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

ADDENDUM NO. 5 TO PROJECT NO. 47331

CONSTRUCTION WORK
REHABILITATE THE EASTERN APPROACH STAIRCASE, PROMENADES, PORTICO, AND EXECUTIVE RAMP
NEW YORK STATE CAPITOL
ALBANY, NY

October 15, 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.

CONSTRUCTION WORK SPECIFICATIONS

1. SECTION 050170 ORNAMENTAL METAL REPAIR: Discard the Section bound in the Project Manual and substitute the accompanying Section (pages 050170 – 1 through 050170 – 9) noted "Revised 10/11/2024".

2. SECTION 055000 METAL FABRICATIONS: Discard the Section bound in the Project Manual and substitute the accompanying Section (pages 055000 – 1 through 055000 – 9) noted "Revised 10/11/2024".

3. SECTION 055100 METAL STAIRS: Discard the Section bound in the Project Manual and substitute the accompanying Section (pages 055100 – 1 through 055100 – 10) noted "Revised 10/11/2024".

4. SECTION 057000 ORNAMENTAL METAL: Discard the Section bound in the Project Manual and substitute the accompanying Section (pages 057000 – 1 through 057000 – 6) noted "Revised 10/11/2024".

5. SECTION 099600 HIGH PERFORMANCE COATINGS: Discard the Section bound in the Project Manual and substitute the accompanying Section (pages 099600 – 1 through 099600 – 6) noted "Revised 10/11/2024".

6. SECTION 310000 EARTHWORK: Discard the Section bound in the Project Manual and substitute the accompanying Section (pages 310000 – 1 through 310000 – 22) noted "Revised 10/11/2024".

7. SECTION 323119 DECORATIVE METAL FENCES AND GATES: Discard the Section bound in the Project Manual and substitute the accompanying Section (pages 323119 – 1 through 323119 – 12) noted "Revised 10/11/2024".

APPENDIX

8. EXISTING CONDITIONS PHOTOS: Add the accompanying Document (pages 1-11) to the Project Manual for informational purposes only.

   NOTE: The photos included in Appendix were taken on 3/17/2023, 6/6/2024, and 10/11/2024. The photos represent the site conditions at the time they were taken and are not meant to convey current conditions. These photos are for reference only.

DRAWINGS

9. Revised Drawings:
   a. Drawing Nos. R102, R103, A100, A102.1, A103.1, A301, A509, A517, A518, A535, A536, and A630 noted "REVISED 10/11/2024" accompany this Addendum and supersede the same numbered originally issued drawings.

END OF ADDENDUM

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

SECTION 050170

ORNAMENTAL METAL REPAIR

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Historic treatment of ornamental metal in the form of repair as follows:

a. Replacing missing components.
b. Refinishing repaired ornamental metal.
c. Salvaging and dismantling metal for shop repair; reinstalling repaired metal.
d. Painting steel uncovered during the Work.

2. Ornamental metals include:

a. Window grilles.
b. Grates in paving.
c. Fencing and gates.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Construction Painting: Section 099101.

B. High-Performance Coatings: Section 099600.

C. Historic Light Fixture Repair: Section 265700.

1.03 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.
1. Review minutes of Preliminary Historic Treatment Conference that pertain to historic treatment of ornamental metal.
a. Refer to Section 013591 "Historic Treatment Procedures" for Preliminary Historic Treatment Conference requirements.
2. Review methods and procedures related to historic ornamental metal repair including, but not limited to, the following:
a. Historic treatment specialist's personnel, equipment, and facilities needed to make progress and avoid delays.

b. Materials, material application, sequencing, tolerances, and required clearances.
c. Ornamental metal historic treatment program.
d. Coordination with building occupants.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of product.
1. Include recommendations for product application and use.
2. Include test data substantiating that products comply with requirements.

B. Shop Drawings:
1. Include plans, elevations, and sections showing locations and extent of repair work, with enlarged details of replacement parts indicating materials, profiles, methods of attachment, accessory items, and finishes.
2. Include field-verified dimensions and the following:
a. Full-size patterns with complete dimensions for new ornamental metal components and their jointing, showing relation of existing to new components.
b. Templates and directions for installing anchor bolts and other anchorages.
c. Identification of each new metal component and its location on the structure in annotated plans and elevations.
d. Provisions for expansion, weep holes, and conduits as required for each location and exposure.

C. Samples: For the following products, finished as required for use in the Work:
1. Each type of new material to be used for replacing missing ornamental metal; 6 inches long in least dimension or whole item.
a. Casting Samples: For castings, provide one of each shape, color, and texture of component, suitable and ready for installation.
2. Brackets, fittings, and anchorage devices.
3. Each type of exposed connection between components. Show method of finishing components at connections.
4. Each type of exposed finish prepared on metal to be used for the Work of this Section; 6 inches long in least dimension.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For ornamental metal historic treatment specialist, including workers and supervisor.

B. Ornamental Metal Historic Treatment Program: For restoring historic ornamental metalwork.

1.06 QUALITY ASSURANCE

A. Ornamental Metal Historic Treatment Specialist Qualifications: A qualified historic ornamental metal restoration specialist. Work must be performed by a contractor having

not less than five years of successful experience in comparable historic ornamental metal restoration work on at least three buildings listed or eligible to be listed in the National Register of Historic Places under the review of federal and/or state historic preservation agencies in the last five years, and employing personnel skilled in the restoration processes and operations indicated.

1. Field Supervisor Qualifications: Experienced full-time supervisor on Project site during times that ornamental metal restoration and installation is in progress. Supervisors shall not be changed during Project without providing written notice to Director's Representative and receiving written acceptance of change from Director's Representative.
2. Worker Qualifications: Skilled workers who are familiar and experienced in historic treatment work of types they will be performing.
3. Experience installing and finishing new ornamental metal work is insufficient experience for ornamental metal historic treatment work.
4. In acceptance or rejection of historic treatment work, no allowance will be made for lack of skill on the part of the workers.

B. Ornamental Metal Historic Treatment Program: Prepare a written, detailed description of materials, methods, equipment, and sequence of operations to be used for historic ornamental metal repair work, including each process or phase of repairing ornamental metal, related work, and the protection of surrounding materials and Project site.

1. Ornamental Metal Historic Treatment Program may include, but not be limited to, the following:
    a. Dismantling existing surface-mounted objects and hardware that overlie ornamental metal surfaces except items indicated to remain in place.
        1) Tag items with location identification to match window number on Window Grille Schedule in Drawings.
    b. Verifying that temporary protections have been installed.
    c. Examining condition of ornamental metal.
    d. Cleaning ornamental metal surface, and removing paint and other finishes to bare metal.
    e. Replacing ornamental metal and supports to the degree required for a uniform and sound surface on which to apply finishes.
    f. Preparing metal for finishing, and applying finishes.
    g. Reinstalling ornamental metal objects.
2. If materials and methods other than those indicated are proposed for any phase of historic treatment work, add a written description of such materials and methods, including evidence of successful use on comparable projects, and demonstrations to show their effectiveness for this Project.

C. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code – Steel."
2. Welders shall be able to provide welds to the standard of AESS Level 3.

1.07 MOCKUPS

A. Prepare mockups of historic treatment repair processes on existing surfaces to demonstrate aesthetic effects and to set quality standards for materials and execution and for fabrication and installation. Prepare mockups so they are inconspicuous.

1. Repairing Metal Component:

a. One metal grille with missing metal components installed, prepared and ready for finishing.
b. One grating with missing metal components installed, prepared, and finished.

2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Director's Representative specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Coordinate delivery of items to be built into other Work to avoid delay. Furnish templates as required for accurate location of Work.

B. Store ornamental metal in a well-ventilated area, away from uncured concrete and masonry, and protected from weather, moisture, soiling, abrasion, extreme temperatures, and humidity.

C. Deliver and store ornamental metal assemblies in wooden crates surrounded by enough packing material to ensure that products are not cracked or otherwise damaged.

PART 2 PRODUCTS

2.01 METAL, GENERAL

A. Provide metal materials made of the alloys, forms, and types that match existing metals and have the ability to receive finishes matching existing finishes unless otherwise indicated. Exposed-to-view surfaces exhibiting imperfections inconsistent with existing materials are unacceptable.

B. Source Limitation for Replacement Cast Materials: Obtain castings for historic treatment of decorative metal from single source from single manufacturer with resources to provide materials of consistent quality in appearance and physical properties.

2.02 STEEL

A. Tubing: Cold formed, ASTM A500/A500M.

B. Steel Plate, Shapes, and Bars: ASTM A36/A36M.

C. Steel Bars: Mild steel; ASTM A29/A29M, Grade 1010.

D. Steel Sheet: ASTM A1008/A1008M, cold-rolled commercial steel sheet; matte finish; suitable for exposed applications.

2.03 CAST IRON

A. Gray-Iron Castings: ASTM A48/A48M, Class 30.

B. Malleable-Iron Castings: ASTM A47/A47M, grade as recommended in writing by fabricator for type of use indicated.

2.04 WROUGHT IRON

A. Pure iron with not more than 0.035 percent carbon and no slag (iron silicate); hand worked or machine forged to the form indicated.

2.05 PREPARATORY CLEANING MATERIALS

A. Blasting Abrasive: Iron oxides, silica, and aluminum oxides blend.
   1. Available Products: Subject to compliance with requirements, available products that may be incorporated into the Project include, but are not limited to, the following:
      a. Harsco Minerals International; Black Beauty Iron.
         1) Grade for Iron Substrates: Fine.

B. Wash Cloths: Lint-free, absorbent, durable cloth without abrasives that can scratch metal.

C. Rust Remover: Manufacturer's standard phosphoric acid-based gel formulation, also called "naval jelly," for removing corrosion from iron and steel.

2.06 FASTENERS

A. Refer to Section 057000 "Ornamental Metal" for fastener requirements.

2.07 ACCESSORIES

A. Welding Electrodes and Filler Metal: Select according to AWS specifications for metal alloy welded; use metal type and alloy as required for color match, strength, and compatibility in fabricated items.

B. Shop Primers: Provide primers that comply with Section 099101 "Construction Painting."

C. Intermediate Coats and Topcoats: Provide products that comply with Section 099101 "Construction Painting."

D. Sealant Materials:
   1. Epoxy seam sealer: Heavy-bodied two-component formulation, toolable.

E. Other Products: Select materials and methods of use based on the following, subject to approval of a mockup:
   1. Previous effectiveness in performing the work involved.
   2. Little possibility of damaging exposed surfaces.

3. Consistency of each application.
4. Uniformity of the resulting overall appearance.
5. Do not use products or tools that could do the following:
   a. Remove, alter, or in any way harm the present condition or future preservation of existing surfaces, including surrounding surfaces not in the Contract.
   b. Leave an unintended residue on surfaces.

2.08 HISTORIC ORNAMENTAL METAL REPAIR, GENERAL

A. Repair Appearance Standard: Repaired surfaces are to have a uniform appearance as viewed from 5 feet away by Director's Representative.

B. Execution of the Work: In repairing historic ornamental metal items, disturb remaining existing work as minimally as possible and as follows:
   1. Stabilize ornamental metal to reestablish structural integrity and weather resistance while maintaining the existing form of each item.
   2. Remove deteriorated coatings and corrosion.
   3. Sequence work to minimize time before protective coatings are reapplied.
   4. Repair items where stabilization is insufficient to stop progress of deterioration.
   5. Retain as much original material as possible.
   6. Replace or reproduce historic items where indicated or scheduled.
   7. Make historic treatment of materials reversible whenever possible.
   8. Install temporary protective measures to stabilize ornamental metal that is indicated to be repaired later.

C. Mechanical Coating Removal: Use gentlest mechanical methods, such as scraping and wire brushing, that do not abrade metal substrate. Do not use abrasive methods, such as sanding, or power tools except as indicated as part of the historic treatment program and approved by Director's Representative.

D. Replacing Ornamental Metal Components: Where indicated, duplicate and replace items with new metal matching existing metal.
   1. Replace heavily deteriorated or missing parts or features of ornamental metal with compatible materials, using surviving prototypes to create patterns for duplicate replacements.
   2. Do not use substitute materials unless otherwise indicated.
   3. Compatible substitute materials may be used with the approval of the Director’s Representative.

2.09 PREPARATORY CLEANING

A. Perform preparatory cleaning before performing repair work. Use only those methods indicated for each type of ornamental metal and its location.
   1. Brushes: If using wire brushes, use brushes of same base metal composition as metal being treated.
   2. Uniformity: Perform each cleaning method in a manner that results in uniform coverage of all surfaces, including corners, contours, and interstices, and that produces an even effect without streaks or damaging surfaces.

3. Protection: After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.

B. Cleaning by Abrasive Blasting: Clean surfaces to remove dirt and existing finishes by dry blasting with specified blasting abrasive at pressure and distance from surface indicated below. Do not rinse ferrous metals with water; wipe with soft brushes and damp cloths to remove residue.
1. Pressure and Distance from Surface: As established by mockup.

C. Chemical Rust Removal:
1. Remove loose rust scale with approved, medium abrasives for ferrous metals.
2. Apply rust remover with brushes or as recommended in writing by manufacturer.
3. Allow rust remover to remain on surface for period recommended in writing by manufacturer or as determined by testing. Do not allow extended dwell time.
4. Wipe off residue with mineral spirits and either steel wool or soft rags, or clean with method recommended in writing by manufacturer to remove residue.
5. Dry immediately with clean, soft cloths. Follow direction of grain in metal.
6. Prime immediately to prevent rust. Do not touch cleaned metal surface until primed.

2.10 METAL FABRICATION

A. Custom fabricate repairs of ornamental metal items and components in sizes and profiles to match existing ornamental metal unless otherwise indicated, with accurate curves, lines, and angles. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.

B. Provide uniform, neat seams with minimum exposure of welds. Epoxy seam-sealer may be used to make seams waterproof, including at locations of non-coated faying surfaces.

C. Provide rebates, lugs, and brackets necessary to assemble components and to attach to existing work. Drill and tap for fasteners. Use concealed fasteners where possible; use exposed fasteners to match existing work.

D. Comply with AWS for recommended practices in welding. Provide welds behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded joints of flux, and dress exposed and contact surfaces.
1. Welding shall comply with AESS Level 3 standards.
2. Use materias and methods that match color of base metal, minimize distortion, and develop maximum strength and corrosion resistance.
3. Remove flux immediately.
4. At exposed connections, match contours of adjoining surfaces, and finish exposed surfaces smooth and blended so no roughness shows after finishing.

2.11 FINISHES, GENERAL

A. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.12 FERROUS METAL FINISHES

A. Preparing Ferrous Items for Shop Priming: Remove finishes and prepare ferrous metal surfaces to comply with SSPC-SP 6/NACE No. 3 "Commercial Blast Cleaning."
   1. Remove finishes to bare metal.

B. Refer to Section 057000 "Ornamental Metal" for shop finishing requirements.

C. Protection: Protect exposed finishes by covering with adhesive paper or other suitable covering prior to shipment.

PART 3 EXECUTION

3.01 DISMANTLING, REPAIR, AND INSTALLATION

A. Salvage and dismantle components from their substrate and repair and reinstall according to approved historic treatment program.

B. Installation:
   1. Locate and place ornamental metal items level and plumb and in alignment with adjacent construction.
      a. Do not cut or abrade finishes that cannot be completely restored in the field. Return items with such finishes to the shop for required alterations, followed by complete refinishing, or provide new units as required.
   2. Use concealed anchorages where possible, unless otherwise indicated.
   3. Form tight joints with exposed connections accurately fitted together.

3.02 CLEANING

A. Clean metals by washing thoroughly with clean water and soap, rinsing with clean water, and drying with soft cloths.

B. Touchup Painting:
   1. Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
      a. Apply by brush to provide a minimum 2.0-mil dry film thickness.

C. Protect finishes of ornamental metal from damage during construction period with temporary protective coverings approved by ornamental metal fabricator. Remove protective covering at time of Substantial Completion.

D. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and complete refinishing.

3.03 PAINTING STEEL UNCOVERED DURING THE WORK

A. Notify Architect if steel is exposed during metal removal. Where Architect determines that the steel is structural, or for other reasons cannot be totally removed, prepare and paint it as follows:

1. Antirust Coating: Immediately paint exposed steel with two coats of antirust coating, following coating manufacturer's written instructions and without exceeding manufacturer's recommended rate of application (dry film thickness per coat).

B. If on inspection and rust removal the thickness of a steel member is found to be reduced from rust by more than 1/16 inch, notify Director’s Representative before proceeding.

END OF SECTION

SECTION 055000

METAL FABRICATIONS

PART 1 GENERAL

1.01 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

A. Anchor Bolts: Installed under Section 033000.

B. Loose Bearing Plates: Installed under Section 040322 or 040323 or 040342.

C. Loose Lintels: Installed under Section 040322 or 040323 or 040342.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Structural Steel (including framing for floor grating): Section 051200 or 051201.

B. Metal Stairs: Section 055100.

C. Construction Painting: Section 099101.

D. High Performance Coatings: Section 099600.

1.03 REFERENCES

A. Except as shown or specified otherwise, the Work of this Section shall meet the requirements of the following:

1. Design, Fabrication, and Erection: "Specification for Structural Steel Buildings, Allowable Stress Design and Plastic Design" adopted by the American Institute of Steel Construction, June 1, 1989 (AISC Specification).

    a. Design and Fabrication of Cold-Formed Shapes: "Specification for the Design of Cold-Formed Steel Structural Members", by the American Iron and Steel Institute (AISI Specification).

2. Welding: "Structural Welding Code - Steel, AWS 1.1", or "Structural Welding Code - Sheet Steel, AWS D1.3", by the American Welding Society (AWS Codes).

B. Organizations:

1. AISC: American Institute of Steel Construction, One East Wacker Dr., Suite 700, Chicago, IL 60601-1802, 866-275-2472, www.aisc.org.
2. AISI: American Iron and Steel Institute, 1140 Connecticut Ave., NW, Suite 705, Washington, D.C. 20036, (202) 452-7100, www.steel.org.
3. AWS: American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126, (800) 443-9353, www.aws.org.

4. ANSI: American National Standards Institute, 1819 L Street, NW, 6th Floor, Washington, DC 20036, (202) 293-8020, www.ansi.org.
5. ASME: ASME International, 3 Park Ave., New York, NY 10016-5990, (800) 843-2763, www.asme.org.
6. ASTM: ASTM International, 100 Barr Harbor Dr., PO Box C700, West Conshohocken, PA, 19428-2959, (610) 832-9500, www.astm.org.
7. MPI: The Master Painters Institute Inc., 2808 Ingleton Ave., Burnaby, BC, V5C 6G7, (888) 674-8937, www.specifypaint.com.
8. SSPC: The Society for Protective Coatings, 40 24th Street, 6th Floor, Pittsburgh PA 15222-4656, (877) 281-7772, www.sspc.org.

1.04 SUBMITTALS

A. Shop Drawings: Show application to project. Machine duplicated copies of Contract Drawings will not be accepted.
   1. Locate anchor bolts required for installation in other Work; furnish setting drawings and templates for required anchors.
   2. Indicate shop and field welds by standard AWS welding symbols in accordance with AWS A2.4.
   3. Floor Grating: Submit erection plan; include cutout areas and clearances.

B. Product Data: Catalog sheets, specifications, and installation instructions for each fabricated item specified, except submit data for fasteners only when indicated.

C. Submit an Environmental Product Declaration (EPD) from the manufacturer for steel within 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.*

D. Quality Control Submittals:
   1. Certificates: Copy of certificates required under Quality Assurance Article.

E. Delegated Design Submittal: For gratings and grilles in walking surfaces, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.05 QUALITY ASSURANCE

A. Galvanizing: Stamp galvanized items with galvanizer's name, weight of coating, and applicable ASTM number.

B. Qualification Data: For professional engineer's experience with providing delegated design engineering services of the kind indicated, including

documentation that engineer is licensed in the State of New York.

C. Certificates:
1. Affidavit by the structural steel manufacturer certifying that structural steel items meet the contract requirements.
a. Submit evidence of steel material compliance with this Specification. Evidence shall consist of certification of source of material, copies of purchase orders and manufacturer's certifications. For stock material, submit copies of latest mill or purchase orders for material replacement.
1) Documentation to confirm compliance with General Conditions Article 25.4 Domestic Steel.
2. The Contractor agrees, that if the value of this contract exceeds $100,000 all structural steel, reinforcing steel and other major steel items to be incorporated in the Work of this Contract shall be produced and made in whole or substantial part in the United States, its territories or possessions.

1.06 DELIVERY AND STORAGE

A. Coordinate delivery of anchor bolts and other anchorage devices to be built into other construction to avoid delay.

B. Promptly cover and protect steel items delivered to the site.

PART 2 PRODUCTS

2.01 MATERIALS

A. Wide Flange Structural Steel: ASTM A ~~36~~992, except as specified or shown otherwise.

B. M and S-Shapes, Channels and Angles: ASTM A 36 or ASTM A 572, Grade 50.

C. Steel Plates to be Bent or Cold-Formed: ASTM A 283, Grade C.

D. Steel Bars and Bar-Size Shapes: ASTM A 675, Grade 70; or ASTM A 36.

E. Merchant Quality Steel Bars: ASTM A 575, grade as selected by fabricator.

F. Cold-Finished Steel Bars: ASTM A 108, grade as selected by fabricator.

G. Hot-Rolled Carbon Steel Sheet and Strip: ASTM A 569, pickled and oiled.

H. Cold-Rolled Carbon Steel Sheet: ASTM A 366, oiled.

I. Galvanized Steel Sheet: ASTM A 526, with G90 hot-dip process zinc coating complying with ASTM A653.

J. Steel Hollow Structural Sections (Round, Square, or Rectangular): ASTM A 500, Grade B; or ASTM A 500, Grade C.

K. Cold-Drawn Steel Tubing: ASTM A 512, buttwelded, cold-finished carbon steel tubing, sink drawn and stress relieved.

L. Cast Iron Castings: ASTM A 48, gray iron castings, Class 30.

M. Steel Pipe: ASTM A 53, type as selected, Grade A; black finish unless galvanizing is required; standard weight (Schedule 40), unless otherwise shown or specified.

N. Rolled Steel Floor Plate, Raised Pattern: ASTM A 786; raised herringbone pattern unless otherwise indicated.

O. Stainless Steel: Type 302/304; ASTM A 666 for plate, sheet and strip; ASTM A 276 for bars and shapes; ASTM A 269 for tubing.

P. Anchors: Except where shown or specified, select anchors of type, size, style, grade, and class required for secure installation of metal fabrications. For exterior use and where built into exterior walls, anchors shall be galvanized or of corrosive-resistant materials.
   1. Threaded-Type Concrete Inserts: Galvanized ferrous casting, internally threaded to receive 3/4 inch diameter machine bolt; either malleable iron or cast steel.
   2. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and equal to four times the load imposed when installed in concrete, as determined by testing per ASTM E 488, conducted by a qualified independent test agency.
      a. Carbon Steel: Zinc-Plated; ASTM B 633, Class Fe/Zn 5.
      b. Stainless Steel: Bolts, Alloy Group 1 or 2; ASTM F593, Nuts; ASTM F 594.

Q. Fasteners: Except where shown or specified, select fasteners of type, size, style, grade, and class required for secure installation of metal fabrications. For exterior use and where built into exterior walls, fasteners shall be galvanized.
   1. Standard Bolts and Nuts: ASTM A 307, Grade A, regular hexagon head.
   2. Stainless Steel Fasteners: ASTM A 666; Type 302/304 for interior Work; Type 316 for exterior Work; Phillips flathead (countersunk) screws and bolts for exposed Work unless otherwise specified.
   3. Eyebolts: ASTM A 489.
   4. Machine Bolts: ASME B18.5 or ASME B18.9, Type, Class, and Form as required.
   5. Machine Screws: ASME B18.6.3.
   6. Lag Screws: ASME B18.2.1.
   7. Wood Screws: Flat head, ASME B18.6.1.
   8. Plain Washers: Round, ASME B18.22.1.
   9. Lock Washers: Helical, spring type, ASME B18.21.1.

10. Toggle Bolts: Spring Wing Type; Wing AISI 1010, Trunion Nut AISI1010 or Zamac Alloy, Bolt Carbon Steel ANSI B18.6.3.

R. Shop Paint (General): Products complying with Section 099600.

S. Shop Paint for Galvanized Steel: Epoxy zinc-rich primer; complying with MPI#20 and compatible with topcoat.

T. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

U. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

V. Bedding Mortar:
1. Shrink-Resistant Grout (Non-Staining): Factory-packaged, non-ferrous mortar grouting compound selected from the following:
   a. Masterflow 713 by Master Builders, 23700 Chagrin Blvd., Cleveland, OH 44122 (800) 227-3350.
   b. Sonogrout by Sonneborn, Chemrex, Inc., 57-46 Flushing Ave., Maspeth, NY 11378, (800) 433-9517.
   c. Five Star Grout by Five Star Products, Inc., 425 Stillson Rd., Fairfield, CT 06430, (800) 243-2206.
   d. Crystex by L&M Construction Chemicals, 14851 Calhoun Rd., Omaha, NB 68152, (800) 362-3331.
   e. Non-Corrosive, Non-Shrink Grout by A.C. Horn, Inc., Tamm Industries, 7405 Production Dr., Mentor, OH 44060, (800) 862-2667.

2.02 MISCELLANEOUS FRAMING AND SUPPORTS

A. Fabricate metal framing and supports, which are not a part of the structural steel framework, to support related items required by the Work.

B. Fabricate units to the sizes, shapes, and profiles indicated or, if not indicated, of required dimensions to receive adjacent Work to be retained by the framing. Except as otherwise indicated, fabricate from structural steel shapes, plates, and bars, of all welded construction, with mitered corners, necessary brackets and splice plates, and a minimum number of joints for field connection. Punch, drill, and tap units to receive hardware and similar items to be anchored to the Work.

C. When required to be built into masonry or cast-in-place concrete, equip units with integrally welded anchor straps. Unless otherwise indicated, anchors shall be minimum 1-1/4 x 1/4 x 8 inch steel straps, spaced 2 feet oc.

D. Galvanize exterior steel framing and supports.

2.03 FIXED LADDERS

A. Fabricate ladders to span between elevations at locations indicated. Comply with the requirements of American Ladder Institute Standard A14.3, American National Standard for Ladders-Fixed – Safety Requirements, unless otherwise shown or specified. The standard can be ordered online at: www.americanladderinstitute.org.

B. Side Rails: Continuous, structural steel, flat solid bars with eased edges, spaced 18 inches apart.
   1. Rail Size: 1/2 x 2-1/2 inches.

C. Rungs: Structural steel, round solid bars, spaced 12 inches oc.
   1. Rung Size: 1 inch diameter.
   2. Non-slip Surface: The top of each rung shall have a non-slip surface, achieved either by coating the rung with aluminum oxide grit set in epoxy resin adhesive or by use of manufactured rung filled with aluminum oxide grout.

D. Fit rungs into punched holes in centerline of side rails, plug weld and grind welds smooth on outer face of rails.

E. Supports: Locate supports for each side rail near top rung, at bottom of ladder, and at intermediate points spaced not more than 5’-0” oc. Use welded or bolted steel brackets or straps for wall anchors, designed for adequate support and anchorage to hold the ladder 6 inches clear of the wall surface and other obstructing construction.

F. Except for ladders terminating at a hatch, extend side rails 3’-6” minimum above top rung and return rails to wall or structure; if construction does not extend above the top rung, goose-neck the extended rails back to the structure. Flare out side rails for through ladder extensions. For side-step ladders, continue the rungs also in the extension.

G. Galvanize exterior ladders and supports.

2.05 LOOSE BEARING PLATES

A. Steel plates fabricated flat, free from warp or twist, and of required thickness and bearing area. Drill plates as required for anchor bolts and for grouting access. Furnish bearing plates where shown and where required for steel items bearing on masonry or concrete construction.

2.06 LOOSE LINTELS

A. Structural steel shape lintels, fabricated for openings and recesses in masonry walls and partitions as indicated. Loose lintels bearing on masonry or concrete shall have a minimum end bearing length of 6 inches at each end, unless otherwise shown.

B. Galvanize lintels to be installed in exterior walls. Apply high-performance coating.

2.07 SAFETY NOSINGS

A. Nosings: Cast, abrasive non-slip type, of profiles indicated, extending full length of concrete treads or other concrete edges to be protected unless otherwise indicated. Equip each nosing with integrally cast, welded, or riveted anchors located not more than 4 inches from each end of nosing and intermediate anchors spaced not over 15 inches oc. Abrasive grain shall be integrally cast into the wearing surface.

2.08 FLOOR GRATING

A. Grating: Rectangular, welded steel bar grating designed to support 200 lb/sq ft with deflection not exceeding 1/180. Fabricate with bearing bars on edge, and with all intersecting and abutting members joined by the electro-pressure welding method for the full depth of cross bar.
   1. Steel Bars: ASTM A 569.
   2. Top Surface of Bearing Bars: Plain.
   3. Finish: Galvanized.
   4. Fasteners for Removable Panels: Saddle clip anchor assembly, with self-drilling screw or weldable stud bolt. Clips shall have same finish as grating.
   5. Banding: Continuous steel bar of same material and size as bearing bars, welded to grating panel.
   6. Close Outs at Steps and Stairs: Special grating panel with nosing edge for platform ending at top of stairs.
   7. Toeplate: Flat steel bar curb secured to outer edge of grating where shown.
   8. Spacing of bars at gratings in exterior walking surfaces shall comply with ANSI A117.

2.13 FABRICATION

A. Use materials of the sizes and thicknesses indicated on the Drawings. If not indicated, use material of required size and thickness to produce adequate strength and durability for the intended use of the finished product.

B. Fabricate items to be exposed to view of material entirely free of surface blemish, including pitting, roller and seam marks, rolled trade names, and roughness. Remove surface blemishes by grinding or by welding and grinding prior to cleaning, treating, and finishing.

C. Form metal true to line, with accurate angles, surfaces, and straight edges. Ease exposed edges to a radius of approximately 1/32 inch unless otherwise shown. Form bent-metal corners to the smallest radius possible without causing grain separation or otherwise impairing the metal.

D. Weld corners and seams continuously. Grind exposed welds smooth and flush, to match and blend with adjoining surfaces.

E. Form exposed connections with flush, smooth, hairline joints. Use concealed fasteners wherever possible. Use Phillips flathead (countersunk) screws or bolts for exposed fasteners, unless otherwise shown or specified.

F. Prepare fabricated items for anchorage of the type indicated, coordinated with the supporting structure. Fabricate and space anchoring devices as indicated or, if not indicated, as required to produce adequate support for the intended use of the item.

G. Punch, reinforce, drill, and tap fabricated items as required to receive hardware and other appurtenant items.

H. Galvanizing:
1. In addition to specific items specified or noted to be galvanized, galvanize items attached to, embedded in, or supporting exterior masonry (including interior wythe of exterior masonry walls) and concrete Work.
2. Unless otherwise specified or noted, items indicated to be galvanized shall receive a zinc coating by the hot-dip process, after fabrication, complying with the following:
   a. ASTM A 123 for plain and fabricated material, and assembled products.
   b. ASTM A 153 for iron and steel hardware.

I. Shop Painting: Apply High-Performance Coatings as indicated in Section 099600.

PART 3 EXECUTION

3.01 PREPARATION

A. Temporarily brace and secure items which are to be built into concrete, masonry, or similar construction.

B. Isolate non-ferrous metal surfaces to be permanently fastened in contact with ferrous metal surfaces, concrete, or masonry by coating non-ferrous metal surface with bituminous mastic, prior to installation.

3.02 INSTALLATION

A. Fit and set fabricated metal items accurately in designed locations, at proper elevation and alignment.

B. Use anchorage devices and fasteners of required type, size, and number as required to provide a secure, rigid installation.

C. Fit exposed connections accurately to form tight hairline joints. Weld connections which are not intended to be left as exposed joints, but cannot be shop welded because of size limitations. Grind welded joints smooth. Cut off exposed threaded portion of bolts flush with nut.

D. Attached Work: Drill holes for fasteners with power tools to exact size required. Unless otherwise shown on the Drawings, fasten metal Work to concrete and solid masonry anchorage with expansion anchors. Fasten metal Work to hollow masonry and stud partitions with square head toggle bolts.

E. Field Welding: Comply with AWS Codes for the procedures for shielded metal arc welding, for the appearance and quality of welds, and for the methods used in correcting welding Work.

F. Grating: Weld grating to supporting members, unless otherwise shown or specified.

1. Secure removable panels with saddle clip anchor assemblies.

END OF SECTION

SECTION 055100

METAL STAIRS

PART 1 GENERAL

1.01 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

A. Anchors to be Cast in Concrete: Installed under Section 033000 or 033001.

B. Anchors to be Embedded in Masonry: Installed under Section 042000 or 042113 and 042200.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Concrete Treads and Platforms: Section 033000.

B. Metal Fabrications: Section 055000.

C. Field Painting: Section 099600.

1.03 REFERENCES

A. Except as shown or specified otherwise, the Work of this Section shall meet the requirements of the following:
   1. Design, Fabrication, and Erection: "Specification for Structural Steel Buildings, Allowable Stress Design and Plastic Design" adopted by the American Institute of Steel Construction, June 1, 1989 (AISC Specification).
      a. Design and Fabrication of Cold-Formed Shapes: "Specification for the Design of Cold-Formed Steel Structural Members", by the American Iron and Steel Institute (AISI Specification).
   2. Welding: "Structural Welding Code - Steel, AWS D1.1", or "Structural Welding Code - Sheet Steel, AWS D1.3", by the American Welding Society (AWS Codes).
   3. High Strength Bolting: "Specification for Structural Joints Using ASTM A325 or A490 Bolts, August 14, 1980", by the Engineering Foundation's Research Council on Riveted and Bolted Structural Joints (Specification for Structural Joints).

B. Organizations:
   1. AISC: American Institute of Steel Construction, One East Wacker Dr., Suite 700, Chicago, IL 60601-1802, 866-275-2472, www.aisc.org.
   2. AISI: American Iron and Steel Institute, 1140 Connecticut Ave., NW, Suite 705, Washington, D.C. 20036, (202) 452-7100, www.steel.org.
   3. AWS: American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126, (800) 443-9353, www.aws.org.

4. ANSI: American National Standards Institute, 1819 L Street, NW, 6th Floor, Washington, DC 20036, (202) 293-8020, www.ansi.org.
5. ASME: ASME International, 3 Park Ave., New York, NY 10016-5990, (800) 843-2763, www.asme.org.
6. ASTM: ASTM International, 100 Barr Harbor Dr., PO Box C700, West Conshohocken, PA, 19428-2959, (610) 832-9500, www.astm.org.
7. MPI: The Master Painters Institute Inc., 2808 Ingleton Ave., Burnaby, BC, V5C 6G7, (888) 674-8937, www.specifypaint.com.
8. SSPC: The Society for Protective Coatings, 40 24th Street, 6th Floor, Pittsburgh PA 15222-4656, (877) 281-7772, www.sspc.org.

1.04 SUBMITTALS

A. Shop Drawings: Show application to project. Machine duplicated copies of Contract Drawings will not be accepted. Shop drawings shall be standard 24 inch by 36 inch size sheets. The fabricator's name and address shall be indicated in the title block on each drawing.
   1. Include anchor bolt location plan (if any), erection drawings, and detail drawings of all components.
   2. Indicate shop and field welds by standard AWS welding symbols in accordance with AWS A2.4.
   3. When shop drawings are marked "Approved as Noted", promptly resubmit copies of corrected shop drawings for formal approval and record.

B. Product Data:
   1. Paint: Manufacturer's name and printed product literature, including storage and application instructions.
   2. Grating Treads and Platforms: Manufacturer's specifications.

C. Quality Control Submittals:
   1. Certificates: Copy of certificates required under Quality Assurance Article.
   2. Fabricator's Qualifications Data:
      a. Firm's name, business address and telephone number.
      b. Years of experience fabricating metal stairs.

D. Delegated Design Submittal: For stairs, railings, and guards, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.05 QUALITY ASSURANCE

A. Certificates:
   1. Affidavit by the structural steel manufacturer certifying that structural steel items meet the contract requirements.
      a. Submit evidence of steel material compliance with this Specification. Evidence shall consist of certification of source of material, copies of purchase orders and manufacturer's

certifications. For stock material, submit copies of latest mill or purchase orders for material replacement.

1) Documentation to confirm compliance with General Conditions Article 25.4 Domestic Steel.

2. The Contractor agrees, that if the value of this contract exceeds $100,000 all structural steel, reinforcing steel and other major steel items to be incorporated in the Work of this Contract shall be produced and made in whole or substantial part in the United States, its territories or possessions.

B. Qualification Data: For professional engineer's experience with providing delegated design engineering services of the kind indicated, including documentation that engineer is licensed in the State in which Project is located.

C. Fabricator's Qualifications: The fabricator shall be experienced in metal stair work and shall be subject to the approval of the Director.

D. Inspection: Shop and field quality assurance inspection may be made by the State. If quality assurance inspection is made by the State, it shall not relieve the fabricator and erector of responsibility for their own quality control programs.

E. Galvanizing: Stamp galvanized items with galvanizer's name, weight of coating, and applicable ASTM number.

1.02 WELDING PROCESS

A. Use only shielded metal arc welding.

B. Shielded metal arc welding procedures that comply with the provisions of the AWS Code shall be considered to be pre-qualified.

PART 2 PRODUCTS

2.01 MATERIALS

A. Wide Flange Structural Steel: ASTM A ~~36~~992, except as specified or shown otherwise.

B. M and S-Shapes, Channels and Angles: ASTM A 36 or ASTM A 572, Grade 50.

C. Steel Plates to be Bent or Cold-Formed: ASTM A283, Grade C.

D. Steel Bars and Bar-Size Shapes: ASTM A675, Grade 70; or ASTM A36.

E. Merchant Quality Steel Bars: ASTM A575, grade as selected by fabricator.

F. Cold-Finished Steel Bars: ASTM A108, grade as selected by fabricator.

G. Hot-Rolled Carbon Steel Sheet and Strip: ASTM A569, pickled and oiled.

H. Cold-Rolled Carbon Steel Sheet: ASTM A366, oiled.

I. Galvanized Steel Sheet: ASTM A526, with G90 hot-dip process zinc coating complying with ASTM A653.

J. Steel Hollow Structural Sections (Round, Square, or Rectangular): ASTM A 500, Grade B; or ASTM A 500, Grade C.

K. Cold-Drawn Steel Tubing: ASTM A512, buttwelded, cold-finished carbon steel tubing, sink drawn and stress relieved.

L. Steel Castings: ASTM A27, grade and class as required by use of item.

M. Steel Pipe: ASTM A53, type as selected, Grade A; black finish unless galvanizing is required; standard weight (Schedule 40), unless otherwise shown or specified.

N. Weld Filler Metal: Weld filler metal for shielded metal arc welding which complies with AWS Specifications A5.1 or A5.5 shall be considered to be pre-qualified.

O. Anchors: Except where shown or specified, select anchors of type, size, style, grade, and class required for secure installation of metal fabrications. For exterior use and where built into exterior walls, anchors shall be galvanized or of corrosive-resistant materials.
   1. Threaded-Type Concrete Inserts: Galvanized ferrous casting, internally threaded to receive 3/4 inch diameter machine bolt; either malleable iron or cast steel.
   2. Wedge-Type Concrete Inserts: Galvanized box-type ferrous casting, designed to accept 3/4 inch diameter bolt having special wedge-shaped head; either malleable iron or cast steel.
      a. Bolts: Carbon steel bolts having special wedge-shaped heads, nuts, washers and shims.
   3. Slotted-Type Concrete Inserts: Galvanized 1/8 inch thick pressed steel plate complying with ASTM A 283; box-type welded construction with slot designed to receive 3/4 inch diameter square head bolt and with knockout cover.
   4. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and equal to four times the load imposed when installed in concrete, as determined by testing per ASTM E 488, conducted by a qualified independent test agency.
      a. Carbon Steel: Zinc-Plated; ASTM B 633, Class Fe/Zn 5.
      b. Stainless Steel: Bolts, Alloy Group 1 or 2; ASTM F593, Nuts; ASTM F 594.

P. Fasteners: Except where shown or specified, select fasteners of type, size, style, grade, and class required for secure installation of metal fabrications. For exterior use and where built into exterior walls, fasteners shall be galvanized.
   1. Standard Bolts and Nuts: ASTM A 307, Grade A, regular hexagon head.

2. Stainless Steel Fasteners: ASTM A 666; Type 302/304 for interior Work; Type 316 for exterior Work; Phillips flathead (countersunk) screws and bolts for exposed Work unless otherwise specified.
3. Eyebolts: ASTM A 489.
4. Machine Bolts: ASME B18.5 or ASME B18.9, Type, Class, and Form as required.
5. Machine Screws: ASME B18.6.3.
6. Lag Screws: ASME B18.2.1.
7. Wood Screws: Flat head, ASME B18.6.1.
8. Plain Washers: Round, ASME B18.22.1.
9. Lock Washers: Helical, spring type, ASME B18.21.1.
10. Toggle Bolts: Spring Wing Type; Wing AISI 1010, Trunion Nut AISI1010 or Zamac Alloy, Bolt Carbon Steel ANSI B18.6.3.

Q. Bedding Mortar:
1. Cement Grout: Portland cement complying with ASTM C 150, Type I or III, and clean uniformly graded natural sand complying with ASTM C 404, size No. 2; mixed at a ratio (by volume) of 1.0 part cement to 3.0 parts sand, with only the minimum amount of water required for placement and hydration.
2. Shrink-Resistant Grout (Non-Staining): Factory-packaged, non-ferrous mortar grouting compound selected from the following:
   a. Masterflow 713 by Master Builders, 23700 Chagrin Blvd., Cleveland, OH 44122 (800) 227-3350.
   b. Sonogrout by Sonneborn, Chemrex, Inc., 57-46 Flushing Ave., Maspeth, NY 11378, (800) 433-9517.
   c. Five Star Grout by Five Star Products, Inc., 425 Stillson Rd., Fairfield, CT 06430, (800) 243-2206.
   d. Crystex by L&M Construction Chemicals, 14851 Calhoun Rd., Omaha, NB 68152, (800) 362-3331.
   e. Non-Corrosive, Non-Shrink Grout by A.C. Horn, Inc., Tamm Industries, 7405 Production Dr., Mentor, OH 44060, (800) 862-2667.

R. Shop Paint (General): Use coatings specified in Section 099600 “High-Performance Coatings.”

S. Shop Paint for Galvanized Steel: Epoxy zinc-rich primer; complying with MPI#20 and compatible with topcoat. See Section 099600.

T. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

U. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.02 STAIR FRAMING

A. Fabricate stringers, headers, and platform framing as shown on the Drawings.
1. Furnish hangers, posts, and miscellaneous items as shown or required.

B. Connections: Welded or bolted as shown.
   1. Use one-sided angle connections only where shown.
   2. When framed connections are used, the minimum length of the connection angles shall be as follows:
      a. Beams 12 to 14 inches deep: 8-1/2 inches.
      b. Beams 8 to 10 inches deep: 5-1/2 inches.
   3. High-Strength Bolted Connections: Amend the Specification for Structural Joints as follows:
      a. Refer to Item 5 (b): High-strength bolts shall have a hardened washer under the element (nut or bolt head) turned in tightening, regardless of the method of tightening.
      b. Refer to Item 6: The inspection of bolt tightening shall be as specified under Item 6(d).

C. Close exposed ends of stringers with continuously welded steel plates.

D. Newels: Tubular steel newels as shown on the Drawings, equipped with required attachments to other Work.
   1. Newels shall have standard caps and bottom closures.
   2. Newels shall be full height of stairwell.

E. Where masonry walls support steel stair Work, provide temporary supporting struts designed for erection of steel stair components before installation of masonry.

2.03 STAIR DETAILS

A. Construct stair units to conform to sizes and arrangement indicated on the Drawings. Construct stair units to support a minimum live load of 100 lb/sq ft, unless otherwise indicated.

B. Grating Treads and Platforms: Rectangular, welded steel bar grating designed to support a minimum live load of 100 lb/sq ft with deflection not exceeding 1/180. Fabricate with bearing bars on edge, and with all intersecting and abutting members joined by the electro-pressure welding method for the full depth of cross bar.
   1. Steel Bars: ASTM A569.
   2. Fabricate grating treads with slip-resistant texture steel plate nosing on front edge and with steel angle or steel plate carrier at each end for stringer connections. Secure treads to stringers with bolts.
   3. Fabricate grating platforms with nosing, matching that on grating treads, at edge of landings over a tread. Provide flat steel bar toeplate at open-sided edges of grating platforms.
   4. Top Surface of Bearing Bars: Plain, unless otherwise indicated.
   5. Banding: Continuous steel bar, of same material and size as bearing bars, welded to grating panel.
   6. Finish: Galvanized.

C. Metal Safety Nosings: Cast iron, abrasive non-slip type; 4 inches wide by full length of step between stringers, unless otherwise shown. Fabricate in thickness,

profile, and surface pattern as shown on the Drawings. Equip each nosing with integral anchors, for embedding in concrete fill, spaced not more than 4 inches from each end of nosing and not more than 16 inches oc.

D. Furring Attachment: Equip stair units with attachment clips or sub-assemblies required for anchorage of furring to stair and platform soffits where plaster/gypsum wallboard soffit is indicated on the Drawings.

2.04 STAIR RAILINGS AND HANDRAILS

A. Fabricate stair railings and handrails of 1-1/2 inch (nominal) diameter steel pipe, unless otherwise shown.

B. Railings: Unless otherwise shown, railings shall consist of top rail and intermediate rails, with posts spaced not more than 4 feet oc. Close ends of rails which do not terminate with a flange or continuous return.
   1. Space rails so that a sphere 4 inches in diameter cannot pass through the openings between the rails.
   2. Join posts, rails, and corners by one of the following methods:
      a. Flush-type steel railing fittings, welded and ground smooth, with railing splice locks secured with 3/8 inch hexagonal-recessed-head setscrews.
      b. Welded joints made by fitting post to top rail and intermediate rail to post, mitering corners, groove welding joints, and grinding joints smooth. Butt railing splices and reinforce by a tight-fitting interior sleeve not less than 6 inches long.
   3. Railings may be bent at corners instead of joining, provided the bends are uniformly formed in jigs, with cylindrical cross-section of pipe maintained throughout the entire bend.
   4. Unless otherwise shown, fabricate railings and accessories as necessary to secure posts and rail ends to building construction as follows:
      a. Anchor posts to steel with steel flanges, angle type or floor type as required by conditions, welded to posts and bolted to the steel supporting members.
      b. Anchor rail ends into concrete and solid masonry with round steel flanges welded to rail ends and anchored into the wall construction with lead expansion shields and bolts.
      c. Anchor rail ends to steel with oval or round steel flanges welded to rail ends and bolted to the steel supporting members.
   5. Fabricate removable railing sections as indicated on the Drawings.

C. Handrails: Pipe handrails shall be secured to walls by means of wall brackets, and shall have a wall return fitting at each end of handrails unless otherwise shown.
   1. Wall Brackets: Malleable iron castings, with not less than 3 inches projection from the finish wall surface to the center of the handrail, and with the wall plate portion of the bracket drilled to receive one 3/8 inch bolt. Brackets shall be located approximately 6 inches from each end of handrails and intermediate brackets equally spaced at intervals not exceeding 5 feet oc. Fabricate wall brackets to secure to building construction as follows:

a. Anchor into concrete and solid masonry with expansion shields and lag bolts.
b. Anchor into hollow masonry and stud partitions with toggle bolts having square heads.

2. Wall Return Fittings: Cast iron castings, flush-type, with the same projection as specified for wall brackets.

D. Kickplates: Flat steel bars 3/16 inch thick by not less than 6 inches high. Secure kickplates as shown.

2.05 FABRICATION

A. Progress shop fabrication from "APPROVED" or "APPROVED AS NOTED" detail drawings only.
1. When detail drawings are "APPROVED AS NOTED", progress fabrication in strict accordance with notes thereon.
2. Fabrication progressed from "DISAPPROVED" or "RETURNED FOR CORRECTION" detail drawings will be rejected. The contractor shall have no claim against the State for any costs or delays due to rejection of items fabricated from "DISAPPROVED" or "RETURNED FOR CORRECTION" detail drawings.

B. Use materials of the sizes and thicknesses indicated on the Drawings. If not indicated, furnish items of size and thickness required to produce adequate strength and durability in the finished product for the intended use.

C. Ease exposed edges to a radius of approximately 1/32 inch unless otherwise shown. Form bent-metal corners to the smallest radius possible without causing grain separation or otherwise impairing the Work.

D. Use hot-rolled steel bars for Work fabricated from bar stock, unless Work is indicated to be fabricated from cold-finished stock.

E. Use flush countersunk screws or bolts for exposed fasteners, unless otherwise indicated.

2.06 GALVANIZING

A. In addition to specific items specified or noted to be galvanized, galvanize items attached to or embedded in exterior masonry (including interior wythe of exterior masonry walls) and concrete Work.

B. Unless otherwise specified or noted, items to be galvanized shall receive a zinc coating by the hot-dip process, after fabrication, complying with the following:
1. ASTM A123 for plain and fabricated material, and assembled products.
2. ASTM A153 for iron and steel hardware.

2.07 SHOP PAINTING

A. Cleaning Steel: Thoroughly clean all surfaces of metal. Remove oil, grease, and similar contaminants in accordance with SSPC SP-1 “Solvent Cleaning”. Remove loose mill scale, loose rust, weld slag and spatter, and other detrimental material in accordance with SSPC SP-2 “Hand Tool Cleaning”, SSPC SP-3 “Power Tool Cleaning”, or SSPC SP-7 “Brush-Off Blast Cleaning”.

B. Galvanized Items:
   1. Galvanized items which are to be finish painted under Section 099600 shall be rinsed in hot alkali or in an acid solution and then in clear water.
   2. Welded and abraded galvanized surfaces shall be wire brushed and repaired with a coating of cold galvanizing compound.

C. Apply one coat of shop paint to all steel surfaces except as follows:
   1. Do not shop paint steel surfaces to be field welded and contact surfaces of high-strength bolted connections.
   2. Apply 2 coats of shop paint, before assembly, to steel surfaces inaccessible after assembly, except surfaces in contact. Also apply 2 coats of paint to surfaces which are inaccessible after erection. Change color of second coat.
   3. Do not paint galvanized items which are not to be finish painted under Section 099600.

D. Apply paint and compound on dry surfaces in accordance with the manufacturer’s printed instructions, and to the following minimum thickness per coat:
   1. Shop Paint (General): 4.0 mils wet film.
   2. Shop Paint for Galvanized Steel: 3.0 mils wet film.
   3. Cold Galvanizing Compound: 2.0 mils dry film.

PART 3 EXECUTION

3.01 INSTALLATION

A. Erect metal stairs in accordance with the AISC Specification, the AWS Codes, and the Specification for Structural Joints, except as otherwise specified.

B. Install anchorage devices and fasteners where necessary for securing metal stair items to in-place construction.

C. Set the Work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Provide temporary bracing and built-in anchors for items which are to be built into concrete, masonry or similar construction.

D. Check railings prior to securing in place to insure proper matching at butting joints and correct alignment throughout their length.

E. Do not make corrections or alterations to fabricated steel without prior written approval by the Director's Representative.

F. Do not use gas or air carbon-arc cutting for cutting or enlarging bolt holes.

END OF SECTION

SECTION 057000

ORNAMENTAL METAL

PART 1 GENERAL

1.01 SUMMARY

A. Section includes provision of ornamental metal grilles.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Construction Painting: Section 099101.

B. High-Performance Coating: Section 099600.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Show fabrication and installation details for each type of ornamental metal assembly.
   1. Include plans, elevations, and component details, and attachment details.
   2. Indicate materials and profiles of each ornamental metal member, fittings, joinery, finishes, fasteners, anchorages, and accessory items.

C. Samples:
   1. Bars and Shapes: Full-size Samples of each type of bar and shape.
   2. Joints: Samples of welded joints showing quality of workmanship.
   3. Fittings, Brackets, and other Accessories: Full size, each type required.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: A firm experienced in producing ornamental metal similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to product required units.

B. Welding Qualifications: Qualify procedures and personnel according to the following:
   1. AWS D1.1/D1.1M, "Structural Welding Code – Steel."
   2. Welds shall comply with AESS Level 3.

1.06 MOCKUPS

A. Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.
   1. Build mockups for the following types of ornamental metal:
      a. Ornamental Metal Grilles: One of each type indicated, fabricated and ready for shop finishing.
   2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Coordinate delivery of items to be built into other Work to avoid delay. Furnish templates as required for accurate location of Work.

B. Store ornamental metal in a well-ventilated area, away from uncured concrete and masonry, and protected from weather, moisture, soiling, abrasion, extreme temperatures, and humidity.

C. Deliver and store ornamental metal assemblies in wooden crates surrounded by enough packing material to ensure that products are not cracked or otherwise damaged.

1.08 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with ornamental metal by field measurements before fabrication and indicate measurements on Shop Drawings.

PART 2 PRODUCTS

2.01 METALS, GENERAL

A. Metal Surfaces, General: Use materials with smooth, flat surfaces unless otherwise indicated. Use materials without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

2.02 STEEL AND IRON

A. Tubing: ASTM A500/A500M (cold formed).

B. Bars: Hot-rolled, carbon steel complying with ASTM A29/A29M, Grade 1010.

C. Plates, Shapes, and Bars: ASTM A36/A36M.

D. Steel Sheet, Cold Rolled: ASTM A1008/A1008M, either commercial steel or structural steel, exposed.

E. Cast Iron: Either gray iron, ASTM A48/A48M, or malleable iron, ASTM A47/A47M unless otherwise indicated.

F. Wrought Iron: Pure iron with not more than 0.035 percent carbon and no slag (iron silicate); hand worked or machine forged to the form indicated.

2.03 FASTENERS

A. Fastener Materials: Provide Type 304 stainless steel fasteners.

B. Fasteners to Anchoring to Other Construction: Unless otherwise indicated, select fasteners of type, grade, and class required to produce connections suitable for anchoring indicated items to other types of construction indicated.

C. Provide concealed fasteners for interconnecting components. Provide exposed fasteners for attaching ornamental metal grilles to other work.

D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC193.
   1. Material: Alloy Group 1 stainless steel bolts, ASTM F593, and nuts, ASTM F594.

2.04 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Shop Primers: Provide primers that comply with Section 099600 “High-Performance Coatings."

C. Intermediate Coats and Topcoats for Steel and Iron: Provide products that comply with Section 099600 "High-Performance Coatings."

2.05 FABRICATION

A. Assemble items in the shop to greatest extent possible to minimize field splicing and assembly.
   1. Disassemble units only as necessary for shipping and handling limitations.
   2. Clearly mark units for coordinated installation.
   3. Use connections that maintain structural value of joined pieces.

B. Form ornamental metal to required shapes and sizes, true to line and level with true curves and accurate angles and surfaces. Finish exposed surfaces to smooth, sharp, well-defined lines and arrises.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing the Work.

D. Form simple and compound curves in bars, pipe, tubing, and extruded shapes by bending members in jigs to produce uniform curvature for each configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces.

E. Cur, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

F. Mill joints to a tight, hairline fit. Cope or miter corner joints. Fabricate connections that will be exposed to weather in a manner to exclude water.

G. Provide necessary rebates, lugs, brackets, flanges, fasteners, and anchors to assemble units and to attach to other work.

H. Comply with AWS for recommended practices in shop welding.
   1. Provide welds behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded joints of flux, and dress welds on exposed and contact surfaces.
   2. Where welding cannot be concealed behind finished surfaces, finish joints to comply with NOMMA's "Voluntary Joint Finish Standards" for Type 1 Welds: no evidence of a welded joint.

2.06 FABRICATION OF ORNAMENTAL METAL GRILLES AND GATES

A. Fabricate ornamental metal grilles, vehicular gates, and pedestrian gates to designs indicated from steel bars and shapes of sizes and profiles indicated. Form steel bars by bending, forging, coping, mitering, and welding.

B. Welding: Interconnect ornamental members with full-length, full-penetration welds unless otherwise indicated. Use welding method that is appropriate for metal and finish indicated and that develops full strength of members joined. Finish exposed welds and surfaces smooth, flush, and blended to match adjoining surfaces. Apply epoxy seam sealer where needed to provide watertight joints.

C. Brackets, Fittings, and Anchors: Provide brackets, fittings, and anchors to connect ornamental metal to other work unless otherwise indicated.

   1. Furnish anchorage devices that connect ornamental metal to masonry work. Coordinate anchorage devices with supporting structure.

2.07 SHOP FINISHING STEEL

A. Preparing Nongalvanized Items for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 6/NACE No. 3 "Commercial Blast Cleaning."

B. Primer Application: Apply shop primer to prepared surfaces of items unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

1. Shop prime uncoated ferrous-metal surfaces with primers specified in Section 099600 “High-Performance Coatings."

C. Shop-Painted Finish: Comply with Section 099600 “High-Performance Coatings."

1. Color: As selected by Director’s Representative from manufacturer's full range.

D. Accessories: Finish brackets, fittings, and anchors to match metal work unless otherwise indicated.

E. Protection: Protect exposed finishes by covering with adhesive paper or other suitable covering prior to shipment.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of ornamental metal.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Perform cutting, drilling, and fitting required for installing ornamental metal. Set ornamental metal assemblies accurately in location, alignment, and elevation, measured from established lines and levels. Securely fasten in place.

B. Do not cut or abrade finishes which cannot be completely restored in the field. Return such items to the shop for required alterations and complete refinishing.

C. Provide anchorage devices and fasteners where necessary for securing items to in-place construction.

D. Restore protective coverings that have been damaged during shipment or installation. Remove protective coverings only when there is no possibility of damage from other work yet to be performed at same location.

3.03 CLEANING

A. Clean metals by washing thoroughly with clean water and soap, rinsing with clean water, and drying with soft cloths.

B. Touchup Painting:
   1. Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
      a. Apply by brush to provide a minimum 2.0-mi dry film thickness.

C. Protect finishes of ornamental metal from damage during construction period with temporary protective coverings approved by ornamental metal fabricator. Remove protective covering at time of Substantial Completion.

D. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and complete refinishing.

END OF SECTION

SECTION 099600

HIGH-PERFORMANCE COATINGS

PART 1 -GENERAL

1.01 SUMMARY

A. Section includes surface preparation and the application of high-performance coating systems on the following substrates:

1. Exterior Substrates:

a. Steel.

b. Galvanized metal.

B. Related Requirements:

1. Section 051200 "Structural Steel Framing" for coating of structural steel.

1.02 DEFINITIONS

A. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D523.

B. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D523.

C. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D523.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
2. Indicate VOC content.

B. Samples for Verification: For each type of coating system and each color and gloss of topcoat indicated.

1. Submit Samples on rigid backing, **8 inches (200 mm)** square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

C. Product List: Cross-reference to coating system and locations of application areas. Use

same designations indicated on Drawings and in schedules. Include color designations.

1.04 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Coatings: 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

1.05 QUALITY ASSURANCE

A. Mockups: Apply mockups of each coating system indicated to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Director's Representative will select one item of each type to represent surfaces and conditions for application of each coating system.
2. Final approval of color selections will be based on mockups.

a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than **45 deg F (7 deg C)**.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.07 FIELD CONDITIONS

A. Apply coatings only when temperature of surfaces to be coated and ambient air temperatures are between **50 and 95 deg F (10 and 35 deg C)**.

B. Do not apply coatings when relative humidity exceeds 85 percent; at temperatures less than **5 deg F (3 deg C)** above the dew point; or to damp or wet surfaces.

C. Do not apply exterior coatings in snow, rain, fog, or mist.

PART 2 -PRODUCTS

2.01 HIGH-PERFORMANCE COATINGS, GENERAL

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Benjamin Moore & Co.
2. International Protective Coatings; AkzoNobel
3. PPG Paints; PPG Industries, Inc.
4. Sherwin-Williams Company (The)
5. Tnemec Company, Inc.

B. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."

C. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
3. Products shall be of same manufacturer for each coat in a coating system.

D. VOC Content, LEED 2009: For field applications that are inside the weatherproofing system, paints and coatings shall comply with VOC content limits of authorities having jurisdiction and the following VOC content limits:

1. Flat Paints and Coatings: 50 g/L.
2. Nonflat Paints and Coatings: 150 g/L.
3. Primers, Sealers, and Undercoaters: 200 g/L.
4. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.
5. Zinc-Rich Industrial Maintenance Primers: 340 g/L.
6. Pretreatment Wash Primers: 420 g/L.
7. Floor Coatings: 100 g/L.

E. Colors: As selected by the Director’s Representative.

2.02 SOURCE QUALITY CONTROL

A. Testing of Coating Materials: The State reserves the right to invoke the following procedure:

1. The State will engage the services of a qualified testing agency to sample coating materials. Contractor will be notified in advance and may be present when samples are taken. If coating materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.

2. Testing agency will perform tests for compliance with product requirements.
3. The State may direct Contractor to stop applying coatings if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying coating materials from Project site, pay for testing, and recoat surfaces coated with rejected materials. Contractor will be required to remove rejected materials from previously coated surfaces if, on recoating with complying materials, the two coatings are incompatible.

PART 3 -EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

C. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.02 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and coating systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair bond of coatings, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce coating systems indicated.

D. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer.

E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop

priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied coatings.

3.03 APPLICATION

A. Apply high-performance coatings according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."

1. Use applicators and techniques suited for coating and substrate indicated.
2. Coat backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
3. Do not apply coatings over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of the same material are to be applied. Tint undercoats to match color of finish coat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.

D. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections.

3.04 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test coatings for dry film thickness.

1. Contractor shall touch up and restore coated surfaces damaged by testing.
2. If test results show that dry film thickness of applied coating does not comply with coating manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with coating manufacturer's written recommendations.

3.05 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from coating operation. Correct damage to

work of other trades by cleaning, repairing, replacing, and recoating, as approved by

Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces.

3.06 EXTERIOR HIGH-PERFORMANCE COATING SCHEDULE

A. Steel Substrates:

1. Pigmented Polyurethane over Epoxy Zinc-Rich Primer System:

a. Prime Coat: Primer, zinc rich, epoxy, MPI #20.
b. Intermediate Coat: Epoxy, gloss, MPI #77.
c. Topcoat: Polyurethane, two component, pigmented, gloss (MPI Gloss Level 6), MPI #72.

B. Galvanized-Metal Substrates:

1. Pigmented Polyurethane over Vinyl Wash Primer and Epoxy Primer System:

a. Prime Coat: Primer, vinyl wash, MPI #80.
b. Intermediate Coat: Primer, epoxy, anti-corrosive, for metal, MPI #101
c. Topcoat: First and Second Polyurethane, two component, pigmented, gloss (MPI Gloss Level 6), MPI #72.

END OF SECTION 099600

SECTION 310000

EARTHWORK

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Work of this Section includes conducting unclassified excavation in bulk and in trenches/pits, filling and backfilling with specified soil materials, compacting, grading, and the following:

1. Earthwork shall occur within, around, and for site conditions as required to provide foundation elements, appurtenant structures, sub-bases and base courses, site landscaping and improvements, utility lines, and other miscellaneous elements of respective work. Earthwork shall further include:

a. Protection of excavations, utilities, adjacent conditions, and previously installed work of the Project to remain.

b. It shall be the responsibility of the contractor to locate all existing utilities whether shown hereon or not, and to protect them from damage. The contract drawings are not inclusive of all utilities that may be present within the project work area. If damaged, the contractor shall bear all expense of repair or replacement of any utility damaged.

c. Over excavation shall be filled with lean concrete or approved compacted structural fill material.

d. Designing, furnishing, installing, and removing temporary excavation supports, dewatering, and other temporary protection including erosion control required for and incidental to performing and maintaining earthwork.

e. Preparing sub-grades and placing base / sub-base courses for utility structures and related distribution lines, wall systems, pavement systems, and site drainage systems.

f. Placing fill/backfill materials including, but not limited to, the following:

1. Coarse Sand material and Washed Gravel material as indicated at and around foundation areas of structures and for utility trenches.

2. Washed Gravel drainage material for filling vertical drains/weeps at drain units.

g. Grading and compacting of site filled and backfilled areas to design grades with allowance for design thicknesses of planting soils, paving systems, and the like, and allowing for even flow of grade transitions to adjacent site areas.

h. Perform Soil Material Testing as specified herein.

2. Use of soil materials properly segregated during excavation operations shall be only as approved by the Director's Representative.

3. Obtaining imported (borrow) material from off-site sources to extent required and of materials specified and tested for approved use in earthwork operations.

   a. Soil materials specified in this Section include the following:

      1. Washed Gravel material for use as sub-base course on grade, and at other conditions indicated.

      2. Aggregate for use as base course over Washed Gravel sub-base course at pavement conditions as indicated.

      3. Sand used for base course at pavement.

      4. Stone Screenings used as base course under sand setting beds.

      5. Sand Based Structural Soil

4. Providing accessory materials including items related to other work of Contract and respective Sections of Work. Accessories include but may not be limited to the following:

   a. Filter and soil separation fabrics.

5. Field survey / layout work including staking out lines and grades, topographic surveys, verification of job site elevations, and other identification of site work locations.

6. Providing Field Samples/Mock-ups for filling, grading, and compaction of different fill soil installations and for other conditions as specified including mock-up installations for paving systems.

7. Preservation and protection of existing and concurrently installed site work and structures including related structures, curbs, walls, decorative surfaces and pavements, in-place soil materials, and utilities.

8. Perform hand excavation and hand backfilling within new and existing to remain planting and paving areas and at other conditions as required to limit damage and protect adjacent finishes.

9. Disposal of excess and unsuitable soil or other materials resulting from earthwork operations.

10. Coordinating this work between and together with related work of Contract and with adjacent work of separate contractors, including sequencing and scheduling of construction operations and use of site areas.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Site Restoration: Section 310101.

B. Site Clearing – Section 311000

C. Selective Tree Removal and Trimming – Section 311300

D. Trenching – Section 312316

E. Erosion and Sediment Control – Section 312513

F. Pavement Repair and Resurfacing – Section 320117

G. Asphalt Paving – Section 321216

H. Concrete Walks – Section 321300

I. Concrete Paving Joint Sealants – Section 321373

J. Portland Cement Concrete Curb – Section 321613

K. Topsoiling – Section 329120

L. Seeding – Section 329219

M. Manholes and Drainage Structures with Frames and Covers – Section 333913

N. Drainage Pipe (Storm Drainage) – Section 334103

1.03 DEFINITIONS

A. The following terms have the meanings ascribed to them in this Article, wherever they appear in this Section.

1. Backfill: General reference for soil materials to be used and the operation to fill an excavation.

a. Initial backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.

b. Final backfill: Backfill placed over initial backfill to fill a trench

2. Base Course: Layer placed between the compacted subgrade and structure or paving system.

3. Bedding Course: Layer placed over the excavated subgrade in a trench before laying pipe and/or conduit.

4. Borrow: Suitable soil or washed gravel imported from off-site for use as fill or backfill material.

5. Bulk Excavation: Excavation of soils and unclassified or classified materials in any areas not defined as trench or pit excavation.

6. Unclassified Earth Excavation: The excavation and disposal of all surface and subsurface materials of any description necessary to perform the work of this contract. This will include:

    a. All soil deposits of any description both above and below groundwater levels. These may be naturally deposited or placed by previous construction operations.

    b. Boulders of any size.

    c. Any materials of man-made origin.

7. Subgrade Surface: Surface upon which subbase or topsoil is placed.

8. Subbase: Select granular material or subbase course Type 2 which is placed immediately beneath pavement or concrete slabs.

9. Foundation Bearing Grade: Grade/elevation at which the bottom-of-footings are constructed.

10. Maximum Density: The dry unit weight in pounds per cubic foot of the soil at “Optimum Moisture Content” when determined by ASTM D 698 (Standard Proctor).

11. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

12. Landscaped Areas: Areas not covered by structures, walks, roads, paving, or parking.

13. Unauthorized Excavation: The removal of material below required elevation indicated on the Drawings or beyond lateral dimensions indicated or specified without specific written direction by the Director’s Representative.

14. Grading Limit Line or Limit of Disturbance (Shown on Drawings): Limits of grading, excavations and filling required for the work of this contract. Unless specifically noted otherwise, the Grading Limit Line

and Contract Limit Line and Limit of Disturbance will be considered the same.

1.04 SUBMITTALS

A. Product Data:

1. Permanent Sheeting, Shoring, and Bracing: Specifications for materials and accessories.

2. Filter Fabric: Manufacturer's catalog sheets, specifications, and installation instructions.

3. Geogrid: Manufacturer's catalog sheets, specifications, and installation instructions.

B. Samples: Submit samples as follows. Take the samples in the presence of the Director's Representative, and submit to the Director's Representative the laboratory test results for gradation, proctors and soundness tests, when required. These tests will be performed in accordance with ASTM standards, will be performed and signed by a certified soils laboratory, and will be submitted as part of the original submittal. At a minimum the samples taken will be of the following quantities:

1. Select Granular Material: 50 - 60 lb. (Two Samples).

2. Subbase Course Type 2: 50 - 60 lb. (Two Samples).

3. Selected Fill: 40 - 50 lb.

4. Cushion Material: 30 lb.

5. Item B-12: 30lb, each gradation.

6. Crushed Stone: 30 lb.

7. Underdrain Filter Material: 40 - 50 lb.

C. Quality Control Submittals:

1. Subbase Materials: Name and location of source and the DOT Source Number. If the material is not being taken from an approved DOT Source the results of the gradation and soundness tests performed by an ASTM certified soils laboratory will be required.

2. Other Aggregates: Name and location of source and soil laboratory test results.

3. Dewatering Procedure: Submit a lay out drawing or detailed outline of intended dewatering procedure for the Director's Representative

information. Provide necessary dewatering permit approvals prior to dewatering.

4. Excavation Procedure: Submit a lay out drawing or detailed outline of intended excavation procedure for the Director's Representative information. This submittal will not relieve the Contractor of responsibility for the successful performance of intended excavation methods.

5. Sheeting, Shoring, and Bracing (Not shown on the Drawings): Submit a detailed plan of intended sheeting, shoring and bracing, signed by a New York State licensed Professional Engineer, for the Director's Representative information. This submittal will not relieve the Contractor of responsibility for the successful performance of the intended sheeting, shoring and bracing methods.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect filter fabric from sunlight during transportation and storage.

1.06 PROJECT CONDITIONS

A. Reference the project's Geotechnical Engineering Report prepared by MFS Consulting Engineers & Surveyor, DPC dated April 21, 2023 for existing subsurface information and additional earthwork construction considerations.

B. Protect existing trees and plants during performance of the Work unless otherwise indicated. Box trees and plants indicated to remain within the limit of disturbance with temporary steel fencing or solidly constructed wood barricades as required. Protect root systems from smothering. If any machinery is operated within the Critical Root Zone of trees requiring protection, the affected area shall be covered with mulch to a depth of at least 12 inches and covered with plywood or metal plates to distribute weight in order to protect roots from damage caused by heavy equipment. Such covering shall be maintained during the course of construction and removed by hand. Do not store excavated material or allow vehicular traffic or parking within the critical root zone or as indicated on the plans. Restrict foot traffic to prevent excessive compaction of soil over root systems.

C. Cold Weather Requirements:

1. Excavation: When freezing temperatures are anticipated, do not excavate to final required elevations for concrete work unless concrete can be placed immediately.

2. Backfilling: If backfill is being placed during freezing temperatures the backfilling operations will be monitored by the Director's Representative and the following procedures will be followed:

a. Frozen ground will be removed in its entirety from beneath and five feet beyond the area of fill placement.

b. The fill material placed will consist of Selected Fill and will be free of all frozen chunks that exceed four inches in size. The material transported to the project site will only consist of material excavated from below the frost depth.

c. At the end of the work day, the area of fill placement will be covered with insulated blankets, or left unprotected. Other means of protection (hay, wood chips, etc.) may also be used for protection provided it is approved by the Director's Representative.

d. Following work day - Remove the insulated blankets and/or strip the area of all frozen material as specified previously.

e. Upon establishing the subgrade elevations, protect the grades with insulated blankets or place additional material that will adequately insulate the exposed earth surface from frost. This additional fill or protective material will be stripped just prior to pouring concrete.

D. Thru-traffic or fill placement with heavy construction vehicles or equipment which causes rutting or weaving to occur within the perimeter of a building will not be permitted. If rutting or weaving occurs during placement of fill, place specified fill in a stable area outside building perimeter and spread with tracked equipment to specified layer thickness.

PART 2 PRODUCTS

2.01 MATERIALS

A. Select Granular Material: Stockpiled, sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials. Comply with the gradation and material requirements specified below:

Sieve		Percent Passing
Sieve Size	**Size opening (mm)**	
2 inch	50.8	100
1/4 inch	6.35	30-65
No. 40	0.425	5-40
No. 200	0.075	0-10

1. Magnesium Sulfate Soundness Test: 20 percent maximum loss by weight after four test cycles.

2. Plasticity Index: The plasticity index of the material passing the No. 40 mesh sieve will not exceed 5.0.

3. Elongated Particles: Not more than 30 percent, by weight, of the particles retained on a 1/2 inch sieve will consist of flat or elongated

particles. A flat or elongated particle is defined as one which has its greatest dimension more than three times its least dimension.

B. Subbase Course Type 2: Stockpiled, crushed ledge rock or approved blast furnace slag. Comply with the gradation and material requirements specified below:

Sieve		Percent Passing
Sieve Size	**Size opening (mm)**	
2 inch	50.8	100
1/4 inch	6.35	25-60
No. 40	0.425	5-40
No. 200	0.075	0-10

1. Magnesium Sulfate Soundness Test: 20 percent maximum loss by weight after four test cycles.

2. Plasticity Index: The plasticity index of the material passing the No. 40 mesh sieve will not exceed 5.0.

3. Elongated Particles: Not more than 30 percent, by weight, of the particles retained on a 1/2 inch sieve will consist of flat or elongated particles. A flat or elongated particle is defined as one which has its greatest dimension more than three times its least dimension.

C. Selected Fill: Sound, durable, sand, gravel, stone, or blends of these materials, free from organic and other deleterious materials. Comply with the gradation requirements specified below:

Sieve		Percent Passing
Sieve Size	**Size opening (mm)**	
4 inch	101.6	100
No. 40	0.425	0-70
No. 200	0.075	0-15

D. Suitable Material (Fill and Backfill for Landscaped Areas): Material consisting of mineral soil (inorganic), blasted or broken rock and similar materials of natural or man-made origin, including mixtures thereof. Maximum particle size will not exceed 2/3 of the specified layer thickness prior to compaction. NOTE: Material containing cinders, industrial waste, sludge, building rubble, land fill, muck, and peat will be considered unsuitable for fill and backfill, except topsoil and organic silt may be used as suitable material in landscaped areas provided it is placed in the top layer of the subgrade surface.

E. Cushion Material: Will consist of clean, hard, durable, uncoated particles, free from lumps of clay and all deleterious substances and will meet the following gradation requirements:

Sieve Size	Percent Passing

Sieve Size	Size opening (mm)	
1/4 inch	6.35	100
No. 60	0.25	0-35
No. 100	0.15	0-10

F. Item B-12: Equal Blend of No.1 and No. 2 Crushed Stone that complies with material requirements of DOT Article 703-02, crushed stone only.

Sieve		Percent Passing
Sieve Size	Size opening (mm)	
1-1/2 inch	38.1	100
1 inch	25.4	95-100
½ inch	12.7	45-60
¼ inch	6.35	0-15

G. No. 1 Coarse Aggregate: Crushed Stone that complies with material requirements of DOT Article 703-02 and meets the following gradation.

Sieve		Percent Passing
Sieve Size	Size opening (mm)	
1 inch	25.4	100
1/2 inch	12.7	90-100
1/4 inch	6.35	0-15

H. No. 2 Coarse Aggregate: Crushed Stone that complies with material requirements of DOT Article 703-02 and meets the following gradation.

Sieve		Percent Passing
Sieve Size	Size opening (mm)	
1-1/2 inch	38.1	100
1 inch	25.4	90-100
1/2 inch	12.7	0-15

I. Rip Rap: Light Stone Filling that complies with DOT Article 620-2.02 for stone filling.

J. Pea Gravel: Comply with DOT Article 703-02 for screened gravel.

Sieve		Percent Passing
Sieve Size	Size opening (mm)	
1/2 inch	12.7	100
1/4 inch	6.35	90-100
1/8 inch	3.17	0-15
No. 200 Sieve	0.075	0-1

K. Flowable Fill: Shall consist of a mixture of Portland cement, sand, water and admixtures proportioned to provide a non-segregating, free-flowing, self-consolidating material that will result in a hardened, dense backfill.

1. Shall have a 28-day compressive strength between 40 and 100 psi.

2.02 GEOTECHNICAL FABRICS

A. Filter Fabric (GeoTextile):

1. Drainage and Erosion Control: Amoco 1199 & 2019, Maccaferri MacTex MX140 & MX155, Mirafi 140N & 160N, Fiberweave 403 & 404 or equivalent.

2. Separation for foundation drains, underdrains, undercuts: Amoco 2002 & 2004, Contech Construction Products Inc. C-180, Synthetic Industries Geotex 250ST & 315ST, Mirafi Geolon HP570 & HP1500 or equivalent.

3. Separation/Stabilization beneath pavements: GeoTex 801, Bonded Fibers Products PN080, Maccaferri Gabions MacTex MX275 & 340, Mirafi 160N & 180N or equivalent. *(Note: Although filter fabric does offer some additional strength to the existing subgrade, the strength it offers is usually temporary and it is not the intended use of fabrics. If a subgrade soil is very soft, the designer shall incorporate a thicker subbase course or shall place a geogrid type material in addition to the fabric. Consult Director's Representative if soft subgrade conditions exist.)*

B. Geogrids:

1. Segmental Retaining Walls.

2. Subgrade Stabilization.

PART 3 EXECUTION

3.01 CLEARING AND GRUBBING

A. Clear and grub the Site within the limit of work disturbance of trees, shrubs, brush, other prominent vegetation, debris, and obstructions except for those items indicated to remain. Completely remove stumps and roots protruding through the ground surface.

1. Use only hand methods for grubbing inside the drip line of trees indicated to be left standing.

2. Where roots and branches of trees indicated to be saved interfere with new construction, carefully and cleanly cut them back to point of branching.

B. Fill depressions caused by the clearing and grubbing operations in accordance with the requirements for filling and backfilling, unless further excavation is indicated.

3.02 REMOVAL OF TOPSOIL

A. Remove existing topsoil from areas within the Grading Limit Line where excavation or fill is required.

B. Stockpile approved topsoil where directed until required for use. Place, grade, and shape stockpiles for proper drainage.

1. Topsoil will be tested prior to stockpiling. Stockpile only quantities of topsoil approved in writing for re-use.

3.03 UNDERGROUND UTILITIES

A. Locate existing underground utilities prior to commencing excavation work. Determine exact utility locations by hand excavated test pits. Support and protect utilities to remain in place.

B. Do not interrupt existing utilities that are in service until temporary or new utilities are installed and operational.

C. Utilities to remain in service: Will be re-routed as shown on the Contract Drawings, if it is known that existing underground utilities exist beneath the footprint of the existing structure. In addition, Director's Representative shall show the rerouting of utilities to remain in service on the contract drawings.

D. Utilities abandoned beneath and five feet laterally beyond the structure's existing footprint will be removed in their entirety. Excavations required for their removal will be backfilled and compacted as specified herein.

E. Utilities extending outside the five feet limit specified above may be abandoned in place provided their ends are adequately plugged as described below.

1. Permanently close open ends of abandoned underground utilities exposed by excavations, which extend outside the limits of the area to be excavated.

2. Close open ends of metallic conduit and pipe with threaded galvanized metal caps or plastic plugs or other approved method for the type of material and size of pipe. Do not use wood plugs.

3. Close open ends of concrete and masonry utilities with concrete or flow-able fill.

3.04 EXCAVATION

A. Excavate earth as required for the Work.

B. Install and maintain all erosion and sedimentation controls during all earthwork operations as specified on the Contract Drawings or as directed by local officials. If the erosion and sedimentation controls specified by the local officials are more

stringent than those specified on the Contract Drawings contact the Director's Representative.

C. Maintain sides and slopes of excavations in a safe condition until completion of backfilling. Comply with Code of Federal Regulations Title 29 - Labor, Part 1926 (OSHA).

1. Trenches: Deposit excavated material on one side of trench only. Trim banks of excavated material to prevent cave-ins and prevent material from falling or sliding into trench. Keep a clear footway between excavated material and trench edge. Maintain areas to allow free drainage of surface water.

D. Stockpile excavated materials classified as suitable material where directed, until required for fill. Place, grade, and shape stockpiles for proper drainage as approved by the Director's Representative.

E. Excavation for Structures: Conform to elevations, lines, and limits indicated. Excavate to a vertical tolerance of plus or minus 1 inch. Extend excavation a sufficient lateral distance to provide clearance to execute the Work.

F. Footings and Foundations: The foundation bearing grade will be established just prior to constructing the concrete foundations when concrete is to bear on undisturbed soil.

1. Stepping Footings: Cut sloping surfaces under footings, foundations, steps, and where required for other Work as indicated.

2. Pile Foundations: Stop excavations 6 to 12 inches above the bottom of pile cap elevation before the piles are placed. After pile installation, remove loose and displaced material and excavate to final grade, leaving a solid base to receive concrete pile caps.

3. Where footings and other Work requiring similar soil support will rest entirely on rock, remove loose soil and loose rock and place concrete to the required elevations. Where footings and other Work requiring similar soil support will rest partially on rock and partially on soil, immediately notify the Director before any backfilling or concrete placement occurs; the Director will determine the correct foundation treatment for the Work.

G. Slabs and Floors: Excavate to the following depths below bottom of concrete for addition of select granular material:

1. Interior Floors: 6 inches unless otherwise indicated.

2. Exterior Slabs and Steps: 12 inches unless otherwise indicated.

H. Pipe Trenches: Open only enough trench length to facilitate laying pipe sections. Unless otherwise indicated on the Drawings, excavate trenches approximately 24 inches wide plus the outside pipe diameter, equally divided on each side of pipe

centerline. Cut trenches to cross section, elevation, profile, line, and grade indicated. Accurately grade and shape trench bottom for uniform bearing of pipe in undisturbed earth. Excavate at bell and coupling joints to allow ample room for proper pipe connections.

1. Trench in Rock: Excavate an additional 6 inches below bottom of pipe for bed of cushion material under the piping.

I. Open Ditches: Cut ditches to cross sections and grades indicated.

J. Pavement: Excavate to subgrade surface elevation.

K. Unauthorized Excavations: Unless otherwise directed, backfill unauthorized excavation under footings, foundation bases, and retaining walls with compacted select granular material without altering the required footing elevation. Elsewhere, backfill and compact unauthorized excavation as specified for authorized excavation of the same classification, unless otherwise directed by the Director.

1. Unauthorized excavations under structural Work such as footings, foundation bases, and retaining walls will be reported immediately to the Director before any concrete or backfilling Work commences.

L. Notify the Director's Representative upon completion of excavation operations. Do not proceed with the Work until the excavation is inspected and approved. Inspection of the excavation by the Director's Representative will be made on three working days notice.

M. Removal of Unsuitable Material Beneath Structures and Other Improvements: Excavate encountered unsuitable materials, which extend below required elevations, to additional depth as directed by the Director. Have cross sections taken, under the supervision of an independent Land Surveyor, to determine the quantity of such excavation. Do not backfill this excavation prior to quantity measurement.

1. Such additional excavation and backfilling, not due to error, fault or neglect of the Contractor and exceeding the numeric quantities indicated on the Drawings, will be paid for at the unit prices specified in this Section.

3.05 DEWATERING

A. Prior to the performance of any excavations provide dewatering methods such that the groundwater table is maintained at an elevation that is beneath the excavated depth.

B. Prevent surface and subsurface water from flowing into excavations and trenches and from flooding the site and surrounding area.

C. Do not allow water to accumulate in excavations or trenches. Remove water from all excavations immediately to prevent softening of foundation bottoms,

undercutting footings, and soil changes detrimental to the stability of subgrades and foundations. Furnish and maintain pumps, sumps, suction and discharge piping systems, and other system components necessary to convey the water away from the Site.

D. Convey water removed from excavations, and rain water, to collecting or run-off area. Cut and maintain temporary drainage ditches and provide other necessary diversions outside excavation limits for each structure. Do not use trench excavations as temporary drainage ditches.

E. Provide temporary controls to restrict the velocity of discharged water as necessary to prevent erosion and siltation of receiving areas. Dewatered groundwater shall be discharged into a sediment holding tank and properly disposed.

F. No groundwater shall be discharged to any storm, sanitary or combined sewers prior to obtaining all proper permits from the New York State Department of Environmental Conservation and any other local governing agency.

3.06 SETTLEMENT DETECTION

A. Excavating beneath the bearing grades of an existing structure: Establish a settlement detection method approved by the Director's Representative for structures subject to settlement from excavation, sheeting or sheetpiling operations. Maintain surveillance to detect any settlement.

B. Surcharging: Establish a settlement monitoring plan to accurately determine the settlements that have occurred and the rate that they occurred to adequately determine when settlement caused by surcharge is complete.

3.07 SHEETING, SHORING, AND BRACING

A. Temporary Sheeting: Install temporary sheeting or sheetpiling with shoring and bracing as required to create a safe working environment and prevent settlement or other damage to adjacent grounds and structures resulting from excavation operations. Shore and brace sheeting in a manner which will not interfere with progress of other Work or related contracts (if any) on this project. Check shoring and bracing for settlement, and adjust for settlement. Promptly remove temporary sheeting, shoring, and bracing when no longer required.

B. Permanent Sheeting: Install permanent steel sheetpiling where shown. Cut off top of permanent sheeting 12 inches below finish grade.

3.08 PLACING FILTER FABRIC

A. Place and overlap filter fabric in accordance with the manufacturer's installation instructions, unless otherwise shown.

B. Cover tears and other damaged areas with additional filter fabric layer extending three feet beyond the damage.

C. Do not permit traffic or construction equipment directly on filter fabric.

D. Backfill over filter fabric within two weeks after placement. Backfill in accordance with the fabric manufacturer's instructions and in a manner to prevent damage to the fabric.

3.09 PLACING FILL AND BACKFILL

A. Surface Preparation of Fill Areas: Strip topsoil, remaining vegetation, and other deleterious materials prior to placement of fill. Remove all asphalt pavement in its entirety from areas requiring the placement of fill. The exposed subgrade surface should be level and free of loose soil, debris, organics, standing water, or other unsatisfactory material. Prior to construction, the subgrade should be compacted with at least five (5) passes of a 2-ton smooth-drum vibratory roller. Any areas exhibiting excessive weaving, rutting, or pumping should be removed and replaced with compacted fill. The exposed subgrade condition should be verified and approved by the Director's Representative for subgrade and fill placement.

B. Excavations: Backfill as promptly as Work permits, but not until completion of the following:

1. Acceptance by the Director's Representative of construction below finish grade including, where applicable, dampproofing, waterproofing, perimeter insulation, and bearing capacity of supporting soil.

2. Inspection, testing, approval, and recording locations of underground utilities.

3. Removal of concrete formwork.

4. Removal of temporary sheeting or sheetpiling and backfilling of voids caused by removals.
5. Cutting off top of permanent sheeting or sheetpiling.

6. Removal of trash and debris.

7. Installation of permanent or temporary bracing on horizontally supported walls.

C. Place backfill and fill materials in layers not more than 12 inches thick in loose depth unless otherwise specified. Before compaction, moisten or aerate each layer as necessary to facilitate compaction to the required density. Do not place backfill or fill material on surfaces that are muddy, frozen, or covered with ice.

1. Place fill and backfill against foundation walls, and in confined areas such as trenches not easily accessible by larger compaction equipment, in maximum six inch thick loose depth layers.

2. For large fill areas, the layer thickness may be modified by the Director's Representative, at the Contractor's written request, if in the Director's

Representative's judgment, the equipment used is capable of compacting the fill material in a greater layer thickness. This request will include the type and specifications of compaction equipment intended for use.

3. For Open Graded Stone/Clean Stone (Item B-12, No. 1 crushed stone, No. 2 crushed stone, etc.) in access of six inches: Material must be wrapped in separation fabric.

D. Concrete walls:

1. Do not place fill or backfill against concrete walls until the walls have attained 70 percent of their design strength. Place backfill against walls of structures containing basements or crawl spaces only after the first floor structural members are in place and any concrete components of the first floor structural system have attained 70 percent of their concrete design strength.

2. Prevent wedging action of backfill against structures backfilled on both sides, by placing backfill uniformly around structure so that the elevation on each side never differs by more than 24 inches.

E. Foundation Drains:

1. Line pipe trench loosely with filter fabric. Lap successive sheets 18 inches.

2. Place underdrain filter material a minimum of 4 inches deep under pipe and 6 inches on both sides and over top of drain pipe.

3. Completely wrap underdrain filter material with filter fabric.

4. Within two weeks complete balance of backfill with selected fill extending 2 feet out from foundation wall and up to 6 inches below finished grade.

F. Perimeter Insulation: Before the insulation is installed, place and tamp specified backfill to a smooth plane even with the required elevation of the lower surface of the insulation.

G. Under Exterior Concrete Slabs and Steps:

1. Up to Subgrade Surface Elevation: Place selected fill when fill or backfill is required.

2. Subbase Material: Place 12 inches of select granular material over subgrade surface.

H. Under Interior Concrete Slabs:

1. Up to Subgrade Surface Elevation: Place selected fill when fill or backfill is required.

2. Subbase Material: Place six inches of select granular material over subgrade surface.

I. Under Pavements and Walks:

1. Up to Subgrade Surface Elevation: Place selected fill when fill or backfill is required.

2. Subbase Material: Place as indicated.

J. Landscaped Areas: Place suitable material when required to complete fill or backfill areas up to subgrade surface elevation. Do not use material containing rocks over four inches in diameter within the top 12 inches of suitable material.

K. Pipe Tunnels: Place selected fill a minimum of 12 inches on both sides and over top of tunnel.

L. Plastic Pipe in Trenches: Place cushion material a minimum of six inches deep under pipe, 12 inches on both sides, and 12 inches above top of pipe. Complete balance of backfill as specified.

1. Trench in Rock: Place a minimum six inch deep bed of cushion material under pipe.

M. Copper Tubing and Steel Gas Pipe in Trenches: Place cushion material a minimum of six inches deep under pipe, 12 inches on both sides, and 12 inches above top of pipe. Complete balance of backfill as specified.

N. Backfilling Excavation Resulting From Removal of Unsuitable Material Beneath Structures and Other Improvements: Backfill the excavation with compacted select granular material.

1. Such additional backfilling, exceeding the numeric quantities indicated on the Drawings, is included in the unit prices specified in this Section.

3.10 ADDITIONAL REQUIREMENTS FOR PLACING FILL TO SUPPORT STRUCTURES

A. Place fill within the entire area enclosed by a line ten feet outside the perimeter of the structure to be constructed as follows:

1. Strip the area in accordance with the requirements for Surface Preparation of Fill Areas.

2. Compact the stripped surface to 95 percent of maximum density.

3. Place fill in horizontal layers not exceeding 12 inches loose depth and compact layers as specified.

B. Place fill within the entire area enclosed by a line 10 feet outside the perimeter of the structure to be constructed as follows:

1. Strip the area in accordance with the requirements for Surface Preparation of Fill Areas.

2. Proof roll the stripped surface with at least five passes of a vibratory drum compactor having a minimum unsprung drum weight of seven tons. Notify the Director's Representative of the proposed date for beginning proof rolling at least seven working days prior to commencing proof rolling.

3. Excavate unsuitable materials (soft and unstable earth) disclosed by the proof rolling operation and replace with compacted Selected Fill material.

4. Place fill in horizontal layers not exceeding 12 inches loose depth and compact layers as specified.

C. Obtain written approval of fill area compaction before excavating for footing.

D. Excavate for footing width plus one foot on each side.

E. Excavate one foot below footing elevations where bottom of footings are two feet or less above or four feet or less below original ground surface.

1. Compact footing bottom and place a one foot bed of select granular material. Compact select granular material in six inch layers.

2. Omit excavation and select granular material below bottom of footings where footing elevations are more than two feet above or more than 4 feet below original ground surface.

3.11 COMPACTION

A. All materials with exception of open graded stone (No. 2 Coarse aggregate, No. 1 Coarse aggregate, Item B-12, etc.):

1. Compact each layer of fill and backfill for the following area classifications to the percentage of maximum density specified below and at a moisture content suitable to obtain the required densities, but at not less than three percent drier or more than two percent wetter than the optimum content as determined by ASTM D 698 (Standard Proctor) or 1557 (Modified Proctor).

a. Structures (entire area within ten feet outside perimeter): 95 percent.

b. Concrete Slabs and Steps: 95 percent.

c. Landscaped Areas: 90 percent.

d. Pavements and Walks: 95 percent.

e. Pipes and Tunnels: 95 percent.

f. Pipe Bedding: 95 percent.

2. When the existing ground surface to be compacted has a density less than that specified for the particular area classification, break up and pulverize, and moisture condition to facilitate compaction to the required percentage of maximum density.

3. Moisture Control:

a. Where fill or backfill must be moisture conditioned before compaction, uniformly apply water to the surface and to each layer of fill or backfill. Prevent ponding or other free water on surface subsequent to, and during compaction operations.

b. Remove and replace, or scarify and air dry, soil that is too wet to permit compaction to specified density. Soil that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing, until moisture content is reduced to a value which will permit compaction to the percentage of maximum density specified.

4. If a compacted layer fails to meet the specified percentage of maximum density, the layer will be recompacted and retested. If compaction cannot be achieved the material/layer will be removed and replaced. No additional material may be placed over a compacted layer until the specified density is achieved.

B. Open graded Stone: Place material in maximum twelve inch lifts. Each lift shall be raked smooth and compacted through several passes of a walk behind vibratory roller. Compaction Testing is **not** required.

3.12 ROUGH GRADING

A. Interior Grading: Trim unexcavated spaces within the building to levels indicated.

1. Subgrade for Interior Slabs: Compact as specified to receive fill material. Finish subgrade surface within 1 inch above or below level specified for fill required.

B. Exterior Grading: Trim and grade area within the Grading Limit Line and excavations outside the limit line, required by this Contract, to a level of 4 inches below the finish grades indicated unless otherwise specified herein or where greater depths are indicated. Provide smooth uniform transition to adjacent areas.

1. Slope cut and fill in transition areas, outside of the grading limit line, to meet corresponding levels of existing grades at a slope of 1 vertical to 2 horizontal unless otherwise indicated.

2. Landscaped Areas: Provide uniform subgrade surface within 1 inch of required level to receive topsoil thickness specified. Compact fill as specified to within three inches of subgrade surface. Remove objectionable material detrimental to proper compaction or to placing full depth of topsoil. If the top three inches of subgrade has become compacted before placement of topsoil, harrow or otherwise loosen rough graded surface to receive topsoil to a depth of three inches immediately prior to placing topsoil.

3.13 SUBGRADE SURFACE FOR WALKS AND PAVEMENT

A. Shape and grade subgrade surface as follows:

1. Walks: Shape the surface of areas under walks to required line, grade and cross section, with the finish surface not more than 1 inch above or below the required subgrade surface elevation.

2. Pavements: Shape the surface of areas under pavement to required line, grade and cross section, with the finish surface not more than 1/2 inch above or below the required subgrade surface elevation.

B. Grade Control: During construction, maintain lines and grades including crown and cross-slope of subbase course.

C. Thoroughly compact subgrade surface for walks and pavement by mechanical rolling, tamping, or with vibratory equipment as approved to the density specified.

D. Shoulders: Place shoulders along edges of filled subgrades to prevent lateral movement. Construct shoulders of selected fill material, placed in such quantity to compact to thickness of each subgrade course layer. Compact and roll at least a 2’-0” wide additional layer of each subgrade course.

3.14 FINISH GRADING

A. Uniformly grade rough graded areas within limits of the Grading Limit Line to finish grade elevations indicated.

B. Grade and compact to smooth finished surface within tolerances specified, and to uniform levels or slopes between points where finish elevations are indicated or between such points and existing finished grade.

C. Grade areas adjacent to building lines so as to drain away from structures and to prevent ponding.

D. Finish surfaces free from irregular surface changes, and as follows:

1. Grassed Areas: Finish areas to receive topsoil to within one inch above or below the required subgrade surface elevations.

2. Walks: Place and compact subbase material as specified. Shape surface of areas under walks to required line, grade and cross section, with the finish surface not more than 1/2 inch above or below the required subbase elevation.

3. Pavements: Place and compact subbase material as specified. Shape surface of areas under pavement to required line, grade and cross section, with the finish surface not more than 1/2 inch above or below the required subbase elevation.

4. Building Slabs: Grade subbase material smooth and even, free of voids, compacted as specified, and to required subbase elevation. Finish final grades within a tolerance of 1/4 inch when tested with a ten foot straightedge.

5. Surfaces To Receive Vapor Barrier: Provide smooth surfaces graded, tamped and/or rolled, entirely free of obstructions or protruding objects.

3.15 MAINTENANCE AND RESTORATION

A. Restore grades to indicated levels where settlement or damage due to performance of the Work has occurred. Correct conditions contributing to settlement. Remove and replace improperly placed or poorly compacted fill materials.

B. Restore pavements, walks, curbs, lawns, and other exterior surfaces damaged during performance of the Work to match the appearance and performance of existing corresponding surfaces as closely as practicable.

C. Topsoil and seed or sod damaged lawn areas outside the GLL and new lawn areas inside the GLL. Water as required until physical completion of the Work.

3.16 DISPOSAL OF EXCESS AND UNSUITABLE MATERIALS

A. Remove from State property and dispose of excess and unsuitable materials, including materials resulting from clearing and grubbing and removal of existing improvements.

B. Transport excess and unsuitable materials, including materials resulting from clearing and grubbing and removal of existing improvements, to spoil areas on State property designated by the Director’s Representative, and dispose of such materials as directed.

C. Transport excess topsoil to areas on State property designated by the Director’s Representative. Smooth grade deposited topsoil.

3.17 FIELD QUALITY CONTROL

A. Compaction Testing: Notify the Director's Representative at least three working days in advance of all phases of filling and backfilling operations. Compaction testing will be performed by the Director's Representative to ascertain the compacted density of the fill and backfill materials. Compaction testing will be performed on certain layers of the fill and backfill as determined by the Director's Representative. If a compacted layer fails to meet the specified percentage of maximum density, the layer will be recompacted and will be retested. No additional material may be placed over a compacted layer until the specified density is achieved.

3.18 PROTECTION

A. Protect graded areas from traffic and erosion and keep them free of trash and debris.

END OF SECTION

SECTION 323119

DECORATIVE METAL FENCES AND GATES

PART 1 -GENERAL

1.01 SUMMARY

A. Section Includes:

1. Decorative steel fences.
2. Swing gates.
3. Gate operators.

B. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete" for concrete bases for gate operators, drives, and controls.
2. Section 087100 “Finish Hardware.”
3. Section 099600 “High-Performance Coatings.”
4. Section 281300 "Card Access Control System" for access control devices installed at gates and provided as part of a security system.
5. Division 26 Sections for electrical service and connections for system disconnect switches and powered devices including, but not limited to, motor operators, controls, and limit switches.

1.02 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.03 ACTION SUBMITTALS

A. Product Data:

1. For each type of product.

B. Shop Drawings: For fencing and gates.

1. Include plans, elevations, sections, gate locations, post spacing, mounting details, and grounding details.
2. Gate Operator: Show locations and details for installing operator components, switches, and controls. Indicate motor size, electrical characteristics, drive arrangement, mounting, and grounding provisions.
3. Wiring Diagrams: Include diagrams for power, signal, and control wiring.

C. Samples: For each fence material and for each color specified.

1. Provide Samples 12 inches (300 mm) in length for linear materials.

2. Provide Samples 12 inches (300 mm) square for sheet or plate materials.

D. Submit an Environmental Product Declaration (EPD) from the manufacturer for steel within 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.*

1.04 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.05 CLOSEOUT SUBMITTALS

A. Maintenance Data: For gate operators to include in maintenance manuals.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.

1. Include 10 ft. (3 m) minimum length of fence plus a pedestrian gate complying with requirements. Construct within project fence at location selected by Director's Representative.
2. Provide a mockup of one fully operational and finished vehicular gate in the shop.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

PART 2 -PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Wind Loading:

1. Fence Height: 0 to 15 ft. (0 to 4.57 m).
2. Wind Exposure Category: D.
3. Design Wind Speed: 105 mph (169 kph).

B. Lightning-Protection System: Maximum grounding-resistance value of 25 ohms under normal dry conditions.

2.02 DECORATIVE STEEL FENCES

A. Decorative Steel Fence Assembly: Fences made from steel tubing, bars, and shapes.

B. Posts: Square steel tubing.

1. All posts shall be hot-dip galvanized.
2. Line Posts: HSS tube 4 by 4 inches.
3. End and Corner Posts: HSS tube 4 by 4 inches (102 by 102 mm).
4. Swing Gate Posts: HSS tube 4 by 4 inches (102 by 102 mm).

C. Post Caps: Steel castings, galvanized.

D. Pickets: Decorative steel bars of pattern and size indicated on Drawings.

1. Picket Placement: Extend pickets beyond top rail as indicated on Drawings and cap with metal square spear point finial.
2. Picket Spacing: As indicated.
3. Treillage: Provide bent straps of pattern indicated between each pair of pickets.

E. Gate Framing:

1. Bars: 1-1/2-by-1/2-inch steel flat bars unless otherwise indicated on Drawings.
2. Square Tubes: Square corner steel tubing1-1/2” square with 1/8-inch (3.2-mm) wall thickness.
3. Steel Plate: As indicated on Drawings.

F. Fabrication:

1. Assemble fences into sections by welding pickets to rails / frame.

    a. Fabricate sections with clips welded to rails for field fastening to posts.
    b. Drill posts and clips for fasteners before finishing to maximum extent possible.

G. Finish exposed welds to comply with NOMMA Guideline 1, Finish #2 - completely sanded joint, some undercutting and pinholes okay. Use epoxy seam-sealer to completely seal joints.

H. Galvanizing: For items other than hardware that are indicated to be galvanized, hot-dip galvanize to comply with ASTM A123/A123M. For hardware items, hot-dip galvanize to comply with ASTM A153/A153M.

1. Hot-dip galvanize all fence and gate components.

I. Finish for Steel Items: High-performance coating.

J. Finish for Metallic-Coated-Steel Items: High-performance coating.

2.03 SWING GATES

A. Gate Configuration: As indicated on Drawings.

B. Gate Frame Height: As indicated on Drawings.

C. Gate Opening Width: As indicated on Drawings.

D. Gate Type: As indicated on Drawings.

E. Steel Frames and Bracing: Fabricate members from square steel tubing 1-1/2 by 1-1/2 inches (38 by 38 mm) with 1/8-inch (3.2-mm) wall thickness and square corners.

F. Frame Corner Construction: Welded.

G. Additional Rails: Provide as indicated, complying with requirements for fence rails.

H. Gate Infill: As indicated on Drawings.

I. Hardware:

1. Single gates: Hinges, latches/locks as indicated in Section 087100 Finish Hardware.
2. Double gates: Electromagnetic locks at top and bottom of meeting stile. (2 per gate opening.)

    a. Hinges: BHMA A156.1, Grade 1, suitable for exterior use.

        1) Function: 39 - Full surface, triple weight, antifriction bearing.
        2) Material: Wrought steel, forged steel, cast steel, or malleable iron; High performance coating.
        3) Three per gate leaf.

J. Exit Hardware: BHMA A156.3, Grade 1, Type 1 (rim exit device), with push-pad-actuating bar, suitable for exterior use.

1. Function: 08 - Entrance by lever. Key locks or unlocks lever.
2. Mounting Channel: Bent-plate channel formed from **1/8-inch- (3.2-mm-)** thick steel plate. Channel spans gate frame. Exit device is mounted on channel web, recessed between flanges, with flanges extending **1/8 inch (3.2 mm)** beyond push-pad surface.

K. Finish exposed welds to comply with NOMMA Guideline 1, Finish #2 - completely sanded joint, some undercutting and pinholes okay.

L. Galvanizing: For items other than hardware that are indicated to be galvanized, hot-dip galvanize to comply with ASTM A123/A123M. For hardware items, hot-dip galvanize to comply with ASTM A153/A153M.

M. Metallic-Coated-Steel Finish: High-performance coating.

N. Steel Finish: High-performance coating.

2.04 GATE OPERATORS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Kinegate, a Kinefac Company or comparable product by one of the following:

1. Amazing Gates of America LLC
2. Eagle Access Control Systems, Inc.
3. Hy-Security Gate, Inc.; Nice North America; Nice group
4. Tymetal Corp.; The Fort Miller Group, Inc.
5. Viking Access Systems LLC; FAAC International Inc.; FAAC SpA

B. Gate Operator Components: Provide factory-assembled automatic operating system designed for gate size, type, weight, and operation frequency. Provide operation control system with characteristics suitable for Project conditions, with remote-control stations, safety devices, and weatherproof enclosures; coordinate electrical requirements with building electrical system.

1. Design operator so that motor may be removed without disturbing limit-switch adjustment and without affecting auxiliary emergency operator.
2. Provide ASTM F2200-listed automated vehicular gates.

C. Comply with NFPA 70.

D. Emergency Access Requirements: Comply with requirements of authorities having jurisdiction for automatic gate operators on gates that must provide emergency access.

E. Motor Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, within installed environment, with indicated operating sequence, and without exceeding nameplate rating or considering service factor. Comply with NEMA MG 1 and the following:

1. Voltage: NEMA standard voltage selected to operate on nominal circuit voltage to which motor is connected.
2. Phase: Polyphase.
3. Enclosure: Totally enclosed.
4. Duty: Continuous duty at ambient temperature of 105 deg F (40 deg C) and at altitude of 3300 ft. (1005 m) above sea level.
5. Service Factor: 1.15 for open dripproof motors; 1.0 for totally enclosed motors.

F. Gate Operator Supports: Gate mounted and as follows:

1. Hydraulic Gate Operators: Swing.

    a. Duty: Heavy duty, commercial/industrial.
    b. Gate Speed: Fully open to fully close. Speed as recommended in writing by manufacturer.
    c. Maximum Gate Weight: As designed.
    d. Frequency of Use: 10 cycles per hour.
    e. Hydraulic Fluid: Of viscosity required for gate operation at ambient temperature range for Project.
    f. Locking: Hydraulic in both directions.

G. Activation Controls: Electric controls separated from gate and motor and drive mechanism, with NEMA ICS 6, Type 1 enclosure for surface mounting, and with space for additional optional equipment. Provide the following remote-control device(s):

1. Control Station:

   a. Momentary-contact, three-button-operated with open, stop, and close function; located remotely from gate.

2. Card Reader: Functions only when authorized card is presented. Programmable, multiple-code system.

   a. Reader Type: Proximity.
   b. Features: Capable of monitoring and auditing gate activity.

3. Remote key-fob operator: functions the same as the card reader.

H. Obstruction-Detection Devices: Provide each motorized gate with automatic safety sensor(s). Activation of sensor(s) causes operator to immediately function as follows:

1. Action: Stop gate in opening cycle and reverse gate in closing cycle, and hold until clear of obstruction.
2. Internal Sensor: Built-in torque or current monitor senses gate is obstructed.
3. Photoelectric/Infrared Sensor System: Designed to detect an obstruction in gate's path when infrared beam in the zone pattern is interrupted.

I. Emergency Release Mechanism: Quick-disconnect release of operator drive system of the following type, permitting manual operation if operator fails. Design system so control-circuit power is disconnected during manual operation.

1. Type: Integral fail-safe release, allowing gate to be pushed open without mechanical devices, keys, cranks, or special knowledge.

J. Operating Features:

1. Digital Microprocessor Control: Electronic programmable means for setting, changing, and adjusting control features with capability for monitoring and auditing gate activity. Provide unit that is isolated from voltage spikes and surges.
2. System Integration: With controlling circuit board capable of accepting any type of input from external devices.
3. Primary/Secondary Capability: Control stations designed and wired for gate pair operation.
4. Automatic Closing Timer: With adjustable time delay before closing.
5. Open Override Circuit: Designed to override closing commands.
6. Reversal Time Delay: Designed to protect gate system from shock load on reversal in both directions.
7. Maximum Run Timer: Designed to prevent damage to gate system by shutting down system if normal time to open gate is exceeded.

K. Battery Backup System: Battery-powered drive and access-control system, independent of primary drive system.

1. Fail-Secure: Gate cycles on battery power, then fail-safe when battery is drained.

L. Accessories:

1. Warning Module: Audio Visual, strobe-light alarm sounding three to five seconds in advance of gate operation and continuing until gate stops moving; compliant with the United States Access Board's ADA-ABA Accessibility Guidelines.
2. Instructional, Safety, and Warning Labels and Signs: In accordance with UL 325 .
3. Equipment Bases/Pads: Precast concrete, depth not less than 12 inches (300 mm) , dimensioned and reinforced in accordance with gate operator component manufacturer's written instructions and as indicated on Drawings.

2.05 STEEL AND IRON MATERIALS

A. Plates, Shapes, and Bars: ASTM A36/A36M.

B. Tubing: ASTM A500/A500M, cold-formed steel tubing.

C. Uncoated Steel Sheet: Hot-rolled steel sheet, ASTM A1011/A1011M, Structural Steel, Grade 45 (Grade 310) or cold-rolled steel sheet, ASTM A1008/A1008M, Structural Steel, Grade 50 (Grade 340).

D. Galvanized-Steel Sheet: ASTM A653/A653M, structural quality, Grade 50 (Grade 340), with G90 (Z275) coating.

E. Castings: Either gray or malleable iron unless otherwise indicated on Drawings.

1. Gray Iron: ASTM A48/A48M, Class 30.
2. Malleable Iron: ASTM A47/A47M.

2.06 COATING MATERIALS

A. Provide coatings that comply with Section 099600 "High-Performance Coatings."

2.07 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select in accordance with AWS specifications for metal alloy welded.

B. Concrete: Normal-weight, air-entrained, ready-mix concrete complying with requirements in Section 033000 "Cast-in-Place Concrete" with a minimum 28-day compressive strength of **3000 psi (20 MPa)**, **3-inch (75-mm)** slump, and **1-inch (25-mm)** maximum aggregate size.

C. Nonshrink Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M and specifically recommended in writing by manufacturer for exterior applications.

2.08 GROUNDING MATERIALS

A. Grounding Conductors: Size as indicated on Drawings. Bare, solid wire for No. 6 AWG and smaller; stranded wire for No. 4 AWG and larger.

1. Material above Finished Grade: Copper.
2. Material on or below Finished Grade: Copper.
3. Bonding Jumpers: Braided copper tape, 1-5/8 inch (41 mm) wide and 1/16 inch (1.6 mm) thick, woven of No. 30 AWG bare copper wire, terminated with copper ferrules.

B. Grounding Connectors and Grounding Rods: Comply with UL 467.

1. Connectors for Below-Grade Use: Exothermic-welded type.
2. Grounding Rods: Copper-clad steel.

a. Size: 5/8 by 96 inches (16 by 2440 mm).

2.09 STEEL FINISHES

A. Surface Preparation: Clean surfaces in accordance with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning." After cleaning, apply a conversion coating compatible with the organic coating to be applied over it.

B. Primer Application: Apply zinc-rich epoxy primer immediately after cleaning, to provide a minimum dry film thickness of 2 mils (0.05 mm) per applied coat, to surfaces that are exposed after assembly and installation, and to concealed surfaces.

C. High-Performance Coating: Apply intermediate and polyurethane topcoats to prime-coated surfaces. Comply with coating manufacturer's written instructions and with requirements in SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting. Apply at spreading rates recommended in writing by coating manufacturer.

1. Match approved Samples for color, texture, and coverage. Remove and refinish, or recoat work that does not comply with specified requirements.

2.10 METALLIC-COATED-STEEL FINISHES

A. Galvanized Finish: Clean welds, mechanical connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

B. Surface Preparation: Clean surfaces of oil and other contaminants. Use cleaning methods that do not leave residue. After cleaning, apply a conversion coating compatible with the organic coating to be applied over it. Clean welds, mechanical connections, and abraded areas and apply galvanizing repair paint, complying with SSPC-Paint 20, to comply with ASTM A780/A780M.

C. High-Performance Coating: Apply epoxy primer, polyurethane intermediate coat, and

polyurethane topcoat to prepared surfaces. Comply with coating manufacturer's written

instructions and with requirements in SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting. Apply at spreading rates recommended in writing by coating manufacturer.

1. Match approved Samples for color, texture, and coverage. Remove and refinish, or recoat work that does not comply with specified requirements.

PART 3 -EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, construction layout, and other conditions affecting performance of the Work.

B. Do not begin installation before final grading is completed unless otherwise permitted by Architect.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Stake or otherwise mark locations of fence lines, gates, and terminal posts. Do not exceed intervals of 25’ between stakes. Indicate locations of utilities and underground structures.

1. Construction layout and field engineering are specified in Section 017123 "Field Engineering."

3.03 INSTALLATION OF DECORATIVE FENCES

A. Install fences by setting posts as indicated on Drawings and fastening infill panels to posts.

B. Post Excavation: Drill or hand-excavate holes for posts in firm, undisturbed soil. Excavate holes to a diameter of not less than 4 times post size and a depth of not less than 24 inches (600 mm) plus 3 inches (75 mm) for each foot (300 mm) or fraction of a foot (300 mm) that fence height exceeds 4 ft. (1.2 m).

C. Post Setting: Set posts in concrete or with mechanical anchors at indicated spacing.

1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
2. Concrete Fill: Place concrete around posts and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.

3. Posts Set in Concrete: Extend post to within 6 inches (150 mm) of specified excavation depth, but not closer than 3 inches (75 mm) to bottom of concrete.
4. Posts Set into Voids in Concrete: Form or core drill holes not less than 3/4 inch (20 mm) larger than outside diagonal dimension of post.

a. Extend posts at least 5 inches (125 mm) into concrete.
b. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink grout, mixed and placed to comply with grout manufacturer's written instructions. Finish and slope top surface of grout to drain water away from post.

5. Space posts as indicated.

3.04 INSTALLATION OF GATES

A. Install gates in accordance with manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.05 INSTALLATION OF GATE OPERATORS

A. General: Install gate operators in accordance with manufacturer's written instructions, aligned and true to fence line and grade.

B. Concrete Bases: Cast-in-place or precast concrete, depth not less than 12 inches (300 mm) , dimensioned and reinforced in accordance with gate operator component manufacturer's written instructions and as indicated on Drawings.

C. Comply with NFPA 70 and manufacturer's written instructions for grounding of electric-powered motors, controls, and other devices.

3.06 GROUNDING AND BONDING

A. Fence Grounding: Install at maximum intervals of750 ft. except as follows:

1. Gates and Other Fence Openings: Ground fence on each side of opening.

a. Bond metal gates to gate posts.
b. Bond across openings, with and without gates, except at openings indicated as intentional fence discontinuities. Use No. 2 AWG wire and bury it at least 18 inches (460 mm) below finished grade.

B. Grounding Method: At each grounding location, drive a grounding rod vertically until the top is 6 inches (150 mm) below finished grade. Connect rod to fence with No. 6 AWG conductor. Connect conductor to each fence component at grounding location.

C. Bonding Method for Gates: Connect bonding jumper between gate post and gate frame.

D. Connections: Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact are galvanically compatible.

1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to

make contact points closer in order of galvanic series.
2. Make connections with clean, bare metal at points of contact.
3. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

E. Bonding to Lightning-Protection System: If fence terminates at lightning-protected building or structure, ground the fence and bond the fence grounding conductor to lightning-protection down conductor or lightning-protection grounding conductor, complying with NFPA 780.

3.07 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

1. Grounding-Resistance Tests: Subject completed grounding system to a megger test at each grounding location. Measure grounding resistance not less than two full days after last trace of precipitation, without soil having been moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural grounding resistance. Perform tests by two-point method in accordance with IEEE 81.
2. Excessive Grounding Resistance: If resistance to grounding exceeds specified value, notify Architect promptly. Include recommendations for reducing grounding resistance and a proposal to accomplish recommended work.
3. Report: Prepare test reports of grounding resistance at each test location certified by a testing agency. Include observations of weather and other phenomena that may affect test results.

3.08 ADJUSTING

A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

B. Automatic Gate Operators: Energize circuits to electrical equipment and devices. Adjust operators, controls, safety devices, alarms, and limit switches.

1. Hydraulic Operators: Purge operating system, adjust pressure and fluid levels, and check for leaks.
2. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
3. Test and adjust controls, alarms, and safeties. Replace damaged and malfunctioning controls and equipment.

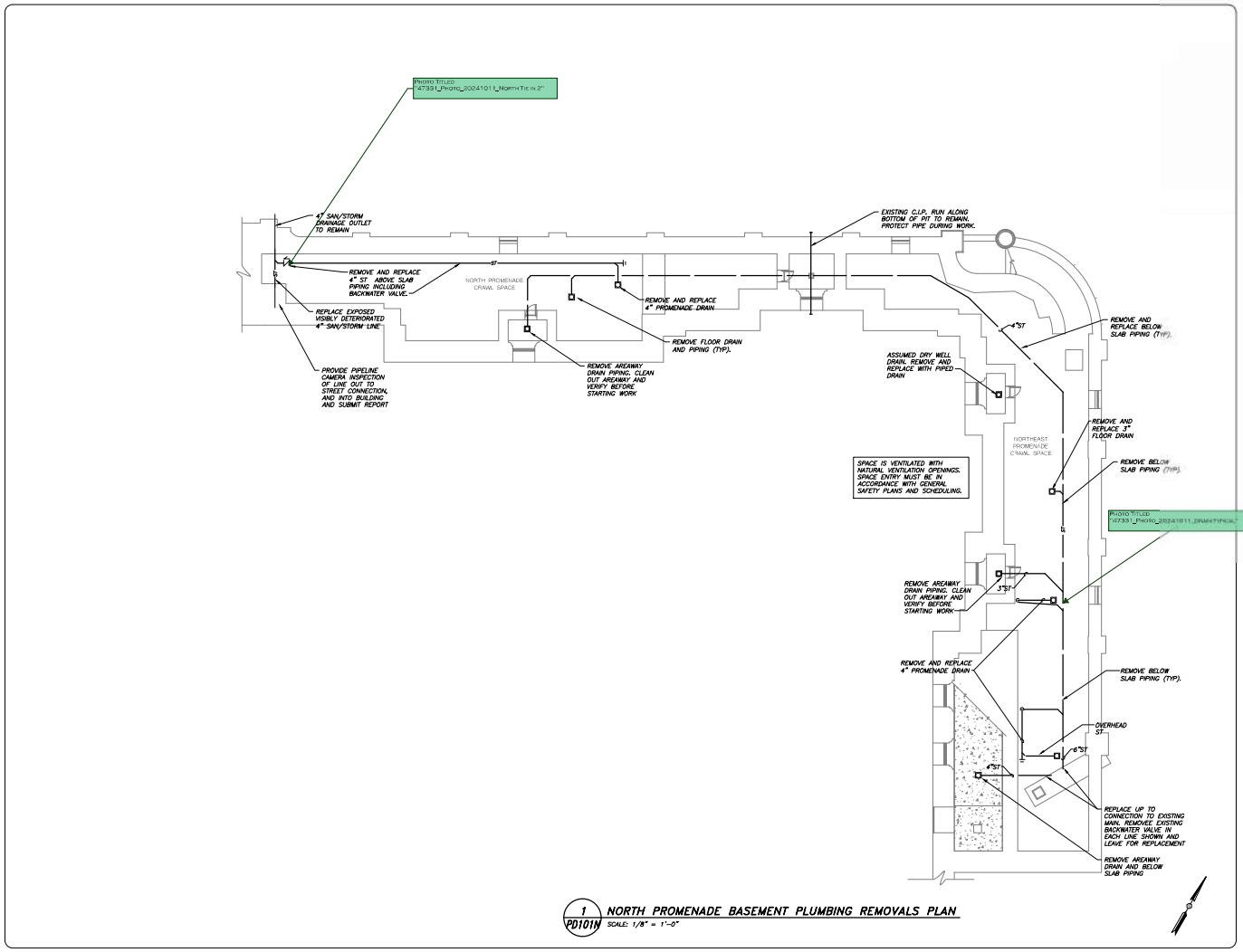
C. Lubricate hardware, gate operators, and other moving parts.

3.09 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's personnel to adjust,

operate, and maintain gates.

END OF SECTION 323119



1 PD101N NORTH PROMENADE BASEMENT PLUMBING REMOVALS PLAN
SCALE: 1/8" = 1'-0"

DESIGN & CONSTRUCTION

CERTIFICATE OF AUTHORIZATION # 31815

Sigma Psi Consulting
MECHANICAL/ELECTRICAL/PLUMBING ENGINEERS, PLLC
4 COLLAMER ROAD
MALTA, NY 12020
518-581-9428

John G. Waite Associates Architects

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CONTRACT: CONSTRUCTION

TITLE: REHABILITATE THE EASTERN APPROACH STAIRCASE, PROMENADES, PORTICO, AND EXECUTIVE RAMP

LOCATION: NEW YORK STATE CAPITOL ALBANY, NY

CLIENT: OFFICE OF GENERAL SERVICES

MARK	DATE	DESCRIPTION

PROJECT NUMBER:	47331 - C
DESIGNED BY:	PJM
DRAWN BY:	PJM
FIELD CHECK:	PJM
APPROVED:	Approver

SHEET TITLE: NORTH PROMENADE BASEMENT PLUMBING REMOVALS PLAN

DRAWING NUMBER: PD101N

SHEET: OF

Xref PLOT SHEET

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47331_PHOTO_20241011_NORTH TIE IN 2

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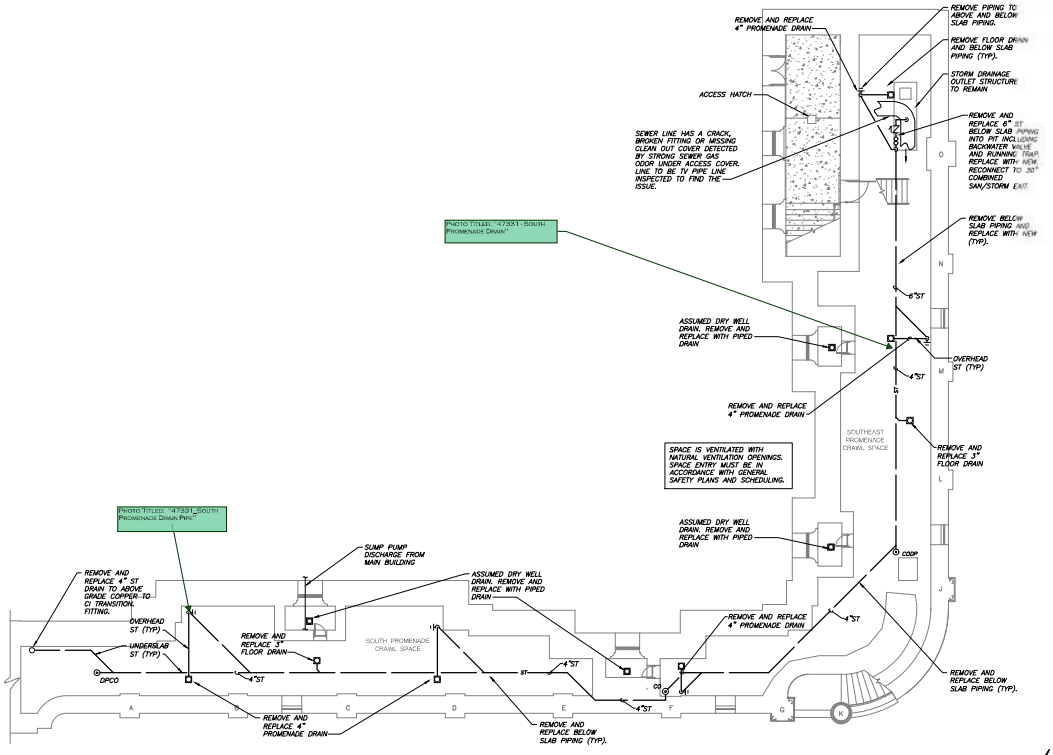

1 PD101S **SOUTH PROMENADE BASEMENT PLUMBING REMOVALS PLAN**
SCALE: 1/8" = 1'-0"

DESIGN & CONSTRUCTION

CERTIFICATE OF AUTHORIZATION # 31815

Sigma Psi Consulting
MECHANICAL/ELECTRICAL/PLUMBING ENGINEERS, PLLC
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MALTA, NY 12020
518-581-9428

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LOCATION: NEW YORK STATE CAPITOL ALBANY, NY

CLIENT: OFFICE OF GENERAL SERVICES

MARK	DATE	DESCRIPTION

PROJECT NUMBER:	47331 - C
DESIGNED BY:	PJM
DRAWN BY:	PJM
FIELD CHECK:	PJM
APPROVED:	Approver

SHEET TITLE: SOUTH PROMENADE BASEMENT PLUMBING REMOVALS PLAN

DRAWING NUMBER: PD101S

SHEET: 23 OF 39

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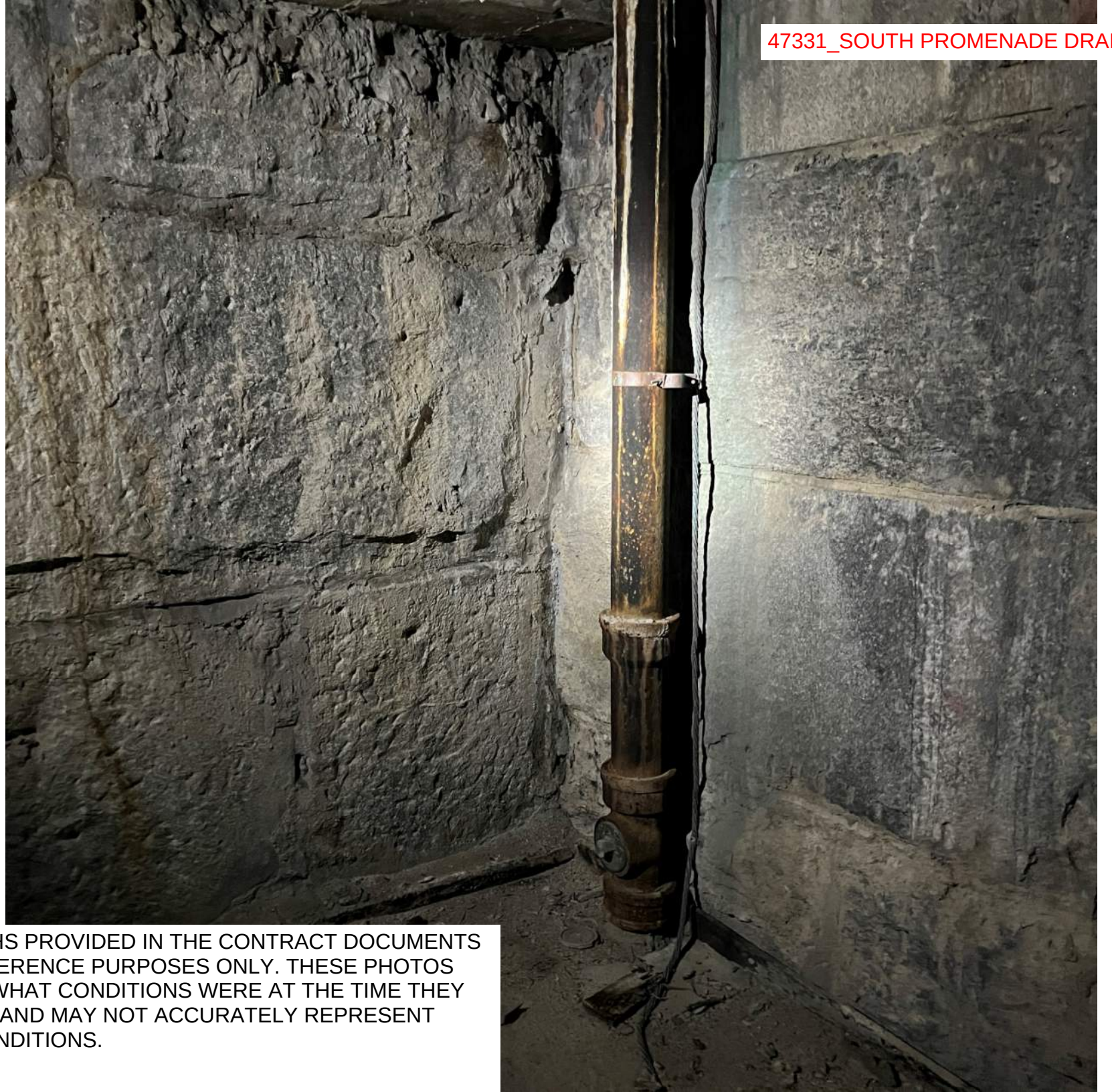
47331_SOUTH PROMENADE DRAIN PIPE



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PROPOSED LOCATION FOR DOOR 005

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EXISTING DOOR 110

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EXISTING DOOR 111

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EXISTING ORNATE METAL WORK

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EXISTING ORNATE METAL WORK

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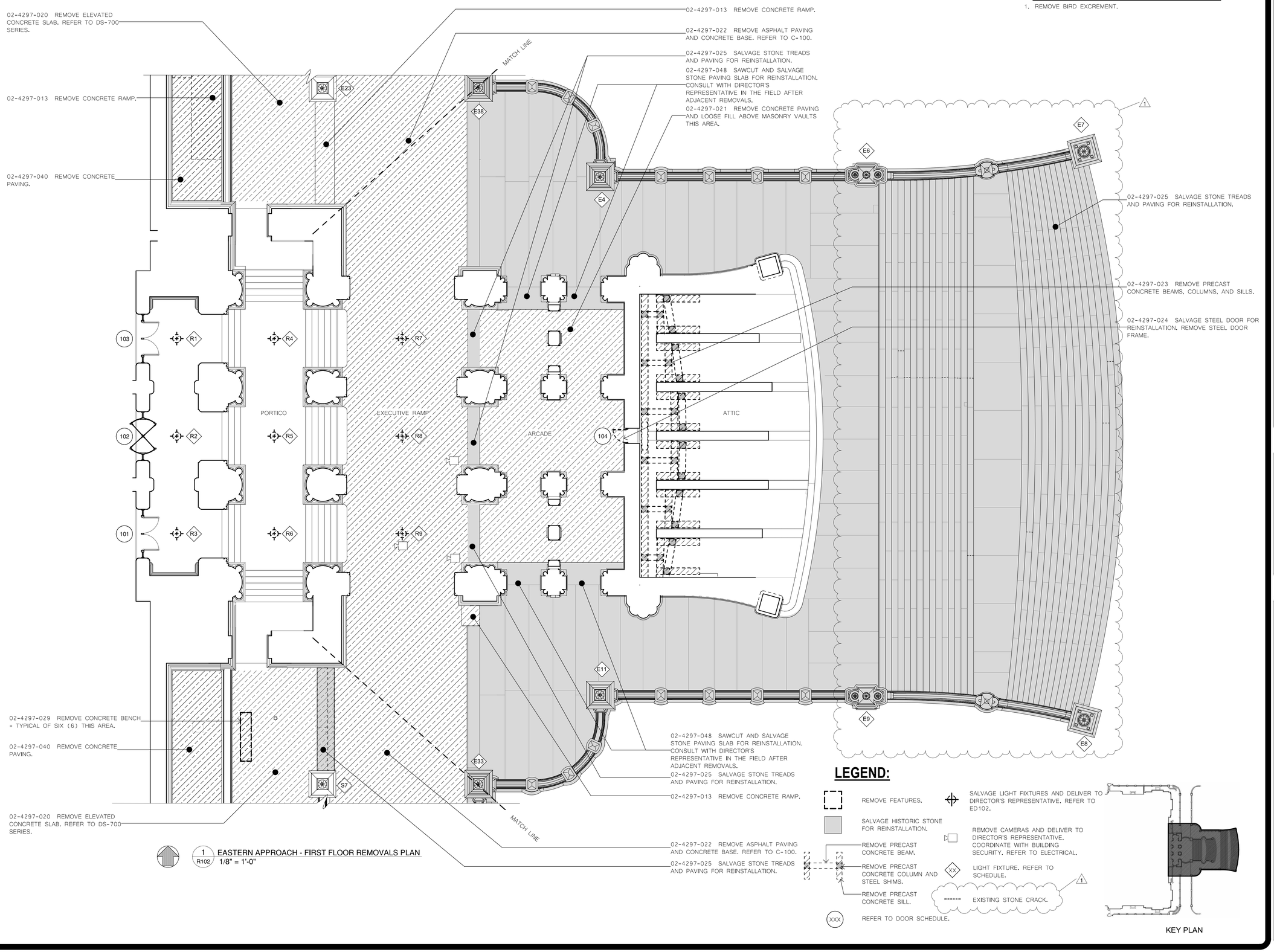
GENERAL NOTES - REMOVALS

1. REMOVE BIRD EXCREMENT.



1 / R102 EASTERN APPROACH - FIRST FLOOR REMOVALS PLAN
1/8" = 1'-0"

LEGEND:

- REMOVE FEATURES.
- SALVAGE HISTORIC STONE FOR REINSTALLATION.
- REMOVE PRECAST CONCRETE BEAM.
- REMOVE PRECAST CONCRETE COLUMN AND STEEL SHIMS.
- REMOVE PRECAST CONCRETE SILL.
- SALVAGE LIGHT FIXTURES AND DELIVER TO DIRECTOR'S REPRESENTATIVE. REFER TO ED102.
- REMOVE CAMERAS AND DELIVER TO DIRECTOR'S REPRESENTATIVE. COORDINATE WITH BUILDING SECURITY. REFER TO ELECTRICAL.
- XX LIGHT FIXTURE. REFER TO SCHEDULE.
- 1 EXISTING STONE CRACK.
- XXX REFER TO DOOR SCHEDULE.

KEY PLAN

NEW YORK STATE | Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT:

John G. Waite Associates PLLC Architects

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REGISTERED ARCHITECT JOHN G. WAITE JR. 014437 STATE OF NEW YORK

CONTRACT:

CONSTRUCTION

TITLE:

REHABILITATE THE EASTERN APPROACH STAIRCASE, PROMENADES, PORTICO, AND EXECUTIVE RAMP

LOCATION:

NEW YORK STATE CAPITOL
ALBANY, NY

CLIENT:

OFFICE OF GENERAL SERVICES

REVISED 10/11/2024

MARK	DATE	DESCRIPTION
1	10/11/2024	ADDENDUM 5
	06/21/2024	BID SET

PROJECT NUMBER:	47331 - C
DESIGNED BY:	
DRAWN BY:	
FIELD CHECK:	
APPROVED:	

SHEET TITLE:

EASTERN APPROACH - FIRST FLOOR REMOVALS PLAN

DRAWING NUMBER:

R102

SHEET: 55 OF 257

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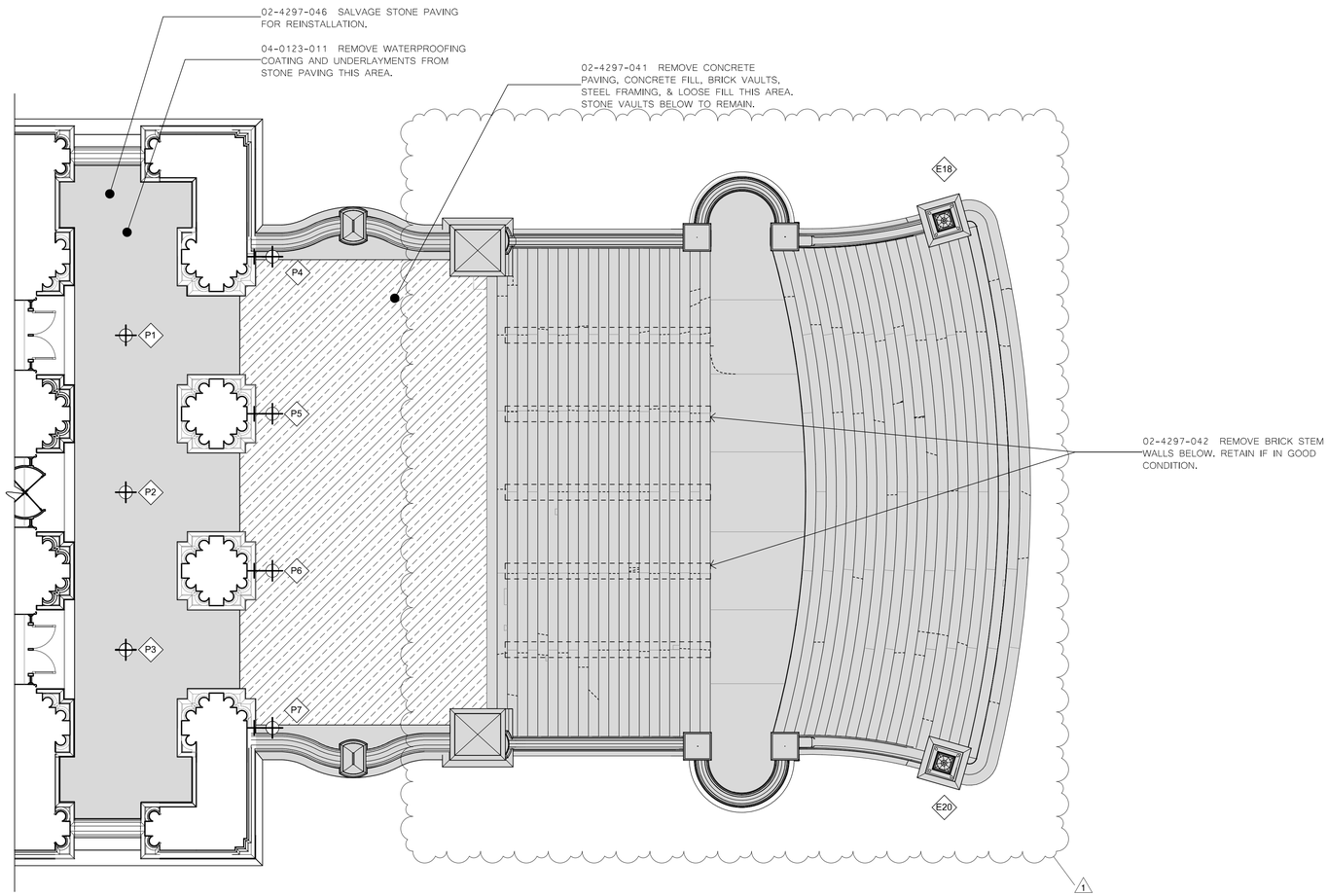
GENERAL NOTES - REMOVALS

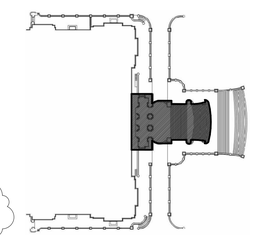
1. REMOVE BIRD EXCREMENT.



1 / R103 EASTERN APPROACH - SECOND FLOOR REMOVALS PLAN
1/8" = 1'-0"

LEGEND:

- REMOVE FEATURES.
- SALVAGE HISTORIC STONE FOR REINSTALLATION.
- SALVAGE LIGHT FIXTURES FOR RESTORATION. REFER TO ELECTRICAL.
- EXISTING STONE CRACK.



KEY PLAN

NEW YORK STATE | Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT:

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REGISTERED ARCHITECT JOHN G. WAITE 014437 STATE OF NEW YORK

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TITLE:
REHABILITATE THE EASTERN APPROACH STAIRCASE, PROMENADES, PORTICO, AND EXECUTIVE RAMP

LOCATION:
NEW YORK STATE CAPITOL
ALBANY, NY

CLIENT:
OFFICE OF GENERAL SERVICES

REVISED 10/11/2024

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1	10/11/2024	ADDENDUM 5
	06/21/2024	BID SET

PROJECT NUMBER:	47331 - C
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FIELD CHECK:	
APPROVED:	

SHEET TITLE:
EASTERN APPROACH - SECOND FLOOR REMOVALS PLAN

DRAWING NUMBER:
R103

SHEET: 56 OF 257

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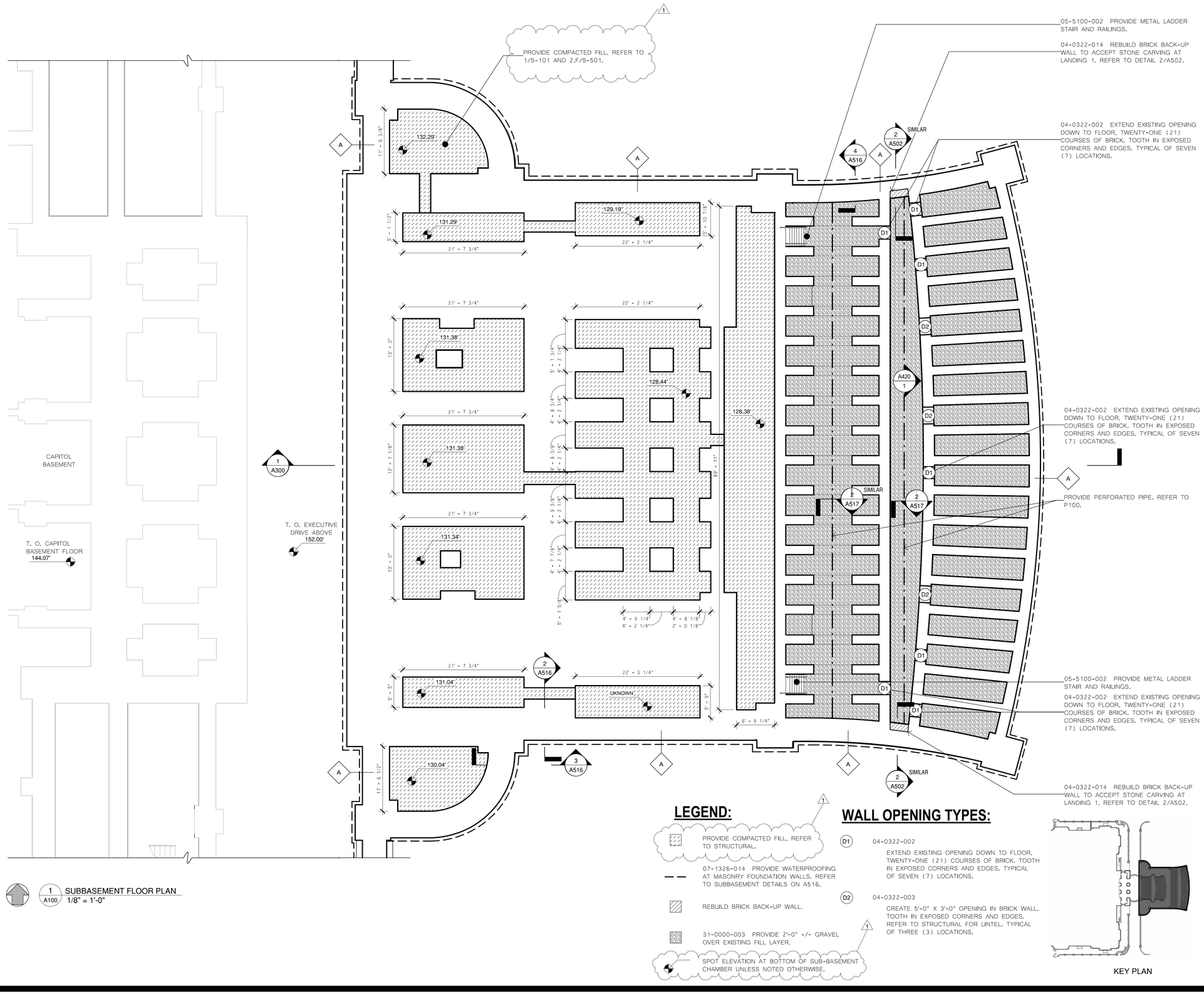

1 A100 SUBBASEMENT FLOOR PLAN
1/8" = 1'-0"

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DESIGN & CONSTRUCTION

CONSULTANT:

John G. Waite Associates PLLC Architects

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REVISED 10/11/2024

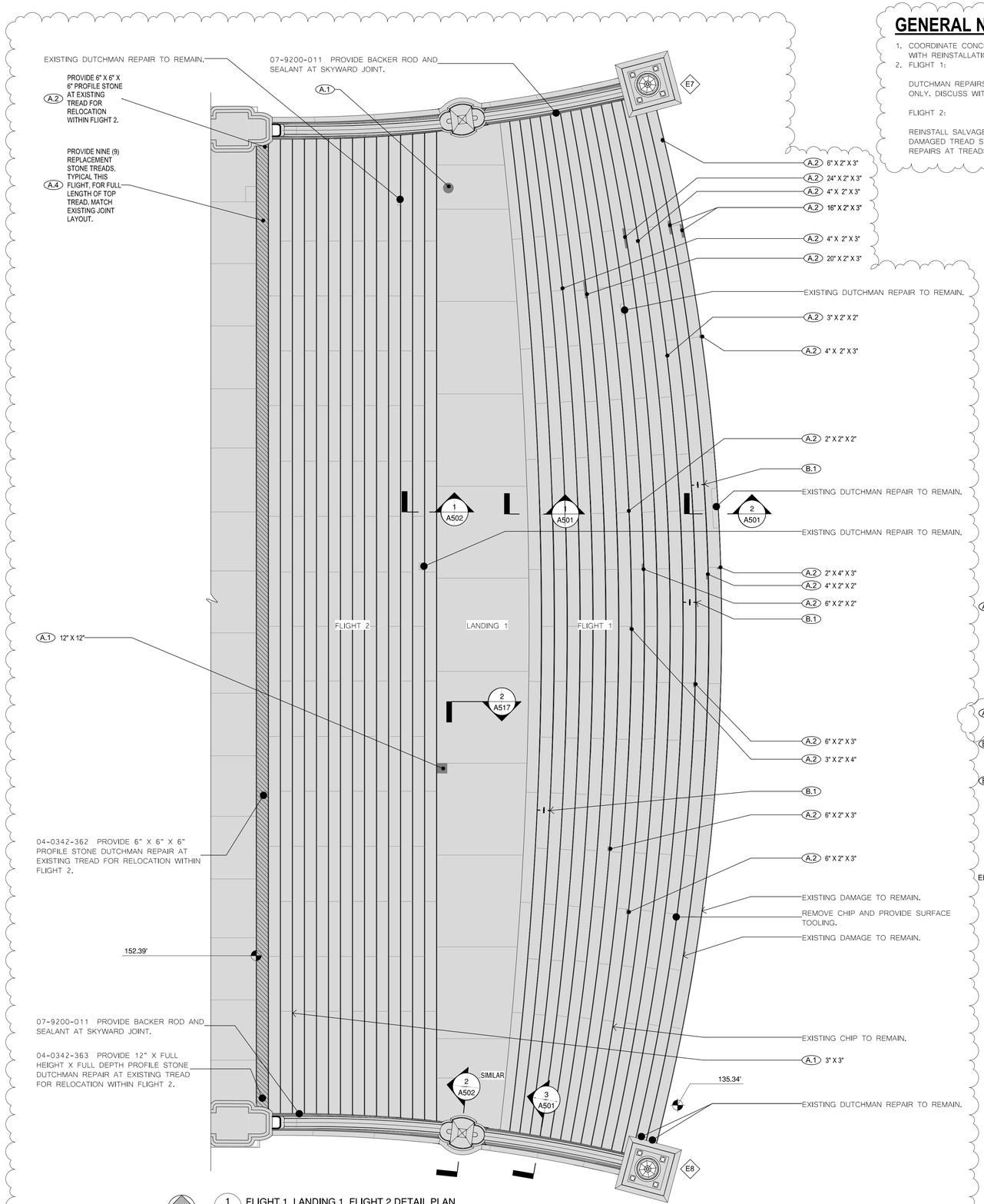
MARK	DATE	DESCRIPTION
1	10/11/2024	ADDENDUM 5
	06/21/2024	BID SET

PROJECT NUMBER:	47331 - C
DESIGNED BY:	
DRAWN BY:	
FIELD CHECK:	
APPROVED:	

SHEET TITLE:
SUBBASEMENT FLOOR PLAN

DRAWING NUMBER:
A100

SHEET: 63 OF 257



1 A102.1 FLIGHT 1, LANDING 1, FLIGHT 2 DETAIL PLAN
3/16" = 1'-0"

GENERAL NOTES:

1. COORDINATE CONCEALED CONDUIT INSTALLATION FOR LIGHT FIXTURES BELOW WITH REINSTALLATION OF STONE TREADS AND LANDINGS.
2. FLIGHT 1:

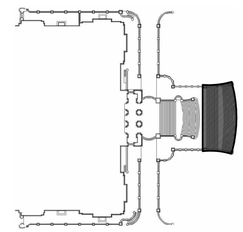
   DUTCHMAN REPAIRS AT FLIGHT 1 TO BE COMPLETED WITH SALVAGED STONE ONLY. DISCUSS WITH DIRECTOR'S REPRESENTATIVE.

   FLIGHT 2:

   REINSTALL SALVAGED TOP TREAD STONES AT LOCATION OF CRACKED AND DAMAGED TREAD STONES. RETAIN DAMAGED SALVAGED STONE FOR DUTCHMAN REPAIRS AT TREADS. DISCUSS WITH DIRECTOR'S REPRESENTATIVE.

LEGEND:

- A.1 — 04-0342-200 PROVIDE DUTCHMAN REPAIR.
- A.2 — 04-0342-300 PROVIDE PROFILE STONE DUTCHMAN REPAIR IN SIZE INDICATED.
- A.3 — 04-0342-400 PROVIDE DECORATIVE STONE DUTCHMAN REPAIR.
- A.4 — 04-0342-600 PROVIDE REPLACEMENT STONE.
- B.1 — 04-0342-005 PROVIDE PIN REPAIR.
- B.2 — 04-0342-006 PROVIDE MORTAR CRACK REPAIR.
- EXISTING STONE TO BE SALVAGED AND RESET.
- ELEVATION — SPOT ELEVATION



KEY PLAN

NEW YORK STATE | Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT:

John G. Waite Associates PLLC Architects

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REGISTERED ARCHITECT JOHN G. WAITE JR. 013437 STATE OF NEW YORK

CONTRACT: CONSTRUCTION

TITLE: REHABILITATE THE EASTERN APPROACH STAIRCASE, PROMENADES, PORTICO, AND EXECUTIVE RAMP

LOCATION: NEW YORK STATE CAPITOL ALBANY, NY

CLIENT: OFFICE OF GENERAL SERVICES

REVISED 10/11/2024

MARK	DATE	DESCRIPTION
1	10/11/2024	ADDENDUM 5
	06/21/2024	BID SET

PROJECT NUMBER:	47331 - C
DESIGNED BY:	
DRAWN BY:	
FIELD CHECK:	
APPROVED:	

SHEET TITLE:

FLIGHT 1, LANDING 1, FLIGHT 2 DETAIL PLAN

DRAWING NUMBER:

A102.1

SHEET: 68 OF 257

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36x24 PLOT SHEET

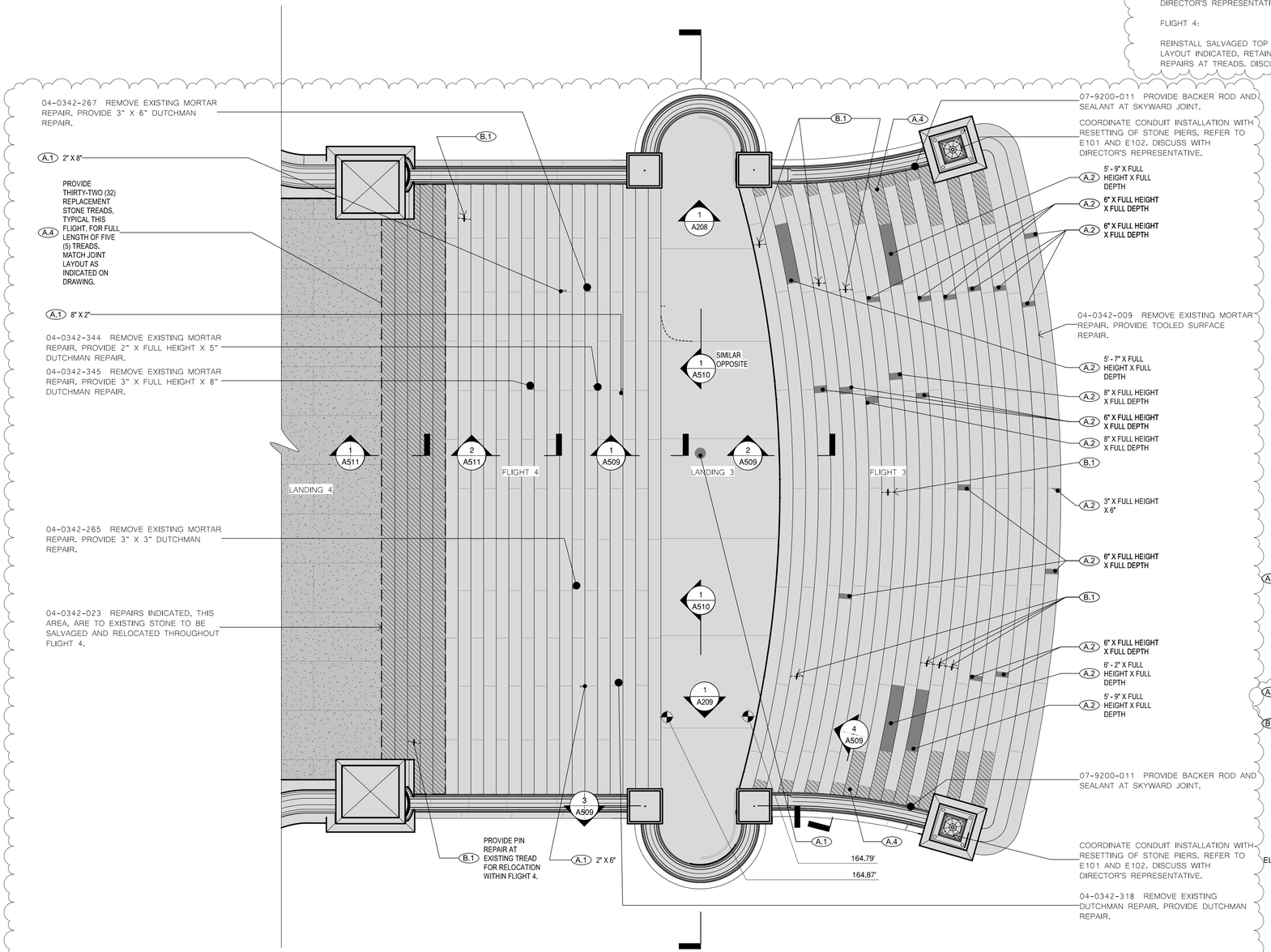
GENERAL NOTES:

1. COORDINATE CONCEALED CONDUIT INSTALLATION FOR LIGHT FIXTURES BELOW WITH REINSTALLATION OF STONE TREADS AND LANDINGS.
2. PROPOSED JOINT PATTERN DIFFERS FROM EXISTING. TYPICAL FLIGHTS 3 AND 4. REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL DETAILS. DISCUSS WITH DIRECTOR'S REPRESENTATIVE.
3. FLIGHT 3:

   RADIUS OF FLIGHT 3 VARIES BY TREAD. REINSTALL AND PROVIDE STONE REPAIRS WITH SALVAGED STONE FROM WITHIN SAME TREAD. LOCATE REPLACEMENT STONE AT END AS INDICATED IN DRAWING. DISCUSS WITH DIRECTOR'S REPRESENTATIVE.

   FLIGHT 4:

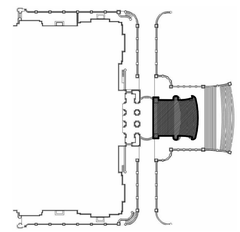
   REINSTALL SALVAGED TOP FIVE (5) STONE TREADS THROUGHOUT FLIGHT 4 IN LAYOUT INDICATED. RETAIN DAMAGED SALVAGED STONE FOR DUTCHMAN REPAIRS AT TREADS. DISCUSS WITH DIRECTOR'S REPRESENTATIVE.



1 A103.1 EASTERN APPROACH - SECOND FLOOR DETAIL PLAN -FLIGHT 3-4
3/16" = 1'-0"

LEGEND:

- A.1 — 04-0342-200 PROVIDE DUTCHMAN REPAIR.
- A.2 — 04-0342-300 PROVIDE PROFILE STONE DUTCHMAN REPAIR IN SIZE INDICATED.
- A.3 — 04-0342-400 PROVIDE DECORATIVE STONE DUTCHMAN REPAIR.
- A.4 — 04-0342-600 PROVIDE REPLACEMENT STONE.
- B.1 — 04-0342-005 PROVIDE PIN REPAIR.
- EXISTING STONE TO BE SALVAGED AND RESET.
- PROVIDE STONE PAVING.
- ELEVATION — SPOT ELEVATION



KEY PLAN

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DESIGN & CONSTRUCTION

CONSULTANT:

John G. Waite Associates PLLC Architects

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REGISTERED ARCHITECT JOHN G. WAITE JR. 014437 STATE OF NEW YORK

CONTRACT: CONSTRUCTION

TITLE: REHABILITATE THE EASTERN APPROACH STAIRCASE, PROMENADES, PORTICO, AND EXECUTIVE RAMP

LOCATION: NEW YORK STATE CAPITOL ALBANY, NY

CLIENT: OFFICE OF GENERAL SERVICES

REVISED 10/11/2024

1	10/11/2024	ADDENDUM 5
	09/27/2024	BID SET
MARK	DATE	DESCRIPTION

PROJECT NUMBER:	47331 - C
DESIGNED BY:	
DRAWN BY:	
FIELD CHECK:	
APPROVED:	

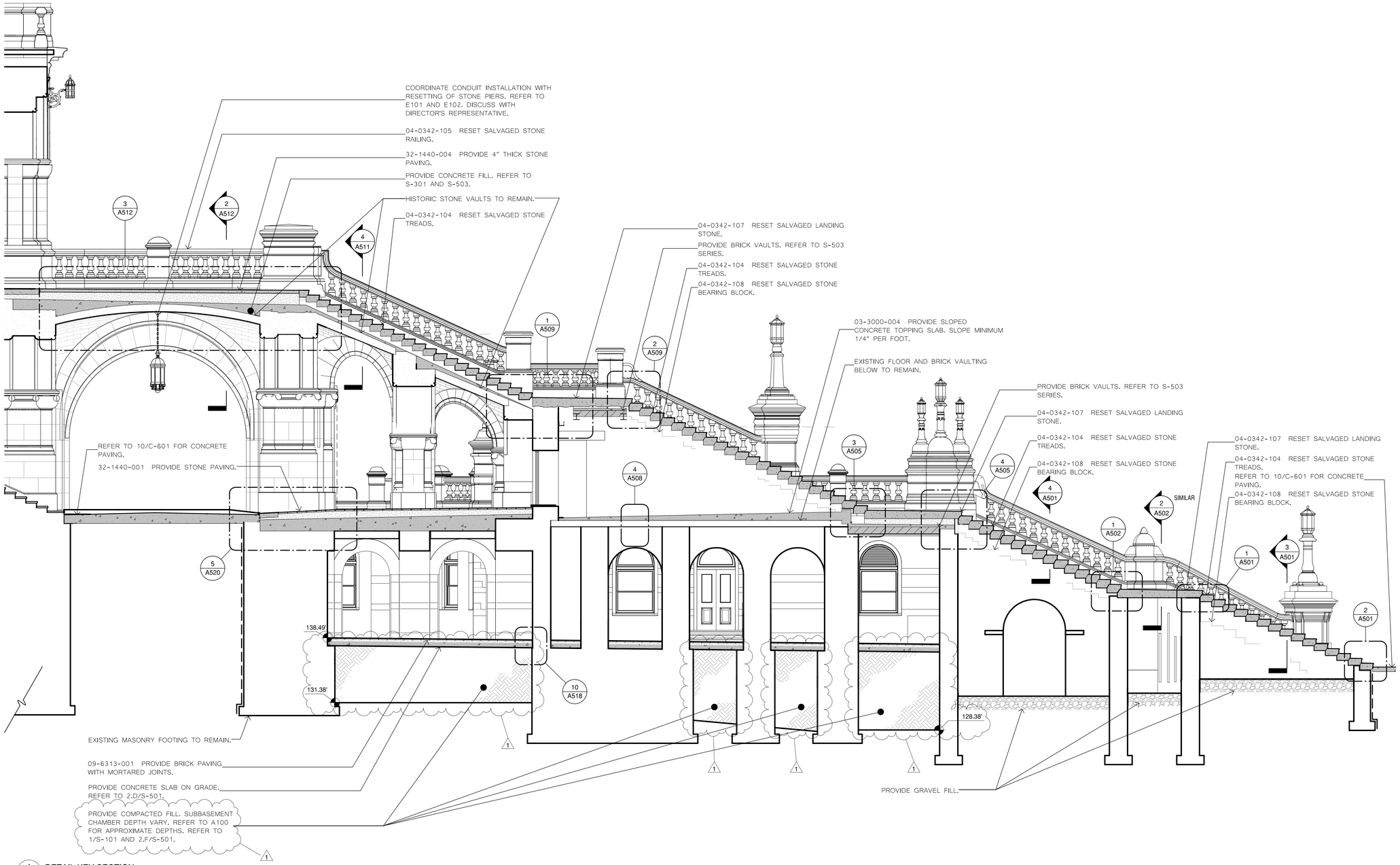
SHEET TITLE:

FLIGHT 3, LANDING 3, FLIGHT 4 DETAIL PLAN

DRAWING NUMBER:

A103.1

SHEET: 74 OF 257



1 A301 **DETAIL KEY SECTION**
3/16" = 1'-0"

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DESIGN & CONSTRUCTION

CONSULTANT:

John G. Waite Associates PLLC Architects

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REGISTERED ARCHITECT JOHN G. WAITE JR. 014437 STATE OF NEW YORK

CONTRACT:
CONSTRUCTION

TITLE:
REHABILITATE THE EASTERN APPROACH STAIRCASE, PROMENADES, PORTICO, AND EXECUTIVE RAMP

LOCATION:
NEW YORK STATE CAPITOL
ALBANY, NY

CLIENT:
OFFICE OF GENERAL SERVICES

REVISED 10/11/2024

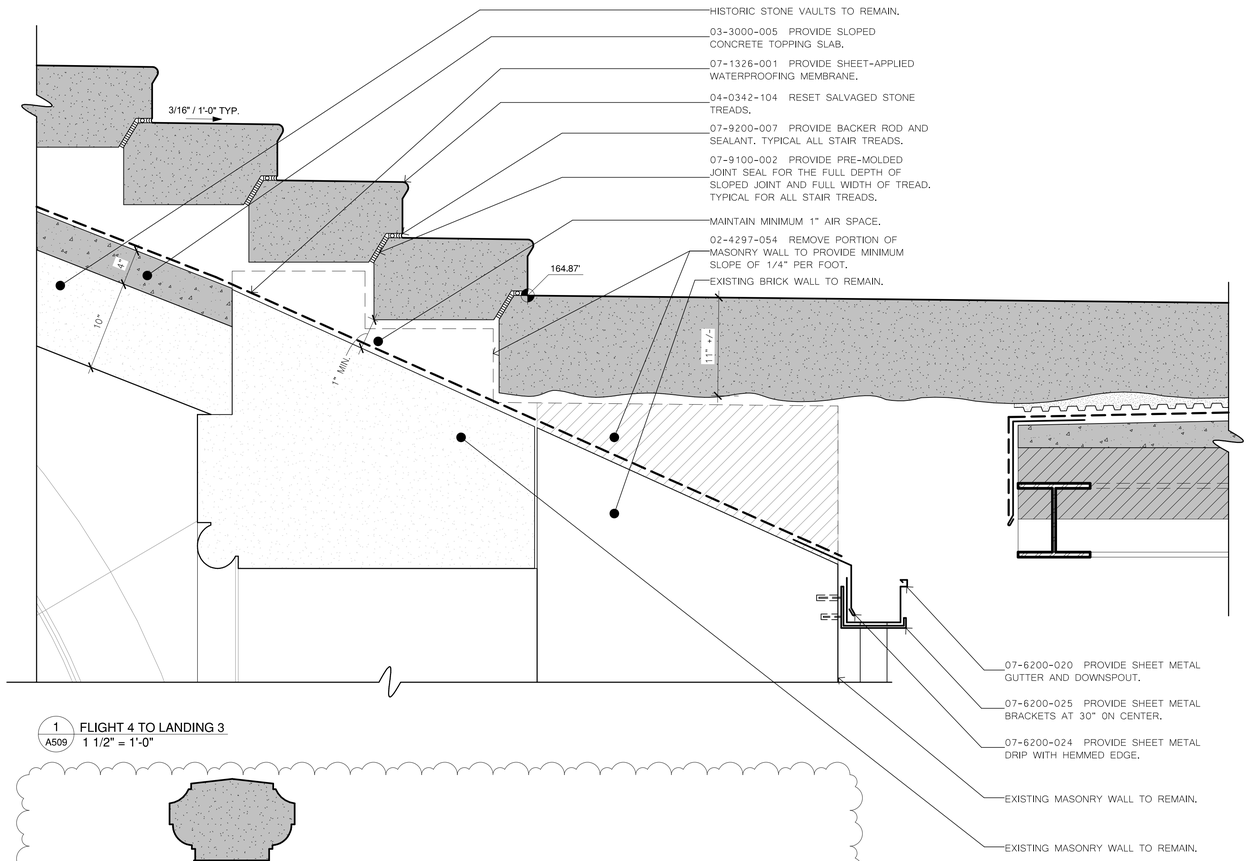
MARK	DATE	DESCRIPTION
1	10/11/2024	ADDENDUM 5
	06/21/2024	BID SET

PROJECT NUMBER:	47331 - C
DESIGNED BY:	
DRAWN BY:	
FIELD CHECK:	
APPROVED:	

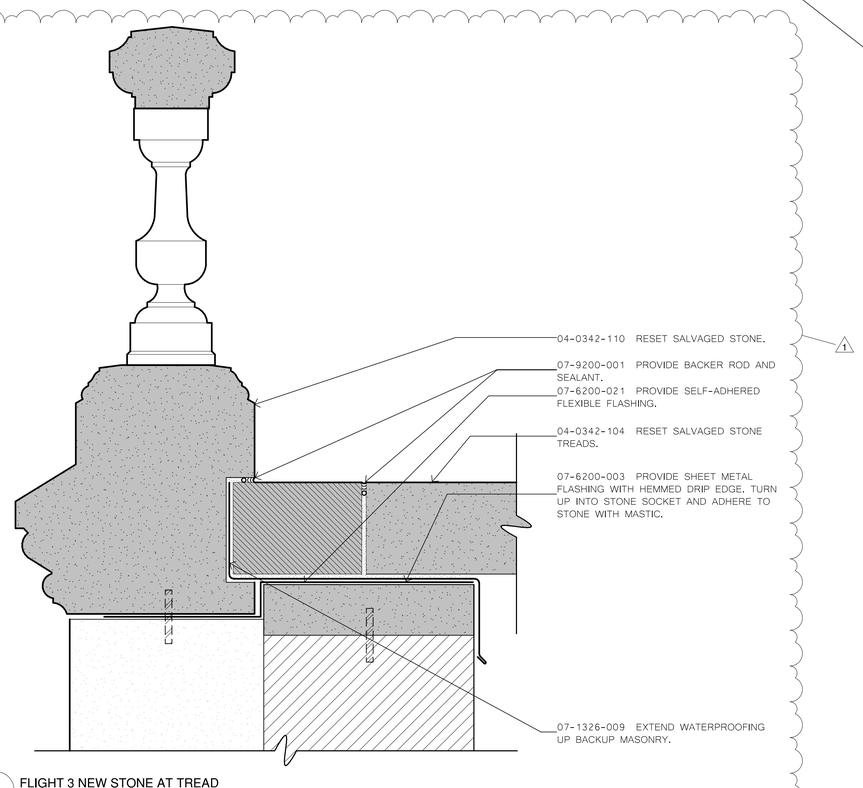
SHEET TITLE:
DETAIL KEY SECTION

DRAWING NUMBER:
A301

SHEET: 121 OF 257



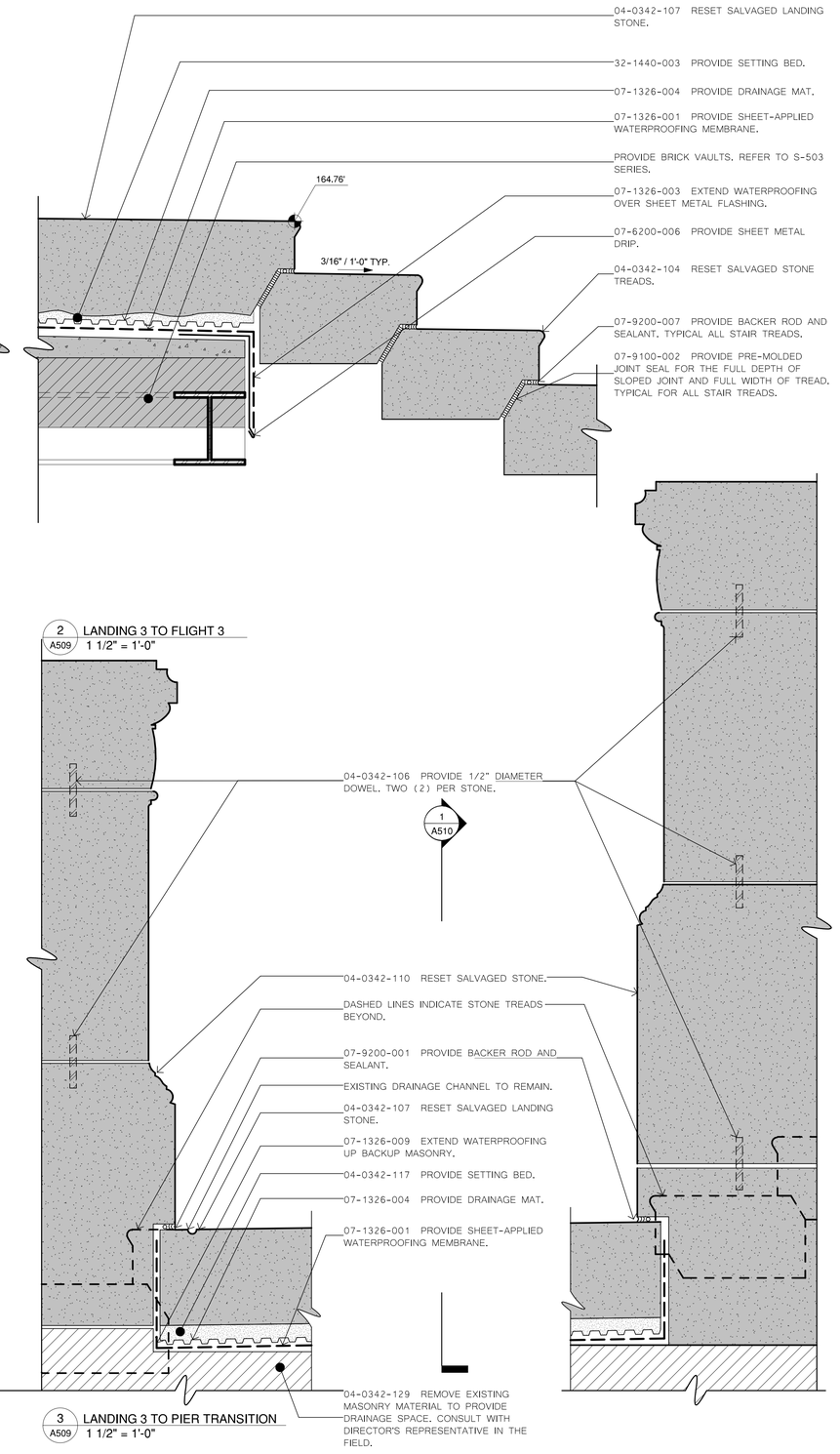
1 A509 FLIGHT 4 TO LANDING 3
1 1/2" = 1'-0"



4 A509 FLIGHT 3 NEW STONE AT TREAD
1 1/2" = 1'-0"

GENERAL NOTES:

1. ALLOW FOR FIELD INSPECTION OF PRE-MOLDED JOINT SEAL, MORTAR, BACKER ROD, AND SEALANT INSTALLATION AT EACH STONE TREAD.



2 A509 LANDING 3 TO FLIGHT 3
1 1/2" = 1'-0"

3 A509 LANDING 3 TO PIER TRANSITION
1 1/2" = 1'-0"

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DESIGN & CONSTRUCTION

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REGISTERED ARCHITECT JOHN G. WAITE 014437 STATE OF NEW YORK

CONTRACT:
CONSTRUCTION

TITLE:
REHABILITATE THE EASTERN APPROACH STAIRCASE, PROMENADES, PORTICO, AND EXECUTIVE RAMP

LOCATION:
NEW YORK STATE CAPITOL
ALBANY, NY

CLIENT:
OFFICE OF GENERAL SERVICES

REVISED 10/11/2024

MARK	DATE	DESCRIPTION
1	10/11/2024 06/21/2024	ADDENDUM 5 BID SET

PROJECT NUMBER: 47331 - C

DESIGNED BY:

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FIELD CHECK:

APPROVED:

SHEET TITLE:

FLIGHT 3 DETAILS

DRAWING NUMBER:

A509

SHEET: 154 OF 257

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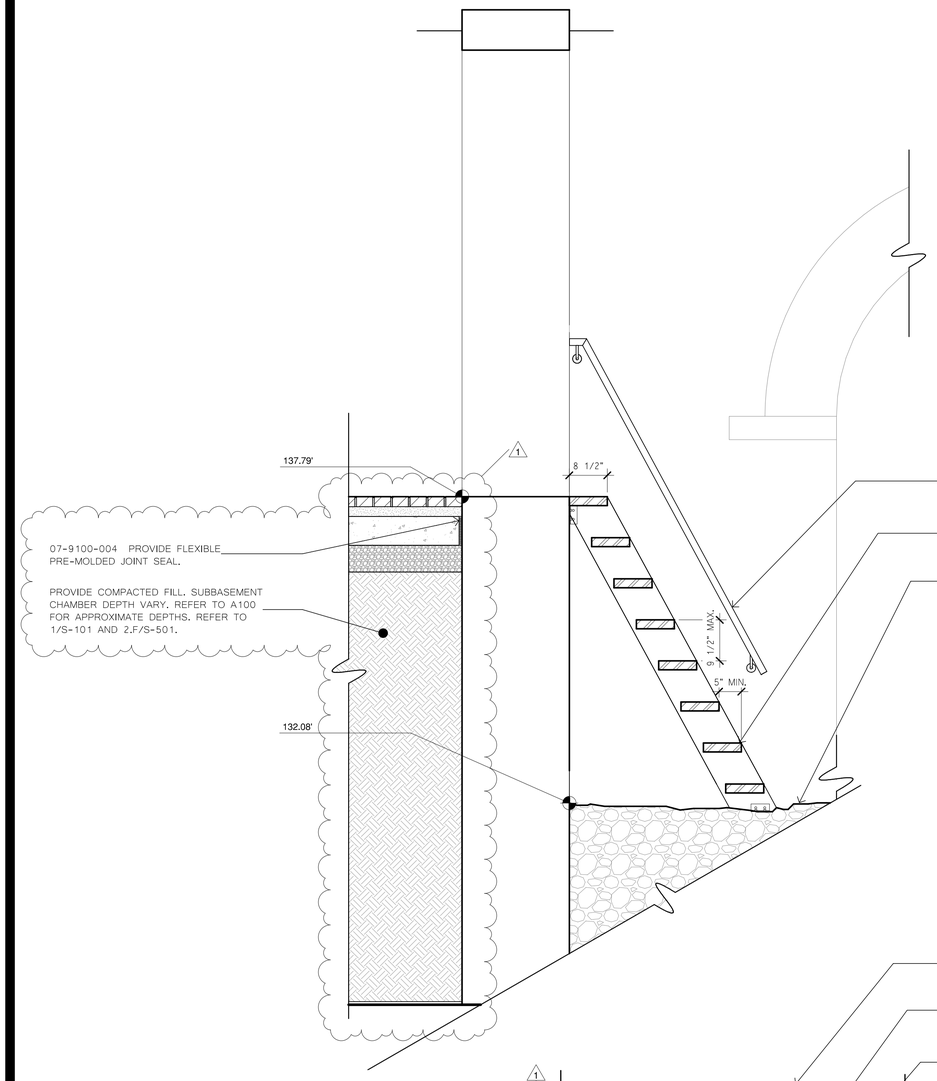
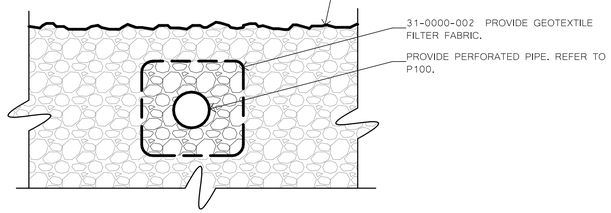
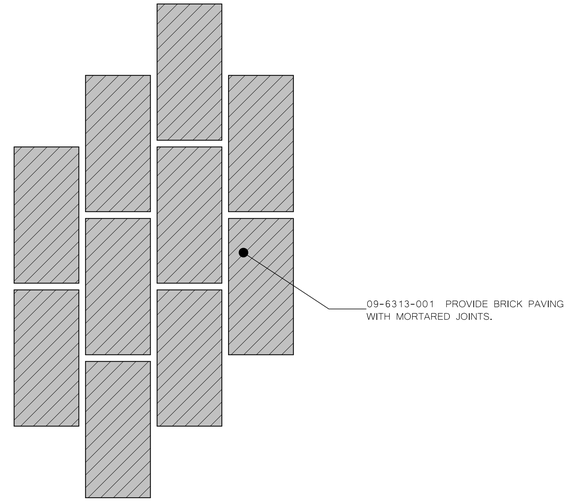


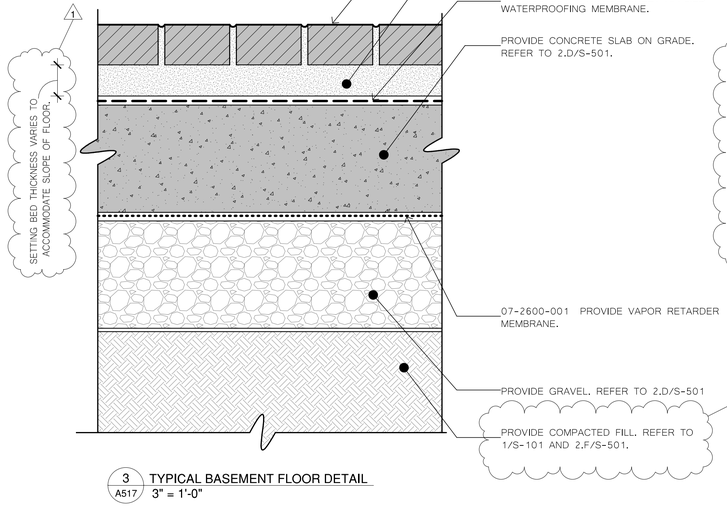
1 A517 SUBBASEMENT LADDER STAIR DETAIL
3/4" = 1'-0"



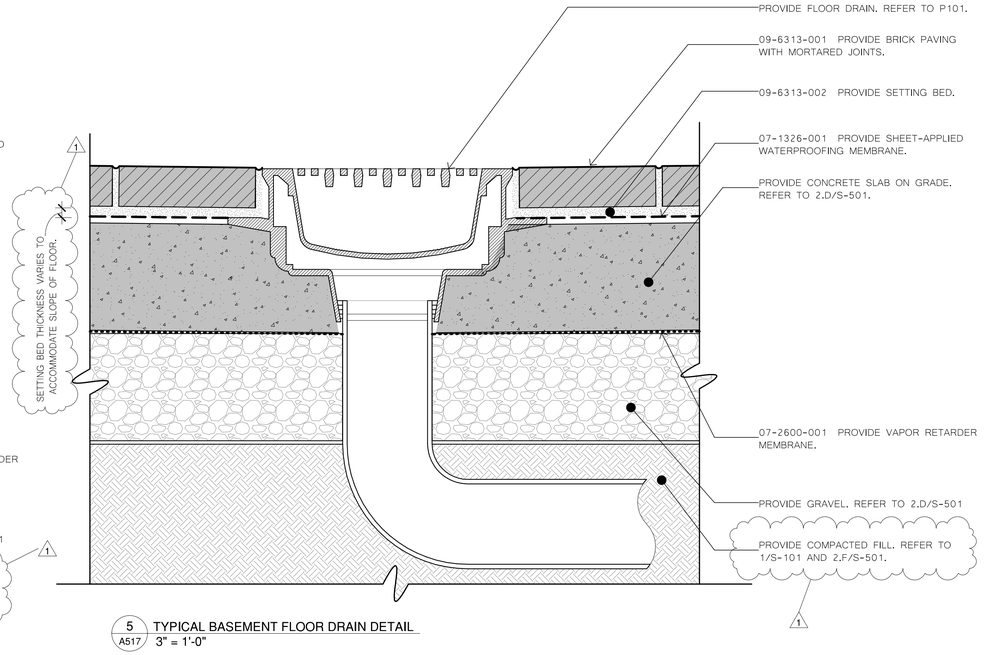
2 A517 PERFORATED PIPE DETAIL
1 1/2" = 1'-0"



4 A517 TYPICAL BRICK PAVING PATTERN
3" = 1'-0"



3 A517 TYPICAL BASEMENT FLOOR DETAIL
3" = 1'-0"



5 A517 TYPICAL BASEMENT FLOOR DRAIN DETAIL
3" = 1'-0"

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DESIGN & CONSTRUCTION

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REGISTERED ARCHITECT JOHN G. WAITE 014437 STATE OF NEW YORK

CONTRACT:
CONSTRUCTION

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REHABILITATE THE EASTERN APPROACH STAIRCASE, PROMENADES, PORTICO, AND EXECUTIVE RAMP

LOCATION:
NEW YORK STATE CAPITOL
ALBANY, NY

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MARK	DATE	DESCRIPTION
1	10/11/2024 06/21/2024	ADDENDUM 5 BID SET

PROJECT NUMBER:	47331 - C
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FIELD CHECK:	
APPROVED:	

SHEET TITLE:

BASEMENT & SUBBASEMENT DETAILS

DRAWING NUMBER:
A517

SHEET: 162 OF 257

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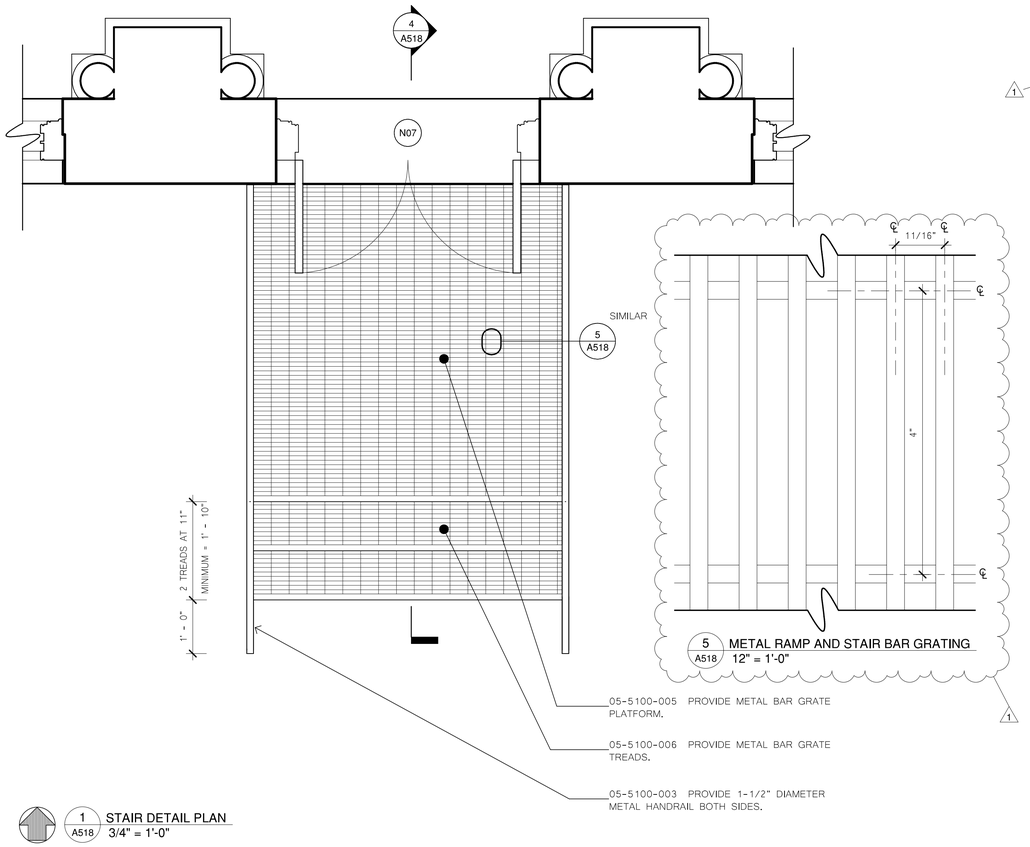
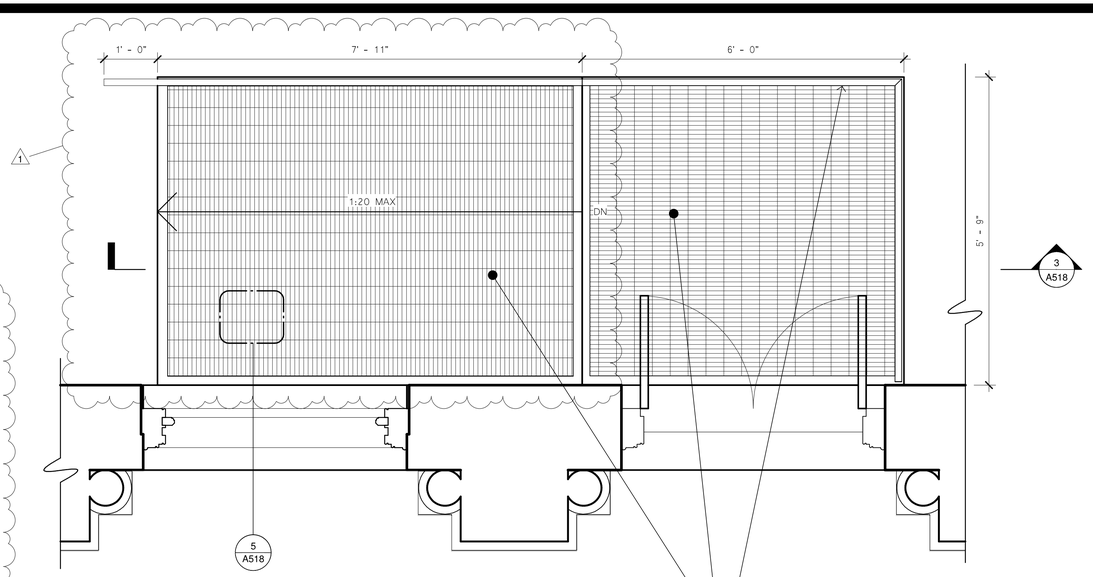
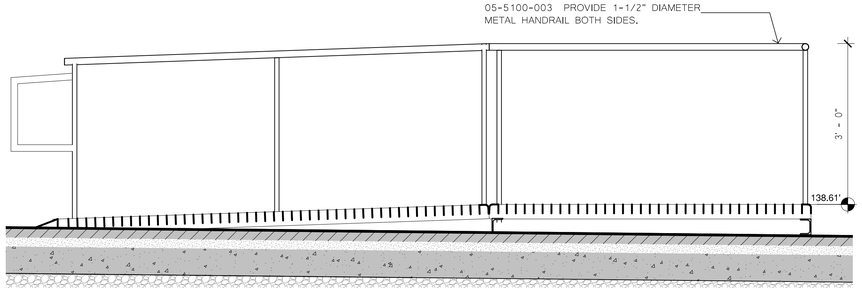


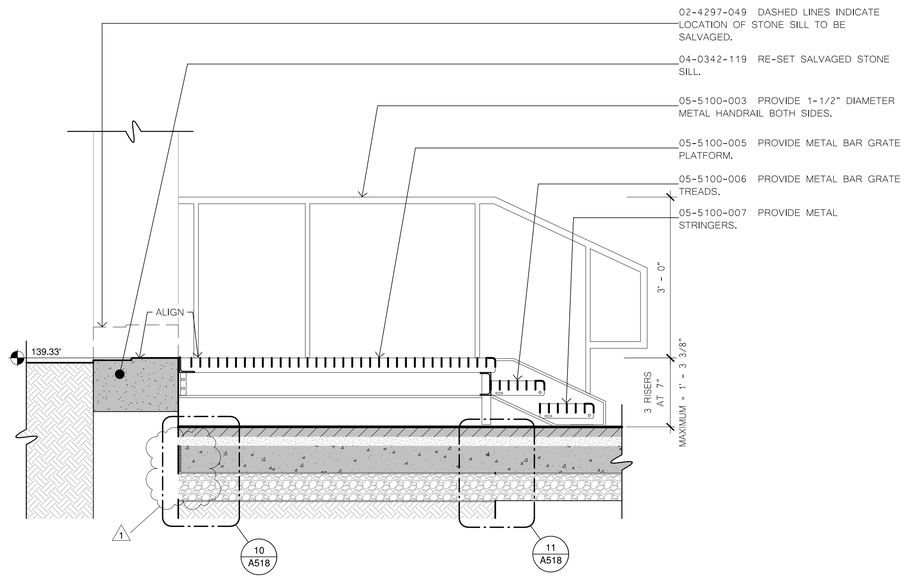
1 A518 STAIR DETAIL PLAN
3/4" = 1'-0"

5 A518 METAL RAMP AND STAIR BAR GRATING
12" = 1'-0"

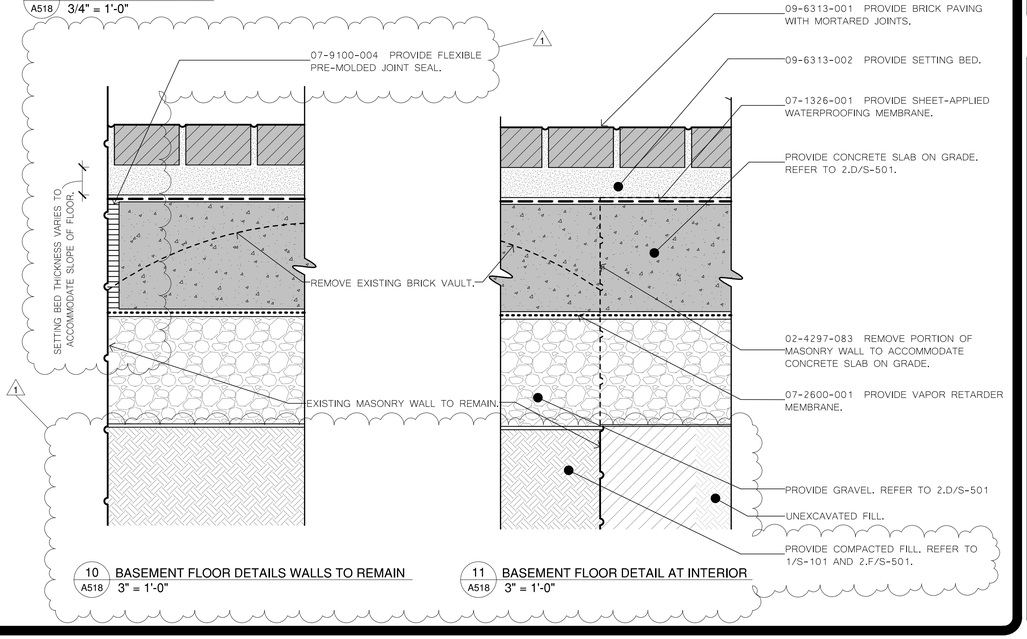


2 A518 RAMP DETAIL PLAN
3/4" = 1'-0"





4 A518 STAIR DETAIL SECTION
3/4" = 1'-0"



3 A518 RAMP DETAIL SECTION
3/4" = 1'-0"

10 A518 BASEMENT FLOOR DETAILS WALLS TO REMAIN
3" = 1'-0"

11 A518 BASEMENT FLOOR DETAIL AT INTERIOR
3" = 1'-0"

NEW YORK STATE | Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT:

John G. Waite Associates PLLC Architects

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REGISTERED ARCHITECT JOHN G. WAITE JR. No. 014437 STATE OF NEW YORK

CONTRACT:
CONSTRUCTION

TITLE:
REHABILITATE THE EASTERN APPROACH STAIRCASE, PROMENADES, PORTICO, AND EXECUTIVE RAMP

LOCATION:
NEW YORK STATE CAPITOL
ALBANY, NY

CLIENT:
OFFICE OF GENERAL SERVICES

REVISED 10/11/2024

MARK	DATE	DESCRIPTION
1	10/11/2024 06/21/2024	ADDENDUM 5 BID SET
PROJECT NUMBER:		47331 - C
DESIGNED BY:		
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FIELD CHECK:		
APPROVED:		

SHEET TITLE:

BASEMENT DETAILS

DRAWING NUMBER:

A518

SHEET: 163 OF 257

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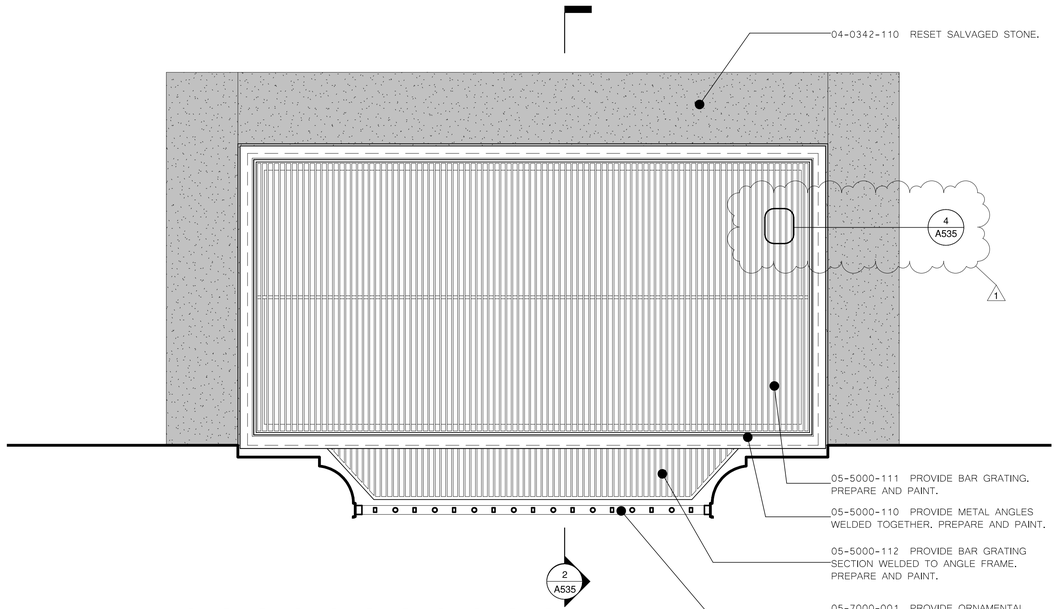
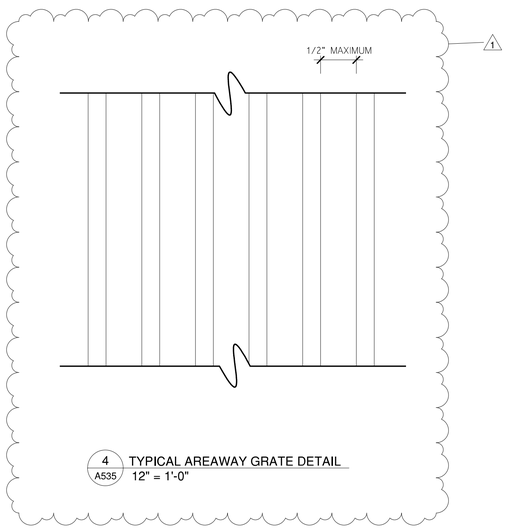
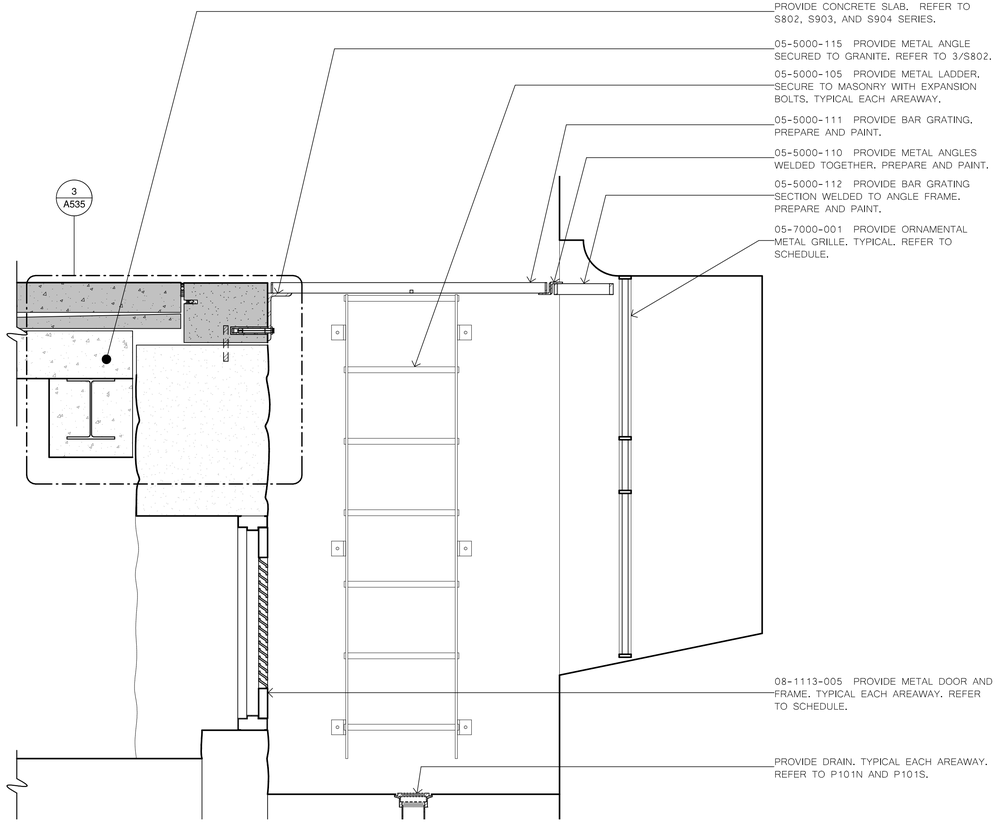


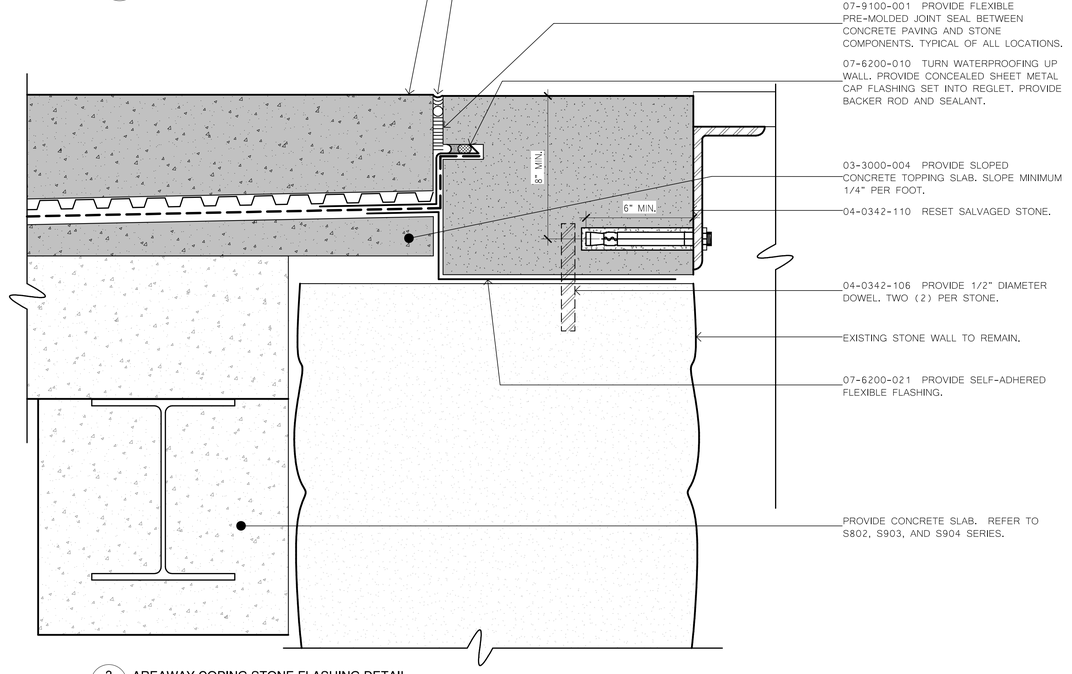
1 A535 PROMENADE TYPICAL AREAWAY GRATE DETAIL PLAN
1" = 1'-0"



4 A535 TYPICAL AREAWAY GRATE DETAIL
12" = 1'-0"



2 A535 TYPICAL AREAWAY DETAIL SECTION
1" = 1'-0"



3 A535 AREAWAY COPING STONE FLASHING DETAIL
3" = 1'-0"

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DESIGN & CONSTRUCTION

CONSULTANT:

John G. Waite Associates PLLC Architects

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CONTRACT:
CONSTRUCTION

TITLE:
REHABILITATE THE EASTERN APPROACH STAIRCASE, PROMENADES, PORTICO, AND EXECUTIVE RAMP

LOCATION:
NEW YORK STATE CAPITOL
ALBANY, NY

CLIENT:
OFFICE OF GENERAL SERVICES

REVISED 10/11/2024

MARK	DATE	DESCRIPTION
1	10/11/2024 06/21/2024	ADDENDUM 5 BID SET

PROJECT NUMBER:	47331 - C
DESIGNED BY:	
DRAWN BY:	
FIELD CHECK:	
APPROVED:	

SHEET TITLE:
PROMENADE - AREAWAY DETAILS

DRAWING NUMBER:
A535

SHEET: 174 OF 257

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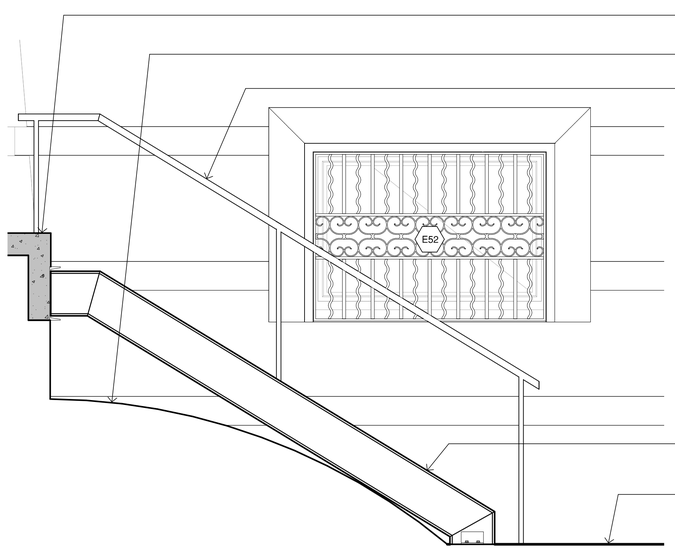
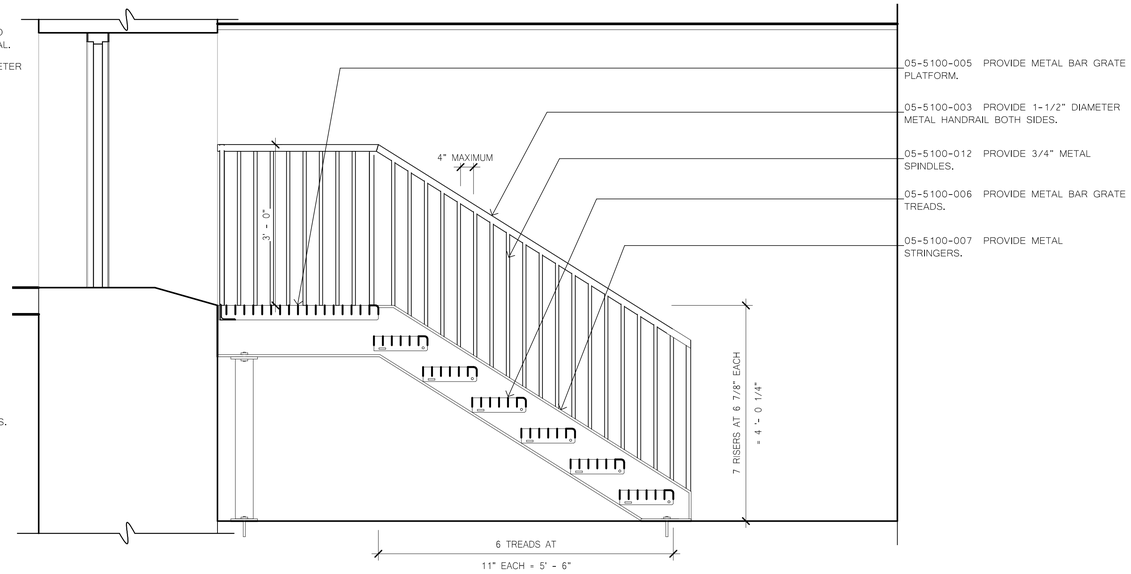
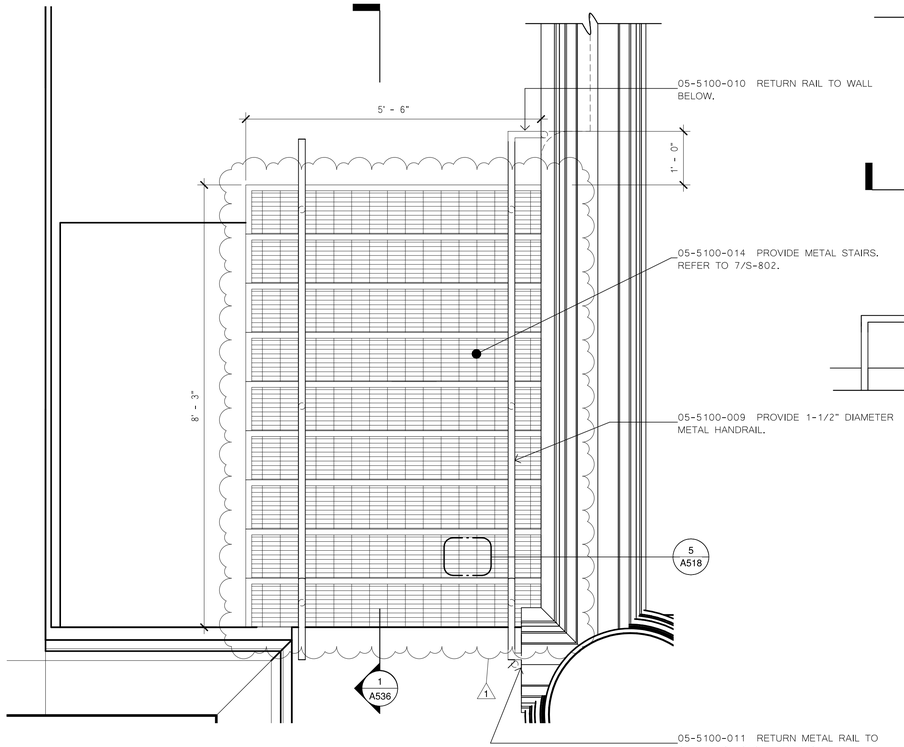


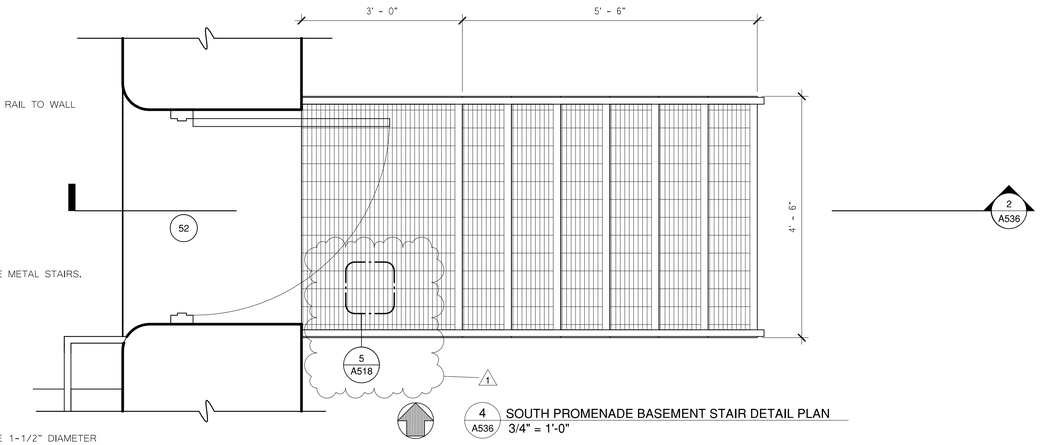
1 A536 SOUTH PROMENADE STAIR SECTION
3/4" = 1'-0"



2 A536 SOUTH PROMENADE BASEMENT STAIR SECTION
3/4" = 1'-0"



3 A536 SOUTH PROMENADE STAIR DETAIL PLAN
3/4" = 1'-0"



4 A536 SOUTH PROMENADE BASEMENT STAIR DETAIL PLAN
3/4" = 1'-0"

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10/11/2024 3:49:18 PM
36x24 PLOT SHEET

NEW YORK STATE | Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT:

John G. Waite Associates PLLC Architects

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REGISTERED ARCHITECT JOHN G. WAITE JR. 014437 STATE OF NEW YORK

CONTRACT: CONSTRUCTION

TITLE: REHABILITATE THE EASTERN APPROACH STAIRCASE, PROMENADES, PORTICO, AND EXECUTIVE RAMP

LOCATION: NEW YORK STATE CAPITOL ALBANY, NY

CLIENT: OFFICE OF GENERAL SERVICES

REVISED 10/11/2024

MARK	DATE	DESCRIPTION
1	10/11/2024	ADDENDUM 5
	06/21/2024	BID SET

PROJECT NUMBER:	47331 - C
DESIGNED BY:	
DRAWN BY:	
FIELD CHECK:	
APPROVED:	

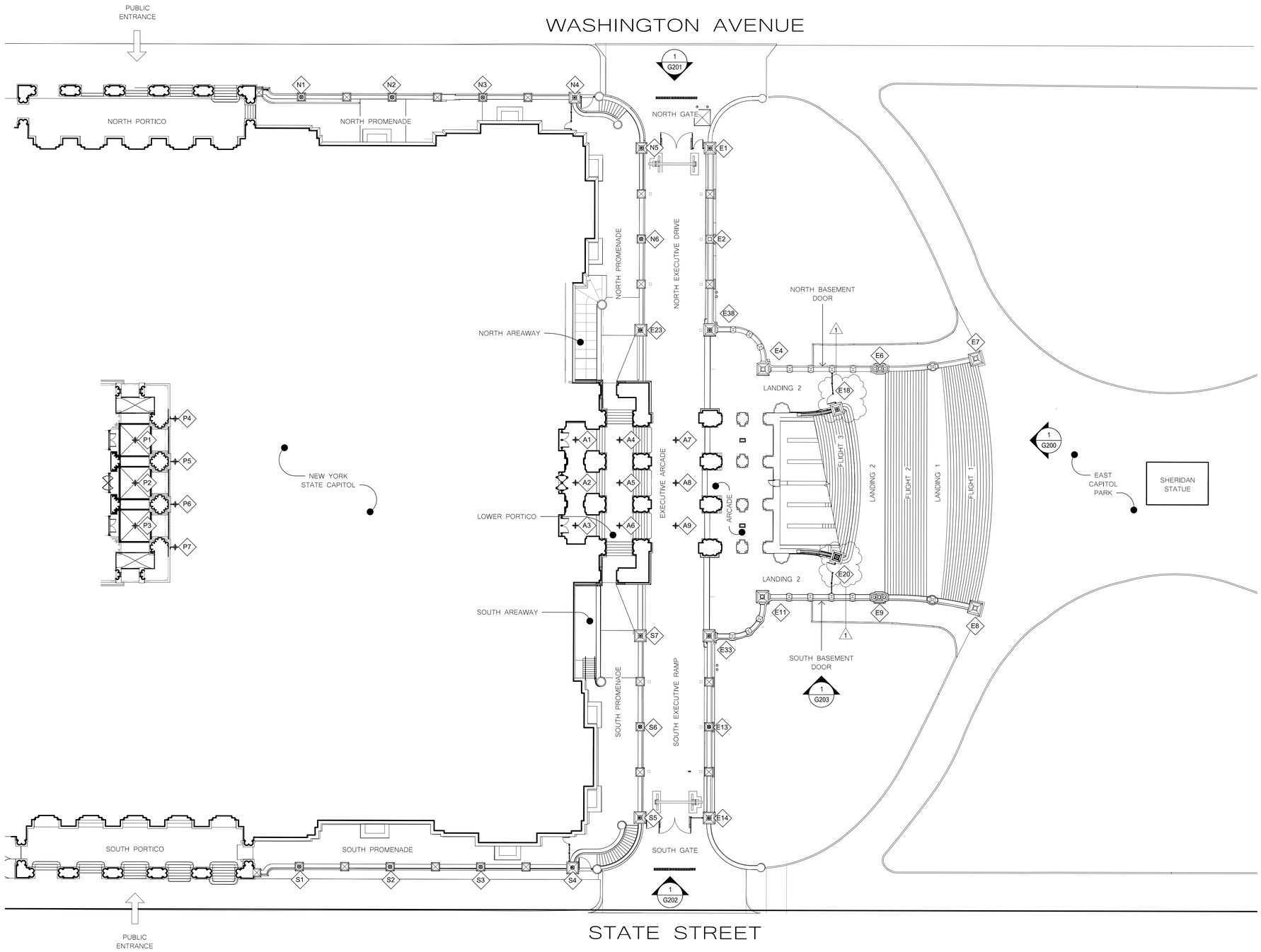
SHEET TITLE:

PROMENADE STAIR DETAILS

DRAWING NUMBER:

A536

SHEET: 175 OF 257



1 A630 HISTORIC LIGHT FIXTURE KEY PLAN
3/64" = 1'-0"

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10/11/2024 3:49:24 PM
36x24 PLOT SHEET

NEW YORK STATE | Office of General Services

DESIGN & CONSTRUCTION

CONSULTANT:

John G. Waite Associates PLLC Architects

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CONTRACT:
CONSTRUCTION

TITLE:
REHABILITATE THE EASTERN APPROACH STAIRCASE, PROMENADES, PORTICO, AND EXECUTIVE RAMP

LOCATION:
NEW YORK STATE CAPITOL
ALBANY, NY

CLIENT:
OFFICE OF GENERAL SERVICES

REVISED 10/11/2024

MARK	DATE	DESCRIPTION
1	10/11/2024	ADDENDUM 5
	06/21/2024	BID SET

PROJECT NUMBER:	47331 - C
DESIGNED BY:	
DRAWN BY:	
FIELD CHECK:	
APPROVED:	

SHEET TITLE:
LIGHT FIXTURE KEY PLAN

DRAWING NUMBER:
A630

SHEET: 198 OF 257