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NOTICE TO ALL FIRMS

Date: December 15, 2023

To: All Prospective Bidders

From: Sam Li
Interim Director of Procurement Services

Re: Addendum Number 6
IFB # C1558 – East Courtyard & Pomerantz Center Air Handler Units Replacement

Notes:

1) See updated schedule below:

C1558 Contract schedule for East Courtyard roof work		
Description of work on the roof	**Start**	**End**
Submission critical equipment defined in Section III Contractor Terms and Conditions	1/15/2024	2/1/2024
Start fabrication AC units (AC units MUST be delivered by 6/15/2024)	2/8/2024	6/15/2024
Coordination dunnage shop drawing with the AC units shop drawing.. Review by roofing contractor and HVAC contractor. Adjust dunnage design to coordinate with final AC units.	2/1/2024	4/30/2024
Duct layout shop drawing for review and coordination with roofing contractor.	2/1/2024	4/30/2024
disconnect and remove the existing units and curbs.	5/28/2024	5/31/2024
Install new dunnage and duct supports	5/28/2024	6/17/2024
Install/rig new units	6/17/2024	6/30/2024
Install new duct and piping	6/30/2024	7/14/2023
Install all hookups (steam, CHW, electric, controls, FA)	6/30/2024	8/6/2024
Startup the AC units	8/7/2024	8/8/2024
Commissioning the AC units	8/8/2024	8/15/2024
Substantial completion East Courtyard AC units	8/15/2024	8/15/2024

2) Kindly find revised drawings and specifications for Addendum #6. A summary of scope is below:

1. *Structural drawings include revisions to the design that are bubbled throughout.*

2. *Specification Section 051200 "Structural Steel Framing" includes revisions to delegated design requirements and clarification that all steel shall be galvanized.*

3. *Specification Section 055000 "Miscellaneous Metal Fabrications" has been removed and replaced with the following specifications for clarity of scope:*
    a. *Specification Section 055119 "Metal Grating Stairs"*
    b. *Specification Section 055213 "Pipe and Tube Railings"*
    c. *Specification Section 055313 "Bar Gratings"*

3) Reminder, the bid due date has been changed from December 18 2023, 12:00 PM to December 27, 2023, 12:00 PM. Your bid must be emailed to Purchasingbids@fitnyc.edu by December 27, 2023, on or before 12:00 PM.

THIS ADDENDUM IS PART OF THE CONTRACT DOCUMENT AND SHALL BE INCLUDED WITH YOUR REQUEST FOR PROPOSAL SUBMITTAL. YOUR SIGNATURE BELOW WARRANTS THAT YOU UNDERSTAND THIS ADDENDUM AND THAT YOU HAVE MADE THE APPRORIATE ADJUSTMENTS IN YOUR PROPOSAL AND CALCULATIONS.

_____
Signature

_____
Print Name and Title of Authorized Representative

_____
Print Name of Company/Partnership/Individual

_____
Date

SECTION 051200 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Structural steel.
2. Shrinkage-resistant grout.

B. Related Requirements:

1. Section 055113 Metal Grating Stairs
2. Section 055213 Pipe and Tube Railings
3. Section 055313 Bar Gratings

1.2 DEFINITIONS

A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in ANSI/AISC 303.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data:

1. Structural-steel materials.
2. High-strength, bolt-nut-washer assemblies.
3. Galvanized-steel primer.
4. Etching cleaner.
5. Galvanized repair paint.
6. Shrinkage-resistant grout.

B. Shop Drawings: Show fabrication of structural-steel components.

1.5 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Mill test reports for structural-steel materials, including chemical and physical properties.

C. Field quality-control reports.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category BU or is accredited by the IAS Fabricator Inspection Program for Structural Steel (Acceptance Criteria 172).

B. Installer Qualifications: A qualified Installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category CSE.

C. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.1/D1.1M.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Comply with applicable provisions of the following specifications and documents:

1. ANSI/AISC 303.
2. ANSI/AISC 360.
3. RCSC's "Specification for Structural Joints Using High-Strength Bolts."

B. Connection Design Information:
1. Fabricator's experienced steel detailer selects or completes connections in accordance with ANSI/AISC 303.

a. Select and complete connections using schematic details indicated and ANSI/AISC 360.
b. Use Allowable Stress Design; data are given at service-load level.

2.2 STRUCTURAL-STEEL MATERIALS

A. W-Shapes: ASTM A992/A992M.

B. Angles: ASTM A36/A36M.

C. Plate and Bar: ASTM A36/A36M.

D. Cold-Formed Hollow Structural Sections: ASTM A500/A500M, Grade C structural tubing.

E. Steel Pipe: ASTM A53/A53M, Type E or Type S, Grade B.

F. Welding Electrodes: Comply with AWS requirements.

2.3 BOLTS AND CONNECTORS

A. High-Strength A325 Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A325 (Grade A325M), Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH (ASTM A563M, Class 10S), heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers; all with plain finish.

1. Direct-Tension Indicators: ASTM F959/F959M, Type 325-1 (Type 8.8-1), compressiblewasher type with plain finish.

B. Zinc-Coated High-Strength A325 Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A325 (Grade A325M), Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH (ASTM A563M, Class 10S), heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers.

1. Finish: Hot-dip zinc coating.
2. Direct-Tension Indicators: ASTM F959/F959M, Type 325-1 (Type 8.8-1), compressiblewasher type with mechanically deposited zinc coating or mechanically deposited zinc coating, baked epoxy-coated finish.

C. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F3125/F3125M, Grade F1852, Type 1, heavy-hex head assemblies, consisting of steel structural bolts with splined ends; ASTM A563, Grade DH (ASTM A563M, Class 10S), heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers.

1. Finish: Mechanically deposited zinc coating.

2.5 SHRINKAGE-RESISTANT GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.6 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate in accordance with ANSI/AISC 303 and to ANSI/AISC 360.

2.7 SHOP CONNECTIONS

A. High-Strength Bolts: Shop install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for type of bolt and type of joint specified.

1. Joint Type: As indicated.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

2.8 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel in accordance with ASTM A123/A123M.

1. Fill vent and drain holes that are exposed in the finished Work unless they function as weep holes, by plugging with zinc solder and filing off smooth.

2.10 SOURCE QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform shop tests and inspections.

1. Allow testing agency access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
2. Bolted Connections: Inspect and test shop-bolted connections in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
3. Welded Connections: Visually inspect shop-welded connections in accordance with AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

    a. Liquid Penetrant Inspection: ASTM E165/E165M.
    b. Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
    c. Ultrasonic Inspection: ASTM E164.
    d. Radiographic Inspection: ASTM E94/E94M.
4. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

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

3.2 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and in accordance with ANSI/AISC 303 and ANSI/AISC 360.

B. Baseplates and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bondreducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Weld plate washers to top of baseplate.
3. Promptly pack shrinkage-resistant grout solidly between bearing surfaces and plates, so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. C. Maintain erection tolerances of structural steel within ANSI/AISC 303.

3.3 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for bolt and joint type specified.

1. Joint Type: As indicated.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Comply with ANSI/AISC 303 and ANSI/AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.

3.4 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector to perform the following special inspections:

1. Verify structural-steel materials and inspect steel frame joint details.
2. Verify weld materials and inspect welds.
3. Verify connection materials and inspect high-strength bolted connections.

B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

1. Bolted Connections: Inspect and test bolted connections in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
2. Welded Connections: Visually inspect field welds in accordance with AWS D1.1/D1.1M.

a. In addition to visual inspection, test and inspect field welds in accordance with AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

1) Liquid Penetrant Inspection: ASTM E165/E165M.
2) Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
3) Ultrasonic Inspection: ASTM E164.
4) Radiographic Inspection: ASTM E94/E94M.

END OF SECTION 051200

SECTION 055119 - METAL GRATING STAIRS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Industrial Class stairs with steel-grating treads.
2. Steel railings and guards attached to metal stairs.

B. Related Requirements:

1. Section 051200 – Structural Steel Framing
2. Section 055213 – Pipe and Tube Railings
3. Section 055313 – Bar Grating

1.2 COORDINATION

A. Coordinate installation with Section 051200 – Structural Steel Framing

B. Filed Measurements: Verify slope of deck and other construction contiguous with metal fabrications to ensure stair treads are level and plumb

1.3 ACTION SUBMITTALS

A. Product Data: For metal grating stairs and the following:

1. Miscellaneous steel materials
2. Bolt-nut-washer assemblies
3. Steel Gratings.
4. Galvanization

B. Shop Drawings:

1. Include plans, elevations, sections, details, and attachment to other work.
2. Indicate sizes of metal sections, thickness of metals, profiles, holes, and field joints.
3. Include plan at each level.

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

1.4 INFORMATIONAL SUBMITTALS

A. 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.

B. Welding certificates.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

B. Welding Qualifications: Qualify procedures and personnel according to the following welding codes:

1. AWS D1.1/D1.1M, “Structural Welding Code – Steel”

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer to design stairs, railings, and guards, including attachment to structural dunnage.

1. Qualified: When used with an entity or individual, "qualified" unless otherwise further described means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction

B. Structural Performance of Stairs: Metal stairs withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Uniform Load: 100 lbf/sq. ft.
2. Concentrated Load: 300 lbf applied on an area of 4 sq. in.
3. Uniform and concentrated loads need not be assumed to act concurrently.
4. Stair Framing: Capable of withstanding stresses resulting from railing and guard loads in addition to loads specified above.
5. Limit deflection of treads, platforms, and framing members to L/360

C. Structural Performance of Railings and Guards: Railings and guards, including attachment to building construction, withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Handrails and Top Rails of Guards:

a. Uniform load of 50 lbf/ft. applied in any direction.
b. Concentrated load of 200 lbf applied in any direction.
c. Uniform and concentrated loads need not be assumed to act concurrently.

2. Infill of Guards:

a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft.
b. Infill load and other loads need not be assumed to act concurrently.

3. Thermal Movements: Allow for thermal movement from ambient and surface temperature changes acting on exterior metal fabrication by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.

D. Source Quality-Control Tests: Tests and inspections that are performed at the source; for example, plant, mill, factory, or shop.

E. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements.

2.2 METALS

A. Galvanizing: All steel elements shall be hot dipped galvanized items as indicated to comply with ASTM A153/A153M for steel hardware and ASTM A123/A123M for other steel products.

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

C. Rolled-Steel Floor Plate: ASTM A786/A786M, rolled from plate complying with ASTM A36/A36M or ASTM A283/A283M, Grade C or D.

D. Steel Bars for Grating Treads: ASTM A36/A36M or steel strip, ASTM A1011/A1011M or ASTM A1018/A1018M.

E. Steel Wire Rod for Grating Crossbars: ASTM A510/A510M.

F. Steel Tubing for Railings and Guards: ASTM A500 / A500M (cold formed)

G. Steel Pipe for Railings and Guards: ASTM A53/A53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.

2.3 FASTENERS

A. General: Hot-Dip Galvanized Railing Components: Type 304 stainless steel or hot-dip zinc-coated steel fasteners complying with ASTM A153/A153M or ASTM F2329/F2329M for zinc coating.

B. Fasteners for Anchoring Railings and Guards to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings and guards to other types of construction indicated.

2.4 FABRICATION, GENERAL

A. Provide complete stair assemblies, including metal framing, hangers, railings, guards, clips, brackets, bearing plates, adjustable pedestals, and other components necessary to support and anchor stairs and platforms on supporting structure.

1. Join components by welding unless otherwise indicated.
2. Use connections that maintain structural value of joined pieces.

B. Assemble stairs, railings, and guards in shop to greatest extent possible.

1. Disassemble units only as necessary for shipping and handling limitations.
2. Clearly mark units for reassembly and coordinated installation.

C. Cut, drill, and punch metals cleanly and accurately.

1. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated.
2. Remove sharp or rough areas on exposed surfaces.

D. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

E. Form exposed work with accurate angles and surfaces and straight edges.

F. Weld connections to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.

G. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible.

1. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts unless otherwise indicated.
2. Locate joints where least conspicuous.
3. Fabricate joints that are exposed to weather in a manner to exclude water.
4. Provide weep holes where water may accumulate internally.

2.5 FABRICATION OF STEEL-FRAMED STAIRS

A. NAAMM Stair Standard: Comply with NAAMM AMP 510, "Metal Stairs Manual," for Industrial Class, unless more stringent requirements are indicated.

B. Stair Framing:

1. Fabricate stringers of steel plates or channels.

a. Stringer Size: As required to comply with "Performance Requirements"
b. Provide closures for exposed ends of channel stringers.
c. Finish: Galvanized.

2. Construct platforms and tread supports of steel plates headers and miscellaneous framing members as required to comply with “Performance Requirements”.

a. Provide closures for exposed ends of channel framing.
b. Finish: Galvanized

3. Weld or bolt stringers to headers; weld or bolt framing members to stringers and headers.

C. Metal Bar-Grating Stairs: Form treads and platforms to configurations shown from metal bar grating; fabricate to comply with NAAMM MBG 531, "Metal Bar Grating Manual."

1. See Section 055313 Bar Grating for performance requirements.
2. Fabricate treads and platforms from pressure-locked steel grating.
3. Fabricate treads and platforms from pressure-locked steel grating with openings in gratings no more than 1/2 inch in least dimension.

a. Surface: Serrated
b. Finish: Galvanized.

4. Fabricate grating treads with rolled-steel floor plate nosing and with steel angle or steel plate carrier at each end for stringer connections.

a. Secure treads to stringers with welding or bolts.

5. Fabricate grating platforms with nosing matching that on grating treads.

a. Secure grating to platform framing by welding or with bolts.

D. Risers: Open

2.6 FABRICATION OF STAIR RAILINGS AND GUARDS

A. Comply with applicable requirements in Section 055213 "Pipe and Tube Railings."

2.7 FINISHES

A. Finish metal stairs after assembly.

B. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153/A153M for steel and iron hardware and with ASTM A123/A123M for other steel and iron products.

1. Fill vent and drain holes that are exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.

PART 3 - EXECUTION

3.1 INSTALLATION OF METAL STAIRS

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal stairs to in-place structural steel dunnage.

1. Include threaded fasteners for concrete paver inserts, through-bolts, lag bolts, and other connectors.

2. Include adjustable pedestals or leveling nuts to enable the stair to remain level and plumb to the bar gating walking surface due to the existing slope at the roof.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal stairs. Set units accurately in location, alignment, and elevation, measured from established lines and levels and free of rack.

C. Install metal stairs by welding stair framing to steel structure unless otherwise indicated.

D. After stairs have been positioned and aligned, tighten adjustable pedestal anchors/

E. Fit exposed connections accurately together to form hairline joints.

1. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.
2. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
3. Comply with requirements for welding in "Fabrication, General" Article.

3.2 INSTALLATION OF RAILINGS AND GUARDS

A. Adjust railing and guard systems before anchoring to ensure matching alignment at abutting joints with tight, hairline joints.

1. Space posts as required by design loads. Plumb posts in each direction, within a tolerance of 1/16 inch in 3 feet.
2. Align rails and guards so variations from level for horizontal members and variations from parallel with rake of stairs for sloping members do not exceed 1/4 inches in 12 feet.
3. Secure posts, rail ends, and guard ends to building construction as follows:

a. Anchor posts to steel by welding or bolting to steel supporting members.

3.3 REPAIR

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

END OF SECTION 055119

SECTION 055213 - PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Steel railings.

B. Related Requirements:

1. Section 051200 – Structural Steel Framing
2. Section 055119 – Metal Grating Stairs
3. Section 055313 – Bar Grating

1.2 COORDINATION

A. Coordinate installation with Section 051200 – Structural Steel Framing

1.3 ACTION SUBMITTALS

A. Product Data:

1. Manufacturer's product lines of mechanically connected railings.
2. Handrail brackets.
3. Metal finishes.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

C. Samples: For each type of exposed finish.

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

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For delegated design professional engineer.

B. Welding certificates.

C. Product Test Reports: For tests on railings performed by a qualified testing agency, in accordance with ASTM E894 and ASTM E935.

1.5 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel in accordance with the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

PART 2 - PRODUCTS

A. Delegated Design: Engage a qualified professional engineer to design railings, including attachment to structural dunnage.

B. Structural Performance: Railings, including attachment to building construction, withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Handrails and Top Rails of Guards:

a. Uniform load of 50 lbf/ ft. (0.73 kN/m) applied in any direction.
b. Concentrated load of 200 lbf (0.89 kN) applied in any direction.
c. Uniform and concentrated loads need not be assumed to act concurrently.

2. Infill of Guards:

a. Concentrated load of 50 lbf (0.22 kN) applied horizontally on an area of 1 sq. ft. (0.093 sq. m).
b. Infill load and other loads need not be assumed to act concurrently.

2.2 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

1. Provide type of bracket with flange tapped for concealed anchorage to threaded hanger bolt that provides 1-1/2-inch (38-mm) clearance from inside face of handrail to finished wall surface.

2.3 STEEL RAILINGS

A. Tubing: ASTM A500/A500M

B. Pipe: ASTM A53/A53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.

1. Provide galvanized finish for exterior installations of all railings

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

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

2.4 FASTENERS

A. Fastener Materials:

1. Hot-Dip Galvanized Railing Components: Type 304 stainless steel or hot-dip zinc-coated steel fasteners complying with ASTM A153/A153M or ASTM F2329/F2329M for zinc coating.

2.5 MISCELLANEOUS MATERIALS

A. Handrail Brackets: Shall be of the same material as the railings. Center of handrail shall be 3 1/8 inches from edge of railing.

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

C. Etching Cleaner for Galvanized Metal: Complying with MPI#25.

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

2.6 FABRICATION

A. Cut, drill, and punch metals cleanly and accurately.

1. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated.
2. Remove sharp or rough areas on exposed surfaces.

B. Form work true to line and level with accurate angles and surfaces.

C. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove flux immediately.

4. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Finish #3 welds; utilitarian appearance not subject to view, partially dressed weld with spatter removed.

D. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.

E. Form changes in direction as follows:
1. By inserting prefabricated elbow fittings

F. Close exposed ends of hollow railing members with prefabricated cap and end fittings of same metal and finish as railings.

G. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.

H. Toe Boards: Where indicated, provide toe boards at railings around openings and at edge of open-sided floors and platforms. Fabricate to dimensions and details indicated.

2.7 STEEL AND IRON FINISHES

A. Galvanized Railings:

1. Hot-dip galvanize exterior steel railings, including hardware, after fabrication.
2. Comply with ASTM A123/A123M for hot-dip galvanized railings.
3. Comply with ASTM A153/A153M for hot-dip galvanized hardware.

B. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.

C. Preparing Galvanized Railings for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Perform cutting, drilling, and fitting required for installing railings.

1. Fit exposed connections together to form tight, hairline joints.
2. Install railings level, plumb, square, true to line; without distortion, warp, or rack.
3. Set railings accurately in location, alignment, and elevation; measured from established lines and levels.
4. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
5. Set posts plumb within a tolerance of 1/16 inch in 3 feet.

6. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.

B. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

3.2 ATTACHING RAILINGS

A. Secure railings to structural dunnage.

B. Provide 1 1/2 inch clearance from inside face of handrail and guardrail.

3.3 CLEANING

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

END OF SECTION 055213

SECTION 055313 - BAR GRATINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metal bar gratings.
2. Grating frames and supports.

B. Related Requirements:

1. Section 051200 – Structural Steel Framing

2. Section 055213 – Pipe and Tube Railings

3. Section 055119 – Metal Grating Stairs

1.2 COORDINATION

A. Coordinate installation with Section 051200 – Structural Steel Framing

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Include plans, sections, and attachment details.

C. Delegated Design Submittals: For gratings, including manufacturer’s published load tables and analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

A. Certificates:
1. Welding certificates.

B. Delegated design engineer qualifications.

1.5 QUALITY ASSURANCE

A. Qualifications:

1. Delegated Design Engineer: A professional engineer who is legally qualified to practice in New York State where Project is located and who is experienced in providing engineering services of the type indicated.
2. Welding Qualifications: Qualify procedures and personnel in accordance with the following welding codes:

    a. AWS D1.1/D1.1M. - Steel

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer to design gratings.

B. Structural Performance: Gratings to withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Maintenance Platforms: Uniform load of 40 lbf / sq. ft.

2. Limit deflection to L/360 or 1/4 inch (6.4 mm), whichever is less.

2.2 METAL BAR GRATINGS

A. Metal Bar Grating Standards: Comply with NAAMM MBG 531

B. Performance Requirements.

1. Bearing Bar Spacing: No gap less than 1/2 inch in shorter direction
2. Bearing Bar Depth: As required to comply with structural performance requirements.
3. Bearing Bar Thickness: As required to comply with structural performance requirements.
4. Crossbar Spacing: 2 inches on center
5. Traffic Surface: Serrated

C. Steel Finish: Hot-dip galvanized with a coating weight or not less than 1.8oz/sw. ft. of coated surface

D. Pressure-Locked Steel Grating: Fabricated by pressing rectangular flush-top crossbars into slotted bearing bars.

2.3 GRATING FRAMES AND SUPPORTS

A. Support shall be provided by the structural dunnage as indicated on the drawings.

B. Supports shall be fabricated from the same basic metal as grating and galvanized in the same fashion. Cut, drill, and tap units to receive hardware and similar items. Miter and weld connections for perimeter angle frames.

2.4 FASTENERS

A. General: Hot-Dip Galvanized Railing Components: Type 304 stainless steel or hot-dip zinc-coated steel fasteners complying with ASTM A153/A153M or ASTM F2329/F2329M for zinc coating.

B. Fasteners for Anchoring Railings and Guards to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings and guards to other types of construction indicated.

2.5 MISCELLANEOUS MATERIALS

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

2.6 FERROUS METALS

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

B. Steel Bars for Bar Gratings: ASTM A36/A36M or steel strip, ASTM A1011/A1011M or ASTM A1018/A1018M.

2.7 FABRICATION

A. Cut, drill, and punch material cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

B. Fit exposed connections accurately together to form hairline joints.

2.8 STEEL FINISHES

A. Finish gratings, frames, and supports after assembly.

B. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153/A153M for steel and iron hardware and with ASTM A123/A123M for other steel and iron products.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing gratings. Set units accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.

B. Fit exposed connections accurately together to form hairline joints.

1. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade the surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

3.2 INSTALLATION OF METAL BAR GRATINGS

A. Install gratings to comply with recommendations of referenced metal bar grating standards that apply to grating types and bar sizes indicated, including installation clearances and standard anchoring details.

B. Attach removable units to supporting members with type and size of clips and fasteners indicated or, if not indicated, as recommended by grating manufacturer for type of installation conditions shown.

C. Attach nonremovable units to supporting members by welding where both materials are same; otherwise, fasten by bolting as indicated above.

3.3 REPAIR

A. Repair of Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

END OF SECTION 055313

DESIGN CRITERIA

1. ALL CONSTRUCTION, MATERIALS, AND WORKMANSHIP SHALL CONFORM TO THE REQUIREMENTS OF THESE DRAWINGS, SPECIFICATIONS, AND THE CODES, RULES AND REGULATIONS OF THE 2022 NEW YORK CITY BUILDING CODE.

2. MATERIAL SPECIFIC DESIGN STANDARDS LISTED IN THESE GENERAL NOTES ARE THE VERSION REFERENCED BY THE BUILDING CODE. IF NOT REFERENCED BY THE BUILDING CODE, USE THE LATEST EDITION APPROVED BY THE AUTHORITY HAVING JURISDICTION ON THE DATE OF THE PERMIT ISSUANCE.

3. RISK CATEGORY III

4. DESIGN DEAD LOADS
   - ROOF 20 PSF
   - ROOF W/ PAVERS 90 PSF

5. DESIGN LIVE LOADS
   - 2 MAINTENANCE PLATFORMS 40 PSF
   - ROOF LIVE LOAD 20 PSF

6. SNOW LOADS
   - GROUND SNOW LOAD, P_g 25 PSF
   - FLAT-ROOF SNOW LOAD, P_f 19 PSF
   - SNOW EXPOSURE FACTOR, C_e 1.0
   - THERMAL FACTOR, C_t 1.0
   - SNOW LOAD IMPORTANCE FACTOR, I_s 1.1
   - RAIN-ON-SNOW SURCHARGE 0 PSF
   - MINIMUM ROOF SNOW, P_m 22 PSF
   - 2 FINAL DESIGN SNOW LOAD 22 PSF + DRIFT

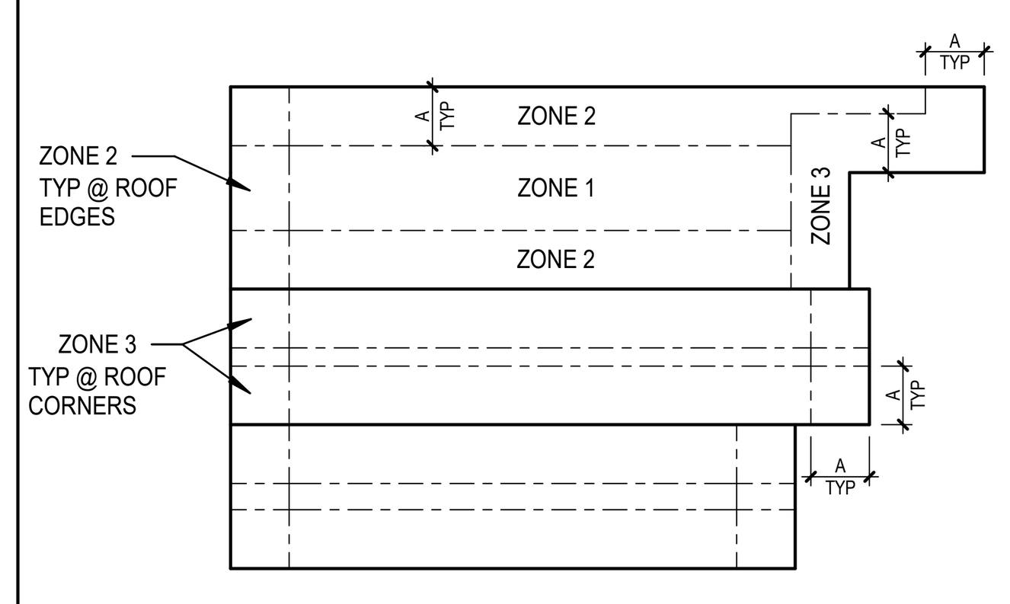
7. WIND LOADS
   - BASIC WIND SPEED (3 SECOND GUST), V 127 MPH
   - NOMINAL WIND SPEED, V_{asd} 100 MPH
   - EXPOSURE CATEGORY B
   - TOPOGRAPHIC FACTOR, K_{zt} 1.0
   - AIR DENSITY FACTOR, K_e 1.0
   - INTERNAL PRESSURE COEFFICIENT, GC_{pi} ± 0.18

   COMPONENTS AND CLADDING:

COMPONENTS AND CLADDING - WALLS (WINDWARD) (ULTIMATE)								
	INTERIOR ZONE (ZONE 4)				EXTERIOR ZONE (ZONE5)			
EFFECTIVE AREA:	10 FT²	20 FT²	50 FT²	100 FT²	10 FT²	20 FT²	50 FT²	100 FT²
HEIGHT (FT)	WIND PRESSURE (PSF)				WIND PRESSURE (PSF)			
0 - 25	29.05	27.71	26	24.73	29.05	27.71	26	24.73

COMPONENTS AND CLADDING - WALLS (LEEWARD) (ULTIMATE)								
	INTERIOR ZONE (ZONE 4)				EXTERIOR ZONE (ZONE5)			
EFFECTIVE AREA:	10 FT²	20 FT²	50 FT²	100 FT²	10 FT²	20 FT²	50 FT²	100 FT²
HEIGHT (FT)	WIND PRESSURE (PSF)				WIND PRESSURE (PSF)			
0 - 25	31.53	30.19	28.48	27.14	38.9	36.32	32.8	30.19

COMPONENTS AND CLADDING - ROOF UPLIFT (ULTIMATE)				
EFFECTIVE AREA:	10 FT²	20 FT²	50 FT²	100 FT²
ZONE	WIND PRESSURE (PSF)			
ZONE 1	29.5	28.28	27.34	26.57
ZONE 2	48.75	43.56	36.69	31.53
ZONE 3	73.38	60.78	44.13	31.53



NOTE: A = 10'

8. SEISMIC LOADS
   - SITE LATITUDE 40° 44' 50"N
   - SITE LONGITUDE 73° 59' 42"W
   - SITE CLASS D (PRESUMED)
   - IMPORTANCE FACTOR, I_e 1.25
   - MAPPED SPECTRAL RESPONSE ACCELERATIONS S_S = 0.29, S_1 = 0.06
   - DESIGN SPECTRAL RESPONSE ACCELERATIONS S_{DS} = 0.309, S_{D1} = 0.096
   - SEISMIC DESIGN CATEGORY B

   EXEMPT FROM LATERAL FORCE-RESISTING SYSTEM ANALYSIS: THE BUILDING ALTERATIONS DO NOT INCREASE THE DEMAND-CAPACITY RATIO OF ANY EXISTING LATERAL LOAD-RESISTING STRUCTURAL ELEMENT BY MORE THAN 10%.

GENERAL

1. THE DRAWINGS REPRESENT THE FINISHED STRUCTURE, NOT THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY GUYING AND BRACING REQUIRED TO ERECT AND HOLD THE STRUCTURE IN PROPER ALIGNMENT UNTIL ALL STRUCTURAL WORK AND CONNECTIONS HAVE BEEN COMPLETED. THE RESEARCH, DESIGN, SAFETY, ADEQUACY, AND INSPECTION OF ERECTION BRACING, SHORING, GUYING, TEMPORARY SUPPORTS, ETC, IS THE RESPONSIBILITY OF THE CONTRACTOR.

2. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S MEANS AND METHODS, SEQUENCES OF CONSTRUCTION, OR CONSTRUCTION TECHNIQUES USED TO PERFORM THE WORK. OBSERVATION VISITS TO THE SITE WILL NOT INVOLVE REVIEW OF THESE ITEMS.

3. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S SAFETY PROGRAM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL SAFETY PRECAUTIONS AND REGULATIONS DURING THE WORK. THE ENGINEER WILL NOT ADVISE ON, NOR ISSUE DIRECTION, AS TO SAFETY PRECAUTIONS AND PROGRAMS. OBSERVATION VISITS TO THE SITE WILL NOT INVOLVE REVIEW OF THESE ITEMS.

4. CONTRACTOR IS TO ESTABLISH AND VERIFY OPENINGS AND INSERTS FOR ITEMS TO BE INSTALLED BY OTHER TRADES PRIOR TO SUBMITTAL OF SHOP DRAWINGS AND CONSTRUCTION.

5. CONSTRUCTION MATERIAL AND EQUIPMENT LOADS PLACED ON THE STRUCTURE DURING THE CONSTRUCTION PROCESS SHALL NOT EXCEED THE DESIGN LIVE LOAD OF THE STRUCTURE NOTED IN THESE DRAWINGS. THE ENGINEER SHALL NOT BE RESPONSIBLE TO INVESTIGATE, NOR APPROVE, THE STRUCTURE FOR CONSTRUCTION MATERIAL OR EQUIPMENT LOADING. ERECTION OR CONSTRUCTION LOADS ARE NOT TO BE APPLIED UNTIL PROPER STRUCTURAL FRAMING CONNECTIONS ARE MADE, AND ALL TEMPORARY BRACING IS IN PLACE. THE CONTRACTOR SHALL DESIGN AND PROVIDE TEMPORARY BRACING OF THE STRUCTURE WHERE NECESSARY FOR CONSTRUCTION LOADS.

6. DETAILS THAT ARE NOTED AS "TYPICAL" OR "TYP" ON DETAIL TITLES ARE TO BE APPLIED TO THE PROJECT CONSTRUCTION AS GENERAL CONSTRUCTION METHODS UNLESS NOTED OTHERWISE. THESE DETAILS ARE NOT CUT AT ALL LOCATIONS WHERE THEY OCCUR, AND THEY MAY NOT BE CUT AT ALL. WHERE NO SPECIFIC DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR CONDITIONS ELSEWHERE ON THE PROJECT, SUBJECT TO APPROVAL OF THE ENGINEER.

7. DO NOT SCALE DRAWINGS. CONTRACTOR IS TO VERIFY ALL DIMENSIONS RELATIVE TO ARCHITECTURAL OR OTHER DISCIPLINE DRAWINGS PRIOR TO CONSTRUCTION. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER PRIOR TO CONSTRUCTION.

8. WHERE DISCREPANCIES OCCUR BETWEEN GENERAL NOTES, PLANS, DETAILS, AND SPECIFICATIONS, THE MOST STRINGENT REQUIREMENTS SHALL GOVERN, UNLESS APPROVED OTHERWISE BY THE ENGINEER IN WRITING PRIOR TO CONSTRUCTION.

9. THE STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE DRAWINGS OF ALL OTHER DISCIPLINES AND SPECIFICATIONS. THE CONTRACTOR SHALL ESTABLISH AND VERIFY THE REQUIREMENTS OF OTHER TRADES AS TO SLEEVES, CHASES, HANGERS, INSERT ANCHORS, HOLES, AND OTHER ITEMS TO BE PLACED OR SET IN THE STRUCTURAL WORK. DO NOT PENETRATE ANY STRUCTURAL ELEMENTS (BEAMS, COLUMNS, WALLS, SLABS, STEEL DECKS, ETC) WITHOUT PRIOR WRITTEN APPROVAL OF THE ENGINEER.

10. IF THE ENGINEER'S SEAL AND SIGNATURE IS NOT AFFIXED TO THESE DRAWINGS, THESE DRAWINGS ARE INTENDED FOR PRELIMINARY PURPOSES ONLY AND SHALL NOT BE USED FOR CONSTRUCTION.

2

POST-INSTALLED ANCHORS

1. UNO, THE FOLLOWING APPLIES TO ALL POST-INSTALLED ANCHORAGE INTO HARDENED CONCRETE OR MASONRY WHICH INCLUDES TYPES SUCH AS EXPANSION, WEDGE, SLEEVE, ADHESIVE / EPOXY, SHOT-PIN, SCREW AND UNDERCUT.

2. POST-INSTALLED ANCHORS SHALL ONLY BE USED WHERE SPECIFIED.

3. CONTRACTOR SHALL OBTAIN APPROVAL FROM ENGINEER OF RECORD PRIOR TO USING POST-INSTALLED ANCHORS FOR MISSING, DAMAGED OR MISPLACED CAST-IN-PLACE ANCHORS.

4. CARE SHALL BE GIVEN TO AVOID CONFLICTS WITH EXISTING REBAR WHEN DRILLING HOLES. HOLES SHALL BE DRILLED AND CLEANED PER THE MANUFACTURER'S INSTRUCTIONS.

5. MAINTAIN A MINIMUM OF 2 INCHES FROM EXISTING REINFORCEMENT, CONDUIT, ETC. USE NON-DESTRUCTIVE TESTING TO LOCATE PRIOR TO DRILLING, CORING OR SHOOTING PINS INTO THE EXISTING CONCRETE OR MASONRY. FOR INSTALLATION DEEPER THAN 3 INCHES USE GROUND PENETRATING RADAR OR X-RAY METHODS.

6. ALL ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH THE BUILDING CODE REQUIREMENTS, MANUFACTURER'S RECOMMENDATIONS AND ALL APPLICABLE ICC-ES REPORTS, INCLUDING, BUT NOT LIMITED TO, ALL ANCHOR SPACINGS, EMBEDMENTS AND EDGE DISTANCES.

7. SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS MUST BE APPROVED IN WRITING BY THE ENGINEER PRIOR TO USE. CONTRACTOR SHALL PROVIDE CALCULATIONS DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERFORMANCE VALUES OF THE SPECIFIED PRODUCT. SUBSTITUTIONS WILL BE EVALUATED BY HAVING AN ICC ESR SHOWING COMPLIANCE WITH THE BUILDING CODE FOR SEISMIC USES, LOAD RESISTANCE, INSTALLATION CATEGORY, AND AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS. ADHESIVE ANCHOR EVALUATION WILL ALSO CONSIDER CREEP, IN-SERVICE AND INSTALLATION TEMPERATURES.

8. EMBEDMENT REFERS TO THE FINAL INSTALLED EFFECTIVE DEPTH "Hef". ALL ANCHORS SHALL HAVE EMBEDMENT NOTED OR EMBEDMENT AS RECOMMENDED BY MANUFACTURER WHERE NO EMBEDMENT IS SHOWN. REQUIRED ANCHOR HOLE DEPTH FOR INSTALLATION MAY BE DEEPER.

9. IF THE FULL ANCHOR EMBEDMENT DEPTH, SPACING OR EDGE DISTANCE CANNOT BE ACHIEVED, NOTIFY THE ENGINEER.

10. ALL PERSONNEL INSTALLING POST-INSTALLED ANCHORS SHALL BE TRAINED BY THE MANUFACTURER ON PROPER INSTALLATION TECHNIQUE. TRAINING DOCUMENTATION FROM THE MANUFACTURER SHALL BE AVAILABLE UPON REQUEST.

11. INSTALLATION OF ADHESIVE ANCHORS IN HORIZONTAL TO VERTICALLY OVERHEAD ORIENTATION SHALL BE DONE BY A CERTIFIED ADHESIVE ANCHOR INSTALLER (AAI) AS CERTIFIED THROUGH ACI AND IN ACCORDANCE WITH ACI 318. PROOF OF CURRENT CERTIFICATION SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF INSTALLATION.

12. ADHESIVE ANCHORS IN MASONRY SHALL BE ONE OF THE FOLLOWING:
    a. HILTI HY-270 FAST CURE ADHESIVE ANCHORS (ICC ESR-4144 FOR URM, ICC ESR-4143)

13. EXPANSION BOLTS IN CONCRETE SHALL BE ONE OF THE FOLLOWING:
    a. HILTI KWIK BOLT TZ2 CONCRETE ANCHORS (ICC ESR-4266)

14. SCREW ANCHORS IN CONCRETE SHALL BE ONE OF THE FOLLOWING:
    a. HILTI HUS-EZ SCREW ANCHOR (ICC ESR-3027)

15. ADHESIVE ANCHORS IN CONCRETE SHALL BE ONE OF THE FOLLOWING:
    a. HILTI HY-200 SAFE SET SYSTEM ADHESIVE ANCHORS (ESR-3187) (FAST CURE APPLICATIONS)

16. ANCHORS ARE NOT TO BE INSTALLED UNTIL CONCRETE OR GROUT HAS REACHED IT'S DESIGN STRENGTH. ADHESIVE ANCHORS SHALL BE INSTALLED IN CONCRETE WITH A MIN. AGE OF 21 DAYS.

17. MASONRY CELLS SHALL BE FULLY GROUTED AND CURED FOR INSTALLATION OF POST-INSTALLED ANCHORS.

18. USE INSTALLATION PROCEDURES FOR CRACKED CONCRETE CONDITIONS. DO NOT CORE DRILL FOR ANCHOR HOLES WITHOUT ENGINEER APPROVAL.

19. PROVIDE GALVANIZED CARBON STEEL ANCHORS AT DRY INTERIOR LOCATIONS AND STAINLESS-STEEL TYPE 304 OR 316 AT EXTERIOR / DAMP INTERIOR LOCATIONS. ANCHORS SHALL BE CLEAN AND FREE OF DEBONDING SUBSTANCES.

20. PATCH ABANDONED HOLES AND SPALLS USING NON-SHRINK GROUT AND REPAIR FINISHES AS REQUIRED. ANCHORS PENETRATING THROUGH WATERPROOFING OR VAPOR MEMBRANES SHALL BE SEALED OR FLASHED.

21. ADHESIVE / EPOXY ANCHORS ON THIS PROJECT ARE NOT DESIGNED TO SUPPORT OR INTENDED TO RESIST SUSTAINED TENSION LOADS.

EXISTING CONDITIONS

1. CONTRACTOR IS TO FIELD VERIFY EXISTING CONDITIONS PRIOR TO BIDDING. ALL WORK AND MATERIALS NECESSARY TO INSTALL NEW WORK IN EXISTING BUILDING(S) SHALL BE INCLUDED.

2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS AND SHALL CONTACT THE ENGINEER IF ANY DISCREPANCIES ARE FOUND BEFORE PROCEEDING. NOTIFY ENGINEER IMMEDIATELY IF EXISTING CONDITIONS DO NOT MATCH, OR SEEM IN CONFLICT WITH, INFORMATION SHOWN ON DRAWINGS.

3. DIMENSIONS INDICATED ON PLAN AS FIELD VERIFY, OR "FV", ARE DIMENSIONS THAT MAY BE REQUIRED FOR FABRICATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF DIMENSIONS IN THE FIELD NECESSARY FOR FABRICATION OF MEMBERS AND PRIOR TO SUBMISSION OF SHOP DRAWINGS.

4. CONTRACTOR TO PROVIDE PROTECTION FOR ALL EXISTING BUILDING MATERIALS AND EQUIPMENT TO REMAIN FROM DAMAGE DUE TO DEMOLITION OR CONSTRUCTION OPERATIONS PERFORMED UNDER THIS CONTRACT.

5. THE SEQUENCE OF CONSTRUCTION SHALL BE THE RESPONSIBILITY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL TEMPORARY GUYS, BRACING, AND OTHER SUPPORTS AS NEEDED TO SAFELY RESIST ALL GRAVITY AND LATERAL LOADS TO WHICH THE EXISTING OR PROPOSED STRUCTURE MAY BE SUBJECTED, INCLUDING LOADS FROM ERECTION EQUIPMENT AND ERECTION OPERATIONS, AND WIND OR SEISMIC FORCES COMPARABLE IN INTENSITY FOR WHICH THE STRUCTURE IS DESIGNED. LOAD VERIFICATION OF EXISTING MEMBERS TO RECEIVE TEMPORARY SHORING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR'S ENGINEER.

6. ALL ERECTION AND CONSTRUCTION PROCEDURES SHALL MEET THE REQUIREMENTS OF ALL APPLICABLE CODES AND ORDINANCES.

7. ALL FRAMING CONNECTIONS TO EXISTING STRUCTURE SHALL BE FIELD VERIFIED PRIOR TO SHOP DRAWING PRODUCTION AND FABRICATION. FIELD VERIFIED DIMENSIONS SHALL BE INCLUDED ON FIRST SHOP DRAWING SUBMITTAL AND NOTED AS SUCH.

8. CONTRACTOR SHALL LOCATE REBAR IN EXIST. CONSTRUCTION PRIOR TO DRILLING OF HOLES AND SHALL TAKE CARE NOT TO DAMAGE EXIST. BARS. IF DAMAGE TO EXIST. REBAR OCCURS DURING CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING THE DAMAGE. REPAIR PROCEDURES NOT DETAILED IN THE CONTRACT DOCUMENTS WILL REQUIRE PREPARATION BY A QUALIFIED PROFESSIONAL ENGINEER REGISTERED IN THE STATE IN WHICH THE PROJECT IS LOCATED AND MUST BE APPROVED BY THE ENGINEER.

EXISTING DOCUMENTATION

1. THE FOLLOWING DOCUMENTS WERE USED TO REPRESENT EXISTING STRUCTURE IN THE CONSTRUCTION DOCUMENTS. NOT ALL ELEMENTS AND INFORMATION HAS BEEN PROVIDED. COPIES OF THE EXISTING DRAWINGS MAY BE AVAILABLE AT THE CONTRACTOR'S REQUEST.
   - ARCHITECTURAL DRAWINGS CREATED BY KEVIN HOM + ANDREW GOLDMAN ARCHITECTS, PC DATED MARCH 29, 2002.
   - STRUCTURAL DRAWINGS CREATED BY WAYMAN C. WING CONSULTING ENGINEERS, PC DATED MARCH 29, 2002.

STRUCTURAL STEEL

1. FABRICATOR QUALIFICATIONS: FABRICATOR SHALL BE AISC CERTIFIED OR AN "APPROVED FABRICATOR" IN ACCORDANCE WITH THE BUILDING CODE AND APPROVED BY THE AHJ. IN LIEU OF THE PREVIOUS, FABRICATOR SHALL INCLUDE IN THEIR BID THE SERVICES OF A SPECIAL INSPECTOR TO PROVIDE INSPECTION/TESTING SERVICES FOR WORK COMPLETED ON THE FABRICATOR'S PREMISES TO MEET BUILDING CODE REQUIREMENTS. AT THE COMPLETION OF WORK, FABRICATOR SHALL SUBMIT A "CERTIFICATE OF COMPLIANCE" TO THE ARCHITECT AND AHJ STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH APPROVED CONSTRUCTION DOCUMENTS.

2. STRUCTURAL STEEL SHAPES AND CONNECTING COMPONENTS SHALL CONFORM TO THE FOLLOWING MATERIAL SPECIFICATIONS UNO:
   FOLLOWING MATERIAL SPECIFICATIONS:
   - WIDE FLANGE SHAPES: ASTM A992, Fy = 50 KSI
   - HOLLOW STRUCTURAL SECTIONS (HSS) ROUND: ASTM A500, GRADE C, Fy = 46 KSI
   - OTHER STEEL SHAPES AND PLATES: ASTM A36, Fy = 36 KSI
   - HIGH STRENGTH STRUCTURAL BOLTS: ASTM F3125, GRADE A325N
   - MACHINE BOLTS: ASTM A307
   - WELDING ELECTRODES: E70XX

3. CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE BUILDING SYSTEM AT ALL TIMES DURING THE ERECTION PROCESS. ELEMENTS HAVE BEEN DESIGNED FOR THE FINAL COMPLETED CONDITION AND HAVE NOT BEEN INVESTIGATED FOR TEMPORARY LOADING DURING CONSTRUCTION. INVESTIGATION OF THE STRUCTURAL ELEMENTS FOR ADEQUACY DURING THE STEEL ERECTION AND CONSTRUCTION PROCESS IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR TO PROVIDE TEMPORARY SUPPORTS AS REQUIRED TO MAINTAIN STABILITY.

4. COLUMNS AND BEAMS WITH BASE, CAP OR END PLATES SHALL HAVE SQUARE CUT OR MILLED ENDS.

5. NON-METALLIC, NON-SHRINK, CHLORIDE FREE GROUT SHALL CONSIST OF A PRE-MIXED PRODUCT COMPLYING WITH ALL REQUIREMENTS OF ASTM C1107. THE 28-DAY COMPRESSIVE STRENGTH OF THE GROUT SHALL BE 5,000 PSI MINIMUM.

6. ALL STRUCTURAL STEEL PERMANENTLY EXPOSED TO THE WEATHER SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. ALL DAMAGED GALVANIZING SHALL BE REPAIRED IN ACCORDANCE WITH ASTM A780. STAINLESS AND WEATHERING STEELS, WHERE SPECIFIED, ARE EXEMPT FROM THIS REQUIREMENT.

7. WHERE CONNECTIONS ARE NOTED TO BE SLIP CRITICAL (EXAMPLE: A325-SC), BOLTS SHALL BE TIGHTENED TO THE MINIMUM PRETENSION FOR FULLY TIGHTENED BOLTS BY ONE OF THE AISC APPROVED METHODS. SLIP-CRITICAL BOLTS SHALL HAVE CLASS "A" FAYING SURFACES.

8. ALL BOLTS (HIGH STRENGTH, ANCHOR BOLTS, EXPANSION BOLTS, ADHESIVE ANCHORS, ETC.) SHALL BE INSTALLED WITH STEEL NUTS AND WASHERS. NUTS AND WASHERS FOR HIGH STRENGTH BOLTS SHALL CONFORM TO ASTM A563 AND TO ASTM F436, RESPECTIVELY.

9. WELDING PROCEDURES, ELECTRODES, AND WELDER QUALIFICATIONS SHALL CONFORM TO THE AMERICAN WELDING SOCIETY CODE D1.1, AISC STANDARDS, AND LOCAL CODE REQUIREMENTS.

10. ALL WELDS SHOWN ON THE DRAWINGS SHALL BE SHOP WELDS, UNO. WHERE SHOWN, FIELD WELDING SHALL BE USED. CONTRACTOR MAY SUBSTITUTE FIELD WELDS FOR SHOP WELDS AT THEIR DISCRETION. SHOP DRAWINGS SHALL CLEARLY NOTE ALL WELDING USING AWS A2.4 SYMBOLS.

11. WHERE CONTINUOUS ANGLES OR BENT PLATES ARE INDICATED, PROVIDE A CONTINUOUS BUTT WELD OR FULL PENETRATION WELD AT THE SPLICE POINTS, UNO. THE STEEL FABRICATOR MAY SUBMIT AN ALTERNATE BOLTED CONNECTION DETAIL FOR APPROVAL.

12. COORDINATE WITH ALL OTHER TRADES WHICH STEEL INTERACTS. THIS INCLUDES BUT IS NOT LIMITED TO COORDINATING WITH MASONRY, PRECAST CONCRETE, CAST-IN-PLACE CONCRETE, JOIST, AND METAL DECK SUPPLIERS.

2

STRUCTURAL STEEL DELEGATED CONNECTION DESIGN

1. CONNECTIONS SHOWN ON CONSTRUCTION DOCUMENTS ARE FOR CONCEPTUAL PURPOSES ONLY. CONNECTIONS SHALL BE DESIGNED TO SUSTAIN THE FACTORED OR UNFACTORED REACTIONS SHOWN IN ACCORDANCE WITH AISC LRFD OR AISC ASD SPECIFICATIONS, RESPECTIVELY, AS INDICATED ON THE DRAWINGS. WHERE NO REACTION HAS BEEN PROVIDED, THE CONNECTION CAPACITY SHALL NOT BE LESS THAN ONE-HALF THE MAXIMUM FACTORED UNIFORM LOAD LISTED IN THE AISC CONSTRUCTION MANUAL FOR THE GIVEN BEAM, SPAN, AND GRADE OF STEEL SPECIFIED.

2. ALL MEMBER FORCES SHOWN ARE TO BE TRANSFERRED TO THE WORK POINT. THE WORK POINT IS DEFINED AS THE INTERSECTION OF ALL CENTROIDS OF THE MEMBERS FRAMING INTO THE JOINT. AT BRACED FRAMES WHERE HORIZONTAL MEMBERS FRAMING INTO THE JOINT HAVE VARYING DEPTHS, AND SIMILAR TOP OF STEEL ELEVATIONS, THE WORK POINT SHALL BE BASED ON THE CENTER LINE OF THE HORIZONTAL MEMBER OF LEAST DEPTH (IE, THE WORKPOINT WILL NOT NECESSARILY CORRESPOND TO THE DEEPER MEMBER).

SUBMITTALS

1. THE FOLLOWING ITEMS ARE REQUIRED STRUCTURAL SUBMITTALS:
   a. STRUCTURAL STEEL FRAMING
   b. BAR GRATINGS

2. THE FOLLOWING ITEMS ARE DELEGATED DESIGN (DEFERRED SUBMITTALS PER THE BUILDING CODE).
   a. STRUCTURAL STEEL CONNECTIONS
   b. METAL FABRICATIONS
   c. METAL GRATING STAIRS
   d. PIPE AND TUBE RAILINGS
   e. ROOF-MOUNTED DUCT SUPPORTS

3. DELEGATED DESIGN SUBMITTAL CALCULATIONS AND/OR SHOP DRAWINGS SHALL BE SIGNED AND SEALED BY THE ENGINEER RESPONSIBLE FOR THEIR PREPARATION AND SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW WITH THE SHOP DRAWING SUBMITTAL. ONCE REVIEWED, CONTRACTOR SHALL FORWARD TO THE AHJ FOR APPROVAL. FABRICATION AND INSTALLATION OF THE DELEGATED DESIGN SUBMITTAL ITEMS SHALL NOT OCCUR UNTIL APPROVAL OF THE AHJ IS RECEIVED.

STATEMENT OF SPECIAL INSPECTIONS

1. IN ACCORDANCE WITH THE NEW YORK CITY BUILDING CODE, SECTION 1704, THE OWNER'S REPRESENTATIVE SHALL EMPLOY ONE OR MORE QUALIFIED SPECIAL INSPECTORS AND/OR TESTING AGENCIES TO PERFORM STRUCTURAL TESTS AND SPECIAL INSPECTIONS ON THE TYPES OF WORK LISTED IN THE STATEMENT OF SPECIAL INSPECTIONS.

2. THE DESIGNATED ENGINEER OF RECORD FOR SPECIAL INSPECTIONS SHALL BE RESPONSIBLE FOR DEFINING THE ACTIVITIES OF THE INSPECTORS, FOR CERTIFYING THE QUALIFICATIONS OF THE INSPECTORS WITH THE AHJ, AND TO ATTEND THE PRE-CONSTRUCTION MEETING TO DEFINE THEIR SCOPE OF SERVICES AND THE TESTING OR TEST PROCEDURES THAT ARE REQUIRED AS OUTLINED IN THE BUILDING CODE.

3. THE INSPECTOR SHALL OBSERVE THE WORK ASSIGNED TO VERIFY CONFORMANCE WITH THE APPROVED CONTRACT DOCUMENTS.

4. THE INSPECTOR SHALL FURNISH DAILY INSPECTION REPORTS ON THE WORK TO THE OWNER'S REPRESENTATIVE, AHJ AND ENGINEER. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION, AND, IF UNCORRECTED, TO THE ENGINEER AND THE AHJ.

5. THE DESIGNATED ENGINEER OF RECORD FOR SPECIAL INSPECTIONS SHALL COMPLETE, SIGN AND SEAL A FINAL REPORT CERTIFYING THAT TO THE BEST OF THEIR KNOWLEDGE, THE WORK IS IN CONFORMANCE WITH THE APPROVED CONTRACT DOCUMENTS.

6. SPECIAL INSPECTION IS TO BE PROVIDED IN ADDITION TO THE INSPECTIONS CONDUCTED BY THE AHJ AND SHALL NOT BE CONSTRUED TO RELIEVE THE OWNER OR AUTHORIZED AGENT FROM REQUESTING THE INSPECTIONS REQUIRED BY NEW YORK CITY BUILDING CODE SECTION 110.

7. CONCRETE: PER NEW YORK CITY BUILDING CODE SECTION 1705.3 AND TABLE 1705.3 WITH EXCEPTIONS. THE FOLLOWING ITEMS REQUIRE SPECIAL INSPECTION: ALL CONCRETE, EXCEPT; SLAB-ON-GRADE, SIDE WALKS, AND PAVEMENT.

8. STEEL CONSTRUCTION: SPECIAL INSPECTIONS FOR STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE QUALITY ASSURANCE INSPECTION REQUIREMENTS OF AISC 360-16. PROVIDE INSPECTION PER NEW YORK CITY BUILDING CODE SECTION 1704.2. FOR STRUCTURAL LOADING-BEARING MEMBERS AND ASSEMBLIES FABRICATED ON THE PREMISES OF A FABRICATOR'S SHOP. THESE INSPECTIONS SHALL BE AT CONTRACTOR'S EXPENSE IF THE FABRICATOR IS NOT AN APPROVED FABRICATOR PER NEW YORK CITY BUILDING CODE SECTION 1704.2.2.

9. WELDING: WELDING INSPECTION SHALL BE IN COMPLIANCE WITH AWS D1.1. THE BASIS FOR WELDING INSPECTOR QUALIFICATIONS SHALL BE AWS D1.1. PROVIDE SPECIAL INSPECTION IN ACCORDANCE WITH AISC 360-16 TABLE N5.4-1 THROUGH TABLE N5.4-3.

10. STEEL DETAILING: AN INSPECTION OF THE STEEL FRAME SHALL BE PERFORMED TO VERIFY COMPLIANCE WITH THE DETAILS SHOWN ON THE APPROVED CONSTRUCTION DOCUMENTS, SUCH AS BRACING, STIFFENING, MEMBER LOCATIONS AND PROPER APPLICATION OF JOINT DETAILS AT EACH CONNECTION.

11. SPRAY-APPLIED FIREPROOFING: PER NEW YORK CITY BUILDING CODE SECTION 1705.14.

12. FIRE-RESISTANT PENETRATIONS AND JOINTS: PER NEW YORK CITY BUILDING CODE SECTION 1705.17.

IBC — TABLE 1705.3

REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION

TYPE	CONTINUOUS	PERIODIC	REFERENCED STANDARD (a)	IBC REFERENCE
1. Inspect reinforcement, including prestressing tendons, and verify placement.	—	X	ACI 318: Ch. 20, 25.2, 25.3, 26.6.1-26.6.3	—
2. Reinforcing bar welding:				
a. Verify weldability of reinforcing bars other than ASTM A706;	—	X	AWS D1.4 ACI 318: 26.6.4	—
b. Inspect single-pass fillet welds, maximum 5/16"; and	—	X		
c. Inspect all other welds.	X	—		
3. Inspect anchors cast in concrete.	—	X	ACI 318: 17.8.2	—
4. Inspect anchors post-installed in hardened concrete members. (b)				
a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads.	X	—	ACI 318: 17.8.2.4	—
b. Mechanical anchors and adhesive anchors not defined in 4.a.	—	X	ACI 318: 17.8.2	—
5. Verify use of required design mix.	—	X	ACI 318: Ch. 19, 26.4.3, 26.4.4	1904.1, 1904.2
6. Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	X	—	ASTM C31 ASTM C172 ACI 318: 26.5, 26.12	—
7. Inspect concrete and shotcrete placement for proper application techniques.	X	—	ACI 318: 26.5	—
8. Verify maintenance of specified curing temperature and techniques.	—	X	ACI 318: 26.5.3-26.5.5	—
9. Inspect prestressed concrete for:				
a. Application of prestressing forces; and	X	—	ACI 318: 26.10	—
b. Grouting of bonded prestressing tendons.	X	—		—
10. Inspect erection of precast concrete members.	—	X	ACI 318: 26.9	—
11. For precast concrete diaphragm connections or reinforcement at joints classified as moderate or high deformability elements (MDE or HDE) in structures assigned to Seismic Design Category C, D, E or F, inspect such connections and reinforcement in the field for:			ACI 318: 26.13.1.3 ACI 550.5	—
a. Installation of the embedded part	X	—		
b. Completion of the continuity of reinforcement across joints.	X	—		
c. Completion of connections in the field.	X	—		
12. Inspect installation tolerances of precast concrete diaphragm connections for compliance with ACI 550.5.	—	X	ACI 318: 26.13.1.3	—
13. Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.	—	X	ACI 318: 26.11.2	—
14. Inspect formwork for shape, location and dimensions of the concrete member being formed.	—	X	ACI 318: 26.11.1.2(b)	—

a. Where applicable, see also Section 1705.13, Special inspections for seismic resistance.
b. Specific requirements for special inspection shall be included in the research report for the anchor issued by an approved source in accordance with 17.8.2 in ACI 318, or other qualification procedures. Where specific requirements are not provided, special inspection requirements shall be specified by the registered design professional and shall be approved by the building official prior to the commencement of the work.

AISC 360 — TABLE N5.4-3

INSPECTION TASKS AFTER WELDING

INSPECTION TASKS AFTER WELDING	QC	QA
Welds cleaned	O	O
Size, length and location of welds	P	P
Welds meet visual acceptance criteria • Crack prohibition • Weld / base-metal fusion • Crater cross section • Weld profiles • Weld size • Undercut • Porosity	P	P
Arc strikes	P	P
k-area [a]	P	P
Weld access holes in rolled heavy shapes and build-up heavy shapes [b]	P	P
Backing removed and weld tabs removed (if required)	P	P
Repair activities	P	P
Document acceptance or rejection of welded joint or member	P	P
No prohibited welds have been added without the approval of the EOR	O	O

[a] When welding of doubler plates, continuity plates or stiffeners has been performed in the k-area, visually inspect the web k-area for cracks within 3 inches (75 mm) of the weld.

[b] After rolled heavy shapes (see Section A3.1c) and built-up heavy shapes (see Section A3.1d) are welded, visually inspect the weld access hole for cracks.

O - Observe these items on a random basis. Operations need not be delayed pending these inspections.
P - Perform these tasks for each welded joint or member.

AISC 360 — TABLE N5.6-1

INSPECTION TASKS PRIOR TO BOLTING

INSPECTION TASKS PRIOR TO BOLTING	QC	QA
Manufacturer's certifications available for fastener materials	O	P
Fasteners marked in accordance with ASTM requirements	O	O
Proper fasteners selected for the joint detail (grade, type, bolt length if threads are to be excluded from shear plane)	O	O
Proper bolting procedure selected for joint detail	O	O
Connecting elements, including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements	O	O
Pre-installation verification testing by installation personnel observed and documented for fastener assemblies and methods used	P	O
Proper storage provided for bolts, nuts, washers, and other fastener components	O	O

O - Observe these items on a random basis. Operations need not be delayed pending these inspections.
P - Perform these tasks for each bolted connection.

AISC 360 — TABLE N5.6-2

INSPECTION TASKS DURING BOLTING

INSPECTION TASKS DURING BOLTING	QC	QA
Fastener assemblies placed in all holes and washers and nuts are positioned as required	O	O
Joint brought to the snug-tight condition prior to the pretensioning operation	O	O
Fastener component not turned by the wrench prevented from rotating	O	O
Fasteners are pretensioned in accordance with the RCSC Specification, progressing systematically from the most rigid point toward the free edges	O	O

O - Observe these items on a random basis. Operations need not be delayed pending these inspections.
P - Perform these tasks for each bolted connection.

AISC 360 — TABLE N5.6-3

INSPECTION TASKS AFTER BOLTING

INSPECTION TASKS AFTER BOLTING	QC	QA
Document acceptance or rejection of bolted connections	P	P

O - Observe these items on a random basis. Operations need not be delayed pending these inspections.
P - Perform these tasks for each bolted connection.

AISC 360 — TABLE N5.4-1

INSPECTION TASKS PRIOR TO WELDING

INSPECTION TASKS PRIOR TO WELDING	QC	QA
Welder qualification records and continuity records	P	O
Welding procedure specifications (WPS) available	P	P
Manufacturer certifications for welding consumables available	P	P
Material identification (type / grade)	O	O
Welder identification system [a]	O	O
Fit-up of groove welds (including joint geometry) • Joint preparations • Dimensions (alignment, root opening, root face, bevel) • Cleanliness (condition of steel surfaces) • Tacking (tack weld quality and location) • Backing type and fit (if applicable)	O	O
Fit-up of CJP groove welds of HSS T-, Y- and K-joints without backing (including joint geometry) • Joint preparations • Dimensions (alignment, root opening, root face, bevel) • Cleanliness (condition of steel surfaces) • Tacking (tack weld quality and location)	P	O
Configuration and finish of access holes	O	O
Fit-up of fillet welds • Dimensions (alignment, gaps at root) • Cleanliness (condition of steel surfaces) • Tacking (tack weld quality and location)	O	O
Check welding equipment	O	—

[a] The fabricator or erector, as applicable, shall maintain a system by which a welder who has welded a joint or member can be identified. Stamps, if used, shall be the low-stress type.

O - Observe these items on a random basis. Operations need not be delayed pending these inspections.
P - Perform these tasks for each welded joint or member.

AISC 360 — TABLE N5.4-2

INSPECTION TASKS DURING WELDING

INSPECTION TASKS DURING WELDING	QC	QA
Control and handling of welding consumables • Packaging • Exposure Control	O	O
No welding over cracked tack welds	O	O
Environmental conditions • Wind speed within limits • Precipitation and temperature	O	O
WPS Followed • Settings on welding equipment • Travel Speed • Selected welding materials • Shielding gas type / flow rate • Preheat applied • Interpass temperature maintained (min. / max.) • Proper position (F, V, H, OH)	O	O
Welding techniques • Interpass and final cleaning • Each pass within profile limitations • Each pass meets quality requirements	O	O
Placement and installation of steel headed stud anchors	P	P

O - Observe these items on a random basis. Operations need not be delayed pending these inspections.
P - Perform these tasks for each welded joint or member.

ABBREVIATIONS

ABBREVIATIONS ARE AS SHOWN IN THE CONTRACT DOCUMENTS WITH THE FOLLOWING EXCEPTIONS:

#	REINFORCING BAR SIZE, SHEET METAL SCREW SIZE
@	AT (SPACING)
Ø	DIAMETER
AB	ANCHOR BOLT
ABC	AGGREGATE BASE COURSE
ADDL	ADDITIONAL
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
ALT	ALTERNATE
ANCH	ANCHOR
APPROX	APPROXIMATE
AR	ANCHOR ROD
ARCH	ARCHITECTURAL
B/	BOTTOM OF
BOD	BOTTOM OF DECK
BLDG	BUILDING
BLKG	BLOCKING
BM(S)	BEAM(S)
BOF	BOTTOM OF FOOTING
BOL	BOTTOM OF LINTEL
BOS	BOTTOM OF STEEL
BOT	BOTTOM
BRBF	BUCKLING RESTRAINED BRACED FRAME
BRG	BEARING
BTWN	BETWEEN
C	CHANNEL
CANT'L	CANTILEVER
CFMF	COLD-FORMED METAL FRAMING
CIP	CAST-IN-PLACE
CJ	CONTROL JOINT
CJP	COMPLETE JOINT PENETRATION
CL	CENTERLINE
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
COMP	COMPOSITE
CONC	CONCRETE
CONN(S)	CONNECTION(S)
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACT(OR)
CSTJ	CONSTRUCTION JOINT
CTR	CENTER
(D)	DEMOLISH
DBA	DEFORMED BAR ANCHOR
DCW	DEMAND CRITICAL WELD
DEG	DEGREE
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DL	DEAD LOAD
DO	DITTO
DT	PRESTRESSED PRECAST DOUBLE TEE
DTL	DETAIL
DWG(S)	DRAWING(S)
DWL(S)	DOWEL(S)
(E)	EXISTING
EA	EACH
EBF	ECCENTRICALLY BRACED FRAME
EE	EACH END
EF	EACH FACE
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
EMBED	EMBEDMENT, EMBEDDED
EN	EDGE NAILING
EWP	ENGINEERED WOOD PRODUCT
ENG	ENGINEER
EOD	EDGE OF DECK
EOR	ENGINEER OF RECORD
EOS	EDGE OF SLAB
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
EW	EACH WAY
EXP	EXPANSION
EXT	EXTERIOR
f'c	SPECIFIED COMPRESSIVE STRENGTH OF CONCRETE
f'm	SPECIFIED COMPRESSIVE STRENGTH OF MASONRY
FD	FLOOR DRAIN
FDN	FOUNDATION
FRT	FIRE RESISTANCE TREATED
FS	FAR SIDE
FT	FEET (FOOT)
FTG	FOOTING
FV	FIELD VERIFY
Fy	YIELD STRENGTH
GA	GAGE, GAUGE
GALV	GALVANIZED
GB	GRADE BEAM
GC	GENERAL CONTRACTOR
GLB	GLUE LAMINATED BEAM
GR	GRADE
H	HEIGHT
HC	PRESTRESSED PRECAST HOLLOW CORE
HDR	HEADER
HORIZ	HORIZONTAL
HS	HEADED STUD
ID	INSIDE DIAMETER
IF	INSIDE FACE
IMF	INTERMEDIATE MOMENT FRAME
IN	INCH
INC	INCLUDE(ING)
INT	INTERIOR
JBE	JOIST BEARING ELEVATION
JST	JOIST
JT	JOINT
K	KIP (1,000 LBS)
KSF	KIPS PER SQUARE FOOT

LB(S)	POUND(S)
Ld	REINFORCING BAR DEVELOPMENT LENGTH
Ldh	HOOKED REINFORCING BAR DEVELOPMENT LENGTH
LF	LINEAR FOOT (FEET)
LFRS	LATERAL FORCE RESISTING SYSTEM
LIN	LINEAR
LL	LIVE LOAD
LLBB	LONG LEG BACK TO BACK
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LONG	LONGITUDINAL
Ls	REINFORCING BAR LAP SPLICE LENGTH
LSH	LONG SLOTTED HOLE
LVL	LAMINATED VENEER LUMBER
LW	LONG WAY
LWC	LIGHTWEIGHT CONCRETE
MAX	MAXIMUM
MECH	MECHANICAL
MEP	MECHANICAL, ELECTRICAL & PLUMBING
MF	MOMENT FRAME
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MTL	METAL
MWFRS	MAIN WIND FORCE RESISTING SYSTEM
(N)	NEW
NA	NOT APPLICABLE
NIC	NOT IN CONTRACT
NO	NUMBER
NS	NEAR SIDE
NTS	NOT TO SCALE
NWC	NORMAL WEIGHT CONCRETE
OC	ON CENTER
OCBF	ORDINARY CONCENTRICALLY BRACED FRAME
OCCS	ORDINARY CANTILEVER COLUMN SYSTEM
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OH	OPPOSITE HAND
OMF	ORDINARY MOMENT FRAME
OPG(S)	OPENING(S)
OPP	OPPOSITE
OWJ	OPEN WEB JOIST
PAF	POWDER ACTUATED FASTENER
PC	PRECAST CONCRETE, PILE CAP
PCBE	PRECAST CONCRETE BEARING ELEVATION
PCF	POUNDS PER CUBIC FOOT
PERP	PERPENDICULAR
PJP	PARTIAL JOINT PENETRATION
PL	PLATE
PLF	POUNDS PER LINEAL FOOT
PLWD	PLYWOOD
PREFAB	PREFABRICATED
PROJ	PROJECTION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PTW	PRESERVATIVE TREATED WOOD
RAD	RADIUS
RC	REINFORCED CONCRETE
REF	REFERENCE
REINF	REINFORCE, REINFORCED, REINFORCEMENT, REINFORCING
REQ(D)	REQUIRE(D)
REV(S)	REVISION(S)
RTU	ROOFTOP UNIT
SCBF	SPECIAL CONCENTRICALLY BRACED FRAME
SCCS	SPECIAL CANTILEVER COLUMN SYSTEM
SCHED	SCHEDULE
SDL	SUPERIMPOSED DEAD LOAD
SDS	SELF-DRILLING SCREWS
SSH	SHORT SLOTTED HOLE
SECT	SECTION
SEOR	STRUCTURAL ENGINEER OF RECORD
SF	SQUARE FOOT
SFRS	SEISMIC FORCE RESISTING SYSTEM
SHT	SHEET
SIM	SIMILAR
SL	SNOW LOAD
SMF	SPECIAL MOMENT FRAME
SOG	SLAB ON GRADE
SPA	SPACE, SPACING
SPEC(S)	SPECIFICATION(S)
SST	STAINLESS STEEL
STAG'D	STAGGERED
STD	STANDARD
STIFF	STIFFENER
STL	STEEL
STRUCT	STRUCTURE, STRUCTURAL
SYM	SYMMETRICAL
t	THICKNESS
T&B	TOP & BOTTOM
T&G	TONGUE & GROOVE
TC	TENSION CONTROL
TCW	TOP OF CONCRETE WALL
TEMP	TEMPORARY
THRD	THREADED
T/	TOP OF
TOB	TOP OF BEAM
TOC	TOP OF CONCRETE
TOF	TOP OF FOOTING
TOS	TOP OF STEEL
TOW	TOP OF WALL
TPE	TOP OF PIER ELEVATION
TRANS	TRANSVERSE
TSE	TOP OF SLAB ELEVATION
TWE	TOP OF WALL ELEVATION
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
VFY	VERIFY
W/	WITH
W/O	WITHOUT
WD	WOOD
WFRS	WIND FORCE RESISTING SYSTEM
WGT	WEIGHT
WP	WORK POINT
WPS	WELDING PROCEDURE SPECIFICATION
WT	STEEL TEE SECTION
WWR	WELDED WIRE FABRIC/REINFORCEMENT
X-STR	EXTRA STRONG
XX-STR	DOUBLE EXTRA STRONG
ZRC	ZINC RICH COATING

DLRGROUP

REPLACEMENT OF EAST COURTYARD AHUS

8969-31 / C1558

218 West 28th St, New York, NY 10001

ADDENDUM #6

12/15/23

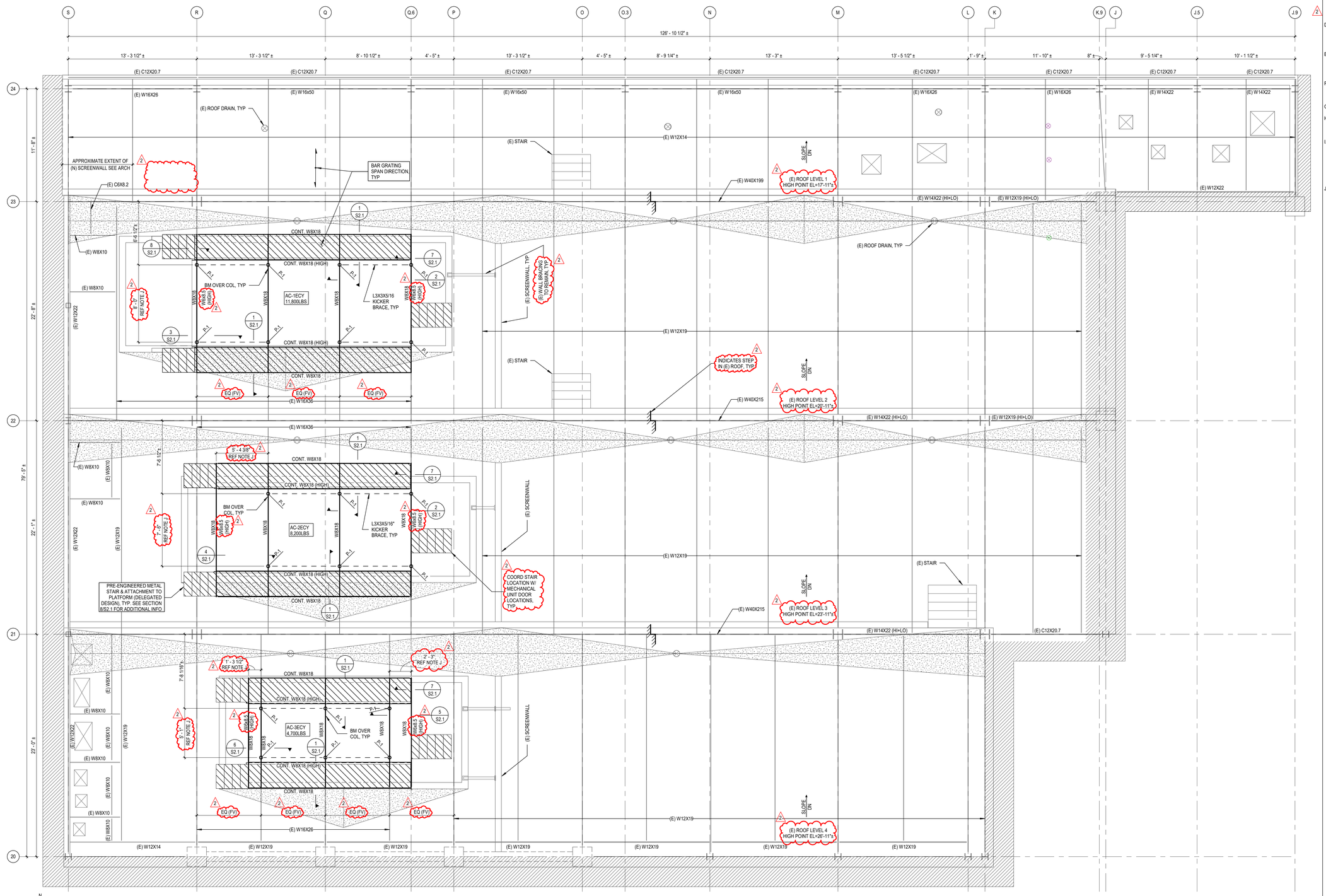
REVISIONS

ADDENDUM 4	12/06/23
ADDENDUM 6	12/15/23

57-23106

STRUCTURAL GENERAL NOTES

S0.1



N

PARTIAL EXISTING ROOF FRAMING PLAN

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

PLAN NOTES

A. EXISTING ROOF CONSTRUCTION: 3 1/4" NORMAL WEIGHT CONCRETE ON 1 1/2"X20GA GALVANIZED COMPOSITE DECK (4 3/4" TOTAL THICKNESS) SUPPORTED BY COMPOSITE STEEL WIDE FLANGE BEAMS AND NON-COMPOSITE WIDE FLANGE STEEL GIRDERS.

B. 1" GALVANIZED TYPE GW STEEL BAR GRATING MANUFACTURED BY MCNICHOLS (MAX SPAN 4'-0"). FASTEN BAR GRATING TO SUPPORT STEEL W/ SADDLE CLIPS @ 12" OC & PROVIDE GALVANIZED STEEL SHIMS TO LEVEL AS NECESSARY. BAR GRATING SPECIFIED LIVE LOAD IS 40 PSF.

C. APPROXIMATE AREA OF EXISTING ROOF TO RECIEVE LIGHT-WEIGHT CEMENTITIOUS LEVELING COMPOUND TO RE-SLOPE ROOF TOWARDS DRAINS. LEVELING COMPOUND MAY NOT EXCEED 2" IN THICKNESS (22 PSF TOTAL). WORK IS TO BE PERFORMED BY ROOFING CONTRACTOR. SEE ARCH DWGS. 2

D. P-1 DENOTES (N) GALVANIZED ROUND HSS4.00X0.313 POST-UP. STRUCTURAL DESIGN INTENT IS FOR (N) POSTUPS TO BE INSTALLED AND ANCHORED TO EXISTING STEEL ROOF BEAMS. SEE TYPICAL DETAIL ON SHEET S2.1 FOR ADDITIONAL INFO.

E. ALL STRUCTURAL STEEL IS TO BE HOT DIPPED GALVANIZED. TOUCH-UP STRUCTURAL STEEL WITH ZINC-RICH PAINT IF GALVANIZED FINISH IS BLEMISHED AFTER INSTALLATION OF STRUCTURAL STEEL.

F. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS AND EXTENTS OF ROOF SLOPES, ELEVATION CHANGES, AS WELL AS RECESSES, RAISES AND DEPRESSIONS.

G. SEE MEP DWGS FOR DUCT SUPPORT LOCATIONS & DETAILS.

H. SEE ARCHITECTURAL AND MEP DRAWINGS FOR SLAB AND ROOF PENETRATIONS, WHETHER INDICATED ON STRUCTURAL DRAWINGS OR NOT.

I. SEE MEP AND OTHER SPECIALTY DRAWINGS FOR THE FOLLOWING, WHETHER INDICATED ON STRUCTURAL DRAWINGS OR NOT:
   a. PIPE RUNS, SLEEVES, HANGERS, AND TRENCHES.
   b. CONDUIT RUNS, BOXES, AND OUTLETS.
   c. EMBEDS, ANCHORAGE AND BRACING FOR EQUIPMENT, DUCTS, PIPING, ETC.

J. EQUIPMENT SIZES, LOCATIONS AND WEIGHTS INDICATED ON STRUCTURAL DRAWINGS ARE SCHEMATIC AND SUBJECT TO CHANGE. COORDINATE FINAL SELECTION AND PLACEMENT WITH CERTIFIED EQUIPMENT MANUFACTURER DRAWINGS. NOTIFY ENGINEER IF FINAL SELECTION DIFFERS FROM THOSE INDICATED. WEIGHTS INDICATED ON THESE DRAWINGS INCLUDE SELF-WEIGHT OF THE NEW MECHANICAL UNITS, PLUS A 500 LB CURB FOR EACH UNIT.

STRUCTURAL ANALYSIS FOR THE PROPOSED MODIFICATIONS TO THE EXISTING ROOF ACCOUNT FOR THE ROOF TO NO LONGER BE OCCUPIABLE. PER DIRECTION OF THE OWNER, ACCORDING TO EXISTING STRUCTURAL DRAWINGS CREATED BY WAYMAN C. WING CONSULTING ENGINEERS, PC DATED 3/29/2002. THE EXISTING ROOF SHOWN ON THIS DRAWING WAS DESIGNED FOR 100 PSF LIVE LOAD AND 90 PSF SUPERIMPOSED DEAD LOAD. THE NEW ROOF LOAD CAPACITIES ARE LISTED IN THE DESIGN CRITERIA ON SHEET S0.1. 2

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REPLACEMENT OF EAST COURTYARD AHUS

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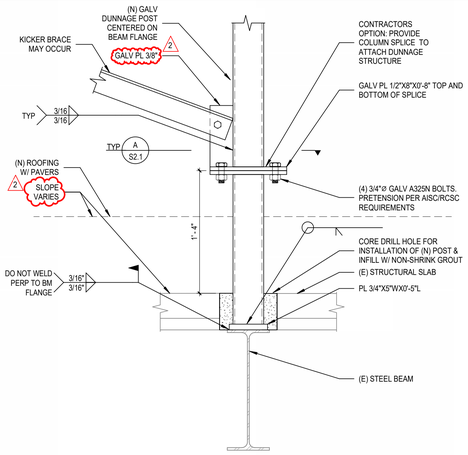
ADDENDUM #6
12/15/23
REVISIONS
ADDENDUM 4 12/05/23
ADDENDUM 6 12/15/23

57-23106

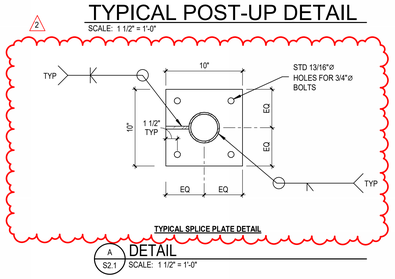
PARTIAL EXISTING ROOF FRAMING PLAN

S1.1

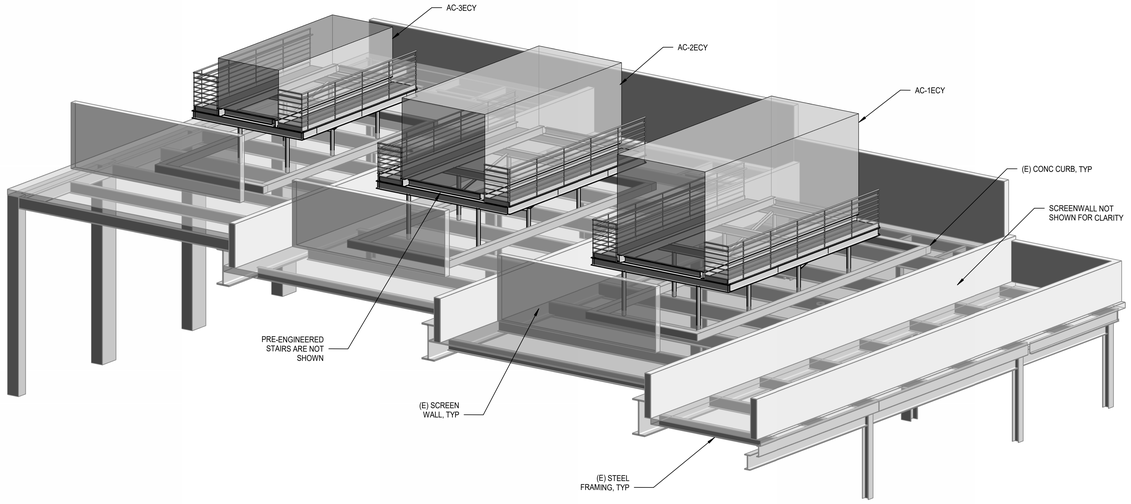


TYPICAL POST-UP DETAIL

SCALE: 1 1/2" = 1'-0"

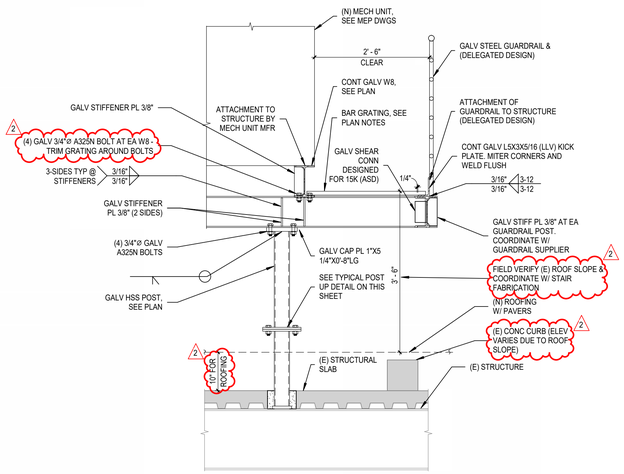


A S2.1 DETAIL
SCALE: 1 1/2" = 1'-0"

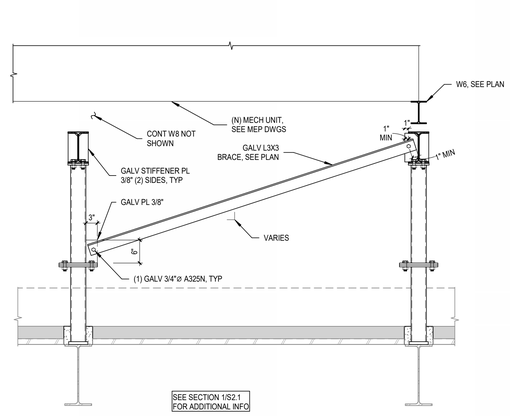


PARTIAL ROOF FRAMING PLAN - ISOMETRIC VIEW

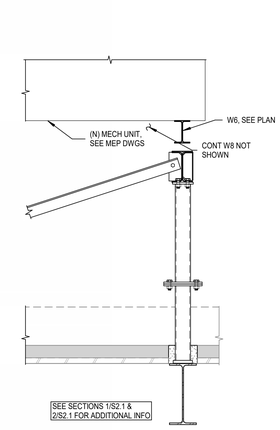
SCALE:



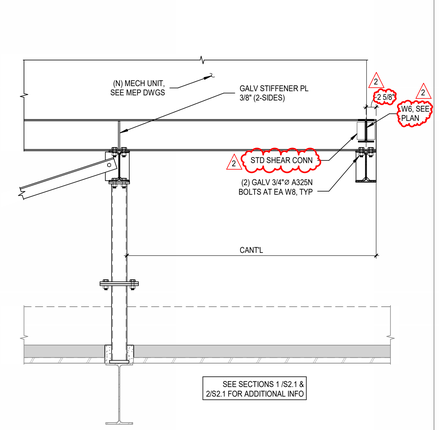
1 S2.1 SECTION
SCALE: 3/4" = 1'-0"



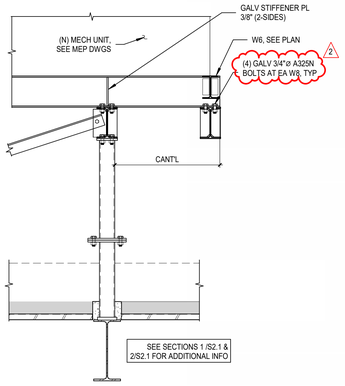
2 S2.1 SECTION
SCALE: 3/4" = 1'-0"



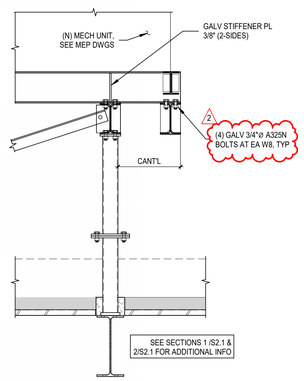
3 S2.1 SECTION
SCALE: 3/4" = 1'-0"



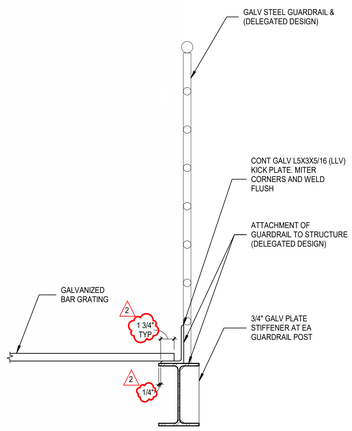
4 S2.1 SECTION
SCALE: 3/4" = 1'-0"



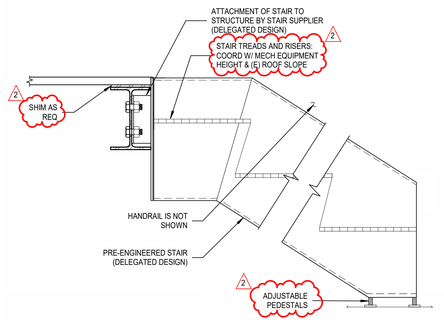
5 S2.1 SECTION
SCALE: 3/4" = 1'-0"



6 S2.1 SECTION
SCALE: 3/4" = 1'-0"



7 S2.1 SECTION
SCALE: 1 1/2" = 1'-0"



8 S2.1 SECTION
SCALE: 1 1/2" = 1'-0"

REPLACEMENT OF EAST COURTYARD AHUS

8969-31 / C1558

218 West 28th St, New York, NY 10001

ADDENDUM #6
12/15/23
REVISIONS
ADDENDUM 4 12/06/23
ADDENDUM 6 12/15/23

57-23106

TYPICAL ROOF FRAMING DETAILS AND SECTIONS

S2.1