install fire dampers. Comply with requirements in Division 23 Section "Air Duct Accessories" for fire and smoke dampers.

L. Protect duct interiors from moisture, construction debris and dust, and other foreign materials. Comply with SMACNA's "IAQ Guidelines for Occupied Buildings Under Construction," Appendix G, "Duct Cleanliness for New Construction Guidelines."

M. Install ductwork to allow maximum headroom. Properly seam, brace, stiffen, support and render ducts mechanically airtight. Adjust ducts to suit job conditions. Dimensions may be changed as approved, if cross sectional area is maintained.

N. Provide necessary transformation pieces, and flexible fabric connections for ductwork connected to air handling equipment or air inlet and outlet devices.

3.02 SEALING SEAMS, JOINTS, AND PENETRATIONS

A. Seal ducts to the following seal classes according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible":

1. All Ducts: Seal Class A (All Transverse joints, longitudinal seams, and duct wall penetrations)

3.03 HANGERS FOR DUCTS, UNDER 2 INCHES W.G.

A. Install hangers for ducts as specified in the SMACNA Manual, with the following exceptions:

1. Rectangular ducts up to 42 inches wide, not having welded or soldered seams, and supported from overhead construction; extend strap hangers down over each side of the duct and turn under bottom of duct a minimum of 2 inches. Secure hanger to duct with 3 full thread sheet metal screws, one in the bottom and 2 in the side of the duct.
2. Rectangular ducts 43 inches wide and over, and all sizes of duct with welded or soldered seams, and supported from overhead construction; use trapeze hangers.
3. Prime coat plain steel rods threaded at the site immediately after installation with metal primer.

3.04 UPPER HANGER ATTACHMENTS

A. General:

1. Secure upper hanger attachments to structural steel or steel bar joists wherever possible.
2. Do not use drive-on beam clamps, flat bars or bent rods, as upper hanger attachments.
3. Do not attach hangers to steel decks which are not to receive concrete fill.
4. Avoid damage to reinforcing members in concrete construction.
5. Metallic fasteners installed with electrically operated or powder driven tools may be used as upper hanger attachments, in accordance with the SMACNA Manual, with the following exceptions:
    a. Do not use powder driven drive pins or expansion nails.
    b. Do not attach powder driven or welded studs to structural steel less than 3/16 inch thick.
    c. Do not support a load, in excess of 250 lbs from any single welded or powder driven stud.
    d. Do not use powder driven fasteners in precast concrete.

B. Attachment to Steel Frame Construction: Provide intermediate structural steel members where required by ductwork support spacing. Select steel members for use as intermediate supports based on a minimum safety factor of 5.

1. Secure upper hanger attachments to steel bar joists at panel points of joists.
2. Do not drill holes in main structural steel members.

3.05 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Leakage Tests:

1. Comply with SMACNA's "HVAC Air Duct Leakage Test Manual." Submit a test report for each test.
2. Test the duct systems as follows:
    a. Indoor ducts:
        1) Test representative duct sections totaling no less than 25 percent of total installed duct area for each designated pressure class.
        2) If any of the representative duct sections fail leak testing, then an additional representative duct section totaling no less that 25 percent of total installed duct area shall be tested.
        3) If any section of the second 25 percent fails, then the entire system shall be leak tested.
    b. Outdoor ducts associated with DOAS and AHU:
        1) Test 100 percent of total installed duct area for each designated pressure class.
    c. Leakage test requirements are intentionally more stringent that standard SMACNA requirements.
3. Disassemble, reassemble, and seal segments of systems to accommodate leakage testing and for compliance with test requirements.

4. Test for leaks before applying external insulation.
5. Conduct tests at static pressures equal to maximum design pressure of system or section being tested. If static-pressure classes are not indicated, test system at maximum system design pressure. Do not pressurize systems above maximum design operating pressure.
6. Give seven days' advance notice for testing.

3.06 DUCT SCHEDULE

A. Fabricate ducts with galvanized sheet steel except as otherwise indicated and as follows:

B. Supply, Return, Exhaust, and Outside Air:

1. Pressure Class: Positive 3-inch wg; Negative 2- inch wg.
2. Minimum SMACNA Seal Class: A.
3. SMACNA Leakage Class for Rectangular: 24.
4. SMACNA Leakage Class for Round: 24
5. Exterior Ducts:
   a. Non-fibrous closed-cell outdoor ductwork (refer to Section 233115)
   b. Pressure Class: Positive or negative 5-inch wg.
   c. Minimum SMACNA Seal Class: A.
   d. SMACNA Leakage Class: 3.

C. Intermediate Reinforcement:

1. Galvanized-Steel Ducts: Galvanized steel or carbon steel coated with zinc-chromate primer.

D. Elbow Configuration:

1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-2, "Rectangular Elbows."
   a. Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."
2. Round Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-4, "Round Duct Elbows."
   a. Minimum Radius-to-Diameter Ratio and Elbow Segments: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 3-1, "Mitered Elbows." Elbows with less than 90-degree change of direction have proportionately fewer segments.
      1) Velocity up to 1500 fpm: 1.5 radius-to-diameter ratio and four segments for 90-degree elbow.
   b. Round Elbows, 8 Inches and Smaller in Diameter: Stamped.
   c. Round Elbows, 10 Inches and Larger in Diameter: 5 Gore, Welded.

E. Branch Configuration:

1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-6, "Branch Connection."
   a. Rectangular Main to Rectangular Branch: 45-degree lateral or 90-degree with 45-degree entry.
2. Rectangular Main to Round Tap: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees." Saddle taps are permitted in existing duct.
   a. Velocity 1000 fpm or Lower: 90-degree tap.
   b. Velocity 1000 to 1500 fpm: Conical tap.
   c. Velocity 2000 fpm or Less: 45-degree lateral or 90-degree with 45-degree entry

END OF SECTION

SECTION 234500

GAS DETECTION AND ALARM SYSTEM

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. General Commissioning Requirements: Section 019113.

B. Commissioning Process: Section AGCP in Appendix.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

1.03 SUMMARY

A. This Section includes gas detection instruments and other components necessary for an emergency gas exhaust system.

1.04 DESCRIPTION

A. The work to be performed in accordance with these Specifications includes engineering, final system and component configuration design, manufacture, procurement, delivery, storage, installation, equipment calibration, testing, documenting, warranting, maintenance and the placing in service of carbon monoxide and nitrogen dioxide detection and alarm system

B. The work shall include the furnishing and installation of equipment, material, conduit, cables, wiring, mounting hardware, system operating software and all appurtenances required to provide complete, coordinated and compatible operating systems with functional subsystems and elements which meet the requirements described in these Contract documents. All other materials and equipment, including items such as; samples, prototypes, cable termination allowances, packing materials, wastage of material during installation efforts and tests, demonstrations, engineering review documentation, and any other materials or services associated with the prosecution of the work or the administration of the Contract that are not listed, but are otherwise specified or necessary for full and complete operation and performance of each system, shall also be provided by the Contractor. The Contract price provides full compensation for complete operational systems and all items and work furnished by the Contractor in compliance with this provision.

C. The Gas Detection and Alarm System to be provided shall be a microprocessor based, distributed control system with industry standard hardware and software to

detect the presence of carbon monoxide, nitrogen dioxide in the maintenance garage and to provide warning alarms to personnel located within and in the immediate surroundings of maintenance garage.

D. The system shall operate over a fault tolerant three-wire communication network loop with built-in diagnostics, programmable logic, non-volatile memory for alarm and calibration logging and accommodate a variety of other fire and gas devices. It shall be designed to ignore opens and shorts that could occur on the network. The loop configuration will ensure a single short or open on the system will not affect system communication between the field devices and the control unit. System communication will provide supervision of all addressable devices on the network and provide fault alarms in the event of system failures

1.05 SYSTEM PERFORMANCE REQUIREMENTS

A. This Section shall be considered by the Contractor to be based primarily on System Performance Requirements. Minimum acceptable technical characteristics have also been specified for major items of equipment and certain materials and services in order to maintain desired standards of quality, and to ensure that interchangeability; maintainability and reliability goals of the Authority are achieved.

B. The Gas Detection and Alarm System shall continuously monitor the carbon monoxide and nitrogen dioxide levels within the spaces in which they are located. Set points for each detector shall be as follows:

1. Carbon Monoxide and Nitrogen Dioxide: The carbon monoxide detector shall detect the presence of carbon monoxide at any location within the maintenance garage in concentrations of 0% to 100%.
2. Gas detection system to initiate a low level alarm A when the level of gas reaches the following concentrations.
    a. Carbon Monoxide- 25 ppm
    b. Nitrogen dioxide- .7 ppm
3. Alarm B to be initiated when the level of gas reaches to following concentrations
    a. Carbon Monoxide- 200 ppm
    b. Nitrogen dioxide- 2 ppm
4. Alarm C to be initiated when the level of gas reaches to following concentrations
    a. Carbon Monoxide- 225 ppm
    b. Nitrogen dioxide- 5 ppm

C. The Gas Detection and Alarm System shall interface with the respective building ventilation systems to enable the fans when the concentrations reach the levels described above.

D. Refer to contract drawings for further information.

E. The Gas Detection and Alarm System shall operate satisfactorily in the environment existing in the maintenance garage. With the exception of normal cleaning requirements, the system operation shall not be compromised and false

alarms shall not be generated by detectors exposed to normal levels of dust, smoke, moisture, chemicals and fumes from petroleum distillates.

F. System trouble signal initiation shall be by one or more of the following devices or actions:
1. Open circuits, shorts and grounds of wiring for initiating device, signaling line, and notification-appliance circuits.
2. Opening, tampering, or removal of alarm-initiating and supervisory signal-initiating devices.
3. Loss of primary power at the Local Control Unit.
4. Ground or a single break in Local Control Unit internal circuits.
5. A break in standby battery circuitry.
6. Failure of battery charging.
7. Abnormal position of any dip switch at the devices so equipped.

G. System Trouble Signal Actions: Ring trouble bell and energize LED or lamp on the graphic annunciator panel. Sound a chime tone and display trouble alarm with description on the computer monitor. Record the event in the system historical log. Trouble alarms shall be cleared only after the system fault has been corrected and a system reset function has been completed.

1.06 SUBMITTALS

A. Field quality-control reports.

B. Startup service reports.

C. Commissioning Submittals:
1. Completed Pre-functional Checklists.
2. Signed off and completed Functional Testing documentation.

D. Warranty: Sample of special warranty

E. Operation and Maintenance Data: Contractor shall include the following information in the operations and maintenance manual:

1. A copy of all approved submittals.
2. Hard copy and CD of Record (As Built) drawings for all equipment items for each system.
3. Complete test data for each system and all equipment for which such data is approved.
4. Other submissions listed elsewhere in these Specifications, as required by the Authority's Representative

1.07 QUALITY ASSURANCE

A. The manufacturer of the major components of the Gas Detection and Alarm System shall have a minimum of 5 years experience in the manufacturing of gas detection equipment and have provided equipment for similar applications in bus maintenance facilities. The satisfactory operation of systems previously provided

shall be subject to verification. Manufacturer must be ISO 9002 certified.

B. All major components of the Gas Detection and Alarm System, including software, shall be furnished from the same manufacturer.

C. The equipment supplier shall participate in the applications engineering, set up, testing and commissioning of the system.

D. Non-dispersed, infrared gas detectors shall be warranted against failure by the manufacturer for a minimum of five years and require calibration only on an annual basis. The gas detectors shall permit calibration to be performed by one person.

E. The system shall be installed by qualified electricians who have successfully completed a training course provided by the equipment supplier.

F. Unless otherwise specified to exceed the listed requirements, all gas detection and alarm systems designs, clearances, construction, electrical and mechanical installations, structural designs, materials and testing shall, as a minimum, be in accordance with the requirements in effect at time of Invitation for Bid for each of the following and shall include addenda and supplements:
1. FMRC NFPA 72 - National Fire Alarm Code
2. Fire Code of the local jurisdiction
3. FM 6310/6320 - Combustible Gas Performance
4. National Electrical Code (NEC).
5. FMRC 6310/6320 Combustible Gas Detectors
6. Building Officials and Code Administrators National Building Code (BOCA).
7. Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG).

1.08 WARRANTY

A. Warranty Period:
1. The materials, equipment, workmanship and software for the systems and components furnished under this contract shall be warranted against defects for a period of 24 months from the date of Substantial Completion except for gas detectors which shall be warranted for a period of five (5) years.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers:
1. Basis-of-Design Product: Subject to compliance with requirements, provide equipment by Honeywell.

2.02 MATERIALS AND EQUIPMENT:

A. The system shall be Honeywell or approved equal and shall be comprised of a control unit, a programmable relay module, addressable infrared gas detectors, initiating device circuits, notification appliance circuits, and analog initiating devices with control unit(s) communicating over a high speed fault tolerant communications link to form an integrated system.

B. All field devices shall have 3/4 inch NPT cable entry and separate terminals for incoming and outgoing field wiring. Terminals shall be sized to accept 16 to 22 AWG wire.

C. All detector locations shall permit the separation from the transmitter for a distance up to 50 feet for carbon monoxide and nitrogen dioxide detectors. Transmitters shall have the capability to simulate and adjust the output to compensate for line loss and allow field testing. Conduit and cabling between the detector and remote transmitter shall be rated for installation in hazardous locations. The transmitter shall display Gas Concentration and Alarm Status as a minimum.

D. The alarm devices shall be a combination horn and visual alarm. Alarm Horns shall operate on 24 VDC, provide 85 db at 10 ft, be corrosion resistant and be NEMA 4X rated. Visual Alarm shall operate on 24 VDC, provide 60 flashes per minute and be NEMA 4X rated.

E. Wire and cable shall be UL listed with color coded insulation appropriate for the area of installation. Cable shielding, conductor configuration and sizing shall be as recommended by the system manufacturer. All system wire and cabling installed outside of equipment enclosures and devices shall be installed in rigid galvanized steel conduit.

F. Provide grounding of system equipment and cable shielding as recommended by the system manufacturer. Grounding shall comply with IEEE 1100.

2.03 LOCAL CONTROL UNIT

A. Acceptable Manufacturers:

1. Honeywell (Basis of design Model VA301C)

B. Power Requirements: 17-27 Vac, 60 Hz or 24-38 Vdc, 500 mA

C. Operating Temperature Range: -4°F to 122°F

D. Operating Humidity Range: 0 to 95% RH (non-condensing)

E. Outputs: 4 DPDT relays

F. Relay Output Rating: 5A, 30 Vac

G. Network Capacity: Up to 96 transmitters

H. Alarm levels: 3 fully programmable alarm levels

I. Communication Cable: Twisted and shielded 2-24 AWG

J. Length of Communication Lines: 2000ft per channel

K. Audible Alarm: 65 dBa at 3ft

L. Battery: 3V Lithium Battery

M. Enclosure: NEMA 4X ABS polycarbonate

N. The control panel must be capable of communicating digitally with the networked transmitters and relay modules through three RS-485 Modbus communication buses. Each communication bus must be capable of accepting a combination of up to 32 addressable transmitters, relay modules, or annunciator panels at a maximum distance of 2,000 feet. The power supply shall be of either 24 Vac or 24 Vdc

O. The controller will manage four internal DPDT relays at fully programmable alarm levels (and within programmable time delays) and be capable of activating multiple relay modules of eight relays each. The relay rating will be no lower than 5 A, 30 Vdc or 250 Vac (resistive load)

P. The controller to include a self-test function that allows for the activation/deactivation of all the programmed outputs by simulating a continuous 5% increase/decrease value until the maximum/minimum value is reached.

Q. The controller to include a real-time clock that enables operation of the outputs for a specific timeframe.

R. The controller must also include an energy saving feature that allows for output operation on alarms set at the max, min or average value of a specific group of transmitters. This feature must also allow for the activation of outputs upon a certain number of a specific group (¾, ½, ⅓ and ¼) of transmitters reaching their alarm levels. A total of 128 groups can be assigned.

S. The controller will indicate the exact concentration of gas, the gas detected, and the location of the sensor by sweeping through the network and displaying the detected levels at each point on a graphic LCD display.

T. Provide required 120V to 24 V by gas detection manufacturer for each controller.

U. Data logging

1. Data logging capability to provide long-term data logging to determine trends. The controller must collect data automatically and must store it on a digital Flash media card.

2.04 TOXIC AND COMBUSTIBLE GAS DETECTOR- CARBON MONOXIDE AND NITROGEN DIOXIDE

A. Acceptable Manufacturers:

1. Honeywell (Basis of design Model E^3Point)

B. Power Requirement: 24 Vac nominal or 24Vdc, 60 Hz, 0.4A

C. Relay Output: 1 DPDT relay, 5A @ 250 Vac; 5A @ 30 Vdc

D. Communications: RS485 Modbus

E. Operating Temperature: -40° to 122°F

F. Display: 8 Character, 2 line backlit LCD

G. Visual Indicator: Green LED: Power; Amber LED 1: Alarm/Fault; Amber LED 2: Alarm/Fault

H. Audible Alarm: 85 dBA at 10ft

I. Accuracy: +/- 3% of full scale

J. Gases Detected: Carbon Monoxide (CO), Nitrogen Dioxide (NO2)

K. Transmitter will be capable of operating within relative humidity ranges of 5-95% and temperature ranges of -4° F to 104° F

L. Enclosure: Polycarbonate

M. Transmitter to be powered by the control panel power supply rated at 24 Vac or 24 Vdc. Fully addressable gas transmitter must be capable of communicating digitally with controller through an RS-485 communication port. Gas transmitters must be installed in a true daisy chain with an end of the line resistor on the last transmitter. The gas transmitter will incorporate an electrochemical cell for toxic gas monitoring and catalytic bead sensor for combustible gases. Unit sensing cell must compensate for variations in relative humidity and temperature to maintain high levels of accuracy

N. When placed in a network configuration the transmitter to be capable of transmitting gas concentrations through the controller. For local activation of fans or louvers (or other equipment) an on-board DPDT relay 5 A, 30 Vdc or 250 Vac (resistive load) to be activated at programmable set points (and programmable time delays) through the control panel. An LCD display to provide gas concentration readings.

O. Unit will be certified to ANSI/UL 61010-1 label and CAN/CSA-C22.2 No. 61010-1. Transmitter must be manufactured in an ISO 9001-2000 production environment.

P. The transmitter should have a plug-in capability for a gas cartridge with a smart sensor capable of self-testing.

Q. For local activation of audible alarms, the transmitter shall have an on-board device able to generate an audible output of 85 dBA @ 10 ft.

R. Provide splash guard enclosure (Honeywell ECLAB or approved equal) within wash down areas.

S. Provide detector guards (Honeywell E3PT-Guard or approved equal)

1. Grid to be made of a 9-gauge steel wire. The guard must be designed to allow calibration without removing the guards

2.05 STROBE AND HORN

A. Acceptable Manufacturers:

1. Honeywell (Basis of design Model P2W-P)

B. Strobe & Horn combo unit will be capable of operating within relative humidity ranges of 0-100% and temperature ranges of -30° F to 150° F (-35° C to 66° C). Rating of horn will be no less than 90dB at 10 feet. Intensity of light will be no less than 40W and will flash at a frequency of 1 per second

2.06 SYSTEM RELAY MODULE

A. Acceptable Manufacturers:

1. Honeywell (Basis of design Model VA301R8)

B. Fully compatible with the 301C Controller

C. Capable of 8 additional DPDT relays, 5A, 30Vdc or 250Vac

D. Easy daisy chain installation (RS-485)

E. LED visual indication of status next to each relay

F. Connects into a single output of the 301C Controller

G. Operating Temperature: 32° to 104°F

H. Humidity Range: 0-95% RH, non-condensing

I. Power Requirements: 17-27Vac, 24-28Vdc

J. Relay module will be powered by the control panel's power output. Module to be capable of communicating digitally with the controller through an RS-485/MODBUS communication port. Relay module will have eight relays rated at no lower than 5A, 30 Vdc or 250 Vac (resistive load).

PART 3 EXECUTION

3.01 INSTALLATION

A. All equipment installation shall comply with applicable codes and shall be performed with a degree of workmanship acceptable to Precision Strip. Final terminations of Gas Detectors, Transmitters, Receivers/Controllers and

Supervisory System must be performed by factory authorized and trained service personnel.

B. Control equipment shall be located at locations shown on contract drawings. Control equipment enclosures and cabinets shall be wall mounted at a height with the top of the enclosure or cabinet not exceeding six feet above the floor. Install all items in accordance with manufacturer's instructions Equipment located within 18 inches below the ceiling shall comply with requirements for areas with hazardous classification per NFPA.

C. Carbon monoxide detectors shall be located between 3 feet and 5 feet above floor.

D. Nitrogen dioxide detectors shall be located between 1foot and 3 feet below underside of roof deck.

E. Install wiring in conduit.

F. Wiring within Enclosures: Separate power-limited and non-power-limited conductors as recommended by manufacturer. Install conductors parallel with or at right angles to sides and back of the enclosure. Bundle, lace and train conductors to terminal points with no excess. Connect conductors that are terminated or interrupted in any enclosure associated with the gas detection and alarm system to terminal blocks. Label each terminal and wire according to the system's wiring diagrams. Make all connections with approved crimp-on terminal spade lugs, pressure-type terminal blocks, or plug connectors.

G. Cable Terminations: Use numbered terminal strips in junction, pull, and outlet boxes, cabinets, or equipment enclosures where circuit connections are made.

H. Color-Coding: Color-code Gas Detection and Alarm System conductors differently from the normal building power wiring. Use one color-code for alarm circuit wiring and a different color-code for supervisory circuits. Color-code audible alarm-indicating circuits differently from alarm-initiating circuits. Use different colors for visible alarm-indicating devices.

I. All wiring used for communication over Ethernet network shall be shielded.

3.02 TESTING:

A. Engage a company field advisor to assist in inspecting, testing, and adjusting components, assemblies, and equipment installations, including connections. Report results in writing.

B. Component Level Tests and Inspections:

1. Prepare detailed pre-test check sheets, test plans, procedures, data entry forms and test reports for the testing of each component.
2. The test plans shall provide objectives, approach, pass/fail criteria, requirements and schedule for each test.
3. Test and adjust all controls and safeties.

4. Verify each component is installed at the correct height indicated.
5. Verify each component is installed securely.
6. Verify electrical connections to each component are correct and secure.
7. Test all functions within each individual components control.
8. Test audible and visual alarms on each component
9. Test Reports: Prepare a written report to record the following:
    a. Test procedures used.
    b. Test results that comply with requirements.
    c. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

C. System Level Tests and Inspections:

1. Prepare detailed pre-test check sheets, test plans, procedures, data entry forms and test reports for the testing of the entire gas detection system.
2. The test plans shall provide objectives, approach, pass/fail criteria, requirements and schedule for each test.
3. Test and adjust all controls and safeties.
4. Verify the absence of unwanted voltages between circuit conductors and ground.
5. Test all conductors for short circuits utilizing an insulation-testing device.
6. With each circuit pair, short circuit at the far end of the circuit and measure the circuit resistance with an ohmmeter. Record the circuit resistance of each circuit.
7. Verify the control unit is in the normal condition as detailed in the manufacturers operating and maintenance manuals.
8. Test each detector for operation and proper response at the control unit. Test detectors with actual carbon monoxide and nitrogen dioxide as appropriate for each detector.
9. Test the system for all specified functions according to the manufacturer's operating and maintenance manual. Systematically initiate specified functional performance items at each station including making all possible alarm and monitoring initiations and using all communications options. For each item, observe related performance at all devices required to be affected by the item under all system sequences. Observe indicating lights, displays, signal tones, and annunciator indications.
10. Verify that all HVAC equipment is functioning properly with the detection control unit.
11. Verify all relays are performing correctly to start-up HVAC equipment.
12. Test Reports: Prepare a written report to record the following:
    a. Test procedures used.
    b. Test results that comply with requirements.
    c. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

D. Furnish equipment required to perform all tests. Test each component installation and system in accordance with the approved procedures.

E. Notify the director’s representative a minimum of two working days prior to

commencing any tests that are to be witnessed by the owner.

F. Furnish personnel, tools and test equipment as required to satisfactorily complete the tests. Test equipment used in performing the tests shall be in current calibration. Factory authorized service personnel shall provide all programming and verification of each Gas Detector, Transmitter, Receiver/Controller, Annunciator Panel and Supervisory System and the Factory authorized service personnel shall provide final test and verification of overall system performance.

H. Repair or replace malfunctioning units and retest as specified above.

I. Prepare and submit certified test reports for each equipment installation test indicating the results of all tests and remedial measures implemented to enable equipment to pass the tests.

J. System Performance Test (30 day): After completion and inspection of all work, and following placement of the gas detection and alarm system in service, the contractor shall perform a 30-day performance test. The performance test shall include an end-to-end test of all function of the system.

1. All detection, alarm and interface function s operate as intended in the event of an actual buildup of carbon monoxide, nitrogen dioxide or the release of compressed natural gas.
2. No false alarms
3. No system trouble or fault alarms
4. If the system, or any part of it, fails to meet any criteria of the performance test, the contractor shall make corrections at no additional cost to the owner. More than three failures during the thirty (30) day test will result in a restart of the test period.

3.03 DEMONSTRATION

A. Engage a company field advisor to train facility maintenance personnel to adjust, operate, and maintain gas detection devices and equipment. Training shall be a minimum duration of 4 hours and contractor shall provide all training materials and equipment.

3.04 SYSTEMS WARRANTY AND CONTRACTOR MAINTENANCE SERVICES:

A. The materials, equipment, workmanship and software for the systems and components furnished under this contract shall be warranted against defects for a period of 24 months from the date of final acceptance except for gas detectors which shall be warranted for a period of five years. Replace or repair any failed equipment, software program or work, including labor, at no additional cost to the state.

END OF SECTION

SECTION 221120

MIXING VALVES

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Manufacturer's catalog sheets, specifications, and installation instructions for each type of mixing valve.

1.02 QUALITY ASSURANCE

A. Regulatory Requirements: Unless otherwise shown or specified, comply with the applicable requirements of FS WW-P-541.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Leonard Water Temperature Controls

B. Powers, A Watts Water Technologies Company

C. Lawler Manufacturing Company

2.02 VALVES - GENERAL

A. Valve Body: Cast brass.

B. Internal Components:
   1. Metals: Brass, or stainless steel.
   2. Non-Metals: Materials not adversely affected by contact with water, temperature changes, and normal wear.

C. Finishes: Furnish polished, chrome plated brass, or No. 4 brush finished stainless steel on exposed to view surfaces installed in finished spaces.

D. Single Handle Mixing Valves:
   1. Operation: Valve shuts off in full cold position, and must pass through cold range before delivering warm, and/or hot water.
   2. Temperature Limit Stop: Factory set for 105 degrees F maximum delivery temperature.
   3. Automatic Shut-Down: If one supply should fail, the other will automatically and instantly shut down.

2.03 VALVE TYPES

A. Type A: Thermostatically operated by means of bi-metallic strip, or expansion bellows. Point of use mixing valve.
   1. ASSE 1070 Certified
   2. Temperature Range: Cold through 115 degrees F.
   3. Delivery Capacity: 0.75 gpm at 5 psig differential.
   4. Basis of Design:
      a. Manufacturer: Leonard
      b. Model: 170A-LF
      c. Discharge set point: 110 degrees F
      d. Pressure drop: 5 psi
      e. Design Flow Rate: 0.75 gpm

B. Type C: Emergency Eyewash Mixing Valves.
   1. ASSE 1071 Certified.
   2. Basis of Design:
      a. Manufacturer: Leonard
      b. Model: TM-26-LF
      c. Discharge set point: 68 degrees F
      d. Pressure drop: 5 psi
      e. Design Flow Rate: 1 gpm

C. Type D: Master domestic hot water mixing valve to be installed at the hot water heater.
   1. ASSE 1017 and CSA B125 certified.
   2. Outlet temperature range: 90 – 160 °F with lockable temperature setting.
   3. Valve to be constructed of lead-free brass.
   4. Basis of Design:
      a. Powers model LFMM434, Hydroguard XP Master Tempering valve, with a Cv of 21.5, minimum flow of 7 gpm and a pressure drop of 5 psi at a flow rate of 48 gpm. Valve to have 1-1/4” ips inlet connections and 1-1/2” outlet.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install the Work of this section in accordance with the manufacturer’s printed installation instructions.

3.02 FIELD QUALITY CONTROL

A. Capacity Check: Operate valve through entire range and verify rated capacity. Correct discrepancies.

B. Temperature Check:
   1. Shower Valve: Set valve at full hot position and check delivered water temperature for specified 105 degree F maximum factory setting. Adjust temperature limit stop as required.

2. Emergency Eyewash: Set valve at full hot position and check delivered water temperature for specified 105 degree F maximum factory setting. Adjust temperature limit stop as required. Adjust valve to produce maximum temperature of 68°F, lock in position.

3. Master domestic hot water: set valve at full hot position and check delivered water temperature matches water heater outlet. Adjust temperature setting to 115 °F as required.

END OF SECTION

SECTION 221520

COMPRESSED AIR OVERHEAD REELS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Overhead hose reels for compressed air.

1.2 ACTION SUBMITTALS

Product Data: For each type of product.

1.3 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

A. Spring retraction over head hose reel for compressed air. Unit to include reel, housing, structural mounts to building structure, connection to compressed air piping system.

2.2 GENERAL REQUIREMENTS FOR OVERHEAD REELS

A. General Description: Factory-assembled and tested; spring retraction overhead hose reel. 300 psig maximum working pressure, ½" nps connection, 3/8 npt outlet, with 50 feet of factory supplied hose.

B. Mounting Frame: Factory fabricated ceiling mounts suitable for attachment to building structure.

2.3 OVERHEAD REEL

A. Basis of Selection: Graco model XDL56B, size 20, color blue, with 50 feet of factory supplied hose, maximum pressure 300 psig, ½" nps inlet, 3/8" nps outlet, or approved equal.

B. Structural Mount: Graco mount kit 24A935 for mount where I beam is not available. Mount is for double reels to accommodate electrical reel. For installation is areas where I-beams are available, use mounting kit 204741.

PART 3 - EXECUTION

3.1 EQUIPMENT INSTALLATION

A. Equipment Mounting: Overhead reels shall be mounted in compliance with manufacturer's instructions. Contractor to submit shop drawings illustrating method of mounting reels for approval.

B. Arrange equipment so devices are accessible for servicing.

C. Maintain manufacturer's recommended clearances for service and maintenance.

D. Clean and test reel operation prior to project completion.

3.2 CONNECTIONS

A. Comply with requirements for piping specified in Section 221513 "General-Service Compressed-Air Piping." Drawings indicate general arrangement of piping, fittings, and specialties.

B. Where installing piping adjacent to other equipment, allow space for service and maintenance.

END OF SECTION

SECTION 223301

DOMESTIC WATER HEATERS

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. Valves: Section 220523.

B. Piping: Section 221100.

C. General Commissioning Requirements: Section 019113.

D. Commissioning Process: Section AGCP in Appendix.

1.02 SUBMITTALS

A. Product Data: Catalog sheets, specifications and installation instructions for each water heater, gas vent pipe, fittings, and accessories required for the vent system.

B. Contract Closeout Submittals:
1. Operation and Maintenance Data: Deliver 2 copies, covering the installed products, to the Director's Representative.
2. Warranty: Copy of specified warranty.

C. Commissioning Submittals:
1. Completed Pre-functional Checklists.
2. Signed off and completed Functional Testing documentation.

1.03 REGULATORY REQUIREMENTS

A. Water heater shall bear the seal of the American Gas Association.

B. Comply with the State Energy Conservation Construction Code.

1.04 WARRANTY

A. Manufacturer's Warranty: Three-year warranty for the glass lined water heater tank.

PART 2 PRODUCTS

2.01 WATER HEATER

A. Tank-type: fully automatic, piezo-electric igniter, non- condensing gas fired water heater.

1. Commercial grade, glass-lined, foam insulated tank.

2. Onboard circuit board controls.
3. Integrated temperature controller providing heater set temperature.
4. Electronic ignition.
5. CSA certified.
6. Thermal efficiency meets ASHRAE 90.1 standards.
7. Low NOx burner.

B. Burner: Atmospheric, self-adjusting air-gas mixture control with auto-shut off with gas pressure regulator.

C. Thermostat: Automatic, adjustable, with automatic pilot, overheat control, and pilot operated automatic gas shut off.

D. Outer Casing: Steel, with baked enamel or acrylic finish.
1. Access door for storage tank hand-hole.

E. Pressure-Temperature Relief Valve: CSA certified, ASME pressure/temperature relief valve.

F. Basis of Design:
1. Manufacturer: A.O. Smith
2. Model: BT-80.

2.02 GAS VENT SYSTEM

A. Galvanized steel UL listed Type B vent with thimble for roof penetration and approved termination cap.

B. Construction: Double wall comprised of galvanized steel outer casing and an aluminum alloy inner pipe separated by an air space. Basis of design: Duravent Model BV.

C. Accessories: Connectors, increasers, supports, flashing, storm collar, insulated thimble for roof penetration and high-wind rain cap shall be products of the vent pipe manufacturer.

2.03 THERMAL EXPANSION TANK

A. Steel construction, urethane top coat, 150 psig working pressure, in-line, 3.2 gallon tank volume, 5 year warranty, factory precharged to 50 psig.

B. Basis of design:
Amtrol, Therm-X-trol model ST-8, 9” diameter, 15” high, 7 lbs.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install the Work of this section in accordance with NFPA 54, NFPA 211, and the manufacturer’s printed installation instructions, unless otherwise specified.

B. Water Heater: Install heater on drip pan with drain line to local floor drain.
   1. Install the pressure - temperature relief valve in the dedicated tank tapping. Pipe relief valve blow-off to a point 6 inches above drip pan.
   2. Provide gate valves on hot and cold water connections and an AGA lubricated plug valve on the gas connection.
   3. Make final gas, and water piping connections with unions.

C. Gas Vent Piping:
   1. Support horizontal piping on 3-foot centers, maximum spacing, support vertical piping at 5 (five) foot intervals maximum.
   2. Terminate vent extension through roof with a bird proof vent top.

END OF SECTION

SECTION 263214

OVERHEAD REELS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Overhead electrical cable reels.

1.02 ACTION SUBMITTALS

Product Data: For each type of product.

1.03 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

PART 2 - PRODUCTS

2.01 SYSTEM DESCRIPTION

A. Spring retraction overhead hose reel for electrical receptacles. Unit to include reel, housing, structural mounts to building structure, connection to electrical power system. Unit to include LED light and tool tap. 120/1/60.

2.02 GENERAL REQUIREMENTS FOR OVERHEAD REELS

A. General Description: Factory-assembled and tested; spring retraction overhead hose reel with 50 feet cord length, 120V single phase, 16 ga. Wire, 12 amp., SJTOW insulation, NEMA 5-15P power cord connection.

B. Mounting Frame: Factory fabricated ceiling mounts suitable for attachment to building structure.

2.03 OVERHEAD REEL

A. Basis of Selection: Graco SD series, model 24Y872, LED light and tool tap, or approved equal.

B. Structural Mount: Graco mount kit required to adapt to location. Mount to be for I-beam or ceiling mount selected for locations where reels are to be installed. Mount is for double reels to

accommodate adjacent compressed air hose reel. Contractor to consult with manufacturer to determine correct mounting kit.

PART 3 - EXECUTION

3.01 EQUIPMENT INSTALLATION

A. Equipment Mounting: Overhead reels shall be mounted in compliance with manufacturer's instructions. Contractor to submit shop drawings illustrating method of mounting reels for approval.

B. Arrange equipment so devices are accessible for servicing.

C. Maintain manufacturer's recommended clearances for service and maintenance.

D. Clean and test reel operation prior to project completion.

3.02 CONNECTIONS

A. Comply with requirements for electric power wiring.

B. Where installing wiring devices and conduit adjacent to other equipment, allow space for service and maintenance.

END OF SECTION

SECTION 265119

LED INTERIOR LIGHTING

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes the following types of LED luminaires:
1. Recessed, linear.
2. Surface mount, linear.

1.02 SUBMITTALS

A. Product Data: For each type of product.

1. Manufacturers' Certified Data: Photometric data certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
2. Testing Agency Certified Data: For indicated luminaires, photometric data certified by a qualified independent testing agency. Photometric data for remaining luminaires shall be certified by manufacturer.

B. Shop Drawings: For nonstandard or custom luminaires.

1. Include plans, elevations, sections, and mounting and attachment details.
2. Include details of luminaire assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Include diagrams for power, signal, and control wiring.

C. Samples: For each luminaire and for each color and texture with standard factory-applied finish.

D. Quality Control Submittals:
1. Coordination Drawings: Reflected ceiling plan(s) and other details, drawn to scale and coordinated with each other, using input from installers of the items involved.
2. Seismic Qualification Data: For luminaires, accessories, and components, from manufacturer.
3. Product Certificates: For each type of luminaire.
4. Product test reports.
5. Sample warranty.

E. Closeout Submittals:

1. Operation and maintenance data.

1.03 QUALITY ASSURANCE

A. Luminaire Photometric Data Testing Laboratory Qualifications: Luminaire manufacturer's laboratory that is accredited under the NVLAP for Energy Efficient Lighting Products.

B. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.7, accredited under the NVLAP for Energy Efficient Lighting Products, and complying with the applicable IES testing standards.

C. Provide luminaires from a single manufacturer for each luminaire type.

D. Each luminaire type shall be binned within a three-step MacAdam Ellipse to ensure color consistency among luminaires.

1.04 WARRANTY

A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.

B. Warranty Period: Five year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 LUMINAIRE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps. Locate labels where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.

1. Label shall include the following lamp characteristics:

    a. "USE ONLY" and include specific lamp type.
    b. Lamp diameter, shape, size, wattage, and coating.
    c. CCT and CRI.

C. Recessed luminaires shall comply with NEMA LE 4.

2.02 FIXTURE "L1".

A. Manufacture: Specgrade

Model: HBF-150-50K-120-V01-BL-CM

FIXTURE "L2".

B. Manufacture: Lumium
Model: PD1-CS-4-35K-LO-VLO-UNV-10D-SC-MF-MA-55-PSS 12" (EMB7)

FIXTURE "L2A".

C. Manufacture: Ledalite
Model: 33-22-D1-ST-L-835-30-A-7-D-S-N

FIXTURE "L2B".

D. Manufacture: Ledalite
Model: 33-24-D1-ST-L-835-30-A-7-D-S-N

FIXTURE "L4".

E. Manufacture: Columbia
Model: LCL-4-3500-ML-ED1-U-CSHC

FIXTURE "L5".

F. Manufacture: Litecontrol
Model: 60L-PT-04-C1-35K-D070-NDM-1C-UNV-2EC

FIXTURE "L6".

G. Manufacture: Lithonia
Model: XVML L48-3500LM-MVOLT-40K-80

FIXTURE "L7".

H. Manufacture: Alphabet
Model: NU4-RD-XTM19-1130-35K-83-D50-DIM10-NC-WH-WH

FIXTURE "L9".

I. Manufacture: Kim Lighitng

Model: WDMD-48L-65-4K8-4F-UNV-BL-PC

FIXTURE "L10".

J. Manufacture: Hubbell
Model: TRP1-12L-20-4K7-4-1-BL-PC-EH

FIXTURE "L11".

K. Manufacture: ELLIPTIPAR
Model: S175-R04G-H-02-8-00-0-00

FIXTURE "L12".

A. Manufacture: LITONIA
Model: OLB

2.03 MATERIALS

A. Metal Parts:

1. Free of burrs and sharp corners and edges.
2. Sheet metal components shall be steel unless otherwise indicated.
3. Form and support to prevent warping and sagging.

B. Steel:

1. ASTM A 36/A 36M for carbon structural steel.
2. ASTM A 568/A 568M for sheet steel.

C. Stainless Steel:

1. 1. Manufacturer's standard grade.
2. 2. Manufacturer's standard type, ASTM A 240/240 M.

D. Galvanized Steel: ASTM A 653/A 653M.

E. Aluminum: ASTM B 209.

2.04 METAL FINISHES

A. Variations in finishes are unacceptable in the same piece. Variations in finishes of adjoining components are acceptable if they are within the range of approved Samples and if they can be and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Comply with NECA 1.

B. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.

C. Install lamps in each luminaire.

D. Supports:

1. Sized and rated for luminaire weight.
2. Able to maintain luminaire position after cleaning and relamping.
3. Provide support for luminaire without causing deflection of ceiling or wall.
4. Luminaire-mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire weight and a vertical force of 400 percent of luminaire weight.

E. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables" for wiring connections.

3.02 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

3.03 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.
2. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.

B. Luminaire will be considered defective if it does not pass operation tests and inspections.

C. Prepare test and inspection reports.

END OF SECTION

SECTION 271524

COMMUNICATION CABLES AND HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Category 6 twisted pair cable.
2. Twisted pair cable hardware, including plugs, jacks, patch panels, and cross-connects.
3. Microprocessor based Interface Gateways
4. Grounding provisions for twisted pair cable.
5. Source quality control requirements for twisted pair cable.

1.02 COPPER BACKBONE CABLING DESCRIPTION

A. Copper backbone cabling system shall provide interconnections between communications equipment rooms, main terminal space, and entrance facilities in the telecommunications cabling system structure. Cabling system consists of backbone cables, intermediate and main cross-connects, mechanical terminations, and patch cords or jumpers used for backbone-to-backbone cross-connection.

B. Backbone cabling cross-connects may be located in communications equipment rooms or at entrance facilities. Bridged taps and splitters shall not be used as part of backbone cabling.

1.03 SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Reviewed and stamped by RCDD.

1. System Labeling Schedules: Electronic copy of labeling schedules, in software and format selected by Owner.
2. Cabling administration Drawings and printouts.
3. Wiring diagrams to show typical wiring schematics, including the following:

    a. Telecommunications rooms plans and elevations.
    b. Telecommunications pathways.
    c. Telecommunications system access points.
    d. Telecommunications grounding system
    e. Cross-connects.
    f. Patch panels.

4. Cross-Connects and Patch Panels: Detail mounting assemblies, and show elevations and physical relationship between the installed components.

C. Twisted pair cable testing plan.

D. Source quality-control reports.

E. Field quality-control reports.

F. Product Certificates: For each type of product.

G. Contract closeout submittals.

1.04 QUALITY ASSURANCE

A. Testing Agency Qualifications: Testing agency must have personnel certified by BICSI on staff.

1. Testing Agency's Field Supervisor: Currently certified by BICSI as an RCDD.

1.05 COORDINATION

A. Coordinate layout and installation of telecommunications pathways and cabling with facility telecommunications and LAN equipment and service suppliers.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. General Performance: Backbone cabling system shall comply with transmission standards in TIA-568-C.1, when tested according to test procedures of this standard.

B. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: 25.
2. Smoke-Developed Index: 50 or less.

C. Telecommunications Pathways and Spaces: Comply with TIA-569-D.

D. Grounding: Comply with TIA-607-B.

2.02 CATEGORY 5 TWISTED PAIR CABLE

A. Description: 100-ohm, 23 AWG, four overall foil shield with unshielded twisted pairs (F/UTP), plenum-rated cable, with internal spline, covered with a white thermoplastic jacket and overall metallic shield.

B. Manufactures: 3M, Belden CDT, General Cable

C. Standard: Comply with NEMA WC 66/ICEA S-116-732 and TIA-568-C.2 for Category 5e cables.

2.03 TWISTED PAIR CABLE HARDWARE AND PATCH PANEL INTERFACE

A. Manufactures: 3M, Belden CDT, General Cable

B. General Requirements for Cable Connecting Hardware:

1. Twisted pair cable hardware shall meet the performance requirements of Category 6.
2. Comply with TIA-568-C.2, IDC type, with modules designed for punch-down caps or tools.
3. Cables shall be terminated with connecting hardware of same category or higher.
4. Source Limitations: Obtain twisted pair cable hardware from same manufacturer as twisted pair cable, from single source.

C. Connecting Blocks: 66-style IDC for Category 6. Provide blocks for the number of cables terminated on the block, plus 25 percent spare, integral with connector bodies, including plugs and jacks where indicated.

D. Cross-Connect: Modular array of connecting blocks arranged to terminate building cables and permit interconnection between cables.

E. Coordinate "Number of Terminals per Field" Subparagraph below with Drawings for quantity of fields.

1. Number of Terminals per Field: One for each conductor in assigned cables.

F. Patch Panel(Interface Gateway): microprocessor based interface for seem less interconnection to existing communications, fire alarm, data, or other low voltage system as indicated. Modular panels housing numbered jack units with IDC-type connectors at each jack for permanent termination of pair groups of installed cables. Include all system specific hardware features for connection of new devices in New Firing Range Building to preserve all functionality of similar devices within existing system network, including but not limited to:
1. Maintain speed, baud rate, band width
2. Repeaters and signal boosting
3. Current and voltage characteristics and control hardware, including filters, harmonic distortion control, signal transmitters
4. Two way communications for full head control and access
5. Interface cards

6. Connectivity for all new devices in New Firing Range Building, including 33% spare ports for future use.
7. Two way communications for full control at existing head end

8. Connectivity Features:

    a. Universal T568A and T568B wiring labels.
    b. Labeling areas adjacent to conductors.
    c. Replaceable connectors.
    d. 24 or 48 ports.
9. Number of Jacks per Field: One for each four-pair cable indicated.

2.4 CONNECTIVITY HARDWARE

A. Plugs and Plug Assemblies:

1. Male; eight position (8P8C); color coded modular telecommunications connector designed for termination of a single four-pair 100 ohm unshielded or shielded twisted pair cable.
2. Standard: Comply with TIA-568-C.2.
3. Marked to indicate transmission performance.

B. Jacks and Jack Assemblies:

1. Female; eight position; modular; fixed telecommunications connector designed for termination of a single four-pair 100-ohm unshielded or shielded twisted pair cable.
2. Designed to snap-in to a patch panel or faceplate.
3. Standard: Comply with TIA-568-C.2.
4. Marked to indicate transmission performance.

C. Faceplates:

1. Two port, vertical single gang faceplates designed to mount to single gang wall boxes.
2. Plastic Faceplate: High-impact plastic. Coordinate color with Section 262726 "Wiring Devices."

2.5 GROUNDING

A. Comply with TIA-607-B.

2.6 SOURCE QUALITY CONTROL

A. Factory test cables on reels according to TIA-568-C.1.

B. Factory test cables according to TIA-568-C.2.

C. Cable will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

PART 3 - EXECUTION

3.01 ENTRANCE FACILITIES

A. Coordinate backbone cabling with the protectors and demarcation point provided by communications service provider.

3.02 WIRING METHODS

A. Wiring Method: Conceal conductors and cables in accessible ceilings, walls, and floors where possible.

B. Wiring within Enclosures: Bundle, lace, and train cables within enclosures. Connect to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Provide and use lacing bars and distribution spools. Install cables parallel with or at right angles to sides and back of enclosure.

3.03 INSTALLATION OF COPPER BACKBONE CABLES

A. Comply with NECA 1 and NECA/BICSI 568.

B. General Requirements for Cabling:

1. Comply with TIA-568-C.0, TIA-568-C.1, and TIA-568-C.2.
2. Comply with BICSI's "Information Transport Systems Installation Manual," Ch. 6, "Cable Termination Practices."
3. Install 110-style IDC termination hardware unless otherwise indicated.
4. Do not untwist twisted pair cables more than 1/2 inch from the point of termination to maintain cable geometry.
5. Terminate all conductors; no cable shall contain unterminated elements. Make terminations only at indicated outlets, terminals, cross-connects, and patch panels.
6. Cables may not be spliced. Secure and support cables at intervals not exceeding 30 inches and not more than 6 inches from cabinets, boxes, fittings, outlets, racks, frames, and terminals.
7. Install lacing bars to restrain cables, prevent straining connections, and prevent bending cables to smaller radii than minimums recommended by manufacturer.
8. Bundle, lace, and train conductors to terminal points without exceeding manufacturer's limitations on bending radii, but not less than radii specified in BICSI's "Information Transport Systems Installation Manual," Ch. 6, "Cable Termination Practices." Use lacing bars and distribution spools.

9. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation, and replace it with new cable.
10. Cold-Weather Installation: Bring cable to room temperature before dereeling. Heat lamps shall not be used for heating.
11. In the communications equipment room, install a 10-foot- long service loop on each end of cable.
12. Pulling Cable: Comply with BICSI's "Information Transport Systems Installation Manual," Ch. 4, "Pulling Cable." Monitor cable pull tensions.

C. Group connecting hardware for cables into separate logical fields.

D. Separation from EMI Sources:

1. Comply with recommendations from BICSI's "Telecommunications Distribution Methods Manual" and TIA-569-D for separating unshielded copper communication cable from potential EMI sources, including electrical power lines and equipment.
2. Separation between open communications cables or cables in nonmetallic raceways and unshielded power conductors and electrical equipment shall be as follows:

    a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 5 inches.
    b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 12 inches.
    c. Electrical Equipment Rating More Than 5 kVA: A minimum of 24 inches.

3. Separation between communications cables in grounded metallic raceways and unshielded power lines or electrical equipment shall be as follows:

    a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 2-1/2 inches.
    b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 6 inches.
    c. Electrical Equipment Rating More Than 5 kVA: A minimum of 12 inches.

4. Separation between communications cables in grounded metallic raceways, power lines, and electrical equipment located in grounded metallic conduits or enclosures shall be as follows:

    a. Electrical Equipment Rating Less Than 2 kVA: No requirement.
    b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 3 inches.
    c. Electrical Equipment Rating More Than 5 kVA: A minimum of 6 inches.

5. Separation between Communications Cables and Electrical Motors and Transformers, 5 kVA or HP and Larger: A minimum of 48 inches.
6. Separation between Communications Cables and Fluorescent Fixtures: A minimum of 5 inches.

3.04 GROUNDING

A. Install grounding according to the "Grounding, Bonding, and Electrical Protection" chapter in BICSI's "Telecommunications Distribution Methods Manual."

B. Comply with TIA-607-B and NECA/BICSI-607.

C. Locate grounding bus bar to minimize the length of bonding conductors. Fasten to wall, allowing at least a 2-inch clearance behind the grounding bus bar. Connect grounding bus bar to suitable electrical building ground, using a minimum No. 4 AWG grounding electrode conductor.

D. Bond metallic equipment to the grounding bus bar, using not smaller than a No. 6 AWG equipment grounding conductor.

3.05 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.

B. Perform tests and inspections.

C. Tests and Inspections:

1. Visually inspect jacket materials for NRTL certification markings. Inspect cabling terminations in communications equipment rooms for compliance with color-coding for pin assignments, and inspect cabling connections for compliance with TIA-568-C.1.
2. Visually inspect cable placement, cable termination, grounding and bonding, equipment and patch cords, and labeling of all components.
3. Test copper cabling for DC loop resistance, shorts, opens, intermittent faults, and polarity between conductors. Test operation of shorting bars in connection blocks. Test cables after termination but not cross-connection.

    a. Test instruments shall meet or exceed applicable requirements in TIA-568-C.2. Perform tests with a tester that complies with performance requirements in "Test Instruments (Normative)" Annex, complying with measurement accuracy specified in "Measurement Accuracy (Informative)" Annex. Use only test cords and adapters that are qualified by test equipment manufacturer for channel or link test configuration.

D. Data for each measurement shall be documented. Data for submittals shall be printed in a summary report that is formatted similarly to Table 10.1 in BICSI's "Telecommunications Distribution Methods Manual," or shall be transferred from the instrument to the computer, saved as text files, printed, and submitted.

E. Remove and replace cabling where test results indicate that they do not comply with specified requirements.

F. End-to-end cabling will be considered defective if it does not pass tests and inspections.

G. Prepare test and inspection reports.

END OF SECTION

CONSTRUCTION SEQUENCE/PHASING:

PHASE I

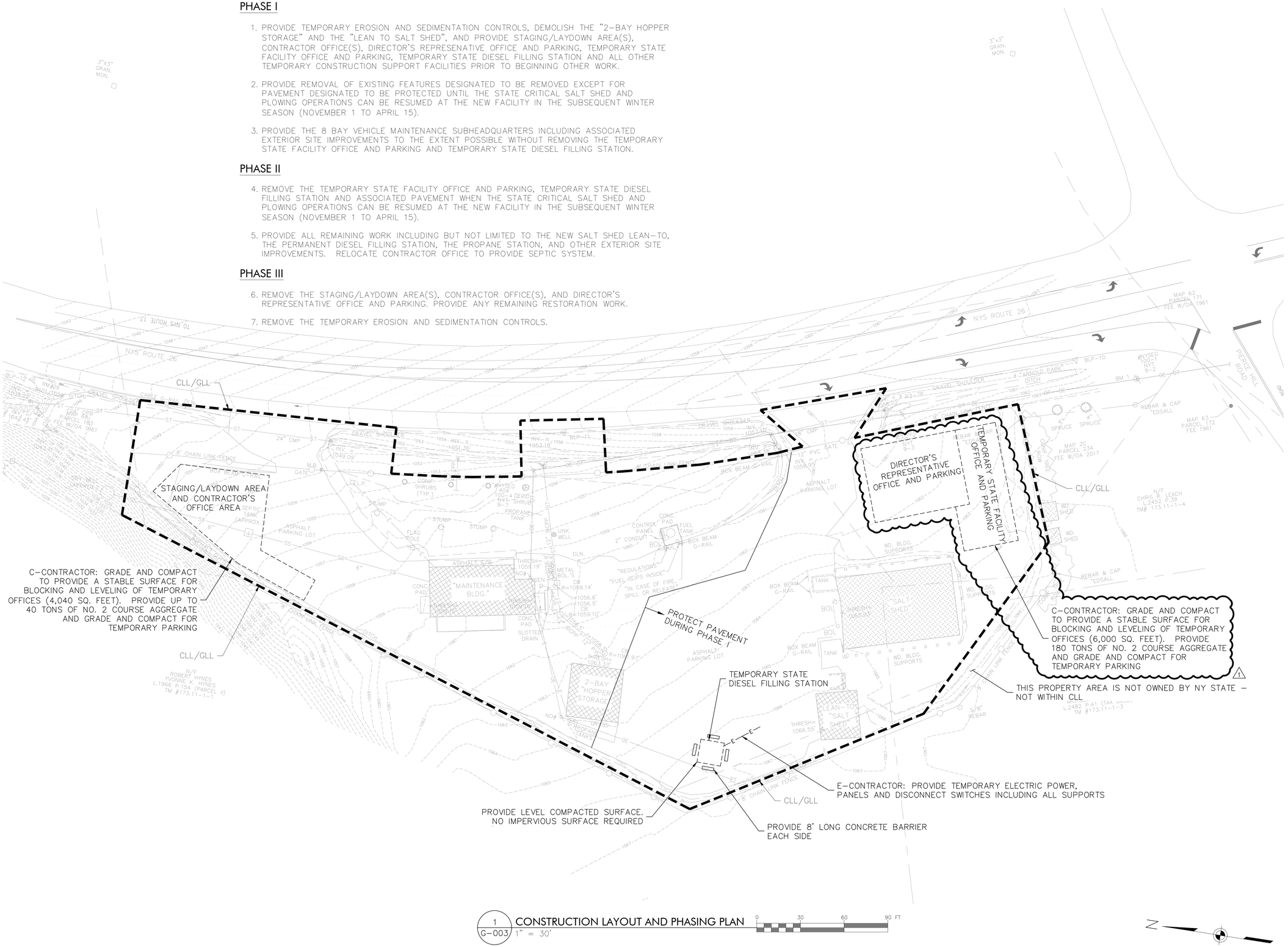
1. PROVIDE TEMPORARY EROSION AND SEDIMENTATION CONTROLS, DEMOLISH THE "2–BAY HOPPER STORAGE" AND THE "LEAN TO SALT SHED", AND PROVIDE STAGING/LAYDOWN AREA(S), CONTRACTOR OFFICE(S), DIRECTOR'S REPRESENATIVE OFFICE AND PARKING, TEMPORARY STATE FACILITY OFFICE AND PARKING, TEMPORARY STATE DIESEL FILLING STATION AND ALL OTHER TEMPORARY CONSTRUCTION SUPPORT FACILITIES PRIOR TO BEGINNING OTHER WORK.
2. PROVIDE REMOVAL OF EXISTING FEATURES DESIGNATED TO BE REMOVED EXCEPT FOR PAVEMENT DESIGNATED TO BE PROTECTED UNTIL THE STATE CRITICAL SALT SHED AND PLOWING OPERATIONS CAN BE RESUMED AT THE NEW FACILITY IN THE SUBSEQUENT WINTER SEASON (NOVEMBER 1 TO APRIL 15).
3. PROVIDE THE 8 BAY VEHICLE MAINTENANCE SUBHEADQUARTERS INCLUDING ASSOCIATED EXTERIOR SITE IMPROVEMENTS TO THE EXTENT POSSIBLE WITHOUT REMOVING THE TEMPORARY STATE FACILITY OFFICE AND PARKING AND TEMPORARY STATE DIESEL FILLING STATION.

PHASE II

4. REMOVE THE TEMPORARY STATE FACILITY OFFICE AND PARKING, TEMPORARY STATE DIESEL FILLING STATION AND ASSOCIATED PAVEMENT WHEN THE STATE CRITICAL SALT SHED AND PLOWING OPERATIONS CAN BE RESUMED AT THE NEW FACILITY IN THE SUBSEQUENT WINTER SEASON (NOVEMBER 1 TO APRIL 15).
5. PROVIDE ALL REMAINING WORK INCLUDING BUT NOT LIMITED TO THE NEW SALT SHED LEAN–TO, THE PERMANENT DIESEL FILLING STATION, THE PROPANE STATION, AND OTHER EXTERIOR SITE IMPROVEMENTS. RELOCATE CONTRACTOR OFFICE TO PROVIDE SEPTIC SYSTEM.

PHASE III

6. REMOVE THE STAGING/LAYDOWN AREA(S), CONTRACTOR OFFICE(S), AND DIRECTOR'S REPRESENTATIVE OFFICE AND PARKING. PROVIDE ANY REMAINING RESTORATION WORK.
7. REMOVE THE TEMPORARY EROSION AND SEDIMENTATION CONTROLS.



1 / G–003 CONSTRUCTION LAYOUT AND PHASING PLAN
1" = 30'

0 30 60 90 FT

N

REVISED DRAWING 2/7/2024

Feb 02,2024 – 10:38am
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36x24 PLOT SHEET

NEW YORK STATE OF OPPORTUNITY. Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT

LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York

ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE:

TO THE BEST OF THE REGISTERED DESIGN PROFESSIONAL'S KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND/OR SPECIFICATIONS, ARE IN COMPLIANCE WITH THE 2020 ENERGY CODE OF NEW YORK STATE.

UNIFORM CODE OF NEW YORK STATE:

TO THE BEST OF THE REGISTERED DESIGN PROFESSIONAL'S KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THIS DESIGN, INCLUDING PLANS AND/OR SPECIFICATIONS, IS IN COMPLIANCE WITH THE 2020 NEW YORK UNIFORM CODE.

STATE OF NEW YORK — MARTIN J. WEGLOWSKI — LICENSED PROFESSIONAL ENGINEER — NO. 071474

CONTRACT:
CONSTRUCTION

TITLE:
PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION:
DOT REGION 9, BROOME COUNTY
ROUTE 26
VESTAL, NY

CLIENT:
DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 –C,H,P,E
DESIGNED BY:	B. PRZYBYL
DRAWN BY:	A. KELLY
FIELD CHECK:	
APPROVED:	

SHEET TITLE:
CONSTRUCTION LAYOUT AND PHASING PLAN

DRAWING NUMBER:
G–003

SHEET 3 OF 98

BUILDING CODE SUMMARY

NAME OF PROJECT: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS
ADDRESS: DOT REGION 9, BROOME COUNTY, ROUTE 26, VESTAL, NEW YORK
PROPOSED USE: SALT STORAGE BUILDING ADDITION, UNCONDITIONED SPACE
OWNER/AUTHORIZED AGENT: NEW YORK STATE DEPARTMENT OF TRANSPORTATION PHONE NO. _____
OWNED BY: ☐ CITY/COUNTY ☐ PRIVATE ☒ STATE
CODE ENFORCEMENT JURISDICTION: ☐ CITY ⚠1 ☐ COUNTY ☒ STATE

BUILDING CODE

- 2020 BUILDING CODE OF NEW YORK STATE
- 2020 FIRE CODE OF NEW YORK STATE
- 2020 MECHANICAL CODE OF NEW YORK STATE
- 2020 PLUMBING CODE OF NEW YORK STATE
- 2020 FUEL AND GAS CODE OF NEW YORK STATE
- 2020 ENERGY CONSTRUCTION CODE OF NEW YORK STATE
- NEW YORK STATE LABOR DEPARTMENT INDUSTRIAL CODE FOR ITEMS RELATING TO PEOPLE WHO WORK IN THE BUILDING SUCH AS SAFETY GLASS, PROVISIONS FOR WINDOW WASHING, COT SPACE FOR FEMALE EMPLOYEES, ASBESTOS ABATEMENT, BOILER DESIGN, ETC.
- 2009 ICC ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES / ANSI A117.1, AS REFERENCED IN THE CODES ABOVE.
- 2017 NATIONAL ELECTRIC CODE NFPA 70, AS REFERENCED IN THE CODES ABOVE.
- 2020 BUILDING CODE OF NEW YORK STATE CHAPTER 33: SAFEGUARDS DURING CONSTRUCTION, AS REFERENCED IN THE CODES ABOVE.
- 2020 FIRE CODE OF NEW YORK STATE CHAPTER 33: FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION, AS REFERENCED IN THE CODES ABOVE.
- 2020 FIRE CODE OF NEW YORK STATE CHAPTER 35: WELDING AND OTHER HOT WORKS, AS REFERENCED IN THE CODES ABOVE.

BUILDING DATA

☐ NEW CONSTRUCTION
☐ EXISTING STRUCTURE ☐ CHANGE OF OCCUPANCY ☒ ADDITION ☐ ALTERATION ☐ REPAIR ☐ UPLIFT
CONSTRUCTION TYPE: ☐ I-A ☐ I-B ☐ II-A ☐ II-B ☐ III-A ☐ III-B ☐ V-A ☒ V-B
MIXED CONSTRUCTION: ☐ YES ☒ NO TYPES: _____
FIRE DISTRICT: ☐ YES ☒ NO
BUILDING HEIGHT: 27' - 4" FEET 1 NUMBER OF STORIES ☐ UNLIMITED PER _____
MEZZANINE: ☐ YES ☒ NO
HIGH RISE: ☐ YES ☒ NO CENTRAL REFERENCE SHEET # IF PROVIDED _____

BUILDING USES

LEVEL	CLASSIFICATION	BLDG. AREA	
1	VEHICLE STORAGE (S-2)	22,429 SF	
1	OFFICES (B)	22,429 SF	

LEVEL	DESCRIPTION OF EACH SPACE	USE	AREA (SF)	AREA/OCCUPANT TABLE 1004.5	OCCUPANT LOAD	EXCEPTIONS
1	VEHICLE STORAGE	S-2	10000 SF	10 SF NET	10	
1	OFFICES/LOCKERS	B	5000 SF	100 SF GROSS	164	

FIRE PROTECTION REQUIREMENTS

LIFE SAFETY PLAN SHEET #, IF PROVIDED _____

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING REQ'D	RATING PROVIDED (W/ * REDUCTION)	DETAIL # SHEET #	DESIGN # FOR RATED ASSEMBLY	DESIGN # FOR RATED PENETRATION
STRUCTURAL FRAME(INCLUDING COLUMNS, GIRDERS, TRUSSES)		0 HR.	0 HR.			
BEARING WALLS						
EXTERIOR	N/A NONE	N/A				
NORTH		N/A				
EAST		N/A				
WEST		N/A				
SOUTH		N/A				
INTERIOR	N/A NONE	N/A				
NONBEARING WALLS & PARTITIONS						
EXTERIOR						
NORTH	>30 FEET	0 HR.	0 HR.			
EAST	>30 FEET	0 HR.	0 HR.			
WEST	>30 FEET	0 HR.	0 HR.			
SOUTH	>30 FEET	0 HR.	0 HR.			
INTERIOR		0 HR.	0 HR.			
FLOOR CONSTRUCTION (INCLUDING SUPPORTING BEAMS AND JOISTS		0 HR.	0 HR.			
ROOF CONSTRUCTION (INCLUDING SUPPORTING BEAMS AND JOISTS)		0 HR.	0 HR.			
SHAFTS - EXIT		N/A				
SHAFTS - OTHER		N/A				
CORRIDOR SEPARATION		N/A				
OCCUPANCY SEPARATION		N/A				
PARTY/ FIRE WALL SEPARATION		N/A				
SMOKE BARRIER ** SEPARATION		N/A				
TENANT SEPARATION		N/A				

* INDICATE SECTION NUMBER PERMITTING REDUCTION
** ATTIC DRAFT STOPPING (REQ'D) (NOT REQ'D WITH NFPA 13 AUTOMATIC SPRINKLER)

ALLOWABLE AREA

PRIMARY OCCUPANCY:
ASSEMBLY: ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
BUSINESS: ☐ B
EDUCATIONAL: ☐ E
FACTORY: ☐ F-1 ☐ F-2
HAZARDOUS: ☐ H-1 ☐ H-2 ☐ H-3 ☐ H-4 ☐ H-5
INSTITUTIONAL: ☐ I-I ☐ I-2 ☐ I-3 ☐ I-4
I-3 USE CONDITION: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
MERCANTILE: ☐ M
RESIDENTIAL: ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4
STORAGE: ☐ S-1 ☒ S-2 ☐ HIGH PILED
UTILITY AND MISC.: ☐ U

SECONDARY OCCUPANCY:
SPECIAL OCCUPANCY: ☐ 508.2 ☐ 508.3 ☐ 508.4 ☐ 508.5 ☐ 508.6 ☐ 508.7 ☐ 508.8
MIXED OCCUPANCY: ☒ NO ☐ YES SEPARATION: 0 HR. EXCEPTION: N/A
☐ NON-SEPARATED MIXED OCCUPANCY (302.3 EXCEPTION)
☐ SEPARATED MIXED OCCUPANCY (302.3.2) - SEE BELOW FOR CALCULATIONS.

STORY NO.	DESCRIPTION & USE	(A) BLDG. AREA PER STORY (ACTUAL)	(B) TABLE 506.2 AREA $_S$	(C) AREA FOR FRONTAGE $_1$ INCREASE	(D) AREA FOR SPRINKLER $_2$ INCREASE	(E) ALLOWABLE AREA OR $_3$ UNLIMITED	(F) MAXIMUM BUILDING $_4$ AREA
1	STORAGE (S-2)	8,200 SF	52,500 SF				

[1] FRONTAGE INCREASES FROM SECTION 506.2 ARE COMPUTED THUS:

A. PERIMETER WHICH FRONTS A PUBLIC WAY OR OPEN SPACE HAVING 20 FEET MINIMUM WIDTH = (F) _____
B. TOTAL BUILDING PERIMETER = ____(P)____
C. RATIO (F/P) = ____(F/P)____
D. W=MINIMUM WIDTH OF PUBLIC WAY = ____(W)____
E. PERCENT OF FRONTAGE INCREASE = 100 ((F/P) - 0.25) x W/30 = % _____
= 100((/)-0.25) x /30 = % _____

[2] THE SPRINKLER INCREASE PER SECTION 506.3 IS AS FOLLOWS:

A. MULTI-STORY BUILDING = 200 PERCENT
B. SINGLE STORY BUILDING = 300 PERCENT

[3] UNLIMITED AREA APPLICABLE UNDER CONDITIONS OF SECTIONS GROUP B, F, M, S, A-4 (507.1, 507.2, 507.3, 507.5), GROUP A MOTION PICTURE (507.8), MALLS (402.6), AND H-2 AIRCRAFT PAINT HANGERS (507.6).

[4] MAXIMUM BUILDING AREA = TOTAL NUMBER OF STORIES IN THE BUILDING x E BUT NOT GREATER THAN 3xE.

ALLOWABLE HEIGHT

	ALLOWABLE (TABLE 503)	SHOWN ON PLANS	CODE REFERENCE
TYPE OF CONSTRUCTION	TYPE V-B	TYPE V-B	
BUILDING HEIGHT (FT)	40 FEET	39'-11"	
BUILDING HEIGHT (STORIES)	2 STORIES	1 STORIES	

LIFE SAFETY SYSTEM REQUIREMENTS

SPRINKLER SYSTEMS: ☐ YES ☒ NO ☐ NFPA 13 ☐ NFPA 13R ☐ NFPA 20
STANDPIPE SYSTEMS: ☐ YES ☒ NO CLASS: ☐ I ☐ II ☐ III ☐ WET ☐ DRY

EXTINGUISHING SYSTEMS:	☐ YES ☒ NO	SMOKE VENTS:	☐ YES ☒ NO
FIRE EXTINGUISHERS:	☐ YES ☒ NO	KITCHEN HOOD EXT:	☐ YES ☒ NO
FIRE ALARM SYSTEMS:	☐ YES ☒ NO	SUPERVISORY SERVICE:	☐ YES ☒ NO
SMOKE DETECTION:	☐ YES ☒ NO	EXIT SIGNS:	☐ YES ☒ NO
HI-RISE FIRE SAFETY:	☐ YES ☒ NO	EMERGENCY LIGHTS:	☐ YES ☒ NO
VISIBLE ALARMS:	☐ YES ☒ NO	EMERGENCY POWER:	☐ YES ☒ NO
SMOKE CONTROL:	☐ YES ☒ NO	PANIC HARDWARE:	☐ YES ☒ NO

BUILDING USES

LEVEL	DESCRIPTION	BLDG. AREA	
1	STORAGE (S-2)	8,200 SF	UNCONDITIONED GENERAL STORAGE SPACE

AREA/OCCUPANT

LEVEL	CLASSIFICATION	USE	AREA (SF)	TABLE 1004.1.2	OCCUPANT LOAD	EXCEPTIONS
1	STORAGE (S-2)	STORAGE	8,200 SF	1/500	17	

EXIT REQUIREMENTS — SEE EXITING PLANS AT A002

NUMBER AND ARRANGEMENT OF EXITS

FLOOR, ROOM, OR SPACE DESIGNATION	MINIMUM NUMBER OF EXITS [2] REQ'D	MINIMUM NUMBER OF EXITS [2] SHOWN ON PLANS	TRAVEL DISTANCE [3] COMMON PATH ALLOW.	COMMON PATH ACTUAL	TRAVEL DISTANCE ALLOW.	TRAVEL DISTANCE ACTUAL	ARRANGEMENT MEANS OF EGRESS (SECTION 1014.2)[1&3] REQUIRED DISTANCE BETWEEN EXIT DOORS	ARRANGEMENT MEANS OF EGRESS (SECTION 1014.2)[1&3] ACTUAL DISTANCE SHOWN ON PLANS
STORAGE (S-2)	2	2	100'-0"	50'-0"	400'-0"	100'-0"	50'-0"	84'-0"

[1] CORRIDOR DEAD ENDS (SECTION 1016.3)
[2] SINGLE EXITS (TABLE 1014.1)
[3] COMMON PATH OF TRAVEL (SECTION 1015)

EXIT WIDTH

USE GROUP OR SPACE DESCRIPTION	(A)[1] AREA SQ. FT.	(B)[1] AREA PER OCCUPANT (TABLE 1004.1.2)	(C) EGRESS WIDTH PER OCCUPANT (TABLE 1005.1) STAIR	(C) LEVEL	EXIT WIDTH (IN) [2,3,4,5,6] REQUIRED WIDTH (SECTION 1005.1) (A/B) X C STAIR	REQUIRED WIDTH LEVEL	ACTUAL WIDTH SHOWN ON PLANS STAIR	ACTUAL WIDTH LEVEL
STORAGE (S-2)	8,200 SF	1/500 = 17	N/A	0.15	N/A	1.5"	N/A	36"

[1] SEE TABLE 1004.1.2 TO DETERMINE WHETHER NET OR GROSS AREA IS APPLICABLE. SEE DEFINITION "FLOOR AREA, GROSS" AND "FLOOR AREA, NET" (SECTION 1002)
[2] THE SPRINKLER INCREASE PER SECTION 506.3 IS AS FOLLOWS:
C. MULIT-STORY BUILDING 1 = 200 PERCENT
D. SINGLE STORY BUILDING 1 = 300 PERCENT
[3] MINIMUM STAIRWAY WIDTH (SECTION 1009.1), MIN. CORRIDOR WIDTH (SECTION 1016.2), MIN. DOOR WIDTH (SECTION 1008.1)
[4] MINIMUM WIDTH OF EXIT PASSAGEWAY (SECTION 1020.2)
[5] THE LOSS OF ONE MEANS OF EGRESS SHALL NOT REDUCE THE AVAILABLE CAPACITY TO LESS THAN 50 PERCENT OF THE TOTAL REQUIRED (SECTION 1005.1)
[6] ASSEMBLY OCCUPANCIES (SECTION 1024)

PLUMBING FIXTURE REQUIREMENTS

FIXTURE & COUNT PROVIDED	MALE	FEMALE	PLUMBING LOAD CALCULATIONS
WATERCLOSETS	0	0	STORAGE BUILDING NOT CONDITIONED FOR OCCUPANCY REQUIRES NO PLUMBING FACILITIES. ADJACENT BUILDING (SUBHEADQUARTERS FACILITY) CONTAINS REQUIRED FACILITIES FOR SITE OCCUPANTS.
URINALS	0	N/A	
LAVATORIES	0	0	
SHOWERS/ TUBS	0	0	
DRINKING FOUNTAINS	0		
SERVICE SINK	0		

ENERGY CODE COMPLIANCE

STATE NY COUNTY TOMPKINS CLIMATE ZONE 6

ENVELOPE EXCEMPT FROM ENERGY CODE COMPLIANCE IN ACCORDANCE WITH IECCC CODE SECTION C402.1.1 EXCEPTION 2 WHERE UNCONDITIONED BUILDINGS DO NOT REQUIRE COMPLIANCE FOR ENVELOPE ENERGY EFFICIENCY/INSULATION.

LIGHTING WILL COMPLY PER ELECTRICAL ENGINEERING DOCUMENTS FOR POWER USE.

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. Office of General Services
DESIGN & CONSTRUCTION

CONSULTANT
LiRo Engineers, Inc.
A LiRo Group Company

FoitAlbert ASSOCIATES
Architecture. Engineering. Surveying. Environmental.
JOB # 19093.00

ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE:
TO THE BEST OF THE REGISTERED DESIGN PROFESSIONAL'S KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THIS DESIGN, INCLUDING PLANS AND/OR SPECIFICATIONS, IS IN COMPLIANCE WITH THE 2020 SUPPLEMENT TO THE NEW YORK STATE ENERGY CONSERVATION CODE CONSTRUCTION CODE AND THE 2018 INTERNATIONAL ENERGY CONSERVATION CODE (IECC) AS MODIFIED BY THE 2020 NEW YORK CODE.

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REGISTERED ARCHITECT MICHAEL R. BRAY No. 033664 STATE OF NEW YORK
EXPIRES: 5/31/2024

CONTRACT: CONSTRUCTION, HVAC, PLUMBING, ELECTRICAL
TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS
LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY
CLIENT: NYS DEPARTMENT OF TRANSPORTATION

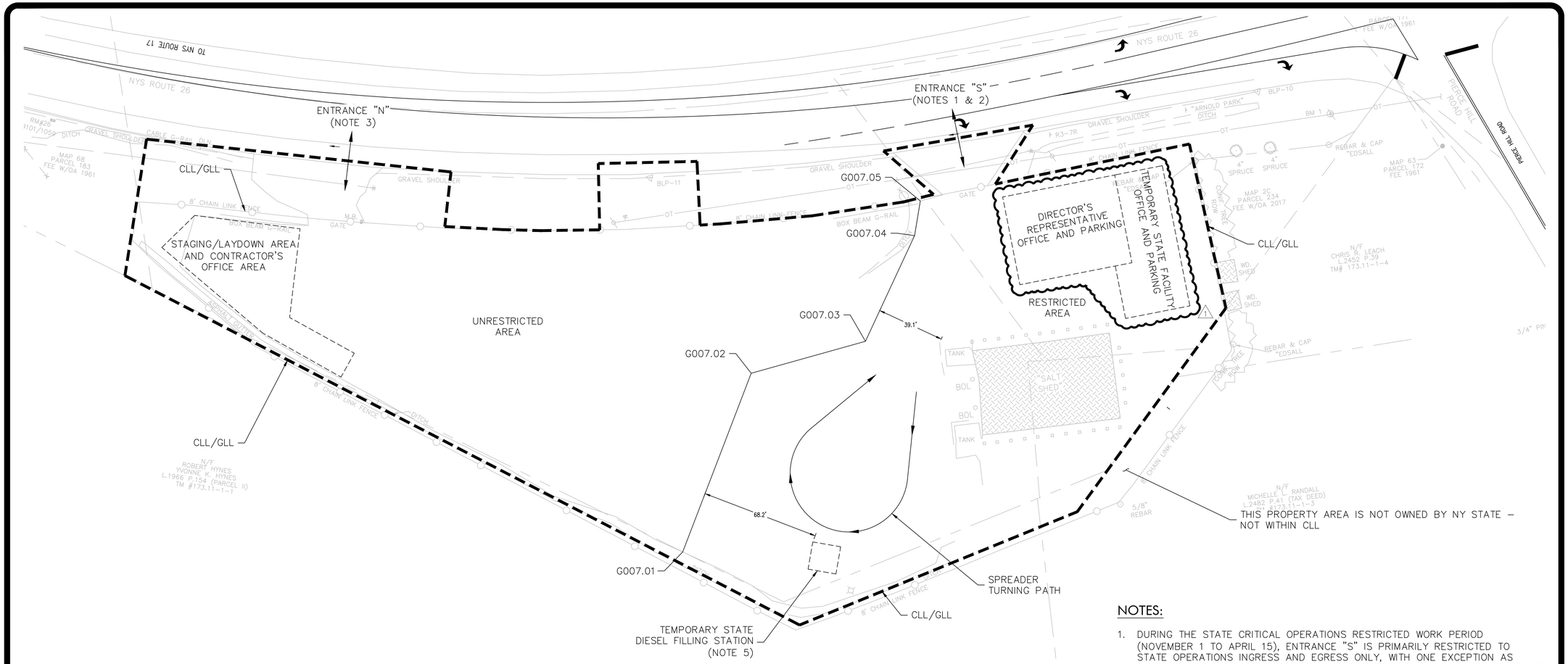
MARK	DATE	DESCRIPTION
⚠1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

OGS PROJECT NUMBER: 46063 - C,H,P,E
DESIGNED BY: MRB
DRAWN BY: MRB
FIELD CHECK:
APPROVED:

SALT STORAGE BUILDING - CODE COMPLIANCE SUMMARY

G-006

SHEET 6 OF 93



1 G-007 RESTRICTED PERIOD TRUCK ROUTING PLAN
1" = 30'
0 30 60 90 FT

NOTES:

1. DURING THE STATE CRITICAL OPERATIONS RESTRICTED WORK PERIOD (NOVEMBER 1 TO APRIL 15), ENTRANCE "S" IS PRIMARILY RESTRICTED TO STATE OPERATIONS INGRESS AND EGRESS ONLY, WITH ONE EXCEPTION AS NOTED: FOR EGRESS OF LARGE TRUCKS, CONTRACTORS MAY UTILIZE ENTRANCE "S" DURING THE RESTRICTED WORK PERIOD PROVIDED THAT TWO SPOTTERS/FLAGMEN IN RADIO COMMUNICATION WITH EACH OTHER (ONE GUIDING THE EGRESSING VEHICLE AND ONE STATIONED AT ENTRANCE "S") GUIDE THE VEHICLE TO THE ENTRANCE/EXIT SO AS NOT TO INTERFERE WITH STATE CRITICAL OPERATIONS.
2. DURING THE NON-RESTRICTED WORK PERIOD, CONTRACTORS MAY USE ENTRANCE "S" FOR INGRESS AND EGRESS AND WORK, PARK, AND STAGE EQUIPMENT AND MATERIAL IN THE RESTRICTED AREA EXCEPT BETWEEN THE STATE TEMPORARY OFFICES AND SALT SHED. ALL CONTRACTOR VEHICLES, MATERIALS, AND EQUIPMENT MUST BE REMOVED FROM THE RESTRICTED AREA PRIOR TO THE START OF THE RESTRICTED WORK PERIOD (NOVEMBER 1 TO APRIL 15).
3. DURING THE STATE CRITICAL OPERATIONS RESTRICTED WORK PERIOD (NOVEMBER 1 TO APRIL 15), AND DURING THE NON-RESTRICTED PERIOD, ENTRANCE "N" IS RESERVED FOR THE INGRESS/EGRESS OF CONTRACTOR VEHICLES ONLY.
4. C-CONTRACTOR: DURING THE RESTRICTED WORK PERIOD (NOVEMBER 1 TO APRIL 15) PROVIDE ORANGE CONSTRUCTION FENCING ALONG THE ENTIRE LENGTH OF THE BOUNDARY BETWEEN THE RESTRICTED WORK AREA AND THE UNRESTRICTED WORK AREA, EXCEPT FOR A 16-FOOT WIDE GAP TO ALLOW TRAVERSE BETWEEN THE AREAS (FOR EMERGENCIES AND AS RESTRICTED PER NOTE 1 ON THIS PAGE).
5. ALL CONTRACTORS ARE PROHIBITED FROM USING THE TEMPORARY STATE DIESEL FILLING STATION.

RESTRICTED/UNRESTRICTED BOUNDARY COORDINATES		
LOCATION	NORTHING	EASTING
G007.01	756575.3045	966831.6640
G007.02	756555.8405	966940.6666
G007.03	756494.4366	966971.2438
G007.04	756478.0293	967036.6197
G007.05	756478.5355	967056.9259

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT

LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York

ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE:

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STATE OF NEW YORK · MARTIN J. WEGLOWSKI · NO. 071974 · LICENSED PROFESSIONAL ENGINEER

CONTRACT:
CONSTRUCTION

TITLE:
PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION:
DOT REGION 9, BROOME COUNTY
ROUTE 26
VESTAL, NY

CLIENT:
DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 -C,H,P,E
DESIGNED BY:	B. PRZYBYL
DRAWN BY:	A. KELLY
FIELD CHECK:	
APPROVED:	

SHEET TITLE:
RESTRICTED PERIOD TRUCK ROUTING PLAN

DRAWING NUMBER:
G-007

SHEET 7 OF 98

Feb 02,2024 - 7:10am
J:\19-289-0295 OGS 8 Bay Maint. HQ\CAD NEW\ADDENDUM 2\G-007.dwg
36x24 PLOT SHEET

GENERAL CIVIL NOTES:

1. SECURE WORK AREA WITH ORANGE CONSTRUCTION FENCE AND "HARD HAT AREA" SIGN.
2. UNDERGROUND UTILITIES ARE SHOWN FROM FIELD SURVEY WHERE POSSIBLE AND FROM RECORD DATA WHERE FOUND. EXACT LOCATION OF UTILITIES MAY DIFFER FROM THE LOCATION SHOWN, AND ADDITIONAL UTILITIES MAY EXIST. VERIFY THE PRESENCE AND EXACT LOCATION OF ALL UTILITIES WITHIN THE CONTRACT LIMIT LINE PRIOR TO COMMENCING ANY EXCAVATION WORK PURSUANT TO THIS CONTRACT. RETAIN THE SERVICES OF AN INDEPENDENT 3RD PARTY LOCATOR SERVICE COMPANY TO FIELD LOCATE AND MARK EXISTING UNDERGROUND UTILITIES AND SERVICE CONNECTIONS.
3. PROVIDE A NEW YORK STATE LICENSED LAND SURVEYOR FOR THE LAYOUT/STAKEOUT OF SITE WORK. LOCATE, MARK, SAFEGUARD AND PRESERVE SURVEY CONTROL POINTS, MONUMENTS, AND BENCHMARKS.
4. CONTROL DUST IN ACCORDANCE WITH THE HEALTH AND SAFETY PLAN. THE NUMBER OF APPLICATIONS AND THE AMOUNT OF WATER SHALL BE BASED UPON FIELD AND WEATHER CONDITIONS.

EROSION AND SEDIMENTATION CONTROL NOTES:

1. PROVIDE EROSION AND SEDIMENT CONTROLS IN ACCORDANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) WHICH IS INCLUDED IN THE PROJECT MANUAL. THE SWPPP IS CONSISTENT WITH THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL 2016 (BLUE BOOK).
2. SEDIMENTATION BARRIERS AND OTHER TEMPORARY EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO THE START OF EXCAVATION IN ACCORDANCE WITH THE SWPPP. THE EROSION CONTROLS SHALL BE INSPECTED BY A QUALIFIED INSPECTOR IN ACCORDANCE WITH THE SPDES GENERAL PERMIT OR SITE SPECIFIC PERMIT.
3. REMOVAL OF TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES AND TEMPORARY FENCING SHALL BE COMPLETED AT THE APPROVAL OF THE DIRECTOR'S REPRESENTATIVE.
4. MAINTAIN SITE CONDITIONS WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. KEEP SIDEWALKS, STREETS, DRIVES AND OTHER PAVEMENTS CLEAN AND FREE FROM SOIL, SEDIMENT, MUD, STONES AND OTHER MATERIALS AS A RESULT OF THIS WORK.
5. PROVIDE THE PERMANENT SITE STORM DRAINAGE SYSTEM AS SOON AS POSSIBLE. UNTIL THEN, PROVIDE TEMPORARY SITE DRAINAGE INCLUDING SWALES DITCHES AND PUMPS TO MAINTAIN THE SITE IN A TRAFFICABLE CONDITION. DO NOT DISCHARGE WATER INTO AREAS TO BE DEVELOPED UNDER THIS CONTRACT. PROVIDE SEDIMENT TRAPS DURING CONSTRUCTION.
6. PROVIDE INLET PROTECTION TO PERMANENT DRAINAGE STRUCTURES UPON CONSTRUCTION UNTIL THE NOTICE OF TERMINATION IS ISSUED.
7. TAKE MEASURES TO REDUCE THE DISTURBANCE OF VEGETATIVE SOIL COVER TO THE MINIMUM REQUIRED BY THE WORK.
8. LIMIT ACCESS ON UNSTABILIZED SOIL SURFACES TO THOSE VEHICLES NECESSARY FOR THE WORK. DO NOT PARK EMPLOYEE VEHICLES ON ERODIBLE SOIL SURFACES.

DEWATERING NOTES:

1. DEWATER AND MAINTAIN SURFACE WATER AND/OR GROUNDWATER ENCOUNTERED DURING THE COURSE OF THE WORK.

EXCAVATION NOTES:

1. VERTICAL CONTROL REFERENCED TO CONTROL POINTS SHOWN ON DRAWING NO. G-002. VERIFY BENCH MARK ELEVATION WITH AT LEAST TWO OTHER GIVEN ELEVATIONS ON THE DRAWINGS, AND NOTIFY THE DIRECTOR'S REPRESENTATIVE IN WRITING OF ANY DISCREPANCIES ENCOUNTERED.
2. COORDINATE THE LAYOUT WITH THE DIRECTOR'S REPRESENTATIVE. ELIMINATE ALL CONFLICTS IN UTILITY LOCATIONS PRIOR TO ANY EXCAVATIONS.
3. PROVIDE SMOOTH TRANSITION TO EXISTING GRADES.

STORM DRAINAGE NOTES:

1. STORM DRAINAGE FACILITIES TO REMAIN SHALL BE MAINTAINED FREE OF DEBRIS, FOREIGN MATTER, AND REMAIN OPERATIONAL THROUGHOUT THE CONSTRUCTION PERIOD.

GEOTECHNICAL DATA:

1. REFERENCE GEOTECHNICAL REPORT AND BORING LOG DATA IN PROJECT MANUAL APPENDIX.

SITE GRADING NOTES:

1. THE FINAL GRADE PLAN OF THIS PROJECT HAS BEEN DESIGNED IN ACCORDANCE WITH A TOPOGRAPHIC SURVEY DATED 3/16/20 AS PREPARED BY SHUMAKER CONSULTING ENGINEERING AND LAND SURVEYING, D.P.C.
2. AT SUBSTANTIAL COMPLETION, PRODUCE AND SUBMIT AS-BUILT DRAWINGS ACCURATELY REPRESENTING SITE CONDITIONS INCLUDING BUT NOT LIMITED TO FINAL GRADES.
3. CLEAR AND GRUB EXISTING VEGETATION, REGARDLESS OF SIZE, NECESSARY TO INSTALL THE WORK OF THIS CONTRACT. REMOVE ALL ABOVE GROUND PORTIONS OF PLANTS TO A DEPTH OF 6 " BELOW FINISH GRADE IN LAWN AREAS. COMPLETELY REMOVE ALL BELOW GROUND PORTIONS OF PLANTS IN AREAS TO BE COVERED WITH BACKFILL. TREES ARE TO BE REMOVED IN THEIR ENTIRETY, INCLUDING ALL ABOVE AND BELOW GROUND PORTIONS TO 6" DEPTH. PRESERVE AND PROTECT ALL EXISTING VEGETATION NOT INDICATED TO BE REMOVED. REMOVE TREES AND VEGETATION IN THEIR ENTIRETY.
4. ANY AREAS THAT HAVE ACHIEVED ACCEPTED GRADE THAT WILL NOT BE DISTURBED FURTHER BY CONSTRUCTION ACTIVITIES SHALL BE PROMPTLY FINISHED TO MINIMIZE EROSION.
5. ANY IMPORTED FILL AND TOPSOIL SHALL MEET NYCRR PART 375 RESTRICTED RESIDENTIAL CRITERIA.

FOUNDATION NOTES:

1. FOUNDATIONS MUST BEAR ON NATIVE OR COMPACTED FILL. FOUNDATIONS HAVE BEEN DESIGNED FOR A NET ALLOWABLE BEARING PRESSURE OF 4,000 PSF.
2. ALL FOUNDATIONS SHALL BEAR ON INORGANIC, UNDISTURBED SOILS AS DESCRIBED IN THE PROJECT GEOTECHNICAL REPORT OR ON SELECT GRANULAR MATERIAL COMPACTED TO 95% MODIFIED PROCTOR DENSITY. ACCEPTABLE BEARING STRATA IS ANTICIPATED AT THE BOTTOM OF FOOTING ELEVATIONS NOTED ON THE PLANS AND SHALL BE INSPECTED BY THE DIRECTOR'S REPRESENTATIVE PRIOR TO PLACING CONCRETE.
3. DO NOT PLACE CONCRETE ON FROZEN GROUND OR IN EXCAVATIONS CONTAINING FREE STANDING WATER. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL BEARING GRADES AND SURROUNDING SOILS PRIOR TO AND AFTER FOUNDATIONS HAVE BEEN POURED.
4. BACKFILL FOUNDATION WALLS IN SUCH A MANNER TO MAINTAIN EQUAL LEVELS OF FILL ON EACH SIDE OF WALL. FILL LEVELS MAY VARY UP TO 1'-0" ON EITHER SIDE AT ANY ONE TIME.
5. WHERE FOOTINGS ARE IN CLOSE PROXIMITY OF SUB-SURFACE PIPING, BOTTOM OF FOOTINGS SHALL BE AT LEAST 8-INCHES BELOW ELEVATION OF PIPING UNLESS OTHERWISE SHOWN ON THE CONTRACT DRAWINGS.
6. COMPLY WITH ALL OSHA STANDARDS AND REGULATIONS WHEN EXCAVATING FOR FOUNDATIONS.

METAL BUILDING STRUCTURAL NOTES:

1. PRIMARY FRAMING SYSTEM: SEE DWG S-201.
2. FOR FRAMED OPENINGS AND OTHER INFORMATION NOT SHOWN ON STRUCTURAL DRAWINGS, REFER TO ARCHITECTURAL DRAWINGS.
3. FOR ROOF TOP, ROOF -SUSPENDED AND WALL HUNG HVAC UNITS AND SUSPENDED EQUIPMENT, REFER TO HVAC AND EQUIPMENT DRAWINGS.
4. THE METAL BUILDING SYSTEM SHALL INCLUDE FRAMED OPENINGS FOR PERSONNEL DOORS, OVERHEAD DOORS, TRANSLUCENT PANELS AND LOUVERS. FRAMED OPENINGS FOR OVERHEAD DOORS SHALL EXTEND TO FINISH FLOOR ELEVATION.
5. THE METAL BUILDING SYSTEM SHALL INCLUDE ROOF CURBS, SUPPLEMENTAL FRAMING AND/OR SPECIAL PURLIN DESIGNS TO ACCOMMODATE LOCATIONS, DETAILS AND CONCENTRATED DEAD LOADS OF ALL ROOF-TOP, ROOF-SUSPENDED AND WALL HUNG EQUIPMENT. FOR EQUIPMENT WEIGHTS SEE NOTE 11. THE CONTRACTOR SHALL COORDINATE ALL EQUIPMENT LOCATIONS, ATTACHMENT REQUIREMENTS, AND ACTUAL WEIGHTS WITH THE METAL BUILDING MANUFACTURER. PROVIDE ALL HANGERS AND SUPPORTS FOR EQUIPMENT INSTALLATION.
6. THE METAL BUILDING SHALL BE ERECTED IN STRICT CONFORMANCE WITH THE BUILDING MANUFACTURER'S ERECTION DRAWINGS AND PRINTED INSTALLATION INSTRUCTIONS.
7. THE METAL BUILDING SYSTEM MANUFACTURER SHALL SUBMIT ANCHOR BOLT PLANS, COLUMN BASE DETAILS AND INTERFACE LOADS TO THE DIRECTOR'S REPRESENTATIVE FOR APPROVAL.
8. PROVIDE ANCHOR BOLTS. INSTALL ANCHOR BOLTS FOR THE METAL BUILDING SYSTEM FURNISHED BY THE METAL BUILDING SYSTEM MANUFACTURER. THE ANCHOR BOLT LAYOUT, QUANTITY, SIZE, AND PROJECTION SHALL BE IN ACCORDANCE WITH THE METAL BUILDING SYSTEM MANUFACTURER'S APPROVED ANCHOR BOLT PLANS. THE ANCHOR BOLT DETAILS AND EMBEDMENT LENGTH SHALL BE IN ACCORDANCE WITH THE STRUCTURAL DRAWINGS.
9. ALL WORK SHALL CONFORM WITH APPROVED SUBMITTAL DOCUMENTS. NO MODIFICATIONS TO THE METAL BUILDING SYSTEM SHALL BE MADE WITHOUT AUTHORIZATION FROM THE METAL BUILDING SYSTEM MANUFACTURER AND APPROVAL OF THE METAL BUILDING SYSTEM MANUFACTURER'S PROFESSIONAL ENGINEER AND THE DIRECTOR'S REPRESENTATIVE.
10. THE METAL BUILDING FOUNDATION HAS BEEN DESIGNED AND DETAILED TO ACCOMMODATE THE TYPICAL REQUIREMENTS OF METAL BUILDING SYSTEMS MANUFACTURERS. SUBMIT TO THE DIRECTOR'S REPRESENTATIVE FOR APPROVAL ANY REQUIRED MODIFICATIONS TO ACCOMMODATE ANY SPECIFIC REQUIREMENTS OF THE APPROVED MANUFACTURER. THE COST OF SUCH MODIFICATIONS SHALL BE MADE AT NO COST TO THE STATE.
11. METAL BUILDING COLLATERAL LOADS
    (A) ROOF UNIFORM DEAD LOAD ALLOWANCE: 10 PSF
    (B) ROOF AND WALL MOUNTED EQUIPMENT LOADS: DESIGN ROOF AND WALL FRAMING FOR CONCENTRATED LOADS FROM ALL ROOF-TOP AND ROOF-SUSPENDED EQUIPMENT. FOR EQUIPMENT LOCATION SEE HVAC AND EQUIPMENT DRAWINGS. FOR EQUIPMENT WEIGHTS, REFER TO APPROVED SUBMITTAL DOCUMENTS. CONCENTRATED LOADS ARE IN ADDITION TO THE 10 PSF COLLATERAL LOAD.
12. WIND DRIFT LIMITATION: L/300
13. EARTHQUAKE DRIFT LIMITATION: THE CALCULATED "ELASTIC" DRIFT MULTIPLIED BY THE APPLICABLE DEFLECTION AMPLICATION FACTOR SHALL COMPLY WITH TABLE 12.2-1 OF ASCE-7.
14. LOAD COMBINATIONS: AS A MINIMUM, THE METAL BUILDINGS SHALL BE DESIGNED FOR THE LOAD COMBINATIONS CONTAINED IN THE BUILDING CODE OF NEW YORK STATE SECTION 1605.0. FOR SEISMIC RESISTING ELEMENTS. THE DESIGN AND LOAD COMBINATIONS SHALL ALSO CONFORM WITH AISC SEISMIC PROVISIONS AND CHAPTER 22 OF THE BUILDING CODE OF NEW YORK STATE.
15. FOR GENERAL BUILDING DESIGN LOADS, SEE "STRUCTURAL DESIGN CRITERIA" TABLE ON THIS DRAWING.
16. FOR ADDITIONAL INFORMATION AND REQUIREMENTS REFER TO METAL BUILDING SYSTEM SPECIFICATION.

CONCRETE NOTES:

1. ALL CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF THE LATEST EDITION OF ACI 301 - "SPECIFICATIONS FOR STRUCTURAL CONCRETE BUILDINGS".
2. ALL DETAILING, FABRICATION AND ERECTION OF REINFORCING BARS, UNLESS NOTED OTHERWISE, MUST FOLLOW THE LATEST EDITION OF THE ACI CODE AND ACI "MANUAL OF STANDARD PRACTICE" FOR DETAILING REINFORCED CONCRETE STRUCTURES.
3. "WET STICKING" DOWELS AND REINFORCING INTO CONCRETE IS NOT PERMITTED. ALL DOWELS, REINFORCING AND WELDED WIRE FABRIC MUST BE SUPPORTED AND TIED IN ITS PROPER LOCATION PRIOR TO POURING CONCRETE.
4. REFER TO CHAPTER 20 OF THE LATEST EDITION OF ACI 318 FOR MINIMUM CONCRETE COVER REQUIREMENTS.
5. NO ADMIXTURES ARE PERMITTED WITHOUT THE DIRECTOR'S REPRESENTATIVE WRITTEN PERMISSION OTHER THAN ENTRAINED AIR.
6. DO NOT USE CALCIUM CHLORIDE IN ANY CONCRETE.
7. REFER TO AND COORDINATE WITH ARCHITECTURAL DRAWINGS AND HVAC, PLUMBING, AND ELECTRICAL CONTRACT DRAWINGS FOR ALL ITEMS REQUIRED BY OTHER TRADES TO BE PLACED INTO CONCRETE PRIOR TO POURING CONCRETE.
8. REFER TO AND COORDINATE WITH ARCHITECTURAL DRAWINGS AND HVAC, PLUMBING, AND ELECTRICAL CONTRACT DRAWINGS FOR ALL SLAB DEPRESSIONS, WALL AND SLAB OPENINGS AND FLOOR FINISHES PRIOR TO POURING CONCRETE.
9. PLACE CONCRETE PIERS AND WALLS MONOLITHICALLY WITH WALL REINFORCING EXTENDING THROUGH PIER.
10. DEFLECTION OF STEEL FRAMED FLOORS WILL OCCUR DURING PLACEMENT OF CONCRETE FLOOR SLABS. PROVIDE ADDITIONAL CONCRETE AS REQUIRED TO FINISH SLABS WITHIN THE SPECIFIED TOLERANCES SET FORTH IN THE PROJECT SPECIFICATIONS. ALLOW FOR AN AVERAGE OF 1/2".
11. SAW CUT CONTROL JOINTS FOR SLABS ON GRADE WHEN CUTTING ACTION WILL NOT TEAR, ABRADE OR OTHERWISE DAMAGE THE SURFACE OF THE CONCRETE WITH AN EARLY-ENTRY DRY-CUT SAW EQUIPPED WITH DIAMOND-RIMMED BLADES. START CUTTING WITHIN 4-HOURS OF FINISHING CONCRETE AND COMPLETE CUTTING WITHIN 12-HOURS OF FINISHING CONCRETE. JOINTS SHALL BE CUT IN PATTERN SHOWN ON PLAN.
12. PROVIDE CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI FOR ALL PURPOSES FOR THIS PROJECT INCLUDING BUT NOT LIMITED TO FOUNDATION WALLS, FOOTERS, RETAINING WALLS, INTERIOR SLABS, EXTERIOR SLABS, CURBS AND SIDEWALKS.

FINISHED CONDITIONS LEGEND

- SEED MIX "A"
- SEED MIX "B"
- CONCRETE
- BITUMINOUS ASPHALT
- LIGHT STONE FILLING
- MEDIUM STONE FILLING

CROSS SECTIONAL LEGEND

- ASPHALT CONCRETE PAVEMENT TOP AND BINDER COURSE
- ASPHALT CONCRETE PAVEMENT BASE COURSE
- COMPACTED SUBGRADE
- TOPSOIL
- LOOSENED REGRADED OR SUITABLE MATERIAL
- COMPACTED REGRADED OR SUITABLE MATERIAL
- SUBBASE COURSE TYPE 2
- CONCRETE
- NO. 2 COARSE AGGREGATE
- LIGHT STONE FILLING
- CUSHION MATERIAL
- SELECT GRANULAR MATERIAL
- C-33 SAND
- NO. 1 COARSE AGGREGATE

STRUCTURAL DESIGN CRITERIA

"NOTE: ALL LOADS SHALL BE DETERMINED IN ACCORDANCE WITH THE "BUILDING CODE OF NEW YORK STATE" (2020)"

TYPE	DESCRIPTION	DESIGN CRITERIA
FLOOR LIVE LOAD	MAINTENANCE BUILDING	150 PSF
ROOF LIVE LOAD	ROOF CONSTRUCTION LOAD	20 PSF
FOUNDATION WALL LOAD	PERIMETER WALL	7.31k/FT
SNOW LOAD	RISK CATEGORY	II
	GROUND SNOW LOAD	40 PSF
	FLAT ROOF SNOW LOAD	36 PSF
	SNOW EXPOSURE FACTOR	C
	IMPORTANCE FACTOR	1.0
	THERMAL FACTOR	1.0
WIND LOAD (MWFRS)	RISK CATEGORY	II
	BASIC WIND SPEED (3-SECOND GUST)	115 MPH
	WIND EXPOSURE CATEGORY	B
	INTERNAL PRESSURE COEFFICIENT	GCpi = ±0.18
EARTHQUAKE LOAD	SITE CLASS	D
	SEISMIC IMPORTANCE FACTOR	1.0
	RISK CATEGORY	II
	DESIGN SPECTRAL RESPONSE COEFFICIENT (Sds)	0.121 g
	DESIGN SPECTRAL RESPONSE COEFFICIENT (Sd1)	0.072 g
	SEISMIC FORCE RESISTING SYSTEM	MOMENT RESISTANT FRAME SYSTEM
	SEISMIC RESPONSE COEFFICIENT	0.0800
	RESPONSE MODIFICATION COEFFICIENT	3.0000
	ANALYSIS PROCEDURE USED	EQUIVALENT LATERAL FORCE
	DESIGN BASE SHEAR	0.29 kip/LF

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. Office of General Services
DESIGN & CONSTRUCTION

CONSULTANT
LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York

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STATE OF NEW YORK · MARTIN J. WESOLOWSKI · No. 071194 · LICENSED PROFESSIONAL ENGINEER

CONTRACT:
CONSTRUCTION

TITLE:
PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION:
DOT REGION 9, BROOME COUNTY
ROUTE 26
VESTAL, NY

CLIENT:
DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 - C
DESIGNED BY:	B. PRZYBYL/J. KOHLER
DRAWN BY:	A. KELLY
FIELD CHECK:	
APPROVED:	

SHEET TITLE:
GENERAL CIVIL AND STRUCTURAL NOTES, LEGEND, AND STRUCTURAL DESIGN CRITERIA

DRAWING NUMBER:
C-001

SHEET 8 OF 98

Feb 02,2024 - 7:04am
J:\19-289-0295 OGS 8 Bay Maint. HQ\CAD NEW\ADDENDUM 2\C-001.dwg
36x24 PLOT SHEET

PHOTO 1 – LEAN TO SALT SHED & OPEN STORAGE BIN

PHOTO 2 – BAY HOPPER STORAGE

PHOTO 3 – HOPPER STORAGE BUILDING INTERIOR

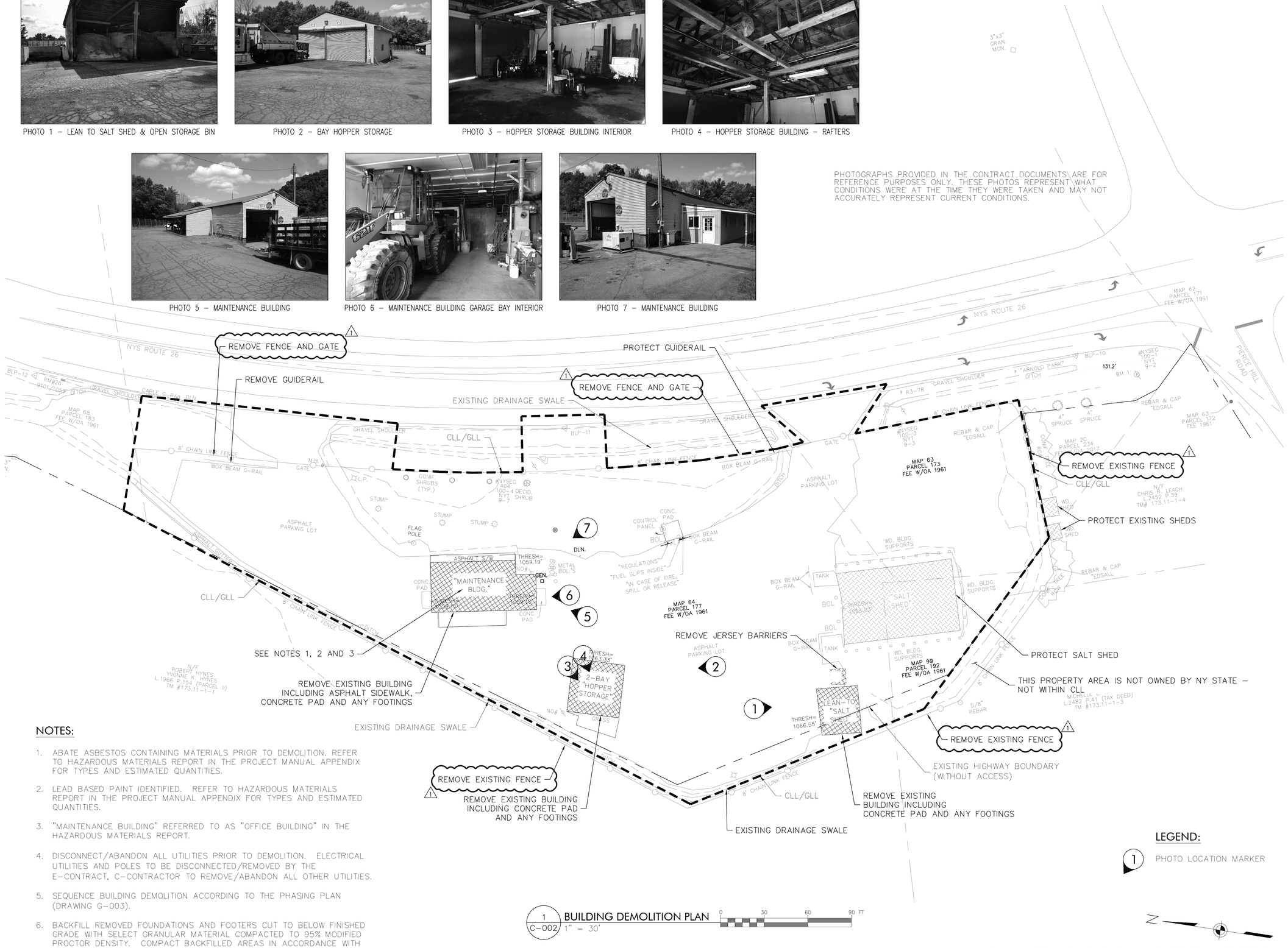
PHOTO 4 – HOPPER STORAGE BUILDING – RAFTERS

PHOTO 5 – MAINTENANCE BUILDING

PHOTO 6 – MAINTENANCE BUILDING GARAGE BAY INTERIOR

PHOTO 7 – MAINTENANCE BUILDING

PHOTOGRAPHS PROVIDED IN THE CONTRACT DOCUMENTS ARE FOR REFERENCE PURPOSES ONLY. THESE PHOTOS REPRESENT WHAT CONDITIONS WERE AT THE TIME THEY WERE TAKEN AND MAY NOT ACCURATELY REPRESENT CURRENT CONDITIONS.



NOTES:

1. ABATE ASBESTOS CONTAINING MATERIALS PRIOR TO DEMOLITION. REFER TO HAZARDOUS MATERIALS REPORT IN THE PROJECT MANUAL APPENDIX FOR TYPES AND ESTIMATED QUANTITIES.
2. LEAD BASED PAINT IDENTIFIED. REFER TO HAZARDOUS MATERIALS REPORT IN THE PROJECT MANUAL APPENDIX FOR TYPES AND ESTIMATED QUANTITIES.
3. "MAINTENANCE BUILDING" REFERRED TO AS "OFFICE BUILDING" IN THE HAZARDOUS MATERIALS REPORT.
4. DISCONNECT/ABANDON ALL UTILITIES PRIOR TO DEMOLITION. ELECTRICAL UTILITIES AND POLES TO BE DISCONNECTED/REMOVED BY THE E-CONTRACT, C-CONTRACTOR TO REMOVE/ABANDON ALL OTHER UTILITIES.
5. SEQUENCE BUILDING DEMOLITION ACCORDING TO THE PHASING PLAN (DRAWING G-003).
6. BACKFILL REMOVED FOUNDATIONS AND FOOTERS CUT TO BELOW FINISHED GRADE WITH SELECT GRANULAR MATERIAL COMPACTED TO 95% MODIFIED PROCTOR DENSITY. COMPACT BACKFILLED AREAS IN ACCORDANCE WITH SECTION 310000.

LEGEND:

1 PHOTO LOCATION MARKER

1 / C-002 BUILDING DEMOLITION PLAN
1" = 30'

0 30 60 90 FT

N

REVISED DRAWING 2/7/2024

Feb 02,2024 - 10:54am
J:\19-289-0295 OGS 8 Bay Maint. HQ\CAD NEW\ADDENDUM 2\C-002.dwg
36x24 PLOT SHEET

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CONSULTANT

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STATE OF NEW JERSEY MARTIN J. WESQUIST LICENSED PROFESSIONAL ENGINEER NO. 074744

CONTRACT: CONSTRUCTION

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

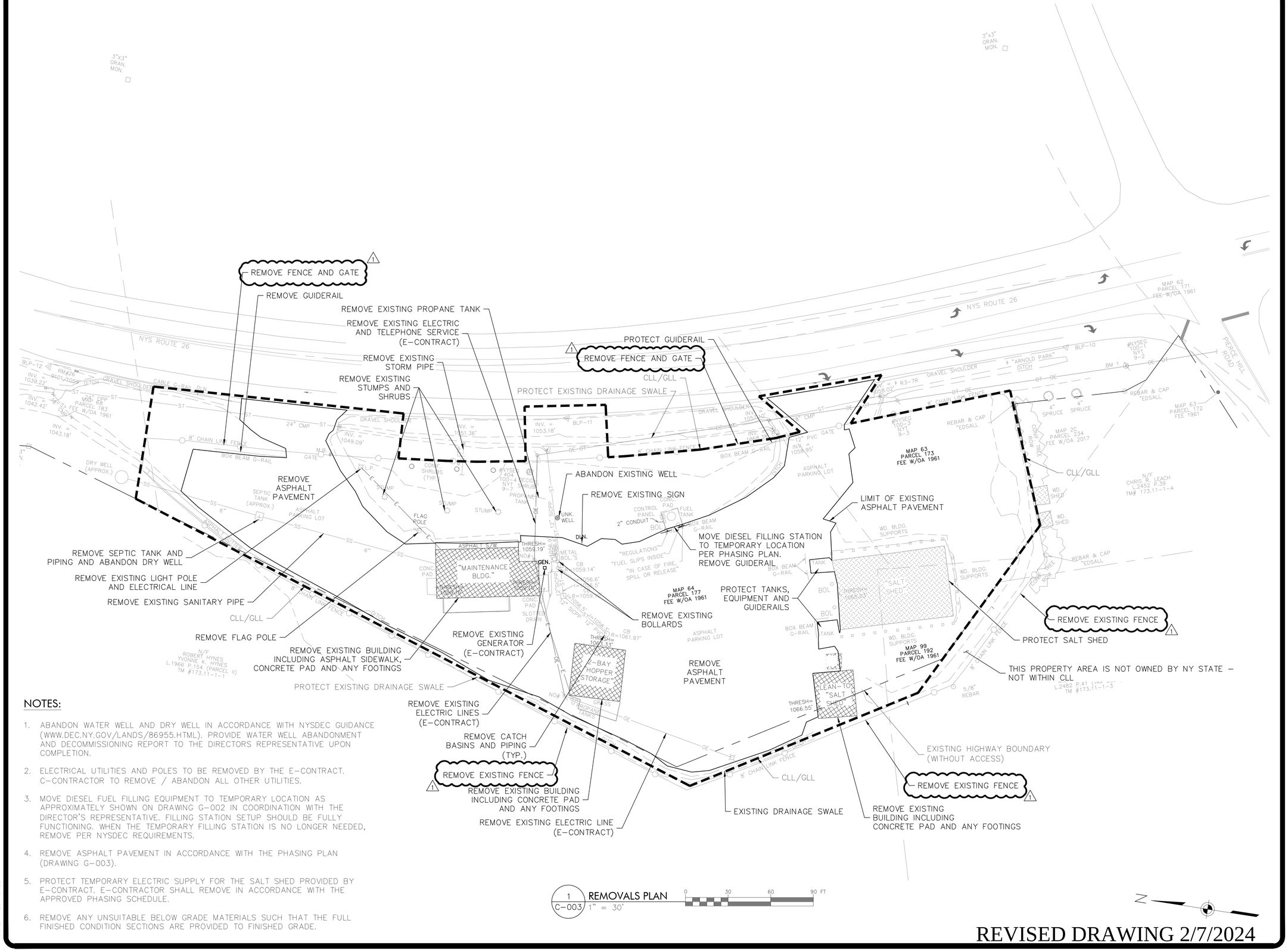
MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 – C
DESIGNED BY:	B. PRZYBYL
DRAWN BY:	A. KELLY
FIELD CHECK:	
APPROVED:	

SHEET TITLE: BUILDING DEMOLITION PLAN

DRAWING NUMBER: C-002

SHEET 9 OF 98



REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT

LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York

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STATE OF NEW YORK — MARTIN J. WEGLOWSKI — LICENSED PROFESSIONAL ENGINEER — NO. 071414

CONTRACT: CONSTRUCTION

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 – C
DESIGNED BY:	B. PRZYBYL
DRAWN BY:	A. KELLY
FIELD CHECK:	
APPROVED:	

SHEET TITLE: REMOVALS PLAN

DRAWING NUMBER: C-003

SHEET 10 OF 98

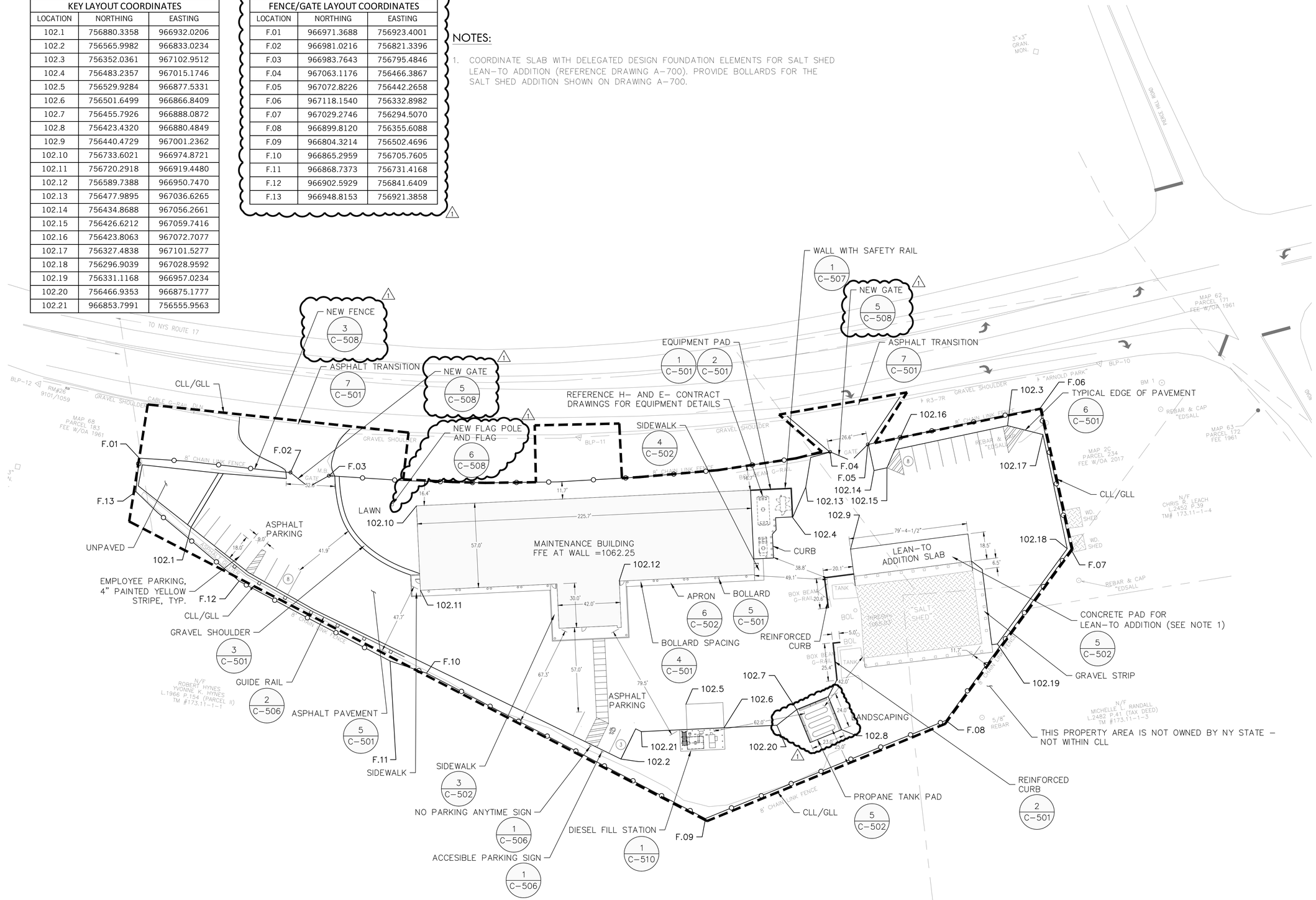
Feb. 02,2024 – 7:07am
J:\19-289-0295 OGS 8 Bay Maint. HQ\CAD NEW\ADDENDUM 2\C-003.dwg
36x24 PLOT SHEET

KEY LAYOUT COORDINATES		
LOCATION	NORTHING	EASTING
102.1	756880.3358	966932.0206
102.2	756565.9982	966833.0234
102.3	756352.0361	967102.9512
102.4	756483.2357	967015.1746
102.5	756529.9284	966877.5331
102.6	756501.6499	966866.8409
102.7	756455.7926	966888.0872
102.8	756423.4320	966880.4849
102.9	756440.4729	967001.2362
102.10	756733.6021	966974.8721
102.11	756720.2918	966919.4480
102.12	756589.7388	966950.7470
102.13	756477.9895	967036.6265
102.14	756434.8688	967056.2661
102.15	756426.6212	967059.7416
102.16	756423.8063	967072.7077
102.17	756327.4838	967101.5277
102.18	756296.9039	967028.9592
102.19	756331.1168	966957.0234
102.20	756466.9353	966875.1777
102.21	966853.7991	756555.9563

FENCE/GATE LAYOUT COORDINATES		
LOCATION	NORTHING	EASTING
F.01	966971.3688	756923.4001
F.02	966981.0216	756821.3396
F.03	966983.7643	756795.4846
F.04	967063.1176	756466.3867
F.05	967072.8226	756442.2658
F.06	967118.1540	756332.8982
F.07	967029.2746	756294.5070
F.08	966899.8120	756355.6088
F.09	966804.3214	756502.4696
F.10	966865.2959	756705.7605
F.11	966868.7373	756731.4168
F.12	966902.5929	756841.6409
F.13	966948.8153	756921.3858

NOTES:

1. COORDINATE SLAB WITH DELEGATED DESIGN FOUNDATION ELEMENTS FOR SALT SHED LEAN–TO ADDITION (REFERENCE DRAWING A–700). PROVIDE BOLLARDS FOR THE SALT SHED ADDITION SHOWN ON DRAWING A–700.



1 C–102 FACILITY LAYOUT
1" = 30'
0 30 60 90 FT

N

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT

LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York

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STATE OF NEW YORK · MARTIN J. WEGLOWSKI · LICENSED PROFESSIONAL ENGINEER · NO. 071474

CONTRACT: CONSTRUCTION

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 – C
DESIGNED BY:	B. PRZYBYL
DRAWN BY:	A. KELLY
FIELD CHECK:	
APPROVED:	

SHEET TITLE: FACILITY LAYOUT

DRAWING NUMBER: C–102

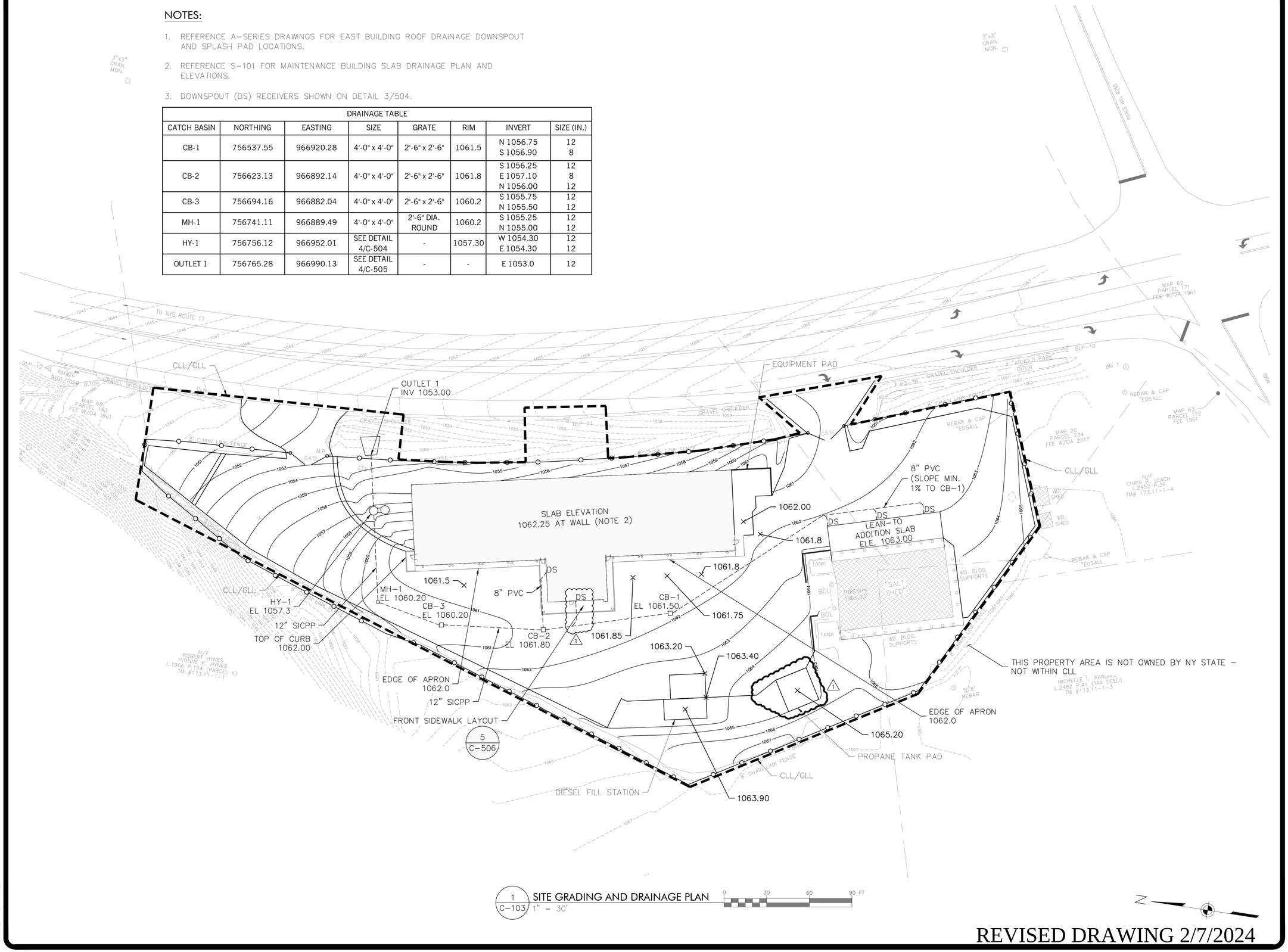
SHEET 12 OF 98

Feb 02,2024 – 7:07am
J:\19-289-0295 OGS 8 Bay Maint. HQ\CAD NEW\ADDENDUM 2\C-102.dwg
36x24 PLOT SHEET

NOTES:

1. REFERENCE A-SERIES DRAWINGS FOR EAST BUILDING ROOF DRAINAGE DOWNSPOUT AND SPLASH PAD LOCATIONS.
2. REFERENCE S-101 FOR MAINTENANCE BUILDING SLAB DRAINAGE PLAN AND ELEVATIONS.
3. DOWNSPOUT (DS) RECEIVERS SHOWN ON DETAIL 3/504.

DRAINAGE TABLE							
CATCH BASIN	NORTHING	EASTING	SIZE	GRATE	RIM	INVERT	SIZE (IN.)
CB-1	756537.55	966920.28	4'-0" x 4'-0"	2'-6" x 2'-6"	1061.5	N 1056.75 S 1056.90	12 8
CB-2	756623.13	966892.14	4'-0" x 4'-0"	2'-6" x 2'-6"	1061.8	S 1056.25 E 1057.10 N 1056.00	12 8 12
CB-3	756694.16	966882.04	4'-0" x 4'-0"	2'-6" x 2'-6"	1060.2	S 1055.75 N 1055.50	12 12
MH-1	756741.11	966889.49	4'-0" x 4'-0"	2'-6" DIA. ROUND	1060.2	S 1055.25 N 1055.00	12 12
HY-1	756756.12	966952.01	SEE DETAIL 4/C-504	-	1057.30	W 1054.30 E 1054.30	12 12
OUTLET 1	756765.28	966990.13	SEE DETAIL 4/C-505	-	-	E 1053.0	12



1 C-103 SITE GRADING AND DRAINAGE PLAN
1" = 30'
0 30 60 90 FT

N

REVISED DRAWING 2/7/2024

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DESIGN & CONSTRUCTION

CONSULTANT

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STATE OF NEW YORK · MARTIN J. WESOLOWSKI · LICENSED PROFESSIONAL ENGINEER · NO. 071414

CONTRACT:
CONSTRUCTION

TITLE:
PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION:
DOT REGION 9, BROOME COUNTY
ROUTE 26
VESTAL, NY

CLIENT:
DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 – C
DESIGNED BY:	B. PRZYBYL
DRAWN BY:	A. KELLY
FIELD CHECK:	
APPROVED:	

SHEET TITLE:
SITE GRADING AND DRAINAGE PLAN

DRAWING NUMBER:
C-103

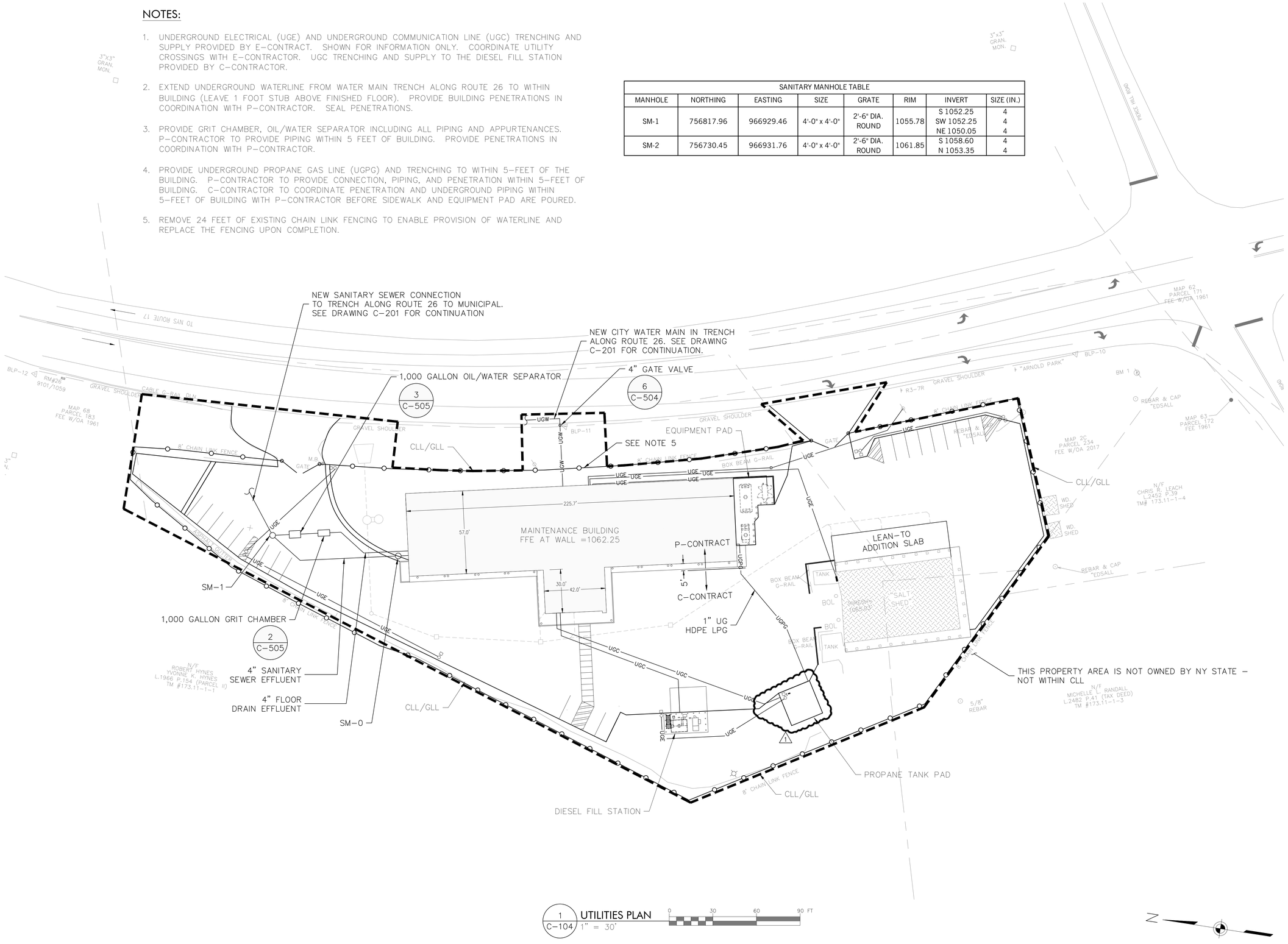
SHEET 13 OF 98

Feb 02,2024 - 7:08am
J:\19-289-0295 OGS 8 Bay Maint. HQ\CAD NEW\ADDENDUM 2\C-103.dwg
36x24 PLOT SHEET

NOTES:

1. UNDERGROUND ELECTRICAL (UGE) AND UNDERGROUND COMMUNICATION LINE (UGC) TRENCHING AND SUPPLY PROVIDED BY E–CONTRACT. SHOWN FOR INFORMATION ONLY. COORDINATE UTILITY CROSSINGS WITH E–CONTRACTOR. UGC TRENCHING AND SUPPLY TO THE DIESEL FILL STATION PROVIDED BY C–CONTRACTOR.
2. EXTEND UNDERGROUND WATERLINE FROM WATER MAIN TRENCH ALONG ROUTE 26 TO WITHIN BUILDING (LEAVE 1 FOOT STUB ABOVE FINISHED FLOOR). PROVIDE BUILDING PENETRATIONS IN COORDINATION WITH P–CONTRACTOR. SEAL PENETRATIONS.
3. PROVIDE GRIT CHAMBER, OIL/WATER SEPARATOR INCLUDING ALL PIPING AND APPURTENANCES. P–CONTRACTOR TO PROVIDE PIPING WITHIN 5 FEET OF BUILDING. PROVIDE PENETRATIONS IN COORDINATION WITH P–CONTRACTOR.
4. PROVIDE UNDERGROUND PROPANE GAS LINE (UGPG) AND TRENCHING TO WITHIN 5–FEET OF THE BUILDING. P–CONTRACTOR TO PROVIDE CONNECTION, PIPING, AND PENETRATION WITHIN 5–FEET OF BUILDING. C–CONTRACTOR TO COORDINATE PENETRATION AND UNDERGROUND PIPING WITHIN 5–FEET OF BUILDING WITH P–CONTRACTOR BEFORE SIDEWALK AND EQUIPMENT PAD ARE POURED.
5. REMOVE 24 FEET OF EXISTING CHAIN LINK FENCING TO ENABLE PROVISION OF WATERLINE AND REPLACE THE FENCING UPON COMPLETION.

SANITARY MANHOLE TABLE							
MANHOLE	NORTHING	EASTING	SIZE	GRATE	RIM	INVERT	SIZE (IN.)
SM-1	756817.96	966929.46	4'-0" x 4'-0"	2'-6" DIA. ROUND	1055.78	S 1052.25 SW 1052.25 NE 1050.05	4 4 4
SM-2	756730.45	966931.76	4'-0" x 4'-0"	2'-6" DIA. ROUND	1061.85	S 1058.60 N 1053.35	4 4



1 C–104 UTILITIES PLAN 1" = 30'

0 30 60 90 FT

N

REVISED DRAWING 2/7/2024

Feb 02,2024 – 7:08am
J:\19–289–0295 005 8 Bay Maint. HQ\CAD NEW\ADDENDUM 2\C–104.dwg
36x24 PLOT SHEET

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DESIGN & CONSTRUCTION

CONSULTANT

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3 Aerial Way, Syosset, New York

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STATE OF NEW YORK MARTIN J. WEGLOWSKI LICENSED PROFESSIONAL ENGINEER NO. 071474

CONTRACT: CONSTRUCTION

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

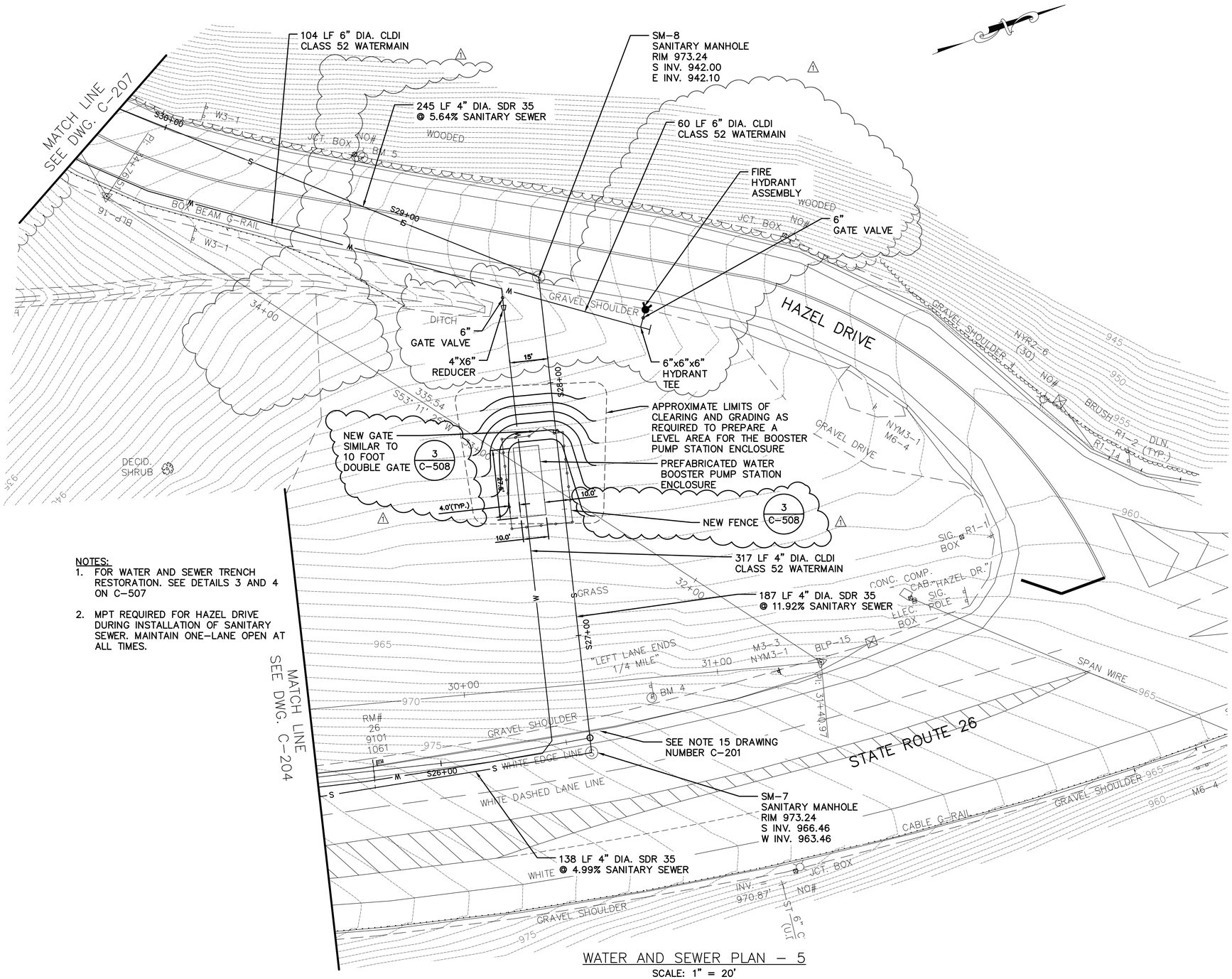
MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 – C
DESIGNED BY:	B. PRZYBYL
DRAWN BY:	A. KELLY
FIELD CHECK:	
APPROVED:	

SHEET TITLE: UTILITIES PLAN

DRAWING NUMBER: C–104

SHEET 14 OF 98



NOTES:

1. FOR WATER AND SEWER TRENCH RESTORATION. SEE DETAILS 3 AND 4 ON C-507
2. MPT REQUIRED FOR HAZEL DRIVE DURING INSTALLATION OF SANITARY SEWER. MAINTAIN ONE-LANE OPEN AT ALL TIMES.

WATER AND SEWER PLAN – 5

SCALE: 1" = 20'

REVISED DRAWING 2/7/2024

Feb 02,2024 - 11:13am
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36x24 PLOT SHEET

NEW YORK STATE OF OPPORTUNITY. | Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT

LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York

CERTIFICATE OF AUTHORIZATION #: 017995

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STATE OF NEW YORK
KENNETH J. HOUSTON
LICENSED PROFESSIONAL ENGINEER
059134

CONTRACT:
— — — —

TITLE:
PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION:
DOT REGION 9, BROOME COUNTY
ROUTE 26
VESTAL, NY

CLIENT:
DEPARTMENT OF TRANSPORTATION

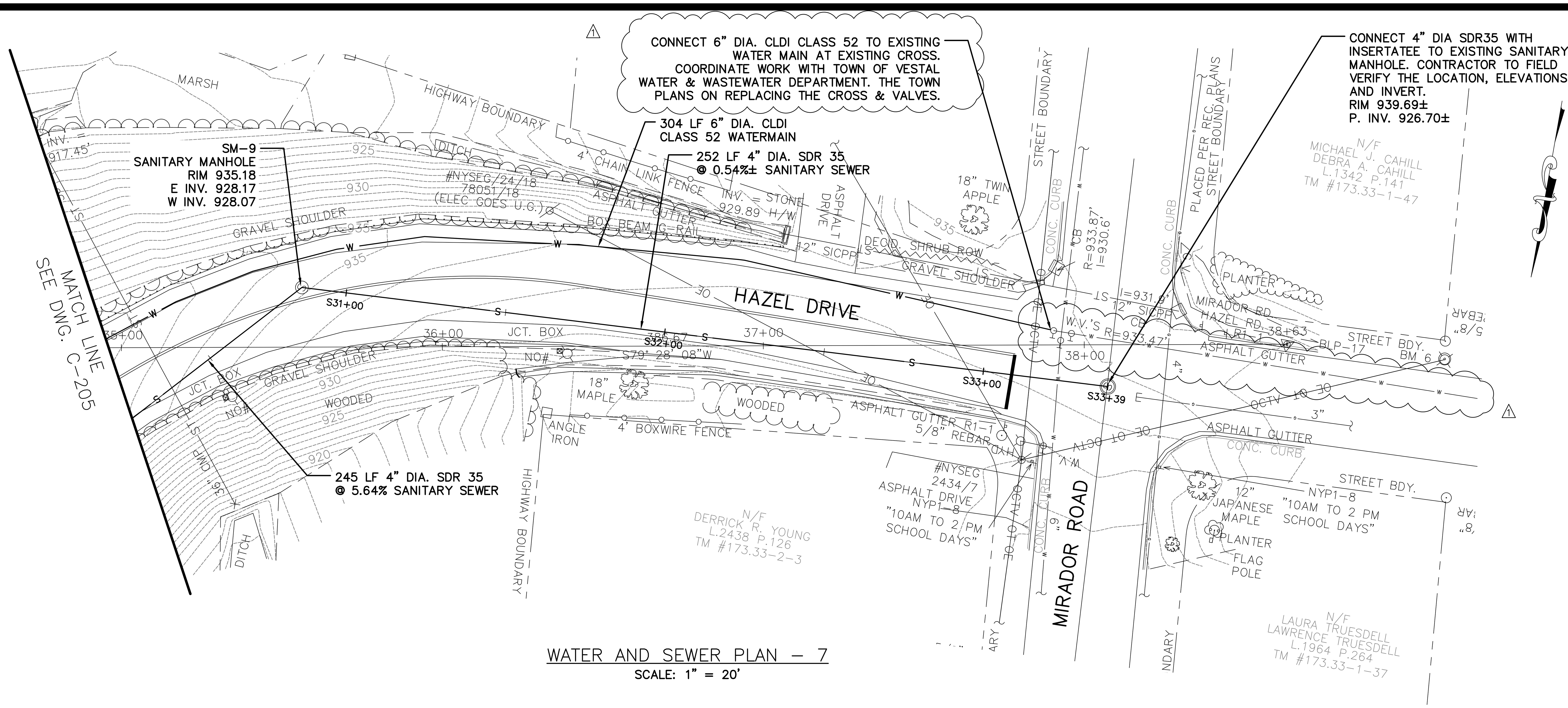
MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 – C
DESIGNED BY:	JT
DRAWN BY:	HIK
FIELD CHECK:	
APPROVED:	PROJECT MANAGER

SHEET TITLE:
WATER AND SEWER PLAN – 5

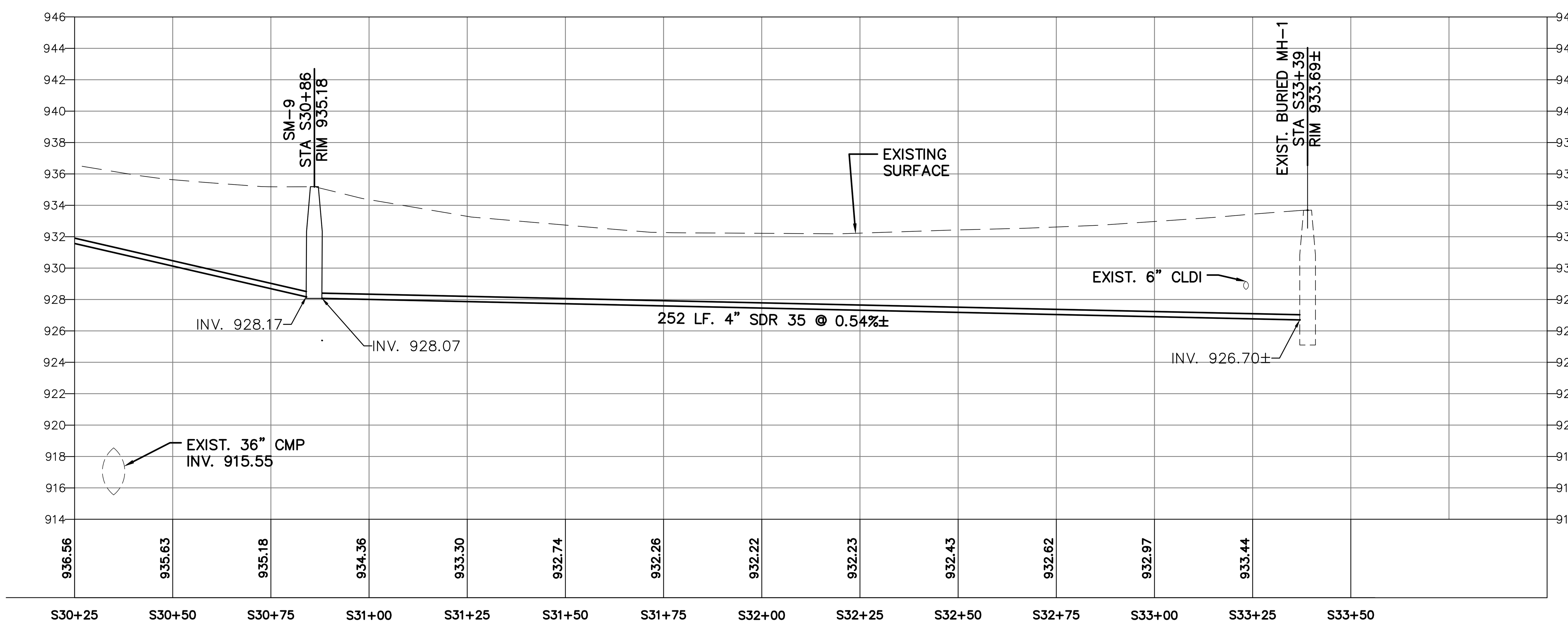
DRAWING NUMBER:
C–205

SHEET 19 OF 108



WATER AND SEWER PLAN – 7

SCALE: 1" = 20'



WATER AND SEWER PROFILE – 7

HORIZONTAL SCALE: 1" = 20'

VERTICAL SCALE: 1" = 5'

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. | Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT

LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York

CERTIFICATE OF AUTHORIZATION #: 017995

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STATE OF NEW YORK · KENNETH J. HOLMES · 059134 · LICENSED PROFESSIONAL ENGINEER

CONTRACT: ————

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER: 46063 – C

DESIGNED BY: JT

DRAWN BY: HIK

FIELD CHECK:

APPROVED: PROJECT MANAGER

SHEET TITLE: WATER AND SEWER PLAN AND PROFILE – 7

DRAWING NUMBER: C-207

SHEET 21 OF 108

Feb 02,2024 – 9:32am
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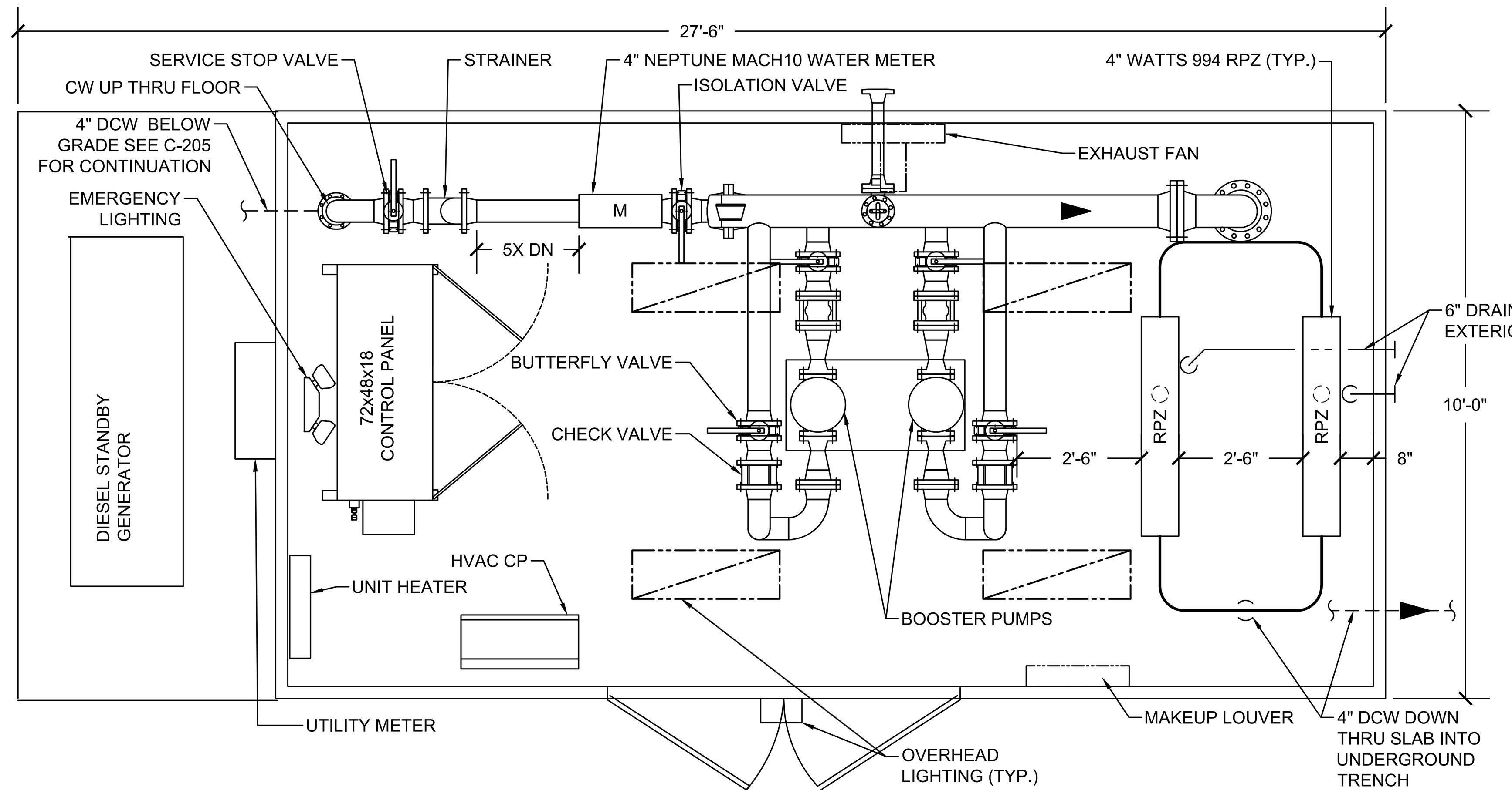
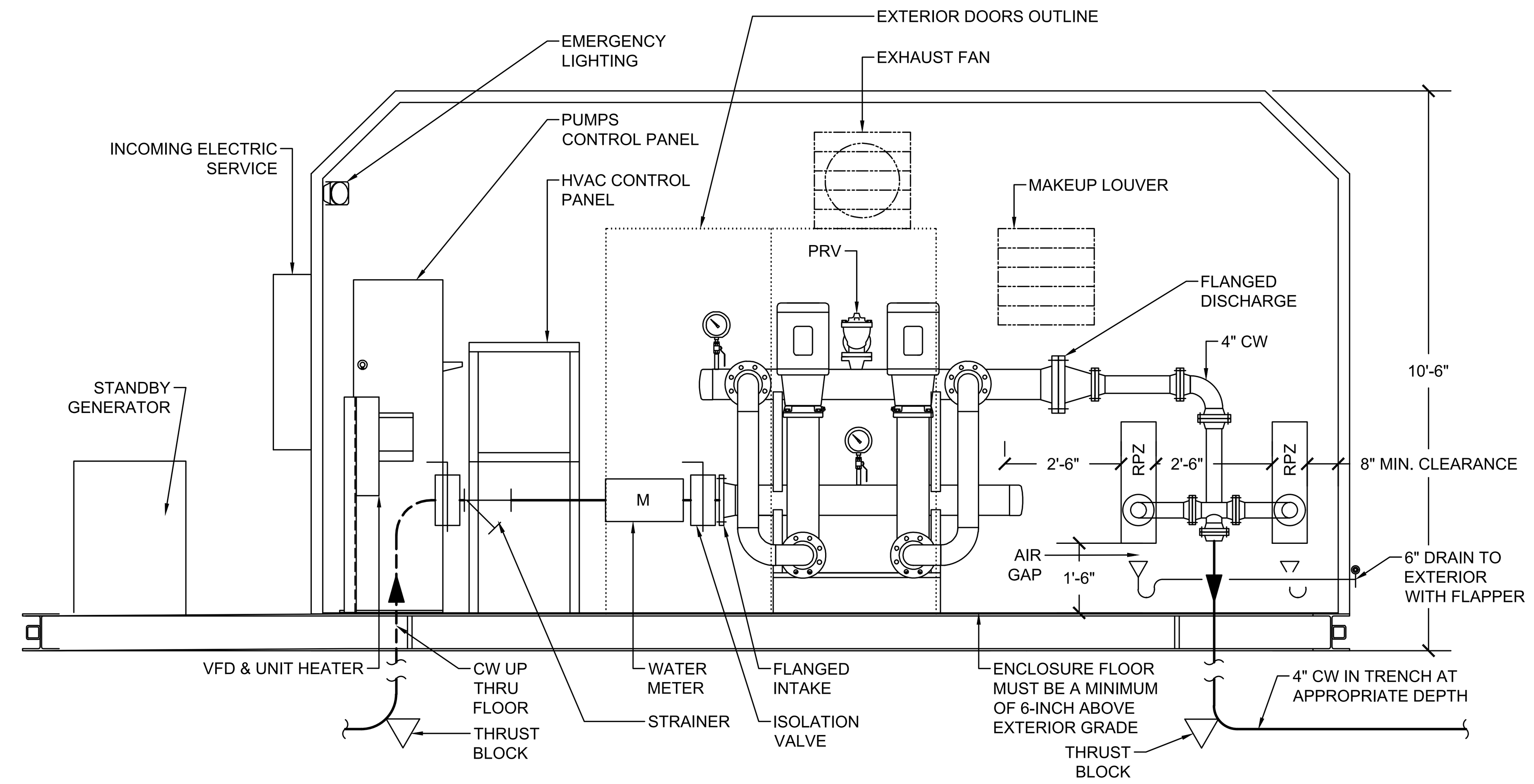


1 C-209 **BOOSTER PUMP ENCLOSURE FLOOR PLAN**
SCALE: NOT TO SCALE

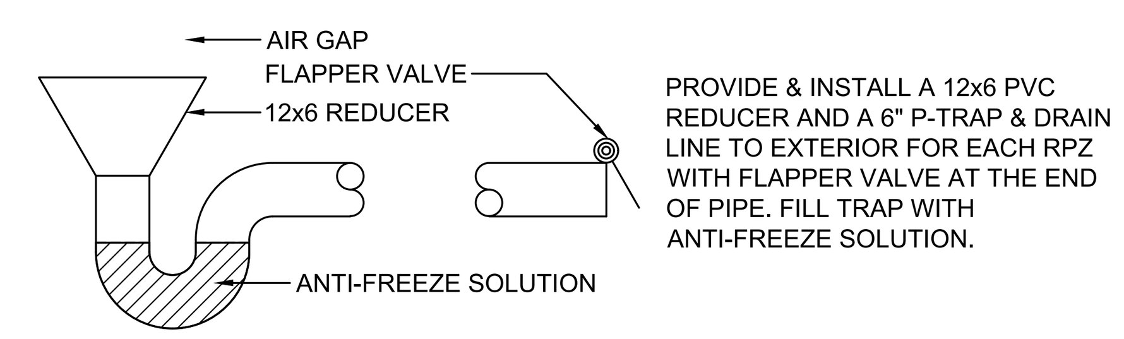


2 C-209 **BOOSTER PUMP ENCLOSURE ELEVATION**
SCALE: NOT TO SCALE

GENERAL NOTES:

1. BOOSTER PUMP ENCLOSURE DRAWINGS ARE CONCEPTUAL AND ARE SUBJECT TO CHANGE BY MANUFACTURER OF THE BOOSTER PUMP ENCLOSURE. THE DEPICTED DRAWINGS ARE SHOWN FOR REFERENCE AND TO COMMUNICATE SCOPE AND REQUIREMENTS. CONTRACTOR IS RESPONSIBLE TO OBTAIN FINAL DRAWINGS FROM THE VENDOR AND COORDINATE WITH STRUCTURAL SLAB SIZE, FLOOR PENETRATION LOCATIONS, OWNER AND LOCAL WATER DISTRICT AND ELECTRICAL UTILITY PRIOR TO INSTALLATION.
2. THE BOOSTER PUMP ENCLOSURE SHALL BE PROVIDED BY THE FABRICATOR/ASSEMBLER VENDOR, REQUIRING MINIMAL FIELD ASSEMBLY TO PUT INTO SERVICE. UTILITY CONNECTIONS (CITY WATER AND ELECTRIC) TO BE COMPLETED BY C-CONTRACTOR AND LOCAL ELECTRIC UTILITY (NYSEG).
3. THE ENCLOSURE SKID WILL BE SECURED TO A PROPERLY SIZED REINFORCED CONCRETE PAD. THE CONCRETE PAD WILL BE SIZED TO ALLOW FOR REQUIRED ENCLOSURE ATTACHMENT. CONSTRUCTION DETAILS OF THE CONCRETE PAD WILL BE SIMILAR TO THOSE DEPICTED ON DRAWING C-512 DETAIL 3. THE CONTRACTOR WILL COORDINATE WITH THE PREFABRICATED BUILDING SUPPLIER AS REQUIRED TO ESTABLISH THE REQUIRED CONSTRUCTION DETAILS FOR THE BOOSTER PUMP ENCLOSURE CONCRETE PAD. (1)
4. COORDINATE ELECTRICAL SERVICE INSTALLATION REQUIREMENTS WITH LOCAL UTILITY (NYSEG) PRIOR TO INSTALLATION.
5. SOME ITEMS ARE NOT DEPICTED ON THE DRAWINGS BUT ARE INCLUDED IN THE BOOSTER PUMP ENCLOSURE SCOPE OF SUPPLY:
   - FLOOD DETECTION AND WIRELESS ALERTS FOR RPZ BACKFLOW PREVENTER INSTALLATIONS (WATTS SENTRYPLUS ALERT UPGRADE KIT OR APPROVED EQUAL)
   - REMOTE CELL MONITORING WITH FACTORY SUPPORT REMOTE ACCESS
   - COMBINATION AIR CONDITIONER AND HEATER (HEAT PUMP)
   - RPZ INDIRECT DRAINS TO DISCHARGE TO OUTSIDE WITH FLAPPER

REVISED DRAWING 2/7/2024



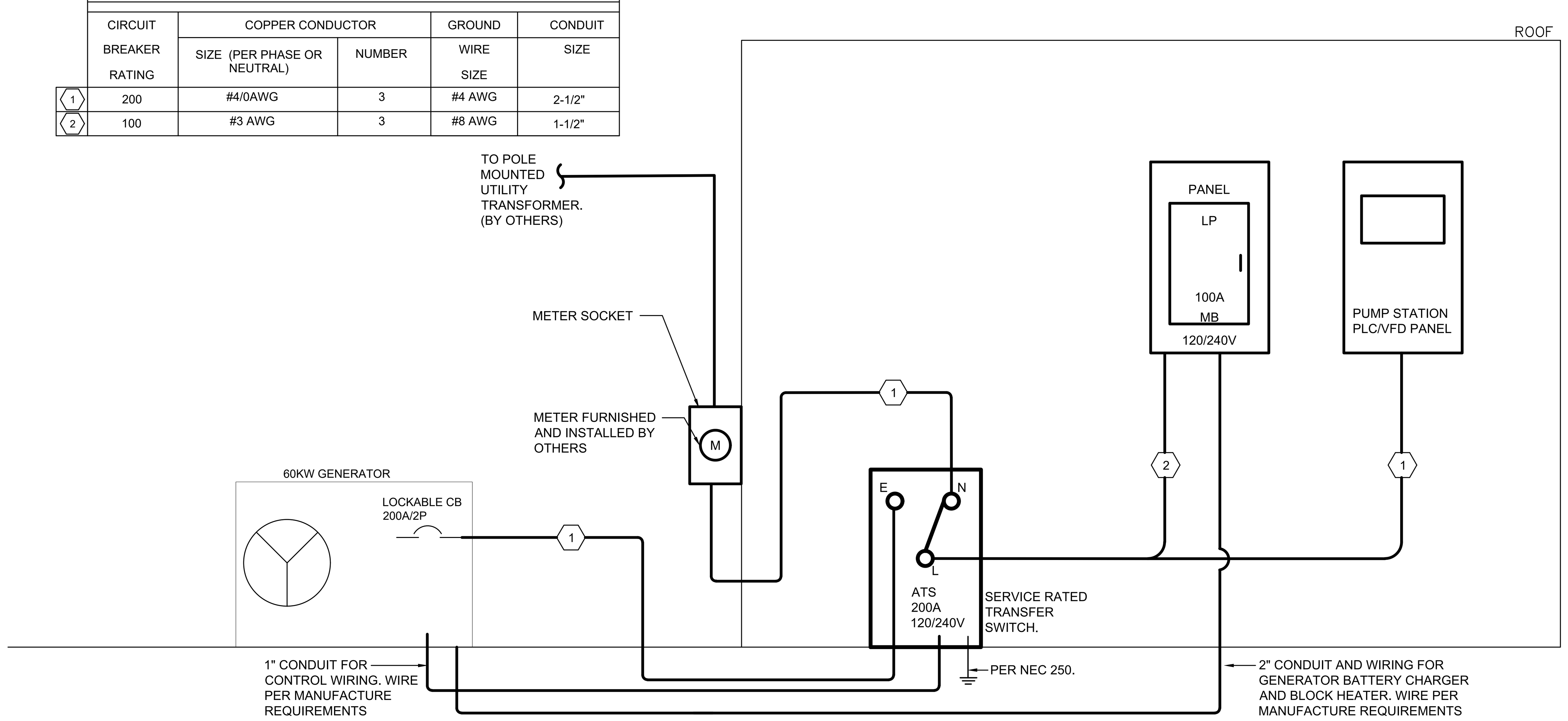
5 C-209 **INDIRECT DRAIN FOR RPZ DETAIL**
SCALE: NONE

NOTES:

1.) THE POINT OF ATTACHMENT ON THE BUILDING TO BE DETERMINED BY THE REQUIRED MINIMUM GROUND CLEARANCES OF SERVICE DROP CONDUCTORS.
2.) ALL WIRING AND MATERIALS MUST CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AND TO APPICABLE LOCAL CODES WHERE CONFLICT EXISTS, THE MORE STRINGENT CODE WILL APPLY.

FEEDER CABLE SIZING SCHEDULE

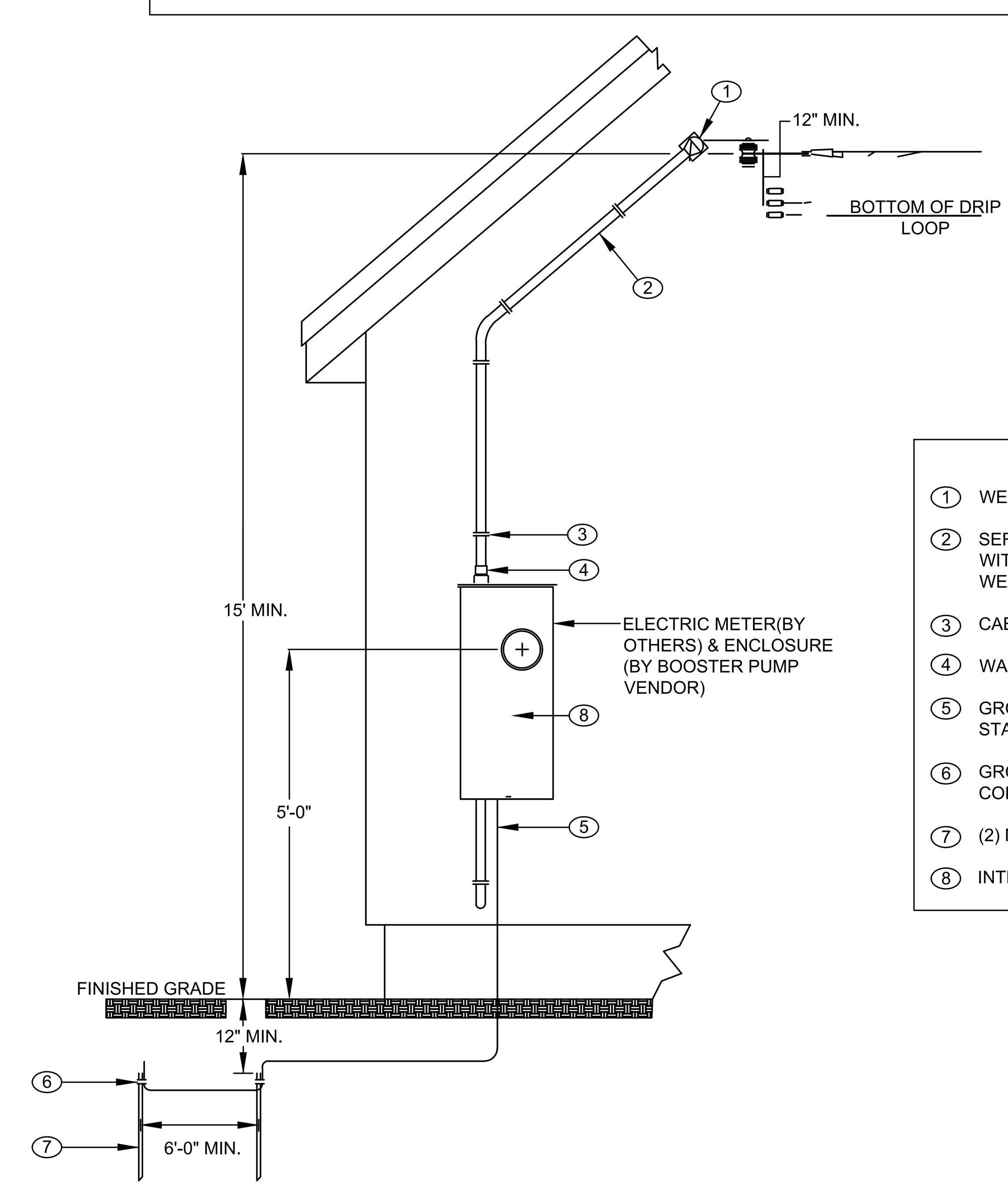
	CIRCUIT BREAKER RATING	COPPER CONDUCTOR SIZE (PER PHASE OR NEUTRAL)	COPPER CONDUCTOR NUMBER	GROUND WIRE SIZE	CONDUIT SIZE
1	200	#4/0AWG	3	#4 AWG	2-1/2"
2	100	#3 AWG	3	#8 AWG	1-1/2"



NOTES:

1.) WORK SHOWN IS TO BE PROVIDED AS PART OF THE BOOSTER PUMP ENCLOSURE PACKAGE.

3 C-209 **ELECTRICAL RISER DIAGRAM**
SCALE: NONE



MATERIALS

1. WEATHERHEAD
2. SERVICE ENTRANCE CABLE TO BE INSTALLED WITH END EXTENDING 3'-0" OUTSIDE OF WEATHERHEAD FOR DRIP LOOP.
3. CABLE CLIPS INSTALLED EVERY 36".
4. WATERTIGHT CONNECTOR
5. GROUND WIRE NO.4 COPPER (MINIMUM SIZE) STAPLED EVERY 6".
6. GROUND ROD CONNECTORS (2)MIN. 8'-0"X 5/8"Ø COPPER CLAD.
7. (2) MIN. 8'-0" x 5/8" DIAMETER COPPER CLAD.
8. INTERNAL SPADE CONNECTORS

4 C-209 **OVERHEAD ELECTRICAL SERVICE DETAIL**
SCALE: NONE

NEW YORK STATE OF OPPORTUNITY. Office of General Services
DESIGN & CONSTRUCTION

CONSULTANT
LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York
CERTIFICATE OF AUTHORIZATION #: 017995

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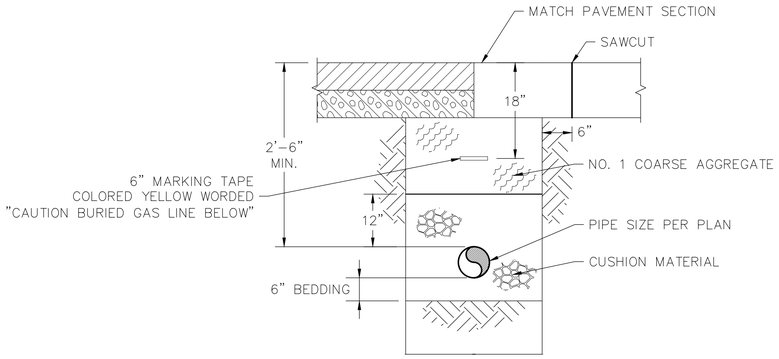
CONTRACT: CONSTRUCTION
TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS
LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY
CLIENT: DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 – C
DESIGNED BY:	PB
DRAWN BY:	PB
FIELD CHECK:	
APPROVED:	PROJECT MANAGER

SHEET TITLE: BOOSTER PUMP ENCLOSURE DRAWINGS
DRAWING NUMBER: C-209
SHEET 23 OF 108



2 / C-507 PROPANE GAS PIPE TRENCH DETAIL - NTS

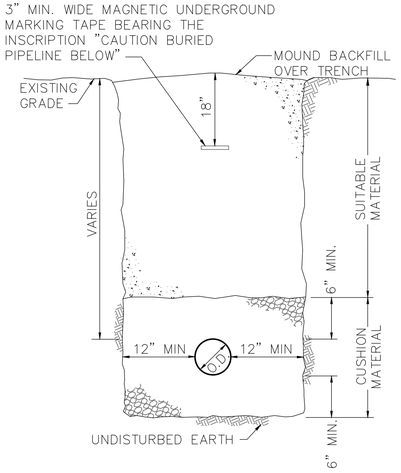
PROPANE GAS PIPING INSTALLATION NOTES:

1. INSTALL PROPANE GAS PIPING A MINIMUM OF 2'-6" BELOW FINISHED GRADE (TOP OF PIPE).

2. PROVIDE TRENCHING, CUSHION MATERIAL, MARKING TAPE, BACKFILL, AND SITE RESTORATION/FINISHED CONDITION.

3. PIPING WITHIN 5 FEET OF THE BUILDING IS CONSTRUCTED UNDER THE PLUMBING CONTRACT. GAS LINE INSTALLATION PIPING BEYOND 5 FEET OF THE BUILDING IS CONSTRUCTED UNDER THE CONSTRUCTION CONTRACT.

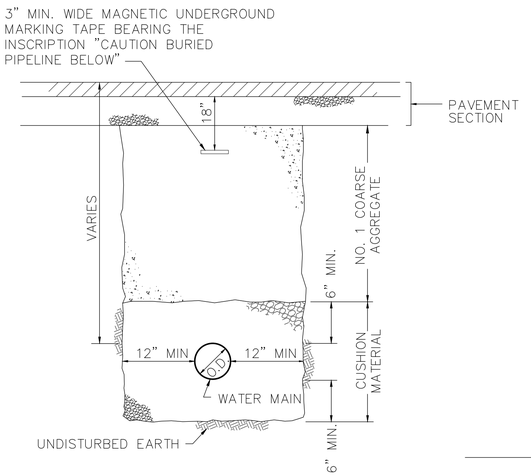
4. METER AND REGULATOR INSTALLATION ARE NOT INSTALLED UNDER THE CONSTRUCTION CONTRACT. COORDINATE CONNECTIONS TO REGULATOR AND METER WITH PLUMBING CONTRACTOR.



3 / C-507 TYPICAL SANITARY/STORM TRENCH DETAIL EARTH/ROCK
NTS

NOTE:

1. WHERE SANITARY AND STORM LINES CROSS, THE TOP OF THE SANITARY LINE MUST BE 1-FOOT BELOW THE BOTTOM OF THE STORM LINE.

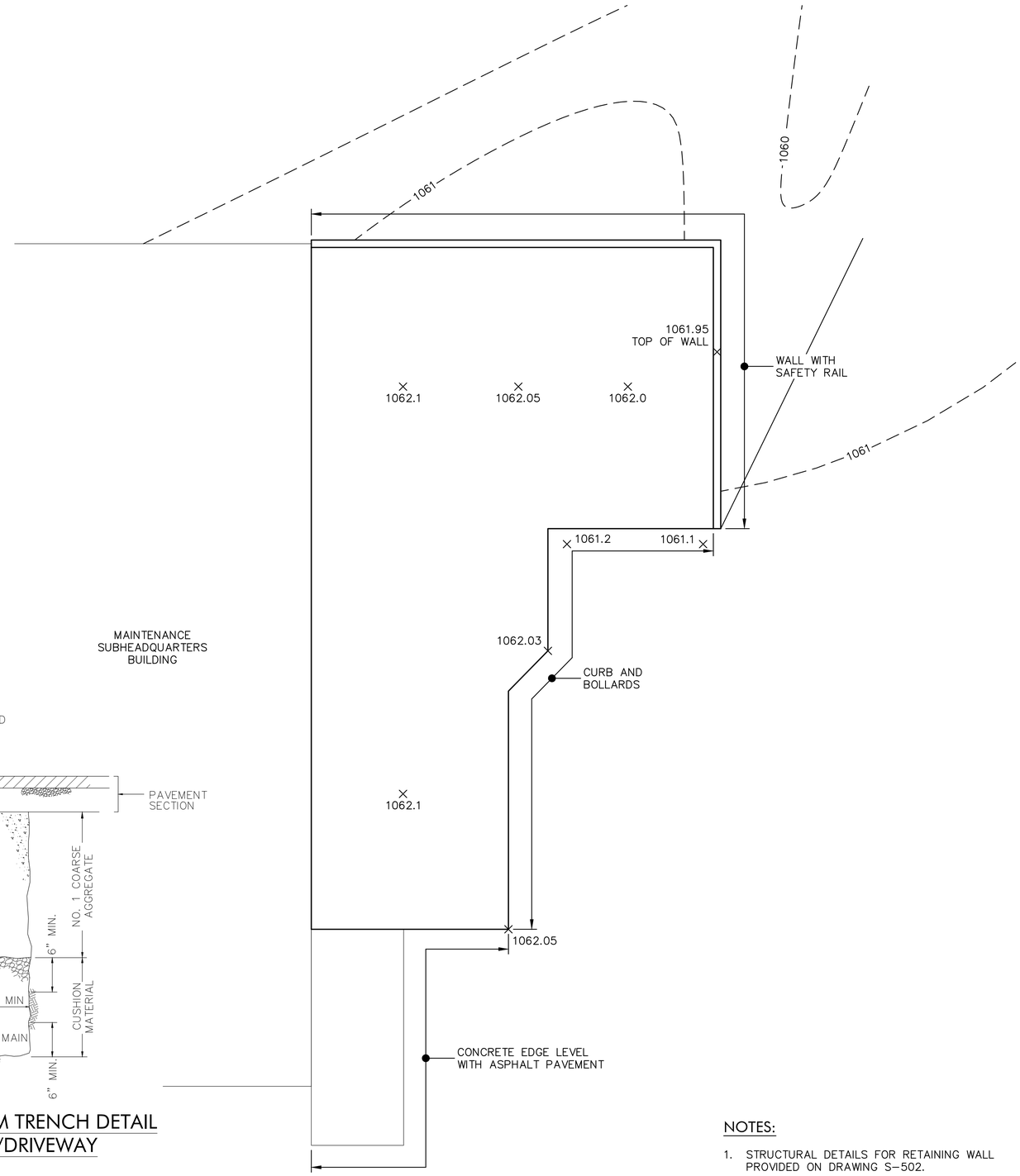


4 / C-507 TYPICAL SANITARY/STORM TRENCH DETAIL UNDER PAVEMENT/DRIVEWAY
NTS

NOTE:

1. WHERE SANITARY AND STORM LINES CROSS, THE TOP OF THE SANITARY LINE MUST BE 1-FOOT BELOW THE BOTTOM OF THE STORM LINE.

2. WHERE NEW STORM OR SANITARY PIPE IS INSTALLED UNDER EXISTING ASPHALT PAVEMENT SECTIONS THAT WILL REMAIN, SAW CUT THE PAVEMENT CLEANLY BEFORE TRENCHING AND REPAIR THE PAVEMENT ACCORDING TO DETAIL 1/C-501. 1



1 / C-508 EQUIPMENT PAD LAYOUT PLAN
1/4" = 1'-0"

NOTES:

1. STRUCTURAL DETAILS FOR RETAINING WALL PROVIDED ON DRAWING S-502.

2. SAFETY RAIL SPECIFIED IN SECTION 068100.

REVISED DRAWING 2/7/2024

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DESIGN & CONSTRUCTION

CONSULTANT

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STATE OF NEW YORK · MARTIN J. WESOLOWSKI · No. 071494 · LICENSED PROFESSIONAL ENGINEER

CONTRACT: CONSTRUCTION

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER: 46063 - C
DESIGNED BY: M. WESOLOWSKI
DRAWN BY: A. KELLY
FIELD CHECK:
APPROVED:

SHEET TITLE: SITE DETAILS

DRAWING NUMBER: C-507

SHEET 21 OF 98

Feb 02,2024 - 7:08am
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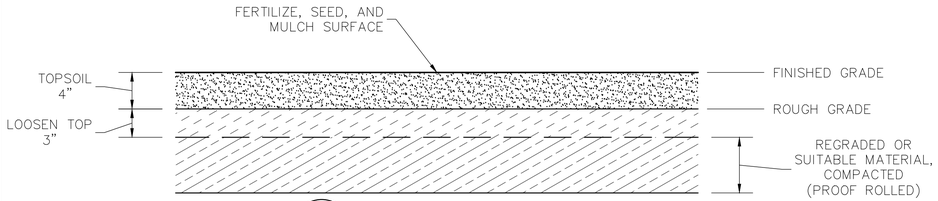
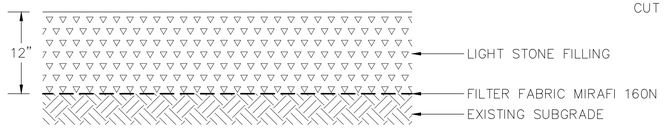


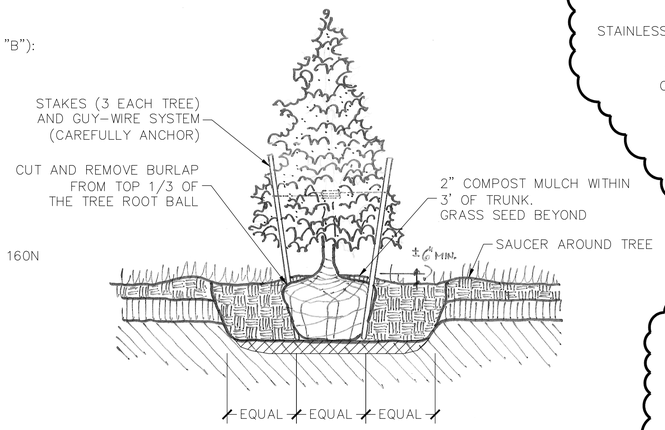
1 C-508 TURF DETAIL - NTS

NOTE:

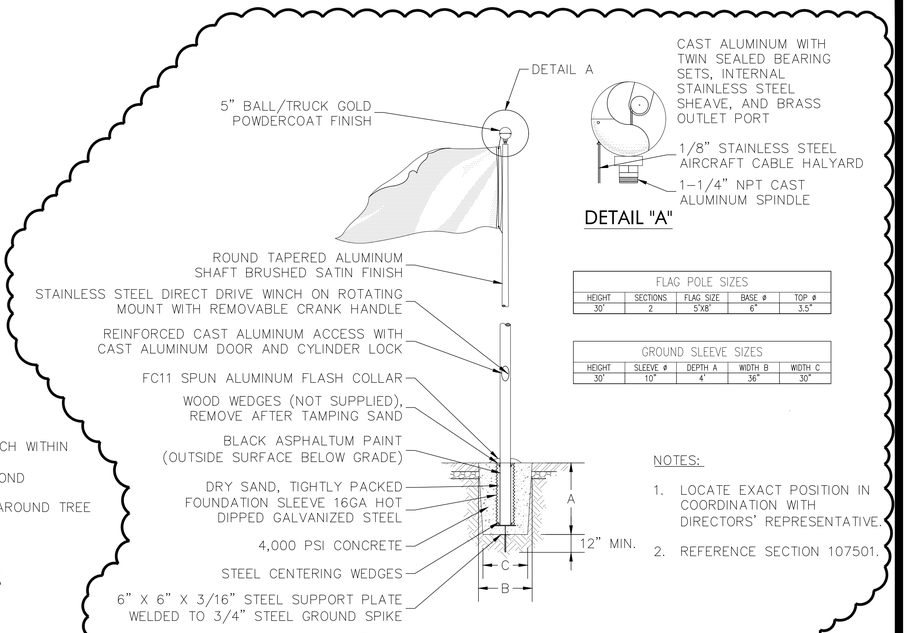
1. RESTORE UNPAVED DISTURBED AREAS WITH TURF (SEED MIX "A" OR "B"): TOPSOIL, SEED, FERTILIZER AND MULCH.



4 C-508 LIGHT STONE FILLING SECTION - NTS



2 C-508 EVERGREEN TREE PLANTING DETAIL - NTS



DETAIL "A"

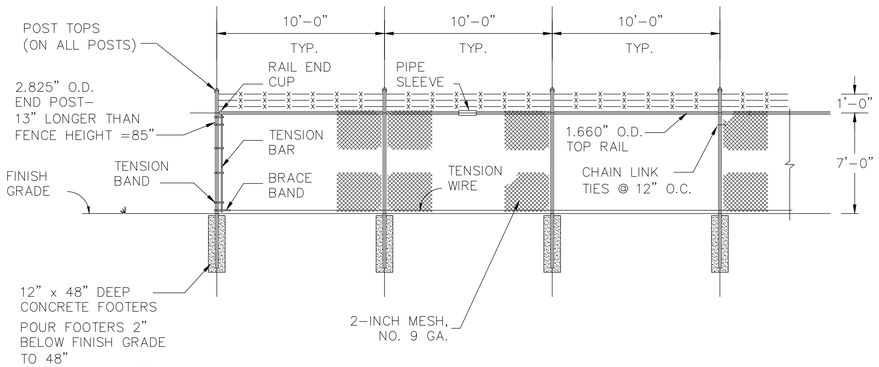
FLAG POLE SIZES				
HEIGHT	SECTIONS	FLAG SIZE	BASE ø	TOP ø
30'	2	5'X8'	6"	3.5"

GROUND SLEEVE SIZES				
HEIGHT	SLEEVE ø	DEPTH A	WIDTH B	WIDTH C
30'	10"	4'	36"	30"

NOTES:

1. LOCATE EXACT POSITION IN COORDINATION WITH DIRECTORS' REPRESENTATIVE.
2. REFERENCE SECTION 107501.

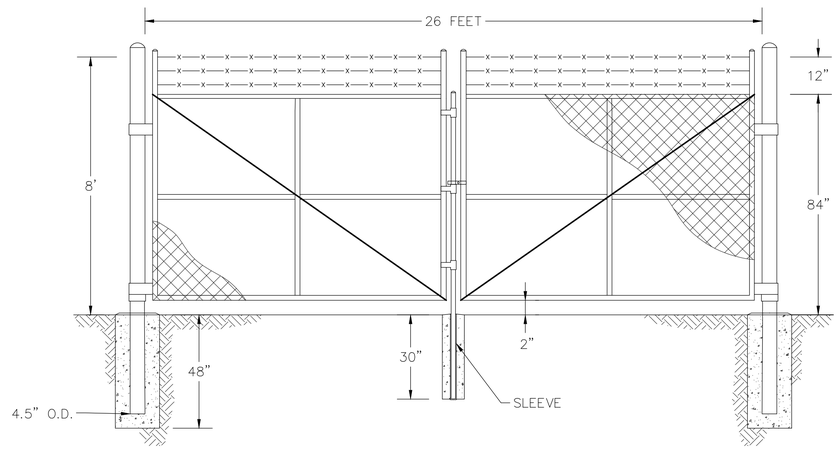
6 C-508 FLAG POLE DETAIL - NTS



3 C-508 7'-0" CHAIN LINK/BARBED WIRE LINE FENCE DETAIL - NTS

NOTE:

1. END POSTS, CORNER POSTS AND PULL POSTS ARE 2.875" O.D. LINE POSTS ARE 2.325" O.D.
2. FENCE DETAILS PROVIDED IN SECTION 323113.



5 C-508 26 FOOT DOUBLE GATE 8' TOTAL HEIGHT - NTS

NOTE:

1. GATE SPECIFICATIONS PROVIDED IN SECTION 323113.

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT

LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York

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STATE OF NEW YORK · MARTIN J. WESOLOWSKI · No. 071474 · LICENSED PROFESSIONAL ENGINEER

CONTRACT:
CONSTRUCTION

TITLE:
PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION:
DOT REGION 9, BROOME COUNTY
ROUTE 26
VESTAL, NY

CLIENT:
DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 — C
DESIGNED BY:	B. PRZYBYL
DRAWN BY:	A. KELLY
FIELD CHECK:	
APPROVED:	

SHEET TITLE:
TURF, RESTORATION, FLAG POLE, FENCE AND GATE DETAILS

DRAWING NUMBER:
C-508

SHEET 22 OF 98

Feb 02,2024 - 10:38am
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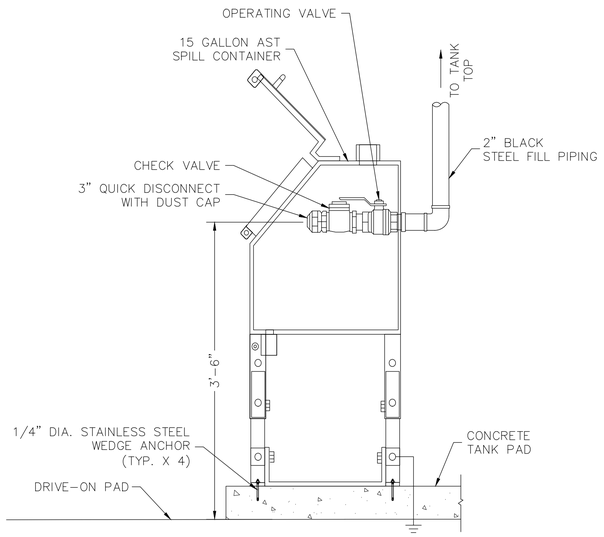
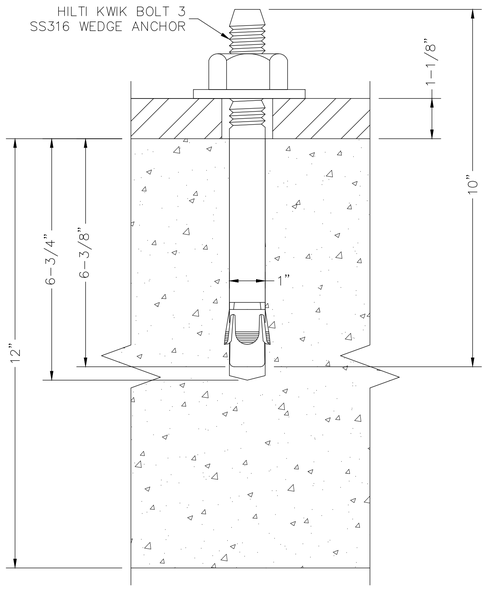
36x24 PLOT SHEET



1 / C-512 **REMOTE FILL SPILL CONTAINER DETAIL**

NOT TO SCALE

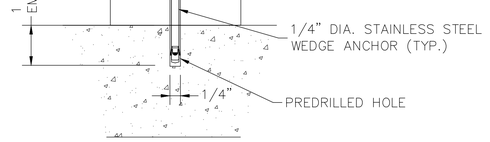


7 / C-512 **TYPICAL TANK ANCHOR BOLT**

NOT TO SCALE

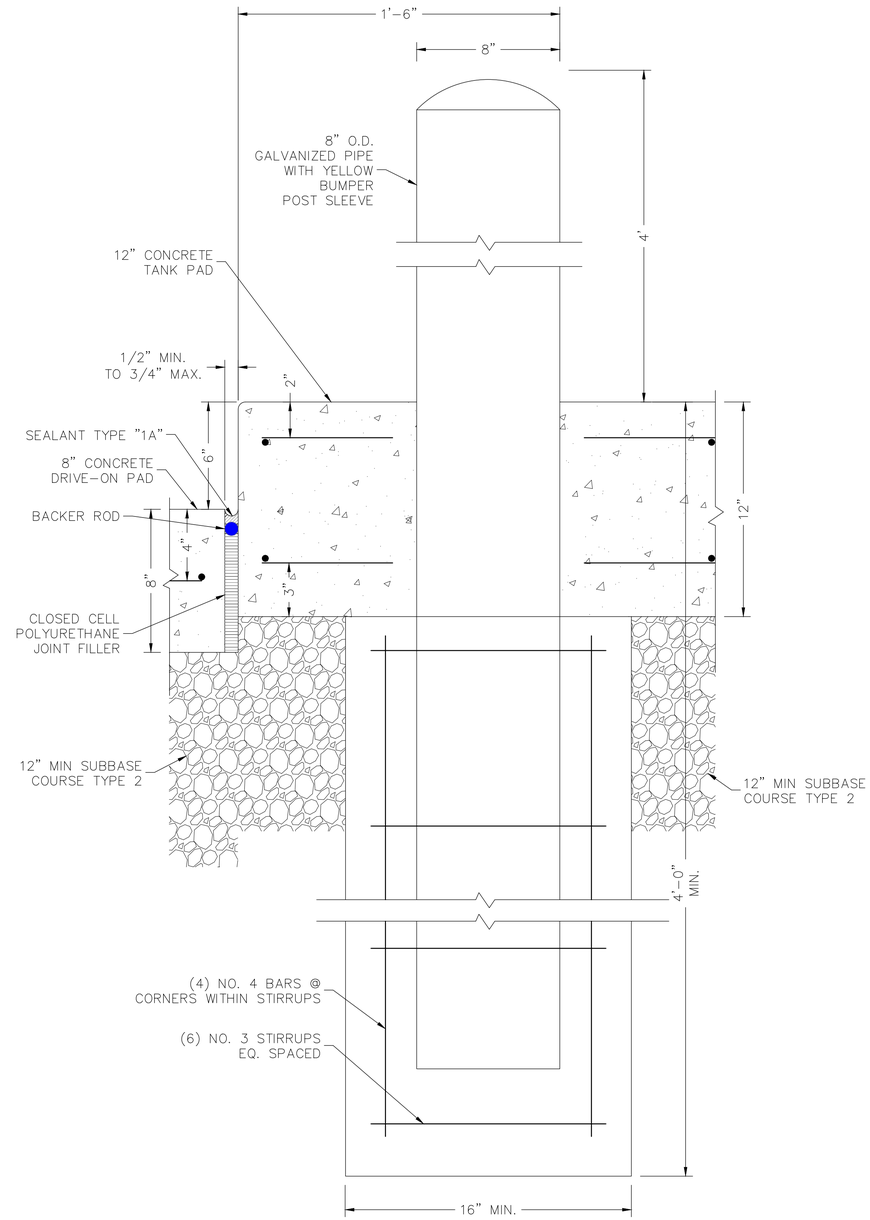
NOTES:

1. CONCRETE FOR THE SLAB-ON-GRADE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI.
2. ANCHOR RODS SHALL BE 7/8" DIAMETER AND HAVE AN ULTIMATE TENSILE STRENGTH OF 60 KSI.
3. PITCH CONCRETE TANK SLAB 1/8 INCH PER FOOT TO PREVENT PONDING OF WATER.
4. FILL INTERIOR OF BOLLARD WITH 4,000 PSI CONCRETE.
5. SET BOTTOM OF PIPE AT 3'-6" BELOW GRADE. 1



8 / C-512 **DISPENSER, STAIR, AND REMOTE FILL ANCHOR BOLT**

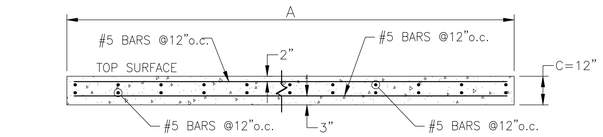
NOT TO SCALE



6 / C-512 **TANK/DRIVE-ON PAD EXPANSION JOINT AND BOLLARD DETAIL**

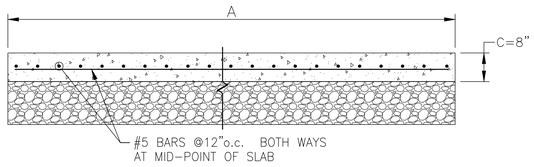
3 0 3

SCALE IN INCHES



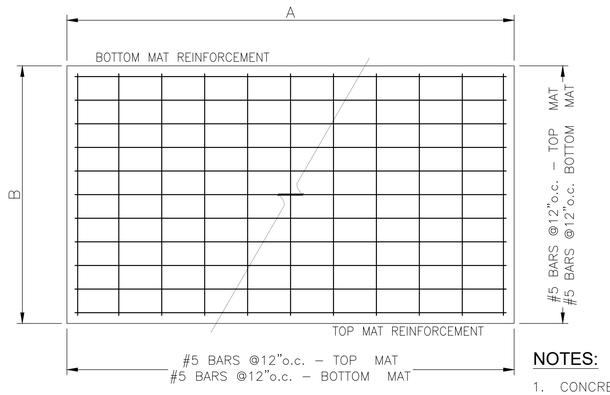
3 / C-512 **12" CONCRETE TANK PAD ELEVATION**

NOT TO SCALE



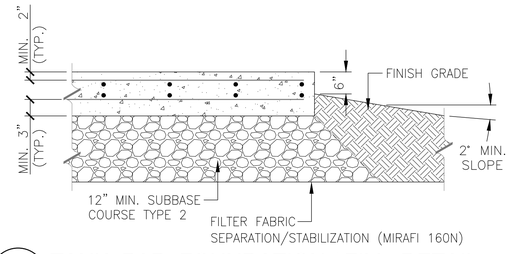
2 / C-512 **8" CONCRETE DRIVE-ON PAD ELEVATION**

NOT TO SCALE



4 / C-512 **CONCRETE TANK PAD PLAN**

NOT TO SCALE



5 / C-512 **TANK PAD FOUNDATION / FILL DETAIL**

NOT TO SCALE

NOTES:

1. CONCRETE PAD DIMENSIONS SHALL BE DETERMINED BY SITE-SPECIFIC CONDITIONS AND FUEL SYSTEM REQUIREMENTS.
2. PROVIDE A ½" CHAMFER AT ALL EXPOSED CORNERS AND EDGES OF CONCRETE SLABS.

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. **Office of General Services**

DESIGN & CONSTRUCTION

CONSULTANT

LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York

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STATE OF NEW YORK · MARTIN J. WESOLOWSKI · NO. 071414 · LICENSED PROFESSIONAL ENGINEER

CONTRACT: CONSTRUCTION

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 - C
DESIGNED BY:	M. WESOLOWSKI
DRAWN BY:	A. KELLY
FIELD CHECK:	
APPROVED:	

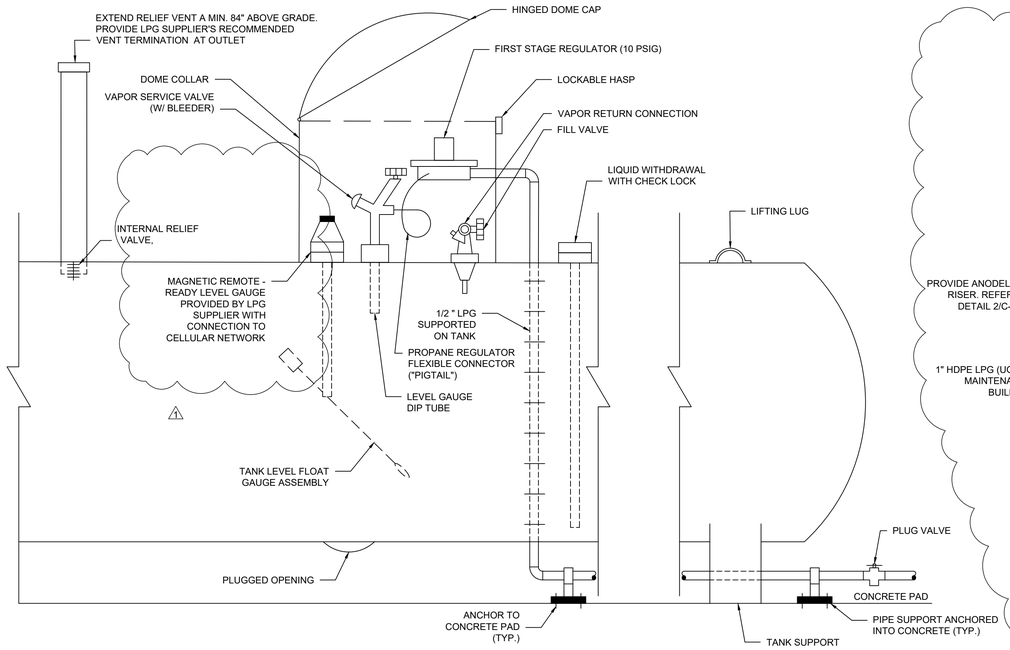
SHEET TITLE: DIESEL FILL STATION PAD DETAILS

DRAWING NUMBER: C-512

SHEET 26 OF 98

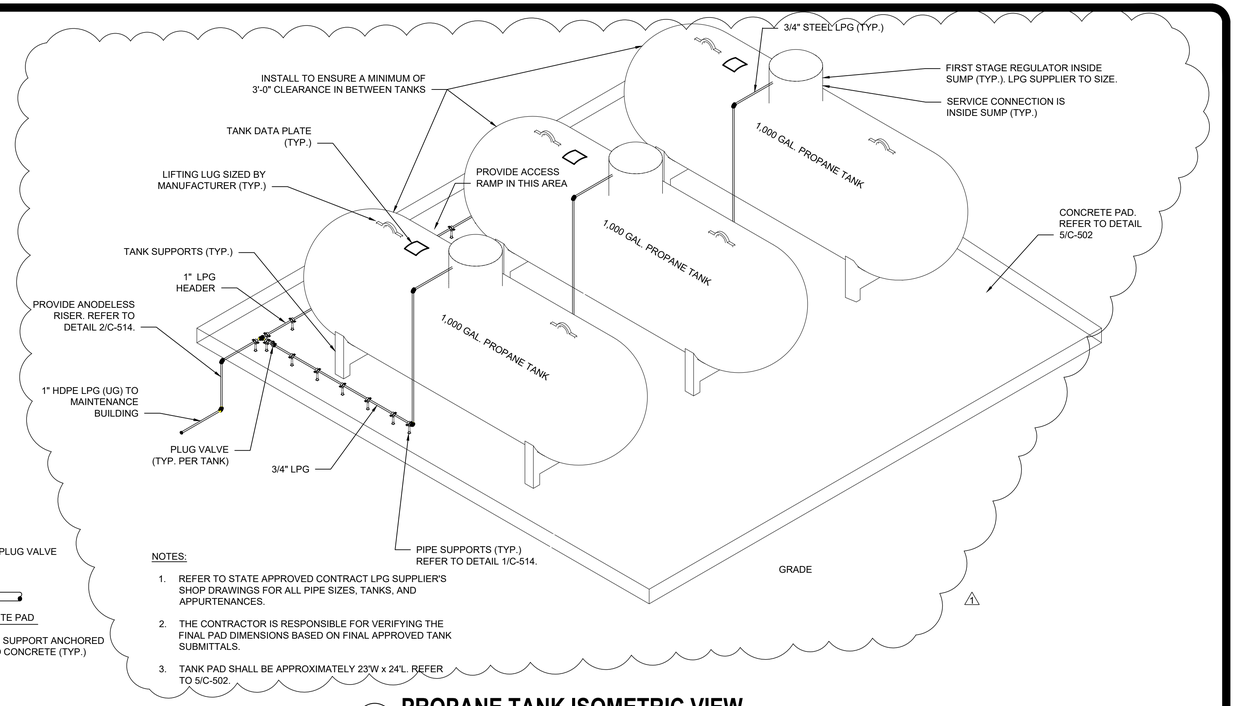
Feb. 02,2024 - 7:09am
J:\19-289-0295 OGS 8 Bay Maint. HQ\CAD NEW\ADDENDUM 2\C-512.dwg

36x24 PLOT SHEET



1 C-513 **PROPANE TANK CONNECTION AND ACCESSORY DETAIL**

NOT TO SCALE



NOTES:

1. REFER TO STATE APPROVED CONTRACT LPG SUPPLIER'S SHOP DRAWINGS FOR ALL PIPE SIZES, TANKS, AND APPURTENANCES.
2. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE FINAL PAD DIMENSIONS BASED ON FINAL APPROVED TANK SUBMITTALS.
3. TANK PAD SHALL BE APPROXIMATELY 23'W x 24'L. REFER TO 5/C-502.

2 C-513 **PROPANE TANK ISOMETRIC VIEW**

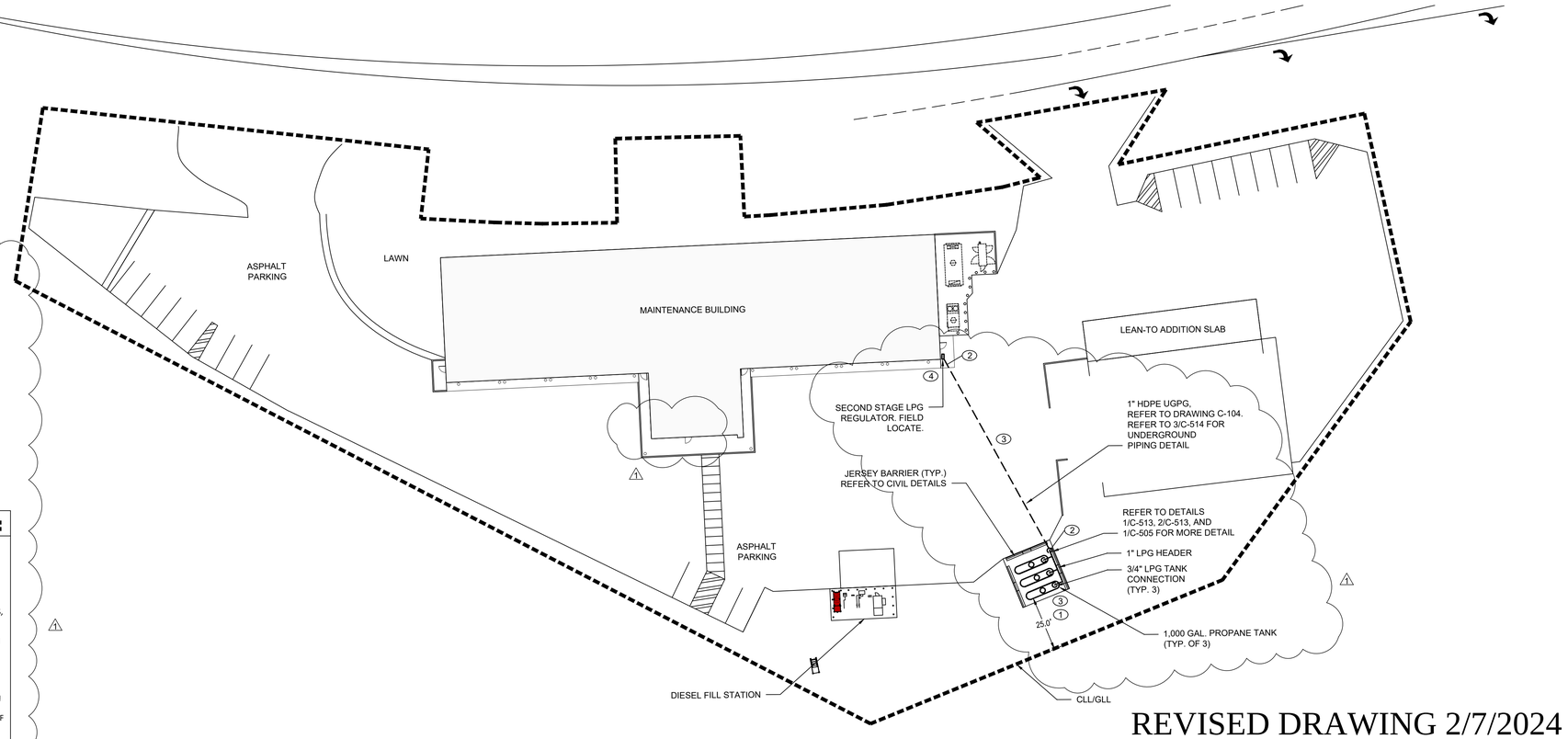
NOT TO SCALE

NOTES:

1. STATE APPROVED CONTRACT LPG SUPPLIER TO PROVIDE TANK LEVEL MONITORING SYSTEM THAT CAN BE ACCESSED THROUGH THE INTERNET. THE TANK LEVEL GAUGES SHALL BE CONNECTED VIA CELLULAR NETWORK.
2. PROVIDE ANODELESS RISER. REFER TO DETAIL 2/C-514.
3. STATE APPROVED CONTRACT LPG SUPPLIER TO PROVIDE TANKS, ALL TANK APPURTENANCES, UNDERGROUND PROPANE SUPPLY LINE TO BUILDING, PROPANE TANK COMMUNICATIONS SYSTEMS, AND LPG PIPING AND VALVES AT TANKS AS PART OF THE C-CONTRACT. P-CONTRACT TO PROVIDE DISTRIBUTION OF PROPANE GAS PIPING INSIDE THE BUILDING. TRENCHING TO BE DONE BY CIVIL CONTRACTOR.
4. LPG SUPPLIER TO SUPPLY SECOND STAGE LPG REGULATOR AT BUILDING. PLUMBING CONTRACTOR TO CONNECT THERE. LPG PROVIDER AND PLUMBING CONTRACTOR TO COORDINATE SIZE AND LOCATION OF REGULATOR.

DELEGATED DESIGN NOTES:

1. THE TANKS SHALL BE SUPPLIED BY STATE APPROVED CONTRACT LPG SUPPLIER AS PART OF THE CIVIL CONTRACT. THE LPG SUPPLIER IS RESPONSIBLE FOR THE DELEGATED DESIGN.
2. THE DRAWINGS FOR THE LIQUIFIED-PETROLEUM GAS (LPG OR PROPANE) CONTAINERS, PIPING, AND APPURTENANCES ARE SCHEMATIC IN NATURE.
3. LPG SUPPLIER SHALL PROVIDE FOR THE DESIGN OF ALL LPG CONTAINERS, SUPPORTS, VALVES, PIPING, GAUGES, AND APPURTENANCES. FERRELLGAS SHALL PROVIDE ALL DESIGN AND CODE CALCULATIONS FOR THE LPG CONTAINERS, WHICH SHALL CONFORM TO THE LATEST EDITION OF THE ASME PRESSURE VESSEL CODE, SECTION VIII, DIVISION 1.
4. LPG SUPPLIER SHALL PROVIDE FOR THE DESIGN OF ALL SUPPORTS FOR THE CONTAINERS AND PIPING AS WELL AS DESIGN OF CONTAINER LIFTING LUGS.
5. LPG SUPPLIER SHALL PROVIDE FOR THE SELECTION, DESIGN, AND IMPLEMENTATION OF ALL VALVES, SAFETIES, AND APPURTENANCES TO PROVIDE A COMPLETE WORKING SYSTEM AND FOR COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS OF NFPA 58-2017.
6. AS PART OF THE DELEGATED DESIGN, LPG SUPPLIER SHALL SUBMIT CERTIFIED TANK DRAWINGS, WITH ASME CODE CALCULATIONS, SEALED AND SIGNED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NEW YORK.
7. CIVIL CONTRACTOR TO PROVIDE TRENCH FOR UG PROPANE PIPING. REFER TO DETAIL ON C-514.



REVISED DRAWING 2/7/2024

3 C-513 **SITE PLAN - OVERALL**

1" = 30'

0' 15' 30' 60'

PLAN NORTH

NEW YORK STATE OF OPPORTUNITY. Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT

LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York

CERTIFICATE OF AUTHORIZATION #: 017995

PATRIOT DESIGN & CONSULTING
STILL SERVING
500 CANAL VIEW BLVD, SUITE 300
ROCHESTER, NY 14623

CERTIFICATE OF AUTHORIZATION #: 0020682

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STATE OF NEW YORK — BRANDON A. FARNSWORTH-WEINBLATT — 089957 — LICENSED PROFESSIONAL ENGINEER

Exp: 09/30/2025

CONTRACT:
CONSTRUCTION

TITLE:
PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION:
DOT REGION 9, BROOME COUNTY
ROUTE 26
VESTAL, NY

CLIENT:
DEPARTMENT OF TRANSPORTATION

1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS
MARK	DATE	DESCRIPTION

PROJECT NUMBER:	46063 – C
DESIGNED BY:	B. FARNSWORTH-WEINBLATT
DRAWN BY:	K. WENDT
FIELD CHECK:	
APPROVED:	B. FARNSWORTH–WEINBLATT

SHEET TITLE:
SITE PROPANE PLAN

DRAWING NUMBER:
C-513

SHEET 35 OF 108

Feb 02,2024 – 8:27am
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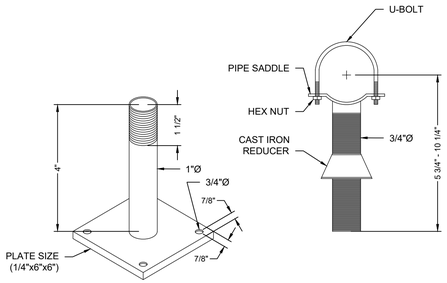
36x24 PLOT SHEET

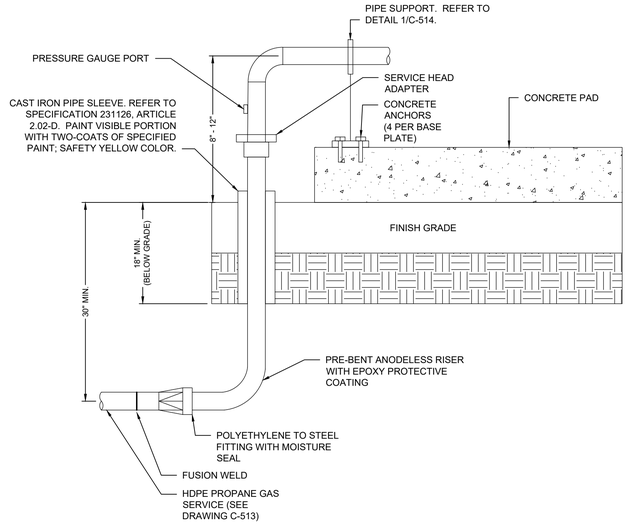


NOTES:

1. BASIS OF DESIGN ARE EATON B3088T-1 FOR 1" THREAD BASE STAND AND B3092-3/4 FOR 3/4" ADJUSTABLE PIPE SADDLE SUPPORT WITH YOKE.
2. PIPE SUPPORTS SHALL BE PAINTED IN ACCORDANCE WITH SECTION 231126 "OUTDOOR AND BELOW-GROUND LIQUEFIED-PETROLEUM GAS PIPING."
3. ANCHOR BASE PLATE WITH CONCRETE ANCHOR THROUGH EACH ANCHOR HOLE (4 PER SUPPORT) DIRECTLY TO CONCRETE SLAB.

1 C-514 PIPE SUPPORT DETAIL

NOT TO SCALE



2 C-514 ANODELESS RISER DETAIL

NOT TO SCALE

PROPANE GAS PIPING INSTALLATION NOTES:

1. INSTALL PROPANE GAS PIPING A MINIMUM OF 2'-6" BELOW FINISHED GRADE (TOP OF PIPE).
2. PROVIDE TRENCHING, CUSHION MATERIAL, MARKING TAPE, BACKFILL, AND SITE RESTORATION/FINISHED CONDITION.
3. PIPING WITHIN 5 FEET OF THE BUILDING IS PROVIDED UNDER THE PLUMBING CONTRACT. GAS LINE INSTALLATION PIPING BEYOND 5 FEET OF THE BUILDING IS CONSTRUCTED UNDER THE CONSTRUCTION CONTRACT.
4. INSTALL PROPANE GAS PIPING A MINIMUM OF 18 INCHES ABOVE THE WATER LINE WHERE IT CROSSES.
5. METER AND REGULATOR INSTALLATION ARE NOT INSTALLED UNDER THE CONSTRUCTION CONTRACT. COORDINATE CONNECTIONS TO REGULATOR AND METER WITH PLUMBING CONTRACTOR.

3 C-514 PROPANE GAS PIPE TRENCH DETAIL

NOT TO SCALE

1

REVISED DRAWING 2/7/2024

Feb 02,2024 - 8:21am
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36x24 PLOT SHEET

NEW YORK STATE OF OPPORTUNITY. Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT

LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York
CERTIFICATE OF AUTHORIZATION #: 017995

PATRIOT DESIGN & CONSULTING
STILL SERVING
500 CANAL VIEW BLVD, SUITE 300
ROCHESTER, NY 14623
CERTIFICATE OF AUTHORIZATION #: 0020682

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STATE OF NEW YORK · BRENDA A FARNSWORTH-WEINBLATT · 089957 · LICENSED PROFESSIONAL ENGINEER
Exp: 09/30/2025

CONTRACT: CONSTRUCTION

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION: DOT REGION 9, BROOME COUNTY
ROUTE 26
VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

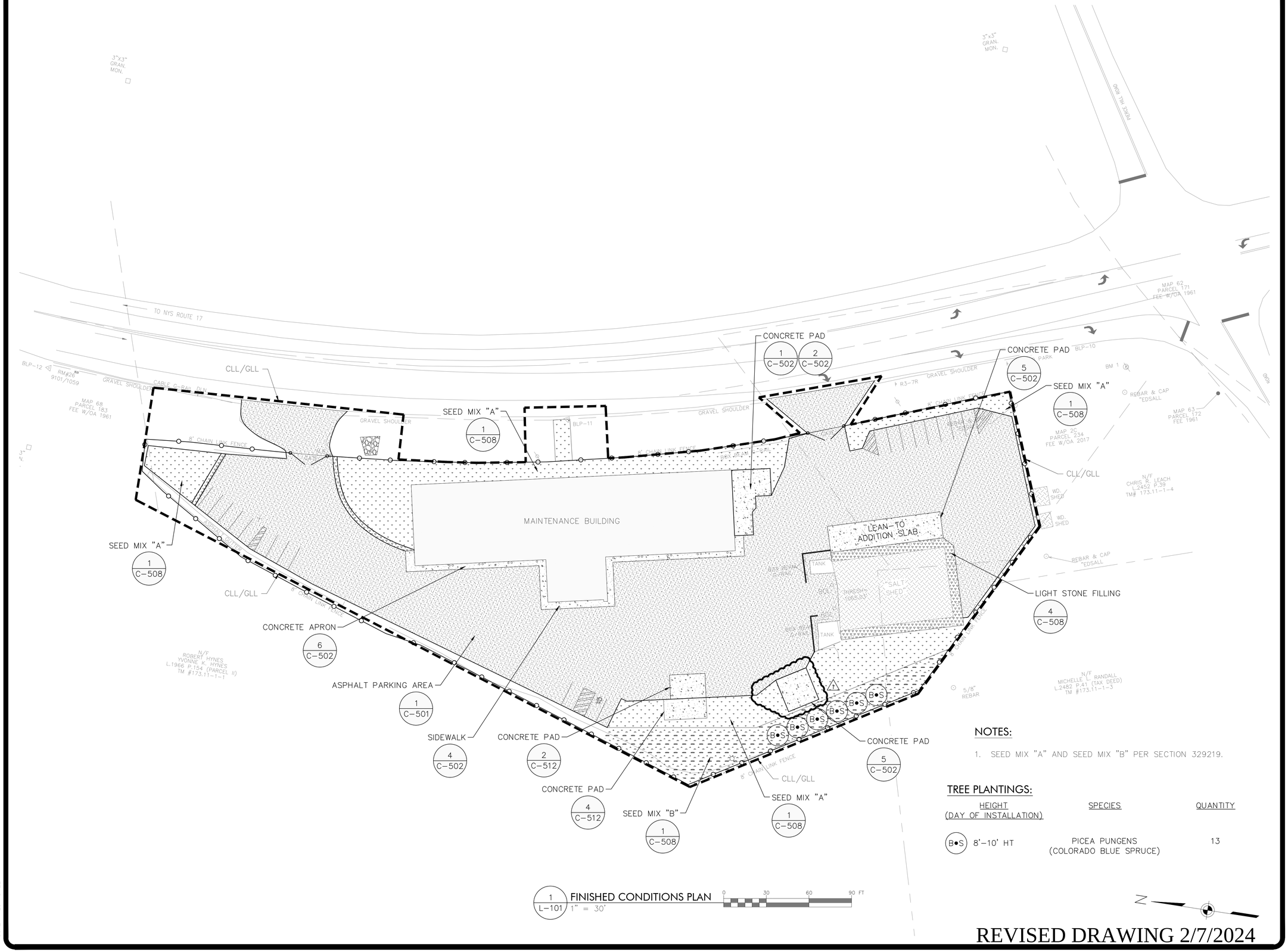
MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 - C
DESIGNED BY:	B. FARNSWORTH-WEINBLATT
DRAWN BY:	K. WENDT
FIELD CHECK:	
APPROVED:	B. FARNSWORTH-WEINBLATT

SHEET TITLE: PROPANE DETAILS

DRAWING NUMBER: C-514

SHEET 36 OF 108



NOTES:

1. SEED MIX "A" AND SEED MIX "B" PER SECTION 329219.

TREE PLANTINGS:

	HEIGHT (DAY OF INSTALLATION)	SPECIES	QUANTITY
B•S	8'-10' HT	PICEA PUNGENS (COLORADO BLUE SPRUCE)	13

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT

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STATE OF NEW YORK · MARTIN J. WEGLOWSKI · LICENSED PROFESSIONAL ENGINEER · NO. 071494

CONTRACT: CONSTRUCTION

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER: 46063 – C
DESIGNED BY: B. PRZYBYL
DRAWN BY: A. KELLY
FIELD CHECK:
APPROVED:
SHEET TITLE: FINISHED CONDITIONS PLAN

DRAWING NUMBER: L-101

SHEET 30 OF 98

Feb 02,2024 - 7:10am
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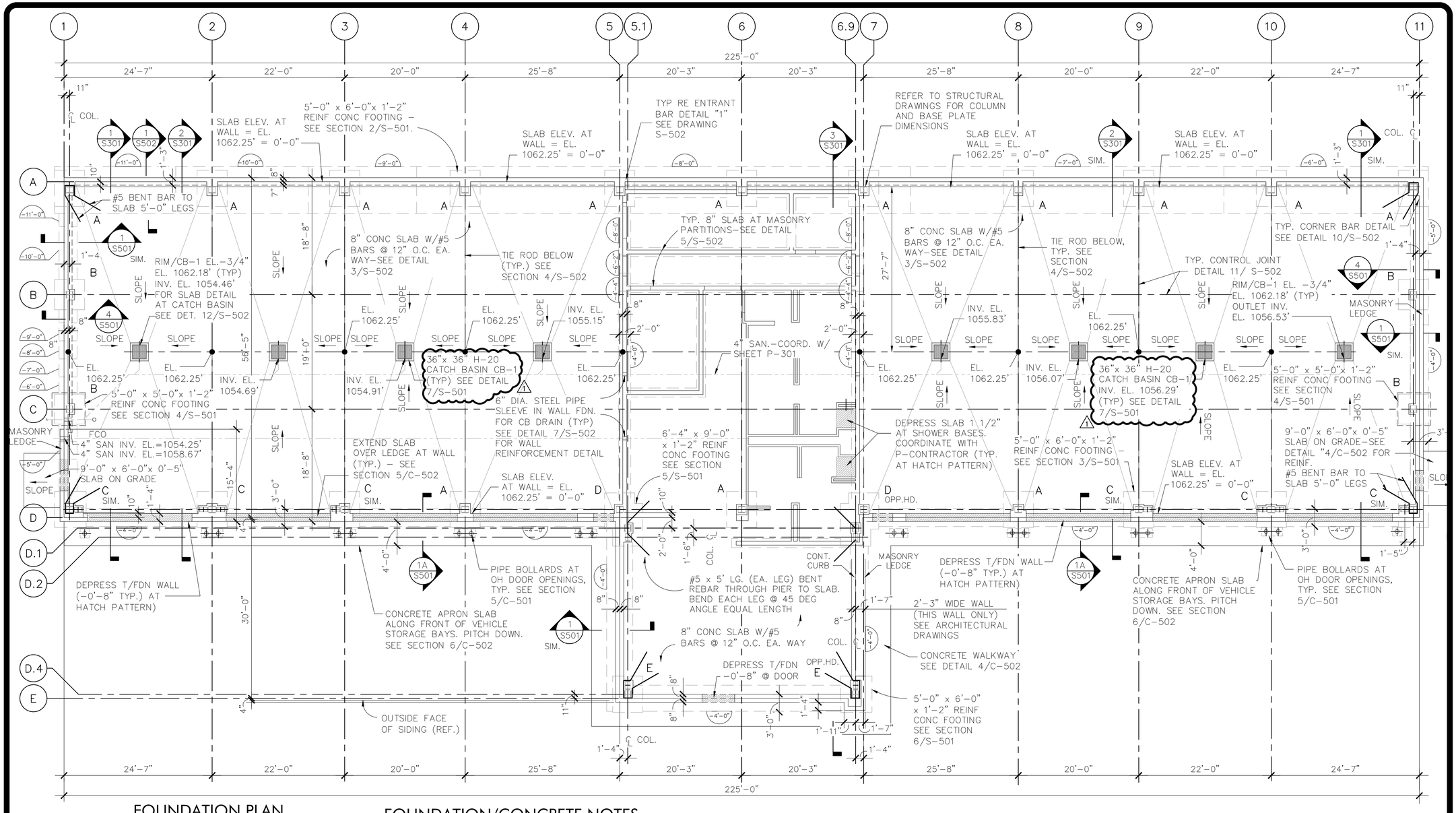
36x24 PLOT SHEET



FOUNDATION PLAN

0 4 8 16

SCALE IN FEET

NOTES:

1.) TIE RODS REQUIRED AT COLUMN LINES 2-10, REFER TO PIER AND FOOTING SECTIONS ON DRAWING S-502.

2.) REFER TO DETAIL 4/S-502 FOR SLAB CONSTRUCTION AT INTERIOR MASONRY PARTITION WALLS. REFER TO ARCHITECTURAL PLANS FOR MASONRY PARTITION WALL LAYOUT.

3.) REFER TO ARCHITECTURAL DRAWINGS FOR EXTERIOR BOLLARD LOCATIONS, SEE SECTION 5/C-501.

4.) IN ROOMS WITH FLOOR DRAINS SLOPE FINISHED SLAB TO DRAINS. SEE P-CONTRACT DRAWINGS FOR LOCATIONS OF FLOOR DRAINS.

5.) REFER TO DETAIL 6/S-502 FOR SLAB DT'L AND RADIANT HEAT TUBING. COORDINATE LOCATIONS WITH MECHANICAL DRAWINGS.

6.) DETAILS GIVEN ARE TYPICAL AND APPLY TO SIMILAR CONDITIONS U.N.O.

7.) PROVIDE CONSTRUCTION SAFETY MEASURES, MEANS AND METHODS AND COMPLIANCE WITH ALL OSHA LAWS.

8.) NOTIFY THE DIRECTOR'S REPRESENTATIVE OF ANY CONFLICTS OR OMISSIONS IN CONTRACT DRAWINGS FOR CLARIFICATION BEFORE PROCEEDING WITH WORK. DO NOT MAKE DEVIATIONS OR SUBSTITUTIONS WITHOUT WRITTEN AUTHORIZATION FROM DIRECTORS' REPRESENTATIVE.

FOUNDATION/CONCRETE NOTES:

1.) PREPARE SUBGRADE IN ACCORDANCE WITH EARTHWORK SPECIFICATIONS (PROOF ROLL, COMPACT, ETC.).

2.) BEARING GRADES FOR FOOTINGS SHALL BE ON NATIVE SOIL. IF FILL OR BEDROCK IS ENCOUNTERED, REMOVE ROCK/FILL TO 6" BELOW FOUNDATION BEARING GRADE AND PLACE 6" OF SUBBASE TYPE 2 COMPACTED TO 95% MODIFIED PROCTOR DENSITY.

3.) LAP ALL REINFORCEMENT SPLICES A MINIMUM OF 48 BAR DIAMETERS, U.N.O. #5 TOP BAR CLASS B SPLICE LENGTH = 49".

4.) WALL CONSTRUCTION/CONTROL JOINTS SHALL ALIGN WITH MASONRY WALL CONTROL JOINTS.

5.) PROVIDE A CONTROL/CONSTRUCTION JOINT LAYOUT PLAN FOR APPROVAL PRIOR TO SLAB POUR.

6.) DETAILS GIVEN ARE TYPICAL AND APPLY TO SIMILAR CONDITIONS U.N.O.

7.) SLAB JOINTS ARE REQUIRED WHERE SHOWN ON PLAN. WHERE JOINTS ARE NOT SHOWN:
   A. PROVIDE CONTROL JOINTS AT COLUMN LINES (TYP.)
   B. CONTROL JOINT SPACING NOT TO EXCEED 15 FEET O.C.

8.) COORDINATE LOCATION, SIZE, SPECIAL REQUIREMENTS FOR OPENINGS IN CONCRETE WORK WITH ALL TRADES PRIOR TO POUR. SLEEVES TO BE SUPPLIED AS REQD. BY OTHER CONTRACTS & INSTALLED UNDER C-CONTRACT. FOOTING STEPS, IF REQ'D., SHALL BE INSTALLED AS REQ'D. AT NO ADDITIONAL COST TO THE STATE.

9.) MAX. CONTROL JOINT SPACING AT SLAB ON GRADE IS 25'-0". ALIGN JOINTS WITH COLUMN CENTERLINES.

10.) VERIFY SIZE & LOCATION OF ANY EQUIPMENT PADS, CURBS, ANCHORS, ETC. WITH OTHER TRADES BEFORE POURING CONCRETE.

11.) CONCRETE SHALL ATTAIN AT LEAST 75% OF DESIGN COMPRESSIVE STRENGTH BEFORE LOADING WITH BACKFILL AND OR CONSTRUCTION ACTIVITY FORCES. PERFORM ADDITIONAL TESTING TO VERIFY AS REQUIRED.

12.) MINIMUM CONCRETE COVER SHALL BE AT LEAST 2 INCHES U.N.O.

13.) USE DCI CORROSION INHIBITOR ADMIXTURE IN GARAGE INTERIOR SLAB AND ALL EXTERIOR SLAB CONCRETE.

14.) CATCH BASINS TO BE PROVIDED BY C-CONTRACTOR. PLUMBING CONTRACTOR TO PROVIDE HOOKUP. SEE PLUMBING DRAWINGS.

15.) DO NOT SUBMIT CONCRETE REINFORCING SHOP DRAWINGS, BEGIN EXCAVATION OR PERFORM CONCRETE WORK, UNTIL FINAL STAMPED FOUNDATION DESIGN HAS BEEN REVIEWED AND APPROVED BY THE DIRECTOR'S REPRESENTATIVE.

16.) PIERS AND FOOTINGS ARE DESIGNED TO MEET REQUIREMENTS FOR A WIDE RANGE OF PRE-ENGINEERED METAL BUILDING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR ANY PIER, FOOTING AND REINFORCEMENT DESIGN OR DIMENSIONAL CHANGES, AND ANY ADDITIONAL COSTS FOR PROVISION OF THE MODIFIED PIERS, FOOTINGS AND REINFORCEMENT, NEEDED TO MEET THE STRUCTURAL REQUIREMENTS FOR THE PRE-ENGINEERED METAL BUILDING

16.) (CONT'D.) PROVIDED BY THE CONTRACTOR.

17.) CHANGES TO THE FOUNDATIONS TO ACCOMMODATE SUBMITTED METAL BUILDING SYSTEM SHALL BE MADE AT NO ADDITIONAL COST TO THE STATE.

18.) ALL RIGID FRAMES HAVE THRUST TIES UNLESS SPECIFICALLY DESIGNED AND DETAILED OTHERWISE.

FOOTING SCHEDULE			
REINF	DEPTH	SIZE	MARK
#6 @ 12 EA. WAY	1'-2"	5'-0" x 6'-0"	A
#6 @ 12 EA. WAY	1'-2"	5'-0" x 5'-0"	B
#6 @ 12 EA. WAY	1'-2"	5'-0" x 6'-0"	C
#6 @ 12 EA. WAY	1'-2"	6'-4" x 9'-0"	D
#6 @ 12 EA. WAY	1'-2"	5'-0" x 6'-0"	E

REVISED DRAWING 2/7/2024

Feb 02,2024 - 7:10am
J:\19-289-0295 OGS 8 Bay Maint. HQ\CAD NEW\ADDENDUM 2\S-101.dwg

36x24 PLOT SHEET

NEW YORK STATE OF OPPORTUNITY. Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT

LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York

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STATE OF NEW YORK · KENNETH J. HOLMSTROM · 059134 · REGISTERED PROFESSIONAL ENGINEER

CONTRACT:
CONSTRUCTION

TITLE:
PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION:
DOT REGION 9, BROOME COUNTY
ROUTE 26
VESTAL, NY

CLIENT:
DEPARTMENT OF TRANSPORTATION

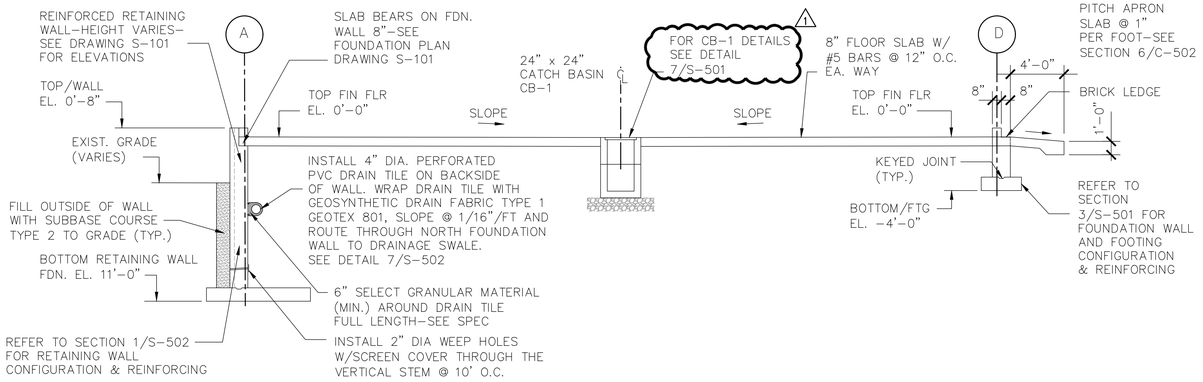
MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 - C
DESIGNED BY:	K. HOLMSTROM
DRAWN BY:	J. KOHLER/A. KELLY
FIELD CHECK:	
APPROVED:	

SHEET TITLE:
FOUNDATION PLAN

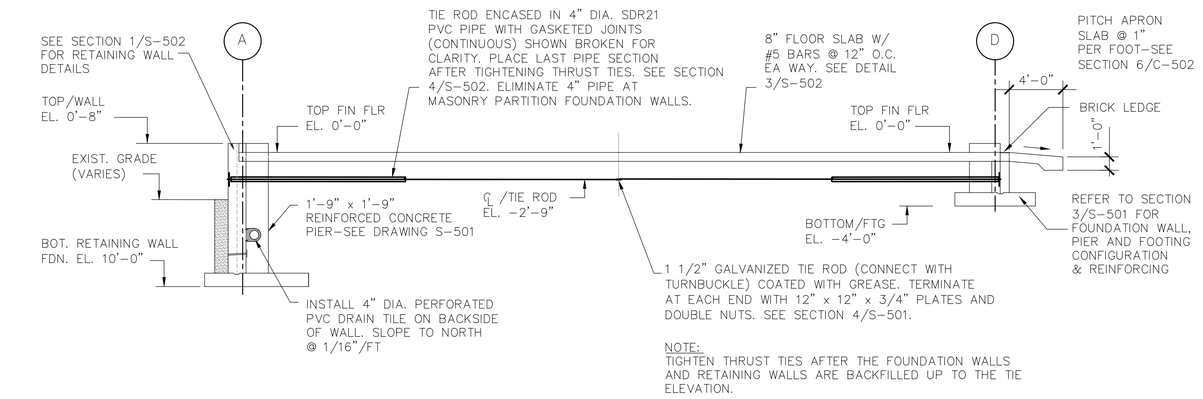
DRAWING NUMBER:
S-101

SHEET 31 OF 98



1/S301 TYPICAL 8 BAY MAINT HQ CROSS SECTION

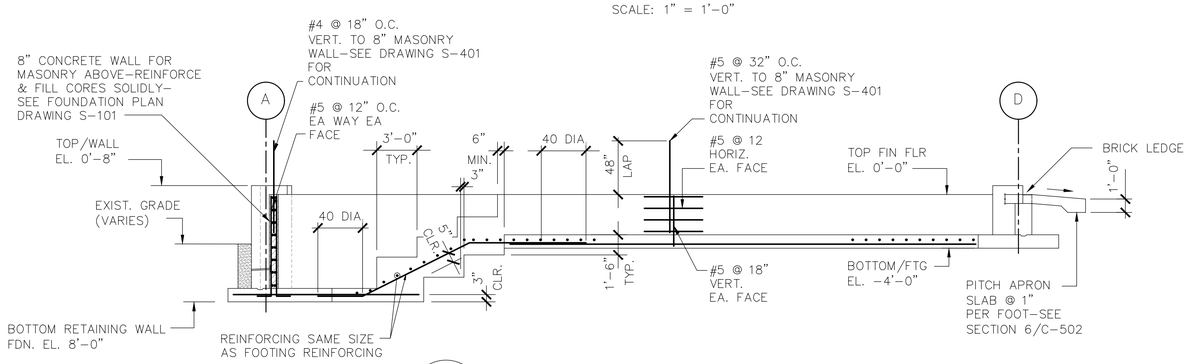
SCALE: 1" = 1'–0"



NOTE:
TIGHTEN THRUST TIES AFTER THE FOUNDATION WALLS AND RETAINING WALLS ARE BACKFILLED UP TO THE TIE ELEVATION.

2/S301 TYPICAL 8 BAY MAINT HQ CROSS SECTION AT RIGID FRAME COLUMNS

SCALE: 1" = 1'–0"



3/S301 TYPICAL STEPPED FOOTING AT INTERIOR MASONRY WALLS

SCALE: 1" = 1'–0"

REVISED DRAWING 2/7/2024

Feb 02,2024 – 7:11am
J:\19–289–0295 OGS 8 Bay Maint. HQ\CAD NEW\ADDENDUM 2\S–301.dwg
36x24 PLOT SHEET

NEW YORK STATE OF OPPORTUNITY. Office of General Services
DESIGN & CONSTRUCTION

CONSULTANT
LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York

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STATE OF NEW YORK · KENNETH J. HOLMSTROM · LICENSED PROFESSIONAL ENGINEER · No. 059134

CONTRACT:
CONSTRUCTION

TITLE:
PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION:
DOT REGION 9, BROOME COUNTY
ROUTE 26
VESTAL, NY

CLIENT:
DEPARTMENT OF TRANSPORTATION

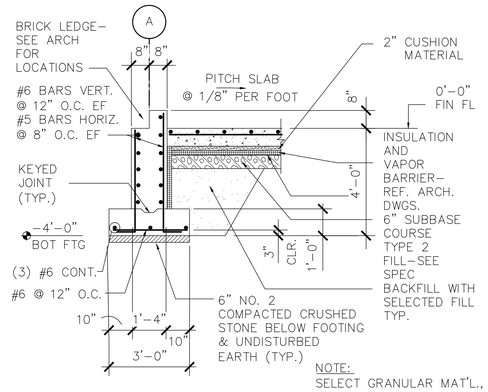
MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 – C
DESIGNED BY:	K. HOLMSTROM
DRAWN BY:	J. KOHLER/A. KELLY
FIELD CHECK:	
APPROVED:	

SHEET TITLE:
TYPICAL BUILDING SECTIONS

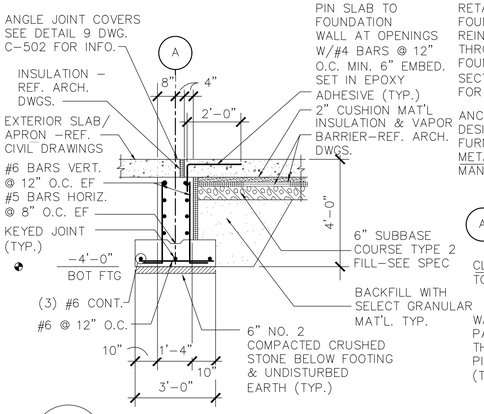
DRAWING NUMBER:
S–301

SHEET 33 OF 98

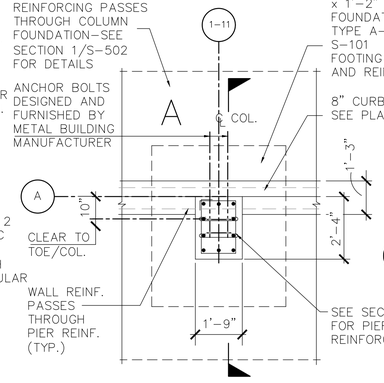


1 S501 TYP FOUNDATION WALL SECTION - NTS

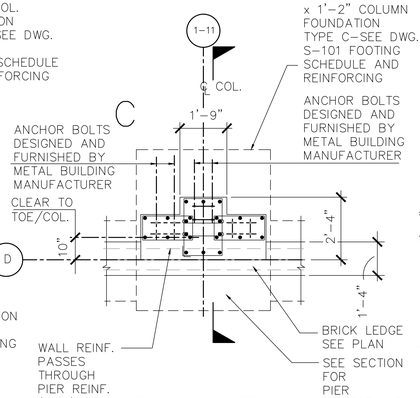
NOTE:
SELECT GRANULAR MAT'L., RIGID BOARD TYPE INSULATION, VAPOR BARRIER, 6" SUBBASE COURSE TYPE 2 & BACKFILL ARE TYPICAL FOR ALL SECTIONS U.N.O. SEE SPEC SECTION 072100 FOR INSULATION, 072600 FOR VAPOR RETARDERS.



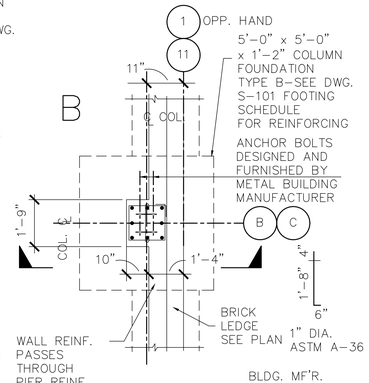
1A S501 TYP FOUNDATION WALL DETAIL AT DOOR OPENINGS - NTS



PLAN - NTS

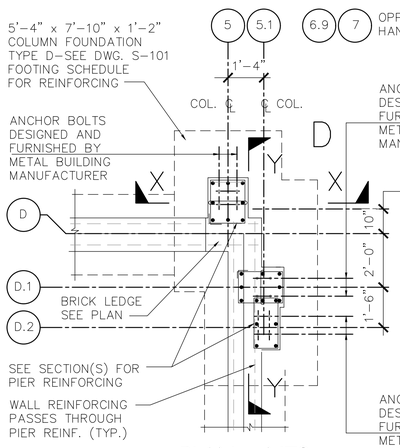


PLAN - NTS

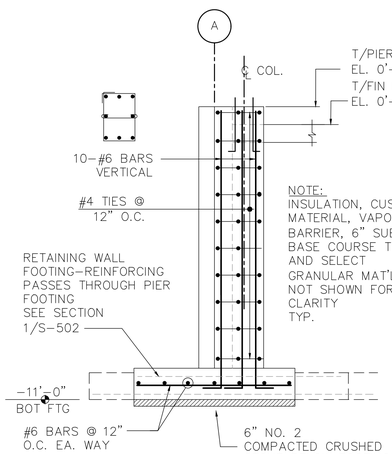


PLAN - NTS

BLDG. MF'R. TO VERIFY AND PROVIDE TO C CONTRACTOR



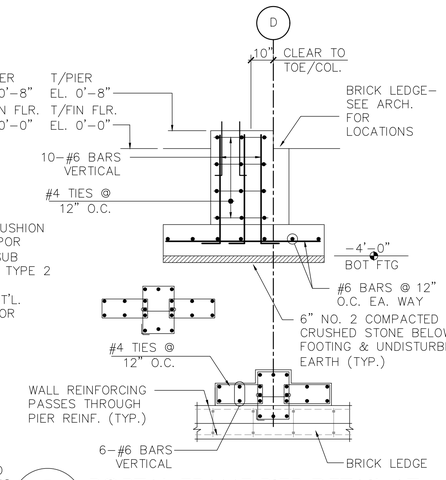
PLAN - NTS



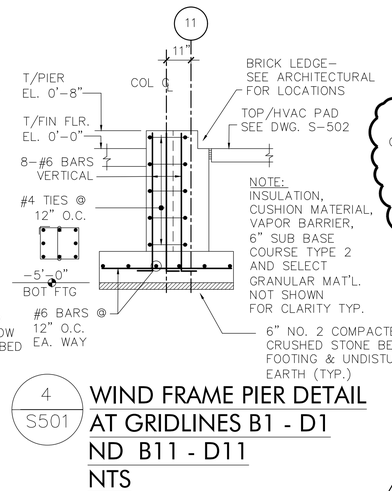
2 S501 RIGID FRAME PIER DETAIL AT GRIDLINES A1 - A11 - NTS

NOTE:
INSULATION, CUSHION MATERIAL, VAPOR BARRIER, 6" SUB BASE COURSE TYPE 2 AND SELECT GRANULAR MAT'L. NOT SHOWN FOR CLARITY TYP.

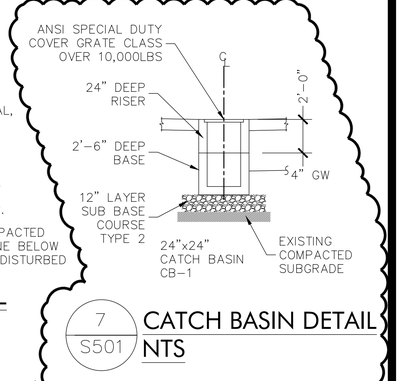
ANCHOR BOLTS DESIGNED AND FURNISHED BY METAL BUILDING MANUFACTURER



3 S501 PORTAL FRAME PIER DETAIL AT GRIDLINES D1 - D3 AND D9 - D11 NTS

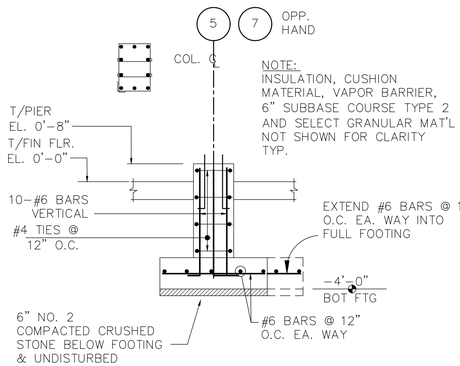


4 S501 WIND FRAME PIER DETAIL AT GRIDLINES B1 - D1 ND B11 - D11 NTS

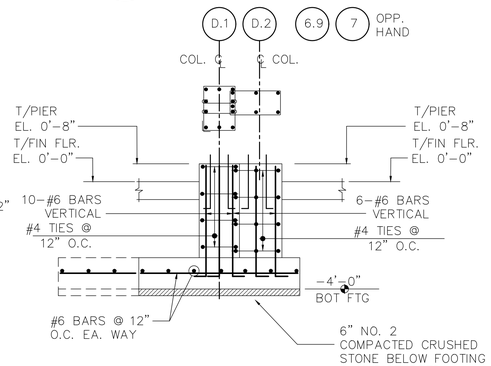


7 S501 CATCH BASIN DETAIL NTS

1

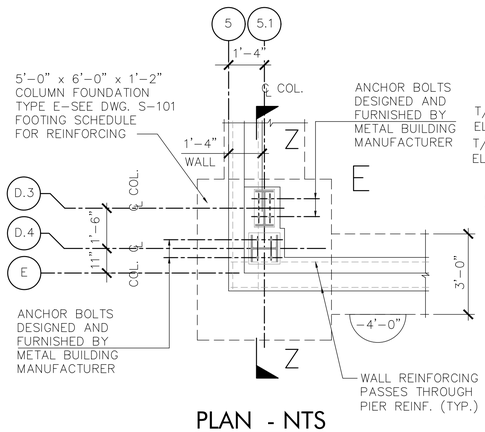


SECTION X-X - NTS

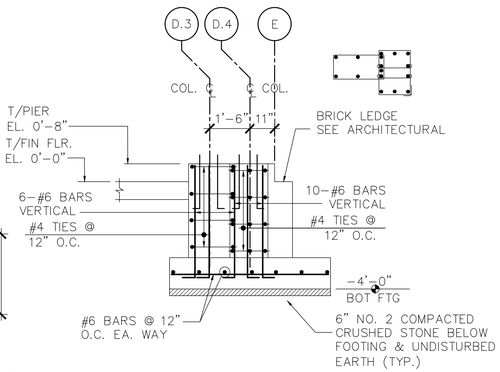


SECTION Y-Y - NTS

5 S501 PIER DETAILS AT GRIDLINES 5D AND 7D NTS



PLAN - NTS



SECTION Z-Z - NTS

6 S501 PIER DETAIL AT GRIDLINES 5.1 AND D.4 6.9 AND D.4 OPPOSITE HAND - NTS

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT

LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York

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STATE OF NEW YORK · KENNETH J. HOLMSTROM · LICENSED PROFESSIONAL ENGINEER · 059134

CONTRACT:
CONSTRUCTION

TITLE:
PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION:
DOT REGION 9, BROOME COUNTY
ROUTE 26
VESTAL, NY

CLIENT:
DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

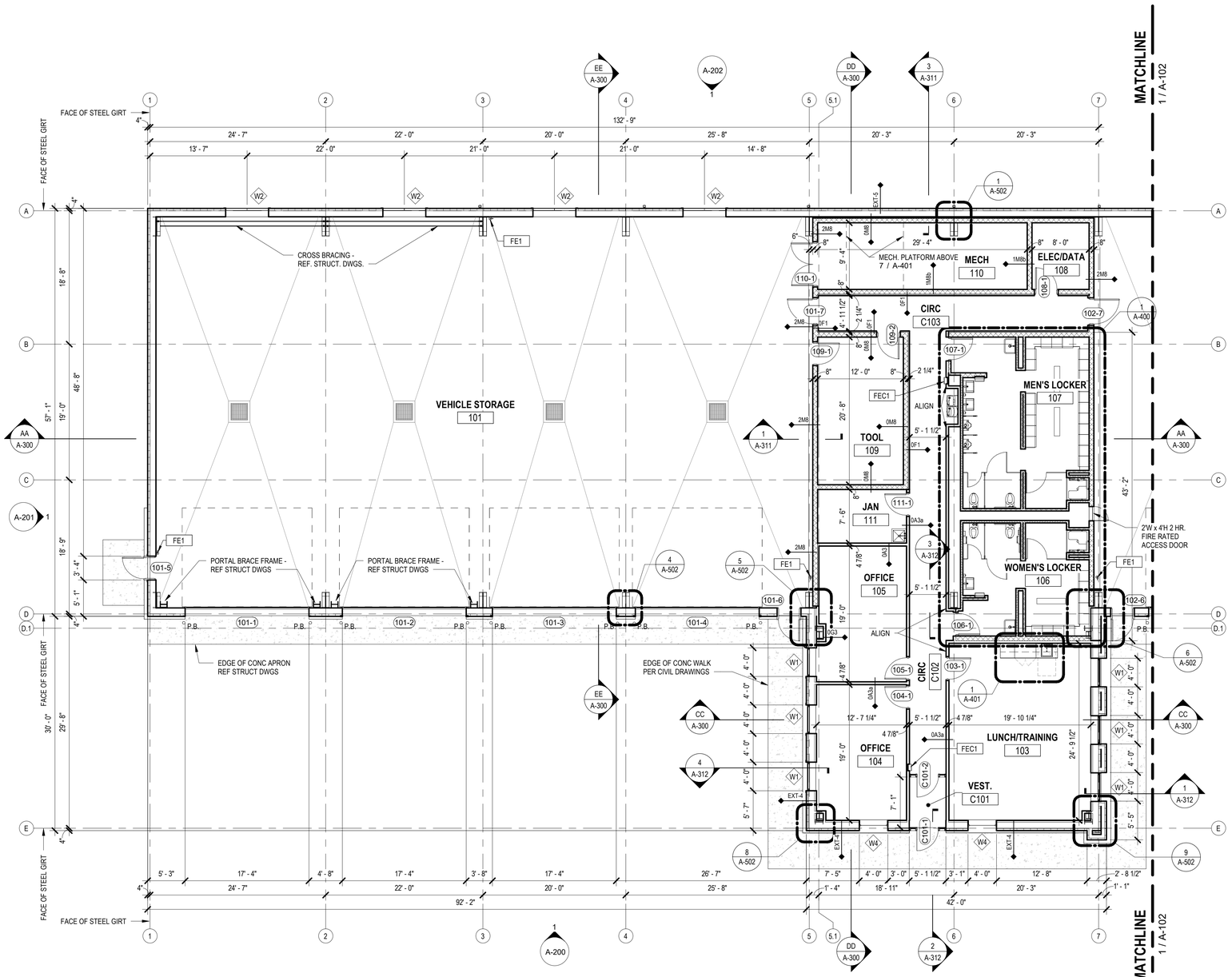
PROJECT NUMBER:	46063 – C
DESIGNED BY:	K. HOLMSTROM
DRAWN BY:	J. KOHLER/A. KELLY
FIELD CHECK:	
APPROVED:	

SHEET TITLE:
FOUNDATION SECTIONS AND DETAILS

DRAWING NUMBER:
S–501

SHEET 37 OF 98

Feb. 02,2024 – 7:11am
J:\19–289–0295 OGS 8 Bay Maint. HQ\CAD NEW\ADDENDUM 2\S–501.dwg
36x24 PLOT SHEET



1 A-101 **PARTIAL 1ST FLOOR PLAN - AREA 1**

1/8" = 1'-0"

0' 4' 8' 16'

PLAN NORTH

FLOOR PLAN NOTES

A. DO NOT SCALE THE DRAWINGS. IF THERE IS A MISSING DIMENSION, OR ONE THAT IS NOT CLEAR IN THE CONSTRUCTION DOCUMENTS, REQUEST CLARIFICATION OF THAT DIMENSION FROM THE DIRECTOR'S REPRESENTATIVE.

B. ALL WORK WILL CONFORM TO THE REQUIREMENTS OF ALL LOCAL, STATE AND FEDERAL CODES AND REGULATIONS. WHERE A NON-COMPLIANT CONDITION OCCURS , THOSE CODES ARE TO TAKE PRECEDENCE OVER THE DRAWINGS AND SPECIFICATIONS. IF A DISCREPANCY IS DISCOVERED, INFORM THE DIRECTOR'S REPRESENTATIVE IMMEDIATELY BEFORE PROCEEDING WITH THE WORK.

C. VERIFY ALL DIMENSIONS, BOUNDARIES, GRADE ELEVATIONS, AND OTHER NECESSARY DIMENSIONAL GUIDES ON SITE AND COMPARE THEM TO THE CONSTRUCTION DOCUMENTS. IMMEDIATELY REPORT ANY DISCREPANCIES TO THE DIRECTOR'S REPRESENTATIVE FOR CLARIFICATION AND DIRECTIVES ON HOW TO PROCEED.

D. ALL DIMENSIONS PROVIDED ARE TO THE FACE OF SAID MATERIALS/CONSTRUCTION, UNLESS NOTED OTHERWISE.

E. ALL DIMENSIONS, NOTES, FINISHES AND FIXTURES SHOWN ON THE FLOOR PLANS, SECTIONS, DETAILS, AND OTHER ILLUSTRATIONS WILL APPLY TO ALL SIMILAR, OPPOSITE HAND, OR SYMMETRICAL PLANS, SECTIONS OR DETAILS.

F. ALL PARTITIONS/WALLS WILL BE ALIGNED WITH THE CENTER, OR NEAREST EDGE (AS INDICATED ON THE DRAWINGS) OF EXISTING WALLS, COLUMNS, WINDOW OPENINGS, ETC. UNLESS OTHERWISE NOTED.

G. FAILURE TO ILLUSTRATE OR MENTION MINOR DETAILS WILL NOT BE WARRANT FOR OMISSION OF NECESSARY APPURTENANCES FOR THE NORMAL, USUAL OR PROPER COMPLETION OF THE WORK.

H. COORDINATE ALL ARCHITECTURAL WORK WITH THE ENGINEERING DESIGNS ISSUED AS PART OF THIS SET OF THESE CONSTRUCTION DOCUMENTS, INCLUDING BUT NOT LIMITED TO STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION AND SECURITY SYSTEMS.

FLOOR PLAN LEGEND

SYMBOL/TAG	DESCRIPTION
MATCHLINE 'A'	MATCHLINE W/PLAN REFERENCE
ROOM NAME / 101 / 150 SF (ROOM NAME, ROOM NUMBER, ROOM AREA (IF PROVIDED))	ROOM IDENTIFICATION TAG
101-1	DOOR AND DOOR TAG
1 — PARTITION (ON FLOOR PLANS), FIRE RATING INDICATION, PARTITION TYPE, MET STUD/CMU WIDTH, PARTITION TYPE MODIFIER, 2A3a-S50 PARTITION KEYNOTE	PARTITION & TYPE IDENTIFICATION (REFERENCE SHEET A-050 FOR PARTITION TYPES)
100.00'	SPOT ELEVATION
W1	WINDOW IDENTIFICATION TAG
FEC1	FIRE EXTINGUISHER IN SEMI-RECESSED CABINET
FE1	FIRE EXTINGUISHER HUNG WITH WALL BRACKET
P.B.	42" HIGH X 6" DIA STEEL PIPE BOLLARD, CONCRETE FILLED WITH COVER SEE DETAIL

AREA 1

KP KEY PLAN

NOT TO SCALE

N

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT

LiRo Engineers, Inc.
A LiRo Group Company

FoitAlbert ASSOCIATES
Architecture. Engineering. Surveying. Environmental.
JOB # 19093.00

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REGISTERED ARCHITECT MICHAEL R. BRAY No. 033564 STATE OF NEW YORK
EXPIRES: 5/31/2024

CONTRACT: CONSTRUCTION

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

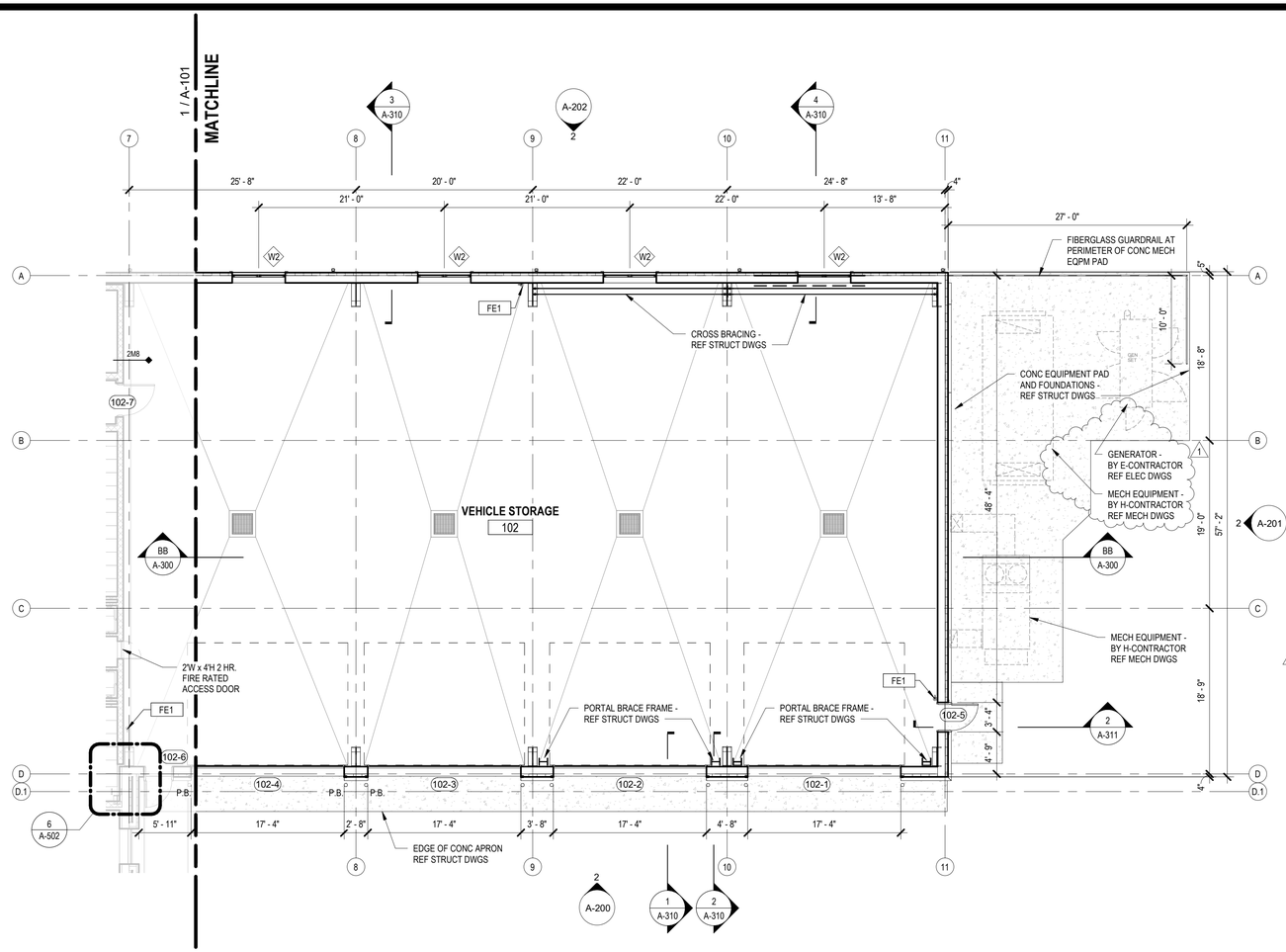
MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 – C
DESIGNED BY:	MRB
DRAWN BY:	FNR, MRB
FIELD CHECK:	
APPROVED:	

SHEET TITLE: PARTIAL FLOOR PLAN – AREA 1

DRAWING NUMBER: A–101

SHEET 42 OF 93



1 PARTIAL 1ST FLOOR PLAN - AREA 2

1/8" = 1'-0"

0' 4' 8' 16'

PLAN NORTH

FLOOR PLAN NOTES

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FLOOR PLAN LEGEND

SYMBOL/TAG	DESCRIPTION
MATCHLINE 'A'	MATCHLINE W/PLAN REFERENCE
ROOM NAME / 101 / 150 SF	ROOM NAME, ROOM NUMBER, ROOM AREA (IF PROVIDED) — ROOM IDENTIFICATION TAG
101-1	DOOR AND DOOR TAG
1 — PARTITION (ON FLOOR PLANS), FIRE RATING INDICATION, PARTITION TYPE, MET STUD/CMU WIDTH, PARTITION TYPE MODIFIER, 2A3a-S50 PARTITION KEYNOTE	PARTITION & TYPE IDENTIFICATION (REFERENCE SHEET A-050 FOR PARTITION TYPES)
100.00'	SPOT ELEVATION
W1	WINDOW IDENTIFICATION TAG
FEC1	FIRE EXTINGUISHER IN SEMI-RECESSED CABINET
FE1	FIRE EXTINGUISHER HUNG WITH WALL BRACKET
P.B.	42" HIGH X 6" DIA STEEL PIPE BOLLARD, CONCRETE FILLED WITH COVER SEE DETAIL

AREA 2

KP KEY PLAN — NOT TO SCALE

N

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT

LiRo Engineers, Inc.
A LiRo Group Company

FoitAlbert ASSOCIATES
Architecture. Engineering. Surveying. Environmental.
JOB # 19093.00

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REGISTERED ARCHITECT MICHAEL R. BRAY No. 033964 STATE OF NEW YORK

EXPIRES: 5/21/2024

CONTRACT:
CONSTRUCTION

TITLE:
PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION:
DOT REGION 9, BROOME COUNTY
ROUTE 26
VESTAL, NY

CLIENT:
DEPARTMENT OF TRANSPORTATION

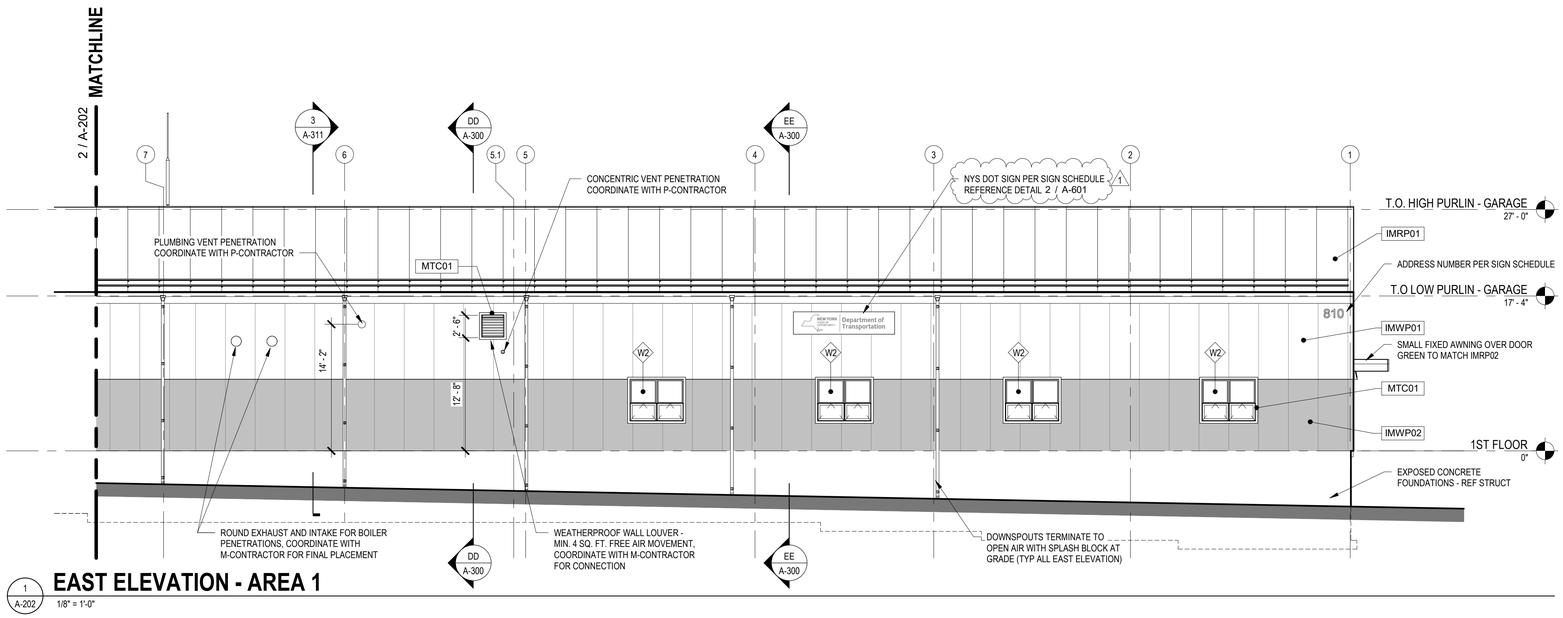
MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER: 46063 – C
DESIGNED BY: MRB
DRAWN BY: FNR, MRB
FIELD CHECK:
APPROVED:

SHEET TITLE:
PARTIAL FLOOR PLAN – AREA 2

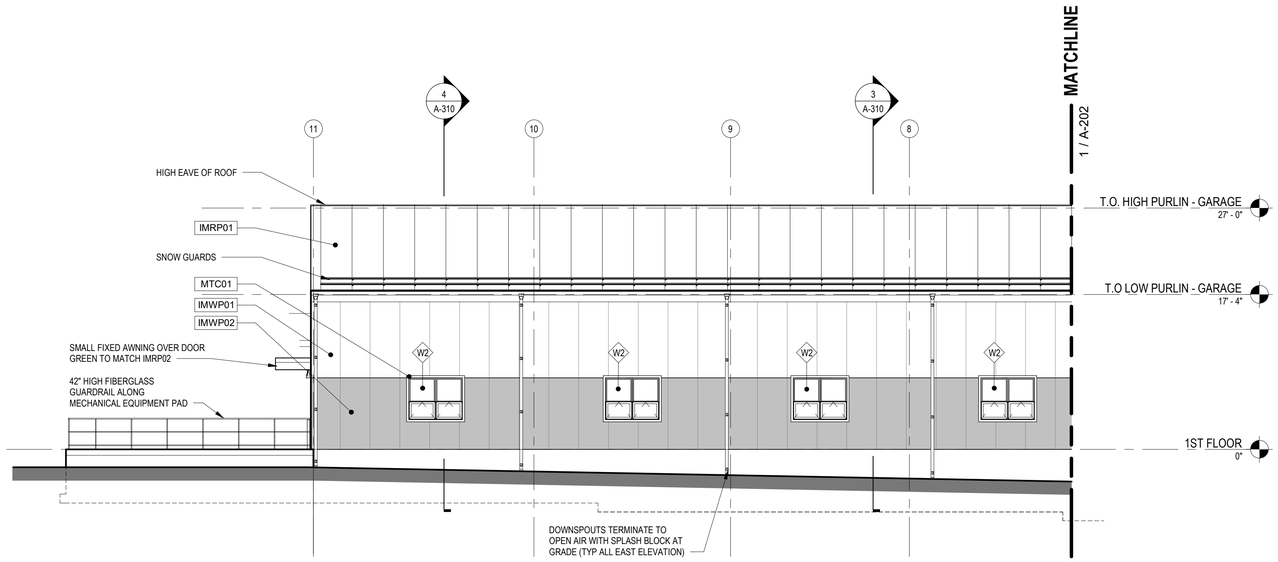
DRAWING NUMBER:
A–102

SHEET 43 OF 93



1 A-202 **EAST ELEVATION - AREA 1**

1/8" = 1'-0"



2 A-202 **EAST ELEVATION - AREA 2**

1/8" = 1'-0"

EXTERIOR FINISH MATERIALS SCHEDULE

MARK	PATTERN	MATERIAL	DESCRIPTION	SPEC SECTION
IMWP01	3' - 4"	INSULATED METAL WALL PANELS	MANUFACTURER: ATAS INTERNATIONAL PRODUCT: ISOLAREN ML COLOR: CUSTOM - LIGHT GRAY	07 4213
IMWP02	3' - 4"	INSULATED METAL WALL PANELS	MANUFACTURER: ATAS INTERNATIONAL PRODUCT: ISOLAREN ML COLOR: CUSTOM - DARK GRAY	07 4213
IMWP03		INSULATED METAL WALL PANELS	MANUFACTURER: ATAS INTERNATIONAL PRODUCT: ISOLAREN ML COLOR: GOLDENROD TRINAR	07 4213
MTC01		METAL TRIM CLOSURE	MANUFACTURER: ATAS INTERNATIONAL PRODUCT: COIL STOCK COLOR: MATCH ADJACENT PANELS	07 4214
IMRP01		INSULATED METAL ROOF PANELS	MANUFACTURER: ATAS OR EQ. PRODUCT: ISOLAREN RL COLOR: TEXAS SILVER	07 4116
IMRP02		INSULATED METAL ROOF PANELS	MANUFACTURER: ATAS OR EQ. PRODUCT: ISOLAREN RL COLOR: FOREST GREEN	07 4116
MP01		METAL RAINSCREEN PANELS	MANUFACTURER: BO-MAR PRODUCT: ALUMINUM PANELS COLOR: FAUX RUST #1, 2, AND 3	05 7000
CMU01		SPLIT-FACED CONCRETE MASONRY UNITS	MANUF: BARNES AND CONE OR EQ. STYLE: SPLIT-FACED COLOR: TBD SIZE: NOM. 4x8x16, RUNNING BOND	04 2000
HPC01		HIGH PERFORMANCE COATING	MANUFACTURER: SHERWIN WILLIAMS TYPE: INTERIOR/EXTERIOR EPOXY COLOR: MATCH ADJACENT PANELS	09 9101

NOTES:

1. BEFORE FINAL FURNISHING OF MATERIALS, COORDINATE COLOR SCHEME WITH DIRECTOR'S REPRESENTATIVE VIA USE OF COLORED EXTERIOR ELEVATIONS TO VERIFY ALL AREAS INDICATED ARE CORRECT.
2. ALL GUTTERS, DOWNSPOUTS, COPINGS, FLASHINGS AND TRIM WILL MATCH ADJACENT MAIN FIELD COLOR AREA MATERIAL UNLESS NOTED OTHERWISE. FINAL SELECTION WILL BE THROUGH DIRECTOR'S REPRESENTATIVE FROM PHYSICAL SAMPLES OF METAL FLASHINGS AND TRIM.
3. ALL EXTERIOR DISSIMILAR MATERIALS WILL BE SEALED WEATHER TIGHT WITH THE PROPER BACKER ROD AND TYPE1 SEALANT, COLOR WILL MATCH ADJACENT MATERIALS, DARKER COLOR SUPERCEDES. COORDINATE ALL SEALANT COLOR SELECTIONS TO BE USED ON THE JOB WITH THE DIRECTOR'S REPRESENTATIVE USING ELEVATIONS FOR VERIFICATION OF LOCATION AND APPLICATION.

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT

LiRo Engineers, Inc.
A LiRo Group Company

FoitAlbert ASSOCIATES
Architecture. Engineering. Surveying. Environmental.
JOB # 19093.00

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REGISTERED ARCHITECT MICHAEL R. BRAY No. 033664 STATE OF NEW YORK

EXPIRES: 5/31/2024

CONTRACT:
CONSTRUCTION

TITLE:
PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION:
DOT REGION 9, BROOME COUNTY
ROUTE 26
VESTAL, NY

CLIENT:
DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

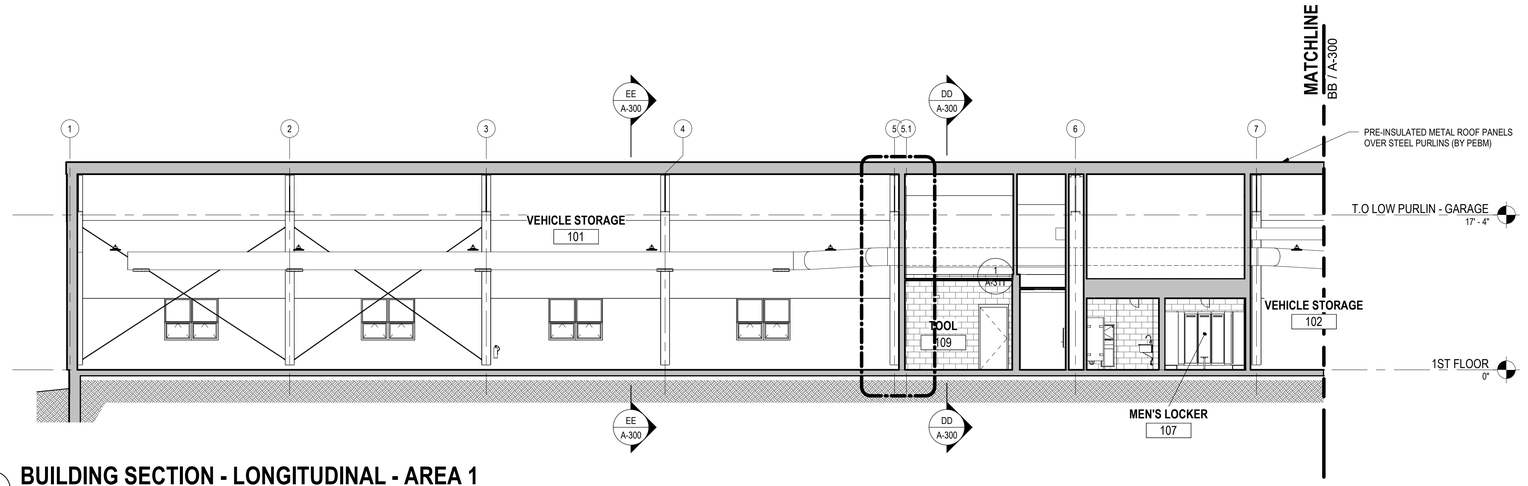
PROJECT NUMBER:	46063 – C
DESIGNED BY:	MRB
DRAWN BY:	MRB, KCR
FIELD CHECK:	
APPROVED:	

SHEET TITLE:

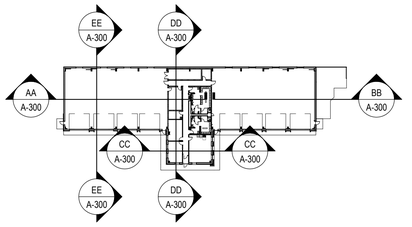
EXTERIOR ELEVATIONS – EAST

DRAWING NUMBER:
A–202

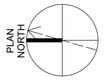
SHEET 52 OF 93

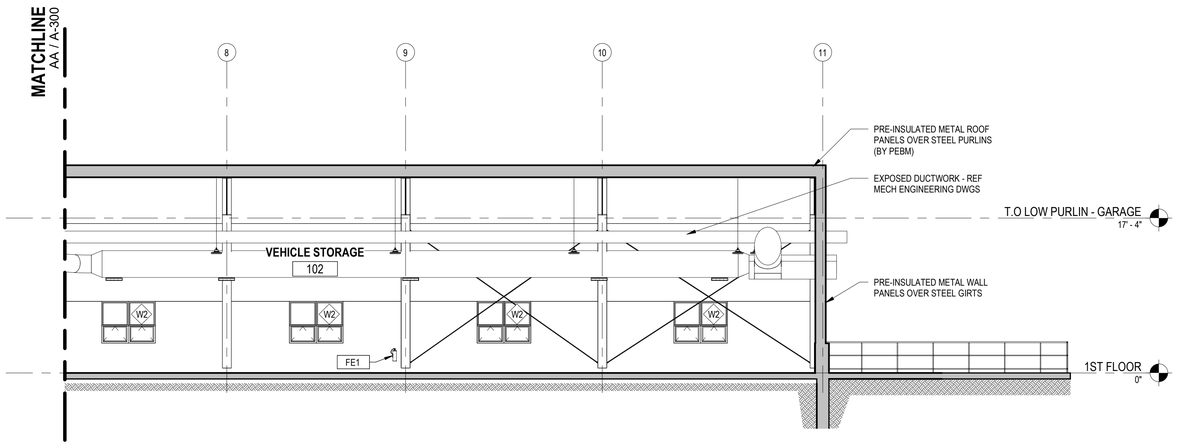


AA A-300 **BUILDING SECTION - LONGITUDINAL - AREA 1**
1/8" = 1'-0"

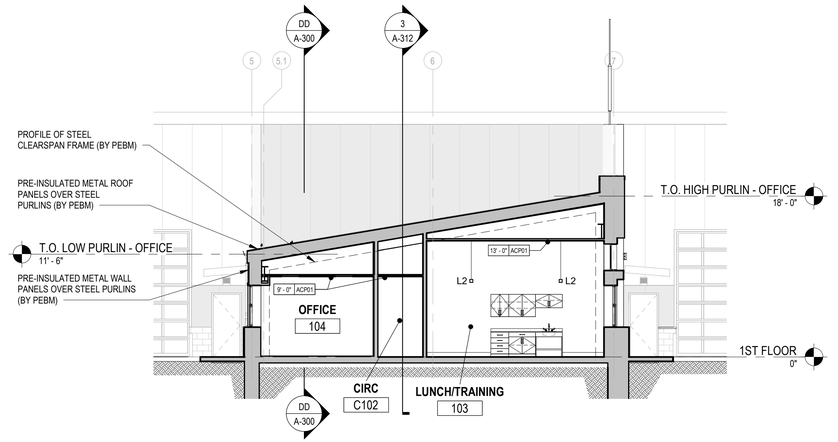


1 A-300 **KEY PLAN - BUILDING SECTIONS**
1/64" = 1'-0"

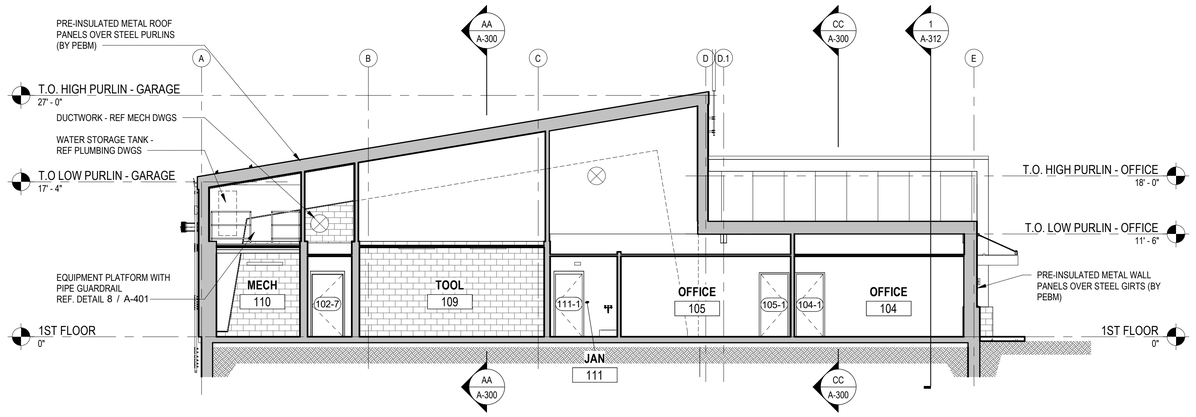




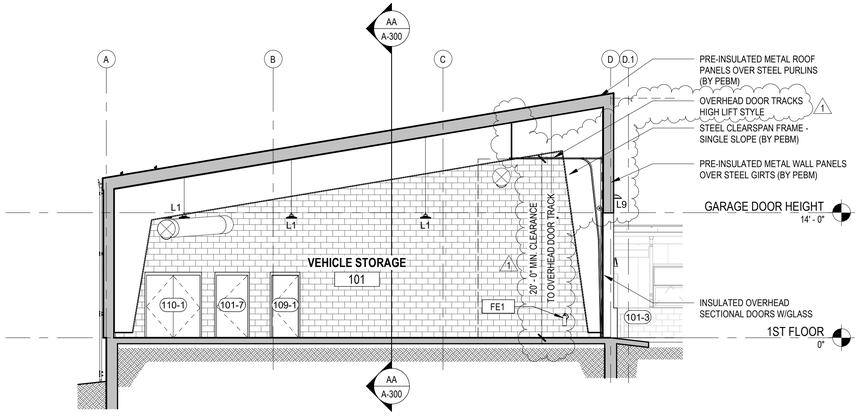
BB A-300 **BUILDING SECTION - LONGITUDINAL - AREA 2**
1/8" = 1'-0"



CC A-300 **BUILDING SECTION - LONGITUDINAL - OFFICES**
1/8" = 1'-0"



DD A-300 **BUILDING SECTION - LATERAL - OFFICES**
1/8" = 1'-0"



EE A-300 **BUILDING SECTION - LATERAL - VEHICLE STORAGE**
1/8" = 1'-0"

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. **Office of General Services**

DESIGN & CONSTRUCTION

CONSULTANT

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REGISTERED ARCHITECT MICHAEL R. BRAY No. 033564 STATE OF NEW YORK
EXPIRES: 5/31/2024

CONTRACT:
CONSTRUCTION

TITLE:
PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION:
DOT REGION 9, BROOME COUNTY
ROUTE 26
VESTAL, NY

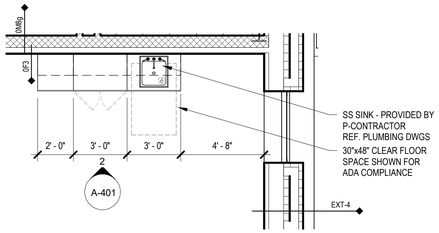
CLIENT:
DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS
PROJECT NUMBER:	46063 – C	
DESIGNED BY:	MRB	
DRAWN BY:	MRB	
FIELD CHECK:		
APPROVED:		

SHEET TITLE:
BUILDING SECTIONS

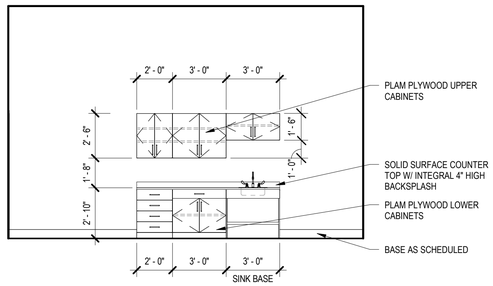
DRAWING NUMBER:
A–300

SHEET 53 OF 93



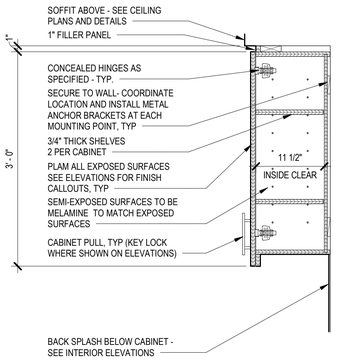
1 A-401 ENLARGED PLAN - KITCHENETTE

1/4" = 1'-0"



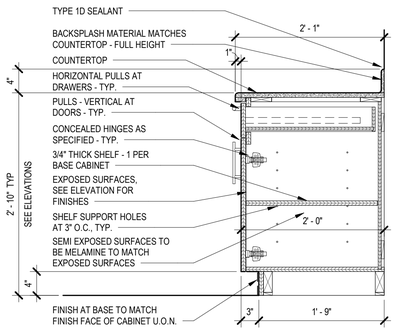
2 A-401 INT. ELEV. - KITCHENETTE

1/4" = 1'-0"



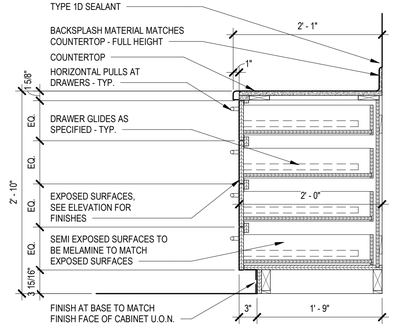
3 A-401 SECTION - WALL CABINET - TYP

1" = 1'-0"



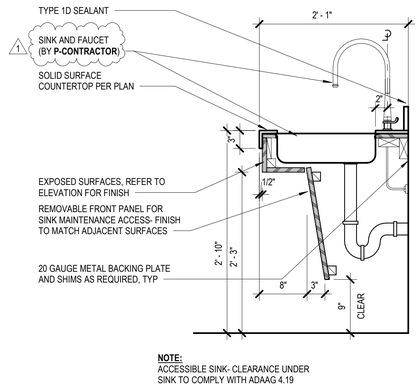
4 A-401 SECTION - CABINET - DOOR & DRAWER

1" = 1'-0"



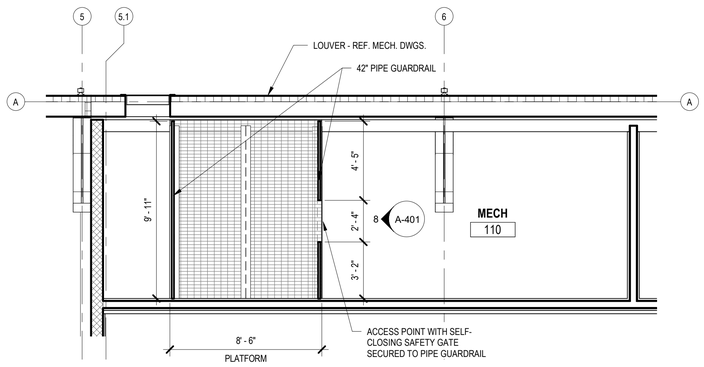
5 A-401 SECTION - CABINET - FOUR-DRAWER

1" = 1'-0"



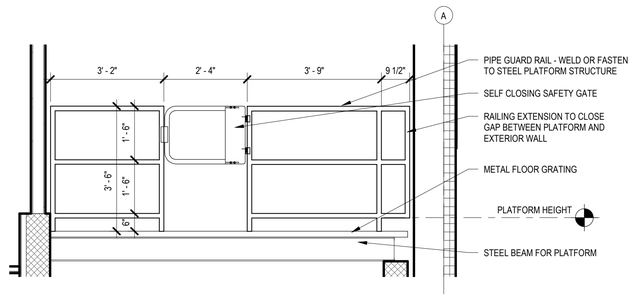
6 A-401 SECTION - CABINET - ADA SINK W/PANEL

1" = 1'-0"



7 A-401 PARTIAL PLATFORM PLAN

1/4" = 1'-0"



8 A-401 ELEVATION - PLATFORM GUARDRAIL & GATE

1/2" = 1'-0"

REVISED DRAWING 2/7/2024

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REGISTERED ARCHITECT MICHAEL R. BRAY No. 033984 STATE OF NEW YORK
EXPIRES: 5/31/2024

CONTRACT:
CONSTRUCTION

TITLE:
PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION:
DOT REGION 9, BROOME COUNTY
ROUTE 26
VESTAL, NY

CLIENT:
DEPARTMENT OF TRANSPORTATION

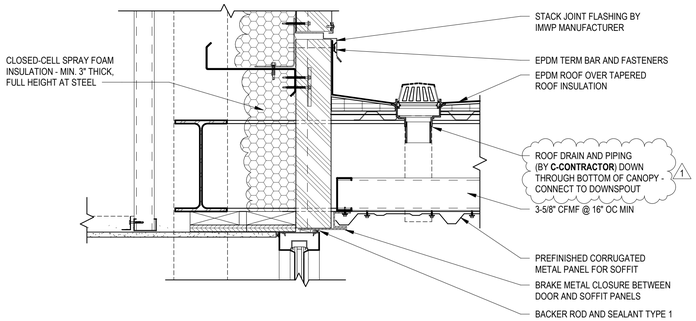
MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 – C
DESIGNED BY:	MRB
DRAWN BY:	Author
FIELD CHECK:	
APPROVED:	

SHEET TITLE:
ENLARGED PLANS & ELEVATIONS

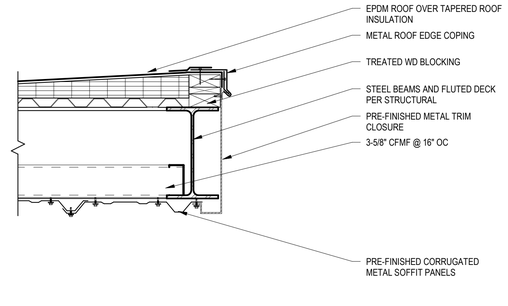
DRAWING NUMBER:
A–401

SHEET 58 OF 93



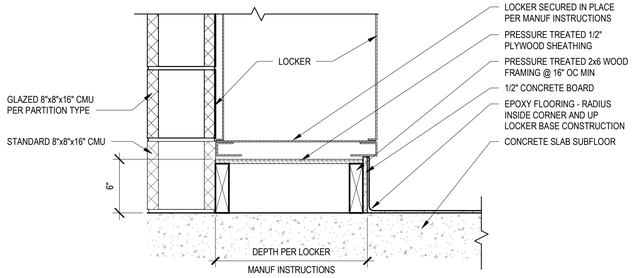
1 A-501 DETAIL - CANOPY - STOREFRONT HEAD

1 1/2" = 1'-0"



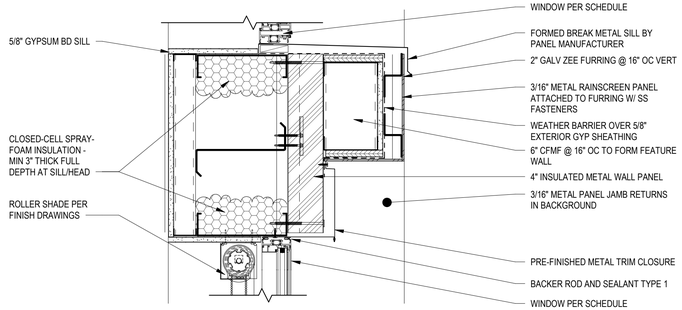
5 A-501 DETAIL - CANOPY - TYP. EDGE

1 1/2" = 1'-0"



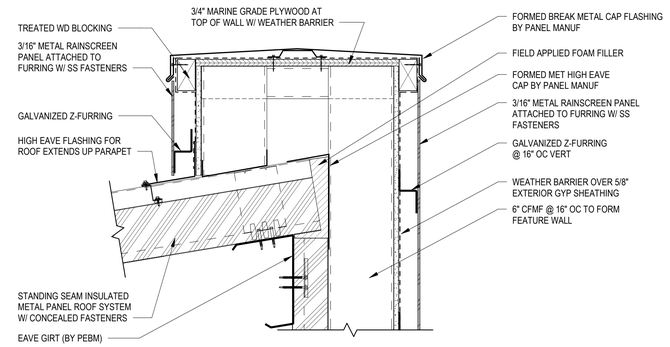
9 A-501 DETAIL - LOCKER BASE

1 1/2" = 1'-0"



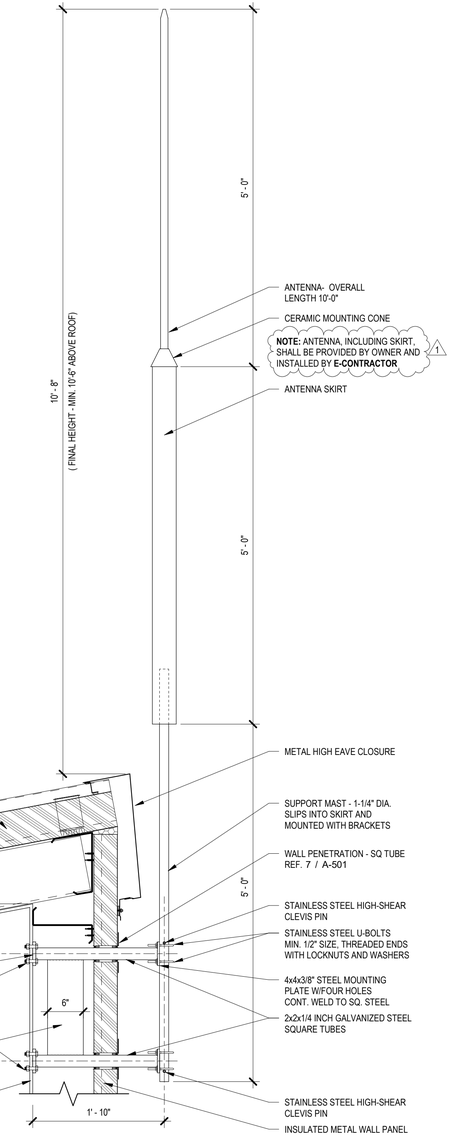
2 A-501 DETAIL - WINDOW HEAD AT METAL PANEL

1 1/2" = 1'-0"



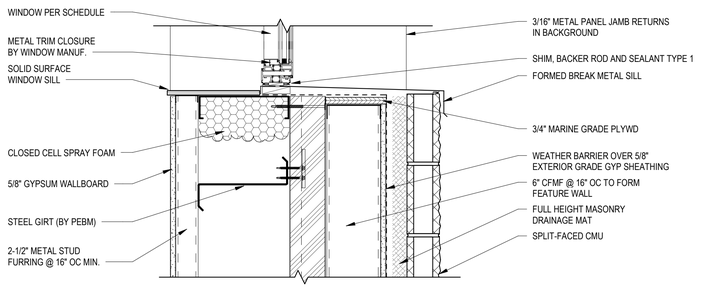
6 A-501 DETAIL - TOP OF FEATURE WALL

1 1/2" = 1'-0"



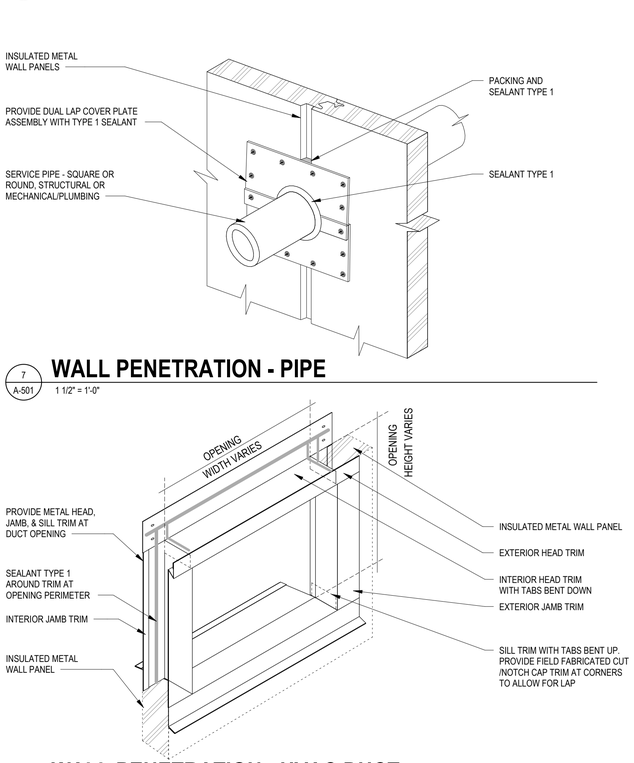
10 A-501 DETAIL - ANTENNA MOUNTING

1" = 1'-0"



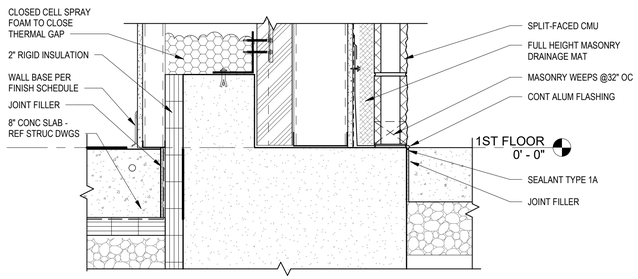
3 A-501 DETAIL - WINDOW SILL AT METAL PANEL

1 1/2" = 1'-0"



8 A-501 WALL PENETRATION - HVAC DUCT

1 1/2" = 1'-0"



4 A-501 DETAIL - BASE AT METAL PANEL

1 1/2" = 1'-0"

7 A-501 WALL PENETRATION - PIPE

1 1/2" = 1'-0"

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. Office of General Services

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CONSULTANT

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REGISTERED ARCHITECT MICHAEL R. BRADY No. 033964 STATE OF NEW YORK
EXPIRES: 5/21/2024

CONTRACT:
CONSTRUCTION

TITLE:
PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION:
DOT REGION 9, BROOME COUNTY
ROUTE 26
VESTAL, NY

CLIENT:
DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 – C
DESIGNED BY:	MRB
DRAWN BY:	MRB
FIELD CHECK:	
APPROVED:	

SHEET TITLE:
DETAILS

DRAWING NUMBER:
A–501

SHEET 60 OF 93

GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL CONFORM WITH ALL NEW YORK STATE CODES AND REGULATIONS (AS WELL AS ALL APPLICABLE LOCAL CODES & REGULATIONS).
2. DO NOT SCALE FROM THESE DRAWINGS.
3. THE EXACT MOUNTING HEIGHTS AND LOCATIONS OF ALL HVAC EQUIPMENT SHALL BE FIELD VERIFIED AND COORDINATED WITH ALL OTHER MECHANICAL, ELECTRICAL, PLUMBING, ARCHITECTURAL AND STRUCTURAL SYSTEMS. DURING SHOP DRAWINGS SUBMISSIONS, SHOW ALL MOUNTING HEIGHTS OF DUCTWORK, UNITS, ETC.
4. VERIFY ALL EQUIPMENT VOLTAGES WITH THE ELECTRICAL CONTRACTOR PRIOR TO ORDERING EQUIPMENT.
5. ELECTRICAL CONTRACTOR WILL PROVIDE DISCONNECT SWITCHES FOR ALL HVAC EQUIPMENT INCLUDING WEATHERPROOF UNITS AS REQUIRED, UNLESS UNITS ARE SPECIFIED WITH FACTORY MOUNTED & INSTALLED DISCONNECT SWITCHES. REFER TO MECHANICAL EQUIPMENT SCHEDULE FOR EXACT DETAILS.
6. PROVIDE PHASE LOSS PROTECTION FOR ALL POLY-PHASE MOTOR DEVICES.
7. DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED SHEET STEEL IN STRICT COMPLIANCE WITH THE LATEST EDITION OF THE ASHRAE, NFPA, AND SMACNA GUIDE RECOMMENDATIONS. SIZES AS SHOWN INDICATE INSIDE CLEAR DIMENSIONS OF THE AIR PASSAGE. DUCTWORK SHALL BE FULLY INSULATED AS PER APPLICABLE CODES AND WRITTEN SPECIFICATIONS.
8. DUCT SIZES MUST BE VERIFIED FOR CLEARANCES AT THE JOB SITE PRIOR TO FABRICATION. DIMENSIONS MAY BE CHANGED TO ACCOMMODATE CONSTRUCTION AS LONG AS EFFECTIVE CROSS-SECTIONAL AREA IS MAINTAINED. DUCT TRANSITIONS SHALL BE CONSTRUCTED WITH A SLOPE OF 1" TO 4". ALL DEVIATIONS FROM ORIGINAL CONTRACT DRAWINGS SHALL BE REVIEWED BY THE DIRECTOR'S REPRESENTATIVE DURING THE SHOP DRAWING PROCESS.
9. PROVIDE ELBOWS OR TEES WITH TURNING VANES FOR ALL CHANGES OF DUCT DIRECTION. PROVIDE SPLITTER DAMPERS WITH LOCKING QUADRANTS IN ALL TEES.
10. PROVIDE MANUAL BALANCING DAMPERS AS REQUIRED TO PROPERLY BALANCE EACH INDIVIDUAL AIR DISTRIBUTION SYSTEM. IF THE LOCATION OF THE BALANCING DAMPER IS NOT DEFINED ON THE DRAWINGS, THE FOLLOWING MINIMUMS STANDARDS SHALL GOVERN. ALL SUPPLY, RETURN, AND EXHAUST MAIN BRANCHES FROM TRUNKS, EACH SPLIT AND ALL SUB- BRANCHES FROM MAIN SHALL INCORPORATE BALANCING DAMPERS.
11. PROVIDE FLEXIBLE CONNECTORS AT ALL DUCT CONNECTIONS TO VIBRATING EQUIPMENT. THESE CONNECTORS SHALL BE INSTALLED IN CLOSE PROXIMITY TO SUCH EQUIPMENT.
12. PROVIDE FIRE DAMPERS WITH RATED ACCESS DOORS AT ALL DUCT PENETRATIONS THROUGH FIRE RATED WALLS, SMOKE AND FIRE STOPPING, SHAFT, FLOORS, RATED CEILINGS AND PARTITIONS AS REQUIRED TO MAINTAIN ARCHITECTURAL FIRE RATINGS. REFER TO THE ARCHITECTURAL PLANS AND SPECIFICATIONS FOR LOCATIONS AND FIRE RATING REQUIREMENTS. FULLY REVIEW ALL ARCHITECTURAL AND ENGINEERING DRAWINGS.
13. ALL ACCESS DOORS REQUIRED IN GENERAL CONSTRUCTION ARE TO BE PROVIDED AND INSTALLED BY THE CONSTRUCTION CONTRACTOR. IDENTIFY SIZE, TYPE AND LOCATION OF SUCH DOORS FOR PROPER ACCESS TO ALL CONCEALED HVAC EQUIPMENT, VALVES AND OTHER RELATED EQUIPMENT. THE HVAC CONTRACTOR SHALL IDENTIFY THESE REQUIREMENTS ON A COORDINATED SHOP DRAWING PRIOR TO SYSTEM FABRICATION AND INSTALLATION.
14. ALL CEILING MOUNTED EQUIPMENT MUST BE SUPPORTED DIRECTLY FROM BUILDING STRUCTURE WITH COMBINATION SPRING AND NEOPRENE-IN-SHEAR HANGERS AND ROD, PROVIDE SUPPLEMENTARY STEEL AS REQUIRED TO ADEQUATELY SUPPORT THE LOAD.
15. CONTRACT AN INDEPENDENT NEBB CERTIFIED AIR BALANCING & TESTING COMPANY TO PERFORM THE AIR BALANCING WORK AND ASSOCIATED SYSTEM AIR BALANCING REPORT. ALL WORK SHALL BE PERFORMED IN STRICT COMPLIANCE WITH ALL APPLICABLE CODES, REGULATIONS, PLANS AND WRITTEN SPECIFICATIONS. SUBMIT THE FINAL AIR BALANCE REPORT TO THE DIRECTOR'S REPRESENTATIVE FOR REVIEW AND APPROVAL PRIOR TO SUBSTANTIAL COMPLETION OF THE PROJECT. THE AIR BALANCE REPORT MUST INCLUDE ALL SUPPLY, RETURN, & EXHAUST AIR TERMINALS, FRESH AIR (OUTSIDE AIR) INTAKE AND VENTILATION EXHAUST CFM RATES FOR ALL UNITS. ALSO INCLUDE ACTUAL SUPPLY & RETURN AIR VELOCITY & STATIC PRESSURE READINGS ALONG WITH ALL MOTOR AMPERAGES FOR ALL UNITS.
16. THE ELECTRICAL CONTRACTOR IS TO PROVIDE 12V SMOKE DETECTORS WITH AUXILIARY CONTACTS. UPON ACTIVATION THE SMOKE DETECTORS SHALL SHUT DOWN THE AIR DISTRIBUTION SYSTEMS AND ACTIVATE A VISIBLE AND AUDIBLE SUPERVISOR SIGNAL AT A CONSTANTLY ATTENDED LOCATION IN ACCORDANCE WITH NFPA 90A & 90B. PROVIDE WIRING BETWEEN THE FAN SHUTDOWN RELAY AND THE HVAC UNIT. COORDINATE THE INSTALLATION OF THE SMOKE DETECTORS WITH THE ELECTRICAL CONTRACTOR.
17. PROVIDE ALL LOW VOLTAGE CONTROL WIRING, THERMOSTATS, RELAYS, TRANSFORMERS, STARTERS ETC FOR A COMPLETE OPERATING CONTROL SYSTEM AS DESCRIBED IN THE SEQUENCE OF OPERATIONS. LINE VOLTAGE CONTROL FOR EXHAUST FANS CONTROLLED FROM LIGHT SWITCH AND THERMOSTATS. ALL CONTROL WIRING IN THE AREAS THAT DO NOT HAVE DROPPED CEILINGS PROVIDE ALL CONTROL WIRING CONDUIT. IN AREAS OF DROPPED CEILING PLENUM RATED CONTROL WIRING CAN BE RUN EXPOSED ABOVE CEILING.
18. RIGGING OF NEW EQUIPMENT TO BE SCHEDULED/COORDINATED WITH DIRECTOR'S REPRESENTATIVE. RIGGING MUST BE PERFORMED DURING "OFF HOURS" TO ELIMINATE PARKING PROBLEMS. COORDINATE RIGGING WITH ANY REQUIREMENT MANDATED BY THE LOCAL BUILDING DEPARTMENT AND/OR ANY OTHER AGENCIES INCLUDING SUCH PERMITS, FEES, ETC.
19. COORDINATE EXACT LOCATIONS AND VERTICAL ELEVATIONS OF ALL TRANSFER GRILLS AND OPENINGS WITH THE ARCHITECT.
20. ALL MECHANICAL EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER'S REQUIREMENTS/SPECIFICATIONS.
21. ALL MECHANICAL EQUIPMENT SHALL BE MOUNTED ON MINIMUM 6" HIGH CONCRETE PAD UNLESS OTHERWISE NOTED (PAVER AND CINDER BLOCK IS NOT ACCEPTABLE).

SCOPE OF WORK:

1. THE INSTALLATION OF ONE (1) NEW HEAT RECOVERY UNIT, ONE (1) AIR HANDLING UNIT, AND ALL ASSOCIATED DUCTWORK, HANGERS, SUPPORTS, DIFFUSERS, REGISTERS, CONTROLS, AND APPURTENANCES.
2. THE INSTALLATION OF IN FLOOR RADIANT HEAT THROUGHOUT THE FACILITY AND ALL ASSOCIATED EQUIPMENT INCLUDING BOILER, PUMPS, PIPING, VALVING, MANIFOLDS, HANGERS, SUPPORTS, CONTROLS, ETC.
3. THE INSTALLATION OF NEW EXHAUST FANS AND ALL ASSOCIATED DUCTWORK, HANGERS, SUPPORTS, GRILLES, CONTROLS, AND APPURTENANCES.
4. THE INSTALLATION OF A NEW GAS DETECTION SYSTEM AND ALL ASSOCIATED SUPPORTS, WIRING, CONTROLS, AND APPURTENANCES.
5. INSTALLATION OF OPERATOR WORKSTATION TO MONITOR FOR ALARMS FROM EQUIPMENT CONTROLLERS AT THE FACILITY.

NOTE: THIS SCOPE OF WORK DESCRIPTION IS PROVIDED TO GIVE AN OVERALL "MACRO" DESCRIPTION OF THIS PROJECT. M.C. IS RESPONSIBLE TO REVIEW ALL ENGINEERING AND ARCHITECTURAL DRAWINGS AND VISIT THE SITE IF NEEDED, PRIOR TO SUBMISSION OF BID. REFER TO SPECIFICATIONS FOR FURTHER SCOPE OF WORK. IF CONFLICTS ARISE, CONTACT DIRECTOR'S REPRESENTATIVE BEFORE FABRICATION.

1

ABBREVIATIONS

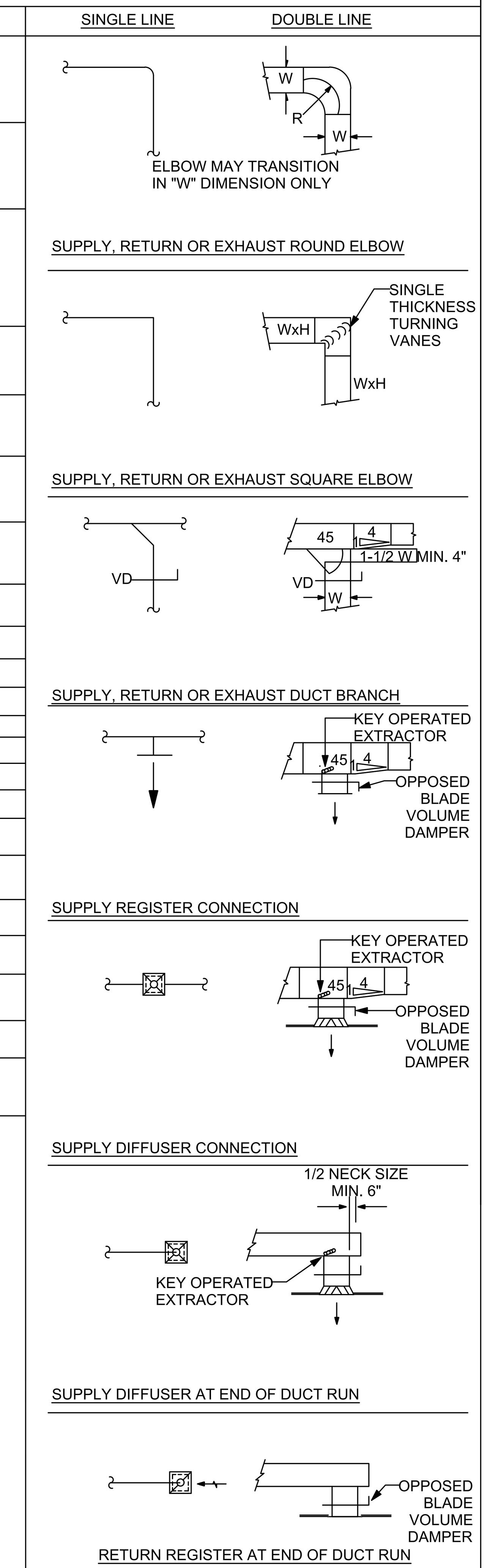
IDENTIFIER	DESCRIPTION
ACCU	AIR COOLED CONDENSING UNIT
AI	ANALOG INPUT
AO	ANALOG OUTPUT
AHU	AIR HANDLING UNIT
A.P.D.	AIR PRESSURE DROP
BACNET	BUILDING AUTOMATION AND CONTROL NETWORKS
BCC	BRANCH CIRCUIT CONTROLLER
BDD	BACK DRAFT DAMPER
BG	BOTTOM GRILLE
BHP	BRAKE HORSEPOWER
BMS	BUILDING MANAGEMENT SYSTEM
BOT	BOTTOM
BR	BOTTOM REGISTER
BTU/HR	BRITISH THERMAL UNITS/HR
CA	COMMON ALARM
CC	CONSTRUCTION CONTRACTOR
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
COND	CONDENSATE DRAIN
CP	CONTROL PANEL
CR	CEILING REGISTER
CRAC	COMPUTER ROOM AIR CONDITIONER
CS	CURRENT SENSOR
DB	DRY BULB
DES	DAMPER END SWITCH
DIA	DIAMETER
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
DN	DOWN
DPT	DIFFERENTIAL PRESSURE TRANSMITTER
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EDB	ENTERING DRY BULB
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EG	EXHAUST GRILLE
ESP	EXTERNAL STATIC PRESSURE
EWB	ENTERING WET BULB
FAI	FRESH AIR INTAKE
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FLA	FULL-LOAD-AMPERAGE
FPM	FEET PER MINUTE
FT	FLOW TRANSMITTER
FZ	FREEZE
G	GAS
HP	HORSEPOWER
HRU	HEAT RECOVERY UNIT
IAW	IN ACCORDANCE WITH
IF	INTAKE FAN
IFR	IN FLOOR RADIATION
IR	INTERPOSING RELAY
LAT	LEAVING AIR TEMPERATURE
MAX	MAXIMUM
MBH	THOUSAND BTU PER HOUR
MIN	MINIMUM
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OA	OUTSIDE AIR
OAI	OUTSIDE AIR INTAKE
OPNG	OPENING
OP WT	OPERATING WEIGHT
PD	PRESSURE DROP
PT	PRESSURE TRANSMITTER
QTY	QUANTITY
RA	RETURN AIR
RD	RETURN DIFFUSER
RG	RETURN GRILLE
RH	RELATIVE HUMIDITY
RHG	REFRIGERANT HOT GAS LINE
RLL	REFRIGERANT LIQUID LINE
RPM	ROTATIONS PER MINUTE
RR	RETURN REGISTER
RTU	ROOFTOP UNIT
SA	SUPPLY AIR
SD	SUPPLY DIFFUSER
SG	SUPPLY GRILLE
SP	SYSTEM PUMP
SPS	STATIC PRESSURE SENSOR
SR	SAFETY RELAY
SS	START/STOP
ST	STATUS
TCV	TEMPERATURE CONTROL VALVE
TG	TRANSFER GRILLE
TSP	TOTAL STATIC PRESSURE
TO	TRANSFER OPENING
TT	TEMPERATURE TRANSMITTER
TYP.	TYPICAL
UH	UNIT HEATER
VFD	VARIABLE FREQUENCY DRIVE
VIC	VIBRATION ISOLATION CONNECTION
VIF	VERIFY IN FIELD
WB	WET BULB
W.C.	WATER COLUMN
WG	WATER GAUGE
WMS	WIRE MESH SCREEN

SYMBOL LIST

IDENTIFIER	DESCRIPTION
	PRESSURE GAUGE WITH PETCOCK
	THERMOMETER
	PIPE DROP ON DIRECTION OF FLOW
	PIPE RISER
	PIPE TEE DOWN
	PIPE TEE UP
	TWO WAY AND THREE WAY CONTROL VALVE
	BALL/ISOLATION VALVE
	GLOBE VALVE
	BALANCING VALVE
	CHECK VALVE
	DRAIN VALVE
	FLEXIBLE CONNECTION
	UNION
	STRAINER WITH BLOW OFF VALVE
	TRIPLE DUTY VALVE
	CAPPED PIPE
	PIPE ANCHOR
	PIPE SLEEVE
	NEW DUCTWORK OR PIPING
24X12 / 24X12	DOUBLE-LINE AND SINGLE-LINE RECTANGULAR DUCT, FIRST NUMBER INDICATES SIDE IN VIEW IN INCHES, SECOND NUMBER INDICATES SIDE IN DEPTH IN INCHES
24Ø / 12Ø	DOUBLE-LINE AND SINGLE-LINE ROUND DUCT, NUMBER INDICATES DIAMETER IN INCHES
	FLEXIBLE DUCTWORK
	REGULAR SUPPLY AIR DUCT (UP AND DOWN)
	REGULAR RETURN AIR DUCT (UP AND DOWN)
VD	VOLUME DAMPER
BDD	BACKDRAFT DAMPER
FD/AD	FIRE DAMPER AND ACCESS DOOR
SD/AD	SMOKE DAMPER AND ACCESS DOOR
	MOTOR OPERATED DAMPER
M	CONTROL DAMPER
	FAN - CENTRIFUGAL

NOTE: NOT ALL SYMBOLS USED IN DRAWINGS

IDENTIFIER	DESCRIPTION
C	COIL - COOLING
H	COIL - HEATING
XX YY	AVERAGING DEVICE XX - DEVICE TYPE YY - SIGNAL TYPE
	VARIABLE FREQUENCY DRIVE
XXX XX	EQUIPMENT TAG EQUIPMENT NUMBER
XXX X-XXX	DETAIL TAG/CALL OUT TAG MECHANICAL SHEET NUMBER
XX YY	TAG - BMS DEVICE XX - DEVICE TYPE YY - SIGNAL TYPE
PS	DIFFERENTIAL PRESSURE SENSOR
	SUPPLY AIR FLOW
	EXHAUST AIR
G type	GAS SENSOR (INDICATE TYPE)
U	UNDERCUT DOOR
T	THERMOSTAT
DSD	DUCT SMOKE DETECTOR
TS	TEMPERATURE SENSOR
	4 WAY CEILING DIFFUSER
	3 WAY CEILING DIFFUSER
	2 WAY CEILING DIFFUSER
	2 WAY CEILING DIFFUSER
	EXHAUST FAN
	RETURN OR EXHAUST GRILLE/REGISTER
	SIDEWALL GRILLE



NOTES:
1. DIFFUSERS, REGISTERS, GRILLES AND DUCT SIZES ARE SHOWN ON FLOOR PLANS OR IN SCHEDULES
2. DUCT SIZES ARE GIVEN AS INTERNAL DIMENSIONS. INTERNALLY LINED DUCTS SHALL BE INCREASED IN SIZE TO MAINTAIN THE SAME INTERNAL SIZE.

NYSECC COMPLIANCE

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE 2020 NEW YORK STATE ENERGY CONSERVATION CODE.

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT

LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York

CERTIFICATE OF AUTHORIZATION #: 017995

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STATE OF NEW YORK · LICENSED PROFESSIONAL ENGINEER

CONTRACT: HVAC

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER: 46063 – H

DESIGNED BY: CCA

DRAWN BY: CCA

FIELD CHECK:

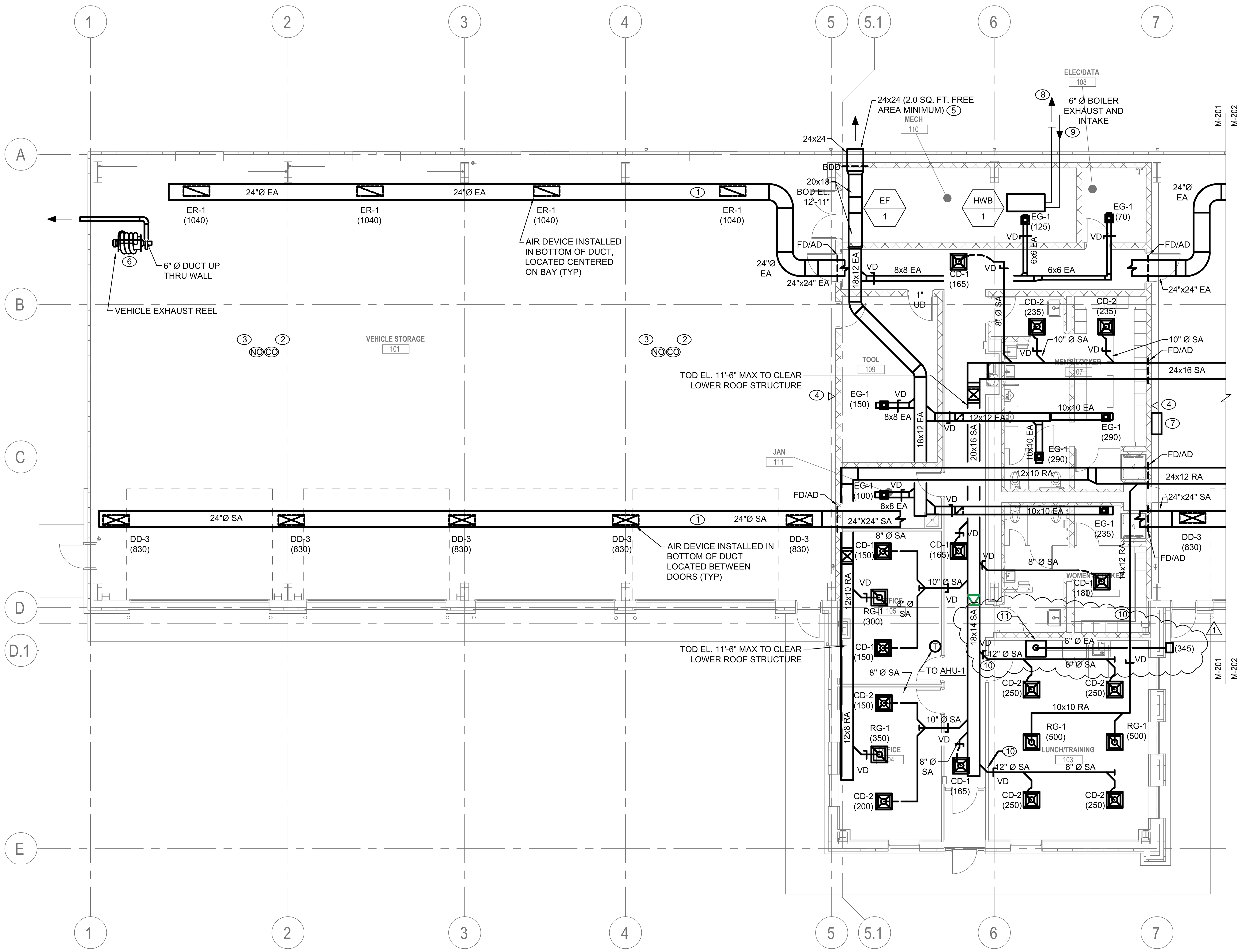
APPROVED: PROJECT MANAGER

SHEET TITLE: NOTES, SYMBOLS, AND ABBREVIATIONS

DRAWING NUMBER: M-001

SHEET 80 OF 108

Jan 31,2024 – 5:09pm
M:\MEP Projects\2019\19-289-0295 Provide 8 Bay Vehicle Storage Building\1 Drawings\Sheets\3_Mechanical\M-001 – NOTES, SYMBOLS AND ABBREVIATIONS.dwg
36x24 PLOT SHEET



PARTIAL 1ST FLOOR DUCTWORK PLAN - AREA 1

1 M-201 SCALE: 1/8" = 1'-0'

GENERAL NOTES:

A. EXTERIOR INSULATED METAL PANELS AND INSULATED ROOF PANELS MAY NOT BE USED TO SECURE ANY ITEMS. COORDINATE WITH CONSTRUCTION CONTRACTOR FOR STUD BLOCKING TO MOUNT DEVICES LOCATED ON THE PANELS.

KEYNOTES:

1. DUCTWORK TO BE INSTALLED TIGHT TO STRUCTURE.
2. PROVIDE SURFACE MOUNTED NETWORK PLATFORM CARBON MONOXIDE SENSOR.INSTALL CO SENSOR 2'-0" BELOW THE FINISHED ROOF DECK OR AS SPECIFIED BY MANUFACTURER. PROVIDE UNISTRUT SUPPORT SUSPENDED FROM THE DECK AS REQUIRED TO ACCOMMODATE INSTALLATION.
3. PROVIDE SURFACE MOUNTED NETWORK PLATFORM NITROGEN DIOXIDE SENSOR. INSTALL NO2 SENSOR 2'-0" BELOW THE FINISHED ROOF DECK OR AS SPECIFIED BY MANUFACTURER. PROVIDE UNISTRUCT SUPPORT SUSPENDED FROM THE DECK AS REQUIRED TO ACCOMMODATE INSTALLATION.
4. PROVIDE REMOTE STROBE AND BUZZER, HONEYWELL P2W-P. PROVIDE WARNING SIGN AT EACH STROBE AND WITHIN THE OPERATIONS AREA AT ALL ENTRANCES INTO THE GARAGE STATING- " UPON ACTIVATION OF GAS DETECTION HORN AND STROBE- HIGH LEVEL GAS DETECTED, EMERGENCY EVACUATION REQUIRED, DO NOT ENTER GARAGE AREA". COORDINATE EXACT LOCATION WITH FACILITY SAFETY PERSONNEL.
5. CONNECT DUCTWORK TO LOUVER AT EXTERIOR WALL. REFER TO MECHANICAL DETAILS AND ARCHITECTURAL SPECIFICATION 089100 FOR LOUVER INFORMATION.
6. PROVIDE VEHICLE EXHAUST REEL, MOTOR OPERATED, WITH 6" HIGH TEMPERATURE HOSE AND FAN MOUNTED TO THE REEL, NEDERMAN MODEL 865 OR APPROVED EQUAL. REEL TO BE SECURED TO HANGING SUPPORT PROVIDED BY THE GENERAL CONTRACTOR. COORDINATE FINAL LOCATIONS AND PROVIDE FINAL ATTACHMENT TO SUPPORTS PER MANUFACTURERS REQUIREMENTS. PROVIDE 6" EXHAUST DUCT UP THROUGH WALL. EXTEND A MINIMUM OF 1' AND TERMINATE WITH WEATHER CAP. COORDINATE PENETRATION WITH C CONTRACT. FINAL SEALING BY C CONTRACT.
7. PROVIDE GAS DETECTION CONTROLLER AND RELAY MODULE, HONEYWELL 301C. SYSTEM TO BE COMPATIBLE AND INTERFACE WITH HRU-1 FOR DEMAND CONTROL VENTILATION FUNCTIONALITY. SYSTEM TO SEND AN ALARM SIGNAL TO THE BMS TO NOTIFY THE END USER OF GAS DETECTION SYSTEM ACTIVATION. PROVIDE ALL REQUIRED CONTROL WIRING AND ANCILLARY DEVICES TO MAKE A COMPLETE AND OPERABLE SYSTEM. CONTROL WIRING TO BE INSTALLED WITHIN ¾" EMT. REFER TO SPECIFICATION 234500 FOR FURTHER INFORMATION AND SYSTEM PERFORMANCE REQUIREMENTS.
8. PROVIDE SECURITY CHIMNEYS SSD AL29-4C DOUBLE WALL STAINLESS STEEL FLUE PIPING WITH 1" AIR GAP OR APPROVED EQUAL. PROVIDE CERTIFIED WALL THIMBLE AT WALL PENETRATION. PITCH FLUE PIPING BACK TOWARDS BOILER. SEAL ALL SEAMS WATER TIGHT. EXTEND A MINIMUM OF 12" BEYOND TERMINATION OF THE INTAKE. TERMINATE WITH SCREEN. PROVIDE BOILER EXHAUST CONDENSATE DRAIN AND EXTEND TO BOILER DRAIN. CONDENSATE TO DRAIN THROUGH NEUTRALIZATION KIT.
9. PROVIDE SECURITY CHIMNEYS SS AL29-4C SINGLE WALL STAINLESS STEEL INTAKE PIPING. TERMINATE WITH DOWN TURNED ELBOW AND SCREEN.
10. PROVIDE DUCT TRANSITION TO ACCOMMODATE TALLER CEILINGS WITHIN THE LUNCH ROOM.
11. PROVIDE KITCHEN EXHAUST HOOD: 30" BROAN ELITE CHIMNEY RANGE EXHAUST HOOD,MODEL EW4330SS WITH GREASE FILTER, WITH INTEGRAL 3-SPEED BLOWER, 350 CFM, 7.5 SONES MAX AT HIGH SPEED, HVI 2100 CERTIFIED, UL 507 LISTED, 2-LEVEL LED LIGHT. 120V, 60 HZ, 1.6A. PROVIDE FLUE EXTENSION AEEW43SS AND WALL CAP MODEL 641. PROVIDE 6"Ø DUCT TO EXTERIOR WALL OUTLET AND TERMINATE WITH WALL CAP. COORDINATE FINAL LOCATION OF THE RANGE HOOD WITH DIRECTOR'S REPRESENTATIVE DEPENDING ON LOCATION OF THE ELECTRIC RANGE AND ENSURE INSTALLATION HEIGHT OF THE HOOD ABOVE THE COOKTOP IS NOT MORE THAN 30 INCHES. COORDINATE SUPPLEMENTAL BLOCKING FOR EXHAUST HOOD INSTALLATION WITH WALL FRAMING.

1 (revision)

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. Office of General Services
DESIGN & CONSTRUCTION

CONSULTANT
LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York
CERTIFICATE OF AUTHORIZATION #: 017995

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MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 – H
DESIGNED BY:	CCA
DRAWN BY:	CCA
FIELD CHECK:	
APPROVED:	PROJECT MANAGER
SHEET TITLE:	PARTIAL 1ST FLOOR DUCTWORK PLAN – AREA 1
DRAWING NUMBER:	M-201

Jan 31,2024 – 5:11pm
M:\MEP Projects\2019\19-289-0295 Provide 8 Bay Vehicle Storage Building\1 Drawings\Sheets\3_Mechanical\M-201 – PARTIAL 1ST FLOOR DUCTWORK PLAN.dwg
36x24 PLOT SHEET

HEAT RECOVERY UNIT SCHEDULE

EQUIP. NO.	BASIS OF DESIGN	MODEL	LOCATION	SUPPLY AIR FAN									EXHAUST AIR FAN									DX COOLING		LP GAS HEATING			CONDENSER			
				AIR FLOW (CFM)	ESP (IN. WG)	TSP (IN. WG)	TYPE	DRIVE	QTY	BHP	HP	RPM	AIR FLOW (CFM)	ESP (IN. WG)	TSP (IN. WG)	TYPE	DRIVE	QTY	BHP	HP	RPM	TOTAL CAP. (MBH)	SENSIBLE CAP. (MBH)	INPUT CAP. (MBH)	OUTPUT CAP. (MBH)	BURNER DELTA T (°F)	FACE AREA (SQ FT)	ROWS	FPI	FANS
HRU-1	SEASONS 4	AHXXX / 3SJK19	OUTSIDE	7,800	1	2.77	AF SWSI	DIRECT	2	2.31	3	2111	8,000	1	2.78	AF SWSI	DIRECT	2	2.45	3	2158	NO COOLING		595.06	476.05	54.1	NO COOLING			

HEAT RECOVERY UNIT SCHEDULE (CONTINUED)

EQUIP. NO.	AIRSTREAM	AIRFLOW	ENERGY RECOVERY	OA FILTER			RA/EXH FILTER			ELECTRICAL				OPERATING WEIGHT (±LBS)	DIMENSIONS LxWxH (IN)
			HEATING DB / WB (°F)	MERV RATING	DEPTH (IN.)	TOTAL AREA (SQFT)	MERV RATING	DEPTH (IN.)	TOTAL AREA (SQFT)	FLA	MCA	MOCP	V-PH-HZ		
HRU-1	OA	7,800	0/-0.5	8	2	20.00	8	2	20.00	46.00	48.0	50	208-3-60	8,850	224x96X101
	PRE-TREATED OA	7,800	52.7/35.9												
	RA	7,800	70/55.8												
	EA	7,800	31.1/31.1												

EQUAL PRODUCTS BY "VENTROL." NOTES:

1. PROVIDE 115V GFI POWERED CONVENIENCE OUTLET - FACTORY WIRED W/TRANSFORMER.
2. PROVIDE MODULATING LP GAS BURNER WITH STAINLESS STEEL HEAT EXCHANGER.
3. PROVIDE UNIT MOUNTED NON-FUSED DISCONNECT SWITCH FOR SINGLE POINT POWER CONNECTION.
4. PROVIDE WITH FACTORY INSTALLED CONTROLS. UNIT TO RUN CONTINUOUSLY AND ENABLE HEAT AS REQUIRED TO MAINTAIN A DISCHAGRE TEMPERATURE OF 72 DEG F.
5. PROVIDE WITH STAINLESS STEEL HEAT PLATE ENERGY RECOVERY WITH FACE & BYPASS DAMPERS.
6. PROVIDE WITH TOP SUPPLY AND RETURN CONNECTIONS.
7. PROVIDE SUPPLY AIR DUCT SMOKE DETECTOR, TO SHUT DOWN UNIT UPON DETECTION OF SMOKE.

FAN SCHEDULE

TAG	BASIS OF DESIGN	MODEL	LOCATION	SERVICE	TYPE	DRIVE	AIR FLOW (CFM)	TSP (IN. WG)	SONES	ELECTRICAL				OPERATING WEIGHT (±LBS)	DIMENSIONS LxWxH (IN)
										HP	RPM	FLA	V-PH-HZ		
EF-1	COOK	SQI-D VF	MECHANICAL ROOM	LOCKER/TOILET RMS	IN-LINE	DIRECT	1,260	0.75	1.5	0.50	1665	6.4	120-1-60	114	17x20x20
VEF-1	NEDERMAN	865	101 VEH STOR	VEHICLE EXHAUST	-	DIRECT	700	-	-	[325 VA]	-	-	120-1-60	110	57x35x37

NOTES:

1. FAN TO OPERATE CONTINUOUSLY AND BE INTERLOCKED WITH AHU-1 OPERATION.
2. PROVIDE ECM MOTOR WITH DIAL ON MOTOR FOR BALANCING.
3. PROVIDE THERMAL OVERLOAD FOR ALL SINGLE PHASE MOTORS.
4. PROVIDE FLEXIBLE DUCT CONNECTORS FOR THE INLET AND OUTLET OF THE FAN.
5. PROVIDE HANGER RODS AND SPRING VIBRATION ISOLATORS FOR IN LINE FANS.

AIR HANDLING UNIT SCHEDULE

TAG	BASIS OF DESIGN	MODEL	LOCATION	SERVICE	NOM. CAP. (TONS)	EFFICIENCY	MIN. OA (CFM)	SUPPLY FAN						RELIEF FAN				FILTER		DX COOLING (88/73 DB/WB)							HOT GAS REHEAT		LP GAS HEAT						ELECTRICAL			OPERATING WEIGHT (±LBS)	DIMENSIONS LxWxH (IN)	NOTES
								AIR FLOW (CFM)	ESP (IN)	TSP (IN)	MOTOR HP	MOTOR TYPE	MOTOR BHP	AIR FLOW (CFM)	ESP (IN)	MOTOR HP	MOTOR TYPE	TYPE	MERV	REFRIG TYPE	TOTAL CAP. (MBH)	SENSIBLE CAP. (MBH)	EAT DB (°F)	EAT WB (°F)	LAT DB (°F)	LAT WB (°F)	EAT DB (°F)	LAT DB (°F)	AIRFLOW (CFM)	INPUT (MBH)	OUTPUT (MBH)	TURNDOWN	EAT DB (°F)	LAT DB (°F)	MCA	MOCP	V-PH-HZ			
AHU-1	ADDISON	PRRA 120 B2XL	PAD MOUNTED	OFFICE	12	16 EER	1,260	2,800	1.0	2.1	2.4	ECM	1.84	1540.00	0.50		ECM	PLEATED	4" MERV 8	R-410A	145.2	86.4	86.6	72.8	59.8	58.6	59.8	75.3	2800	200.0	150.0	5:1	34.3	85.0	46.6	60	208-3-60	2651	183X64X66	1-6

NOTES:

1. PROVIDE WITH 100% ECONOMIZER CONTROL AND RELIEF DAMPER.
2. FAN STATIC PRESSURE TO BE BASED ON FILTERS IN REPLACEMENT CONDITION
3. PROVIDE PREPROGRAMMED CONTROLLER BY UNIT MANUFACTURER. UNIT TO PROVIDE COOLING/VENTILATION IN THE SUMMER AND VENTILATION ONLY IN THE WINTER. UNIT TO PROVIDE NEUTRAL (72 DEG F) DISCHARGE TEMPERATURE WHEN SPACE IS SATISFIED.
4. PROVIDE WITH NON-FUSED DISCONNECT.
5. PROVIDE A DUCT SMOKE DETECTOR IN THE RETURN AIR DUCT. FAN TO BE SHUT DOWN UPON ACTIVATION OF THE SMOKE DETECTOR.
6. PROVIDE REMOTE WALL MOUNTED DIGITAL ADJUSTABLE THERMOSTAT. PROVIDE WIRING BACK TO UNIT INSTALLED WITHIN EMT.

1

GAS FIRED HOT WATER CONDENSING BOILER SCHEDULE

TAG	BASIS OF DESIGN	MODEL	MOUNTING	LOCATION	EWT (°F)	LWT (°F)	MAX. INPUT (MBH)	HIGH FIRE OUTPUT (MBH)	LOW FIRE OUTPUT (MBH)	THERMAL EFF.	GAS PRESSURE		FLOW (GPM)	INTAKE SIZE	VENT SIZE	ELECTRICAL		NOTES
											MIN (IN. WG)	MAX (IN. WG)				V.-PH.-CY.	FLA	
HWB-1	HTP	ELX-650FBN	FLOOR	MECHANICAL ROOM	105	125	650	630	65	96.9%	4	14	63	6	6	120-1-60	21.3	SEE BELOW

NOTES

1. PROVIDE STAINLESS STEEL FLUE AND COMBUSTION AIR DUCTS. INCLUDE ALL NECESSARY HANGERS, FITTINGS, AND TERMINATION CAPS.
2. PROVIDE CONDENSATE NEUTRALIZATION KIT FOR EACH BOILER.
3. BOILER TO INCLUDE FACTORY INSTALLED PRESSURE RELIEF VALVE, LOW WATER CUTOFF, FLOW SWITCH, AIR VENT, HIGH LIMIT SWITCH.
4. INSTALL BOILER INCLUDING ALL PIPING CONNECTIONS, FLUE AND COMBUSTION AIR PIPING PER MANUFACTURERS INSTALLATION INSTRUCTIONS.
5. BOILER TO ENABLE/DISABLE BASED ON A CALL FOR HEAT FROM ANY ZONE. BOILER TO ENERGIZE ASSOCIATED BOILER PUMP. PROVIDE RELAY PANEL TO ACCOMMODATE INPUT FROM MULTIPLE THERMOSTATS TO ENERGIZE BOILER.

PUMP SCHEDULE

TAG	BASIS OF DESIGN	MODEL	LOCATION	SERVICE	PUMP TYPE	FLUID TYPE	CONNECTION SIZE (IN)	GPM	HEAD (FT. WG)	ELECTRICAL			NOTES
										HP	AMPS	V/PH/HZ	
BP-1	TACO	VR15H	MECHANICAL ROOM	BOILER	IN LINE	WATER	1.5	60	35	0.88		230/1/60	2,3
BP-2	TACO	VR15H	MECHANICAL ROOM	BOILER	IN LINE	WATER	1.5	60	35	0.88		230/1/60	2,3
P-1	TACO	VR15M	MECHANICAL ROOM	ZONE 1	IN LINE	WATER	1.5	13	35	1/4		115/1/60	1
P-2	TACO	VR15M	JAN CLOSET	ZONE 2	IN LINE	WATER	1.5	13	35	1/4		115/1/60	1
P-3	TACO	VR15M	ELEC/DATA	ZONE 3	IN LINE	WATER	1.5	13	35	1/4		115/1/60	1
P-4	TACO	VR15M	PLBG CHASE	ZONE 4	IN LINE	WATER	1.5	13	35	1/4		115/1/60	1
P-5	TACO	VR15M	MECHANICAL ROOM	ZONE 5	IN LINE	WATER	1.5	8	35	1/4		115/1/60	1

NOTES:

1. ZONE PUMPS (P1- THRU P-5) TO BE CONTROLLED BY CORRESPONDING ZONE THERMOSTAT. UPON CALL FOR HEAT ASSOCIATED PUMP TO BE ENABLED AND DISABLED WHEN SPACE IS SATISFIED. PROVIDE LINE VOLTAGE RELAY/TRANSFORMER TO ACCOMMODATE LOW VOLTAGE THERMOSTAT. THERMOSTAT TO BE POWERD FROM RELAY AND ENERGIZE PUMP UPON RELAY CLOSURE OF THERMOSTAT. PROVIDE ONE PER PUMP.
2. BOILER PUMPS (BP-1 & BP-2) TO ENABLE/DISABLE UPON CALL FOR HEAT. PUMPS TO BE CONTROLLED BY BOILER. ONE PUMP STANDBY.
3. PROVIDE WITH OPTIONAL SUPPORT STAND

IN FLOOR RADIATION SCHEDULE

EQUIP. NO.	BASIS OF DESIGN	MODEL	SERVICE	CAPACITY (MBH)	BRANCH CONNECTION (IN)	HOT WATER SIDE							V/PH/HZ	NOTES
						EWT (°F)	LWT (°F)	FLOW (GPM)	MAX P.D. (FT. WG)	# CIRCUITS	CIRCUIT LENGTH	% GLYCOL		
IFR-1	WATTS	RADIANT PEX+	GARAGE ZONE 1	124.0	1 1/2	125	105	13.0	6.10	8	400	0	120/1/60	SEE BELOW
IFR-2	WATTS	RADIANT PEX+	GARAGE ZONE 2	124.0	1 1/2	125	105	13.0	7.70	7	400	0	120/1/60	SEE BELOW
IFR-3	WATTS	RADIANT PEX+	GARAGE ZONE 3	124.0	1 1/2	125	105	13.0	6.10	8	400	0	120/1/60	SEE BELOW
IFR-4	WATTS	RADIANT PEX+	GARAGE ZONE 4	124.0	1 1/2	125	105	13.0	7.70	7	400	0	120/1/60	SEE BELOW
IFR-5	WATTS	RADIANT PEX+	OFFICE	68.0	1 1/2	102	82	8.0	2.50	9	395	0	120/1/60	SEE BELOW

NOTES:

1. PROVIDE WITH ONE ZONE PANEL PER ZONE, WATTS 3WM THERMALPRO HIGH-FLOW TYPE OR APPROVED EQUAL. PANELS TO INCLUDE ZONE PUMP, STAINLESS STEEL MANIFOLD, ACTUATORS, SHUT OFF VALVE, MANUAL MIXING VALVE AND PIPING PREASSEMBLED AND TESTED AT THE FACTORY.
2. PROVIDE ONE THERMOSTAT PER ZONE, WATTS MODEL 519. THERMOSTAT TO CONTROL THE ROOM AND FLOOR TEMPERATURE. PROVIDE WITH FLOOR SENSOR
3. REFER TO STRUCTURAL DRAWINGS FOR SLAB THICKNESS AND TUBING LOCATION WITHIN THE SLAB.

EXPANSION TANK

EQUIP. NO.	BASIS OF DESIGN	MODEL	LOCATION	SERVICE	TYPE	QTY	HEIGHT (IN)	DIA (IN)	VOLUME (GAL)		WORKING PRESSURE		NOTES
									TOTAL	ACCEPTANCE	MIN (PSIA)	MAX (PSIA)	
ET-1	TACO	CBX300-125	MECHANICAL ROOM	HOT WATER LOOP	DIAPHRAGM	1	55.313	24.0	79.0	43.0	26.4	43.8	SEE BELOW

NOTES:

1. PROVIDE WITH SIGHT GLASS
2. OPERATING PRESSURE TO BE 12 PSI

REGISTER, GRILLE, DIFFUSER SCHEDULE

TAG	BASIS OF DESIGN	MODEL	SERVICE	CFM	NECK SIZE (IN)	FACE SIZE (IN)	CONSTRUCTION	BLADE SPACING (IN)	MAX S.P.	MAX NC	NOTES
CD-1	PRICE	SCD	SUPPLY	0-200	6" ROUND	24x24	STEEL	NA	0.062	< 30	W/ VOLUME DAMPER
CD-2	PRICE	SCD	SUPPLY	200-350	8" ROUND	24x24	STEEL	NA	0.080	< 30	W/ VOLUME DAMPER
DD-1	PRICE	HCD	SUPPLY	0-425	-	18" x 6"	STEEL	NA	0.134	< 30	DRUM DIFFUSER W/ OPPOSED BLADE DAMPER
DD-2	PRICE	HCD	SUPPLY	425-1000	-	24" x 12"	STEEL	NA	0.106	< 30	DRUM DIFFUSER W/ OPPOSED BLADE DAMPER
DD-3	PRICE	HCD	SUPPLY	1000-2060	-	30" x 15"	STEEL	NA	0.054	< 30	DRUM DIFFUSER W/ OPPOSED BLADE DAMPER
ER-1	PRICE	530D	RETURN	500-1200	-	30"X16"	STEEL	3/4"	0.062	< 30	DUCT REGISTER W/ OPPOSED BLADE DAMPER
RG-1	PRICE	535D	RETURN	0-1000	-	24" x 24"	STEEL	1/2"	0.062	< 30	CEILING RETURN GRILLE W/ OPPOSED BLADE DAMPER
RR-1	PRICE	535D	RETURN	0-75	-	12" x 12"	STEEL	1/2"	0.062	< 30	CEILING RETURN GRILLE W/ OPPOSED BLADE DAMPER
EG-1	PRICE	635DAL	EXHAUST	0-125	-	12" x 12"	ALUMINUM	1/2"	0.190	< 30	W/ OPPOSED BLADE DAMPER
EG-2	PRICE	635DAL	EXHAUST	125-200	-	12" x 12"	ALUMINUM	1/2"	0.139	< 30	W/ OPPOSED BLADE DAMPER
EG-3	PRICE	635DAL	EXHAUST	150-300	-	24" x 24"	ALUMINUM	1/2"	0.139	< 30	W/ OPPOSED BLADE DAMPER
EG-4	PRICE	635DAL	EXHAUST	300-600	-	14" x 14"	ALUMINUM	1/2"	0.097	< 30	W/ OPPOSED BLADE DAMPER

NOTES:

1. COORDINATE AND CONFIRM CEILING MOUNT (T-BAR, SURFACE, ETC) WITH DIRECTOR'S REPRESENTATIVE BEFORE ORDERING EQUIPMENT.
2. MC IS RESPONSIBLE FOR PROVIDING ALUMINUM CONSTRUCTION RGD IN ALL WET ENVIRONMENTS, SUCH AS BATHROOMS & LOCKER ROOMS. CONFIRM PRIOR TO ORDERING.

AIR SEPARATOR

EQUIP. NO.	BASIS OF DESIGN	MODEL	LOCATION	SERVICE	QTY	CONN. SIZE (IN)	FLOW (GPM)	PD (FT H2O)	NOTES
AS-1	TACO	AC025F-125	MECHANICAL RM	HEATING HOT WATER	1	2.5	60	0.35	SEE BELOW

NOTES:

1. AIR SEPERATOR TO BE ASME RATED AND DESIGNED TO REMOVE AIR AND DIRT
2. PROVIDE WITH IN LINE STRAINER

REVISED DRAWING 2/7/2024

Jan 31,2024 – 5:10pm
M:\MEP Projects\2019\19–289–0295 Provide 8 Bay Vehicle Storage Building\1 Drawings\Sheets\3_Mechanical\M–601 – MECHANICAL SCHEDULES.dwg
36x24 PLOT SHEET

NEW YORK STATE OF OPPORTUNITY. | Office of General Services
DESIGN & CONSTRUCTION

CONSULTANT
LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York
CERTIFICATE OF AUTHORIZATION #: 017995

ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE:
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WARNING:
THE ALTERATION OF THIS MATERIAL IN ANY WAY, UNLESS DONE UNDER THE DIRECTION OF A COMPARABLE PROFESSIONAL, I.E. ARCHITECT FOR AN ARCHITECT, ENGINEER FOR AN ENGINEER OR LANDSCAPE ARCHITECT FOR A LANDSCAPE ARCHITECT, IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW AND/OR REGULATIONS AND IS A CLASS "A" MISDEMEANOR.

STATE OF NEW YORK · LICENSED PROFESSIONAL ENGINEER

CONTRACT: HVAC
TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS
LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY
CLIENT: DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER: 46063 – H
DESIGNED BY: CCA
DRAWN BY: CCA
FIELD CHECK:
APPROVED: PROJECT MANAGER
SHEET TITLE: MECHANICAL SCHEDULES
DRAWING NUMBER: M-601
SHEET 84 OF 108

SYMBOL LIST

IDENTIFIER	DESCRIPTION
CW	DOMESTIC COLD WATER
HW	DOMESTIC HOT WATER
HWR	DOMESTIC HOT WATER RETURN
S	SANITARY PIPING (UNDER SLAB)
S	SANITARY PIPING (ABOVE SLAB)
LPG	LIQUEFIED PETROLEUM GAS
LPG	LIQUEFIED PETROLEUM GAS (UNDER SLAB)
V	SANITARY VENT PIPING
CA	COMPRESSED AIR
GW	GARAGE WASTE PIPING
GV	GARAGE VENT PIPING
XXX / #	STACK OR RISER DESIGNATION STACK OR RISER NUMBER
XXX / XX	EQUIPMENT TAG EQUIPMENT NUMBER
XXX / X-XXX	DETAIL TAG/CALL OUT TAG PLUMBING DRAWING NUMBER

PIPING ELEMENTS/VALVING

- CIRCUIT SETTING BALANCING VALVE
- FD FLOOR DRAIN
- GAS COCK
- SHUT OFF VALVE
- HOSE BIBB
- THERMOMETER
- BALL VALVE
- PIPE DROPPING DOWN
- PIPE RISING UP
- PRESSURE REDUCING VALVE (PRV)
- STRAINER
- SWING CHECK VALVE
- TEE OUTLET DOWN
- WHA WATER HAMMER ARRESTER
- CIRCUIT SETTER / BALANCE VALVE

CODE REFERENCE

2020 NYS PLUMBING CODE
2020 NYS FUEL GAS CODE
2020 NYS ENERGY CONSERVATION CODE

SECTION 704
DRAINAGE PIPING INSTALLATION

704.1 SLOPE OF HORIZONTAL DRAINAGE PIPING.

HORIZONTAL DRAINAGE PIPING SHALL BE INSTALLED IN UNIFORM ALIGNMENT AT UNIFORM SLOPES. THE MINIMUM SLOPE OF HORIZONTAL DRAINAGE PIPE SHALL BE IN ACCORDANCE WITH TABLE 704.1.

TABLE 704.1
SLOPE OF HORIZONTAL DRAINAGE PIPE

SIZE (INCHES)	MINIMUM SLOPE (INCH PER FOOT)
2 1/2 OR LESS	1/4
3 TO 6	1/8
8 OR LARGER	1/16

ABBREVIATIONS:

BFP	BACKFLOW PREVENTER
CA	COMPRESSED AIR
CB	CATCH BASIN
CO	CLEAN OUT
CW	COLD WATER
DFU	DRAINAGE FIXTURE UNIT
FCO	FLOOR CLEAN OUT
FD	FLOOR DRAIN
GW	GARAGE WASTE
GV	GARAGE VENT
HW	HOT WATER
HWR	HOT WATER RETURN
L	LAVATORY
LPG	LIQUEFIED PETROLEUM GAS
NYS-PC	NEW YORK STATE PLUMBING CODE
S	SANITARY
U	URINAL
V	VENT
WC	WATER CLOSET
TYP	TYPICAL

THE ABBREVIATIONS ARE SHOWN FOR GENERAL REFERENCE ONLY. THE PRESENCE OF AN ABBREVIATION ON THIS LIST DOES NOT IMPLY ITS USE ON THIS PROJECT. REFER TO DRAWINGS FOR SPECIFIC ABBREVIATIONS USED.

GENERAL NOTES:

1. ALL WORK UNDER THIS CONTRACT SHALL CONFORM TO THE LATEST EDITION OF THE PLUMBING CODE OF NEW YORK STATE (PC-NYS), THE NEW YORK STATE ENERGY CODE, AND THE REQUIREMENTS OF THE UTILITY AND THE LOCAL WATER COMPANY.
2. ALL MATERIALS SHALL BE NEW UNLESS NOTED OTHERWISE.
3. ASSUME RESPONSIBILITY FOR ALL LABOR AND MATERIALS SUPPLIED AND INSTALLED UNDER THIS CONTRACT AND GUARANTEE THE WORK PERFORMED UNDER THIS CONTRACT FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE OF THIS WORK.
4. COOPERATE AND COORDINATE WITH ALL OTHER TRADES IN ORDER TO MINIMIZE INTERFERENCES BETWEEN TRADES DURING PERFORMANCE OF THIS WORK.
5. PREPARE AND FILE ALL REQUIRED PLANS AND PERMITS WITH THE LOCAL AUTHORITIES. PAY THE FILING FEES AS REQUIRED. OBTAIN ALL APPROVALS AND PAY FOR ALL WORK PERMITS, INSPECTIONS AND SIGN-OFFS AS REQUIRED TO EXECUTE THIS WORK IN A MANNER IN CONFORMANCE WITH THE CODES AND AUTHORITIES HAVING JURISDICTION.
6. PERFORM ALL TESTS AND ARRANGE FOR ALL INSPECTIONS FOR WORK UNDER THIS CONTRACT AS REQUIRED BY LAW AND SUPPLY ALL CERTIFICATES OF INSURANCE AS REQUIRED BY THE LAW AND THE OWNER. REFER TO THE PC-NYS.
7. MAKE ALL FINAL CONNECTIONS TO ALL PLUMBING EQUIPMENT REGARDLESS WHETHER ILLUSTRATED HEREIN WITHOUT ANY ADDITIONAL COSTS TO THE STATE.
8. PERFORM ALL CUTTING, EXCAVATION, BACKFILLING, ROUGH & FINISH PATCHING AS PER THE SPECIFICATIONS AS REQUIRED FOR THE INSTALLATION OF THE WORK, UNLESS NOTED OTHERWISE.
9. CONNECTIONS TO EQUIPMENT SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
10. IT IS THE INTENT OF THIS CONTRACT THAT THE COMPLETED WORK BE FULLY OPERATIONAL.
11. PIPE HANGERS AND SUPPORTS SHALL BE INSTALLED AT INTERVALS AND BE FABRICATED OF MATERIALS AS REQUIRED BY THE PC-NYS.
12. ALL PLUMBING FIXTURES SHALL BE INSTALLED WITH ANGLE STOP VALVES IN THE SUPPLY LINES SERVING THE FIXTURE.
13. ALL EXPOSED WATER AND WASTE PIPING SERVING THE FIXTURES SHALL BE CHROME PLATED AND SHALL HAVE CHROME PLATED ESCUTCHEONS RIGIDLY ATTACHED TO THE PIPING AT THE POINT OF WALL OR FLOOR PENETRATIONS.
14. SUBMIT SHOP DRAWINGS FOR PLUMBING FIXTURES AND EQUIPMENT TO BE SUPPLIED AND INSTALLED UNDER THIS CONTRACT FOR APPROVAL BEFORE INSTALLATION OF SAME.
15. WATERPROOF PIPE SLEEVES SHALL BE INSTALLED AT ALL PENETRATIONS THROUGH EXTERIOR WALLS. PIPE SLEEVES SHALL BE INSTALLED AT ALL WALL PENETRATIONS THROUGH INTERIOR WALLS AND FLOORS.
16. WATER HAMMER ARRESTORS SHALL BE INSTALLED AT ALL RUN OUTS IN HOT AND/OR COLD WATER LINES SERVING TOILET ROOMS AND OTHER AREAS WHICH INCORPORATE "RAPID - ACTION" VALVES SUCH AS FLUSHOMETERS, SOLENOID VALVES, ETC.
17. PIPING SHALL BE TESTED AT A MINIMUM PRESSURE OF 1-1/2 TIMES THE MAXIMUM OPERATING PRESSURE UNLESS OTHERWISE NOTED ON THE DOCUMENTS OR THE NYS PLUMBING CODE, AND IN ACCORDANCE WITH THE LATEST EDITION OF THE NYS FUEL GAS CODE.
18. REMOVALS PERFORMED UNDER THIS CONTRACT SHALL INCLUDE REMOVAL OF DEBRIS AND DISPOSAL AT AN APPROPRIATE SITE.
19. LAVATORIES DESIGNED FOR USE BY PERSONS CONFINED TO WHEELCHAIRS SHALL HAVE THE HOT & COLD WATER SERVICES, AS WELL AS THE TRAP, RECESSED & INSULATED IN ACCORDANCE WITH ADA REQUIREMENTS.
20. REFER TO THE ARCHITECTURAL PLANS FOR ALL STRUCTURAL DIMENSIONS.
21. WORK TO BE COORDINATED WITH OTHER TRADES.
22. PIPING PENETRATIONS TO BE SEALED AROUND WITH FIRE SEALANT.
23. WATER SERVICE PIPING WITHIN THE BUILDING IS TO BE INSULATED IN ACCORDANCE WITH ALL NEW YORK STATE PLUMBING CODE (NYS-PC) AND NYS ENERGY CODES.
24. PLUMBING FIXTURES TO BE INSTALLED AS PER FACTORY RECOMMENDATIONS.
25. PLUMBING FIXTURES TO BE TRAPPED, VENTED AND PROVIDED WITH WATER HAMMER ARRESTORS WHEN REQUIRED.
26. PLUMBING FIXTURES SHALL COMPLY WITH "WATER CONSERVATION" REQUIREMENT AS DETAILED IN THE NYS-PC.
27. SUBMIT APPLICATION AND TAP FEES TO LOCAL WATER AUTHORITY AND HAVE OWNER FILL OUT APPLICATION UPON COMPLETION OF PLUMBING ROUGH-IN INSPECTION.
28. WATER PIPING SHALL BE INSULATED.
29. FLOOR DRAINS AND FLOOR CLEAN-OUTS SHALL BE SET LEVEL WITH FINISHED FLOORS.
30. PIPE DIMENSIONS ARE INSIDE CLEAR.
31. PLUMBING FIXTURES TO HAVE ISOLATION VALVES.
32. ADJUST WATER HEATER TEMPERATURE TO ENSURE A TEMPERATURE RANGE OF 110°F TO 120°F AT THE INDIVIDUAL FIXTURE OUTPUT. P.C. MUST ENSURE A TEMPERATURE OF 120° F MAXIMUM AT THE FIXTURES TO PREVENT SCALDING.
33. BUILDING DOMESTIC WATER DEMAND & SIZING IS CALCULATED FROM NYS-PC.
34. BUILDING SANITARY DEMAND & SIZING IS CALCULATED FROM NYS-PC.
35. DFU CALCULATIONS ARE BASED ON THE NYS-PC.
36. SANITARY PIPING SHALL BE PITCHED IN ACCORDANCE WITH NYS-PC.
37. VENT SIZING IS BASED ON THE NYS PLUMBING CODE.
38. GAS PIPE SIZING IS BASED ON THE NYS FUEL GAS CODES.
39. PLUMBING EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS.
40. PROVIDE EXTERIOR PIPING EXTENDING WITHIN 5'-0" OF BUILDING FOUNDATION.
41. PLUMBING EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER'S REQUIREMENTS/SPECIFICATIONS.
42. PLUMBING EQUIPMENT SHALL BE MOUNTED ON MINIMUM 6" HIGH CONCRETE PAD UNLESS OTHERWISE NOTED (PAVER AND CINDER BLOCK IS NOT ACCEPTABLE).

1

PLUMBING FIXTURE SCHEDULE

TAG	FIXTURE DESCRIPTION	ACCESSORIES DESCRIPTION	CW (INCH)	HW (INCH)	SANITARY (INCH)	VENT (INCH)
L-1	ADA COMPLIANT, WHITE VITREOUS CHINA, WALL MOUNTED LAVATORY SINK	DECK MOUNTED MANUAL SINK FAUCET WITH 4" DECK PLATE & F4" FIXED CENTERS. 05.GPM, ADA COMPLIANT, SINGLE LEVER MIXING VALVE	1/2	1/2	2	1 1/2
HS-1	STAINLESS STEEL, WALL HUNG, SINGLE BOWL HAND WASH SINK KIT. 14 GAUGE TYPE 304 STAINLESS STEEL. INCLUDES SENSOR FAUCET (AC PLUG IN TYPE)	MIXING VALVE	1/2	1/2	2	1 1/2
EWC-1	BOTTLE FILLING STATION & BI-LEVEL ADA WATER COOLER WITH FILTER	-	1/2	-	1 1/2	1 1/2
EEW-1	EMERGENCY EYE WASH WITH YELLOW PLASTIC BOWL	EMERGENCY THERMOSTATIC MIXING VALVE	3/4	3/4	2	1 1/2
S-1	STAINLESS STEEL SINGLE BOWL, DROP IN, ADA COMPLIANT SINK 22"X22"x6"	DECK MOUNTED FAUCET, 8" FIXED CENTERS, AND RIGID GOOSENECK SPOUT. 2.2 GPM	1/2	1/2	2	1 1/2
S-2	MOP SINK, ONE PIECE, 6" HIGH 24"x24" TERRAZZO WITH QUICK DRAIN CONNECTORS	HOSE & HOSE BRACKET ALUMINUM BUMPER GUARDS WITH VINYL INSERT FAUCET MOP HANGER	3/4	3/4	3	2
SH-1	38" BARRIER FREE SHOWER WITH REAR CENTER DRAIN, AND 3/4" THRESHOLD.	GRAB BAR GRAB BAR SOAP DISH FOLDING SEAT MIXING VALVE HAND HELD SHOWER CURTAIN ROD	1/2	1/2	2	1 1/2
U-1	WHITE VITREOUS CHINA, WALL MOUNTED URINAL. 0.5 GPF	POLISHED CHROME, BATTERY POWERED, SENSOR OPERATED FLUSH VALVE. 0.5 GPF	3/4	-	2	1 1/2
WC-1	WHITE VITREOUS CHINA, WALL MOUNTED WATER CLOSET. 1.28 GPF. MOUNT AT ADA HEIGHT	POLISHED CHROME, BATTERY POWERED, SENSOR OPERATED FLUSH VALVE. 1.6 GPF. HEAVY DUTY OPEN FRONT SEAT, LESS COVER	1	-	4	2
WC-2	WHITE VITREOUS CHINA, WALL MOUNTED WATER CLOSET. 1.28 GPF.	POLISHED CHROME, BATTERY POWERED, SENSOR OPERATED FLUSH VALVE. 1.6 GPF. HEAVY DUTY OPEN FRONT SEAT, LESS COVER	1	-	4	2

NOTES:

1. PROVIDE ALL FIXTURES WITH ALL NECESSARY ACCESSORIES.
2. PROVIDE LAVATORY SINK L-1 WITH INSULATION WRAP ON SUPPLY AND DRAIN PIPING.

GAS FIRED DOMESTIC HOT WATER HEATER SCHEDULE

TAG	LOCATION	BTU INPUT PER HOUR	HEATER RECOVERY (GPM @ 100F RISE)	MIN/MAX PROPANE SUPPLY PRESSURE (IN WC)	STORAGE (GAL)	DIMENSIONS		
						HEIGHT (IN)	DIAMETER	SHIPPING WEIGHT (LBS)
GWH-1	MECHANICAL (110)	75,100	73	8/14	74	61-1/8	26-1/2	275

NOTES:
1. BASIS OF SELECTION: A.O. SMITH MODEL BT-80

POTABLE WATER RECIRCULATING PUMP SCHEDULE

TAG	DESIGN FLOW (GPM)	DESIGN HEAD (FT.)	MINIMUM FLUID TEMP. (F)	MAXIMUM FLUID TEMP (F)	MAXIMUM PRESSURE (PSI)	HW CONNECTION (IN.)	ELECTRICAL			
							V.PH.HZ	AMPS	HP	WATTS
RCP-1	5	8	36	230	145	1	115	0.55/0.75/0.95	0.08/0.11/0.15	61/84/110

NOTES:
1. PROVIDE WITH TIMER TO SHUT PUMP DOWN DURING OFF HOURS, AND AQUASTAT TO MAINTAIN TEMPERATURE IN THE SYSTEM WHEN THE BUILDING IS OCCUPIED.

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. | Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT

LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York
CERTIFICATE OF AUTHORIZATION #: 017995

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STATE OF NEW YORK · MICHAEL A. LICATA · 091089 · LICENSED PROFESSIONAL ENGINEER

CONTRACT: PLUMBING

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 – P
DESIGNED BY:	DC
DRAWN BY:	DC
FIELD CHECK:	
APPROVED:	PROJECT MANAGER

SHEET TITLE: NOTES, SYMBOLS, LEGENDS & SCHEDULES

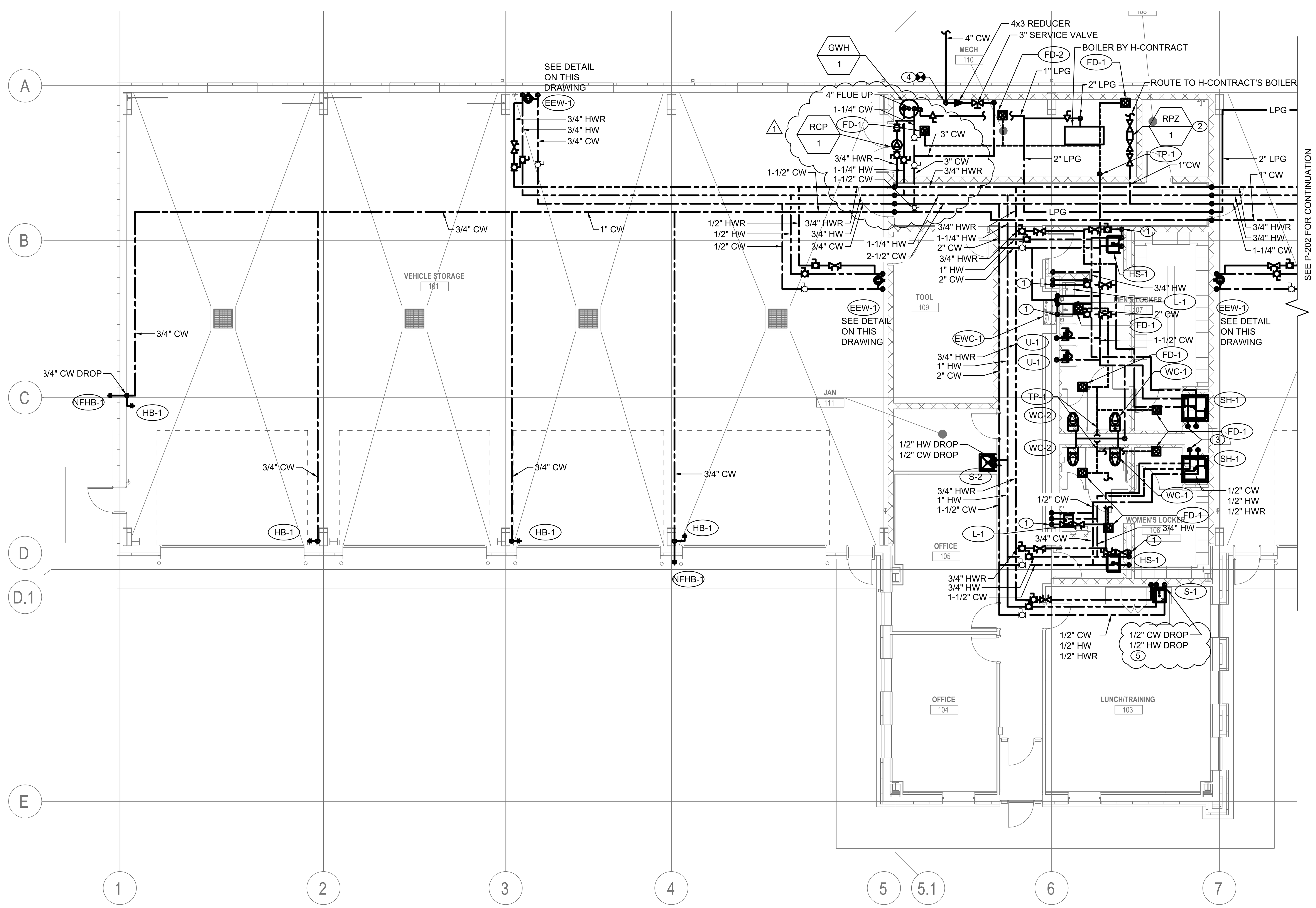
DRAWING NUMBER: P-001

SHEET 89 OF 108

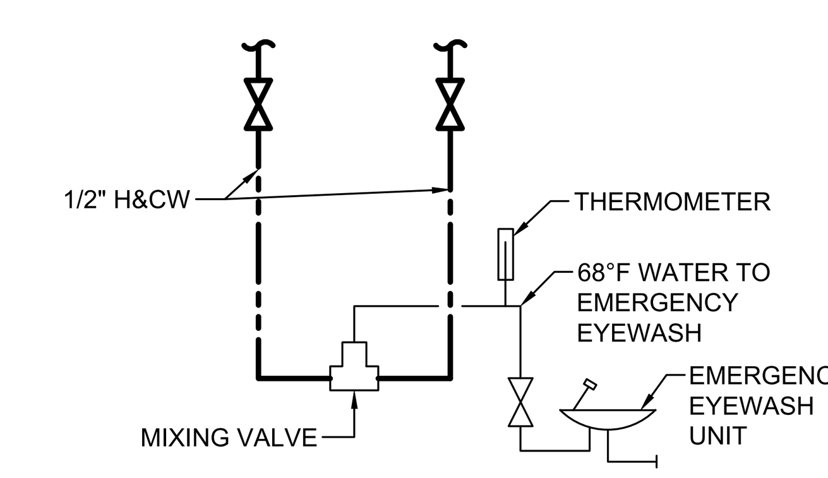
Jan 31,2024 – 5:31pm
M:\MEP Projects\2019\19-289-0295 Provide 8 Bay Vehicle Storage Building\1 Drawings\Sheets\5_Plumbing\P-001 PLUMBING NOTES, SYMBOLS, LEGENDS & SCHEDULES.dwg
36x24 PLOT SHEET

KEYNOTES:

1. 3/4" HWR DOWN TO WITHIN 2 FEET OF LAVATORY FAUCET (TYPICAL OF EVERY LAVATORY SINK).
2. ROUTE DRAIN FROM RPZ DOWN TO FLOOR DRAIN BELOW.
3. 1/2" HW & CW DOWN TO SHOWERS.
4. PLUMBING CONTRACTOR TO CONNECT TO NEW DCW SERVICE 1'-0" AFF. REFER TO DETAIL 1/C-505 FOR COORDINATION. PROVIDE DIELECTRIC FITTING TO TRANSITION FROM UNDERGROUND PIPE TO DCW PIPING.
5. PROVIDE AN ADDITIONAL CONNECTION WITH ISOLATION VALVE FROM THE SINK DCW DROP TO PROVIDE A 1/8" WATER LINE TO AN ICE MAKER. COORDINATE FINAL LOCATION WITH DIRECTOR'S REPRESENTATIVE.



1 / P-201 **PARTIAL 1ST FLOOR DOMESTIC WATER & GAS PLAN - AREA 1**
SCALE: 1/8" = 1'-0'



2 / P-201 **EMERGENCY EYEWASH PIPING DETAIL**
SCALE: NOT TO SCALE

REVISED DRAWING 2/7/2024

CONSULTANT
LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York
CERTIFICATE OF AUTHORIZATION #: 017995

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CONTRACT: PLUMBING

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 – P
DESIGNED BY:	DC
DRAWN BY:	DC
FIELD CHECK:	
APPROVED:	PROJECT MANAGER

SHEET TITLE: PARTIAL 1ST FLOOR DOMESTIC WATER & GAS PLAN – AREA 1

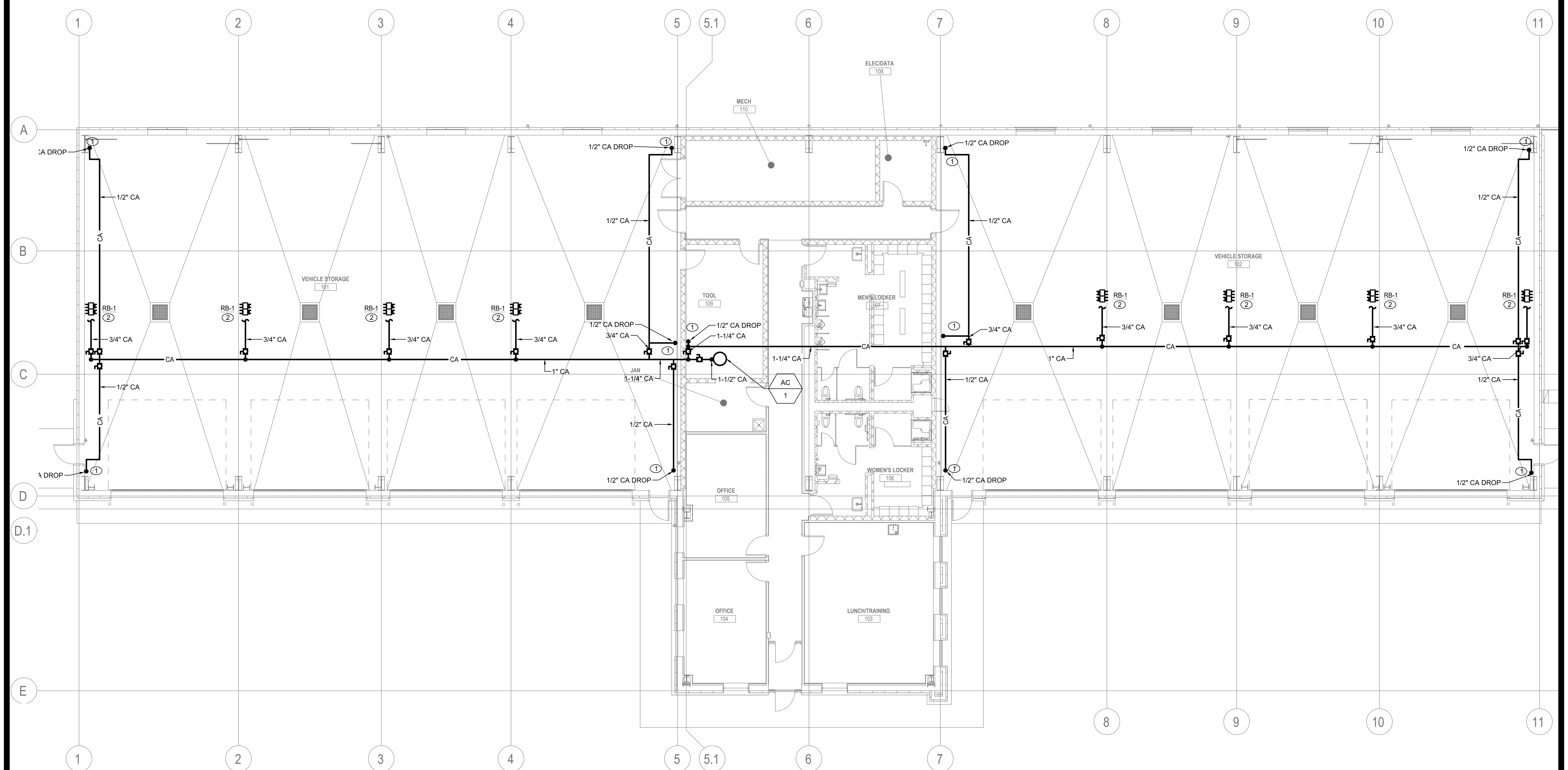
DRAWING NUMBER: P-201

SHEET 91 OF 108

KEYNOTES:

1. PROVIDE 1/4" PUSH-TO-CONNECT INDUSTRIAL INTERCHANGE EXHAUSTING COMPRESSED AIR QUICK COUPLER, PARKER PBS 251-4. REFER TO DETAIL 3 ON SHEET P-502.
2. PROVIDE REEL BANK AS SCHEDULED. SUPPORT HOSE REELS FROM OVERHEAD HANGING SUPPORTS FURNISHED AND INSTALLED BY CONSTRUCTION CONTRACTOR. COORDINATE FINAL LOCATIONS AND ATTACHMENTS TO SUPPORTS PER MANUFACTURER REQUIREMENTS. PROVIDE UNISTRUT SUPPORTS, ANCHORED TO REEL BANK SUPPORT INSTALLED EVERY 5 FEET. PROVIDE SHUT-OFF VALVE AND FLEXIBLE TUBING AT CONNECTION TO REEL. REFER TO DETAIL 1 ON SHEET P502.

1



1 P-203 **COMPRESSED AIR SYSTEM 1ST FLOOR PLAN**
SCALE: 1/8" = 1'-0"

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT

LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York

CERTIFICATE OF AUTHORIZATION #: 017995

ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE:
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CONTRACT: PLUMBING

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 – P
DESIGNED BY:	DC
DRAWN BY:	DC
FIELD CHECK:	
APPROVED:	PROJECT MANAGER

SHEET TITLE: COMPRESSED AIR SYSTEM 1ST FLOOR PLAN

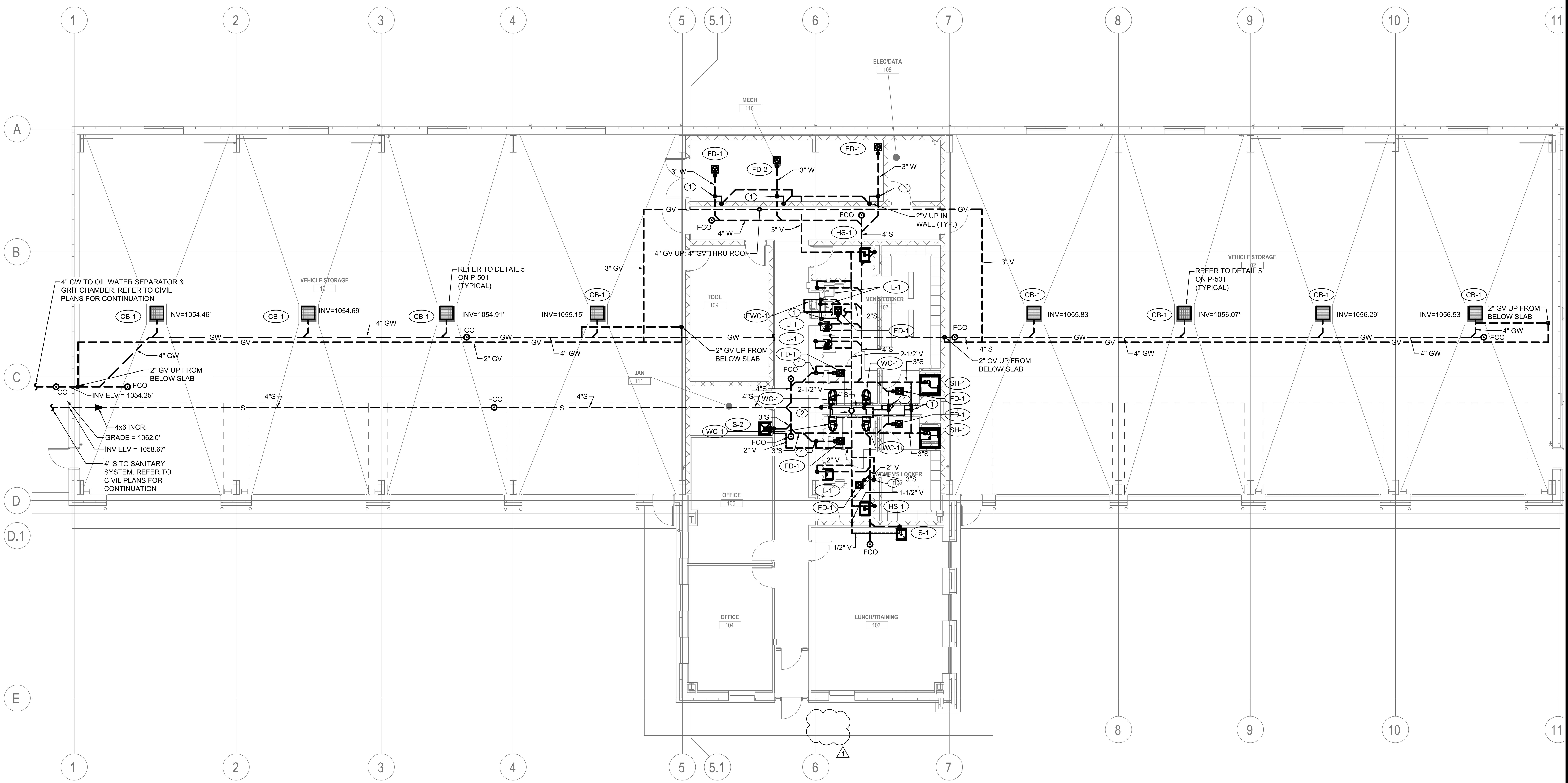
DRAWING NUMBER: P-203

SHEET 93 OF 108

Jan 31,2024 – 5:33pm
M:\MEP Projects\2019\19-289-0295 Provide 8 Bay Vehicle Storage Building\1 Drawings\Sheets\5_Plumbing\P-203 COMPRESSED AIR SYSTEM FIRST FLOOR PLAN.dwg
36x24 PLOT SHEET

KEYNOTES:

1. 2" V UP FROM BELOW FLOOR.
2. 4" V UP/ 4" VTR



1 P-301 **1ST FLOOR SANITARY & VENT PLAN**
SCALE: 1/8" = 1'-0"

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. | Office of General Services
DESIGN & CONSTRUCTION

CONSULTANT
LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York
CERTIFICATE OF AUTHORIZATION #: 017995

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CONTRACT: PLUMBING

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER: 46063 – P
DESIGNED BY: DC
DRAWN BY: DC
FIELD CHECK:
APPROVED: PROJECT MANAGER

SHEET TITLE: 1ST FLOOR SANITARY & VENT PLAN

DRAWING NUMBER: P-301

SHEET 94 OF 108

Jan 31,2024 – 5:30pm
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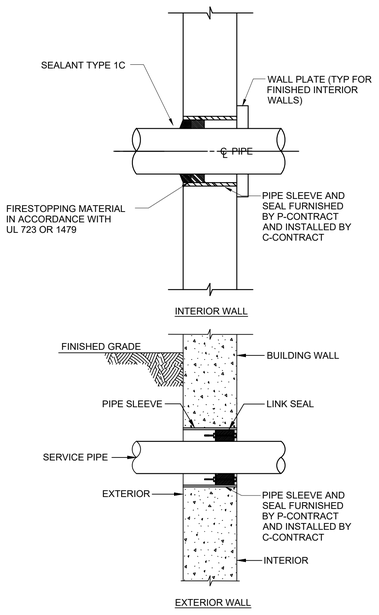
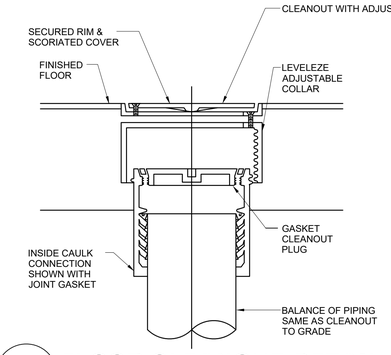
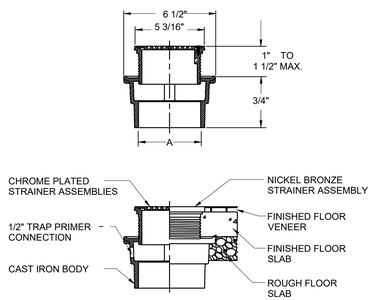
36x24 PLOT SHEET



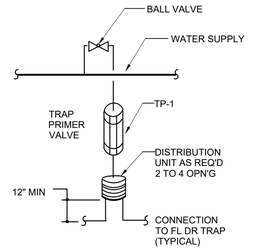
1 P-501 **TYP WALL PENETRATION DETAIL** SCALE: NONE



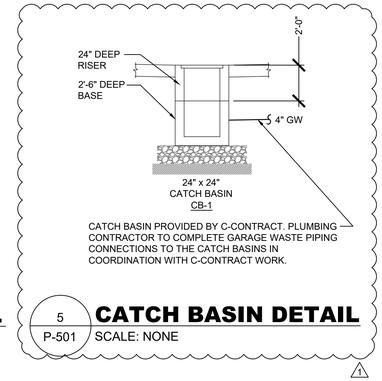
2 P-501 **FLOOR CLEANOUT DETAIL** SCALE: NONE



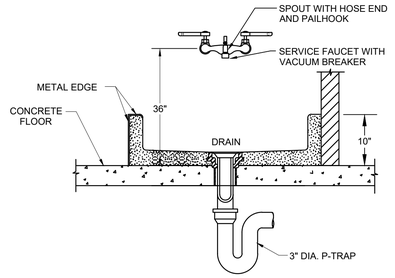
3 P-501 **FLOOR DRAIN DETAIL** SCALE: NONE



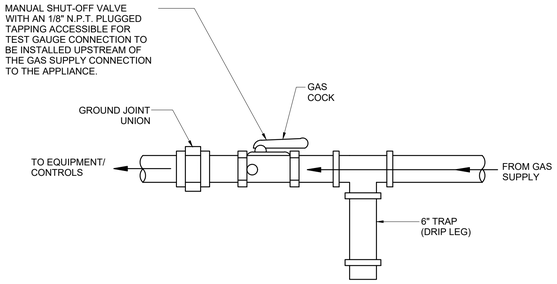
4 P-501 **TRAP PRIMER DETAIL** SCALE: NONE



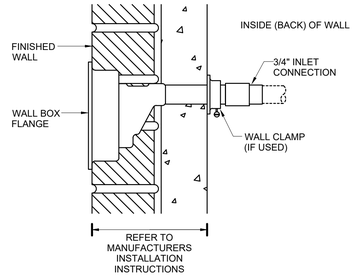
5 P-501 **CATCH BASIN DETAIL** SCALE: NONE



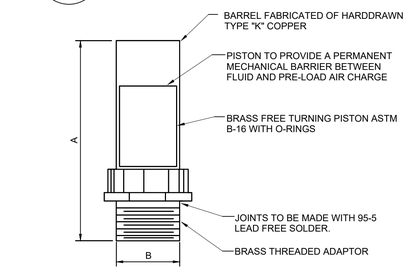
6 P-501 **MOP SINK DETAIL** SCALE: NONE



7 P-501 **GAS CONNECTION TO EQUIPMENT DETAIL** SCALE: NONE



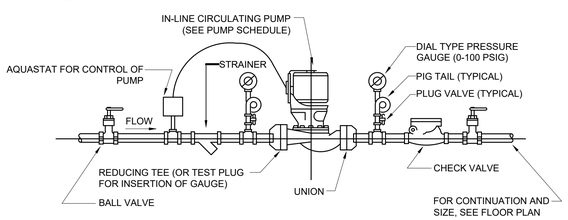
8 P-501 **NON FREEZE HOSE BIBB DETAIL** SCALE: NONE



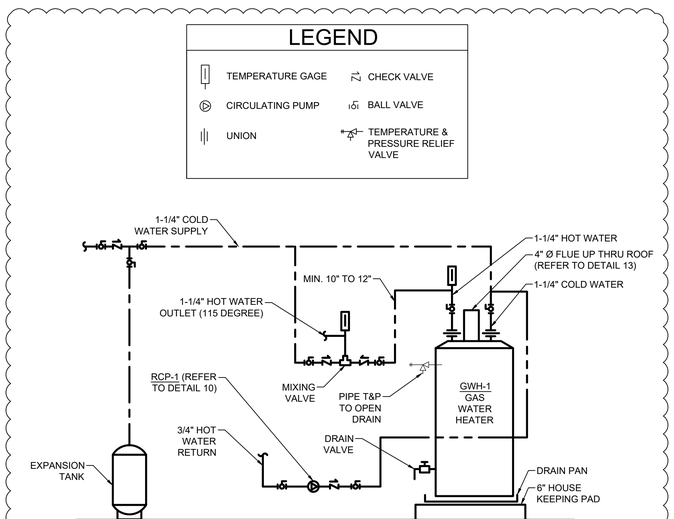
PPP SIZE	P.D.I. SYMBOL	FIXTURE UNIT RATINGS	A SIZE	B SIZE
1/2"	A	1 - 11	5"	1/2"
3/4"	B	12 - 32	5"	3/4"
1"	C	33 - 60	7"	1"
1-1/4"	D	61 - 113	7"	1-1/4"
1-1/2"	E	114 - 154	9"	1-1/2"
2"	F	155 - 330	9"	2"

NOTE: SEE WATER RISER DIAGRAMS FOR LOCATIONS OF SHOCK ABSORBERS.

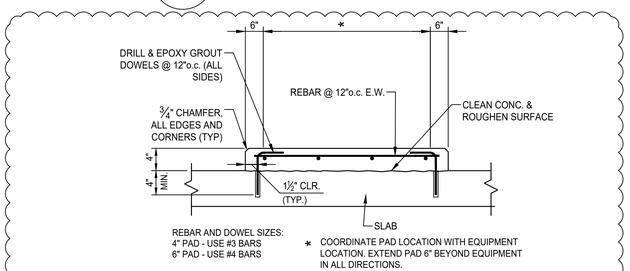
9 P-501 **WATER HAMMER ARRESTOR DETAIL** SCALE: NONE



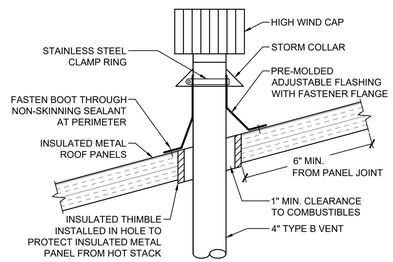
10 P-501 **IN-LINE CIRCULATING PUMP DETAIL** SCALE: NONE



11 P-501 **GAS WATER HEATER (GWH-1) DETAIL** SCALE: NONE



12 P-501 **TYPICAL EQUIPMENT PAD DETAIL** SCALE: NONE



NOTE:
FIELD-CUT ROOF PANELS TO ALLOW PIPE PENETRATION(S), KEEP AWAY FROM EDGES AND STANDING SEAM AREAS.
TYPE B VENT MATERIAL BASED ON DURAVENT. INSTALL PER CODE AND MANUFACTURER'S INSTRUCTIONS.

13 P-501 **WATER HEATER ROOF FLUE TERMINATION** SCALE: NONE

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. **Office of General Services**

DESIGN & CONSTRUCTION

CONSULTANT

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STATE OF NEW YORK · MICHELA L. LICARI · LICENSED PROFESSIONAL ENGINEER · Oct 2023

CONTRACT: PLUMBING

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

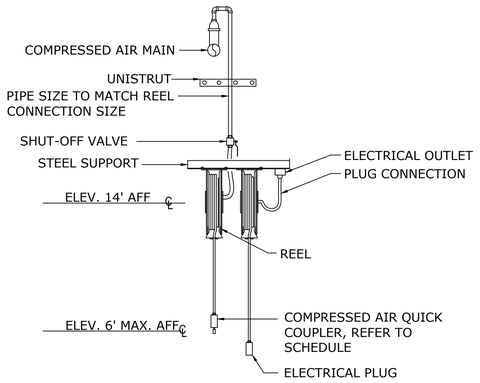
MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 – P
DESIGNED BY:	DC
DRAWN BY:	DC
FIELD CHECK:	
APPROVED:	PROJECT MANAGER

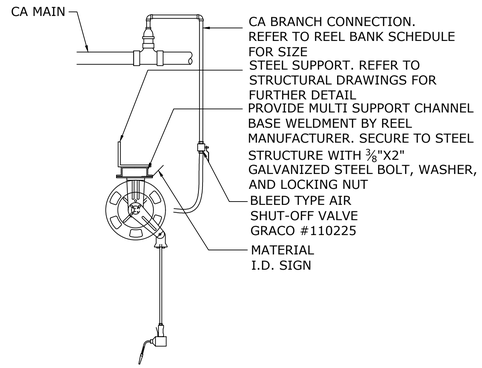
SHEET TITLE: DETAILS

DRAWING NUMBER: P–501

SHEET 95 OF 108



ELEVATION OF HOSE REEL BANKS

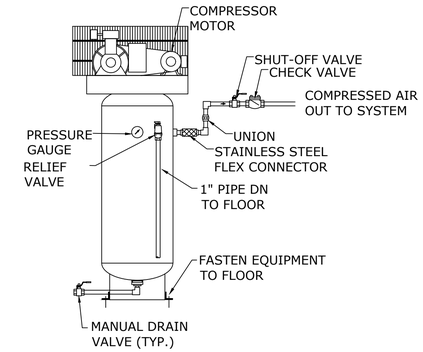


SECTION OF HOSE REEL BANKS

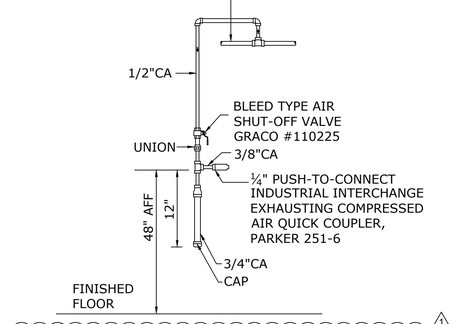
NOTE:
1. SUPPORT HOSE REELS FROM OVERHEAD HANGING SUPPORTS PROVIDED BY CONSTRUCTION CONTRACTOR. REFER TO DETAIL 8/S-503. COORDINATE FINAL LOCATIONS AND ATTACHMENTS TO SUPPORTS PER MANUFACTURER REQUIREMENTS.
2. MANUFACTURERS AND MODEL NUMBERS INDICATED ARE THE BASIS OF DESIGN PRODUCT. REFER TO SPEC SECTION 221520 FOR FURTHER INFORMATION

1

1 / P-502 **REEL BANK DETAIL**
SCALE: NTS



2 / P-502 **COMPRESSOR PIPING ARRANGEMENT**
SCALE: NTS



NOTE: MANUFACTURERS AND MODEL NUMBERS INDICATED ARE THE BASIS OF DESIGN PRODUCT.

1

3 / P-502 **COMPRESSED AIR OUTLET**
SCALE: NTS

REVISED DRAWING 2/7/2024

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CONSULTANT

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STATE OF NEW YORK · MICHAEL J. LICARI · 091089 · LICENSED PROFESSIONAL ENGINEER

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LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

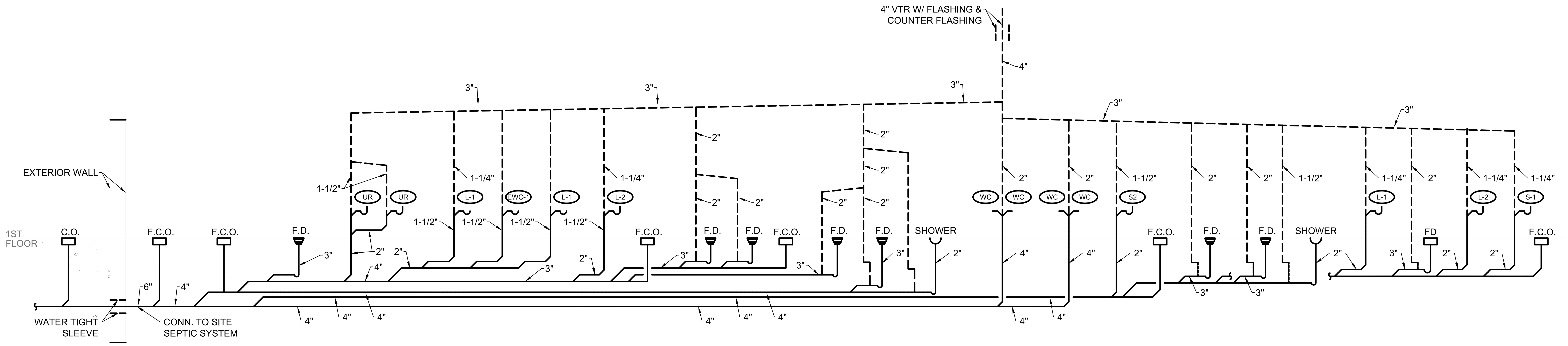
PROJECT NUMBER:	46063 – P
DESIGNED BY:	DC
DRAWN BY:	DC
FIELD CHECK:	
APPROVED:	PROJECT MANAGER

SHEET TITLE: COMPRESSED AIR SYSTEM DETAILS

DRAWING NUMBER: P–502

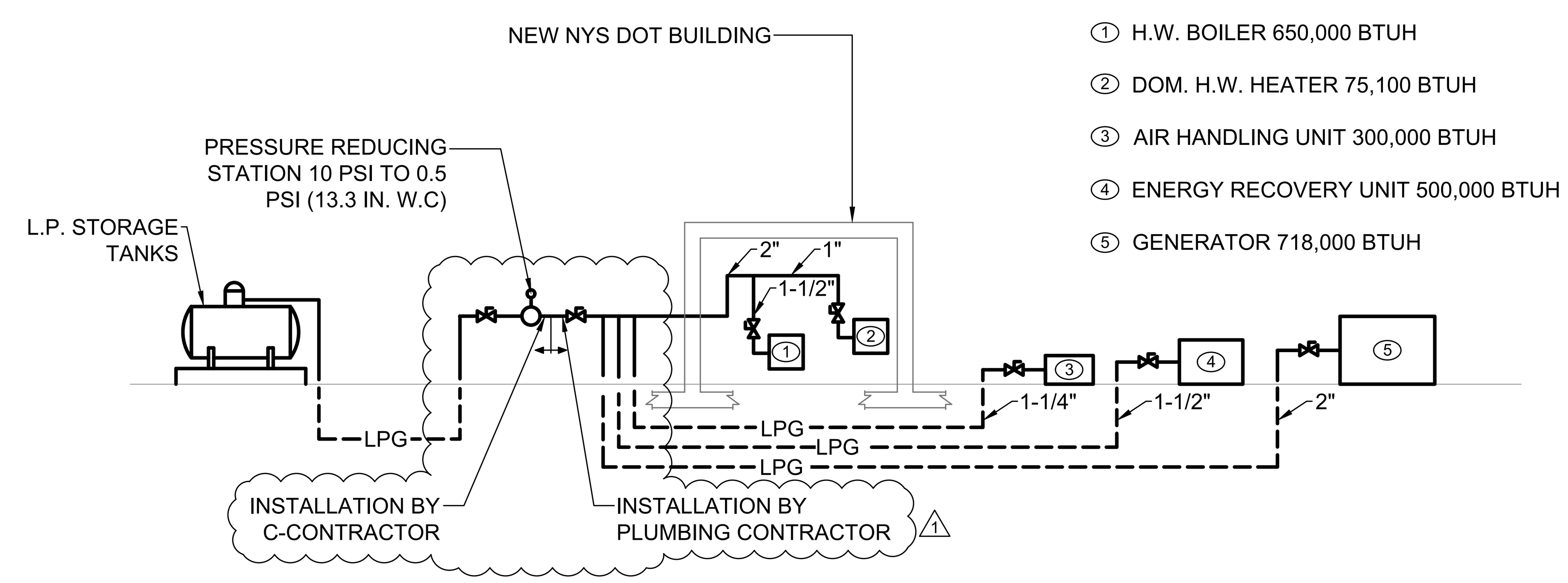
SHEET 96 OF 108

Feb 01,2024 – 6:04pm
M:\MEP Projects\2019\19-289-0295 Provide 8 Bay Vehicle Storage Building\1 Drawings\Sheets\5_Plumbing\P-502 COMPRESSED AIR SYSTEM DETAILS.dwg
36x24 PLOT SHEET



PLUMBING SANITARY RISER DIAGRAM

SCALE: NOT TO SCALE



PLUMBING LOW PRESSURE GAS RISER DIAGRAM

SCALE: NOT TO SCALE

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. Office of General Services
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STATE OF NEW YORK · LICENSED PROFESSIONAL ENGINEER

CONTRACT: PLUMBING

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER: 46063 – P

DESIGNED BY: AD

DRAWN BY: MH

FIELD CHECK:

APPROVED: PROJECT MANAGER

SHEET TITLE: PLUMBING RISER DIAGRAMS

DRAWING NUMBER: P-701

SHEET 97 OF 108

GENERAL NOTES:

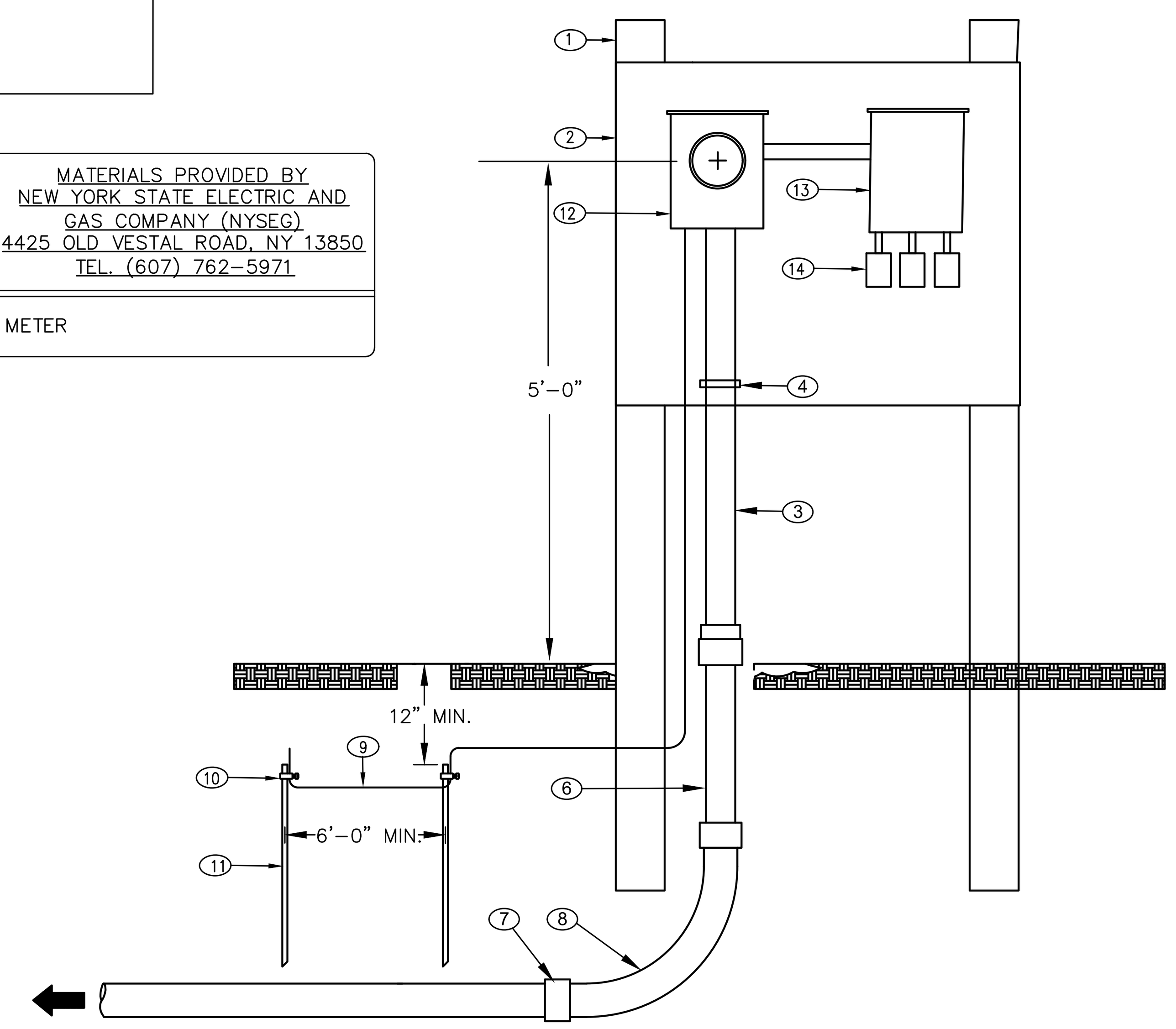
a.) ALL SERVICE WIRING MUST BE COMPLETED BEFORE UTILITY CO. EXTENDS SERVICE DROP CONDUCTORS TO THE SUPPORTING STRUCTURE.
b.) ALL WIRING AND MATERIALS MUST CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AND TO APPLICABLE LOCAL CODES. WHERE CONFLICT EXISTS, THE MORE STRINGENT CODE WILL APPLY.
c.) THE POINT OF ATTACHMENT SHALL BE DETERMINED BY THE REQUIRED MINIMUM GROUND CLEARANCE OF THE SERVICE DROP CONDUCTORS.
d.) SUPPORT STRUCTURE SUBJECT TO APPROVAL BY UTILITY CO.

MATERIALS LIST

1. SUPPORT POSTS (PRESERVATIVE TREATED) 4" x 8" MIN. SQUARE
2. MOUNTNG BOARD WEATHERPROOF MATERIAL OF ADEQUATE SIZE SECURELY ATTACHED TO SUPPORT POSTS.
3. 3" CONDUIT CONDUIT MAY BE EITHER SCHEDULE 80 PVC OR GALVANIZED STEEL & INSULATED BUSHING.
4. PIPE STRAPS
5. 3" SLIP-JOINT FROST HEAVE PROTECTION INSTALLED ABOVE GRADE
6. 3" CONDUIT SCHEDULE 40 PVC. BELOW FINISH GRADE.
7. 3" ADAPTER (IF NEEDED)
8. 3" 90° SWEEP GALVANIZED STEEL
9. GROUND WIRE NO. 6 COPPER (MIN. SIZE) BONDED TO GALVANIZED STEEL CONDUIT BY ELECTRICAL CONTRACTOR AS REQ'D.
10. GROUND ROD CONNECTORS
11. GROUND RODS (2) MIN. 8'-0" x 5/8" DIAMETER COPPER CLAD
12. METER SOCKETS TO BE SECURELY ATTACHED TO MOUNTING BOARD
13. NEMA 3R PANELBOARD SERVICE ENTRANCE RATED 225AMP MCB, 240V, 1PH
14. WEATHERPROOF GFI RECEPTACLE (TYP)

MATERIALS PROVIDED BY NEW YORK STATE ELECTRIC AND GAS COMPANY (NYSEG) 4425 OLD VESTAL ROAD, NY 13850 TEL. (607) 762-5971

METER



TEMPORARY SERVICE ENTRANCE INSTALLATION

TEMPORARY PANEL: TPP

NEMA 3R, SERVICE RATED

CKT NO.	DESCRIPTION	UNIT V.A.	POLES	TRIP	WIRE SIZE	CONDUIT SIZE	PHASE (V.A.) A	B	CONDUIT SIZE	WIRE SIZE	TRIP	POLES	UNIT V.A.	DESCRIPTION	CKT NO.
1	RECEPTACLE	1500	1	20	12	3/4	3000		3/4	12	20	1	1500	RECEPTACLE	2
3			1	20	12			1500	3/4	12	20	1	1500	RECEPTACLE	4
5			1	20	12		4900		SEE PLANS		60	2	4900	EXISTING SALT SHED PANEL	6
7			1	20	12			3000					3000		8
9	STATE FACILITY TRAILER	6000	2	50	SEE PLANS		12000		SEE PLANS		50	2	6000	DIRECTOR'S REP. TRAILER	10
11		6000						12000					6000		12
							19900	16500							

VOLTAGE	120/240V		12	POLES
PANEL AMP RATING	225A	TOTAL KVA: 36.4	10	KAIC RATING
PHASE	1	TOTAL AMPS: 175.0	SURFACE	MOUNTING
WIRE	3		POLE	FED FROM
MAIN BREAKER	225A		MODEL	-

EXISTING PANEL: PPS

CKT NO.	DESCRIPTION	UNIT V.A.	POLES	TRIP	WIRE SIZE	CONDUIT SIZE	PHASE (V.A.) A	B	CONDUIT SIZE	WIRE SIZE	TRIP	POLES	UNIT V.A.	DESCRIPTION	CKT NO.
1	PUMP	1500	1	20	12	3/4	1900		3/4	12	20	1	400	SHED LIGHTS	2
3	BLOCK HEATER	1800	1	20	12	3/4		3600	3/4	12	20	1	1800	BLOCK HEATER	4
5	BLOCK HEATER	1800	1	20	12	3/4	1800								6
7	BLOCK HEATER	1800	1	20	12	3/4		1800							8
9	BLOCK HEATER	1800	1	20	12	3/4	4800		1	10	30	2	3000	FUEL STATION	10
11	BLOCK HEATER	1800	1	20	12	3/4		4800					3000		12
							8500	10200							

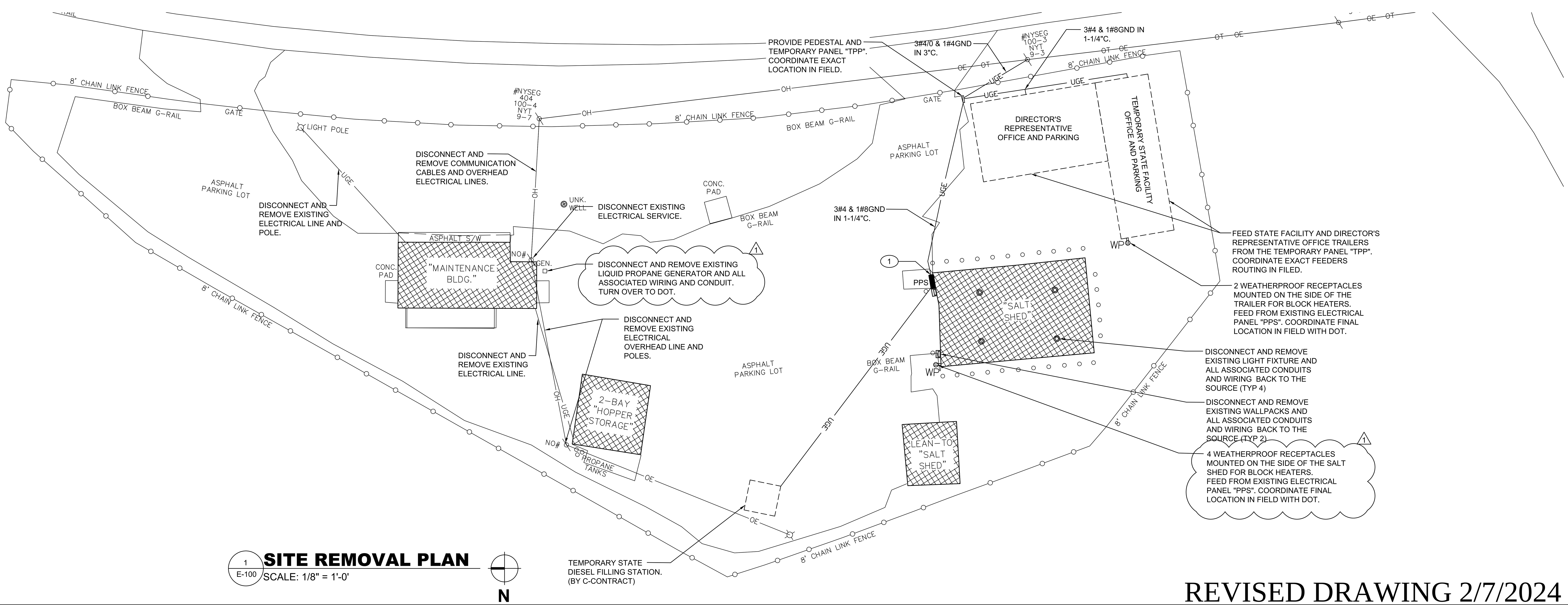
VOLTAGE	120/240V		12	POLES
PANEL AMP RATING	100A	TOTAL KVA: 18.7	10	KAIC RATING
PHASE	1	TOTAL AMPS: 77.9	SURFACE	MOUNTING
WIRE	3		-	FED FROM
MAIN BREAKER	100A		MODEL	-

GENERAL NOTES:

A. COORDINATE EXISTING SERVICE RELOCATION WITH LOCAL UTILITY.
B. ELECTRICAL CONTRACTOR SHALL PERFORM LOAD READINGS FOR AVERAGE POWER DEMAND OVER A 15 MINUTE PERIOD CONTINUOUSLY RECORDED OVER A 30 DAY PERIOD ON ALL ELECTRICAL PANELS EFFECTED BY THE RENOVATION. VERIFY PANELBOARDS ARE NOT OVERLOADED BASED ON EXISTING LOADS AND NEW LOADS ADDED. IF PANELBOARDS ARE OVERLOADED, MAKE SAFE AND INFORM ENGINEER AND ARCHITECT. SUBMIT REPORT INDICATING AVERAGE AND PEAK POWER DEMAND.
C. REFER TO DETAIL 3/E-801 FOR DIRECT BURIAL CONDUIT INSTALLATION REQUIREMENTS.
D. COORDINATE INSTALLATION REQUIREMENTS OF THE COMMUNICATION SYSTEM TO TEMPORARY TRAILERS WITH LOCAL TELECOM COMPANY.

ELECTRICAL NOTES:

1. EXISTING 100A, 240V, 1PH ELECTRICAL PANEL TO REMAIN. DISCONNECT PANEL FROM THE EXISTING ELECTRICAL SERVICE INSIDE THE MAINTENANCE BUILDING AND REMOVE EXISTING FEEDERS AND CONDUIT SERVING THE PANEL (PANEL TO BE RE-FED FROM THE TEMPORARY PANEL PANEL). DISCONNECT AND REMOVE PANEL AND FEEDERS BACK TO THE SOURCE WHEN PERMANENT PANEL IS INSTALLED AND ENERGIZED. SEE ELECTRICAL CONSTRUCTION PLANS FOR NEW WORK.



1 E-100 **SITE REMOVAL PLAN**
SCALE: 1/8" = 1'-0'

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. Office of General Services
DESIGN & CONSTRUCTION

CONSULTANT
LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York
CERTIFICATE OF AUTHORIZATION #: 017995

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STATE OF NEW YORK LICENSED PROFESSIONAL ENGINEER

CONTRACT: ELECTRICAL

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

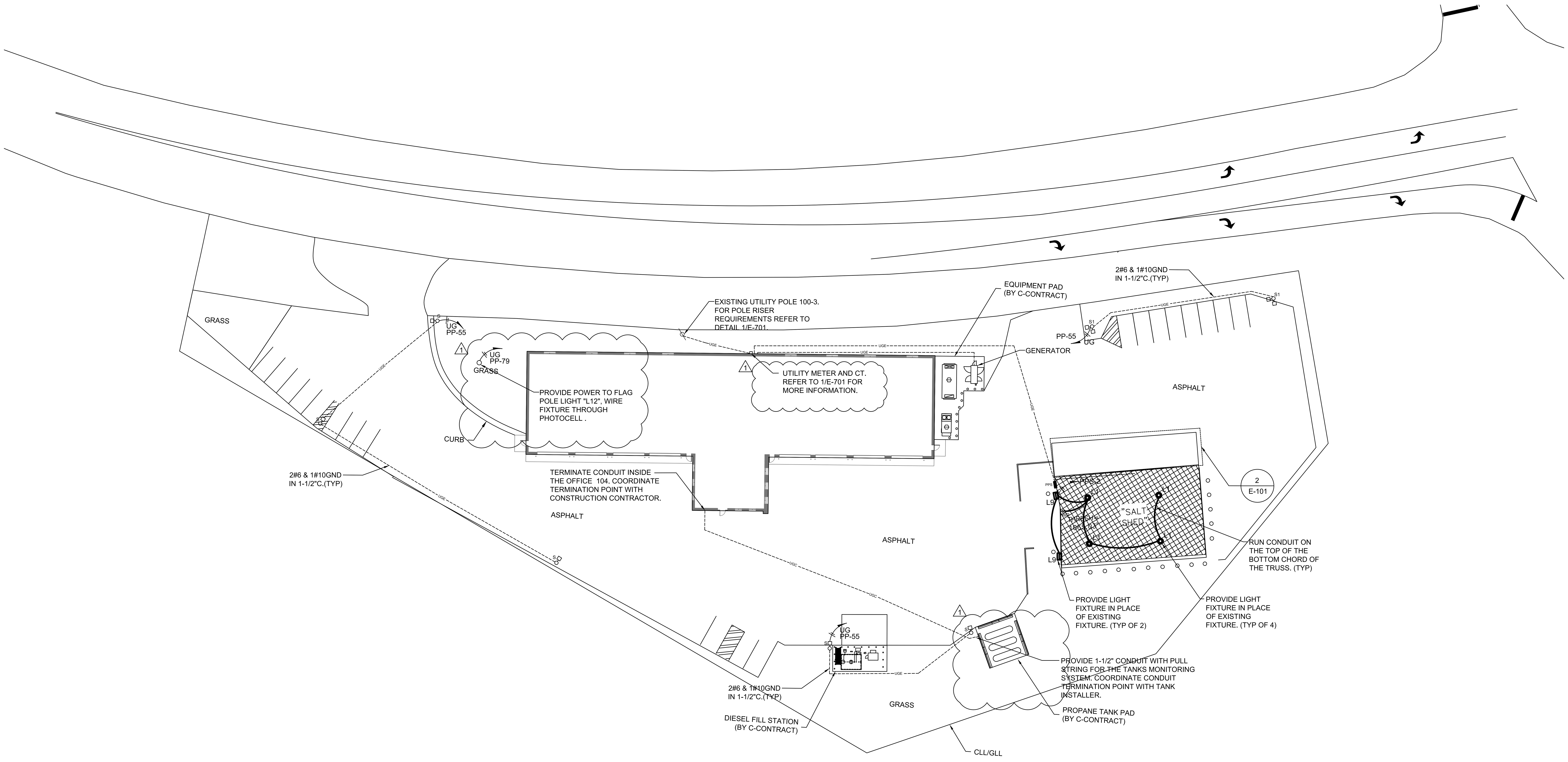
PROJECT NUMBER:	46063 – E
DESIGNED BY:	PB
DRAWN BY:	PB
FIELD CHECK:	
APPROVED:	PROJECT MANAGER

SHEET TITLE: SITE REMOVAL PLAN

DRAWING NUMBER: E-100

SHEET 99 OF 108

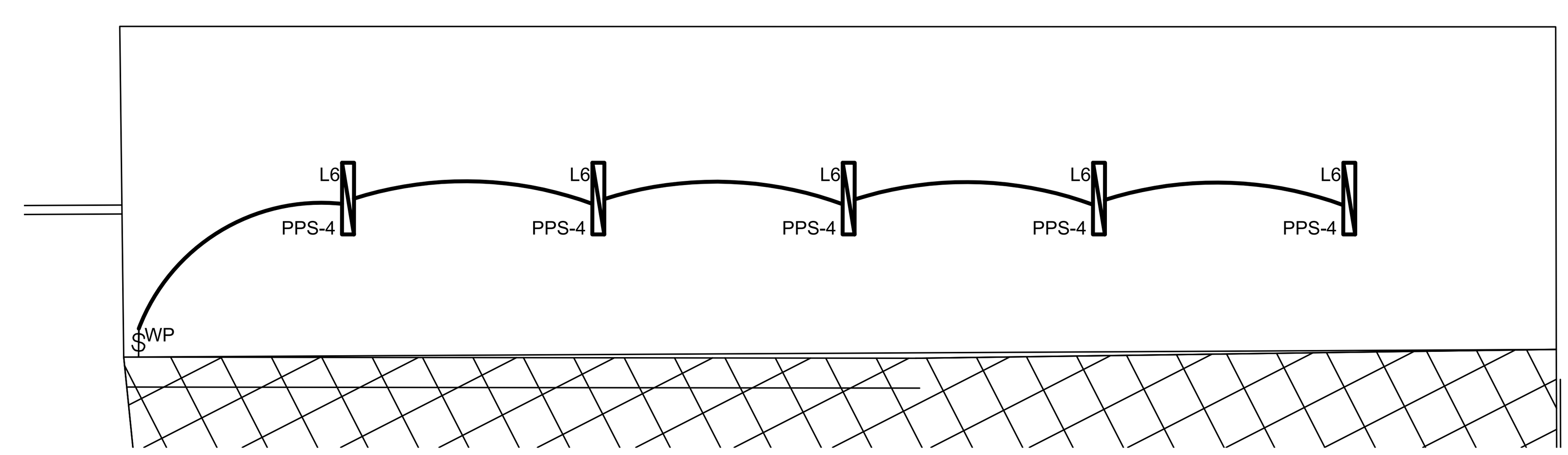
Feb 01,2024 – 4:48pm
C:\Users\belousp\appdata\local\temp\AcPublish_295040\E-100 ELECTRICAL SITE DEMOLITION PLAN.dwg
36x24 PLOT SHEET



1 E-101 **SITE PLAN**
SCALE: 1" = 30'-0"

GENERAL NOTES:

A. REFER TO DETAIL 3/E-801 FOR DIRECT BURIAL CONDUIT INSTALLATION REQUIREMENTS.



2 E-101 **LEAN-TO ADDITION PLAN**
SCALE: 1/8"=1'-0"

REVISED DRAWING 2/7/2024

Feb 01,2024 – 4:47pm
C:\Users\belovusp\appdata\local\temp\AcPublish_295040\E-101 ELECTRICAL SITE PLAN.dwg
36x24 PLOT SHEET

NEW YORK STATE OF OPPORTUNITY. Office of General Services
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CONSULTANT
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STATE OF NEW YORK – LICENSED PROFESSIONAL ENGINEER

CONTRACT: ELECTRICAL

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

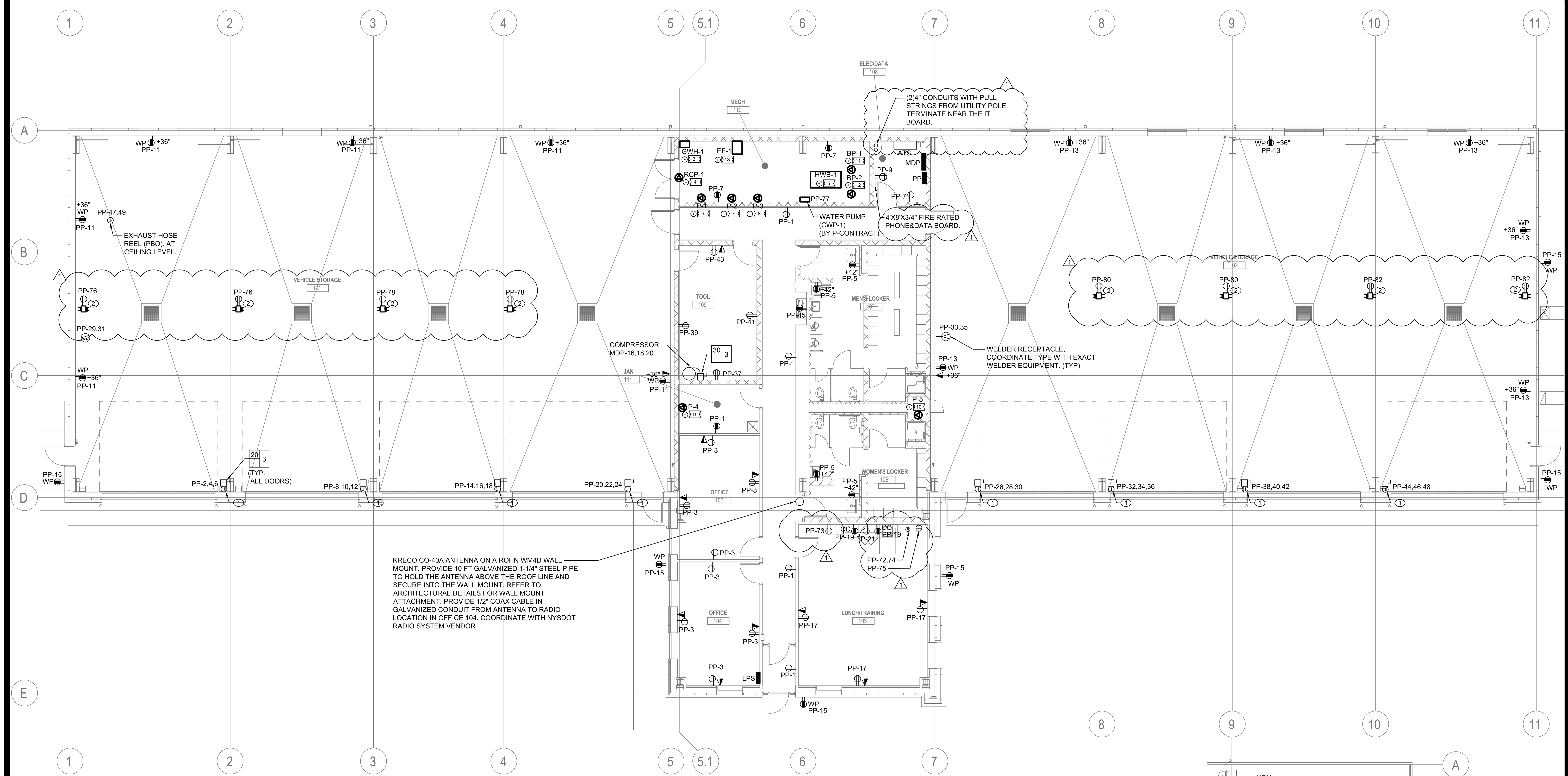
MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 – E
DESIGNED BY:	PB
DRAWN BY:	PB
FIELD CHECK:	
APPROVED:	PROJECT MANAGER

SHEET TITLE: SITE PLAN

DRAWING NUMBER: E-101

SHEET 100 OF 108



1 E-201 **1ST FLOOR POWER PLAN**
SCALE: 3/16" = 1'-0"

N

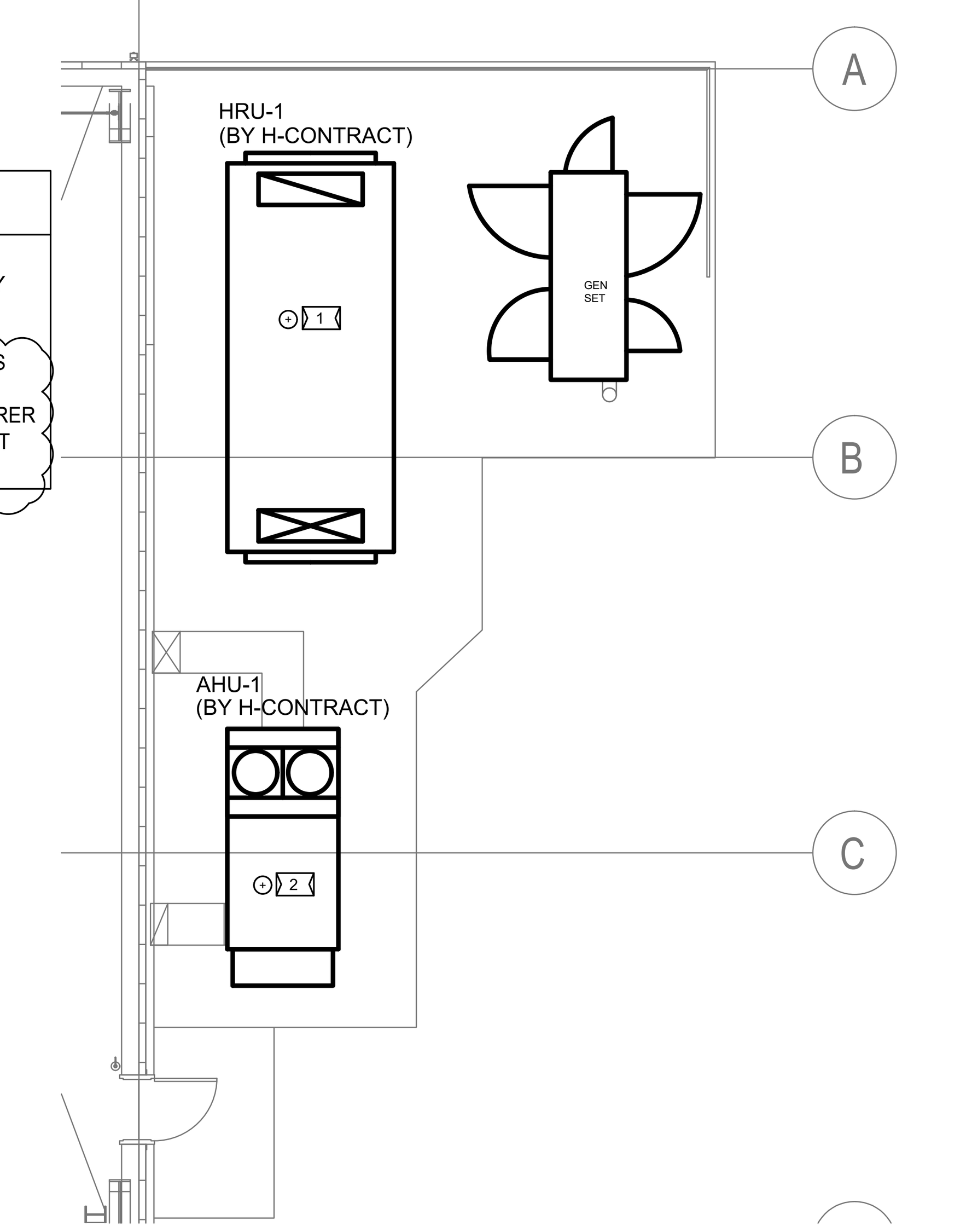
REVISED DRAWING 2/7/2024

GENERAL NOTES:

1. INSTALL DEVICES EXPOSED IN THE AREAS WITH BLOCK WALL. IN ALL OTHER AREAS TO BE INSTALLED CONCEALED.

KEYNOTES:

1. POWER FEED FOR GARAGE DOOR MOTOR. COORDINATE MOUNTING HEIGHT WITH GARAGE DOOR REQUIREMENTS. DOOR CONTROL WIRING PROVIDED BY OTHERS.
2. PROVIDE REEL BANK AS PER SPECIFICATION SECTION 263214. SUPPORT HOSE REELS FROM OVERHEAD HANGING SUPPORTS PROVIDED BY CONSTRUCTION CONTRACTOR. COORDINATE FINAL LOCATIONS AND ATTACHMENTS TO SUPPORTS PER MANUFACTURER REQUIREMENTS. PROVIDE UNISTRUT SUPPORTS, ANCHORED TO REEL BANK SUPPORT INSTALLED EVERY 5 FEET.



2 E-201 **PARTIAL 1ST FLOOR PLAN**
SCALE: 1/8" = 1'-0"

N

EQUIPMENT CONNECTION SCHEDULE

KEY

DISCONNECT TYPE	NEMA TYPE	STARTER TYPE	CONTROLS	FURNISHED BY
A - NON-FUSED SAFETY SWITCH B - FUSED SAFETY SWITCH C - MOTOR SWITCH D - MOTOR SWITCH W/ THERMAL OVERLOAD E - CORD AND PLUG F - TOGGLE SWITCH	12 - NEMA 12 (INDOOR, OIL TIGHT) 3R - NEMA 3R (RAIN PROOF) 7 - NEMA 7 (EXPLOSION PROOF) 4 - NEMA 4 (WATERTIGHT) 4X - NEMA 4X (CORROSION/WATERTI 1 - NEMA 1 (INDOOR, DUST TIGHT)	MAG - MAGNETIC COMB - COMBINATION MAN - MANUAL RED - REDUCED VOLTAGE VFD - VARIABLE FREQUENCY DRIVE OTH - OTHER (SEE NOTES) VSC - VARIABLE SPEED CONTROL	1 - START/STOP PUSH BUTTON W/ PILOT LIGHT IN COVER 2 - H-O-A SWITCH W/ PILOT LIGHT IN COVER 3 - AUXILLARY CONTACTS	ELEC - DIVISION 26

ITEM NO	DESIGNATION	DESCRIPTION	LOCATION	HP	KW	AMPS	VOLTS	PH	PANEL	CIRCUIT	BREAKER SIZE	WIRE	GND	CONDUIT SIZE	DISCONNECT TYPE	DISCONNECT NEMA TYPE	DISCONNECT SIZE (AMPS)	DISCONNECT FUSES (AMPS)	DISCONNECT PROVIDED BY	STARTER TYPE	STARTER NEMA SIZE	STARTER NEMA TYPE	STARTER PROVIDED BY	CONTROLS CONTROL VOLTAGE	CONTROLS CONTROL TYPE	FIRE ALARM INTERFACE
1	HRU-1	OUTDOOR AIR UNIT (PBO)	AT GRADE			46	208	3	MDP	7,9,11	50/3	#6	#10	1"	W/UNIT								W/UNIT			N
2	AHU-2	AIR HANDLER UNIT (PBO)	AT GRADE			46.6	208	3	MDP	13,15,17	60/3	#4	#8	1-1/4"	W/UNIT								W/UNIT			Y
3	GWH-1	GAS WATER HEATER (PBO)	MECH 110			2	120	1	PP	57	20	#12	#12	3/4"	F	1	20		ELEC							N
4	RCP-1	RECIRC PUMP (PBO)	MECH 110			1	120	1	PP	59	20	#12	#12	3/4"	F	1	20		ELEC							N
5	B-1	GAS BOILER (PBO)	MECH 110			2	120	1	PP	61	20	#12	#12	3/4"	F	1	20		ELEC							N
6	P1	PUMP (PBO)	MECH 110			5	120	1	PP	62	20	#12	#12	3/4"	F	1	20		ELEC				W/UNIT			N
7	P2	PUMP (PBO)	MECH 110			5	120	1	PP	64	20	#12	#12	3/4"	F	1	20		ELEC				W/UNIT			N
8	P3	PUMP (PBO)	MECH 110			5	120	1	PP	66	20	#12	#12	3/4"	F	1	20		ELEC				W/UNIT			N
9	P4	PUMP (PBO)	JAN 111			5	120	1	PP	68	20	#12	#12	3/4"	F	1	20		ELEC				W/UNIT			N
10	P5	PUMP (PBO)	CLOSET			5	120	1	PP	70	20	#12	#12	3/4"	F	1	20		ELEC				W/UNIT			N
11	BP-1	BOILER PUMP (PBO)	MECH 110			2.4	208	1	PP	65,67	20	#12	#12	3/4"	D	1	20		ELEC				W/UNIT			N
12	BP-2	BOILER PUMP (PBO)	MECH 110			2.4	208	1	PP	69,71	20	#12	#12	3/4"	D	1	20		ELEC				W/UNIT			N
13	EF-1	EXHAUST FAN (PBO)	MECH 110			0.1	120	1	PP	23	20	#12	#12	3/4"	F	1	20		ELEC							N

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DESIGN & CONSTRUCTION

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STATE OF NEW YORK · MICHAEL A. LICARI · LICENSED PROFESSIONAL ENGINEER

CONTRACT: ELECTRICAL

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

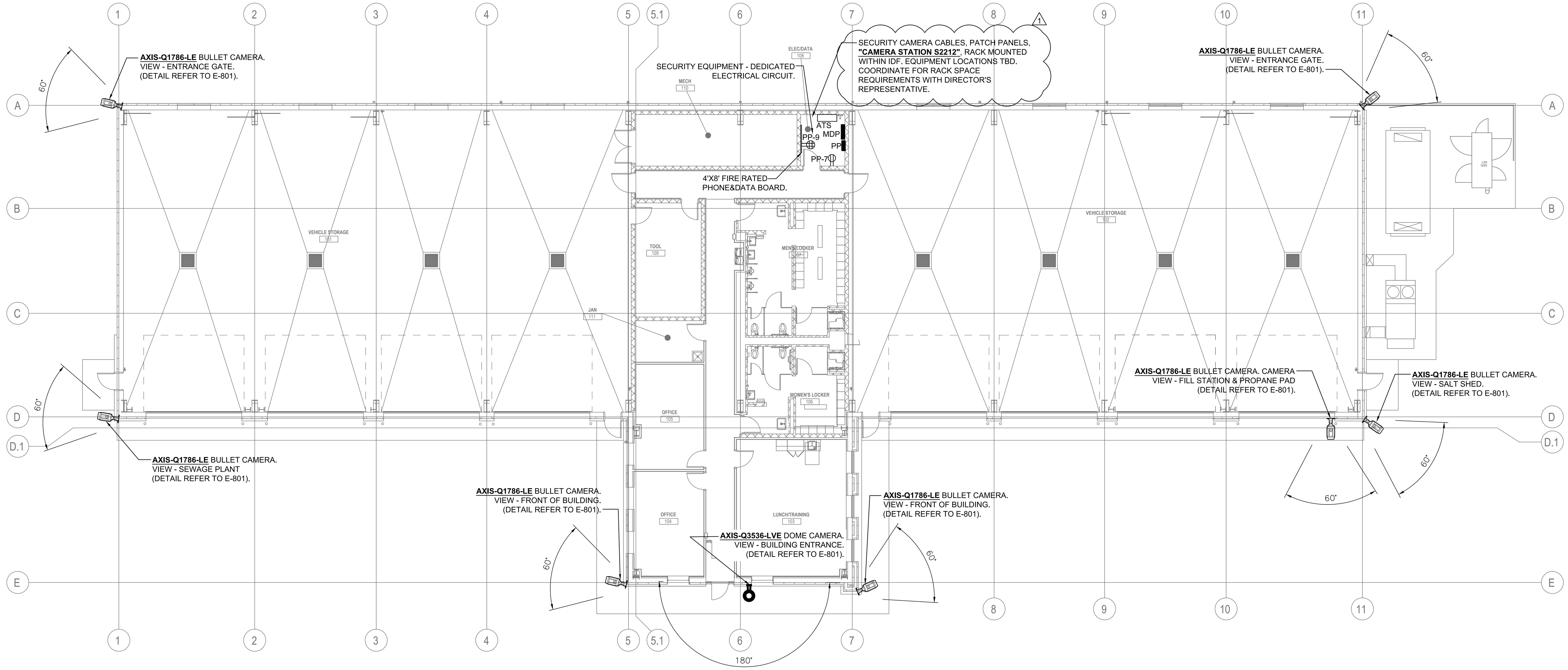
LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER: 46063 – E
DESIGNED BY: PB
DRAWN BY: PB
FIELD CHECK:
APPROVED: PROJECT MANAGER
SHEET TITLE: 1ST FLOOR POWER PLAN
DRAWING NUMBER: E-201
SHEET 101 OF 108

Feb 01,2024 – 4:48pm
M:\MEP Projects\2019\19-289-0295 Provide 8 Bay Vehicle Storage Building\1 Drawings\Sheets\4_Electrical\E-201 ELECTRICAL FIRST FLOOR POWER.dwg
36x24 PLOT SHEET



1 E-201

1ST FLOOR SECURITY PLAN

SCALE: 3/16" = 1'-0'

N

SCOPE OF WORK:

1. PROVIDE AND INSTALL OUTDOOR RATED CATEGORY 6 DATA CABLES.
2. PROVIDE AND INSTALL CAT6 DATA CABLES TO ALL SECURITY CAMERA LOCATIONS & COMPONENTS, AS SHOWN ON PLANS.
3. ALL CAT6 DATA CABLES ARE TO BE "HOME RUNS" FROM CAMERA TO TELECOM RM / SECURITY CLOSET.
4. PROVIDE AND INSTALL OUTDOOR RATED CATEGORY 6 - 4 PAIR UTP COPPER CABLE TERMINATED ON A 8-PIN-8 CONDUCTOR CATEGORY 6 JACK FOR ALL CAT6 TERMINATIONS.
5. ALL DATA CABLES SHALL BE LABELED AT BOTH ENDS WITH SELF LAMINATING LABELS.
6. ALL CAT6 CABLE, PROVIDE 12" OF CABLE SLACK FOR FINAL TERMINATION WITHIN BACK BOX. CABLE TO BE COILED NEATLY FOR FINAL TERMINATION.
7. EMI / RFI AVOIDANCE:
   - DATA CABLES SHALL CROSS ELECTRICAL CABLES & CONDUITS AT A 90 DEGREE ANGLE ONLY.
   - MINIMUM OF 12 INCHES SEPARATION BETWEEN DATA CABLES AND ELECTRICAL CABLES RUNNING IN PARALLEL WITHIN CEILING SPACE
   - TELECOMMUNICATION CABLES TO MAINTAIN FOLLOWING MINIMUM DISTANCE:
     1. TWELVE INCHES FROM HIGH VOLTAGE LIGHTING
     2. THIRTY-SX INCHED FROM POWER LINES OF 5kva OR GREATER.
     3. FORTY INCHES FROM TRANSFORMERS OR MOTORS.
8. COORDINATE CABLE ROUTING IN FIELD, FIELD CONDITIONS APPLY.
9. CONTRACTOR TO PROVIDE STANDARD GROUNDING AND BONDING PRACTICE. FOLLOWING INDUSTRY STANDARD.
10. DRAG LINES MUST BE LEFT INSTALLED IN SECURITY CONDUIT / INNER-DUCT PATHWAYS.
11. WHERE THERE IS A CONFLICT BETWEEN CABLING SPECIFICATIONS AND OR ROUTING, OBTAIN CLARIFICATION FROM ENGINEER AND OWNER PRIOR TO INSTALLATION.
12. SECURITY CAMERAS SHALL BE INSTALLED FOLLOWING MANUFACTURES RECOMMENDED INSTALLATION PROCEDURES.
13. SECURITY CONTRACTOR IS RESPONSIBLE FOR ALL CAMERA RELATED HARDWARE INCLUDING BRACKETS, BEZELS, DOMES AND ALL ASSOCIATED HARDWARE FOR INSTALLATION.
14. SECURITY CONTRACTOR SHALL RECORD ALL DATA CABLE TEST RESULTS PRIOR TO SYSTEM TURNOVER. ONLY PASSING TEST RESULTS WILL BE ACCEPTED.
15. SECURITY CONTRACTOR SHALL REFER TO DRAWINGS FOR ADDITIONAL INFORMATION AND ALL PART NUMBERS FOR CAMERA SYSTEM COMPONENTS.
16. SECURITY CONTRACTOR SHALL LABEL ALL VIDEO SECURITY COMPONENTS, CABLES, PATCH PANELS, CAMERAS, ETC. FOLLOWING INDUSTRY STANDARDS.

GENERAL NOTES:

1. ALL WORK SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE, NFPA, UL, ADA AND ALL OTHER GOVERNING AGENCIES HAVING JURISDICTION.
2. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND FOLLOW DRAWINGS WHEN LAYING OUT WORK AND CHECK DRAWINGS OF OTHER TRADES TO VERIFY SPACE CONDITIONS. MAINTAIN HEADROOM AND SPACE CONDITIONS.
3. SECURITY CONTRACTOR SHALL VISIT AND EXAMINE CAREFULLY THE EXISTING AREAS AFFECTED BY THIS WORK AND BECOME FAMILIAR WITH EXISTING CONDITIONS. SECURITY CONTRACTOR SHALL PERFORM THIS PRIOR TO SUBMITTING A PROPOSAL. SUBMISSION OF A PROPOSAL SHALL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED, WHICH COULD HAVE BEEN FORESEEN, HAD SUCH AN EXAMINATION BEEN MADE.
4. BEFORE PERFORMING ANY INSTALLATION, THE SECURITY CONTRACTOR SHALL SEE THAT IT DOES NOT INTERFERE WITH CLEARANCES REQUIRED FOR FINISHED COLUMNS, HUNG CEILINGS, PLASTER, PARTITIONS, WALLS, ETC., AS SHOWN IN THE ARCHITECTURAL DRAWINGS AND DETAILS. IF ANY WORK IS SO INSTALLED AND IT LATER DEVELOPS THAT SUCH DETAILS OR DESIGN CANNOT BE FOLLOWED, THE SECURITY CONTRACTOR AT HIS OWN EXPENSE SHALL MAKE SUCH CHANGES IN THE WORK AS DIRECTED BY THE ARCHITECT, AS WELL AS TO PERMIT THE INSTALLATION OF THE ARCHITECTURAL WORK AS SHOWN ON THE PLANS AND DETAILS.
5. HOMERUN ALL CABLES VIA CONDUITS, J-HOOKS AND ABOVE ACCESSIBLE CEILINGS DIRECTLY TO THE IDF/SECURITY ROOMS AS INDICATED ON DRAWINGS. ATTACHMENT TO DRYWALL IS NOT ACCEPTABLE.
6. FIRESTOPPING SHALL BE INSTALLED WHEREVER CABLING OR RACEWAYS CROSS FIRE RATED CONSTRUCTION.
7. ALL CUTTING AND PATHING SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR.
8. ANY DAMAGE TO PARTITIONS, FLOORS, CEILINGS OR ANY PART OF THE BUILDING OR EQUIPMENT CAUSED BY THE WORK OF THE SECURITY CONTRACTOR SHALL BE MADE GOOD AT NO ADDITIONAL EXPENSE TO THE OWNER.
10. COORDINATE ALL ELECTRICAL POWER, CONDUIT AND OUTLET BOX REQUIREMENTS WITH ELECTRICAL CONTRACTOR.
11. ALL J-BOXES & CONDUITS SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR UNLESS OTHERWISE NOTED. COORDINATION AS REQUIRED.
12. SECURITY CONTRACTOR SHALL PROVIDE ANY AND ALL REQUIRED TROUGH, CONNECTIONS TO OR TRANSITIONS FROM WALLFIELD TROUGH AS REQUIRED.
13. COORDINATE EXACT LOCATIONS, MOUNTING AND FINISHES OF INTRUSION VIDEO SURVEILLANCE AND WITH ARCHITECT.
14. COORDINATE PATCH PANEL LOCATIONS, ETHERNET SWITCHING, PORT ALLOCATION, IP ADDRESS INFO AS REQUIRED WITH OWNER.
15. FINAL ACCEPTANCE IS REQUIRED TO BE MADE AFTER THE SECURITY CONTRACTOR HAS DEMONSTRATED THAT THE WORK FULFILLS THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS.
16. SECURITY CONTRACTOR SHALL PROVIDE COMPLETE AS-BUILT DOCUMENTATION AND ACAD DRAWINGS.

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT

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STATE OF NEW YORK · MICHAEL A. LICARI · LICENSED PROFESSIONAL ENGINEER · 091089

CONTRACT: ELECTRICAL

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 – E
DESIGNED BY:	PB
DRAWN BY:	PB
FIELD CHECK:	
APPROVED:	PROJECT MANAGER

SHEET TITLE: 1ST FLOOR SECURITY PLAN

DRAWING NUMBER: E-202

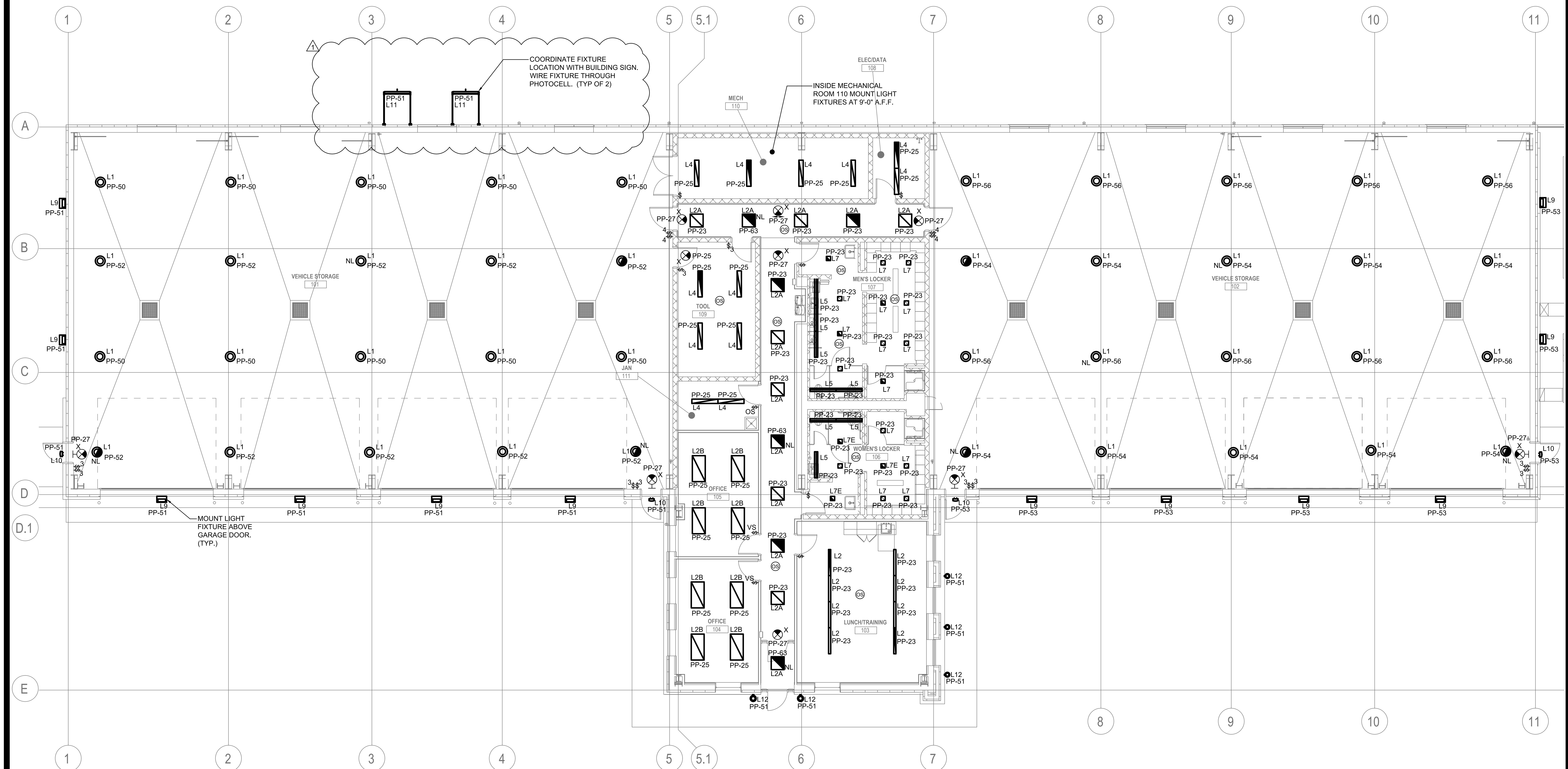
SHEET 102 OF 108

Feb 01,2024 – 4:49pm M:\MEP Projects\2019\19-289-0295 Provide 8 Bay Vehicle Storage Building\1 Drawings\Sheets\4_Electrical\E-202 SECURITY CAMERA PLAN.dwg

36x24 PLOT SHEET

GENERAL NOTES:

1. PROVIDE AN UN-SWITCHED WIRE FROM THE INDICATED CIRCUIT TO SERVE EXIT SIGNS.
2. IN ADDITION TO SWITCHED CIRCUIT PROVIDE AN UN-SWITCHED WIRE TO SERVE EMERGENCY FIXTURES. REFER TO DETAIL 9/E-801.



1 E-301 1ST FLOOR LIGHTING PLAN

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

N

REVISED DRAWING 2/7/2024

Feb 01,2024 – 4:49pm
M:\MEP Projects\2019\19-289-0295 Provide 8 Bay Vehicle Storage Building\1 Drawings\Sheets\4_Electrical\E-301 ELECTRICAL FIRST FLOOR LIGHTING.dwg
36x24 PLOT SHEET

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CONTRACT: ELECTRICAL

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

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1	2/07/2024	ADDENDUM 3
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PROJECT NUMBER:	46063 – E
DESIGNED BY:	PB
DRAWN BY:	PB
FIELD CHECK:	
APPROVED:	PROJECT MANAGER

SHEET TITLE: 1ST FLOOR LIGHTING PLAN

DRAWING NUMBER: E-301

SHEET 103 OF 108

PANEL SCHEDULE: MDP

POWER & LIGHTING PANEL

CKT NO.	DESCRIPTION	UNIT V.A.	POLES	TRIP	WIRE SIZE	CONDUIT SIZE	LOAD PER PHASE (V.A.) A	B	C	CONDUIT SIZE	WIRE SIZE	TRIP	POLES	UNIT V.A.	DESCRIPTION	CKT NO.
1	SPACE						25430							25430	PP	2
3	SPACE							21320		2-1/2	4/0	225	3	21320		4
5	SPACE								26300					26300		6
7	HRU-1	5520					7420							1900	PPS	8
9		5520	3	50	6	1		5720		2	1/0	100	2	200		10
11		5520							5520						SPACE	12
13	AHU-1	5112					5112									14
15		5112	3	60	4	1-1/4		6936						1824	COMPRESSOR	16
17		5112							6936	1	10	30	3	1824		18
19	SPACE						1824							1824		20
21	SPACE							0		1-1/2	4	60	2		PANEL "LPS"	22
23	SPACE								0							24
25	SPACE						0								SPACE	26
27	SPACE							0							SPACE	28
29	SPACE								0						SPACE	30
31	SPACE						0								SPACE	32
33	SPACE							0							SPACE	34
35	SPACE								0						SPACE	36
37	SPACE						0								SPACE	38
39	SPACE							0							SPACE	40
41	SPACE								0						SPACE	42
							39786	33976	38756							

VOLTAGE	208Y/120		42	POLES
PANEL AMP RATING	400	TOTAL KVA: 112.52	42	KAIC RATING
PHASE	3	TOTAL AMPS: 312.55	SURFACE	MOUNTING
WIRE	4		TRANS.	FED FROM
MAIN BREAKER	400		MODEL	-

PANEL SCHEDULE: PPS

CKT NO.	DESCRIPTION	UNIT V.A.	POLES	TRIP	WIRE SIZE	CONDUIT SIZE	PHASE (V.A.) A	B	CONDUIT SIZE	WIRE SIZE	TRIP	POLES	UNIT V.A.	DESCRIPTION	CKT NO.
1	PUMP	1500	1	20	12	3/4	1900		3/4	12	20	1	400	SHED LIGHTS	2
3	SPARE		1	20	12			200	3/4	12	20	1	200	LEAN-TO ADDITION LIGHTS	4
5	SPARE		1	20	12		0			12	20	1		SPARE	6
7	SPARE		1	20	12			0		12	20	1		SPARE	8
9	SPARE		1	20	12		0		1-1/2	4	60	2		PANEL "LPS"	10
11	SPARE		1	20	12			0							12
							1900	200							

VOLTAGE	120/240V		12	POLES
PANEL AMP RATING	100A	TOTAL KVA: 2.1	10	KAIC RATING
PHASE	1	TOTAL AMPS: 10.1	SURFACE	MOUNTING
WIRE	3		MDP	FED FROM
MAIN BREAKER	100A		MODEL	-

PANEL SCHEDULE: LPS

FUEL ISLAND POWER & LIGHTING PANEL

CKT NO.	DESCRIPTION	UNIT V.A.	POLES	TRIP	WIRE SIZE	CONDUIT SIZE	LOAD PER PHASE (V.A.) A	B	C	CONDUIT SIZE	WIRE SIZE	TRIP	POLES	UNIT V.A.	DESCRIPTION	CKT NO.
1	SPARE		1	20			0					20	1		SPARE	2
3	SPARE		1	20				0				20	1		SPARE	4
5	SPARE		1	20					0			20	1		SPARE	6
7	SPARE		1	20			0					20	1		SPARE	8
9	SPARE		1	20				0				20	1		SPARE	10
11	SPARE		1	20					0			20	1		SPARE	12
13	SPARE		1	20			0					20	1		SPARE	14
15	SPARE		1	20				0				20	1		SPARE	16
17	SPARE		1	20					0			20	1		SPARE	18
19	SPARE		1	20			0					20	1		SPARE	20
21	SPARE		1	20				0				20	1		SPARE	22
23	SPARE		1	20					0			20	1		SPARE	24
25	SPARE		1	20			0					20	1		SPARE	26
27	SPARE		1	20				0				20	1		SPARE	28
29	SPARE		1	20					0			20	1		SPARE	30
							0									

VOLTAGE	240Y/120		30	POLES
PANEL AMP RATING	100	TOTAL KVA: 0	10	KAIC RATING
PHASE	1	TOTAL AMPS: 0	SURFACE	MOUNTING
WIRE	3		MDP	FED FROM
MAIN BREAKER	60		MODEL	-

NOTE: PANEL "LPS" BRANCH CIRCUITS PROVIDED UNDER SEPARATE CONTRACT.

PANEL SCHEDULE: PP

POWER & LIGHTING PANEL

CKT NO.	DESCRIPTION	UNIT V.A.	POLES	TRIP	WIRE SIZE	CONDUIT SIZE	LOAD PER PHASE (V.A.) A	B	C	CONDUIT SIZE	WIRE SIZE	TRIP	POLES	UNIT V.A.	DESCRIPTION	CKT NO.
1	CORRDIDOR RECEPT.	900	1	20	12	3/4	1400							500		2
3	OFFICE RECEPT.	1440	1	20	12	3/4		1940		3/4	12	20	3	500	GARAGE DOOR	4
5	BATHROOM'S RECEPT.	720	1	20	12	3/4			1220					500		6
7	MECH/ELECT RM RECEPT.	540	1	20	12	3/4	1040							500		8
9	PHONEBOARD RECEPT.	360	1	20	12	3/4		860		3/4	12	20	3	500	GARAGE DOOR	10
11	STORAGE 101 RECEPT.	1080	1	20	12	3/4			1580					500		12
13	STORAGE 102 RECEPT.	1080	1	20	12	3/4	1580							500		14
15	EXTERIOR RECEPT.	1080	1	20	12	3/4		1580		3/4	12	20	3	500	GARAGE DOOR	16
17	LUNCH RM RECEPT.	540	1	20	12	3/4			1040					500		18
19	LUNCH RM RECEPT.	360	1	20	12	3/4	860							500		20
21	LUNCH RM RECEPT.	1080	1	20	12	3/4		1580		3/4	12	20	3	500	GARAGE DOOR	22
23	LIGHTING	1200	1	20	12	3/4			1700					500		24
25	LIGHTING	800	1	20	12	3/4	1300							500		26
27	EXIT SIGNS	100	1	20	12	3/4		600		3/4	12	20	3	500	GARAGE DOOR	28
29	WELDER RECEPT.	3500							4000					500		30
31		3500	2	60	4	1	4000							500		32
33	WELDER RECEPT.	3500						4000		3/4	12	20	3	500	GARAGE DOOR	34
35		3500	2	60	4	1			4000					500		36
37	TOOL RM. RECEPT.	600	1	20	12	3/4	1100							500		38
39	TOOL RM. RECEPT.	600	1	20	12	3/4		1100		3/4	12	20	3	500	GARAGE DOOR	40
41	TOOL RM. RECEPT.	600	1	20	12	3/4			1100					500		42
43	TOOL RM. RECEPT.	600	1	20	12	3/4	1100							500		44
45	WATER COOLER	600	1	20	12	3/4		1100		3/4	12	20	3	500	GARAGE DOOR	46
47	HOSE REEL	1000							1500					500		48
49		1000	2	20	12	3/4	2500			3/4	12	20	1	1500	GARAGE LIGHTING	50
51	LIGHTING	1200	1	20	12	3/4		2700		3/4	12	20	1	1500	GARAGE LIGHTING	52
53	LIGHTING	1200	1	20	12	3/4			2700	3/4	12	20	1	1500	GARAGE LIGHTING	54
55	SITE LIGHTING	1000	1	20	SEE PLANS		2500			3/4	12	20	1	1500	GARAGE LIGHTING	56
57	GAS WATER HEATER	180	1	20	12	3/4		980		3/4	12	20	1	800	GEN. BLOCK HEATER	58
59	RECIRC. PUMP	120	1	20	12	3/4			320	3/4	12	20	1	200	GEN. BATTERY CHARGER	60
61	GAS BOILER	360	1	20	12	3/4	960			3/4	12	20	1	600	PUMP P-1	62
63	NIGHT LIGHTS	300	1	20	12	3/4		900		3/4	12	20	1	600	PUMP P-2	64
65	BOILER PUMP-1	250							850	3/4	12	20	1	600	PUMP P-3	66
67		250	2	20	12	3/4	850			3/4	12	20	1	600	PUMP P-4	68
69	BOILER PUMP-2	250						850		3/4	12	20	1	600	PUMP P-5	70
71		250	2	20	12	3/4			4250	1	8	40	2	4000	STOVE	72
73	ICE MAKER	600	1	20	12	3/4	4600							4000		74
75	KITCHEN FAN	200	1	20	12	3/4		1640		3/4	10	30	1	1440	ELECTRIC REEL	76
77	WATER LEVEL PANEL	200	1	20	12	3/4	1640			3/4	10	30	1	1440	ELECTRIC REEL	78
79	FLAG POLE	50	1	20	12	3/4		1490		3/4	10	30	1	1440	ELECTRIC REEL	80
81	FACP	600	1	20	12	3/4			2040	3/4	10	30	1	1440	ELECTRIC REEL	82
83	SPARE		1	20					0			20	1	0	SPARE	84
							25430	21,320	26,300							

VOLTAGE	208Y/120		84	POLES
PANEL AMP RATING	225	TOTAL KVA: 73.05	22	KAIC RATING
PHASE	3	TOTAL AMPS: 202.92	SURFACE	MOUNTING
WIRE	4		MDP	FED FROM
MAIN BREAKER	225		MODEL	-

1

LIGHTING SCHEDULE

ID	DESCRIPTION	VOLTAGE	LAMPS NO.	LAMPS TYPE	LAMPS COLOR TEMP	FIXTURE WATTAGE	COMMENTS
L1	HIGH BAY	120V	-	LED	5000	150	PROVIDE BATTERY BACKUP (90 MINUTES) FOR FIXTURES MARKED WITH HATCH. MOUNT 14' AFF.
L2	4' LINEAR	120V	-	LED	3500	36	PROVIDE BATTERY BACKUP (90 MINUTES) FOR FIXTURES MARKED WITH HATCH
L2A	SHINE 2X2	120V	-	LED	3500	26.7	PROVIDE BATTERY BACKUP (90 MINUTES) FOR FIXTURES MARKED WITH HATCH
L2B	SHINE 2X4	120V	-	LED	3500	36.8	PROVIDE BATTERY BACKUP (90 MINUTES) FOR FIXTURES MARKED WITH HATCH
L4	SUSPENDENT STRIPLIGHT	120V	-	LED	3500	42	PROVIDE BATTERY BACKUP (90 MINUTES) FOR FIXTURES MARKED WITH HATCH
L5	3' RECESSED LINEAR	120V	-	LED	3500	11.5	PROVIDE BATTERY BACKUP (90 MINUTES) FOR FIXTURES MARKED WITH HATCH
L6	4' LINEAR	120V	-	LED	4000	33	
L7	4" DOWNLIGHT	120V	-	LED	3500	15	PROVIDE BATTERY BACKUP (90 MINUTES) FOR FIXTURES MARKED WITH HATCH. (L7E)
L9	WALL SCONCE	120V	-	LED	4000	65	
L10	LINEAR	120V	-	LED	4000	20	
L11	OUTDOOR LINEAR	120V	-	LED	3500	14.4	
L12	WALL SCONCE	120V	-	LED	4000	30	
S	POLE LIGHT	120V	-	LED	4000	90	COORDINATE FIXTURE MOUNTING REQUIREMENTS WITH SITE PLAN DRAWING.
X	EXIT SIGN	120V	-	LED	-	3	MOUNT WALL/CEILING DETERMINED BY E.C.

LIGHT SCHEDULE NOTES: 1. CONFIRM LIGHT FIXTURE INSTALLATION HEIGHTS WITH ARCHITECTURAL DRAWING, ELEVATIONS AND CONSTRUCTION CONTRACTOR. AS NEEDED. PROVIDE ALL NECESSARY COMPONENTS AND ACCESSORIES TO OBTAIN A 100% COMPLETE INSTALLATION. 2. SEE SPECIFICATION FOR FIXTURES PART NUMBERS.

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT

LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York

CERTIFICATE OF AUTHORIZATION #: 017995

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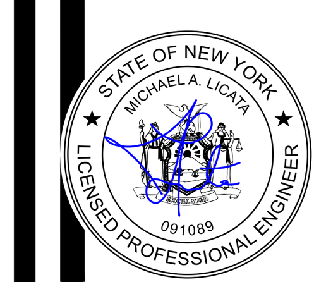


CONTRACT: ELECTRICAL

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 – E
DESIGNED BY:	PB
DRAWN BY:	PB
FIELD CHECK:	
APPROVED:	PROJECT MANAGER

SHEET TITLE: SCHEDULES

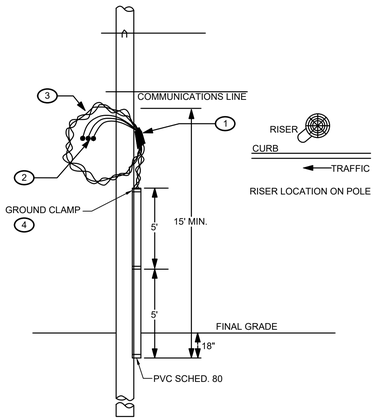
DRAWING NUMBER: E-601

SHEET 104 OF 108

Feb 01,2024 – 4:49pm
M:\MEP Projects\2019\19-289-0295 Provide 8 Bay Vehicle Storage Building\1 Drawings\Sheets\4_Electrical\E-601 ELECTRICAL SCHEDULES.dwg
36x24 PLOT SHEET

KEY NOTES:

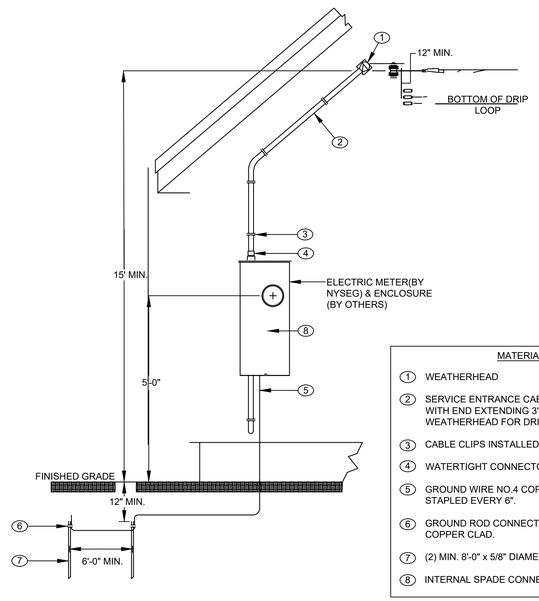
1. CABLE IS TO BE ATTACHED TO THE POLE WELL ABOVE THE TOP OF THE RISER WITH A KELLUMS GRIP BASKET OR LENGTH OF LINE TIED IN A "ROLLING BEND KNOT" SO AS TO PROTECT THE CABLE FROM MECHANICAL BENDING DAMAGE.
2. ALL CABLE SHALL BE PROPERLY END CAPPED AT BOTH ENDS BY THE CONTRACTOR WITH APPROVED TIGHT FITTING WATERTIGHT SEALING CAPS OR IN STRICT COMPLIANCE WITH NEC §300.5(E).
3. PROVIDE 35 FEET OF CABLE PER PHASE FOR UTILITY PROVIDER TO COMPLETE INSTALLATION OF RISER.
4. PROVIDE #4 CU GROUND WIRE FROM GROUND CLAMP TO 1'-0" ABOVE SECONDARY CLEVIS.



1/E-701 UTILITY POLE RISER DIAGRAM
SCALE: NONE

DETAIL NOTES:

1.) THE POINT OF ATTACHMENT ON THE BUILDING TO BE DETERMINED BY THE REQUIRED MINIMUM GROUND CLEARANCES OF SERVICE DROP CONDUCTORS.
2.) ALL WIRING AND MATERIALS MUST CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AND TO APPICABLE LOCAL CODES WHERE CONFLICT EXISTS, THE MORE STRINGENT CODE WILL APPLY.



MATERIALS

1. WEATHERHEAD
2. SERVICE ENTRANCE CABLE TO BE INSTALLED WITH END EXTENDING 3'-0" OUTSIDE OF WEATHERHEAD FOR DRIP LOOP.
3. CABLE CLIPS INSTALLED EVERY 36".
4. WATERTIGHT CONNECTOR
5. GROUND WIRE NO.4 COPPER (MINIMUM SIZE) STAPLED EVERY 6".
6. GROUND ROD CONNECTORS (2)MIN. 8'-0"X 5/8"Ø COPPER CLAD.
7. (2) MIN. 8'-0" x 5/8" DIAMETER COPPER CLAD.
8. INTERNAL SPADE CONNECTORS

3/E-701 OVERHEAD ELECTRICAL SERVICE DETAIL
SCALE: NONE

GENERAL NOTES:

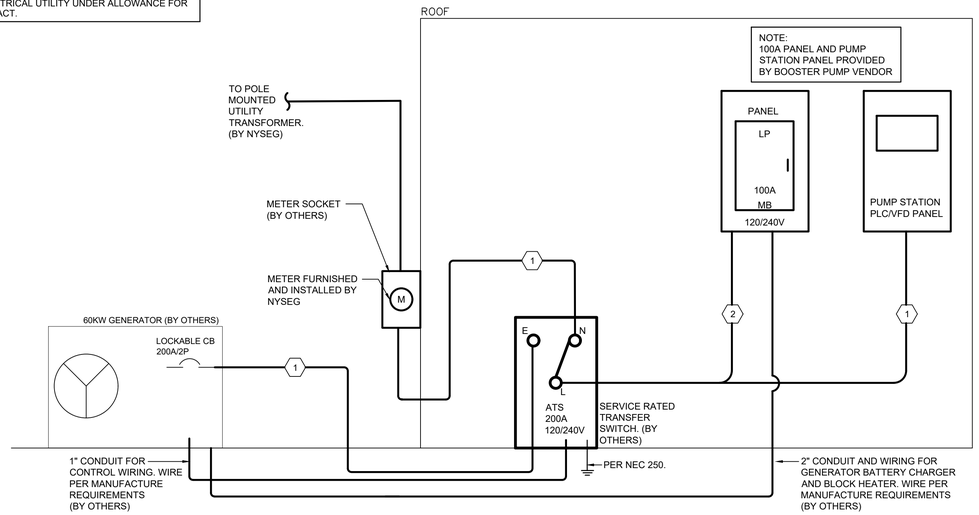
1. DETAILS 3 AND 4 ARE SHOWN FOR REFERENCE TO IDENTIFY THE WORK THAT WILL BE COMPLETED BY THE ELECTRICAL UTILITY UNDER ALLOWANCE FOR E-CONTRACT.

SCOPE OF WORK NOTES:

1.)WORKS SHOWN ON THIS DIAGRAM TO BE PROVIDED AS PART OF THE BOOSTER PUMP ENCLOSURE PACKAGE.
2.) OVERHEAD ELECTRICAL SERVICE CONNECTION TO BOOSTER PUMP STATION WILL BE PROVIDED BY NYSEG PER ALLOWANCE UNDER E-CONTRACT.

FEEDER CABLE SIZING SCHEDULE

	CIRCUIT BREAKER RATING	COPPER CONDUCTOR SIZE (PER PHASE OR NEUTRAL)	COPPER CONDUCTOR NUMBER	GROUND WIRE SIZE	CONDUIT SIZE
1	200	#4/0AWG	3	#4 AWG	2-1/2"
2	100	#3 AWG	3	#8 AWG	1-1/2"



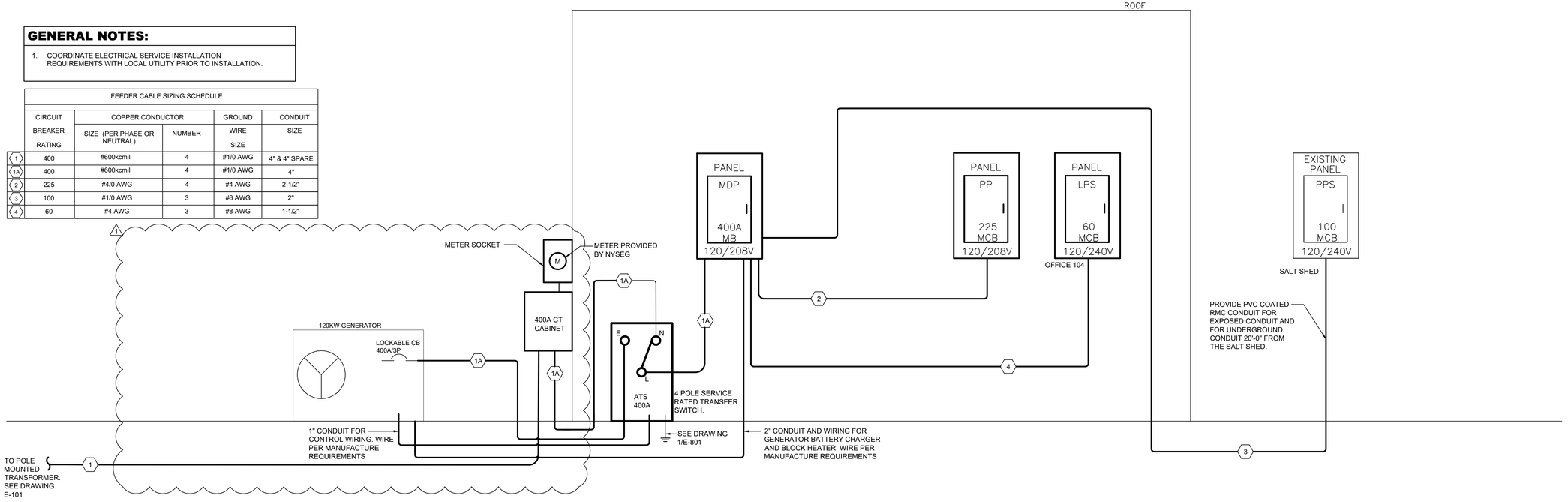
4/E-701 ELECTRICAL RISER DIAGRAM FOR BOOSTER PUMP ENCLOSURE
SCALE: NONE

GENERAL NOTES:

1. COORDINATE ELECTRICAL SERVICE INSTALLATION REQUIREMENTS WITH LOCAL UTILITY PRIOR TO INSTALLATION.

FEEDER CABLE SIZING SCHEDULE

	CIRCUIT BREAKER RATING	COPPER CONDUCTOR SIZE (PER PHASE OR NEUTRAL)	COPPER CONDUCTOR NUMBER	GROUND WIRE SIZE	CONDUIT SIZE
1	400	#600kcmil	4	#1/0 AWG	4" & 4" SPARE
1A	400	#600kcmil	4	#1/0 AWG	4"
2	225	#4/0 AWG	4	#4 AWG	2-1/2"
3	100	#1/0 AWG	3	#6 AWG	2"
4	60	#4 AWG	3	#8 AWG	1-1/2"



2/E-701 MAIN FACILITY ELECTRICAL RISER DIAGRAM
SCALE: NONE

REVISED DRAWING 2/7/2024

NEW YORK STATE OF OPPORTUNITY. Office of General Services
DESIGN & CONSTRUCTION

CONSULTANT

LiRo Engineers, Inc.
3 Aerial Way, Syosset, New York
CERTIFICATE OF AUTHORIZATION #: 017995

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STATE OF NEW YORK · MICHAEL J. LORA · 091089 · LICENSED PROFESSIONAL ENGINEER

CONTRACT: ELECTRICAL

TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS

LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY

CLIENT: DEPARTMENT OF TRANSPORTATION

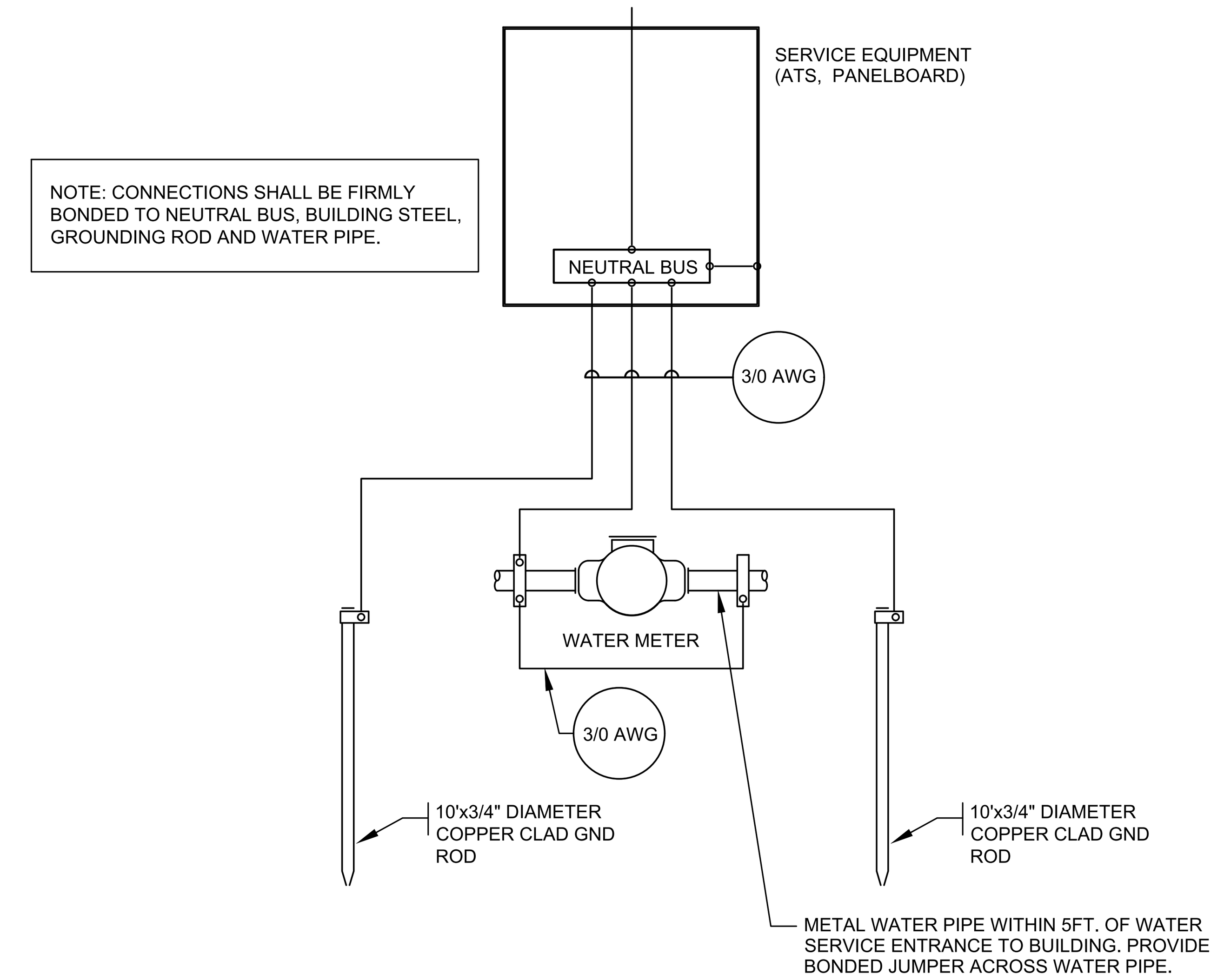
MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 – E
DESIGNED BY:	PB
DRAWN BY:	PB
FIELD CHECK:	
APPROVED:	PROJECT MANAGER

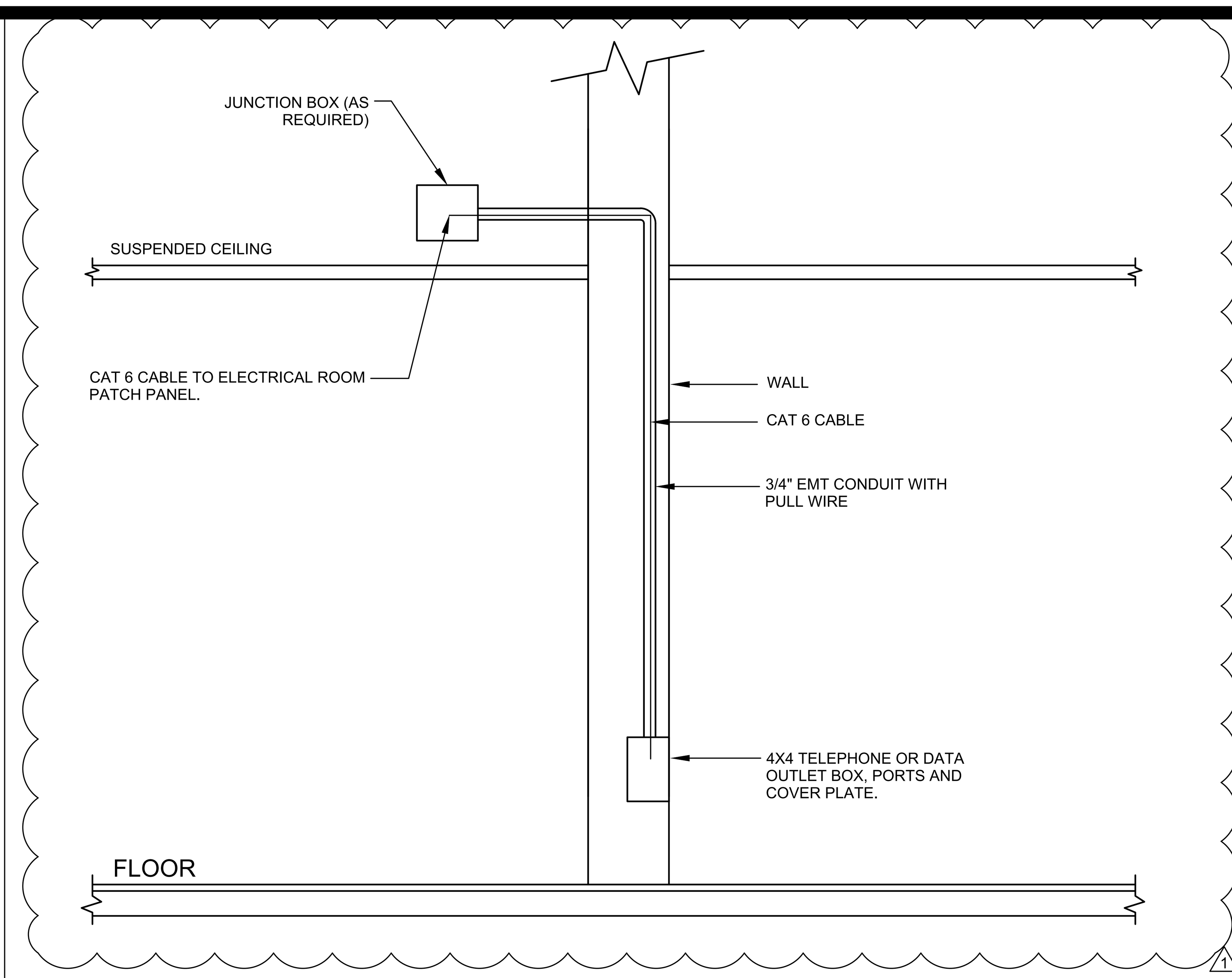
SHEET TITLE: SINGLE LINE DIAGRAM

DRAWING NUMBER: E–701

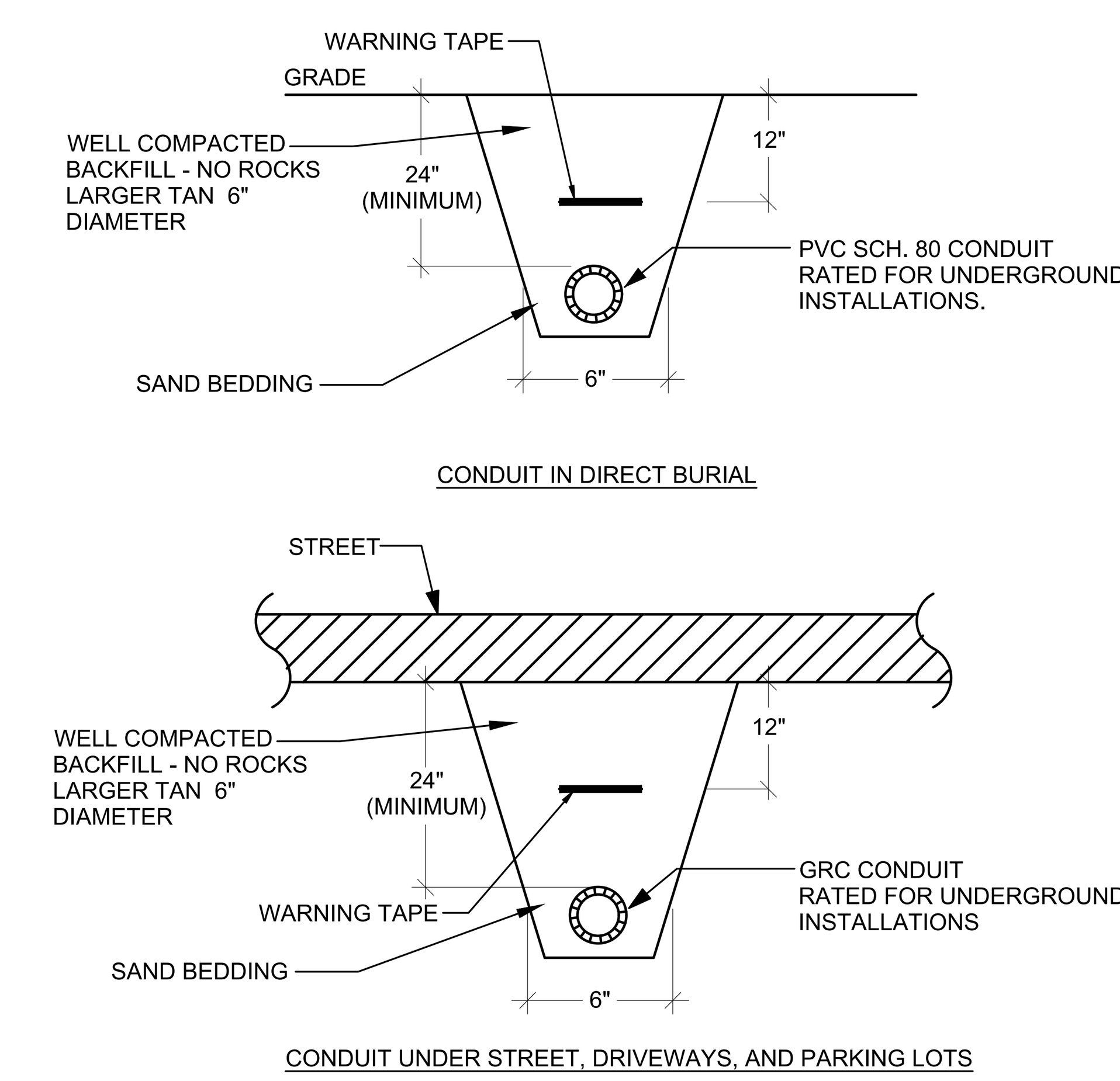
SHEET 105 OF 108



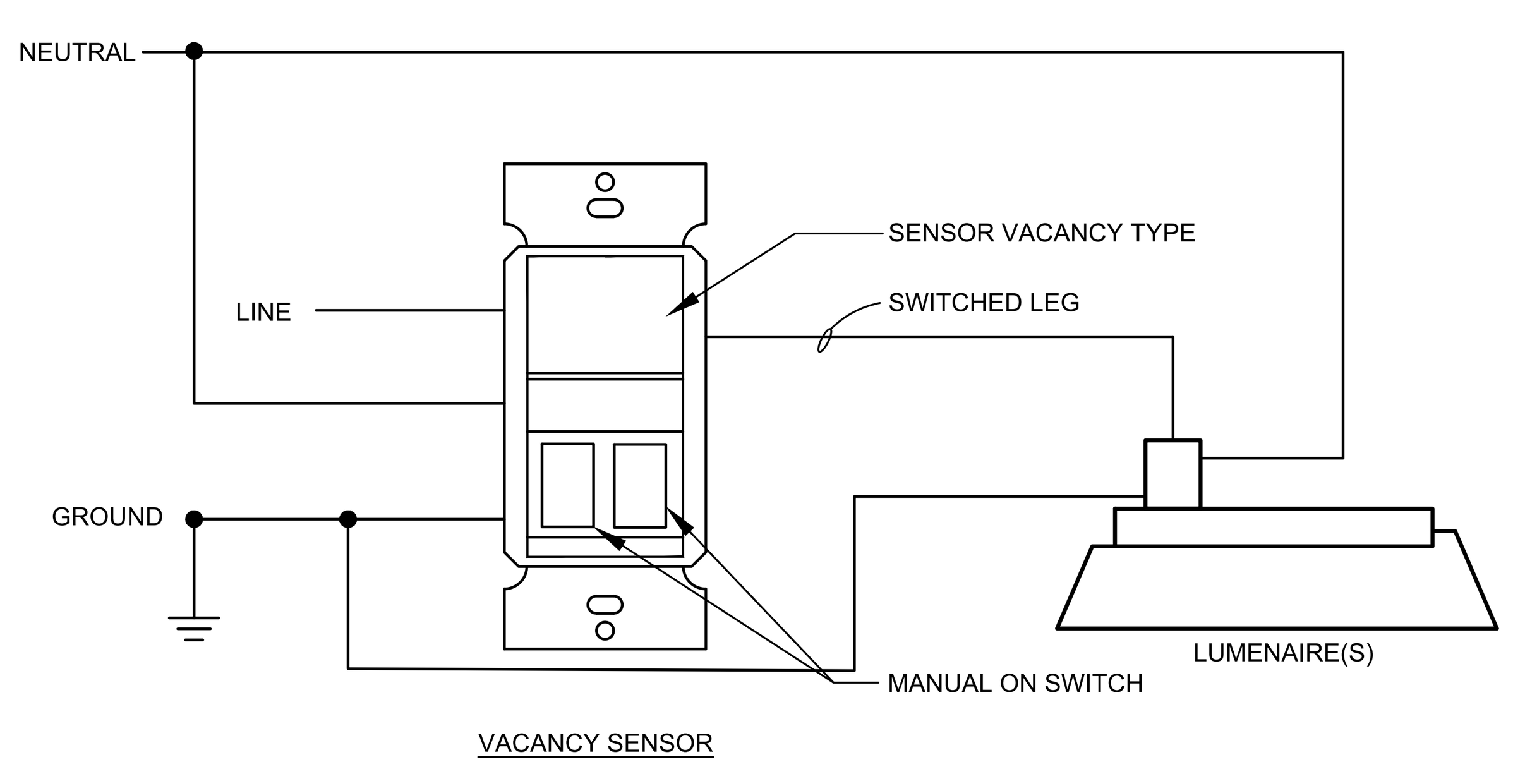
1 E-801 **GROUNDING & BONDING DETAIL**
SCALE: NONE



2 E-801 **TYPICAL CONDUIT FOR TELEPHONE/DATA RACEWAY**
SCALE: NONE

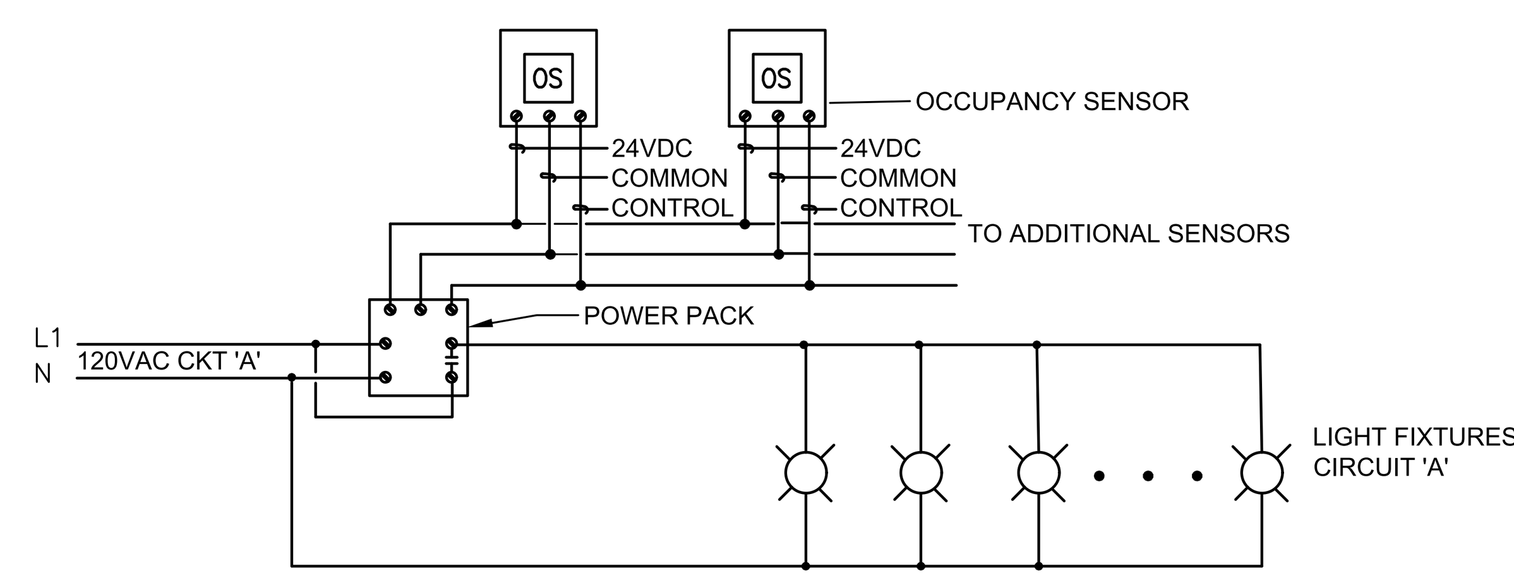


3 E-801 **DIRECT BURIAL CONDUIT DETAIL**
SCALE: NONE



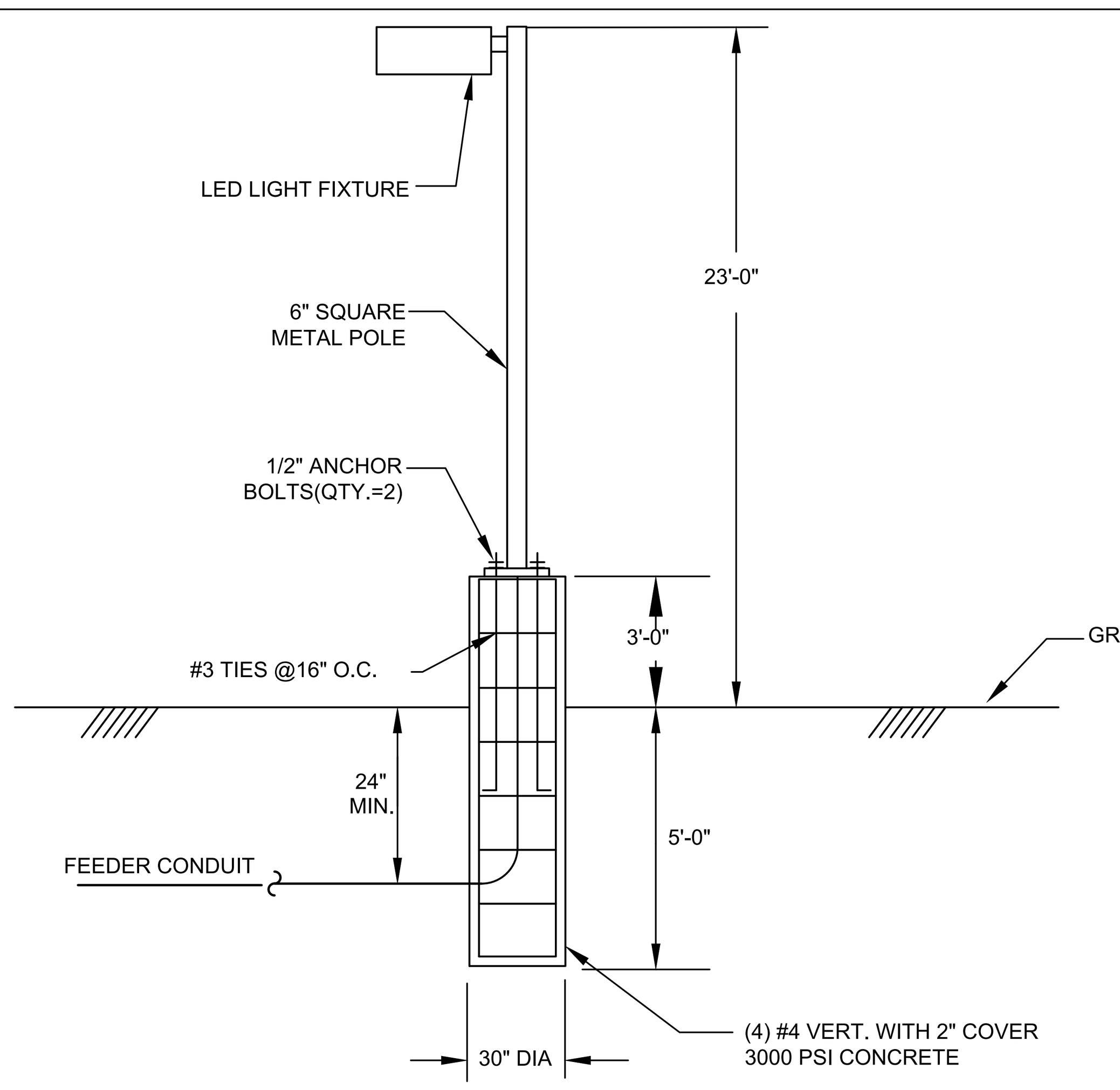
NOTES:
A. REFER TO FLOOR PLANS FOR QUANTITY AND LOCATION OF DEVICES.

4 E-801 **TYPICAL OFFICE CONTROL DIAGRAM**
SCALE: NONE

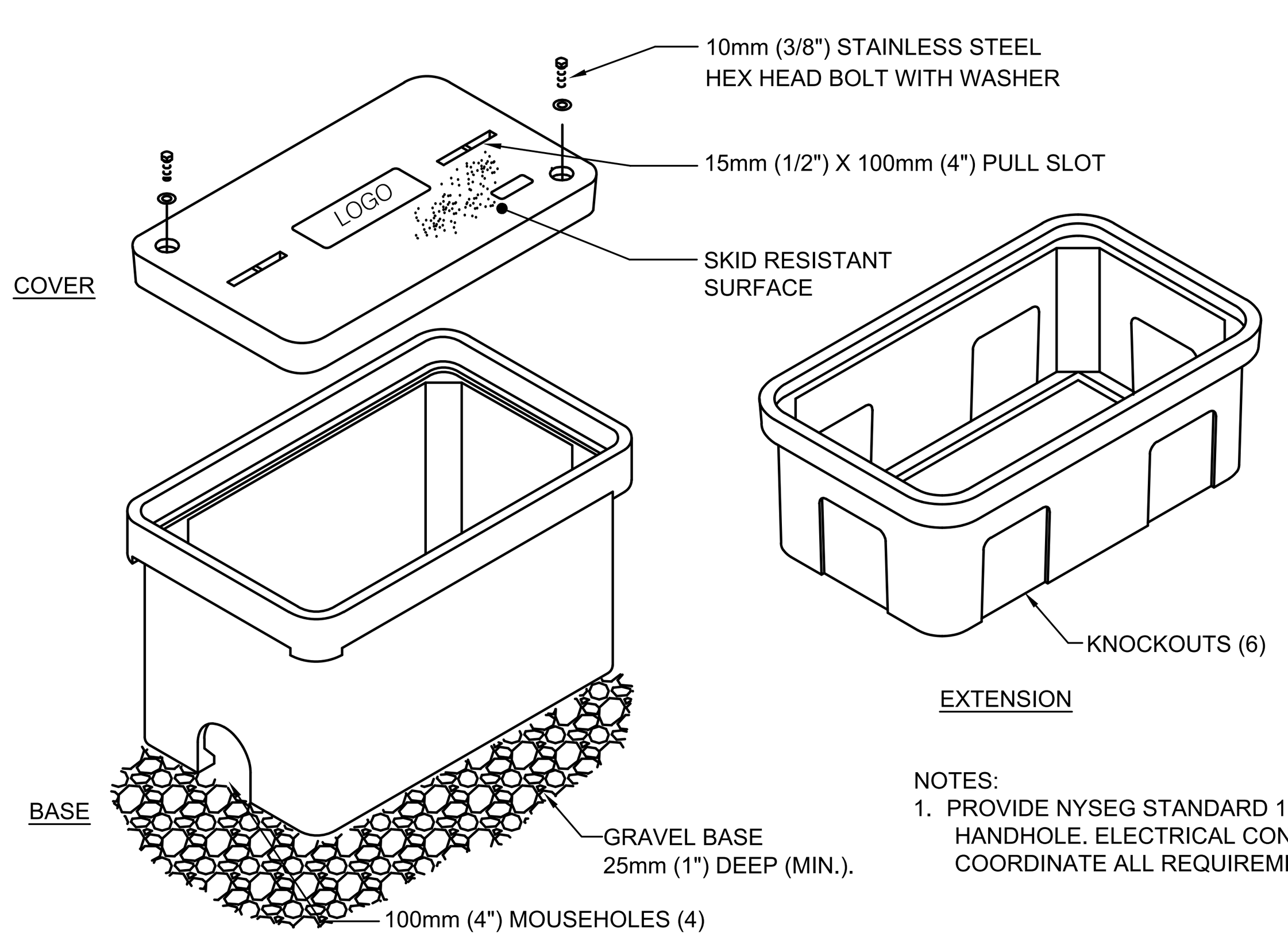


NOTES:
A. PROVIDE UN-SWITCHED WIRED TO EMERGENCY BALLAST FIXTURES.
B. WIRE EXIT SIGNS UN-SWITCHED TO SAME CIRCUIT AS FIXTURES IN SIMILAR SPACE.

5 E-801 **TYPICAL CORRIDOR LIGHTING CONTROL DIAGRAM**
SCALE: NONE



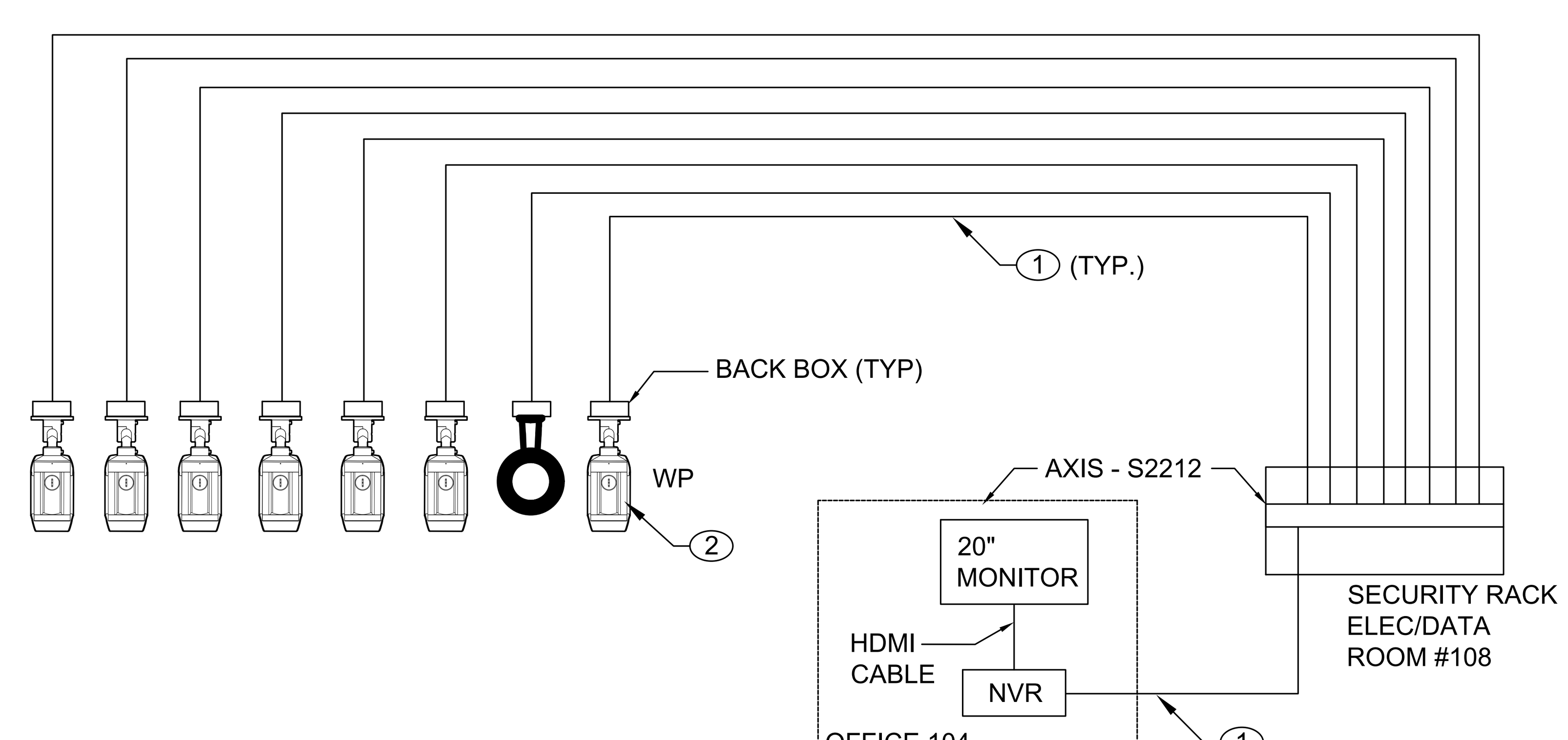
6 E-801 **LIGHTING POLE INST. DETAIL**
SCALE: NONE



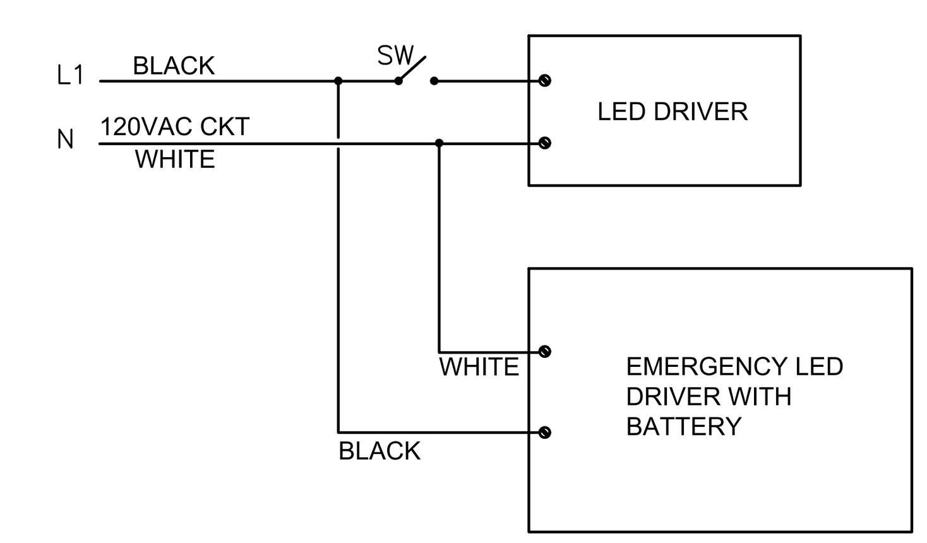
NOTES:
1. PROVIDE NYSEG STANDARD 13"W X 24"L X 18"D HANDHOLE. ELECTRICAL CONTRACTOR TO COORDINATE ALL REQUIREMENTS WITH NYSEG.

7 E-801 **HANDHOLE DETAIL**
SCALE: NONE

SECURITY SYSTEM DIAGRAM NOTES:
1. (2) CAT6 "OUTDOOR" CABLE IN 3/4" CONDUIT.
2. WALL MOUNT CAMERA IN EXTERIOR WP HOUSING. COORDINATE CAMERA ORIENTATION IN FIELD.
3. ASSOCIATED CORNER MOUNTING BRACKETS AND HARDWARE FOR CAMERAS.
4. (2) - DATA CABLE SHALL BE PULLED AND TERMINATED PER CAMERA LOCATION.
5. AXIS - CAMERA STATION (S2212) REQUIRES DEDICATED CIRCUIT.



8 E-801 **SECURITY CCTV SYSTEM RISER DIAGRAM**
SCALE: NOT TO SCALE



9 E-801 **EMERGENCY FIXTURE WIRING DIAGRAM**
SCALE: NONE

REVISED DRAWING 2/7/2024

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DESIGN & CONSTRUCTION

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STATE OF NEW YORK · MICHAEL A. LICARI · LICENSED PROFESSIONAL ENGINEER

CONTRACT: ELECTRICAL
TITLE: PROVIDE 8 BAY MAINTENANCE SUBHEADQUARTERS
LOCATION: DOT REGION 9, BROOME COUNTY ROUTE 26 VESTAL, NY
CLIENT: DEPARTMENT OF TRANSPORTATION

MARK	DATE	DESCRIPTION
1	2/07/2024	ADDENDUM 3
0	9/20/2023	BID DOCUMENTS

PROJECT NUMBER:	46063 - E
DESIGNED BY:	PB
DRAWN BY:	PB
FIELD CHECK:	
APPROVED:	PROJECT MANAGER

SHEET TITLE: DETAILS
DRAWING NUMBER: E-801
SHEET 106 OF 108

Feb 01,2024 – 4:49pm
M:\MEP Projects\2019\19-289-0295 Provide 8 Bay Vehicle Storage Building\1 Drawings\Sheets\4_Electrical\E-801 ELECTRICAL DETAILS.dwg
36x24 PLOT SHEET