



CITY OF HOUSTON

Administration and Regulatory Affairs Department
Strategic Purchasing Division

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June 11, 2013

Subject: Letter of Clarification No. 3 to Invitation to Bid No. S50-C24582 to Fabricate and Install Hurricane Shutters for the General Services Department

To: All Prospective Bidders:

This letter of Clarification is being issued for the following reasons:

- **To extend the bid opening date, revise Section "B" Scope of Work/Technical Specifications and respond to questions posed by perspective bidders:**

1) **NOTICE TO BIDDER:**

The bid opening date has changed from 10:30 A.M. June 13, 2013 to 10:30 A.M., June 20, 2013.

- 1) Add Page Nos. 90 of 179 through Page Nos. 140 of 179 and Page Nos. 161 of 179 through 169 of 179 marked, REVISED 6/10/2013.
- 1) Remove Page Nos. 9 & 10 of 113 and replace with Page Nos. 9 & 10 of 179 marked, REVISED 6/10/2013.
- 2) The following questions and City of Houston responses are hereby incorporated and made a part of the Invitation to Bid:

Question No 1: We have not been able to locate an indication for the finish for the new steel columns that will be exposed at both buildings. Are these steel members to be galvanized, painted, powdercoated, Etc?

Answer: Refer to Page No. 69 of 179, Section 099600 - HIGH-PERFORMANCE COATINGS: For requirements of applications of finishes to steel members.

Question No 2: Some of the steel members are noted with sizes that do not appear in the standard steel manuals, please confirm these member sizes.

Answer: The thinner walled corner column is a result of using the larger HSS6X6 for geometric continuity from adjacent elevations. The thinner walled section is adequate for the required loads. The connection angle at the top of the post shown in detail Drawing No. 6/S2.01 is L8X4X7/16.

Question No 3: **1200 Travis** - Note 20a on Sheet A3.01 indicates film ton be applied at all widows; however there is no specification or other reference for this work. Please confirm the scope limits for this?

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Answer: The film has been removed from the Scope of Work. See the attached Page No. 161 of 179, Drawing No. A301_ASK-001_2013-060 marked, REVISED 6/10/2013.

Question No 4: **City Hall Annex** - There is a continuous portion of the existing plaster soffit, which scales at about 5'-0" wide; is this to be removed and replaced? Will the soffit framing need to be replaced? If so, is it suspended channel iron framing? Will the existing plaster that remains need to be refinished to avoid the cold joint and difference in texture that will be visible between the new and old plaster even after painting?

Answer: The City will remove the existing plaster soffit in its entirety to allow for abatement of the ceiling asbestos. The Contractor shall be required to replace in kind with suspended channel iron framing for installation of new column penetrations and new horizontal coiling door openings as required. See the revised Page No. 9 of **170** marked, REVISED 6/10/2013.

Question No. 5: **1200 Travis** – Details 5 & 9/A.501, don't show how the soffit can be supported where it extends under the shutter housing. The soffit system must not connect or be in contact in any way to the shutter system or else vibrations will transfer onto the plaster and cause cracking to occur. Additionally the portion between the shutter and the building will also be a problem; such a narrow soffit is going to be particularly vulnerable to cracking, especially around something that will vibrate.

Answer: The plaster soffit will be suspended from the existing concrete deck above. The shutter housing will be hung between the column separate from the soffit. The Contractor shall be required to provide manufacturer's prefab shutter opening at soffit and extend prefinished metal flashing/trim closure from back edge of shutter opening to above the edge of the curtain wall system and run column to column. Closure trim and shutter opening to match curtain wall (dark drone anodized). See the revised Page No. 10 of **170** marked, REVISED 6/10/2013.

Question No 6: **General** – Typically for projects involving welding, the Code Enforcement requires inspection by a third party. On prior projects, this work was performed by a City provided lab. Will such a lab be provided? If not, will the City or AE provide the special inspection?

Answer: Material testing services will be performed by a third party Contractor who has a contract with the City of Houston.

Question No. 7: **1200 Travis** – Some of the subcontractors have indicated the specifications do not match the type of shutters described

Answer: See the added Page Nos. 90 of 170 through Page Nos. 140 of 170, Technical Specifications for 1200 Travis marked, REVISED 6/10/2013.

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Question No 8: Can the City provide a copy of the structural drawings for the City Hall Annex and Houston Police Department? Also, provide the pictures that were taken inside the eave at 1200 Travis - Houston Police Department?

Answer: Structural drawings for the City Hall Annex are not available. See the attached structural drawings and photographs of the eave at 1200 Travis marked, REVISED 6/10/2013.

Note: No further questions will be accepted after the publication of this Letter of Clarification.

When issued, Letter(s) of Clarification shall automatically become a part of the solicitation documents and shall supersede any previous specification(s) and/or provision(s) in conflict with the Letter(s) of Clarification. All revisions, responses, and answers incorporated into the Letter(s) of Clarification are collaboratively from both the Strategic Purchasing Division and the applicable City Department(s). It is the responsibility of the bidder/respondent to ensure that it has obtained all such letter(s). By submitting a bid on this project, bidders/respondents shall be deemed to have received all Letter(s) of Clarification and to have incorporated them into this solicitation and resulting bid.

Furthermore, it is the responsibility of each Contractor to obtain any previous Letter of Clarification associated with this solicitation.

Arturo Lopez

Arturo Lopez
Senior Procurement Specialist
832-393-8731

Attachment: Revised Page Nos. 9,10, & 90 of 179 through Page Nos. 140 of 179 & 169 of 179 through 169 of 179.

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**REVISED 6/10/2013
TECHNICAL SPECIFICATIONS
1200 TRAVIS – HOUSTON POLICE DEPARTMENT**

SECTION 01 73 29

CUTTING AND PATCHING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes general administrative and procedural requirements governing cutting and patching.
- B. Related Sections include Division 02 Section "Selective Demolition" for demolition and removal of selected portions of the building including abatement of existing hazardous materials.

1.02 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.03 INFORMATIONAL SUBMITTALS

- A. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed. Include the following information:
 - 1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
 - 2. Changes to In-Place Construction: Describe anticipated results. Include changes to waterproofing components as well as changes in building appearance and other significant visual elements.
 - 3. Products: List products to be used for patching and firms or entities that will perform patching work.
 - 4. Dates: Indicate when cutting and patching will be performed.

1.04 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
 - 1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
 - 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as

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3. intended or that results in increased maintenance or decreased operational life or safety.
 4. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
 - a. Water, moisture, or vapor barriers.
 - b. Membranes and flashings.
 - c. Sprayed fire-resistive material.
 - d. Exterior, aluminum-framed curtain-wall and storefront construction.
 5. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- B. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.01 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

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- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in specified in other Division 1 Sections.
- F. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete and Terrazzo: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 - 5. Proceed with patching after construction operations requiring cutting are complete.
- G. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition. floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove

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in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

- a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 4. Soffits: Patch or repair in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
 6. Plaza Waterproofing: Patch waterproofing in a manner that restores membrane to a water condition and ensures moisture integrity of building enclosure.
- H. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

END OF SECTION

SECTION 02 41 19

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes demolition and removal of selected portions of building or structure.

1.02 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- C. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.03 PREINSTALLATION MEETINGS

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- A. Predemolition Conference: Conduct conference at Project site.
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review structural load limitations of existing structure.
 - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
 - 5. Review areas where existing construction is to remain and requires protection.

1.04 INFORMATIONAL SUBMITTALS

- A. Predemolition Photographs or Video: Submit before Work begins.

1.05 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: Hazardous materials are present in buildings and structures to be selectively demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.
 - 1. Hazardous materials will be removed by a qualified hazardous materials abatement contractor under separate contract to the Owner.
 - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

1.06 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

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PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION 3.01

EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- D. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.

3.02 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

3.03 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Comply with requirements for access and protection specified in Division 1.
- B. Temporary Facilities:
 - 1. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 2. Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.
 - a. At openings between space above exterior soffits and interior ceilings, install temporary weather barrier consisting of reinforced, fire-resistive sheet, 10-mil minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of

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construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

3.04 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 - a. Remove existing sections of terrazzo by saw cutting. Maintain a straight line for best appearance of finished Work.
2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
5. Dispose of demolished items and materials promptly.

B. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by the Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.05 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them.

1. Do not allow demolished materials to accumulate on-site.

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2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.06 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION

SECTION 051200

STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK

- A. Extent of structural steel work is shown on drawings including schedules, notes and details that show size and location of members, typical connections, and type of steel required. Furnish all labor, materials, services, equipment and appliances required in conjunction with or related to the furnishing, fabrication, delivery, and erection of all structural steel defined below. Include all supplementary parts, members and connections necessary to complete the structural steel work, regardless of whether all such items are specifically shown or specified on the drawings.
- B. Structural steel shall be defined as that work prescribed in Section 2.1 of the AISC "Code of Standard Practice for Steel Buildings and Bridges."

1.3 QUALIFICATIONS

- A. Fabricator
 1. The structural steel fabricator shall have not less than 5 years of experience in the successful fabrication of structural steel similar to this project.
 2. The structural steel fabricator must be registered and approved by the local building official to perform fabrication work without special inspection. Should the fabricator not be so approved, the fabricator shall reimburse the City for the cost

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of the special inspections required by the local building official.

- B. Detailer:
 - 1. The structural steel detailer shall have not less than 2 years of experience in the successful detailing of structural steel similar to this project including experience in selecting or completing structural steel connection details using information found in tables in the AISC "Steel Construction Manual.
- C. Erector:
 - 1. The structural steel erector shall have not less than 2 years of successful experience in the erection of structural steel of a similar nature to this project.
- D. Independent Testing Laboratory: Any testing laboratory retained to perform tests that are required by this specification shall meet the basic requirements of ASTM E 329.

1.4 QUALITY ASSURANCE

- A. The Contractor is responsible for quality control, including workmanship and materials furnished by his subcontractors and suppliers.
- B. Codes and Standards: Comply with provisions of following, except as otherwise indicated. For codes and standards for which no specific version is referenced, the version that is referenced in the applicable building code shall govern, or, if there is no reference in the building code, the latest version of the code or standard shall govern except as otherwise noted in the AISC Steel Construction Manual, 13th edition. Certain sections in this specification contain requirements that are more restrictive and/or different than contained in the standards listed. In such cases, the requirements of this specification shall control.
 - 1. All federal (OSHA), state and local laws that govern safety requirements for steel erection and other requirements if more stringent than the codes and standards enumerated below. OSHA requirements include regulation 29 CFR 1926, Part R, "Safety Standard for Steel Erection".
 - 2. AISC, "Code of Standard Practice for Steel Buildings and Bridges," except as noted herein.
 - a. Certain sections in this specification contain requirements that are more restrictive and/or different than contained in this standard. In such cases, the requirements of this specification shall control.
 - 3. ANSI/AISC 360, "Specification for Structural Steel Buildings."
 - 4. Research Council on Structural Connections (RCSC) "Specification for Structural Joints using High-Strength Bolts."
 - 5. AISC, "Steel Construction Manual", Thirteenth Edition.

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6. ANSI/AWS D1.1, "Structural Welding Code – Steel."
 7. The Society of Protective Coatings, "SSPC Painting Manual", Volumes 1 and 2.
- C. Qualifications for Welding Work: Qualify welding processes and welding operators in accordance with AWS "Structural Welding Code - Steel".
- D. Source Quality Control: Materials and fabrication procedures are subject to inspection and tests in the mill, shop, and field by the Owner's testing laboratory. Such inspections and tests will not relieve the Contractor of responsibility for providing materials and fabrication procedures in compliance with specified requirements. The Contractor shall promptly remove and replace materials or fabricated components which do not comply.
- E. Questions about Contract Documents: The Contractor shall promptly notify the Architect/Engineer whenever design of members and connections for any portion of the structure are not clearly indicated or when other questions exist about the Contract Documents. Such questions shall be resolved prior to the submission of shop drawings.
- F. Owner's Testing Laboratory Services: Inspection or testing by the Owner does not relieve the Contractor of his responsibility to perform the Work in accordance with the Contract Documents.
- G. Surveyor: The General Contractor shall employ a qualified land surveyor to perform surveys required by this specification.

1.5 SUBMITTALS

- A. Product Data: Submit producer's or manufacturer's specifications and installation instructions for following products; include laboratory test reports and other data to show compliance with specifications (including the specified standards):
1. Structural steel (each type), including certified copies of mill reports covering chemical and physical properties. For structural steel for which evidence exists that the steel may not conform to ASTM requirements, the contractor, where permitted by the engineer, shall engage the services of an independent testing laboratory to test the material according to ASTM A 6 and submit certified test reports that verify conformity to ASTM standards.
 2. High-strength bolts (each type), including nuts and washers, including certified copies of mill reports covering physical and chemical properties.
 3. Shrinkage-resistant grout.
 4. Welding electrodes (each type).
- B. Shop Drawing and Erection Drawings:
1. All drawings submitted for review shall have the approved shop drawing stamp of the Design Team as part of the title block. The shop drawing stamp will be

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provided in electronic format to the successful bidder.

2. Definitions:
 - a. Shop Drawings: Drawings of the individual structural steel shipping pieces that are to be produced in the fabrication shop.
 - b. Erection Drawings: Field-installation or member-placement drawings that are prepared by the Fabricator to show the location and attachment of the individual shipping pieces.
 3. Shop Drawings: Submit for review and approval shop drawings showing complete details and schedules for fabrication and assembly of structural steel members.
 4. Structural steel shop drawings shall include the following minimum information:
 - a. Include details of cuts, connections, holes, and other pertinent data. Indicate welds by standard AWS symbols, and show size, length, and type of each weld. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Holes, flange cuts, slots and openings shall be made as required by the structural drawings, all of which shall be properly located by means of templates.
 - b. Provide setting drawings, templates, and directions for installation of bolted connection, jacket assemblies, and other anchorages to be installed by others.
 5. Erection Drawings: Submit for review and approval complete erection drawings showing field-installation and member-placing instructions for locating and attaching the individual shipping pieces.
 6. The fabricator alone shall be responsible for all errors of detailing, fabrication, and for the correct fitting of the structural members.
 7. All fabricated material and connections shall fit within architectural constraints.
 8. Structural steel members for which shop drawings have not been reviewed and approved shall not be fabricated.
 9. The omission from the shop drawings of any materials required by the Contract Documents shall not relieve the Contractor of the responsibility of furnishing and installing such materials, even though the shop drawings may have been reviewed and approved.
- C. Test Reports: Submit certified reports of tests required by this Specification Section. Include data on type(s) of tests conducted and test results.
- D. Qualification Data:
1. If requested by Engineer or Architect, submit qualification data, including required certifications, for firms and persons specified in the "Qualifications" section under

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Part 1, to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

2. Submit Welding Procedure Specifications (WPS) in accordance with ANSI/AWS D1.1 for all welded joints. Submit test reports showing successful passage of qualification tests for all non-prequalified WPSs.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to site at such intervals to ensure uninterrupted progress of work.
- B. Store materials to permit easy access for inspection and identification. Keep steel members off ground, using pallets, platforms, or other supports. Protect steel members and packaged materials from corrosion and deterioration. Do not store materials on structure in a manner that might exceed allowable loads on or cause distortion or damage to members or supporting structures. Repair or replace damaged materials or structures as directed by Architect/Engineer.
- C. Furnish all fuel, maintenance, and equipment required for hoisting and placement of materials under this contract.
- D. Process, pay for and maintain all permits and certificates of on-site inspection required for derricks, cranes and hoisting equipment. No derrick, crane or hoisting equipment shall be operated without a certificate of operation and a certificate of on-site inspection, as required by governing authorities.
 1. In addition to the above, all hoisting equipment shall be installed, operated and maintained in accordance with all applicable regulations of authorities having jurisdiction.
 2. The Contractor shall furnish street storage and sidewalk crossing permits.

1.7 JOB CONDITIONS

- A. The Contractor shall coordinate the fabrication and erection of all structural steel work with the work of other trades.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Structural Steel: All hot rolled steel plates, shapes, sheet piling, and bars shall be new steel conforming to ASTM A 6.
- B. Structural steel shall comply with the provisions of the following ASTM Specifications as appropriate for the grades and types, and at the locations as specified on the drawings:
 1. Structural Steel Wide Flange and WT Shapes: High Strength Steel, ASTM A

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992. ASTM A 572, Grade 50 is acceptable as a substitute for A992.

2. Angle Shapes: Carbon Steel, ASTM A 36.
 3. Structural Steel Plates and Bars: Carbon Steel, ASTM A 36.
 4. Square and Rectangular HSS: ASTM A 500, Grade B ($F_y = 46$ ksi).
- C. Structural Bolts and Threaded Fasteners: Structural bolts and threaded fasteners shall comply with the following ASTM Specifications as appropriate for the types and at the locations as specified on the drawings:
1. ASTM A 325 Type 1.
 2. Bolts and Nuts, High Strength Bolts: Bolts and nuts for all high strength bolts shall be heavy hex head conforming to ANSI Standards B18.2.1 and B18.2.2 respectively. Nuts shall conform to ASTM A 563.
 3. Washers: All washers shall be circular, flat and smooth and shall conform to the requirements of Type A washers in ANSI Standard B23.1. Washers for high strength bolts shall be hardened and conform to ASTM F 436. Beveled washers for American Standard Beams and channels shall be square or rectangular, shall taper in thickness (16 2/3% slope) with an average thickness of 5/16". When an outer face of a bolted part has a slope greater than 1:20 with respect to a plane normal to the bolt axis, a beveled washer shall be used. Washers to be used with A490 bolts larger than 1 inch in diameter and installed over oversized or short-slotted holes and other similar situations shall conform to ASTM F 436 except with 5/16 inch minimum thickness.
 4. Zinc-Coated Bolts: ASTM A 325 bolts, with their nuts and washers, that are used to connect steel called for on the drawings or in the specifications as hot-dip galvanized after fabrication shall be zinc-coated either by the hot-dip process in accordance with ASTM A 153, Class C or by the mechanical deposition process in accordance with ASTM B 695, Class 50, Type 1. The bolts, nuts, and washers shall all be zinc-coated using the same process and they shall be considered together as an assembly and shall be tested and shipped together as such. Comply with all the requirements of ASTM A 325 and ASTM A 563 as they relate to zinc-coated materials. ASTM F 1852 bolts with their nuts, and washers shall be zinc-coated only by the mechanical deposition process in accordance with ASTM B 695, Class 50, Type 1. Do not zinc-coat ASTM A 490 bolts.
 5. Bolt Lubrication: All bolts shall be well lubricated at time of installation. Dry, rusty bolts will not be allowed.
 6. New Bolts: All bolts shall be new and shall not be reused.
- D. Electrodes for Welding:
1. Provide electrodes that comply with AWS D1.1, "Structural Welding Code - Steel" and that can produce welds that have a minimum Charpy V-notch toughness of 20 ft-lbs at 40° F, unless noted otherwise in these specifications or

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on the drawings.

2. Electrodes for various welding processes shall be as specified below:

a. SMAW:

1) E70XX low hydrogen

b. SAW:

1) F7X-EXXX

c. GMAW:

1) ER70S-X

d. FCAW:

1) E7XT-X

3. Electrodes shall be compatible with parent metal joined.

E. Structural Steel Primer Paint:

1. Refer to Architect's drawings and specifications for primer and final paint finish requirements of structural steel. Primer paint shall be compatible with final paint requirements.

F. Non-Shrink Grout: Provide grout type(s) as specified on the drawings:

1. Non-Metallic Non-Shrink Grout: Premixed, non-corrosive, non-staining product containing Portland cement, silica sands, shrinkage compensating agents, and fluidity improving compounds. Conform to ASTM C 1107. Provide the minimum strength of 6,000 psi as determined by grout cube test at 28 days:

Subject to conformance with specified requirements, acceptable non-shrink grouts include:

a. L&M Construction Chemicals, Inc.; Crystex and Duragrout.

b. Dayton-Superior Corporation; Sure Grip High Performance Grout and 1107 Advantage Grout.

c. BASF Construction Chemicals; Masterflow 555, and Set Grout.

d. U.S. Grout Corp.; Five Star Grout.

e. The Euclid Chemical Company; NS Grout.

f. Hilti, Inc.; CG 200 PC.

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2.2 FABRICATION

- A. Shop Fabrication and Assembly:
1. Fabricate and assemble structural assemblies in shop to greatest extent possible. Fabricate items of structural steel in accordance with AISC Specification and as indicated on approved final shop drawings. Fabricator shall coordinate connection details, joint fit-up procedures, and field adjustment requirements with erector. The Contractor shall coordinate provision of all erection bolts, lifting lugs or other devices required for erection with the fabricator and the erector and for interference with architectural finishes and constraints.
 2. Properly mark and match-mark materials for field assembly. Fabricate for delivery sequence which will expedite erection and minimize field handling of materials.
 3. Clearly mark the grade of steel on each piece, distinguishable in the field from floor surfaces, for purpose of field inspection and confirmation of grade of steel.
 4. Milled surfaces of built-up sections shall be completely assembled or welded before milling.
- B. Dimensional Tolerances: Dimensional tolerances of fabricated structural steel shall conform to Section 6.4 of the AISC Code of Standard Practice.
- C. Splices in Structural Steel: Splicing of structural steel members in the shop or the field is prohibited without prior approval of the Engineer. Any member having a splice not shown and detailed on approved shop drawings will be rejected.
- D. Cutting: Manual oxygen cutting shall be done only with a mechanically guided torch. An unguided torch may be used provided the cut is not within 1/8 inch of the finished dimension and final removal is completed by means such as chipping or grinding to produce a smooth surface quality free of notches or jagged edges. All corners shall be smooth and rounded to a minimum 1/2" radius.
- E. Holes for Other Work: Provide holes required for securing other work to structural steel framing, and for passage of other work through steel framing members as shown on the contract documents, and/or the final shop drawings.
1. Provide specialty items as indicated to receive other work.
 2. Cut, drill, or punch holes perpendicular to metal surfaces. Do not flame cut holes or enlarge holes by burning. Drill holes in bearing plates.
- F. Lifting and Erection Devices: The fabricator shall be responsible for designing, detailing and furnishing all lifting devices and erection aids required for erection. Such devices shall be removed after erection if they interfere with architectural finish requirements.
- G. Drainage Holes: Provide 1 inch diameter drainage (weep) holes in all members (trusses, girders, beams, etc.) exposed to weather where rain water could collect (at

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low points and/or behind dams caused by connections, stiffener plates, etc.). Show all holes on shop drawings for review by the Engineer.

2.3 WELDING

- A. Code: All shop and field welding shall conform to all requirements in the "Structural Welding Code - Steel", ANSI/AWS D1.1, as published by the American Welding Society (AWS).
- B. Welder Certification: All shop and field welders shall be certified according to all the applicable AWS procedures for the welding process and welding position used. Each welder shall be assigned an identifying symbol or mark and all shop and field welded connections containing complete or partial joint penetration welds, multi-pass fillet welds, and fillet welds greater than 5/16" shall be identified by the symbol or mark of the welder responsible for the connection.
- C. Minimum Size and Strength:
 - 1. Fillet Welds: Minimum size of fillet welds shall be as specified in Table J2.4 in AISC Specification, Chapter J.
 - 2. Minimum Strength of Welded Connections: Except as specified below in "Connections" or noted otherwise on the drawings, all shop and field welds shall develop the full tensile strength of the member or element joined.
- D. Filler Metal Requirements: Weld metal shall be as specified in Table J2.5 in AISC Specification, Chapter J and other requirements of this specification.
- E. Welding Procedure Specification:
 - 1. All welding shall be performed in accordance with a Welding Procedure Specification (WPS) as required in AWS D1.1 and approved by the Owner's Testing Laboratory and the Architect/Engineer. The WPS variables shall be within the parameters established by the filler-metal manufacturer. Engage the services of an independent testing laboratory to provide the qualification testing required by AWS D 1.1, Chapter 4, part B to qualify any non-prequalified WPS needed for the project. The testing laboratory shall prepare Welding Procedure Qualification Records (WPQR) documenting the successful qualification of each Welding Procedure Specification.
- F. Welding Procedures:
 - 1. All welding processes shall comply with the requirements of ANSI/AWS D1.1 unless noted otherwise.
 - 2. Welds not specified shall, if possible, be continuous fillet welds developing the minimum strength, as specified above, using not less than the minimum fillet welds as specified by AISC.
 - 3. The toughness and notch sensitivity of the steel shall be considered in the formation of all welding procedures to prevent brittle and premature fracture

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during fabrication and erection.

4. Before welding is started, the fabricator shall submit for the approval of the Owner's Testing Laboratory in consultation with the Architect/Engineer, written Welding Procedure Specification for all joints to be welded. After approval, the Welding Procedure Specification shall be followed without deviation unless specific approval for change is obtained from the Owner's Testing Laboratory and the Architect/Engineer.
5. Before welding, particular attention shall be paid to surface preparation, fit up and cleanliness of surfaces to be welded.
6. Minimum preheat and interpass temperatures for structural steel welding shall be as specified in ANSI/AWS D1.1, except that no welding shall be performed when the ambient temperature is lower than 0 degrees F. The temperature shall be measured from the side opposite that upon which the preheat is applied.
7. The heat, input, length of weld and sequence of weld shall be controlled to prevent distortions. The surfaces to be welded and the filler metals to be used shall be subject to inspection before any welding is performed.
8. Welds shall be sound throughout. There shall be no crack in any weld or weld pass. Welds shall be considered sound if they conform to AWS requirements, as confirmed by non-destructive testing.
9. Welds shall be free from overlap.
10. Craters shall be filled to the full cross section of the welds.
11. For high-strength low-alloy steels, follow welding procedures as recommended by steel producer for exposed and concealed connections.
12. Fabricator and erector shall coordinate welding responsibility at all welded joints.

2.4 BOLTING

- A. Bolt Diameter: Minimum bolt diameter shall be 3/4 inch. The difference in diameter between bolts of differing sizes used on the project shall be not less than 1/4".
- B. Connection Type: Unless noted otherwise on the drawings, all bolted connections shall be snug-tightened using high-strength bolts in standard holes (hole diameter nominally 1/16 inch greater than the nominal bolt diameter) with threads included in the shear planes. Notwithstanding, the contractor shall be responsible to adhere to provisions of AISC Specification Section J1.10, which lists circumstances under which certain connections require pretensioned high strength bolts.
- C. Oversize, Short Slotted and Long Slotted Holes: The dimensions and washer requirements of oversize, short slotted, and long slotted holes shall conform to the AISC "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" Unless noted otherwise in the drawings.

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- D. Washers: Washers under the bolt head and/or nut shall be used as required by the AISC "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- E. Bolt Lubrication: All bolts shall be well lubricated at time of installation. Dry, rusty bolts will not be allowed.
- F. Impact Wrenches: Properly sized and lubricated air impact wrenches with adequate air pressure shall be utilized for all bolt installation.
- G. New Bolts: All bolts shall be new and shall not be reused.

2.5 SURFACE PREPARATION AND SHOP PRIME PAINTING

- A. Specification: Surface preparation, paint, and painting practices shall conform to the "SSPC Painting Manual", Volumes 1 and 2.
- B. Scope: All steel shall remain unpainted, except the following:
 - 1. Shop paint surfaces that are to remain exposed to view in the final construction.
 - 2. Shop paint any steel other than weathering steel that, in the final construction, will not be in a controlled environment and is therefore subject to moisture or high humidity infiltration and that has not been specified to be galvanized.
 - 3. Coordinate all shop painting of structural steel with Architect's painting requirements as specified on the architectural drawings and in the specifications. The Fabricator shall be responsible for determining all painting requirements (which surfaces are to be painted or left unpainted) on the project prior to fabrication.
- C. Surface Preparation and Primer Paint - Shop Painted Steel:
 - 1. Surface Preparation: Prepare the surface of all structural steel specified to be shop painted as required by the paint manufacturer or the Society for Protective Coatings specifications, but not less than the following:
 - a. SSPC-SP 6, "Commercial Blast Cleaning" shall be applied to the faying surfaces (including filler and member-end supplement plates, if any) of connections that are noted on the drawings as requiring a slip-critical coating. At a minimum, apply this surface preparation to the area between and surrounding all bolt holes including the area up to 2" outside the outer-most holes.
 - 2. Priming: Immediately after surface preparation, apply primer to all structural steel specified to be shop primed in strict accordance with manufacturer's instructions and the Society for Protective Coatings specifications. Apply paint at a rate to conform to the manufacturer's written instructions and to provide a dry film thickness of not less than 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, welds, and all exposed surfaces. Apply two coats to surfaces that are inaccessible after assembly or erection. Change the color of the second coat to distinguish it from the first coat.

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3. Finish Coat: Coordinate shop primer paint requirements with architectural drawings and specifications. The primer selected must be compatible with any specified finish coat.
- D. Shop Touch-Up Painting: The Fabricator shall provide for cleaning and touch-up painting of welds, bolted connections (including nuts, bolts, washers, filler plates, member end supplement plates and welds, if any), and abraded areas. Prior to shipment, apply paint to exposed areas using same materials and surface preparation as used for shop painting. Paint shall be applied by brush or spray with minimum dry film thickness of 1.5 mils.

PART 3 - EXECUTION

3.1 ERECTION

- A. The Erection work shall comply with the requirements of AISC Specification Section M4.
- B. Inspection: Erector shall examine areas and conditions under which structural steel work is to be installed and notify the Contractor and the Architect/Engineer in writing of conditions detrimental to proper and timely completion of the work.
- C. Erection Tolerances: Erection tolerances of anchor rods, embedded items, and all structural steel shall conform to the AISC Code of Standard Practice, Section 7, unless stricter tolerances are specified elsewhere in the contract documents.
- D. Base Plates and Bearing Plates: Remove loose latent material from bearing surfaces and base and bearing plates. Set plates to the elevation indicated on the drawings and level using steel shims (plastic shims will not be allowed) or by three leveling screws with weldments at the plate edges. After all protruding plates have been trimmed, grout plates solidly between bearing surfaces using the specified grout, ensuring no voids are present. Finish exposed surfaces, protect installed materials, and allow to wet cure. For proprietary grout materials, comply with manufacturer's instructions. Tighten anchor bolts after supported members have been positioned and plumbed.
- E. Splices: Splices will be permitted only where indicated on the contract drawings and approved shop drawings. Fastenings of splices of compression members shall be done after the abutting surfaces have been brought completely into contact within AISC tolerances. Bearing surfaces and surfaces that will be in permanent contact are to be cleaned before the members are assembled.
- F. Field Assembly of Structural Steel:
 1. As erection of the steel progresses, the work shall be fastened securely to safely carry all dead load, wind and erection forces. Particular care shall be exercised to ensure straightness and tautness of bracing immediately upon raising a steel column.
 2. Provide temporary planking and working platforms as necessary to effectively complete work.

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3. Set structural frames accurately to lines and elevations indicated. Align and adjust various members forming part of complete frame or structure before permanently fastening. Clean bearing surfaces and other surfaces which will be in permanent contact before assembly. Perform necessary adjustments to compensate for discrepancies in elevations and alignment. Level and plumb individual members of structure within specified AISC tolerances. The Contractor shall coordinate with Erector and Fabricator regarding possible discrepancies in member lengths between temperature at time of fabrication and temperatures during erection, and shall make necessary adjustments to ensure plumbness within AISC tolerances at 70°F. Compensate for cumulative welding draw, construction loadings, sequential applications of dead loads, or any other predictable conditions that could cause distortions to exceed tolerance limitations.
 4. On welded construction exposed to view or weather, remove erection bolts, fill holes with plug welds or filler and grind smooth at exposed surfaces.
 5. Comply with AISC Specifications for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces receiving field welds.
 6. Comply with all bolting and welding requirements of Part 2 of this specification section.
- G. Field Modifications to Structural Steel: Errors in shop fabrication or deformation resulting from handling and transportation that prevent the proper assembly and structural fitting of parts shall be reported immediately to the Architect/Engineer, and approval of the method of correction shall be obtained. Approved corrections shall be made at no additional cost to the City. Do not use cutting torches, reamers, or other devices in the field for unauthorized correction of fabrication errors.
- H. Removal of Erection Aids and Devices: The erector shall remove all erection aids and devices that interfere with architectural finish or MEP requirements.
- I. Field Touch-Up Painting:
1. Clean field welds, unpainted areas of bolted connections (including all exposed areas of nuts, bolts, washers, filler plates, member end supplement plates, and welds) and any shop painted areas that are abraded. Apply paint to all exposed areas using same material and surface preparation as used for shop painting. Apply by brush or spray to provide minimum dry film thickness of 1.5 mils.
 2. Clean field welds, ungalvanized areas of bolted connections (including all exposed areas of nuts, bolts, washers, filler plates, member end supplement plates and welds) and any galvanized areas that are abraded. Prepare surfaces and apply specified galvanizing repair paint in accordance with ASTM A 780.
 3. The Contractor shall ensure that, at the substantial completion of the project, all structural steel, bolted and/or welded, required to be painted shall have all necessary steel surfaces painted (including touch-up painting as required) to prevent corrosion bleeding.

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- J. Clean Up: Clean up all debris caused by the Work of this Section, keeping the premises neat and clean at all times.

3.2 QUALITY ASSURANCE TESTING AND INSPECTION DURING CONSTRUCTION

A. Scope of Work:

1. The Owner's Testing Laboratory: An independent testing laboratory will sample and test materials as they are being installed for compliance with acceptance criteria as specified and report and interpret the results. The laboratory shall monitor and report on the installation of constructed work and shall perform tests on the completed construction as required to indicate the Contractor's compliance with the various material specifications governing this work. The City shall be responsible for paying the testing laboratory for these services.
2. The Owner's Testing Laboratory or a separate agency shall serve as a Special Inspector to provide Special Inspection services for the items listed below. The scope of such services for each item shall be as defined in the IBC 2006 or as defined in the City of Houston building code. These inspections are mandatory for conformance to the legal requirements of the building code and shall be in addition to the inspections and tests otherwise defined in this specification.
3. The Contractor will engage a qualified testing and inspection agency (the testing laboratory) to perform field tests and inspections and prepare test reports. The contractor shall not engage the same testing laboratory for construction services as the Owner has for quality assurance testing, unless agreed to by the Owner.

B. Special Inspections:

1. Inspection of Structural Steel, Bolting, and Welding Material
2. Welding of Structural Steel
3. High-Strength Bolting

C. Qualifications:

1. Qualifications of Special Inspector: The special inspector shall be a qualified person who shall demonstrate competence, to the satisfaction of the Building Official, for inspection of the particular type of construction or operation being inspected. The Special Inspector shall meet the legal qualifications of the building code having jurisdiction.
2. Testing Laboratory:
 - a. The Testing Laboratory shall meet the basic requirements of ASTM E 329 and shall submit to the Owner, Architect, and Engineer evidence of current accreditation from the American Association for Laboratory Accreditation, the AASHTO Accreditation Program or the "NIST" National Voluntary Laboratory Accreditation Program.

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- b. The Testing Laboratory shall be an Approved Agency by the Building Official of the City of Houston to perform Special Inspections and other tests and inspections as outlined in the applicable building code.
 - c. Tests and inspections shall be conducted in accordance with specified requirements, and if not specified, in accordance with the applicable standards of the American Society for Testing and Materials or other recognized and accepted authorities in the field.
3. Qualifications of Welding Inspectors
- a. Inspectors performing visual weld inspection shall meet the requirements of AWS D1.1 Section 6.1.4. Welding inspection shall be supervised and the inspection reports signed by an inspector with current certification as an AWS Certified Welding Inspector (CWI).
 - b. Inspectors performing nondestructive examinations of welds other than visual inspection (MT, PT, UT, RT) shall meet the requirements of AWS D1.1, Section 6.14.6.

D. Authorities and Duties of the Laboratory:

1. Attending Preconstruction Conferences: The Owner's Testing Laboratory shall receive from the Owner and review the project plans and specifications with the Architect and Engineer immediately upon receipt and prior to the start of construction. The Laboratory shall attend preconstruction conferences with the Architect, Engineer, Project Manager, General Contractor, and Material Suppliers as required to coordinate materials inspection and testing requirements with the planned construction schedule and shall participate in such conferences throughout the course of the project.
2. Cost Proposal: The Testing Laboratory's proposal to the Owner shall contain unit price stipulations for specified tests and inspections and on an hourly basis for personnel. A total estimated price shall also be submitted.
3. Cooperation with Design Team: The Laboratory shall cooperate with the Architect, Engineer, and Contractor and provide qualified personnel promptly on notice.
4. The Laboratory shall perform the required inspections, sampling, and testing of materials as specified under each section and observe methods of construction for compliance with the requirements of the Contract Documents and the applicable building code.
5. Inspections Required by Government Agencies: The Testing Laboratory shall perform inspections and submit reports and certifications as required by government agencies having jurisdiction over the aspects of the project covered by this specification.
6. Notification of Deficiencies in the Work: The Laboratory shall notify the Architect, Engineer, and Contractor within 24 hours of discovery by telephone or e-mail,

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and then in writing of observed irregularities and deficiencies of the work and other conditions not in compliance with the requirements of the Contract Documents.

7. Reports:
 - a. Information on Reports: The Laboratory shall submit copies of reports of inspections and tests promptly and directly to the parties named below. The reports shall contain at least the following information:
 - 1) Project Name.
 - 2) Date report issued.
 - 3) Testing Laboratory name and address.
 - 4) Name and signature of inspector.
 - 5) Date of inspection and sampling.
 - 6) Date of test.
 - 7) Identification of product and Specification section.
 - 8) Location in the project.
 - 9) Identification of inspection or test.
 - 10) Record of weather conditions and temperature (if applicable).
 - 11) Results of test regarding compliance with Contract Documents.
 - b. Copies: The Laboratory shall send signed copies of test and inspection reports to the following parties:
 - 1) Copies of Reports to the Owner or his representative.
 - 2) Copies of Reports to General Contractor.
 - 3) Copies of Reports to Architect.
 - 4) Copies of Reports to the Engineer of responsibility.
 - c. Certification: Upon completion of the job, the Laboratory shall furnish to the Owner, Architect, and Engineer of Record, a statement signed by a licensed professional engineer that, to the best of their knowledge, required tests and inspections were made in accordance with the requirements of the Contract Documents.
8. Accounting: The Testing Laboratory shall be responsible for separating and billing costs attributed to the Owner and costs attributed to the Contractor.
9. Monitoring Product and Material Certifications: The Testing Laboratory shall be responsible for monitoring the submittals of product and material certifications from manufacturers and suppliers as specified in the Specifications and shall report to the Owner, Architect, and Engineer when those submittals are not made in a timely manner.
10. Limitations of Authority: The Testing Laboratory is not authorized to revoke, alter, relax, enlarge upon, or release any requirements of the Specifications or to approve or accept any portion of the work or to perform any duties of the Contractor and its Subcontractors.

E. Authority and duties of the Contractor

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1. Cooperation with Design team: The Contractor shall cooperate with laboratory personnel, provide access to the work, and to manufacturer's operations.
2. Furnishing Samples and Certificates: The Contractor shall provide to the laboratory certificates and representative samples of materials proposed for use in the work in quantities sufficient for accurate testing as specified.
3. Furnishing Casual Labor, Equipment and Facilities: The Contractor shall furnish casual labor, equipment, and facilities as required for sampling and testing by the laboratory and otherwise facilitate the required inspections and tests.
4. Advance Notice: The Contractor shall be responsible for notifying the Testing Laboratory sufficiently in advance of operations to allow for assignment of personnel and scheduling of tests. Failure to sufficiently notify may result in additional costs incurred by the Testing Laboratory that may be back-charged to the Contractor by the Owner.
5. Payment for Substitution Testing: The Contractor shall arrange for and pay for any additional samples and tests above those required by the Contract Documents as requested by the Contractor for his convenience in performing the work.
6. Payment for Retesting: The Contractor shall be liable to the Owner for the cost for any additional inspections, sampling, testing, and retesting done by the Owner's Testing Laboratory as required when initial tests indicate work does not comply with the requirements of the Contract Documents.
7. Payment by Contractor: The Contractor shall be required to furnish and pay for the following items if required:
 - a. Certification of structural steel mill order.
 - b. Certification of welders and preparation of Welding Procedure Specifications.
 - c. Tests, samples, and mock-ups of substitute material where the substitution is requested by the Contractor and the tests are necessary in the opinion of the Owner, Architect or Engineer to establish equality with specified items.
 - d. Any other tests when such costs are required by the Contract Documents to be paid by the Contractor.
8. Notification of Source Change: The Contractor shall be responsible for notifying the Owner, Architect, Engineer, and Owner's Testing Laboratory when the source of any material is changed after the original tests or inspections have been made.
9. Tests for Suspected Deficient Work: If in the opinion of the City, Architect, or Engineer any of the work of the Contractor is not satisfactory, the Contractor shall furnish and pay for all tests that the Owner, Architect, or Engineer deem advisable to determine its proper construction. The City shall pay all costs if the

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tests prove the questioned work to be satisfactory.

F. Contract Obligations:

1. **Owner Responsibility:** The Owner shall pay for initial shop and field inspections and tests (laboratory services) as required during the fabrication and erection of the structural steel. The Contractor will be liable to the Owner for the cost for testing and retesting of materials that do not comply with the requirements of the Contract Documents and shall furnish and pay for the testing and inspection of other items as specified in these specifications.
2. **Contractor Responsibility:** The Contractor shall provide the Testing Laboratory with the following:
 - a. A complete set of shop and erection drawings that have been reviewed by the Architect/Engineer and including all revisions and addenda.
 - b. Cutting lists, order sheets, material bills, shipping bills, and mill test reports.
 - c. Information as to time and place of all rollings and shipment of material to shop.
 - d. Representative sample pieces requested for testing.
 - e. Full and ample means and assistance for testing all material
 - f. Proper facilities, including scaffolding, temporary work platforms, hoisting facilities, etc, for inspection of work in the mills, shop, and field.
3. **Testing Laboratory Responsibility:** The inspection by the Testing Laboratory of the Fabricator's work shall be in sequence, timely, and performed in such a manner so that corrections can be made without delaying the progress of the work. Inspections shall be performed by qualified technicians with a minimum of two years experience in structural steel testing and inspection. See "Qualifications of Welding Inspectors" above for special requirements for welding inspectors. The Testing Laboratory shall provide test reports of all inspections. All test reports shall indicate types and locations of all defects found during inspection, the measures required and performed to correct such defects, statements of final approval of all welding and bolting of shop and field connections, and other fabrication and erection data pertinent to the safe and proper welding and bolting of shop and field connections. In addition to the parties listed in this Specification the Fabricator and Erector shall receive copies of all test reports.
4. **Duties and Responsibilities of the Special Inspector:**
 - a. The special inspector shall observe the work assigned to ascertain that, to the best of his/her knowledge, it is in conformance with the approved design drawings and specifications.

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- b. The special inspector shall keep records of inspections and shall furnish inspection reports to the Building Official, the Architect/Engineer, and the Owner. All discrepancies shall be brought to the immediate attention of the Architect/Engineer, Contractor, and Owner. A report that the corrected work has been inspected shall be sent to the Building Official, the Architect/Engineer, and the City.
 - c. The special inspector shall create and maintain a log of all discrepancies throughout the duration of the project. This log shall include, but is not limited to the discrepancy date, description of the discrepancy, plans or views or specification reference, description of as-built condition, description of any remedial work performed and status of the discrepancy. This log shall be submitted to the contractor and Architect/Engineer on a periodic basis for review and comment. Upon completion this log shall be submitted as an entirety as an attachment to the final signed report described below.
 - d. The special inspector shall submit a final signed report stating whether the work requiring special inspection was, to the best of their inspector's knowledge, in conformance to the approved plans and specifications and the applicable workmanship provisions of the building code.
5. Rejection of Material or Workmanship: The City, Architect, Engineer, and Testing Laboratory reserve the right to reject any material or workmanship not in conformance with the Contract Documents at any time during the progress of the work. However, this provision does not allow waiving the obligation for timely, in sequence inspections.
- G. Field Inspections: The Owner's Testing Laboratory shall provide the following inspections in the field:
1. Obtain the planned erection procedure, and review with the Erectors supervisory personnel.
 2. Check the installation of base plates for proper leveling, grout type, and grout application.
 3. Conduct welding inspection and verification testing per detailed requirement of section on Welding Inspection and Testing below.
 4. Conduct high-strength bolting inspection per detailed requirements of Section on High-Strength Bolting and Testing below.
 5. Periodically inspect the steel frame for such items as bracing and stiffening details, member locations, and joint details at each connection for compliance with approved construction documents.
 6. Endeavor to guard the City against the Contractor cutting, grinding, reaming, or making any other field modification to structural steel without the prior approval of the Engineer. Report any noted unauthorized modifications to the Owner and Engineer.

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- H. Weld Inspection and Testing: The Owner's Testing Laboratory shall make the following inspections and tests of the welds and welding processes. Welds performed in the fabricating shop may be inspected in the field unless continuous monitoring of the welding process is herein specified or if access in the field due to other work or shop finishes makes field inspection impractical:
1. Approve Welding Procedure Specifications submitted by the Contractor. Approve any changes submitted by the Contractor to any WPS that has already been approved. Obtain the Welding Procedure Qualification Record (WPQR) for each successful WPS qualification.
 2. Verify welder qualifications either by certification and/or by retesting. Obtain welder certificates.
 3. Verify welding electrodes to be used and other welding consumables as the job progresses.
 4. Periodically observe joint preparation, assembly practice, welding techniques including preheating and sequence, and the performance of welders with sufficient frequency to assure compliance with code and contract document requirements. Check preheating to assure conformance with AWS D1.1, Section 5.6. Verify procedure for control of distortion and shrinkage stresses.
 5. Observe joint preparation and fit up.
 6. Visually inspect 100 % of welds for proper size, length, location, and weld quality in accordance with AWS D1.1 requirements. Unless specifically noted otherwise, all welding shall be considered statically loaded nontubular connections.
 7. In addition to the inspections above, perform the following:
 - a. Check preheating to assure conformance with AWS D1.1, Section 5.6. Verify procedure for control of distortion and shrinkage stresses.
 - b. Periodically monitor welding of single-pass fillet welds that are less than or equal to 5/16 inch.
 8. Weld Verification Testing Scope:
 - a. Perform nondestructive examination services using a qualified technician with the necessary equipment to perform the following:
 - 1) Nondestructive examination conducted in accordance with the specific requirements for the item being examined including radiographic (RT), ultrasonic (UT), magnetic particle (MT), or dye-penetrant inspection (PT). Nondestructive inspection procedures shall conform to AWS D1.1.
 - 2) Interpret, record, and report results of the nondestructive tests.
 - 3) Mark for repair, any area not meeting specification requirements. Correction of rejected welds shall be made in accordance with AWS

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- 4) Re-examine repair areas and interpret, record, and report the results of examinations of repair welds.
 - 5) Verify that quality of welds meet the requirements of AWS D1.1.
- b. Acceptance Criteria
- 1) Visual, MT, PT shall be per AWS D1.1 Table 6.1.
 - 2) UT testing shall be per AWS D1.1 6.13.1 and Table 6.2.
- c. The costs of repairing defective welds and the costs of retesting by the Testing Laboratory providing services for the Owner shall be borne by the Contractor.
- I. High-Strength Bolting Inspection and Testing: The Owner's Testing Laboratory shall perform the following inspections and test for connections joined with high-strength bolting.
1. Daily check the calibration of impact wrenches used in field bolted connections.
 2. Inspect bolt installation for 100% of high strength bolted connections according to inspection procedures outlined in the "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts".
 3. Monitoring of Bolting Installation:
 - a. Periodic Monitoring: All joints and bolt installation methods shall be monitored on a periodic basis.
- J. Non-shrink grout for base plates and bearing plates:
1. Compressive Strength Tests (by the Owner's Testing Laboratory): Compressive strength of grout shall be determined by testing grout cubes according to the requirements of ASTM C 109 - Modified. Test one set of three cubes at 1 day, and one set of three cubes at 28 days.
 2. Frequency of Testing: One set of cubes (6 cubes) shall be made for each day's operation of grouting ducts.

END OF SECTION 051200

SECTION 055000

METAL FABRICATIONS

PART 1 - GENERAL

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1.01 SUMMARY

- A. Section includes miscellaneous steel framing and supports.
- B. Related Sections include Division 05 Section "Structural Steel."

1.02 ACTION SUBMITTALS

- A. Product Data: For post-installed anchors.
- B. Shop Drawings: Show fabrication and installation details for metal fabrications. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
 - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.02 METALS

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- C. Steel Tubing: ASTM A 500/A 500M, cold-formed steel tubing.
- D. Steel Pipe: ASTM A 53/A 53M, Standard Weight (Schedule 40) unless otherwise indicated.

2.03 FASTENERS

- A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners.
- B. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors.
 - 1. Material for Exterior Locations and Where Stainless Steel is Indicated: Alloy Group 1 stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.

2.04 MISCELLANEOUS MATERIALS

- A. Shop Primers: Provide primers that comply with Division 09 Section "High-Performance Coatings."
- B. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

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2.05 FABRICATION, GENERAL

- A. Shop Assembly: Use connections that maintain structural value of joined pieces.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges. Remove sharp or rough areas on exposed surfaces.
- C. Weld corners and seams continuously 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.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended.
- D. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Locate joints where least conspicuous.
- E. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

2.06 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide supplementary steel framing and supports not specified in Division 08 "Overhead Coiling Doors" as required to complete the Work.

2.07 FINISHES

- A. General: Finish metal fabrications after assembly.
- B. Steel and Iron Finishes:
 - 1. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.
 - 2. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.
 - a. Shop prime with primers specified in Division 09 Section "High-Performance Coatings."
 - 3. Preparation for Shop Priming: Prepare surfaces to comply with SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - 4. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

PART 3 - EXECUTION

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3.01 INSTALLATION

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.
- C. Fit exposed connections accurately together to form hairline joints. 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 surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction.

3.02 ADJUSTING AND CLEANING

- A. Touchup: Immediately after erection, clean bolted connections and abraded areas. Touchup shop applied finish to with the same material as used for shop finishing to match undamaged surfaces.

END OF SECTION

SECTION 07 92 00

JOINT SEALANTS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Silicone joint sealants.
 - 2. Urethane joint sealants.

1.02 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.

1.03 INFORMATIONAL SUBMITTALS

- A. Field-adhesion test reports.
- B. Warranties.

1.04 WARRANTY

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- A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

- B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Ten years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

- A. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

2.02 SILICONE JOINT SEALANTS

- A. Silicone, S, NS, 50, NT: Single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dow Corning Corporation; 791.
 - b. GE Construction Sealants; SCS2000 SilPruf.
 - c. Pecora Corporation; PCS.
 - d. Sika Corporation U.S.; Sikasil WS-295.

2.03 URETHANE JOINT SEALANTS

- A. Urethane, M, P, 25, T, NT: Multicomponent, pourable, plus 25 percent / minus 25 percent movement capability, traffic and nontraffic-use, urethane joint sealant; ASTM C 920, Type M, Grade P, Class 25, Uses T and NT.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. BASF Construction Chemicals, LLC, Building Systems; Sonolastic SL 2.
 - b. LymTal International, Inc.; Iso-Flex 880 GB.
 - c. Sika Corporation U.S.; Sikaflex-2c SL.

2.04 JOINT SEALANT BACKING

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- A. Cylindrical Sealant Backings: ASTM C 1330, of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance and as approved in writing by joint-sealant manufacturer for joint application indicated.
- B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

2.05 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.
 - 1. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint- sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.03 INSTALLATION

- A. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

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- B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of sealant backings.
 - 2. Do not stretch, twist, puncture, or tear sealant backings.
 - 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 - 1. Remove excess sealant from surfaces adjacent to joints.
 - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 - 3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
- F. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.04 FIELD QUALITY CONTROL

- A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
 - 1. Extent of Testing: Test completed and cured sealant joints as follows:
 - a. Perform 3 tests for the first 1000 feet of joint length for each kind of sealant and joint substrate.
 - b. Perform 1 test for each 1000 feet of joint length thereafter or 1 test per each floor per elevation.

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2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

B. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.05 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.06 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces.

1. Joint Locations:

- a. Control and expansion joints in terrazzo.
- b. Isolation joints in terazzo.
- c. Other joints as indicated on Drawings.

2. Joint Sealant: Urethane, M, P, 25, T, NT.

3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

B. Exterior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations: Joints between metal components and cement plaster.

2. Joint Sealant: Silicone.

3. Joint-Sealant Color: As selected by Owner from manufacturer's full range of colors.

END OF SECTION

SECTION 08 33 23

OVERHEAD COILING DOORS

PART 1 - GENERAL

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1.01 SUMMARY

- A. Section includes manually operated overhead coiling doors.
- B. Related Sections include:
 - 1. Division 05 Section "Metal Fabrications" for miscellaneous steel supports.
 - 2. Division 09 Section "High-Performance Coatings" for finish painting of factory-primed doors.

1.02 ACTION SUBMITTALS

- A. Product Data: For each type and size of overhead coiling door and accessory.
 - 1. Include construction details, material descriptions, dimensions of individual components, profiles for slats, and finishes.
- B. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data.
 - 1. Include plans, elevations, sections, and mounting details.
 - 2. Include details of equipment assemblies, and indicate dimensions, required clearances, method of field assembly, components, and location and size of each field connection.
 - 3. Include points of attachment and their corresponding static and dynamic loads imposed on structure.
 - 4. For exterior components, include details of provisions for assembly expansion and contraction and for excluding and draining moisture to the exterior.
 - 5. Show locations of operators and other accessories.

1.03 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Manufacturer's certificate stating that installation complies with specified requirements.
- C. Manufacturer's installation instructions.

1.04 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For overhead coiling doors to include in maintenance manuals.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer for both installation and maintenance of units required for this Project.

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1. Maintenance Proximity: Not more than one hours' normal travel time from Installer's place of business to Project site.

1.06 WARRANTY

- A. Standard Warranty: Two years from date of shipment against defects in material and workmanship.
- B. Maintenance: Submit for owner's consideration and acceptance of a maintenance service agreement for installed products.

PART 2 - PRODUCTS

2.01 MANUFACTURERS, GENERAL

- A. Source Limitations: Obtain overhead coiling doors from single source from single manufacturer.
 1. Obtain operators and controls from overhead coiling door manufacturer.
- B. Basis of Design: Design is based on Cornell Iron Works, Inc., Model: ESD10 with Push To Close Mechanical Control. Subject to compliance with requirements, provide named product or comparable product approved by Architect by one of the following:
 1. Clopay Building Products.
 2. McKeon Rolling Steel Door Company, Inc.
 3. Overhead Door Corporation.
 4. Wayne-Dalton Corp.

2.02 PERFORMANCE REQUIREMENTS

- A. Structural Performance, Exterior Doors: Capable of withstanding the design wind loads.
 1. Design Wind Load: Uniform pressure (velocity pressure) as indicated on Structural Drawings.
 2. Deflection Limits: Design overhead coiling doors to withstand design wind load without evidencing permanent deformation or disengagement of door components.
- B. Windborne-Debris Impact Resistance: Provide impact-protective overhead coiling doors that pass missile-impact and cyclic-pressure tests according to ASTM E 1996 for Wind Zone 3 for Essential Facilities.
 1. Large-Missile Test: For overhead coiling doors located within 30 feet of grade.
- C. Cycle Life: Design doors of standard construction for minimal use of up to 20 cycles per year maximum.

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2.03 MATERIALS

- A. Curtain:
1. Slats: Cornell Iron Works, Inc. No. 5F slat, fabricated from zinc-coated (galvanized), cold-rolled structural steel sheet; complying with ASTM A 653/A 653M, Grade 40, with G90 zinc coating; nominal sheet thickness as required to meet specified windload.
 2. Bottom Bar: Two L 2x2x1/8 inch structural steel angles.
 3. Fabricate interlocking sections with high strength galvanized steel endlocks on alternate slats each secured with three 1/4-inch rivets. Provide windlocks as required to meet specified wind load.
 4. Slat Finish: Manufacturer's standard coating system to include an ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation of a chemical bonding, light gray baked-on polyester base coat and a light gray baked-on polyester finish coat.
 5. Bottom Bar Finish: Phosphate treatment followed by a corrosion inhibitive baked-on zinc-rich gray polyester powder coat; minimum 2.5 mils cured film thickness.
- B. Guides: Fabricate with structural steel angles. Provide windlock bars of same material when windlocks are required to meet specified wind load. Top of inner and outer guide angles to be flared outwards to form bellmouth for smooth entry of curtain into guides. Provide removable guide stoppers to prevent over travel of curtain and bottom bar.
1. Top 16-1/2 inch of coil side guide angles to be removable for ease of curtain installation and as needed for future curtain service.
 2. Steel Finish: Phosphate treatment followed by a corrosion inhibitive baked-on zinc-rich gray polyester powder coat; minimum 2.5 mils cured film thickness.
- C. Counterbalance Shaft Assembly:
1. Barrel: Steel pipe capable of supporting curtain load with maximum deflection of 0.03 inches per foot of width.
 2. Spring Balance: Oil-tempered, heat-treated steel helical torsion spring assembly designed to balance the door while allowing for mechanical push to close station operation. Maximum effort to operate floor level crank will not exceed 25 lbs. Provide wheel for applying and adjusting spring torque.
- D. Brackets: Fabricate from minimum 1/4 inch steel plate with permanently lubricated ball or roller bearings at rotating support points to support counterbalance shaft assembly and form end closures.
1. Finish: Phosphate treatment followed by a corrosion inhibitive baked-on zinc-rich gray polyester powder coat; minimum 2.5 mils cured film thickness.
- E. Hood: 24 gauge galvanized steel with reinforced top and bottom edges. Provide minimum 1/4 inch steel intermediate support brackets as required to prevent excessive sag.

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1. Finish: Manufacturer's standard coating system to include an ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation of a chemical bonding, light gray baked-on polyester base coat and a light gray baked-on polyester finish coat.

F. Weatherstripping:

1. Bottom Bar: Replaceable, bulb-style, compressible EDPM gasket extending into guides.
2. Guides: Vinyl strip sealing against fascia side of curtain.

2.04 OPERATION

- A. Manual Crank Hoist: Provide combination crank / controlled closing system operator including ground level wall mounted hand crank and geared reduction unit. Integral to the unit is a releasing device for connection to a floor level push to close station and a governor to control automatic closing speed.
1. Automatic closure shall be activated by the floor level push to close station.
 2. Doors shall maintain a closing speed of not more than 12-inches per second during automatic closing.
 3. System does not require resetting. Door can be opened or closed by use of the manual crank operator at any time.
- B. Floor Level Manual Crank Hoist: Provide a floor level crank hoist operator including crank gear box, steel crank drive shaft and geared reduction unit. Fabricate gear box to completely enclose operating mechanism and be oil-tight. Design to be operated by removable hand crank or a portable winch operator socket to the drive mechanism.
1. Operation: Manual winch with detachable hand crank.
 2. Portable Winch Operator: One portable electric motor-drive device including adaptor to fit crank mechanism.
- C. Floor Level Closing Device: Device allows for closing of the door at floor level as an option to using the manual floor level crank operator.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates upon which work will be installed and verify conditions are in accordance with approved shop drawings.
- B. Coordinate with responsible entity to perform corrective work on unsatisfactory substrates.
- C. Commencement of work by installer is acceptance of substrate.

3.02 INSTALLATION

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- A. Install overhead coiling doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.
- B. Install overhead coiling doors, hoods, controls, and operators at the mounting locations indicated for each door.

3.03 ADJUSTING

- A. Following completion of installation, including related work by others, lubricate, test, and adjust doors for ease of operation, free from warp, twist, or distortion.

3.04 CLEANING

- A. Clean surfaces soiled by work as recommended by manufacturer.

3.05 DEMONSTRATION

- A. Demonstrate proper operation to Owner's Representative.
- B. Instruct Owner's Representative in maintenance procedures.

END OF SECTION

SECTION 09 24 00

CEMENT PLASTERING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes exterior portland cement plasterwork (stucco) on metal lath.
- B. Related Sections include Division 02 Section "Selective Demolition" for general demolition requirements governing removal portions of existing portland cement plasterwork:

1.02 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples: For each type of factory-prepared finish coat indicated.

1.03 QUALITY ASSURANCE

- A. TBLP Standards: Comply with TBLP's "Lath and Plaster Systems Manual" and with written recommendations for plaster type indicated unless more stringent requirements are specified.
- B. Mockups: Before plastering, install mockups of at least 50 sq. ft. in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.

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1. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.04 PROJECT CONDITIONS

- A. Comply with ASTM C 926 requirements.
- B. Factory-Prepared Finishes: Comply with manufacturer's written recommendations for environmental conditions for applying finishes.

PART 2 - PRODUCTS

2.01 METAL LATH

- A. Expanded-Metal Lath: ASTM C 847 with ASTM A 653/A 653M, G60, hot-dip galvanized zinc coating.
 1. Diamond-Mesh Lath: Flat, 3.4 lb/sq. yd.

2.02 ACCESSORIES

- A. General: Comply with ASTM C 1063 and coordinate depth of trim and accessories with thicknesses and number of plaster coats required.
- B. Metal Accessories:
 1. Casing Beads: Fabricated from zinc; square-edged style; with expanded flanges.
 2. Control Joints: Fabricated from zinc; one-piece-type, folded pair of unperforated screeds in M-shaped configuration; with perforated flanges and removable protective tape on plaster face of control joint.
 3. Expansion Joints: Fabricated from zinc; folded pair of unperforated screeds in M-shaped configuration; with expanded flanges.

2.03 MISCELLANEOUS MATERIALS

- A. Water for Mixing: Potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.
- B. Fiber for Base Coat: Alkaline-resistant glass or polypropylene fibers, 1/2 inch long, free of contaminants, manufactured for use in portland cement plaster.
- C. Steel Drill Screws: For metal-to-metal fastening, ASTM C 1002 or ASTM C 954, as required by thickness of metal being fastened; with pan head that is suitable for application; in lengths required to achieve penetration through joined materials of no fewer than three exposed threads.
- D. Fasteners for Attaching Metal Lath to Substrates: Complying with ASTM C 1063.
- E. Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, not less than 0.0475-inch diameter, unless otherwise indicated.

2.04 PLASTER MATERIALS

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- A. Portland Cement: ASTM C 150, Type I or Type II.
 - 1. Masonry Cement and Plastic Cement: Not permitted.
- B. Lime: ASTM C 206, Type S; or ASTM C 207, Type S.
- C. Sand Aggregate: ASTM C 897.
- D. Ready-Mixed Finish-Coat Plaster: Mill-mixed portland cement, aggregates, coloring agents, and proprietary ingredients.
 - 1. Color: As selected by Architect from manufacturer's full range.

2.05 PLASTER MIXES

- A. General: Comply with ASTM C 926 for applications indicated.
 - 1. Fiber Content: Add fiber to base-coat mixes after ingredients have mixed at least two minutes. Comply with fiber manufacturer's written instructions for fiber quantities in mixes, but do not exceed 1 lb of fiber/cu. yd. of cementitious materials.
- B. Base-Coat Mixes for Use over Metal Lath: Scratch and brown coats for three-coat plasterwork as follows:
 - 1. Portland Cement Mixes for Scratch and Brown Coats: For cementitious material, mix 1 part portland cement and 1/4 to 1/2 parts lime. Use 3-1/2 to 4-1/2 parts aggregate per part of cementitious material (sum of separate volumes of each component material).
- C. Factory-Prepared Finish-Coat Mixes: For ready-mixed finish-coat plasters, comply with manufacturer's written instructions.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Protect adjacent work from soiling, spattering, moisture deterioration, and other harmful effects caused by plastering.

3.02 INSTALLING METAL LATH

- A. Expanded-Metal Lath: Install according to ASTM C 1063.
 - 1. Flat-Ceiling and Horizontal Framing: Install flat diamond-mesh lath.

3.03 INSTALLING ACCESSORIES

- A. Install according to ASTM C 1063 and at locations indicated on Drawings.
- B. Control Joints: Install control joints in specific locations to match existing as approved by Architect.

3.04 PLASTER APPLICATION

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- A. General: Comply with ASTM C 926.
- B. Ceilings; Base-Coat Mixes for Use over Metal Lath: Scratch and brown coats for three-coat plasterwork; 1/2 inch thick.
 - 1. Portland cement mixes.
- C. Plaster Finish Coats: Apply to provide float finish to match existing as approved by Architect.

3.05 PLASTER REPAIRS

- A. Repair or replace work to eliminate cracks, dents, blisters, buckles, crazing and check cracking, dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.

END OF SECTION

SECTION 09 66 13.26

RUSTIC TERRAZZO FLOORING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes cementitious rustic terrazzo, bonded system.
- B. Related Sections include Division 02 Section "Selective Demolition" for general demolition requirements governing removal portions of existing terrazzo installation:

1.02 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct a conference at Project site.
 - 1. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
 - a. Terrazzo installer.
 - b. Architect.
 - c. Representatives of the Owner.
 - 2. Review methods and procedures related to terrazzo including, but not limited to, the following:
 - a. Inspect and discuss condition of substrate and preparatory work required.
 - b. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - c. Review terrazzo mixes and patterns.

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- d. Review terrazzo mixes, designs, and patterns.
- e. Coordination with the Work of other Installers.

1.03 ACTION SUBMITTAL

- A. Product Data: For each type of product required for installation including strip materials.
- B. Shop Drawings: Include plans, elevations, sections, component details, and attachments to other work. Show layout of the following:
 - 1. Divider strips.
 - 2. Expansion-joint strips.
- C. Samples for Initial Selection: Submit NTMA "Color Palette Brochure" showing full range of colors and patterns available for rustic terrazzo.
- D. Samples for Verification: For each type, material, color, and pattern of terrazzo and accessory required showing the full range of color, texture, and pattern variations expected. Label each terrazzo sample to identify manufacturer's matrix color and aggregate types, sizes, and proportions. Each Sample shall be of same thickness and prepared from same material to be used for the Work, in size indicated below:
 - 1. Terrazzo: 12 by 12 inch Samples with divider strips 4 inches from each edge.
 - 2. Accessories: 6 inch long Samples of each type and kind of exposed strip item required.

1.04 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
 - 1. Include list of projects with photographs indicating name and location of Project, name of Owner, name and contact information for General Contractor, and name and contact information for Architect.
 - 2. Include letter from NTMA with the name of the Project and name of member, stating current member status.

1.05 CLOSEOUT SUBMITTAL

- A. Maintenance Literature: Maintenance recommendations from NTMA or maintenance product members of NTMA.

1.06 QUALITY ASSURANCE

- A. Acceptable Suppliers: A firm experienced in manufacturing products in accordance with NTMA standards and with a record of successful in-service performance, as well as sufficient production capacity to produce required materials.
- B. Acceptable Terrazzo Installer: A Contractor Member of NTMA whose work has resulted in construction with a record of successful in service performance.

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1. Installer shall have completed terrazzo installations within the past five years of scale and complexity similar to the proposed installation.
- C. Terrazzo Standards: Materials and installation shall comply with NTMA's "Terrazzo Specifications and Design Guide" and with written recommendations for terrazzo type indicated unless more stringent requirements are specified.
- D. Source Limitations for Aggregates: Obtain each color, grade, type, and variety of granular materials from single source with resources to provide materials of consistent quality in appearance and physical properties.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to Project site in supplier's original wrappings and containers, labeled with source or manufacturer's name, material or product brand name, and lot number if any.
- B. Store materials in their original, undamaged packages and containers.
 1. Store cement materials inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

1.08 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit terrazzo flooring to be installed according to NTMA standards.
 1. Where existing and forecasted weather conditions do not comply with NTMA standards, provide enclosure with temporary heat maintained at a minimum of 50 deg F.
- B. Protect other adjacent work from water and dust generated by grinding operations.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Portland cement: ASTM C 150, Type I, gray
- B. Sand: Coarse, clean, washed, locally available sand.
- C. Marble, Quartz, Granite or Gravel:
 1. Size: Conform to NTMA standards.
 2. Abrasion and Impact Resistance: Not more than 40 percent loss when tested in accordance with ASTM C 131.
 3. Chips shall contain no deleterious or foreign matter.
- D. Strips:
 1. Expansion joints: Zinc with a cap strip top with a depth of 1-1/4 inches.

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2. Divider Strips:
 - a. Materials: White alloy of zinc.
 - b. Thickness: 16 gauge.

E. Curing Materials: Water or polyethylene sheeting.

2.02 MISCELLANEOUS ACCESSORIES

- A. Sealant: Polyurethane with appropriate backer rod.
- B. Sealer: Penetrating, non-ambering, chemical neutral, clear sealer that does not impair terrazzo aesthetics or physical properties; is specifically recommended for rustic terrazzo. Sealers shall comply with the following:
 1. Solvent-Based Sealer Properties: Flashpoint at 95 deg. F according to ASTM D 56.

2.03 MIXES

- A. Terrazzo Selection: Provide terrazzo mix(es) according to the following:
 1. Mix Color: As selected by Architect from NTMA rustic-terrazzo plates
- B. Proportions:
 1. Underbed: One part portland cement to 4 parts coarse sand. Air entrainment agent (6 percent plus / minus 1 percent air).
 2. Terrazzo Topping: One 94-lb. bag of portland cement per 200 lb. of aggregate and sufficient potable water to produce a workable mix.
- C. Mixing: Mix underbed and topping as follows:
 1. Underbed:
 - a. Charge and mix sand and Portland cement.
 - b. Add water and mix.
 2. Terrazzo Topping:
 - a. Charge and mix aggregate and portland cement.
 - b. Add water and mix to a uniform workable consistency.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates and areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

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1. Verify that concrete surfaces to receive bonded terrazzo flooring are sound, free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil and other contaminants incompatible with terrazzo flooring materials. Concrete substrate shall have a float finish.

- B. Proceed with installation only after unsatisfactory conditions, including levelness tolerances, have been corrected.

3.02 PREPARATION

- A. Broom clean area to receive terrazzo to remove loose chips and all foreign matter.

3.03 INSTALLATION

- A. Concrete Underbed:

1. Set expansion material around building perimeter, around all column bases, and directly above expansion joints in concrete structural slab.
2. Thoroughly saturate concrete subfloor with water, slush and broom with neat cement paste.
3. Place concrete underbed and screed to an elevation of 1/2- to 3/4-inch below finished surface, depending on size of aggregate.
4. Install divider strips before concrete hardens.
5. Install continuous expansion joint between existing terrazzo and new terrazzo for a 3/16-inch wide sealant-filled, expansion joint.

- B. Placing Rustic Terrazzo Topping:

1. Soak underbed surface thoroughly with clean water.
2. Place rustic terrazzo mixture in panels formed by divider strips and trowel mixture to top of strips.
3. Roll and compact surface until all excess cement and water has been extracted.

- C. Finishing: Expose aggregate by hosing, absorbent rolling, or use of a retarder.

- D. Curing: After completing placement of terrazzo and composition has sufficiently set, cure the terrazzo topping by flooding with clean water, or covering with polyethylene sheeting.

- E. Cleaning: When topping is sufficiently cured, in the opinion of the Installer, apply cleaner, scrub with a stiff broom to remove all laitance and rinse immediately with clean water to remove all traces of cleaner.

- F. Sealing:

1. Rinse floor with clean water and allow to dry.
2. When floor is thoroughly dry, apply the sealer in accordance with manufacturer's directions for use on rustic terrazzo.

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- G. Joint Sealants: Place sealant in joints with backer rod as required.

3.04 REPAIR

- A. Repair terrazzo areas that evidence lack of bond between topping and underbed according to NTMA's written recommendations.

3.05 PROTECTION

- A. Protect the finished floor after Installer has completed final grinding and applied sealer to terrazzo surfaces.

END OF SECTION

SECTION 09 91 13

EXTERIOR PAINTING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes surface preparation and the application of paint systems on exterior portland cement plaster (stucco) substrates.

1.02 DEFINITIONS

- A. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- B. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.

1.03 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
- B. Samples: For each type of paint system and each color and gloss of topcoat.
- C. Product List: For each product indicated. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.

1.04 QUALITY ASSURANCE

- A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
 - a. Horizontal Surfaces: Provide samples of at least 100 sq. ft.

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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.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. AkzoNobel Paints (Glidden Professional).
 2. Benjamin Moore & Co.
 3. PPG Architectural Finishes, Inc.
 4. Sherwin-Williams Company (The).

2.02 PAINT, GENERAL

- A. MPI Standards: Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List."
- B. Material Compatibility:
 1. Provide materials for use within each paint system that are 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, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- C. VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction.
- D. Colors: As indicated in a color schedule or if not indicated as selected by Architect from manufacturer's full range.

2.03 PRIMERS/SEALERS

- A. Primer, Alkali Resistant, Water Based: MPI #3.

2.04 WATER-BASED PAINTS

- A. Latex, Exterior Low Sheen (Gloss Level 3-4): MPI #15.

PART 3 - EXECUTION

3.01 EXAMINATION

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- 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. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - 1. Portland Cement Plaster: 12 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- D. 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 Manual" and "MPI Maintenance Repainting Manual" as applicable to substrates and paint systems indicated.
- B. Clean substrates of substances that could impair bond of paints, 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 paint systems indicated.

3.03 APPLICATION

- A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Manual."
- B. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

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

3.05 CLEANING AND PROTECTION

- A. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

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- B. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.06 EXTERIOR PAINTING SCHEDULE

- A. Portland Cement Plaster Substrates:
 - 1. Latex over Alkali-Resistant Primer System (MPI EXT 9.1J):
 - a. Prime Coat: Primer, alkali resistant, water based.
 - b. Intermediate Coat: Latex, exterior, matching topcoat.
 - c. Topcoat: Latex, exterior, low sheen (Gloss Level 3-4).

END OF SECTION

SECTION 09 96 00

HIGH-PERFORMANCE COATINGS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes surface preparation and application of high-performance coating systems on the following exterior substrates:
 - 1. Steel.
 - 2. Galvanized metal.

1.02 DEFINITIONS

- A. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

1.03 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include preparation requirements and application instructions.
- B. Samples: For each type of coating system and in each color and gloss of topcoat indicated.
- C. Product List: For each product indicated, include printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.

1.04 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials 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. of each material and color applied.

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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. Architect will select one surface to represent surfaces and conditions for application of each coating system specified in Part 3.
 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 the City.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. AkzoNobel Paints.
 2. PPG Architectural Finishes, Inc.
 3. Sherwin-Williams Company (The).
 4. Tnemec Company Inc.

2.02 HIGH-PERFORMANCE COATINGS, GENERAL

- A. MPI Standards: Provide products that comply with MPI standards indicated and are listed in "MPI Approved Products List."
- B. Material Compatibility:
1. Provide materials for use within each coating system that are 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 coating system, provide products recommended in writing by manufacturers of topcoat for use in coating system and on substrate indicated.
 3. Provide products of same manufacturer for each coat in a coating system.
- C. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction.
- D. Colors: As indicated in color schedule or if not indicated as selected by Architect from manufacturer's full range.

2.03 METAL PRIMERS

- A. Primer, Zinc-Rich, Epoxy: MPI #20.
- B. Primer, Epoxy, Anti-Corrosive, for Metal: MPI #101.

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2.04 EPOXY COATINGS

- A. Epoxy, Gloss: MPI #77.

2.05 POLYURETHANE COATINGS

- A. Polyurethane, Two-Component, Pigmented, Gloss (Gloss Level 6): MPI #72.

2.06 SOURCE QUALITY CONTROL

- A. Testing of Coating Materials: Owner reserves the right to invoke the following procedure:
 - 1. The City will engage the services of a qualified testing agency to sample coating materials. The 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 City may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. The Contractor shall remove noncomplying coating materials from Project site, pay for testing, and recoat surfaces coated with rejected materials. The Contractor shall 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. Beginning coating application constitutes the Contractor's acceptance of substrates and conditions.

3.02 PREPARATION

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

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3.03 APPLICATION

- A. Apply high-performance coatings according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."
- B. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

3.04 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: The City reserves the right to engage the services of a qualified testing and inspecting agency to inspect and test coatings for dry film thickness.
 - 1. The 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, the 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

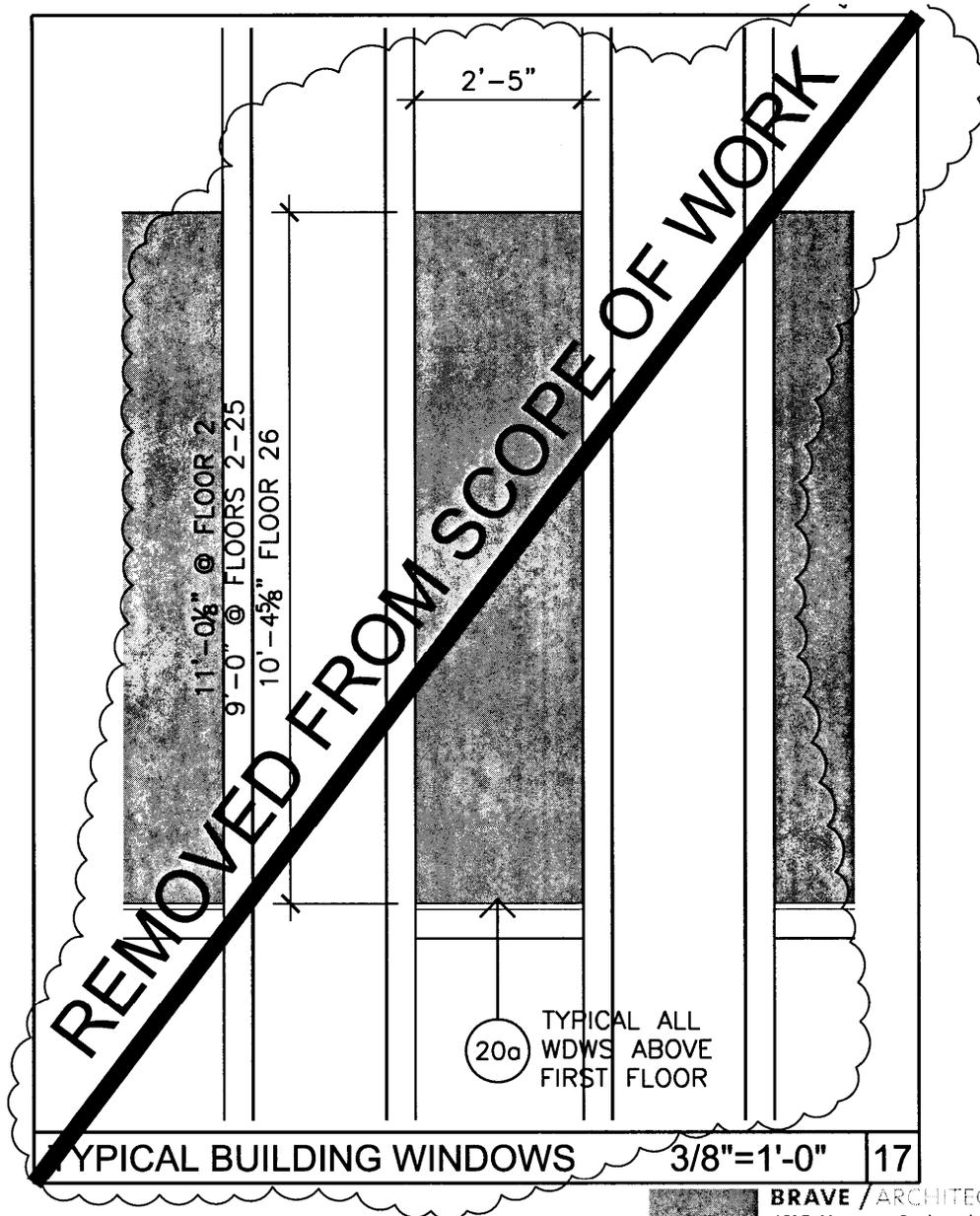
- A. Protect work of other trades against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, as approved by Architect, and leave in an undamaged condition.
- B. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces.

3.06 EXTERIOR HIGH-PERFORMANCE COATING SCHEDULE

- A. Steel Substrates: Pigmented polyurethane over epoxy zinc-rich primer system; MPI EXT 5.1P:
 - 1. Prime Coat: Primer, zinc-rich, epoxy.
 - 2. Intermediate Coat: Epoxy, gloss.
 - 3. First Topcoat: Polyurethane, two-component, pigmented, gloss (Gloss Level 6).
- B. Galvanized-Metal Substrates: Pigmented polyurethane system: MPI EXT 5.3L.
 - 1. Prime Coat: Primer, epoxy, anti-corrosive, for metal.
 - 2. Intermediate Coat: Polyurethane, two-component, pigmented, gloss (Gloss Level 6).
 - 3. Topcoat: Polyurethane, two-component, pigmented, gloss (Gloss Level 6).

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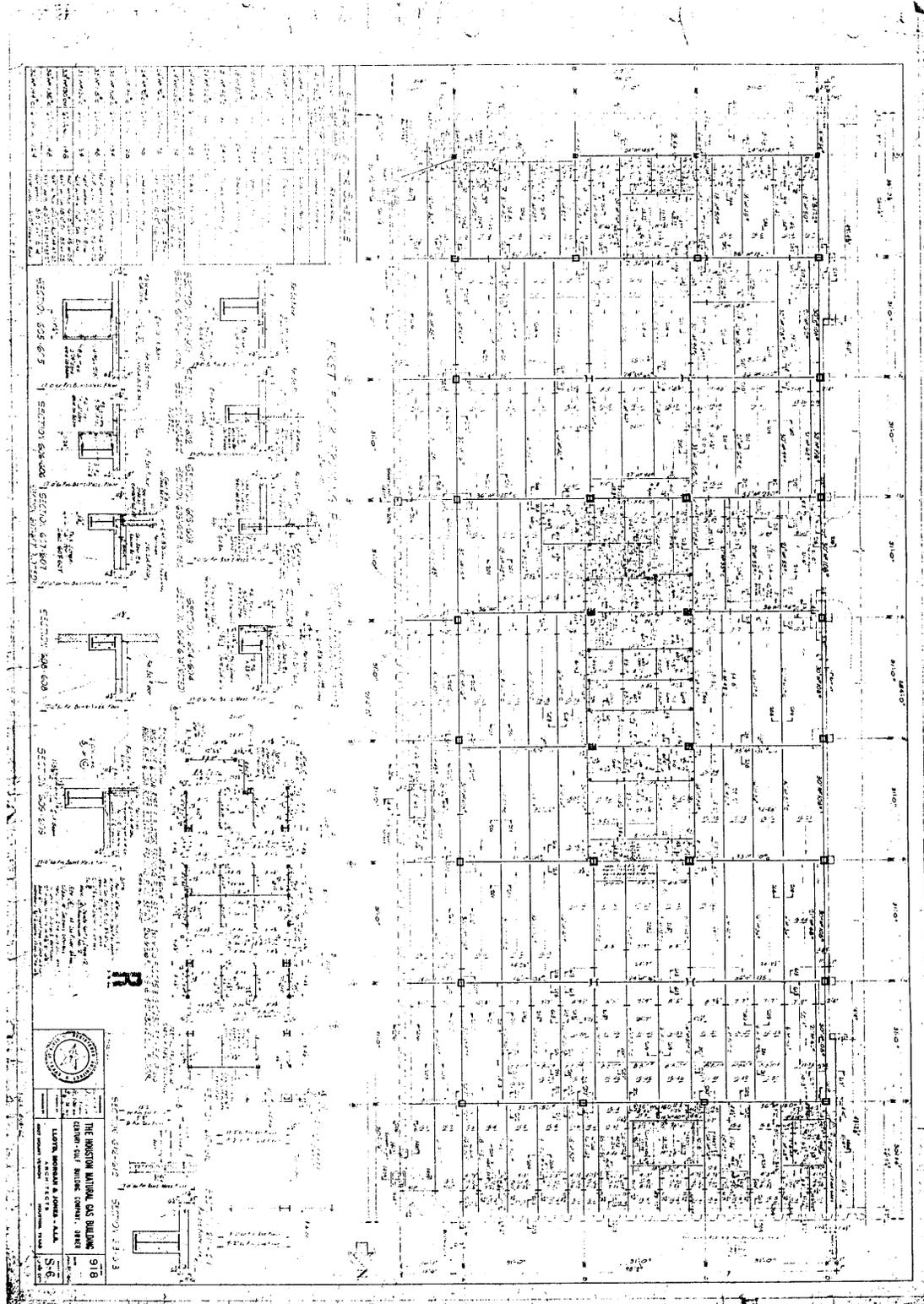
BRAVE / ARCHITECTURE
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 studio@bravearchitecture.com

PROJECT NAME: HPD 1200 Travis	DRAWING TITLE: Window Film	SHEET NO.: ASK-001
BRAVE PROJECT NO.: 12183	DATE: 06.06.2013	SCALE: -
		REFERENCE: 17/A.301

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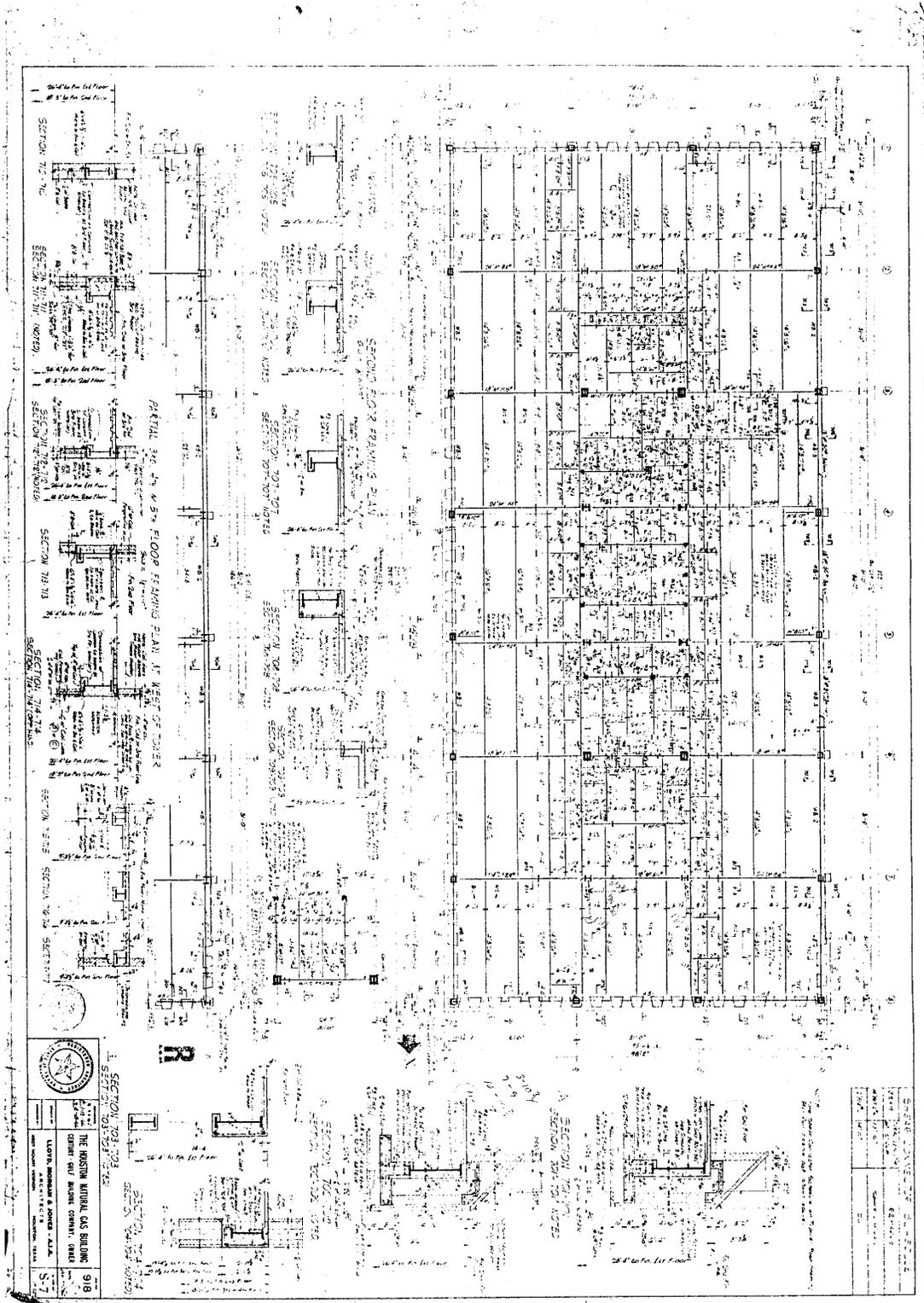
Structural Drawings – 1200 Travis- HPD



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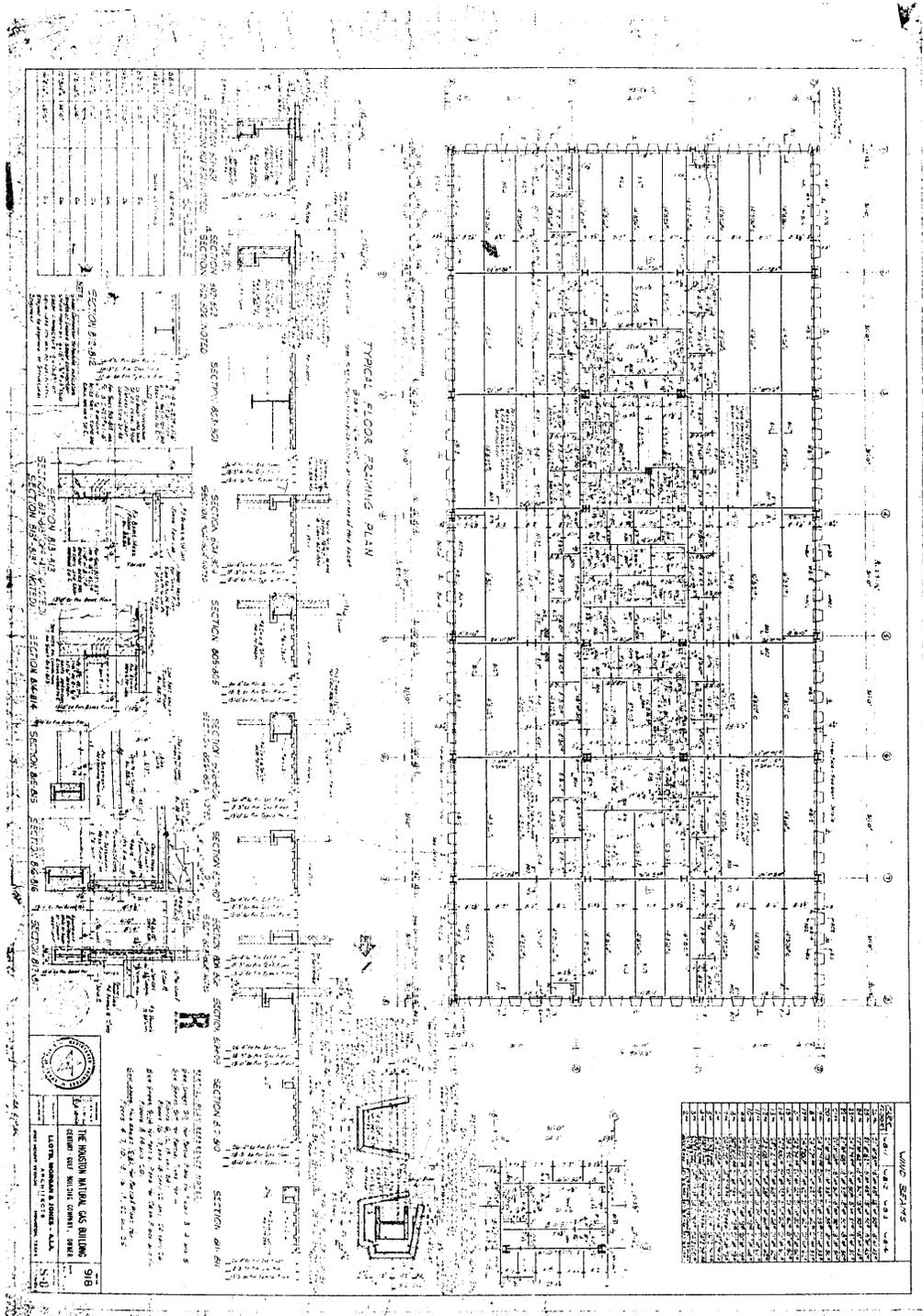
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Structural Drawings – 1200 Travi - HPD



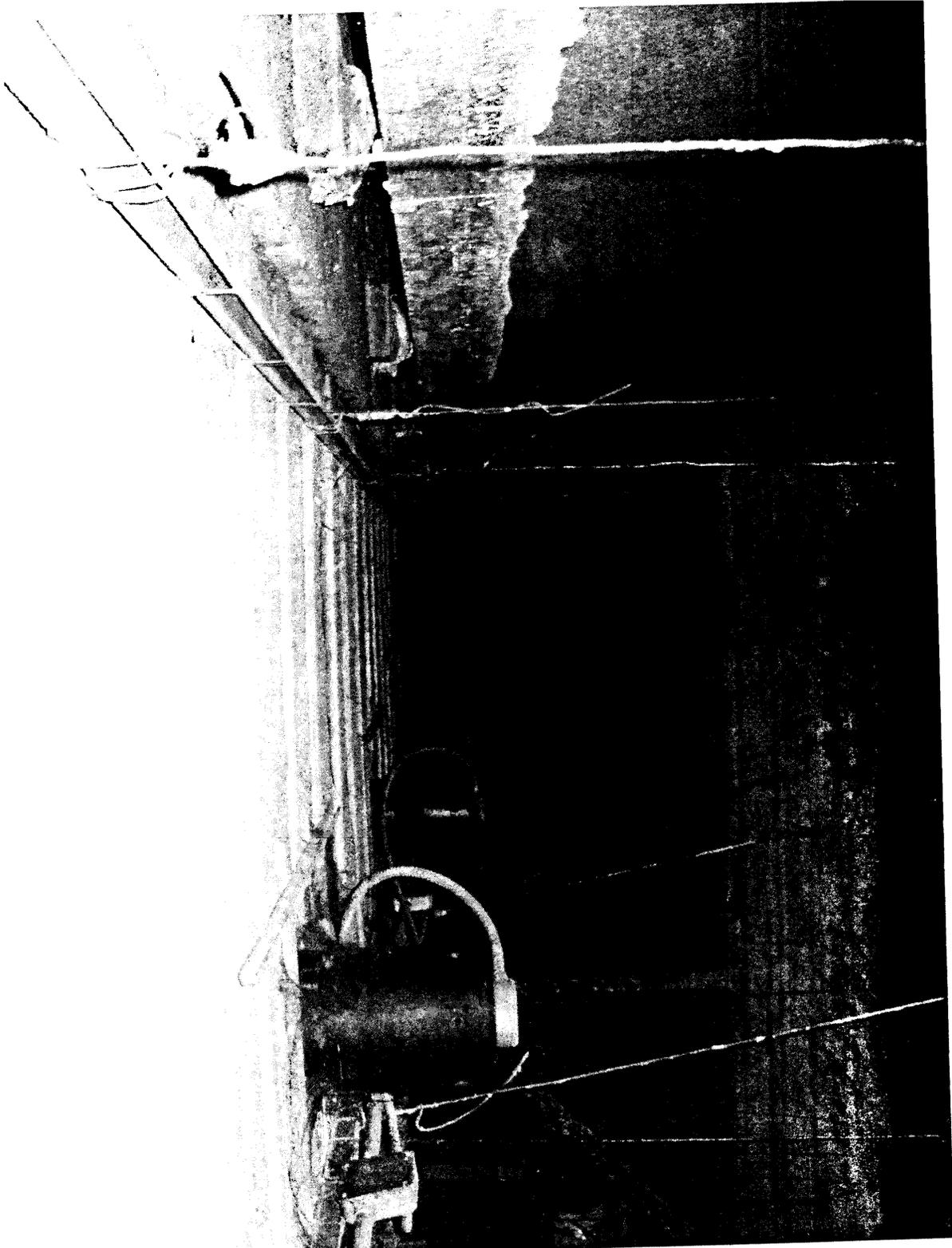
A PDF version of 1200 Travis Structural Drawings
can be viewed at the following web link

<https://purchasing.houstontx.gov/buyer/BidDocumentManager.aspx?id=C24582>

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1200 Travis Eave Picture No. 1



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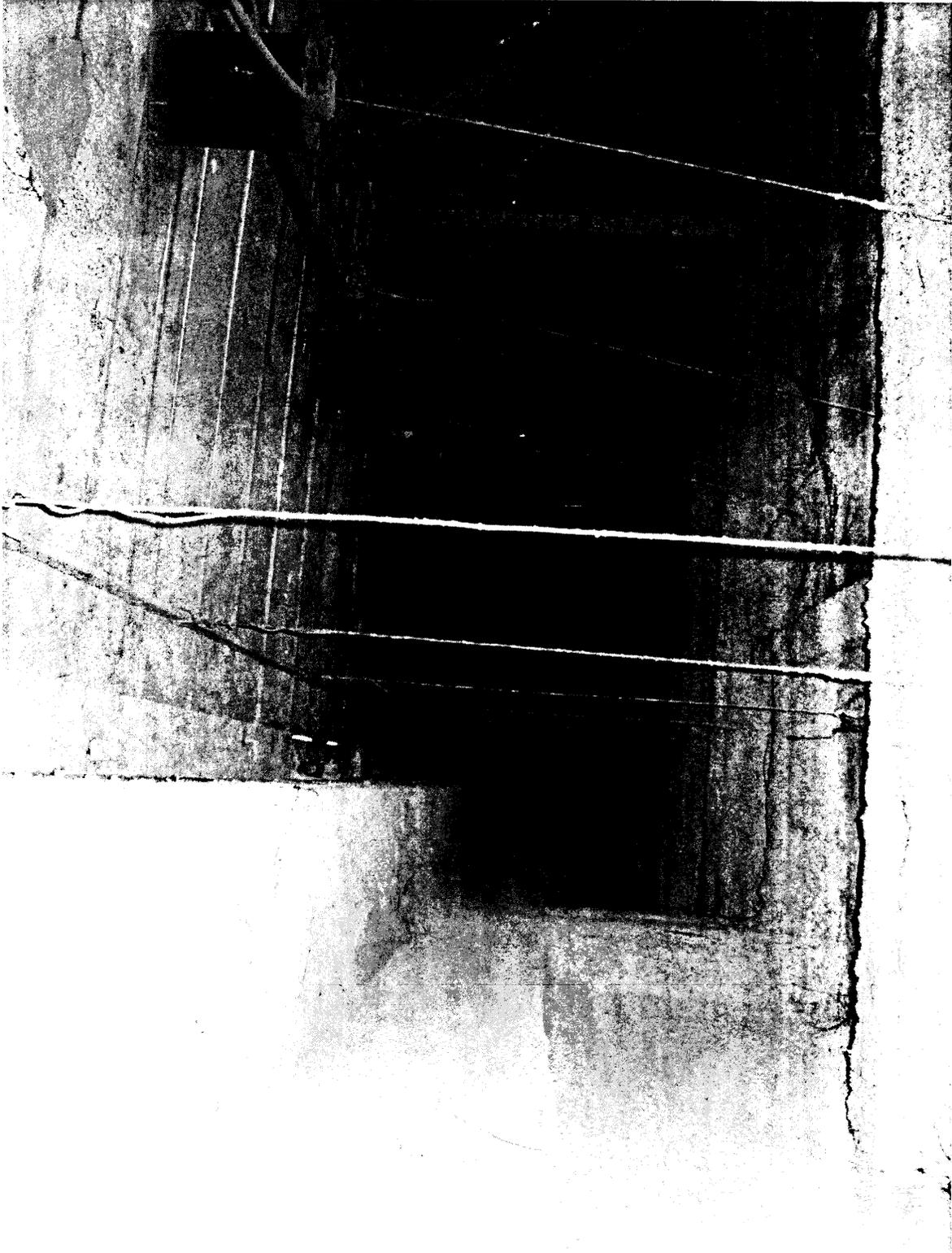
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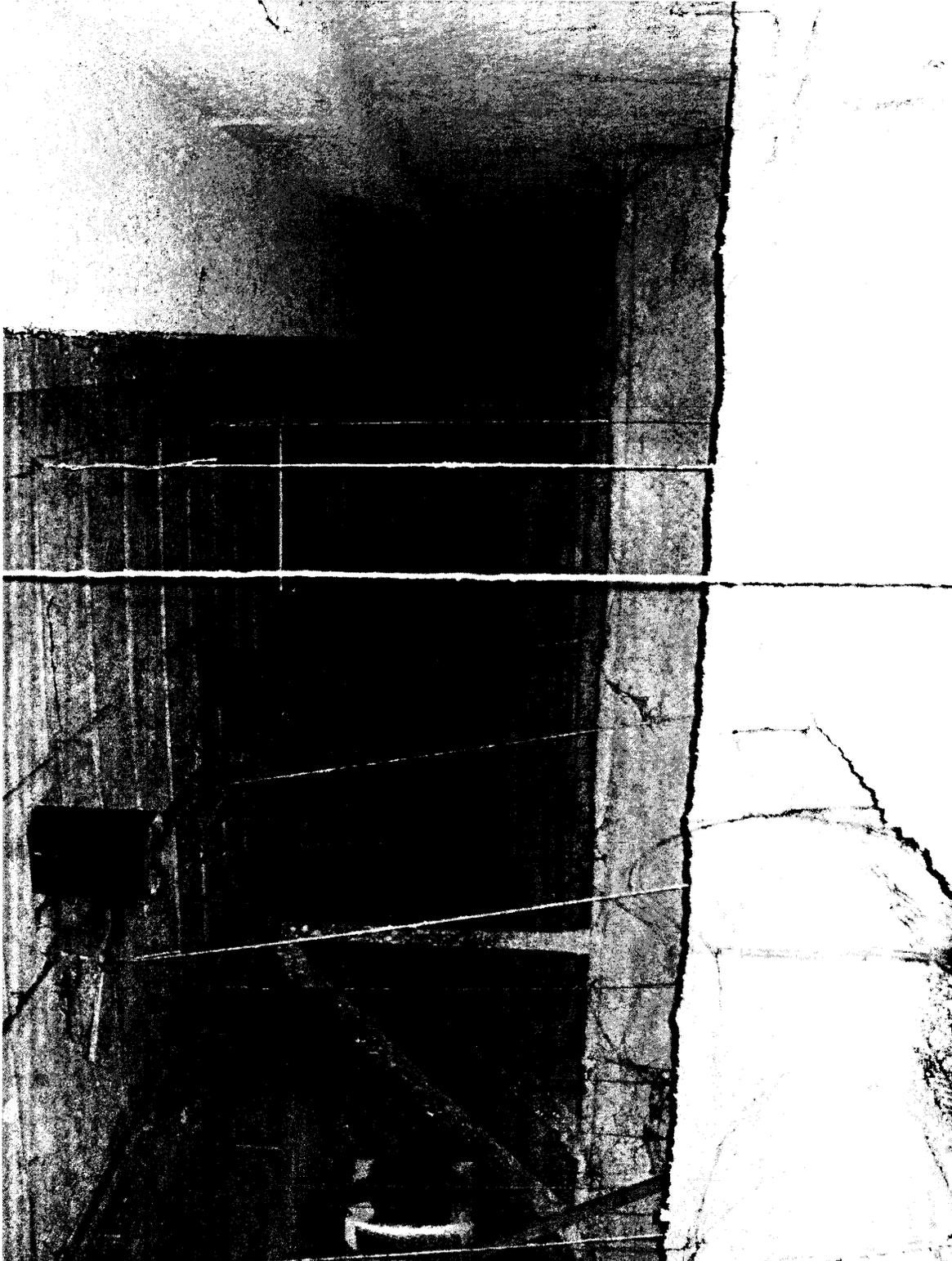
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1200 Travis Eave Picture No. 4



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1200 Travis Eave Picture No. 5



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