Stantec

ARCHITECTURAL ADDENDUM #01

Addendum Number One (01)
PLANS AND SPECIFICATIONS FOR
Houston Community College – Culinary Arts Center
STANTEC Project No. 2140 00 169

Stantec
20 East Greenway Plaza
Suite 200
Houston, Texas 77046

January 6, 2017

NOTE: If you have questions about this Addendum, please contact Geoffrey Wheeler.

This Addendum is generally seperated into sections for convenience; however, all contractors, subcontractors, material suppliers and other involved parties shall be responsible for reading the entire Addendum. Failure to list an item(s) in all affected sections of this Addendum does not relieve any party affected from performing per instructions, provided the information is set forth one time anywhere in the Addendum.

This document shall become attached to and part of the Construction Documents for the aforementioned project.

SPECIFICATIONS

All following listed specification sections missing pages in the originally posted Project Manuals have been added or replaced in the revised and reposted two volumes of Project Manuals. See linked files under Documents heading below.

Division 0

1. 00 21 00 Request for Competitive Sealed Proposals

Division 3

2. 03 30 00 Cast-In-Place Concrete

Division 4

3. 04 22 13 Structural Reinforced Concrete Unit Masonry

Division 5

4. 05 12 00 Structural Steel Framing
5. 05 21 00 Steel Joist Framing
6. 05 31 13 Steel Floor Decking
7. 05 31 23 Steel Roof Decking

Division 7

8. 07 54 05 Thermoplastic Membrane Roofing

Division 12

9. 12 93 00 Site Furnishings

Division 21

10. 21 05 53 Identification for Fire Suppression Piping and Equipment
11. 21 07 00 Fire Suppression Systems Insulation
12. 21 11 00 Facility Fire Suppression Water Service Piping
13. 21 13 00 Fire Protection Systems
14. 21 13 13 Fire Protection Sprinkler Systems
15. 21 30 00 Fire Pumps
16. 21 41 23 Fire Water and Domestic Water Surge Tanks

Division 22

17. 22 05 00 Common Work Results for Plumbing
18. 22 05 26 Pipe and Pipe Fittings
19. 22 05 29 Hangers and Supports for Plumbing Piping and Equipment
20. 22 05 33 Heat Tracing for Plumbing Piping
21. 22 05 48 Vibration Isolation for Plumbing Piping and Equipment
22. 22 05 53 Identification for Plumbing Piping and Equipment
23. 22 07 19 Plumbing Piping Insulation
24. 22 11 16 Domestic Water Piping Systems
25. 22 11 17 Gas Piping and Appurtenances
26. 22 11 19 Domestic Water Piping Specialties
27. 22 11 23 Plumbing Pumps
28. 22 11 23.13 Domestic Water Pressure Boosting Systems
29. 22 13 16 Sanitary Waste and Vent Piping
30. 22 13 19 Sanitary Waste Piping Specialties
31. 22 31 00 Water Softener
32. 22 33 13 Electric Tankless domestic Water Heaters
33. 22 35 00 Gas FireD Domestic Water Heaters
34. 22 40 00 Plumbing Fixtures

Division 27

35. 27 00 00 Communications

Division 28

36. 28 00 00 Electronic Security
37. 28 10 00 Electronic Access Control and Intrusion Detection
38. 28 23 00 Video Surveillance
39. 28 26 00 Emergency Intercommunications and Duress
40. 28 31 00 Fire Alarm System

DOCUMENTS

1. **CC Project Manual Volume 1 of 2 20161118.pdf**
2. **CC Project Manual Volume 2 of 2 20161118.pdf**

NUMBER OF ATTACHMENTS:
Addendum Narrative – 8.5” x 11” – 2 pages
Specifications – (See links attached here with for full specification volume downloads)

END OF ADDENDUM NUMBER ONE (01)

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ARCHITECTURAL ADDENDUM #02

Addendum Number Two (02)
PLANS AND SPECIFICATIONS FOR
Houston Community College – Culinary Arts Center
STANTEC Project No. 2140 00 169

Stantec
20 East Greenway Plaza
Suite 200
Houston, Texas 77046

January 23, 2017

NOTE: If you have questions about this Addendum, please contact Geoffrey Wheeler.

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This document shall become attached to and part of the Construction Documents for the aforementioned project.

SPECIFICATIONS

Division 09 51 13 - ACOUSTICAL PANEL CEILINGS

1. Section 2.2, A. APC-1, 1. Basis of Design: has been revised to *Cortega 770*.

Division 10 28 00 - TOILET ACCESSORIES

2. Section 2.4 NAPKIN/TAMPON DISPENSER has been omitted and replaced with TOILET SEAT COVER DISPENSER as follows:

    a. Surface-mounted stainless steel coin-operated dispensing unit with seamless exposed walls, double-locking front panel. And separately-keyed coin box.
        i. Finish: Type 304 satin finish stainless steel.

    b. Basis-of-Design: Model 09512 K-C Professional as manufactured by Kimberly Clark.

Division 23 52 33 - CONDENSING BOILERS

3. Section 2.3 is omitted in its entirety.
4. Section 2.4 has been revised as follows
    C. Flue shall be prefabricated system similar to Schebler P2eVent, double wall positive pressure flue or approved equal. Flue shall have 304 AL-294C stainless steel inner wall and 304 stainless steel outer wall with ~~2 inches insulation~~ a 1-inch air gap and suitable for flue temperature of 550 F. Minimum pressure rating of 60 40 inches w.c. Refer to section 23 31 13 "Ductwork" for additional requirements.
5. Section 3.2 following has been added:
    C. Provide State of Texas Boiler Operating Permit.
    D. Startup shall be completed by factory authorized personnel.

E. Provide at a time of the Owner's approval, training by a factory trained representative for a period of two, eight-hour days to instruct the Owner's operating personnel in the operation and maintenance of the units.

DRAWINGS

Sheet C100

1. Keynote No. 9: Revised to read "EXISTING BOLLARDS TO BE REMOVED TO OWNER".

Sheet A401

2. Omitted Sanitary Napkin Dispensers and added Toilet Seat Cover Dispensers.

Sheet A501

3. Door Schedule: A108 door and frame material has been revised to be aluminum.
4. Door Schedule: A212 Glazing designation GL-2 has been removed.

Sheet A601

5. Ceiling finish clarifications.

Sheet A602

6. Ceiling finish clarifications.

Sheet A801

7. Color Schedule: APC-1: Style and Manufacturer No. have been revised to *Cortega 770*.
8. Finish Schedule: A105, A118, A119, A120, A121 and A123 Ceilings have been revised to be *Exposed to Structure*.

Sheet M003

9. Revised control valve schedule for three-way HW valve at AHU-2-2.

Sheet M601

10. Revised control diagram for three-way HW valve at AHU-2-2

Sheet M905

11. Added detail for three-way valve coil connection.

NUMBER OF ATTACHMENTS:
Addendum Narrative – 8.5" x 11" – 2 pages
Specifications – 8.5" x 11" – 20 pages
Drawings – 42" x 30" – 9 sheets

END OF ADDENDUM NUMBER TWO (02)

SECTION 09 51 13 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes acoustical ceiling panels in suspended grid.

1.2 REFERENCES

A. ASTM International:
1. ASTM C635 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
2. ASTM C636 - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
3. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
4. ASTM E580 - Standard Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint.
5. ASTM E1264 - Standard Classification for Acoustical Ceiling Products.

B. Ceilings and Interior Systems Construction Association:
1. CISCA - Acoustical Ceilings: Use and Practice.

C. Underwriters Laboratories Inc.:
1. UL - Fire Resistance Directory.
2. UL 723 - Tests for Surface Burning Characteristics of Building Materials.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Coordination Drawings: Reflected ceiling plans drawn to scale and coordinating penetrations and ceiling-mounted items. Show the following:
1. Ceiling suspension system members.
2. Method of attaching suspension system hangers to building structure.
3. Ceiling-mounted items including light fixtures; air outlets and inlets; speakers; sprinklers; and special moldings at walls, column penetrations, and other junctures of acoustical ceilings with adjoining construction.
4. Minimum Drawing Scale: 1/8 inch = 1 foot (1:96).

C. Product Data: Submit data on acoustic units, metal grid system components, and edge trim.

D. Samples:
1. Submit two samples, 6 x 6 inch in size, of each type of acoustic panel specified.
2. Submit two samples, 12 inches long, of each type of exposed suspension system specified.

E. Manufacturer's Installation Instructions: Submit special procedures, perimeter conditions requiring special attention.

F. Certification: Provide certification from manufacturer of products that all materials used in food preparation and food serving areas have USDA approval for use in food preparation and food serving areas.

1.4 SUSTAINABLE DESIGN (LEED) REQUIREMENTS

A. GENERAL LEED REQUIREMENTS: Reference Section 01 35 45 for general information regarding sustainable requirements for this LEED Silver Project.

B. LEED PROJECT CHECKLIST: Reference the *LEED Project Checklist* (included in Section 01 35 45) for an understanding of the project's LEED goals, including quantities and percentages within the required credits.

C. LEED SUBMITTAL PROCEDURE: All Subcontractor(s) and vendor(s) providing materials and products under this Section shall be REQUIRED to submit a fully-executed *Sustainable Product Submittal Sheet* (included in Section 01 35 45) regardless of whether credits are expected for materials and products provided under this Section.

D. LEED PRODUCT DATA SUBMITTALS: Required for Materials and Products under this Section:

1. Materials and Products under this section contribute towards the LEED credits listed and the Project's LEED Silver goal.

2. Product Data for Credit **MR4**: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating costs for each product having recycled content.

3. Product Data for Credit **EQ4.1:** For sealants, documentation including printed statement of VOC content.

4. Laboratory Test Reports for Credit **EQ4:** For ceiling systems, documentation indicating that products comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

5. Submit local/regional source certification: Manufacturer or fabricator's certificate indicating location and distance in miles from the Project site, of each product's final assembly, extraction, harvesting, or recovery prior to shipment to the Project site.

1.5 QUALITY ASSURANCE

A. Conform to CISCA requirements.

B. Surface Burning Characteristics: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

C. Certify all materials used in food preparation and food serving areas have USDA approval for use in food serving and food preparation areas.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum five years' experience.

B. Installer: Company specializing in performing work of this section with minimum three years' experience and approved by manufacturer.

1.7 DELIVERY, STORAGE, and HANDLING

A. Deliver acoustical panels, suspension system components, and accessories to Project site in original, unopened packages and store in a fully enclosed and conditioned space, protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other detriments.

B. Before installing store acoustical panels in the conditioned rooms of installation for at least 24 hours for panels to stabilize in room temperature and humidity levels.

C. Handle acoustical panels carefully to avoid chipping, staining, cracking, or damaging units in any way.

1.8 PRE-INSTALLATION MEETINGS

A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one week prior to commencing work of this section.

1.9 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements.

B. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustic unit installation.

C. Do not install suspension grids or acoustical panels until spaces are enclosed and weatherproof, wet work is complete and dry, work above ceilings is complete and observed by the A/E, and room temperature and humidity levels are maintained as designed for occupied Project.

1.10 SEQUENCING

A. Section 01 10 00 - Summary: Requirements for sequencing.

B. Sequence Work to ensure acoustic ceilings are not installed until building is enclosed, sufficient heat or air conditioning is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

C. Install acoustic units after interior wet work is dry.

1.11 WARRANTY

A. Installed suspension system and ceiling panels shall be warranted by Contractor to be free from rusting, sagging, warping, shrinking, buckling, or delaminating for a minimum of one year from date of Substantial Completion of the Project.

B. For sag-resistant panels, provide ceiling panel manufacturer’s written warranty against sagging, warping, shrinking, buckling or delaminating as a result of manufacturing defects for a period of ten years from date of Substantial Completion of the Project.

C. Provide suspension manufacturer’s written warranty against material defects for a period of fifteen years from date of Substantial Completion. Where suspension manufacturer and non-sag ceiling panel manufacturer are the same, provide combination warranty including protection from sagging, warping, shrinking, buckling or delaminating of ceiling panels as a result of manufacturing defects.

1.12 EXTRA MATERIALS

A. Section 01 70 00 - Execution and Closeout Requirements: Spare parts and maintenance products.

B. Furnish to Owner an additional 4-percent of installed panels for each type of panel Tile shall be carefully boxed and cushioned against breakage installed. Obtain receipt.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Armstrong World Industries, Inc. www.armstrong.com.

B. CertainTeed Ceilings, www.certainteed.com.

C. USG Interiors, Inc. www.usg.com.

D. Substitutions: Section 01 60 00 - Product Requirements.

2.2 SELECTIONS - Identifications as noted in the Color/Finish Schedule:

A. **APC-1**: ASTM E1264, Type IV conforming to the following:
1. Basis of Design: *Cortega 770* as manufactured by Armstrong or approved equivalent by specified manufacturer.
2. Size: 24 x 24 inches.
3. Thickness: 3/4 inches.
4. Composition: Mineral fiber, wet-formed.
5. Light Reflectance Coefficient: 0.82.
6. NRC: 0.55.
7. CAC: 33.
8. Edge: Square.
9. Surface Color: White, typical.
10. Surface Finish: Fine texture, no pattern.
11. Special Treatment: *HumiGuard Plus.*

B. **APC-2**: ASTM E1264, Type IV, Clean Room Class 100, conforming to the following:
1. Basis of Design: *Clean Room VL* as manufactured by Armstrong or approved equivalent by specified manufacturer.
2. Size: 24 x 24 inches.
3. Thickness: 5/8 inches.
4. Composition: Mineral fiber, wet-formed.
5. Light Reflectance Coefficient: 0.80.
6. CAC: 40.
7. Edge: Square.
8. Surface Color: White, typical.
9. Surface Finish: Smooth and unperforated washable vinyl-faced.
10. Surface Finish: Fine texture, no pattern.
11. Special Treatment: *HumiGuard Plus* and *BioBlock+*.

C. Grid:
1. Non-fire Rated Grid: ASTM C635, 15/16” face, galvanized, intermediate duty; exposed T; components die cut and interlocking.
2. Rated Grid: ASTM C635, 15/16” face, galvanized, intermediate duty; exposed T; components die cut and interlocking. UL labeled and meeting requirements of ASTM E84 and ASTM E119 as an assembly when installed with rated tiles.
3. Manufacturers:
   a. Armstrong World Industries, Inc.
   b. BPB America.
   c. Chicago Metallic Corporation.
   d. National Rolling Mills, Inc.
   e. USG Interiors, Inc.
4. Products: Basis of Design – *Prelude* and *Prelude Plus XL Fire Guard* as manufactured by Armstrong.
   a. Commercial quality cold rolled steel with galvanized coating.
   b. Painted Steel Finish: Factory painted in standard or custom colors as scheduled.
5. Exposed Grid Surface Width: 15/16 inch.
6. Accessories: Stabilizer bars, clips, splices, perimeter moldings, hold down clips, and other items required for suspended grid system.
   a. For circular penetrations of ceiling, provide perimeter moldings fabricated to diameter required to fit penetration exactly.

b. At exposed perimeter edges of “cloud” ceilings, provide 1” high steel Cee-channel in factory white finish.

7. Support Channels and Hangers: Galvanized steel; size and type to suit application and ceiling system flatness requirement specified.
   a. Post-installed Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing per ASTM E 1190, conducted by a qualified testing and inspecting agency.

   b. Zinc-Coated Carbon-Steel Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper. Select wire diameter so its stress at three times hanger design load will be less than yield stress of wire, but provide not less than 0.106 inch diameter wire.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Verify layout of hangers will not interfere with other work.

3.2 EXISTING WORK

A. Extend existing acoustical ceiling installations using materials and methods as specified.

B. Clean and repair existing acoustical ceilings which remain or are to be reinstalled.

3.3 INSTALLATION

A. Lay-In Grid Suspension System:
   1. Install suspension system in accordance with ASTM C635, ASTM C636 and as supplemented in this section.
   2. Install system capable of supporting imposed loads to deflection of 1/360 maximum.
   3. Lay out system to balanced grid design with edge units no less than 50 percent of acoustic unit size.
   4. Install after major above ceiling work is complete. Coordinate location of hangers with other work.
   5. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
   6. Do not attach hangers to steel roof deck. Attach hangers to structural members.
   7. Space hangers not more than 48 inches o.c. along each member supported directly from hangers, and provide hangers not more than 8 inches from ends of each member.
   8. Where ducts or other equipment prevent regular spacing of hangers, reinforce nearest affected hangers and related carrying channels to span extra distance.
   9. Do not support components on main runners or cross runners when weight causes total dead load to exceed deflection capability. Support fixture loads by supplementary hangers located within 6 inches of each corner; or support components independently.
   10. Do not eccentrically load system, or produce rotation of runners.
   11. Perimeter Molding:
      a. Install standard angle edge molding at intersection of ceiling and vertical surfaces and other with other interruptions.
         1) Use longest practical lengths.

2) Overlap corners.

b. Install cee-channel edge at “cloud” ceilings.

c. Install specified pre-formed reveal edging at round columns and similar intersections.

d. Do not use exposed fasteners, including pop rivets, on moldings and trim.

B. Acoustic Units:

1. Fit acoustic units in place, free from damaged edges or other defects detrimental to appearance and function.
2. Fit border trim neatly against abutting surfaces.
3. Install units after above-ceiling work is complete.
4. Install acoustic units level, in uniform plane, and free from twist, warp, and dents.
5. Cut to fit irregular grid and perimeter edge trim.
6. Where round obstructions occur, install preformed closures to match perimeter molding.
7. Install hold-down clips to retain panels tight to grid system within 20 ft of exterior door.

3.4 ERECTION TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION

SECTION 10 28 00 - TOILET ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. The following items are Contractor furnished and Contractor installed (CFCI):
   1. Sanitary napkin disposal units.
   2. Sanitary napkin/tampon dispensers.
   3. Grab bars.
   4. Stainless steel framed mirrors.
   5. Soap Dispensers
   6. Mop and broom holders.

B. The following items are Owner-Furnished and Contractor Installed (OFCI):
   1. Toilet tissue dispensers: Kimberly Clark #09601.
   2. Toilet seat cover dispensers: Kimberly Clark.
   3. Loose trash container: Rubbermaid FG354000GRAY, Slim Jim, 23 gal.

1.2 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specifications Sections.

B. Product Data for each toilet accessory item specified, including details of construction relative to materials, dimensions, gages, profiles, method of mounting, specified options, and finishes.

C. Schedule: Indicating types, quantities, sizes, and installation locations (by room) for each toilet accessory item to be provided for project.

D. Setting Drawings: Where cutouts are required in other work, provide templates, substrate preparation instructions, and directions for preparing cutouts and for installation of anchorage devices.

1.3 SUSTAINABLE DESIGN (LEED) REQUIREMENTS

A. GENERAL LEED REQUIREMENTS: Reference Section 01 35 45 for general information regarding sustainable requirements for this LEED Silver Project.

B. LEED PROJECT CHECKLIST: Reference the LEED Project Checklist (included in Section 01 35 45) for an understanding of the project's LEED goals, including quantities and percentages within the required credits.

C. LEED SUBMITTAL PROCEDURE: All Subcontractor(s) and vendor(s) providing materials and products under this Section shall be REQUIRED to submit a fully-executed Sustainable Product Submittal Sheet (included in Section 01 35 45) regardless of whether credits are expected for materials and products provided under this Section.

D. LEED PRODUCT DATA SUBMITTALS: Required for Materials and Products under this Section:

1. Materials and Products under this section contribute towards the LEED credits listed and the Project's LEED Silver goal.

2. Product Data for Credit **MR4:** For metals or other products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer

recycled content. Include statement indicating cost for each product having recycled content

1.4 QUALITY ASSURANCE

A. Inserts and Anchorages: Furnish inserts and anchoring devices that must be set in concrete or built into masonry; coordinate delivery with other work to avoid delay.

B. Single-Source Responsibility: Provide products of same manufacturer for each type of accessory unit and for units exposed to view in same areas, unless otherwise acceptable to Architect.

1.5 PROJECT CONDITIONS

A. Coordination: Coordinate accessory locations, installation, and sequencing with other work to avoid interference and to assure proper installation, operation, adjustment, cleaning, and servicing of toilet accessory items.

1.6 WARRANTY

A. Provide Contractor's written warranty against defects in materials and installation for a period of 1-year after Date of Substantial Completion of the Project.

B. Provide manufacturer's written warranty against defects in materials or workmanship for a period of 3-years after Date of Substantial Completion of the Project. Defects shall include, but not be limited to: deterioration of finish, noisy operation or other operational problems, failure to meet specified quality assurance requirements.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS FOR PRODUCTS PROVIDED AND INSTALLED BY CONTRACTOR:

A. Subject to compliance with specified requirements, provide toilet accessories by one of the following:
1. A & J Washroom Accessories www.ajwashroom.com
2. American Specialties, Inc. www.americanspecialties.com
3. Bobrick Washroom Equipment, Inc. www.bobrick.com
4. Bradley Corporation www.bradleycorp.com
5. Dyson Ltd. www.airblade.dyson.com

2.2 GENERAL REQUIREMENTS:

A. Fasteners: Screws, bolts, and other devices of same material as accessory unit or of galvanized steel where concealed. Where manufacturer's fastening system is exposed fasteners, provide tamper-proof head design.

B. Except where specifically specified otherwise, provide all accessory items by same manufacturer for those items available by the same manufacturer.

C. Keys: Provide universal keying for access to all keyed toilet accessory units provided by the same manufacturer. Provide minimum of six (6) copies of key to Owner's representative and obtain receipt.

2.3 SANITARY NAPKIN DISPOSAL UNITS

A. Surface-mounted stainless steel disposal unit with seamless exposed walls, tightly self-closing top cover and locking bottom panel with stainless steel continuous hinge.
1. Provide manufacturer's concealed fastening system with anchors appropriate for the wall construction.

B. Basis-of-Design: Model B-270 as manufactured by Bobrick.

2.4 TOILET SEAT COVER DISPENSER

A. Surface-mounted stainless steel coin-operated dispensing unit with seamless exposed walls, double-locking front panel. And separately-keyed coin box.
1. Finish: Type 304 satin finish stainless steel.

B. Basis-of-Design: Model 09512 K-C Professional as manufactured by Kimberly Clark.

2.5 GRAB BARS

A. Stainless Steel Type: Provide grab bars with wall thickness not less than 18 gage and as follows:
1. Mounting: Concealed, manufacturer's standard flanges and anchorages.
2. Clearance: 1-1/2 inches clearance between wall surface and inside face of bar.
3. Gripping Surfaces: Smooth, satin finish.
4. Heavy-Duty Size: Outside diameter of 1-1/2 inches.
5. Configurations: As indicated in the drawings.
a. Length: 42", at sides of water closet; 36", behind water closet.
6. Provide manufacturer’s concealed fastening system with anchors appropriate for the wall construction.

B. Basis-of-Design: Model B-6806 as manufactured by Bobrick.

2.6 FRAMED MIRRORS

A. Stainless Steel Framed Mirror Units: Fabricate frame with angle shapes of not less than 18 gage, with square corners mitered, welded, and ground smooth. Meet requirements of ASTM C1036 Standard Specification for Flat Glass.
1. Provide in No. 4 satin finish.
2. Provide 24” wide x 36” high unless indicated otherwise.
3. Provide manufacturer’s concealed fastening system with anchors appropriate for the wall construction.

B. Basis of Design: Model B-290 as manufactured by Bobrick

2.7 SOAP DISPENSERS

A. Basis of Design: Model B-2112, Classic Series surface-mounted as manufactured by Bobrick.

2.8 MOP AND BROOM HOLDER

A. Type: Surface-mounted 18-gage Type 304 stainless steel "hat" channel with spring-loaded rubber cam-type mop/broom holders.
1. Length: 34-inches.
2. Integral stainless steel utility shelf.
3. Complete with 4 hooks and 3 mop holders.
4. Basis-of-Design: Bobrick B-239 x 34.

2.9 ELECTRIC HAND DRYER

A. Description
1. General: High speed, energy efficient, automatic-on electric hand dryer.
2. Operating Sound Level: 81 dB or less.
3. Basis-of-Design: *Air Blade dB*, Model AB14 as manufactured by Dyson.
4. HEPA filtration system.
5. Housing:
a. Polycarbonate-ABAS exposed enclosure in white or grey color as selected by the Architect. Galvanized steel back plate/mounting bracket.

b. Nominal size: 11-7/8” wide x 26” tall x 9-3/4” deep.
6. Operating temperature range: 32-104 degrees F.
7. Hand dry time: Nominal 12 seconds.
8. Airspeed: 420 mph.
9. Unit auto-on is activated by infrared optical sensor, and shall remain in operation until hands are removed or 30-seconds maximum.

B. Electrical Characteristics
1. Input voltage: 110-127V (verify with power provided in the Electrical Drawings)
2. Rated Power: 1400 W, 11.7 amps at 120V.
3. Motor Type: Brushless DC, 92,000 rpm.
4. Internally grounded.

C. Warranty: Manufacturer’s 5-year written warranty against defects in materials and workmanship.
1. Parts: 5-years.
2. Labor: 1-year.

D. Mounting: Unit suitable for surface-mounting direct to wall.

2.10 FABRICATION

A. General: Only a maximum 1-1/2 inch diameter, unobtrusive stamped logo of manufacturer, as approved by Architect, is permitted on exposed face of toilet or bath accessory units. On either interior surface not exposed to view or back surface, provide additional identification by means of either a printed, waterproof label or a stamped nameplate, indicating manufacturer's name and product model number.

B. Surface-Mounted Toilet Accessories, General: Except where otherwise indicated, fabricate units with tight seams and joints, exposed edges rolled. Hang doors or access panels with continuous stainless steel piano hinge. Provide concealed anchorage wherever possible.

C. Recessed Toilet Accessories, General: Except where otherwise indicated, fabricate units of all welded construction, without mitered corners. Hang doors or access panels with full-length stainless steel piano hinge. Provide anchorage that is fully concealed when unit is closed.

D. Framed Mirror Units, General: Fabricate frames for glass mirror units to accommodate wood, felt, plastic, or other glass edge protection material. Provide mirror backing and support system that will permit rigid, tamperproof glass installation and prevent accumulation of moisture. Provide galvanized steel backing sheet, not less than 22 gage and full mirror size, with non-absorptive filler material. Corrugated cardboard is not an acceptable filler material.

E. Mirror Unit Hangers: Provide system of mounting mirror units that will permit rigid, tamperproof, and theft-proof installation including heavy-duty wall brackets of galvanized steel, equipped with concealed locking devices requiring special tool to remove.

F. Electric Hand Dryers: Mount steel back plate to wall using stainless steel screws, and attach polycarbonate housing using manufacture’s tamper-proof installation system. Locate projecting hand dryers out of path-of-travel in accordance with ADA and state requirements.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install toilet accessory units in accordance with manufacturers' instructions, using fasteners appropriate to substrate and recommended by manufacturer of unit. Install units plumb and level, firmly anchored in locations and at heights indicated.

B. Secure mirrors to walls in concealed, tamperproof manner with special hangers, toggle bolts,

or screws. Set units plumb, level, and square at locations indicated, in accordance with manufacturer's instructions for type of substrate involved.

C. Install grab bars to resist tensile and moment forces generated by a load of 250 lb. applied in any direction, or as otherwise required by authorities having jurisdiction, whichever is more stringent.

3.2 ADJUSTING AND CLEANING

A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.

B. Clean and polish all exposed surfaces in strict accordance with manufacturer's recommendations after removing temporary labels and protective coatings.

3.3 KEY TESTING AND DELIVERY

A. Test each key for proper operation of locking units. Group and package master keys and copies by manufacturer clearly marked as to manufacturer and the units key copies will fit. One master key and its copies will fit all lockable units supplied by that manufacturer.

B. Deliver marked key packages to Owner’s representative and obtain receipt.

END OF SECTION

SECTION 23 52 33 - CONDENSING BOILERS

PART 1 - GENERAL

1.1 WORK INCLUDED

A. This specification specifies complete packaged factory-assembled and tested, water tube hot water boilers, trim, and accessories.

1.2 RELATED DOCUMENTS

A. Section 23 31 13 “Ductwork”

B. Section 23 21 13 “Hydronic Piping and Fittings”

C. Section 23 21 33 “HVAC Pumps”

D. Section 23 09 00 “Instrumentation and Control”

1.3 SUBMITTALS

A. Product Data - Manufacturer’s technical data shall be presented prior to start of fabrication in an organized and bound submittal and shall include the following:
   1. Boiler:
      a. Product General Arrangement Drawing.
      b. Rated capacities of selected models.
      c. Product dimensions including required clearances.
      d. Unit weights (shipping and operating).
      e. Customer Order Data Sheet confirming job site conditions and requirements.
   2. Boiler Controls, Trim, & Instrumentation:
      a. Piping & Instrument Diagrams.
      b. Instrument & Electrical symbols legends.
      c. Drawing Index.
      d. Bills of Materials listing manufacturer, models, and quantity of supplied components.
      e. Control Panel Layout Drawings.
      f. Panel Controls and Indicators Layout Drawing.
      g. Ladder Diagram type wiring schematics.
      h. Wiring schematic drawing index and symbols legend.
   3. Flue:
      a. General arrangement or component drawing.
      b. Component Data Sheet.
      c. Shop drawings.
      d. Pressure loss and expansion calculations.

B. Operating & Maintenance Instructions - O & M manuals shall be compiled in an organized and bound volume and submitted prior to commissioning of the equipment. Refer to sections 01 78 23 and 23 00 10 for additional requirements.

1.4 QUALITY ASSURANCE

A. Manufacturer's Qualifications:
   1. Firms must be regularly engaged in the manufacture of water tube boilers of types and capacities required. The firms products must have been in satisfactory use in similar service for not less than 10 years.
   2. The firm must have a written Quality Control manual and program which is currently maintained and includes the following information:
      a. Authority and Responsibility for content and implementation of the QC program.
      b. Company organization and individual authority and responsibility for each phase of the QC program’s operation.

c. Sales order entry requirements, documentation, and control.
d. Design criterion requirements, documentation, and control.
e. Drawing requirements, documentation, and control.
f. Calculation requirements, documentation, and control.
g. Fabrication specifications, requirements, documentation, and control.
h. Material procurement requirements, documentation, and control.
i. Material handling and storage requirements, documentation, and control.
j. In-process inspection and examination program.
k. Non-conformity identification and correction program.
l. Welding process and qualification control.
m. Non-destructive examination program.
n. Heat treatment requirements, documentation, and control.
o. Calibration program for test, measurement, and production equipment .
p. Record requirements and retention.
q. Third party inspection program.

3. The firm must establish individual qualifications for each person engaged in welding and establish and maintain the following:
   a. Weld standards and procedures for each identified manufacturing process.
   b. Tests to qualify each individual for any weld process employed in their job responsibilities.
   c. Accredited on-site welding instruction and testing facility to train and certify welding personnel.
4. Warranty:
   a. The boiler pressure vessel shall be warranted for 10 years against thermal shock on a non-pro-rated basis.
   b. Heat exchanger and burner shall be warranted for not less than 5 years against flue gas corrosion.
   c. The complete boiler package shall be warranted for twelve months from the date of startup.

B. Weld Codes and Standards:
1. Boiler testing and rating will be in accordance with American Boiler Manufacturer's Association (ABMA) .
2. Hot water boiler construction will be in accordance with American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code. Pressure vessels shall bear the appropriate ASME stamp.
3. Electrical installations shall comply with National Fire Prevention Association (NFPA) Code- 70 “The National Electrical Code”.
4. Gas Fired-boiler installations shall be in accordance with National Fire Protection Association (NFPA) Code 54 "National Fuel Gas Code".
5. Ancillary electrical components shall be Underwriters Laboratories (UL) listed and labeled.
6. The complete boiler package is to be designed and fabricated per UL guidelines.
7. Instrument and piping drawings and electrical drawings are to use symbology and protocol established and defined by the Instrument Society of America (ISA).
8. The installation shall be in accordance with ASME CSD-1.
9. The installation shall be in accordance with Factory Mutual (FM) requirements and local codes.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packaged boiler critical envelope dimensions shall be provided to allow review for clearances prior to transport or insertion into restricted spaces.

B. Exposed electrical components that may be subject to transportation damage due to ambient exposure shall be wrapped and isolated with appropriate elastomer or weatherproofing material at the factory.

C. Exposed physical utility connections (flanges, pipe ends, etc.) shall be isolated for transport from ambient influences with appropriate blinds, caps, or weatherproofing materials.

D. Manufacturer shall provide lifting lugs at points of crane or lift attachment. Lifting load (weight) shall be provided by the manufacturer.

E. Water shall be drained from all water storage areas, piping systems, valves, and components prior to shipment.

1.6 WARRANTY

A. The manufacturer shall provide a 1 year warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Boiler Manufacturers: Approved packaged watertube boiler manufacturers must be subject to and in compliance with this specification and other applicable contract requirements. Approved manufacturers (contingent on specification compliance) include the following:
1. Patterson Kelly/Harsco.
2. Fulton.
3. Cleaver Brooks.

2.2 PACKAGED WATERTUBE BOILER

A. Hot Water Boiler: The selected unit shall be a packaged watertube boiler. The boiler (pressure vessel), burner, fuel and combustion air delivery systems, burner management systems, and electrical control shall be specifically engineered as a compatible packaged system. The system, boiler, and accessories shall be factory mounted on a heavy steel base frame. Solid supports or saddles should be used to attach and provide placement of the pressure vessel with the frame and package. The system (package) shall be factory assembled and tested. The packaged unit shall be designed to be transported and installed with a minimum of field assembly required.

B. Power Connection. Boilers shall be provided with a single point power connection with powers the burner and any other accessories required by the boiler. The single point power connection shall include a disconnect switch in a NEMA 1 enclosure.

C. General Boiler Specifications: The boiler shall be designed to provide reliable and consistent performance to the following operating parameters:
1. Boiler performance shall meet the requirements scheduled on the drawings.
2. The water boiler shall be manufactured in strict accordance with the ASME Heating Boiler Code and shall bear the ASME stamp for a maximum working pressure of 150 PSIG at 250 deg F temperature.
3. Burner shall provide a minimum fuel combustion efficiency of 99.9%.
4. Emissions of Nitrogen Oxides shall not exceed TCEQ requirements for Houston/Galveston Area Non-attainment zone when operating with natural gas.

D. General Boiler Design: The packaged watertube boiler shall be designed with the following features to provide optimized efficiency and unit life:
1. The boiler shall be furnished with an adequate number of tappings and inspection openings to facilitate internal boiler inspection and cleaning.
2. The boiler shall be constructed and assembled as a completely packaged unit and all appropriate controls, when possible, shall be mounted on boiler front
3. The boiler package shall be complete with forced draft burner manufactured for that boiler.

2.3 BOILER SPECIFICATIONS

A. Factory-fabricated, -assembled, and -tested, ~~pulse combustion~~ condensing boiler with heat exchanger sealed pressure tight, built on a steel base; including insulated jacket; flue-gas vent; combustion-air intake connections; water supply, return, and condensate drain connections; and controls.

B. Heat Exchanger: Each hot water boiler shall consist of a cast aluminum or stainless steel heat exchanger complete with trim, valve trains, burner, and boiler control system. The boiler manufacturer shall fully coordinate the boiler as to the interaction of its elements with the burner and the boiler control system in order to provide the required capacities, efficiencies, and performance as specified. The boiler heat exchanger shall resist the corrosive gases produced from flue gas condensation. The casting shall be a counter-flow design for maximum heat transfer with the multiple flow paths arranged in a reverse return configuration to assure balanced flow through each channel. Each boiler shall be capable of operating with a minimum outlet water temperature of 68 F.
1. The boiler shall be designed and suitable for variable flow design with minimum required flow for operation no more than ~~5 gpm~~ 45% design flow (at minimum firing rate).

C. Exhaust Gas Vent: Boilers shall have a flanged flue exhaust vent at the top front of the boiler. The vent is to include a 5" diameter stack thermometer and will be designed for convenient connection to flue or stack exhaust equipment. The vent will include a second thermal well for the installation of stack temperature sensor by the controls vendor.

D. Insulation and Jacket: The boiler shall be constructed on a structural steel frame and properly insulated with no less than 1 1/2" fiberglass insulation. The boiler shall also be complete with a metal jacket, heavy gauge, zinc-coated rust resistant steel casing, finished with a suitable heat resisting paint. Complete jacket and insulation shall be easily removable and reinstalled. The boiler shall incorporate individually removable jacket doors, with handles providing easy access to tube access panels. The entire tube area shall be easily accessible for fireside.

E. Boiler Trim: The boiler shall include the following control and accessory equipment (trim):
1. Shall comply with the requirements of ASME CSD-1 and FM requirements.
2. Relief Valves shall be provided in types, sizes and quantities to comply with ASME Code requirements.
3. Hot Water Temperature Controls shalll be provided to regulate the burner operation and boiler output and safety. The following controls will be mounted on the boiler:
   a. One firing rate controller for modulation of burner firing rate.
   b. Operating aquastat
   c. High limit aquastat M/R
   d. Independently mounted 3” dial thermometer
   e. Independently mounted 4 ½” pressure gauge
   f. Probe type Low Water Cut Off.
   g. High Pressure Cut-Off.
   h. Above listed controls shall be factory piped and wired. All trim and control wiring shall be housed in conduit or an approved casement.
4. Data Reports: The Manufacturer shall supply two copies of data reports, ASME form P-2, P-4, P-6, and P-7 (when applicable).

F. Burner: The burner shall be low NO_x, conform to TCEQ requirements for Houston/Galveston Area nonattainment zone without the use of flue gas recirculation, when firing natural gas. Burner shall be fully modulating gas, fan servomotor, air damper assembly, flame-safeguard, electronic ignition unit, flame-retention head, nozzle, and hinged, two-piece, cast-aluminum burner housing. The burner, burner management and safety system, combustion control, and fuel delivery systems shall have the following certifications and features:
1. The burner shall be suitable for direct vent (sealed combustion).

2. Standards and Certifications:
   a. The burner system (hereafter referred to as burner) shall be designed, built, and tested to guidelines established by UL-795 (gas), and UL-2096 (emissions reduction equipment), as applicable.
   b. The burner shall meet the requirements of CSD-1.
   c. The burner shall meet the requirements of Factory Mutual (FM)
   d. Provide unit tested and certified by a Nationally Recognized Testing Laboratory to conform to UL standards 795 & 296, CAN/CSA B140.2.1-M90, CAN/CSA B140.0-M87, CAN/CSA standard C22.2 No. 3-1988.
3. Construction:
   a. The burner shall be supplied with an integral packaged combustion air blower.
   b. Burner shall utilize linkage-less controls.
   c. Provide unit with resilient, high-gloss, powder-paint finish. Ensure housing can be swung open for service form either the left or the right, and has a removable access cover with integrated sight-glass. Ensure that unit has built-in closure switch to prevent burner operation if the burner is not fully closed.
   d. Provide burner housing constructed so that all components can be easily accessed or removed for service or replacement using hand tools. Ensure housing is designed for either left or right hinging and that complete support of the burner is provided from the mounting flange such that no other support is required. Also ensure that the burner body is secured in the operating position to the mounting flange by means of either a single or a double securing bolt.
   e. Provide non-asbestos flange gasket for mounting between heat-exchanger and burner mounting plate
   f. Provide unit complete with flange switch to prevent burner activation when the hinged housing is not secured in the operating position
   g. Burner shall be self supporting for transportation and operation.
   h. Air flow dampers shall be driven to a closed position with minimal leakage to ensure minimum heat loss through the boiler during boiler shutdown periods.
   i. Provide TEFC integrally mounted electric motor manufactured by the burner manufacturer to match the exact performance requirements of the burner. Ensure motor provides fan capacity to meet the requirements of all potential firing rates of the particular burner model and size
   j. Ensure diffuser/nozzle assembly (mixing head) can be removed completely from the burner without dismounting the burner from the heat-exchanger
   k. Provide burner with multiple–blade damper on the suction of the combustion air fan and driven by a dedicated servomotor
   l. Provide a separate servomotor for each fuel, sliding sleeve, and air.
4. Gas Operation: The burner shall have the following operating characteristics or capabilities when firing natural gas:
   a. Full modulation of combustion air and fuel over the entire firing range.
   b. 5:1 on low NO_x operation.
   c. Excess air limited to 15% (3% flue gas oxygen).
   d. Carbon monoxide emissions required by TCEQ for Houston/Galveston Area Non-attainment Zone.
   e. NO_x emissions levels required by TCEQ for Houston/Galveston Area Non-attainment Zone.
5. Accessories and Components: The gas and light oil burners shall include the following accessories or components:
   a. Differential air pressure switch for proof of air flow.
   b. Gas Pilot of the fuel/air premix type with automatic electric ignition. The unit will be complete with an electronic detector to monitor pilot so that the primary fuel valve cannot open until the pilot flame has been established.
   c. Pilot train is to include:
   d. Pilot electrically actuated dual solenoid valves.
   e. Pilot gas pressure regulator.

f. Pilot shut off manual hand valve.
g. Pilot gas pressure gauge.

6. Combustion Control: The burner shall include a combustion control system to maintain fuel and combustion air ratios at pre-determined rates for optimum efficiency. The Combustion control system shall be fully integrated into the flame safeguard or burner management system. Features shall include:
   a. The combustion control system shall provide load control over the entire operating range of the boiler.
   b. Boiler operation will be maintained to within 3% of set point when operating at or below stated operating output rates.
   c. The system shall have the capability of custom characterizing or matching desired fuel and combustion air ratios throughout the operating range.
   d. The burner fuel characterization devices shall be provided with externally mounted position indicators.
   e. Assured low fire position shutdown on standard (non-safety interlock) shutdowns will be provided.
   f. Oxygen trim module.
   g. Variable speed combustion air controller
7. Burner Gas Piping: The gas delivery system supplied with and to the burner shall be delivered completely assembled and installed with the packaged boiler. The gas piping system shall be designed to deliver the required fuel flow rates and pressures to the burner. The gas pipe train shall include as a minimum the following:
   a. Burner shut off manual hand valve.
   b. Characterized gas flow control valve.
   c. Main gas shut off valves, electrically actuated, with proof-of-closure switch.
   d. Normally open electrically actuated gas vent valve.
   e. Main gas shut off manual hand valve.
   f. Main gas pressure regulator designed for 5 psig gas supply pressure. The burner shall be capable of operation with 3 psig gas supply pressure.
   g. High and low gas pressure switches.
8. Control Panel and Wiring: The control panel shall incorporate the following features and components.
   a. The controls, flame safeguard system, and other electrical devices and services that are not boiler, burner, or skid mounted shall be housed in an enclosed control panel or mounted on the burner.
   b. The control panel will include a primary flame safeguard control with flame scanner. A primary signal display module is to be mounted on the panel door for easy access and display. The flame scannner shall be capable of continuous 24 hr a day operation.
   c. All wiring in the panel and on the boiler shall be identified and marked on each end.
   d. I.E.C. motor starter with overload protection shall be provided.
   e. Each boiler shall be provided with all necessary controls, all necessary programming sequences, and all safety interlocks. Each boiler control system shall be properly interlocked with all safeties.
   f. Each boiler shall be provided with a “Full Modulating” firing control system whereby the firing rate is infinitely proportional at any firing rate between 20% and 100% as determined by the pulse width modulation input control signal. Both fuel input and air input must be sequenced in unison to the appropriate firing rate without the use of mechanical linkage.
   g. Control system shall provide the minimum capabilities:
      1) Maintain single set point
      2) Reset the set point based on outdoor air temperature.
      3) Boiler shutdown based on outdoor air temperature.
      4) Internal dual set point program with an external point of closure.

5) Alarm relay for any manual reset alarm function.
6) Programmable Low Fire Delay to prevent short cycling based on a time and temperature factor for release to modulation.
7) LCD text display showing current supply and return temperatures, current set points as well as differential set points. It must also display any fault codes whether automatically reset or manually reset.
8) Local Manual Operation.
9) Cascade control for up to 24 boilers without the need for external control source.
10) Remote Control System (Building Management/Sequencer Control) - The boiler control shall be capable of accepting a 0 to 10vdc remote external analog signal to control the firing rate and temperature setpoint.
11) On board Domestic Hot Water Priority capable of changing from the heating pump to the DHW pump as well as changing the boiler set point from a heating temperature to a higher set point temperature to satisfy the DHW system and then return to the heating mode.
12) Domestic Hot Water may run concurrent with Comfort Heat mode.
13) All equipment shall be provided with necessary communication capabilities and hardware to allow integration with BacNet Communications with building Automation System

h. Building Automation System Interface: Factory-install hardware and software to enable building automation system to monitor, control, and display boiler status and alarms. Provide interface from the burner management system to building control system to communicate the following information:
1) Burner status.
2) Fault alarms:
3) High gas pressure.
4) Low gas pressure.
5) Airflow alarm.
6) High boiler pressure.
7) Low water level.
8) Flame fault.
9) Low water temperature switch.
10) Burner management system internal fault alarm.

i. The following controls points shall be hard wired from the boiler to the building control system. The boiler manufacturer shall connect the points to a terminal strip outside of the boiler control panel for connection to the building control system:
1) Boiler remote Enable/Disable.
2) Boiler Hot Water Supply Temperature setpoint.

9. Control voltage for the control panel shall be 120 VAC, one phase, 60 Hertz and shall be provided from a 460/3/60 primary voltage step down transformer.
10. The control circuit shall be provided with fused over-current protection.

G. Warranty
1. Complete burner and boiler package to have a Manufacturer's parts and labor warranty on all materials and components supplied for 12 months from date of startup.

H. Packaged Boiler Commissioning:
1. The boiler manufacturer shall provide the services of a factory authorized service engineer for the boiler start-up.
2. A comprehensive start-up report shall be completed and provided to the Owner.
3. Factory authorized training for operators, maintenance, and others shall be performed at the time of commissioning. Manufacturer shall provide 2 days of training by a factory trained technician on the boiler and burner (1 day each). Training shall include regular maintenance and trouble shooting.

I. Boiler Efficiency Performance Guarantee:
1. The unit shall operate at the following efficiencies firing the specified fuels at boiler maximum capacity:
a. Natural Gas – 92% based on ANSI Z 21.13 conditions.

~~J. The following procedure shall be employed for determining the boiler's efficiency:~~
~~1. Operation of the boiler, while firing the specified fuels, shall be used to establish an efficient and stable fuel-air ratio over the complete load range. Operation of the unit shall then be continued for testing and demonstration of the certified efficiency at rated capacity. This test is to take place on the factory fire test stand.~~
~~2. The efficiency test shall consist of the accurate measurements and recording of the following listed factors:~~
~~a. Oxygen, NO_x, and combustibles in stack gases.~~
~~b. Ambient air temperature.~~
~~c. Stack temperature.~~
~~3. On completion of the test, the following listed heat losses shall be calculated as prescribed under, "Heat Loss Efficiency" of the ASME Test Form for Abbreviated Efficiency per Power Test Codes PTC4-1:~~
~~a. Heat loss due to dry gas.~~
~~b. Heat loss due to moisture in fuel.~~
~~c. Heat loss due to moisture from combustion of hydrogen.~~
~~4. The following data shall be utilized in conjunction with the calculation of the above listed heat losses to determine the certified efficiency.~~
~~a. Analysis of fuel fired.~~
~~b. Unaccounted, radiation and convection loss as claculated for the Model being tested. Calculated data taken from actual measured test results.~~
~~5.~~2. ~~The test results shall be certified to the customer by the boiler manufacturer in a report which shall include all supporting data and appropriate calculations showing the resulting efficiency. In the event the test does not yield results per Certified Minimum Efficiency stated above, the Customer may refuse shipment of the unit until such time as the boiler manufacturer can demonstrate the Certified Minimum Efficiency.~~

2.4 FLUE

A. Provide flue from interface to boiler to discharge to atmosphere as shown.

B. Flue shall be in accordance with boiler requirements for adequate exhaust flow and draft.

C. Flue shall be prefabricated system similar to Schebler ~~P2~~eVent, double wall positive pressure flue or approved equal. Flue shall have ~~304~~ AL-294C stainless steel inner wall and 304 stainless steel outer wall with ~~2 inches insulation~~ a 1-inch air gap and suitable for flue temperature of 550 F. Minimum pressure rating of ~~60~~ 40 inches w.c. Refer to section 23 31 13 “Ductwork” for additional requirements.

D. Provide barometric dampers if necessary to to satisfy boiler operating requirements.

E. Provide the following components and accessories from the flue manufacturer as required and recommended by the flue manufacturer: ventilated thimble, stack cap, fittings, adjustable length joints, expansion joints, and support components.

2.5 SOURCE QUALITY CONTROL

A. Boiler pressure vessel shall be designed, constructed, and hydrostatically tested in accordance with ASME Boiler and Pressure Vessel Code Section I, and will bear the appropriates ASME label.

B. Quality control shall be executed, inspected and documented per the manufacturers approved ASME Quality Control program and manual.

C. Boiler shall receive a factory test of full load capacity and emissions performance. The Owner's representatives may witness the factory test of the boilers.

PART 3 - EXECUTION

3.1 EXAMINATION

A. The buyer or assigned designee may inspect the order execution and job progress at the manufacturer's facility during normal business hours at any point during the design, procurement, and fabrication processes.

3.2 FIELD QUALITY CONTROL

A. The manufacturer will provide completed ASME H-2 forms to assist in completion by others of any required on-site hydrostatic testing or other testing in accordance with applicable sections of ASME Boiler and Pressure Vessel Code or other local codes.

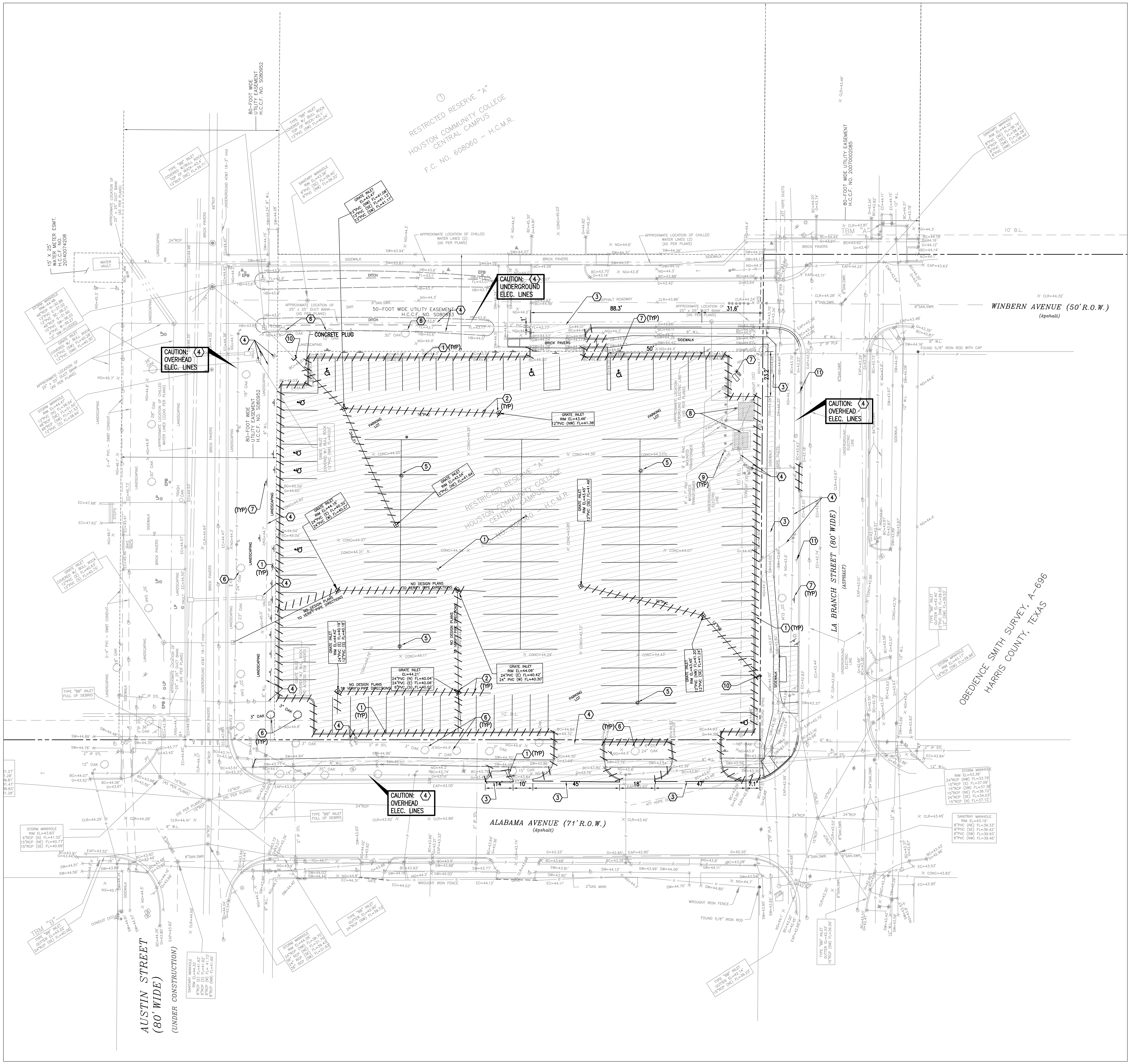
B. Manufacturer will provide a written procedure by which any field defects or deficiencies will be brought to the manufacturer's attention and by which the manufacturer will address such defects and deficiencies.

C. Provide State of Texas Boiler Operating Permit.

D. Startup shall be completed by factory authorized personnel.

~~B.~~E. Provide at a time of the Owner's approval, training by a factory trained representative for a period of two, eight-hour days to instruct the Owner's operating personnel in the operation and maintenance of the units.

END OF SECTION



Benchmark:

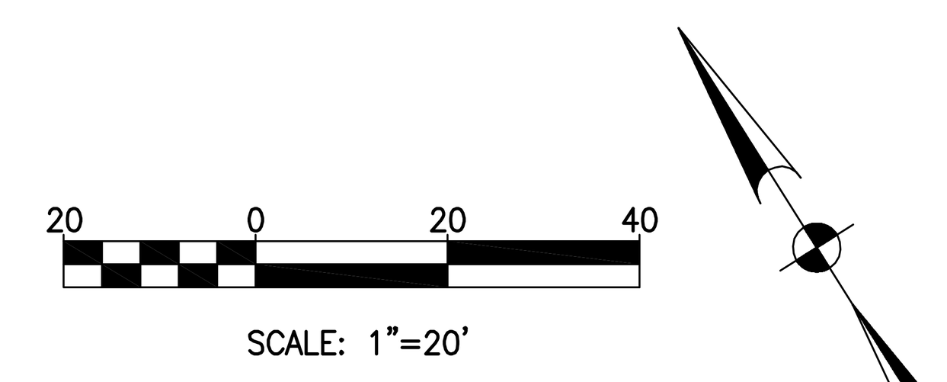
1. THIS IS A LIMITED TOPOGRAPHIC SURVEY OF THE CENTRAL CAMPUS, AS PER THE CLIENT'S REQUEST.
2. THE BASIS FOR BEARINGS FOR THIS PROJECT AND THE BOUNDARY LINES, EASEMENTS AND BUILDING LINES SHOWN HEREON ARE BASED ON THE SUBDIVISION PLAT FOR THE HOUSTON COMMUNITY COLLEGE CENTRAL CAMPUS, BASED ON THE PLAT RECORDED UNDER FILM CODE NO. 608060 OF THE HARRIS COUNTY MAP RECORDS.
3. RECORDS RESEARCH FOR EASEMENTS AFFECTING THE CAMPUS AFTER THE RECORDING OF THE PLAT WAS PERFORMED BY ABSTRACT SERVICES OF HOUSTON UNDER SURVEY REPORT PREPARED DURING MARCH, 2015.
4. ELEVATIONS FOR THIS PROJECT ARE REFERENCED TO THE FOLLOWING:
   A. BENCHMARK: TSARP REFERENCE MARK 040095 BEING A H.C.F.C.D. BRASS DISK STAMPED HCFCD CONTROL BM D100 0095D LOCATED ON THE DOWNSTREAM SIDEWALK ALONG THE NORTH SIDE OF THE SOUTH MACGREGOR WAY BRIDGE OVER HARRIS COUNTY FLOOD CONTROL DISTRICT UNIT NO. D100-00-00 AND SHOWN ON KEY MAP PAGE 533F.

   ELEVATION: NAVD 1988, 2001 ADJ. – 45.52 FEET

   TBM A: "LL" ON TOP FLANGE OF FIRE HYDRANT LOCATED AT THE NE CORNER OF LA BRANCH AND WINBERN. ELEVATION 46.19 FEET.

   TBM B: SQUARE CUT ON BB-INLET AT SW CORNER OF ALABAMA AND AUSTIN. ELEVATION-44.15 FEET.
5. ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP FOR HARRIS COUNTY, TEXAS MAP NO. 48201C0860L, REVISED JUNE 18, 2007, THE SUBJECT TRACT APPEARS TO BE WITHIN UNSHADED ZONE X, DEFINED AS AN AREA DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.

   THIS FLOOD STATEMENT DOES NOT IMPLY THAT THE PROPERTY OR STRUCTURES THEREON WILL BE FREE FROM FLOODING OR FLOOD DAMAGE. ON RARE OCCASIONS, FLOODS CAN AND WILL OCCUR AND FLOOD HEIGHTS MAY BE INCREASED BY MAN-MADE OR NATURAL CAUSES. THE LOCATION OF THE FLOOD ZONE WAS DETERMINED BY SCALING FROM THE FEMA MAP MENTIONED ABOVE. THE ACTUAL LOCATION, AS DETERMINED BY TRUE ELEVATION CONTOURS, MAY DIFFER. EHRA, INC. ASSUMES NO LIABILITY AS TO THE ACCURACY OF THE LOCATION OF THE FLOOD ZONE LIMITS AS SHOWN ON THE FEMA FLOOD RATE MAP. THIS FLOOD STATEMENT SHALL NOT CREATE LIABILITY ON THE PART OF EHRA, INC..



LEGEND

	EXISTING	PROPOSED
Curb		
Edge of Pavement		
R.O.W.		
Curve Number		C1
Storm Sewer/MH		
Large Diam Storm Sewer/MH		
Curb Inlet/Grate Inlet		
Sanitary Sewer/MH/Cleanout		
Large Diam Sanitary Sewer/MH		
Water Line/Fire Hydrant/Valve		
Gas		
Electric		
Phone		
Fence		
Contour	90	90
Slope		1%
Top of Pavement	xTP41.07	TP 42.25
Top of Wall	xTW41.07	TW 42.25
Finished Grade	xFG41.07	FG 42.25
Top of Grate	xTG41.07	TG 42.25
Flow Line	xFL41.07	FL 42.25
Detail Number		5
Detail Sheet Number		C5.0

NOTE:

A. PROTECT IN PLACE EVERYTHING OUTSIDE LIMITS OF DEMOLITION. ANYTHING DAMAGED TO BE REPLACED BACK TO ORIGINAL CONDITION

B. ALL TREE REMOVAL AND PROTECTION TO BE COORDINATED WITH LANDSCAPE ARCHITECT

KEY NOTES:

1. REMOVE EXISTING CONCRETE CURB, PAVEMENT AND SUBBASE
2. REMOVE EXISTING UTILITY OR STRUCTURE
3. FULL DEPTH SAWCUT
4. PROTECT IN PLACE EXISTING UTILITY OR STRUCTURE
5. REMOVE EXISTING LIGHT POLE AND FOUNDATION; COORDINATE WITH OWNER
6. COORDINATE W/LANDSCAPE ARCHITECT FOR ALL TREE PROTECTION AND REMOVAL
7. REMOVE EXISTING SIGN AND FOUNDATION; COORDINATE WITH OWNER
8. PROTECT EXISTING TRANSFORMERS; IF DAMAGED REPLACE TO CENTERPOINT STANDARDS
9. REMOVE EXISTING BOLLARD (1)
10. CUT/PLUG EXISTING UTILITY
11. PROTECT EXISTING PARKING METER

Stantec

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Issue for Bidding

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TBPE Firm Registration No. 1856

STATE OF TEXAS
MANOJ H. ADWANEY
122342
LICENSED PROFESSIONAL ENGINEER
01/23/2017

HCC

HCC HOUSTON COMMUNITY COLLEGE *Central*

CULINARY ARTS CENTER
HOUSTON, TEXAS

DRAWN: PMW
CHECKED: MHA
SCALE: AS NOTED

ISSUE: 11/18/2016 ISSUE FOR BIDDING
1 01/23/2017 ADDENDUM 2

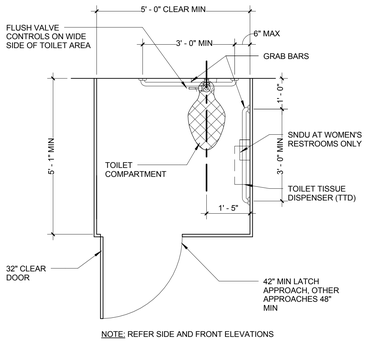
CIVIL SITE DEMOLITION PLAN

C.100

Project #: 214000169

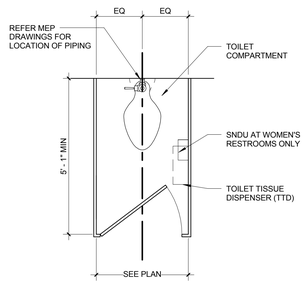
Jan 23, 2017 - 11:35am P:\M03\2015\15043-00 HCC CULINARY\Civil\Cad\Site\M03-15043-00 DM.dwg

TYPICAL STANDARD TOILET LAYOUTS

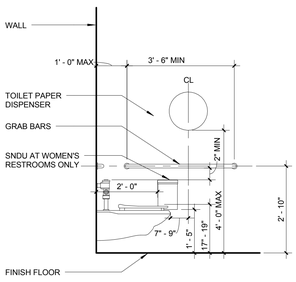


NOTE: REFER SIDE AND FRONT ELEVATIONS

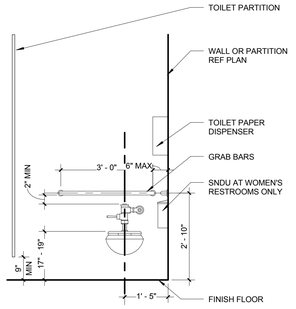
TYPICAL END OF ROW ACCESSIBLE



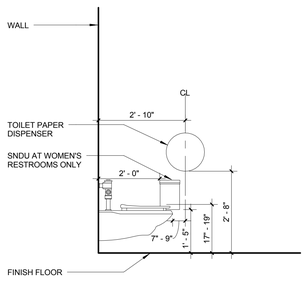
TYPICAL



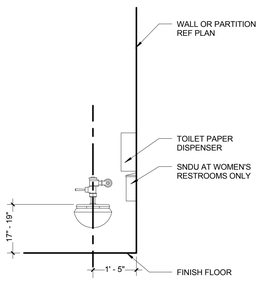
TYPICAL SIDE WALL ELEVATION AT ACCESSIBLE TOILET



TYPICAL ELEVATION AT ACCESSIBLE TOILET



TYPICAL SIDE WALL ELEVATION AT TOILET



TYPICAL ELEVATION AT TOILET

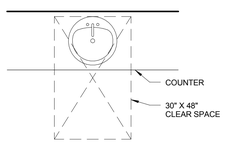
TOILET ROOM LEGEND

- WALL MOUNTED WATER CLOSET
- WALL MOUNTED ACC WATER CLOSET
- URINAL
- ACC URINAL
- COUNTER MOUNTED LAVATORY
- ACC COUNTER MOUNTED LAVATORY
- MOP BASIN
- MOP RACK
- TOILET TISSUE DISPENSER (TTD) -
- SANITARY NAPKIN DISPOSAL UNIT (SNDU) -
- SANITARY NAPKIN DISPENSER (SND) - A2
- SOAP DISPENSER
- FRAMED MIRROR (18"X36" UON)
- ELECTRIC WATER COOLER (EWC)
- ACC ELECTRIC WATER COOLER
- DYSON HAND DRYER
- K-C TOILET SEAT COVER DISPENSER A2

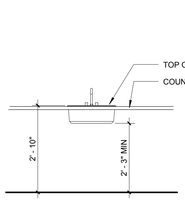
TOILET PLAN GENERAL NOTES

1. REFER TO PLAN FOR PARTITION TYPE DESIGNATION AND A.002 FOR PARTITION INFORMATION.
2. ALL TOILET ROOM WALLS TO DECK, UON.
3. PROVIDE ACOUSTICAL BATT INSULATION IN STUD CONSTRUCTION WALLS SURROUNDING TOILET ROOMS.
4. PROVIDE WALL MOUNTED DOOR STOPS IN RESTROOMS.
5. REFER TO SHEET A.801 FOR INTERIOR FINISHES.
6. PROVIDE FRT WOOD BLOCKING IN ALL WALLS BEHIND WALL MOUNTED ACCESSORIES
7. REFER TO TOILET ROOM LEGEND' ON A.401 FOR FIXTURES AND ACCESSORY INFO, TYP.
8. REFER TO A.002 FOR ACCESSORY MOUNTING HEIGHTS SCHEDULE. REFER TO THIS SHEET FOR FIXTURE MOUTNING HEIGHT INFO.
9. COORDINATE INSTALLATION OF REQD BLOCKING AND STABILIZING FOR FIXTURES.
10. THE STRUCTURAL STRENGTH OF GRAB BARS AT ACCESSIBLE WATER CLOSETS SHALL COMPLY WITH TAS 609.8. & IBC 1607.8.2.
11. MIRRORS MOUNTED WITHOUT SINKS OR CABINETS BELOW THEM SHALL BE FULL HEIGHT MIRRORS U.O.N. LOCATE TOPS OF THESE MIRRORS (MEASURED FROM FLOOR TO TOP MOST EDGE) AT 74" A.F.F. AND THE BOTTOMS OF MIRRORS AT 12" A.F.F. (MEASURED FROM FLOOR TO BOTTOM OF REFLECTING SURFACE).

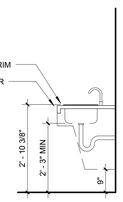
TYPICAL BARRIER FREE LAVATORY



TYPICAL PLAN

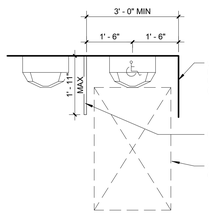


TYPICAL FRONT ELEVATION



TYP SIDE ELEVATION

TYPICAL URINAL LAYOUT



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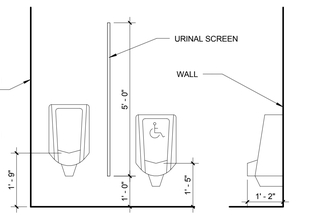
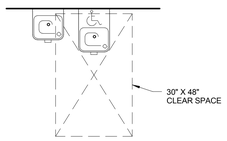


TYPICAL FRONT ELEVATION

TYP SIDE ELEVATION

TYPICAL DRINKING FOUNTAIN



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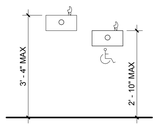
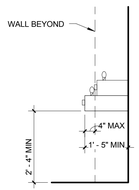
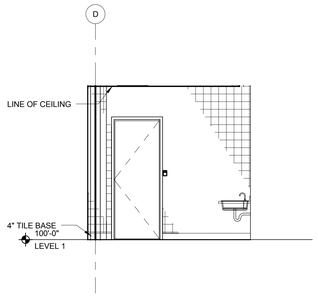


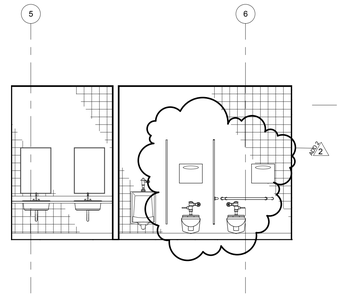
TYPICAL FRONT ELEVATION



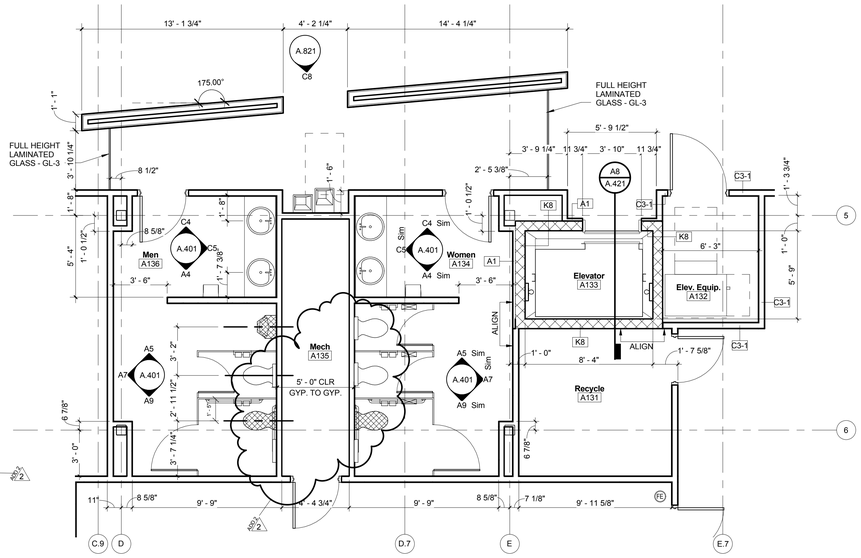
TYP SIDE ELEVATION



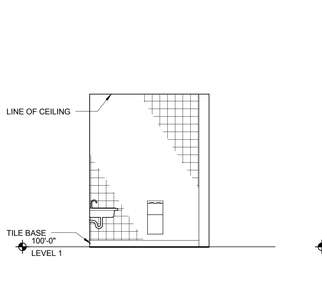
C4 MEN'S TLT WALL ELEVATION
1/4" = 1'-0"



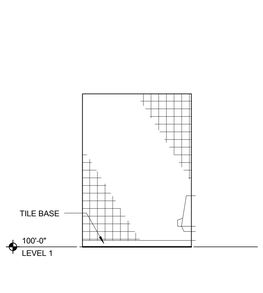
C5 MEN'S TLT WALL ELEVATION
1/4" = 1'-0"



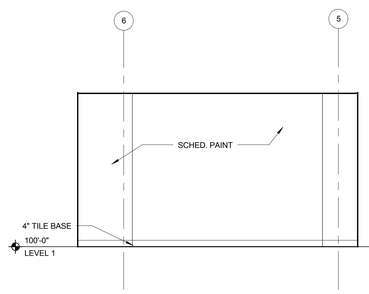
C7 L1 ENLARGED CORE PLAN
1/4" = 1'-0"



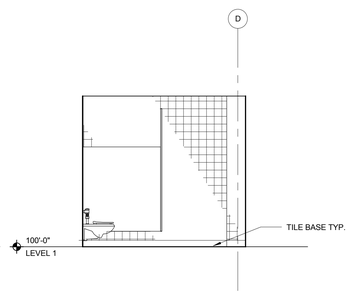
A4 MEN'S TLT WALL ELEVATION
1/4" = 1'-0"



A5 MEN'S TLT WALL ELEVATION
1/4" = 1'-0"



A7 MEN'S TLT WALL ELEVATION
1/4" = 1'-0"



A9 MEN'S TLT WALL ELEVATION
1/4" = 1'-0"

Stantec

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Issue for Bidding

Geoffrey L Wheeler

REGISTERED ARCHITECT · Geoffrey L Wheeler · 17798 · STATE OF TEXAS

11/18/2016

Houston Community College

HOUSTON COMMUNITY COLLEGE Central

CULINARY ARTS CENTER
HOUSTON, TEXAS

DRAWN: **NMW**
CHECKED:
SCALE: **As indicated**

ISSUE: **11/18/2016**
ISSUE FOR BIDDING

2	01/23/2017	Addendum 2

SHEET TITLE:
ENLARGED TOILET ROOMS

A.401

Project #: **214000169**

1/23/2017 12:14:42 PM
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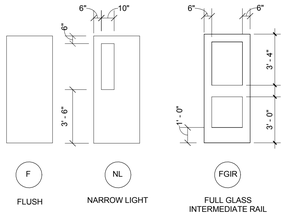
DOOR SCHEDULE

NUMBER	DOOR WIDTH	DOOR HEIGHT	DOOR TYPE	DOOR MATERIAL	DOOR GLAZING	FRAME TYPE	FRAME MATERIAL	FRAME FINISH	DETAILS HEAD	DETAILS JAMB	DETAILS SILL	DETAILS THRESH	FIRE RATING	REMARKS	HARDWARE
FIRST LEVEL															
A100	3' - 0"	7' - 10"	NL	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				20
A101	3' - 0"	7' - 10"	NL	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				27
A102A	3' - 0"	7' - 10"	NL	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				27
A102B	3' - 0"	7' - 10"	NL	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				27
A103	3' - 0"	7' - 10"	NL	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				27
A104	3' - 0"	7' - 10"	NL	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				27
A105	3' - 0"	7' - 10"	NL	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				23
A106	6' - 0"	7' - 10"	FGIR	ALUM		9	ALUM		E7/A.511	F7/A.511	H5/A.511				5
A107	3' - 0"	7' - 10"	NL	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				28
A108	3' - 0"	7' - 10"	NL	WD		10	ALUM		E7/A.511	F7/A.511	H5/A.511				8
A109	3' - 8"	7' - 10"	NL	STL		1	STL		E6/A.512	C6/A.512					10
A110	3' - 0"	7' - 10"	NL	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				18
A111	3' - 0"	7' - 10"	F	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				23
A112	3' - 0"	7' - 10"	F	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				25
A113	3' - 8"	7' - 10"	NL	STL		1	STL		E6/A.512	C6/A.512					10
A114	6' - 0"	7' - 10"	F	STL		2	STL		E6/A.512	C6/A.512					11
A115	6' - 0"	7' - 10"	F	STL		2	STL		E9/A.511	C9/A.511	F9/A.511				12
A117A	6' - 0"	7' - 10"	FGIR	ALUM		5	ALUM		A4/A.322	A8/A.331	G8/A.512			1,2	1
A117B	6' - 0"	7' - 10"	FGIR	ALUM		8	ALUM		E7/A.511	A6/A.512; C3/A.331	H5/A.511			2	4
A124	4' - 0"	7' - 10"	NL	STL		1	STL		E6/A.512	C6/A.331				1	9
A125	3' - 0"	7' - 10"	NL	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				27
A126	3' - 0"	7' - 10"	NL	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				27
A127	3' - 0"	7' - 10"	F	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				23
A128	6' - 0"	7' - 10"	NL	WD		2	STL		E9/A.511	C9/A.511	F9/A.511				16
A129	3' - 0"	7' - 10"	F	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				23
A130A	3' - 0"	7' - 10"	NL	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				17
A130B	6' - 0"	7' - 10"	NL	WD		2	STL		E9/A.511	C9/A.511	F9/A.511				16
A131	3' - 0"	7' - 10"	F	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				21
A132	3' - 8"	7' - 10"	F	WD		1	STL		E9/A.511	C9/A.511	F9/A.511		1 HR.		15
A134	3' - 0"	7' - 10"	F	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				22
A135	3' - 0"	7' - 10"	F	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				24
A136	3' - 0"	7' - 10"	F	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				22
A137	3' - 0"	7' - 10"	F	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				23
A140	3' - 0"	7' - 10"	NL	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				23
A141A	6' - 0"	7' - 10"	FGIR	ALUM		6	ALUM		E7/A.511	F5/A.511	H5/A.511				6
A141B	6' - 0"	7' - 10"	FGIR	ALUM		3	ALUM		A4/A.322	F6/A.331	G8/A.512				2
A141C	6' - 0"	7' - 10"	FGIR	ALUM			ALUM		F8/A.322	A1/A.331	G8/A.512				2
A142A	6' - 0"	7' - 10"	FGIR	ALUM		3	ALUM		A4/A.322	F6/A.331	G8/A.512			1,2	1
A142B	6' - 0"	7' - 10"	FGIR	ALUM		7	ALUM		E7/A.511	C6/A.331	H5/A.511			2	4
SECOND LEVEL															
A200	6' - 0"	7' - 10"	NL	WD	GL-2	2	STL		E9/A.511	C9/A.511	F9/A.511				16
A202	3' - 0"	7' - 10"	F	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				14
A203	3' - 0"	7' - 10"	F	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				18
A204	6' - 0"	7' - 10"	NL	WD	GL-2	2	STL		E9/A.511	C9/A.511	F9/A.511				16
A208	3' - 0"	7' - 10"	F	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				26
A209A	6' - 0"	7' - 10"	FGIR	ALUM		11	ALUM		E7/A.511	C7/A.511	H5/A.511				3
A209B	3' - 0"	7' - 10"	FGIR	ALUM		11	ALUM		E7/A.511	F1/A.331	H5/A.511				7
A211	3' - 0"	7' - 10"	F	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				19
A212	6' - 0"	7' - 10"	F	WD		2	STL		E9/A.511	C9/A.511	F9/A.511				13
A213	3' - 0"	7' - 10"	F	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				22
A214	3' - 0"	7' - 10"	F	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				22
A215	3' - 0"	7' - 10"	F	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				25
A216	3' - 0"	7' - 10"	F	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				23
A218A	3' - 0"	7' - 10"	FGIR	ALUM		12	ALUM		E7/A.511	F7/A.511/	H5/A.511				7
A218B	6' - 0"	7' - 10"	FGIR	ALUM		12	ALUM		E7/A.511	C5/A.511	H5/A.511				3
A219	3' - 0"	7' - 10"	F	WD		1	STL		E9/A.511	C9/A.511	F9/A.511				24



DOOR TYPES

GLAZING LEGEND

GL-1: 1" INSULATED, TINTED, SAFETY (TEMPERED) LOW 'E' GLASS - PPG SOLARBAN 70XL "ATLANTICA" TYP
SHGC = 0.24, U-VALUE = 0.28 (WINTER), 0.26 (SUMMER)

GL-2: CLEAR SAFETY (TEMPERED) GLASS, 1/4" THICK

GL-3: CLEAR LAMINATED GLASS WITH FROSTED 0.030 INTERLAYER, 5/16" THICK

GL-4: 1" INSULATED SPANDREL GLASS

1 GLASS THICKNESS DESIGNATIONS INDICATED ARE MINIMUMS & ARE FOR DETAILING ONLY. GLAZING TRADE CONTRACTOR TO DETERMINE SAFETY GLAZING REQUIREMENTS & TO CONFIRM GLASS THICKNESSES BY ANALYZING PROJECT LOADS, IN-SERVICE CONDITIONS & GLASS LOCATIONS. PROVIDE GLASS LITES / UNITS IN THE THICKNESS DESIGNATIONS INDICATED ABOVE FOR VARIOUS SIZE OPENINGS, BUT NOT LESS THAN THICKNESSES & IN STRENGTH (ANNEALED, TEMPERED OR HEAT TREATED) REQUIRED TO MEET OR EXCEED CODE & PERFORMANCE CRITERIA, RE: SPECIFICATION SECTION 08 8000.

2 ALL EXTERIOR GLAZING IS GL-1, U.N.O.

3 ALL EXTERIOR DOOR GLAZING IS GL-1, U.N.O.

4 ALL INTERIOR GLAZING IS GL-2 U.N.O.

5 ALL INTERIOR DOOR GLAZING IS GL-2, U.N.O.

6 REFER TO DOOR AND WINDOW FRAME TYPES FOR SPECIFIC GLASS TYPE LOCATIONS.

7 ALL LEVEL 1 EXTERIOR GLAZING TO HAVE IMPACT RESISTANT FILM

DOOR SCHEDULE REMARKS:

NOTE: DOOR SCHEDULED AS WOOD (WD) SHALL HAVE PLASTIC LAMINATE VENEER. ALL PLASTIC LAMINATE VENEERS TO BE PLAM-1 U.N.O.
NOTE: REFER TO A.501 FOR DOOR MARK KEY.

1. CARD READER
2. DOOR OPERATOR

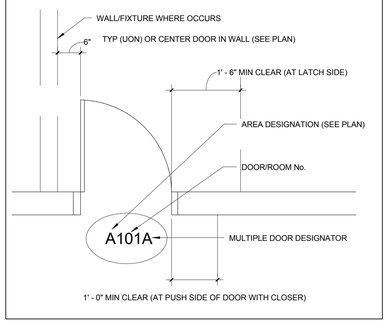
GENERAL DOOR SIGNAGE NOTES:

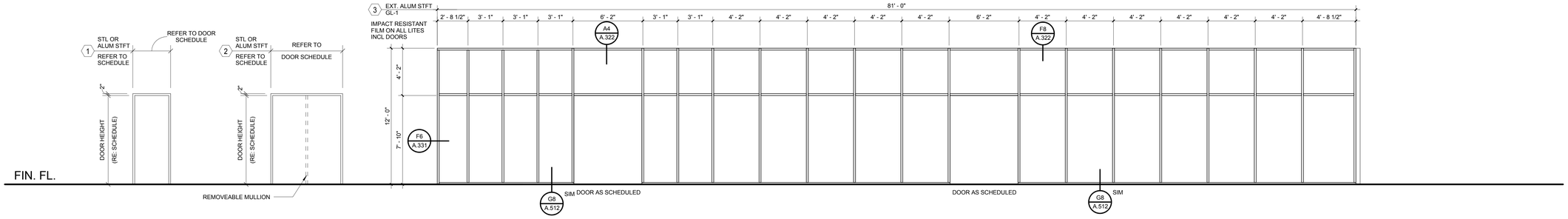
1. REFER TO A.501 FOR ROOM SIGN TYPES.
2. PROVIDE FULL CONCEALED BACK PIECE FOR SIGNS MOUNTED ON GLASS.
3. EXTERIOR ROOM SIGNS TO BE WEATHERPROOF
4. ACTUAL ROOM NAMES AND NUMBERS TO BE DETERMINED BY ARCHITECT AND OWNER DURING CONSTRUCTION.

DOOR TYPE ABBRVIATIONS:

NL - NARROW LITE
F - FLUSH
FGIR - FULL GLASS INTERMEDIATE RAIL

DOOR MARK KEY & TYPICAL ADA CLEARANCES





DOOR FRAME TYPES

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Issue for Bidding

Geoffrey L Wheeler

REGISTERED ARCHITECT Geoffrey L Wheeler 17798 STATE OF TEXAS

11/18/2016

Houston Community College

HCC HOUSTON COMMUNITY COLLEGE Central

CULINARY ARTS CENTER
HOUSTON, TEXAS

DRAWN: **BH, NMW**
CHECKED:
SCALE: **As indicated**

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ISSUE FOR BIDDING

2 01/23/2017 Addendum 2

SHEET TITLE:
DOOR SCHEDULE, INFO, AND FRAME TYPES

A.501

Project #: **214000169**

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REFLECTED CEILING PLAN KEYNOTES

1. 2 HR CEILING ASSEMBLE, UL DESIGN # D503. RE: G.012 FOR DESIGN INFORMATION
2. NOT USED
3. NOT USED
4. GYP. BD BULKHEAD, TYP.
5. NOT USED
6. METAL WALL PANELS SOFFIT PERIMETER, MP-1

GENERAL CEILING NOTES

1. REFER TO FLOOR PLANS & INTERIOR ELEVATIONS FOR WALL MOUNTED FIXTURES & DEVICES, ETC.
2. REFER TO MECHANICAL, ELECTRICAL & TECHNOLOGY DRAWINGS FOR QUANTITY & TYPE OF CEILING MOUNTED FIXTURES & DEVICES, ETC.
3. ALL CEILING MOUNTED FIXTURES, DEVICES, ETC ARE TO BE CENTERED WITHIN THE CEILING TILE UNLESS NOTED OTHERWISE.
4. THE TYPICAL HEIGHT FOR SUSPENDED CEILINGS SHALL BE 10' - 0" AFF UNLESS NOTED OTHERWISE. REFER TO ROOM FINISH SCHEDULE FOR CEILING HEIGHTS.
5. THE TYPICAL HEIGHT FOR GYPSUM BOARD CEILINGS SHALL BE 10' - 0" AFF UNLESS NOTED OTHERWISE.
6. THE TYPICAL HEIGHT FOR GYPSUM BOARD BULKHEADS SHALL BE 9' - 6" AFF UNLESS NOTED OTHERWISE.
7. THE TYPICAL HEIGHT FOR GYPSUM BOARD SOFFITS SHALL BE 12' - 0" AFF, UNLESS NOTED OTHERWISE. NOTE: GYPSUM BOARD PERIMETER SOFFIT HEIGHT IS GENERAL IN NATURE, THOSE ABUTTING GLAZING SYSTEMS ARE TO ALIGN WITH THE TOP OR BOTTOM OF MULLION AS INDICATED IN SECTION DETAILS.
8. UNDESIGNATED PAINTED GYPSUM BOARD SOFFITS & CEILINGS UNLESS NOTED OTHERWISE TO BE PAINTED 'PT-1'.
9. EXACT LOCATIONS FOR PROJECTOR MOUNTS & CEILING MOUNTED PROJECTION SCREENS ARE TO BE FIELD VERIFIED TO ACHIEVE THE OPTIMUM PERFORMANCE. COORDINATE WITH TECHNOLOGY TRADE CONTRACTOR.
10. FIELD VERIFY ALL BULKHEAD DIMENSIONS PRIOR TO CONSTRUCTION.
11. PROVIDE CONTROL JOINTS AT 30' - 0" OC MAXIMUM AT ALL GYPSUM BOARD BULKHEADS
12. ALL ACP-1 CLOUDS / PANEL TERMINATIONS TO RECIEVE 4" AXIOM PERIMETER.
13. REFER TO ELECTRICAL SHEET E.001 FOR LUMINAIRE SCHEDULE AND ELECTRICAL LIGHTING PLAN SHEETS FOR LIGHTING FIXTURE TYPES & LOCATIONS.

LIGHTING LEGEND

- 2 X 4 LIGHT FIXTURE
- CHAIN HUNG LIGHT FIXTURE
- LINEAR STRIP LIGHT FIXTURE
- DOWNLIGHT
- PENDANT LIGHT FIXTURE

CEILING PLAN LEGEND

- APC 1 - 2X2 ACOUSTIC PANEL CEILING
  REFER TO ELECTRICAL DRAWINGS FOR LIGHT FIXTURE LOCATIONS (UNO)
- APC 2 - 2X2 ACOUSTIC PANEL CEILING
  REFER TO ELECTRICAL DRAWINGS FOR LIGHT FIXTURE LOCATIONS (UNO)
- APC 3 - BEAM & BAFFLE SPECIALTY METAL CEILING SYSTEM
  REFER TO ELECTRICAL DRAWINGS FOR LIGHT FIXTURE LOCATIONS (UON)
- GYPSUM BOARD BULKHEAD/CEILING - PAINTED
  REFER TO FINISH SCHEDULE FOR MORE INFORMATION
- EXPOSED TO STRUCTURE ABOVE (PAINTED)
- PLASTER SOFFIT
- PREFINISHED ALUM CANOPY

A1 REFLECTED CEILING PLAN - LEVEL 1
1/8" = 1'-0"

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SHEET TITLE:
FIRST LEVEL CEILING PLAN

A.601

Project #: **214000169**

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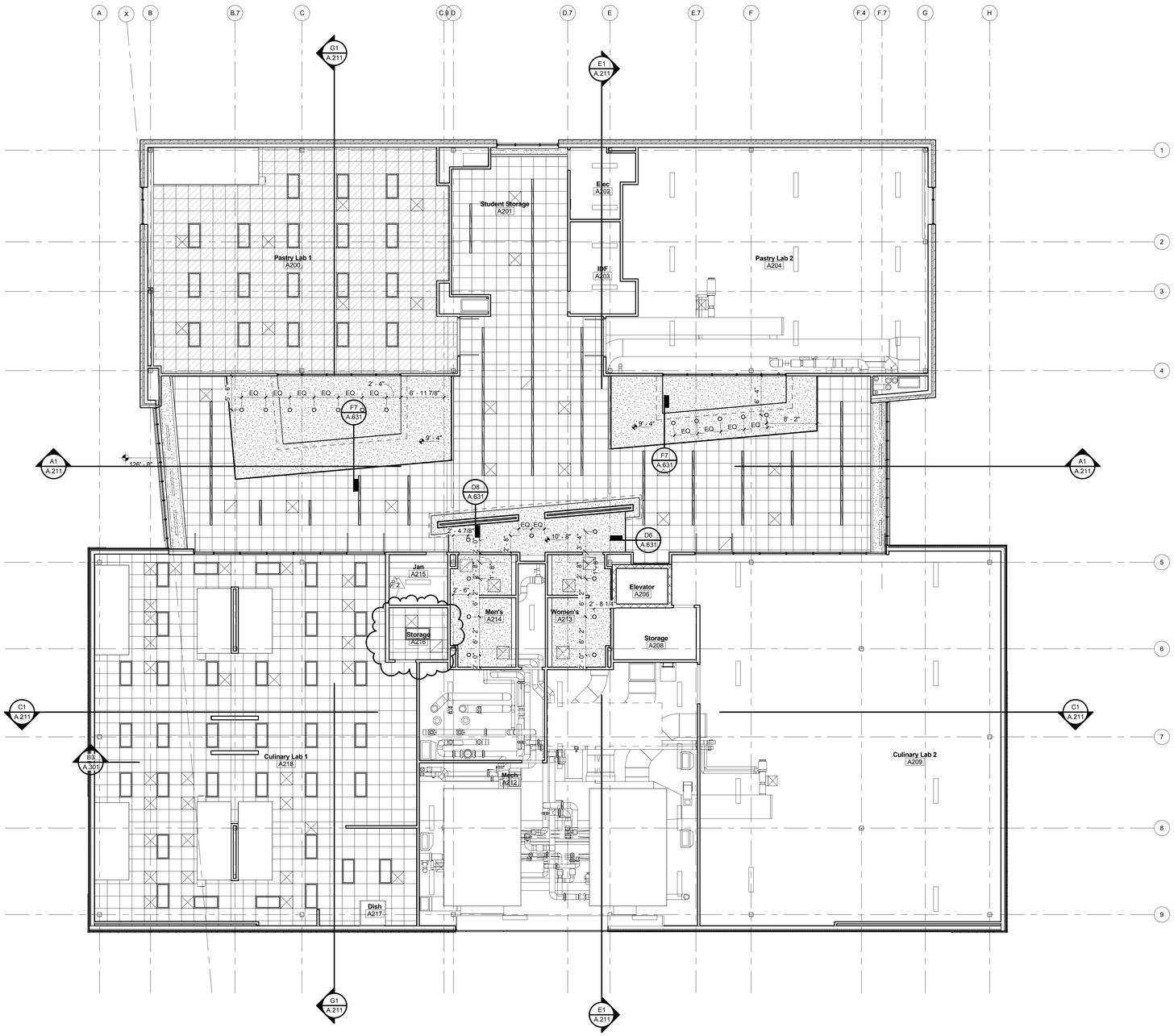

A1 REFLECTED CEILING PLAN - LEVEL 2

1/8" = 1'-0"

GENERAL CEILING NOTES

1. REFER TO FLOOR PLANS & INTERIOR ELEVATIONS FOR WALL MOUNTED FIXTURES & DEVICES, ETC.
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11/18/2016

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HOUSTON, TEXAS

DRAWN: **BH**
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SCALE: **As indicated**

ISSUE: **11/18/2016**
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SHEET TITLE:

SECOND LEVEL CEILING PLAN

A.602

Project #: **214000169**

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CULINARY ARTS CENTER COLOR SCHEDULE

		MRK	MATERIAL	MANUFACTURER	STYLE	MFR. NO.	COLOR	REMARKS	CLASS
INTERIOR	WALLS	PT-1	PAINT	SHERWIN WILLIAMS	ACRYLIC	SW7005	PURE WHITE	TYPICAL PAINT - ARCYLIC	
		PT-2	PAINT	SHERWIN WILLIAMS	EPOXY	SW7005	PURE WHITE	TYPICAL PAINT - EPOXY	
		PT-3	PAINT	SHERWIN WILLIAMS	ACRYLIC	SW7017	DORIAN GRAY	ACCENT PAINT	
		PT-4	PAINT	SHERWIN WILLIAMS	ACRYLIC	SW6712	LUAU GREEN	ACCENT COLOR @ WALLS WHERE NOTED	
		PT-5	PAINT	SHERWIN WILLIAMS	ACRYLIC	SW6705	HIGH STRUNG	ACCENT COLOR @ WALLS WHERE NOTED	
		PT-6	PAINT	SHERWIN WILLIAMS	ACRYLIC	SW6711	PARAKEET	ACCENT COLOR @ WALLS WHERE NOTED	
		PT-7	PAINT	SHERWIN WILLIAMS	ACRYLIC	SW6914	EYE CATCHING	ACCENT COLOR @ WALLS WHERE NOTED	
		PT-8	PAINT	SHERWIN WILLIAMS	ACRYLIC	SW6711	PARAKEET	ACCENT - EPOXY	
		PT-9	PAINT	SHERWIN WILLIAMS	ACRYLIC	SW6712	LUAU GREEN	ACCENT - EPOXY	
		PT-10	PAINT	SHERWIN WILLIAMS	ACRYLIC	SW6914	EYE CATCHING	ACCENT - EPOXY	
		PT-11	PAINT	SHERWIN WILLIAMS	ACRYLIC	SW7037	BALANCED BEIGE		
		PT-12	PAINT	SHERWIN WILLIAMS	ACRYLIC	SW7076	CYBERSPACE	ACCENT COLOR @ STAIR STRINGER	
		WP-1	WOOD PLANK	TERAGREN	RANDOM PLANKS	BFF-CHSNT-TL2	CHESNUT	VERTICAL SURFACE AT LOBBY WALL WHERE NOTED	C
		CT-1	CERAMIC TILE	DALTILE	SEMI-GLOSS, 4 1/4" X 4 1/4"	0135 - GROUP 1	ALMOND	WHERE NOTED ON R.R. WALLS	C
		FRP-1	FIBERGLASS REINFORCED PANEL	KEMLITE	GLASBORD	85	EMBOSSED WHITE		C
	FLOORS	CPT-1	WALK OFF CARPET	TANDUS	ABRASIVE ACTION II	19100	CHARCOAL	ENTRANCE VESTIBULES, CLASS I OR II	I OR II
		P CONC	POLISHED CONCRETE	RETROPLATE			CLEAR		
		S CONC	SEALED CONCRETE	SELECT SEAL			CLEAR		
		CT-5	CERAMIC FLOOR TILE	DALTILE	KEYSTONES, 2" X 2"	D132 - GROUP 2	UPTOWN TAUPE	ALL RESTROOM FLOORS & INTEGRAL COVE BASE	
		CTB-1	CERAMIC TILE BASE	DALTILE	KEYSTONE, 2" X 2"	D132 - GROUP 2	UPTOWN TAUPE	ALL RESTROOM BASE	
		RBR-1	RUBBER BASE	ROPPE	PINNACLE-TYPE-TS RUBBER	114	LUNAR DUST	TYPICAL WALL BASE FOR GYP BD	C
		RBR-2	RUBBER FLOOR	ROPPE	995 HAMMERED	100	BLACK	@ ELEVATOR	
	ACCESSORIES	PLAM-1	PLASTIC LAMINATE	WILSONART	PREMIUM AEON	7209K-78	NEPAL TEAK	DOORS	
		PLAM-2	PLASTIC LAMINATE	WILSONART		D431	ALABASTER	MILLWORK	
		QTZ-1	QUARTZ COUNTERTOP SURFACE	CAESARSTONE	CLASSICO	2003	CONCRETE	COUNTERTOP IN STUDENT STORAGE & LOUNGE	
		QTZ-2	QUARTZ COUNTERTOP SURFACE	CAESARSTONE	CLASSICO	4001	FRESH CONCRETE	COUNTERTOP IN LABS & RESTROOMS	
		TP-1	TOILET PARTITION	ACCURATE	SOLID PLASTIC	9205	BLACK	CEILING HUNG	
		RS	SHADES	MECHOSHADE	TBD	TBD	TBD	MANUAL	
	CEILINGS	APC-1	ACOUSTICAL PANEL	ARMSTRONG	CORTEGA	770	2' X 2'	TYPICAL CEILING	C
		APC-2	ACOUSTICAL PANEL	ARMSTRONG	CLEAN ROOM VL	UNPERFORATED		ALL KITCHENS / LABS, WHITE ALUM CAP ON GRID	C
		APC-3	BEAM & BAFFLE CEILING SYSTEM	HUNTER DOUGLAS	TAVOLA, 2" W X 6" H		PERF METAL, WD FINISH	WHERE NOTED IN MULTI-PURPOSE	C
		GYP	GYPSUM BOARD				PAINTED, PT-1		C
		EXPOSED-1	EXPOSED TO STRUCTURE				PAINTED		
EXTERIOR		MP-1	METAL WALL PANEL	DRI-DESIGN	SHADOW SERIES 1 1/2" THICK	DRI-008	PNT'D ALUM - CITYSCAPE		
		MP-2	METAL WALL PANEL	DRI-DESIGN	SHADOW SERIES 3" THICK	DRI-008	PNT'D ALUM - CITYSCAPE		
		MP-3	METAL WALL PANEL	DRI-DESIGN	SHADOW SERIES 1 1/2" THICK	DRI-125	PNT'D ALUM - SILVER		
		BK-1	VENEER MASONRY	CLOUD CERAMICS	MODULAR		CORONADO GREY VELOUR		
		BBK-1	BURNISHED CMU	HEADWATERS	8"		TBD		
		GL-1	GLAZING	PPG	SOLARBAN	70XL	ATLANTICA		
		PM-1	PREFINISHED METAL					TO MATCH MP-1 / MP-2	
		ALUM	ALUMINUM FRAME	KAWNEER			CLEAR ANODIZED		

GENERAL COLOR SCHEDULE NOTES

GENERAL

1. NOTE: ALL COLORS SHOWN IN COLOR SCHEDULES ARE SUBJECT TO CHANGE. FIELD VERIFICATION BY ARCHITECT AND OWNER WILL OCCUR BEFORE FINAL PAINT COLORS ARE SELECTED. CONTRACTOR TO PROVIDE COLOR SAMPLES TO MATCH EXISTING COLORS, TYP.
2. MANUFACTURERS NAMES AND IDENTIFICATION NUMBERS ARE LISTED AS A MEANS OF ESTABLISHING A STANDARD OF TYPE, FUNCTION, COLOR, AND QUALITY. REFER TO PROJECT MANUAL FOR ADDITIONAL MANUFACTURERS & PROCEDURES.
3. THE CONTRACTOR SHALL SUBMIT TO THE ARCHITECT A SAMPLE OF ALL FINISH MATERIALS FOR APPROVAL BEFORE MATERIALS ARE APPLIED ON THE JOB.
4. PAINT ALL INTERIOR & EXTERIOR EXPOSED PIPING INCLUDING SPRINKLER PIPING. VERIFY COLOR W/ ARCHITECT.
5. PAINT ANY VENTS, GRILLES, PIPING, CONDUIT, ETC... SAME COLOR AS ADJACENT WALL OR CEILING.

COLORS WILL BE MARKED AS SHOWN. NOTE ALL COLORS MAY NOT BE MARKED ON PLANS. MATERIALS NOT NOTED WILL BE COVERED UNDER GENERAL NOTES OR WILL BE SELECTED ON THE JOB BY THE ARCHITECT.

INTERIOR

1. ALL INTERIOR STEEL DOOR FRAMES TO BE PT-1.
2. ALL EXTERIOR STEEL DOOR FRAMES AND DOORS TO BE PT-11.
3. ALL INTERIOR PLASTIC LAMINTATE FACED WOOD DOORS TO BE PLAM-1.
4. ALL TOILET PARTITIONS SHALL BE MARK TP-1.
5. ALL COUNTERTOPS SHALL BE AS DESIGNATED QTZ-1, U.N.O.
6. ALL WALLS BEHIND DRINKING FOUNTAINS TO BE EPOXY PAINT, PT-2.
7. ALL CASEWORK DOOR, DRAWER, AND SHELF EDGES AND COUNTERTOPS ARE TO HAVE 3MM PVC EDGEBANDING. THIS IS TO BE A CUSTOM MATCH TO THE COLOR, PATTERN, AND TEXTURE OF ADJACENT LAMINATE ON ALL SURFACES.
8. ALL WET AREAS TO HAVE EPOXY PAINT, PT-2, U.N.O.
9. ALL INTERIOR EXPOSED CONCRETE TO BE SEALED AND POLISHED, TYPICAL, U.N.O.
10. ALL EXPOSED STEEL STRUCTURAL MEMBERS AND DECK TO BE PAINTED PT-1, PROPERLY PREPARE STEEL FOR PAINT.
11. AT ALL SUSPENDED CLOUD CEILINGS, 4" AXIOM EDGE TRIM IS TO BE INSTALLED AT ALL PERIMETER EDGES U.N.O.
12. PROVIDE FRP WAINSCOT TO 4'-0" AFF & 8'-0" MAXIMUM HORIZONTALLY AT WALL BEHIND MOP SINK. EPOXY PAINT AT ALL OTHER WALLS, TYP.
13. ALL INT. WALL & CLG FINISHES HAVE A MINIMUM CLASS C RATING
14. WALK-OFF CARPET TO HAVE A CLASS I OR II RATING

EXTERIOR

1. ALL EXTERIOR STEEL LINTELS SHALL BE GALVANIZED.
2. ALL ALUM. STOREFRONT WINDOWS & DOOR FRAMES SHALL BE CLEAR ANODIZED; EXTERIOR GLAZING TO BE PPG SOLARBAN 70XL, ATLANTICA, U.N.O.
3. ALL EXTERIOR LETTERING SHALL BE CLEAR ANODIZED.
4. ALL EXTERIOR METAL SHALL BE FINISHED AS FOLLOWS:

PM-1 - METAL COPING, AND FLASHING NOTED ON COLOR SCHEDULE AND EXTERIOR ELEVATIONS.

PM-1 - ALL UNDESIGNATED PRE-FINISHED METAL

5. ALL EXT COUNTER FLASHING, PIPE SUPPORTS AND MISC. FLASHING TO COORDINATE WITH EXTERIOR WALL FINISH. COLORS TO BE VERIFIED BY ARCHITECT.

ROOM SCHEDULE - FIRST LEVEL

ROOM #	ROOM NAME	FLOOR	BASE	WALLS NORTH	WALLS EAST	WALLS SOUTH	WALLS WEST	CEILING HEIGHT	CEILING FINISH	REMARKS	ASIGNED ROOM #
A100	Work Stations	P. CONC	RBR-1	PT-3	PT-1	PT-1	PT-1		APC-1		
A101	Office	P. CONC	RBR-1	PT-1	PT-1	PT-3	PT-1		APC-1		
A102	Cons	P. CONC	RBR-1	PT-1	PT-1	PT-3	PT-1		APC-1		
A103	Cons	P. CONC	RBR-1	PT-1	PT-1	PT-3	PT-1		APC-1		
A104	Cons	P. CONC	RBR-1	PT-1	PT-1	PT-3	PT-1		APC-1		
A105	Storage	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		EXP		
A106	Rec	P. CONC	RBR-1	PT-1	PT-1	PT-1	PT-6		APC-1		
A107	Lounge	P. CONC	RBR-1	PT-1	PT-1	PT-1	PT-5		APC-1		
A108	Conf	P. CONC	RBR-1	PT-1	PT-4	PT-1	PT-1		APC-1		
A109	Em Elec	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		EXP		
A110	MDF	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		EXP		
A111	Mother's	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		APC-1		
A112	Jan	S. CONC	RBR-1	PT-2, FRP	PT-2, FRP	PT-2	PT-2		EXP	4	
A113	Main Elec	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		EXP		
A114	Fire Pump	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		EXP		
A115	Mech	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		EXP		
A116	Student Lounge/Resource	P. CONC	RBR-1	PT-3, PT-4	PT-1	WP-1	PT-1		APC-1	2,5	
A117	Vestibule	CPT-1	RBR-1	-	PT-1	-	PT-1		GYP		
A118	Cooler	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		EXP		
A119	Cooler	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		EXP		
A120	Freezer	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		EXP		
A121	Staging	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		EXP		
A123	Cooler	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		EXP		
A124	Receive	P. CONC	RBR-1	PT-2	PT-2	PT-2	PT-2		APC-1	1	
A125	Off	P. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		APC-1		
A126	Off	P. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		APC-1		
A127	Liquor Stor	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		APC-1		
A128	Store Lab	P. CONC	RBR-1	PT-2	PT-2	PT-2	PT-2		APC-1		
A129	Dry Storage	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		APC-1		
A130	Specialty Lab	P. CONC	RBR-1	PT-2	PT-2	PT-2	PT-2		APC-2		
A131	Recycle	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		APC-1		
A132	Elev. Equip.	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		EXP		
A133	Elevator	RBR-2	-	-	-	-	-				
A134	Women	CT-5	CTB-1	CT-1	PT-8	CT-1	CT-1	9' - 0"	GYP	6	
A135	Mech	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		EXP		
A136	Men	CT-5	CTB-1	CT-1	CT-1	CT-1	PT-10	9' - 0"	GYP	6	
A137	China Room	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		APC-2		
A138	Staging	P. CONC	RBR-1	PT-2	PT-2	PT-2	PT-2		APC-2		
A139	Dishes	P. CONC	RBR-1	PT-2	-	PT-2	PT-2		APC-2		
A140	Storage	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		APC-1		
A141	Multipurpose	P. CONC	RBR-1	PT-2	WP-1	PT-2	PT-2		GYP, APC-3	2	
A142	Vestibule	CPT-1	RBR-1	-	PT-1	PT-1	PT-1		GYP		
A143	Demo Kitchen	P. CONC	RBR-1	PT-2	PT-2	PT-2	PT-2		GYP		

ROOM SCHEDULE - SECOND LEVEL

ROOM #	ROOM NAME	FLOOR	BASE	WALLS NORTH	WALLS EAST	WALLS SOUTH	WALLS WEST	CEILING HEIGHT	CEILING FINISH	REMARKS	ASIGNED ROOM #
A200	Pastry Lab 1	P. CONC	RBR-1	PT-2	PT-8	PT-2	PT-2		APC-2		
A201	Student Storage	P. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		APC-1		
A202	Elec	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		EXP		
A203	IDF	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		EXP		
A204	Pastry Lab 2	P. CONC	-	-	-	-	-				
A205	Lobby	P. CONC	RBR-1	PT-1	PT-1	WP-1	PT-1		GYP, APC-1	2	
A206	Elevator	RBR-2	-	-	-	-	-				
A208	Storage	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		EXP		
A209	Culinary Lab 2	P. CONC	-	-	-	-	-				
A210	Dish	P. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1				
A211	Boiler	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1				
A212	Mech	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		EXP		
A213	Women's	CT-5	CTB-1	CT-1	PT-8	CT-1	CT-1	9' - 0"	GYP	6	
A214	Men's	CT-5	CTB-1	CT-1	CT-1	CT-1	PT-10	9' - 0"	GYP	6	
A215	Jan	S. CONC	RBR-1	PT-2	PT-2	PT-2, FRP	PT-2, FRP		EXP	4	
A216	Storage	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		APC-1		
A217	Dish	P. CONC	RBR-1	PT-2	PT-2	PT-2	PT-2		APC-2		
A218	Culinary Lab 1	P. CONC	RBR-1	PT-2	PT-8	PT-2	PT-2		APC-2	3	
A219	Mech	S. CONC	RBR-1	PT-1	PT-1	PT-1	PT-1		EXP		

GENERAL NOTES:

1 UNLESS NOTED OTHERWISE, INTERIOR UNDESIGNATED PAINTED:
GYPSUM BOARD WALLS PT-1
GYPSUM BOARD SOFFITS & BULKHEADS PT-1
HOLLOW METAL DOOR & FRAMES PT-1
EXPOSED STEEL (COLUMNS, BEAMS, LINTELS, ETC) PT-1
EXPOSED STEEL (GUARD & HANDRAILS) PT-1

2 UNLESS NOTED OTHERWISE, EXTERIOR UNDESIGNATED PAINTED:
HOLLOW METAL DOORS & FRAMES PT-11
ROOF TOP EQUIPMENT (MECH EQUIP, SPEAKERS, ETC) PT-11
GUARD RAILS, POSTS, SCREENS PT-11

3 ELEVATOR CAB FINISHES (UNLESS NOTED OTHERWISE):
FLOOR FINISH RBR-2
WALLS SS
CEILING SS

4 ALL INTERIOR FLOORS TO BE POLISHED CONCRETE U.N.O.

5 ALL INTERIOR CONCRETE FLOORS TO HAVE 1/4" WIDE x ONE-FOURTH OF SLAB DEPTH, SEALANT FILLED SAW CUT CONTROL JOINTS. MAX CJ SPACING: 4" SLAB = 10'-0", 5" SLAB = 11'-0", 6" SLAB = 12'-0". CONTRACTOR TO SUBMIT CJ LAYOUT FOR APPROVAL.

6 ALL WALL BASES TO BE RBR-1 U.N.O.

7 ALL CEILINGS TO BE APC-1 AT 10'-0" AFF U.N.O.

8 ALL OUTSIDE GYP BD CORNERS TO HAVE CORNER GUARDS, TYP.

9 ALL MARKER BOARDS TO BE OWNER FURNISHED CONTRACTOR INSTALLED, TYP.

REMARKS:

1 IMPACT RESISTANT GYP. BD. TO 4'-0."
2 REFER TO A900 SHEETS FOR WP-1 LOCATION
3 REFER TO A.900 SHEETS FOR ACCENT PAINT LOCATION
4 PROVIDE FRP-1 TO 4'-0" A.F.F. AT WALLS EITHER SIDE OF MOP SINK
5 IMPACT RESISTANT GYP. BD. TO WALLS UNDER STAIRS
6 CERAMIC TILE BASE TO EXTEND 4" UP WALL & TO HAVE INTEGRAL COVE
7 PROVIDE STAINLESS STEEL PANELS BEHIND ALL HOODS. STAINLESS STEEL TO EXTEND FROM BOTTOM OF HOOD TO FINISHED FLOOR RE: A. 702 FOR LOCATIONS

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Issue for Bidding

Geoffrey L Wheeler

REGISTERED ARCHITECT Geoffrey L Wheeler 17798 STATE OF TEXAS

11/18/2016

Houston Community College

HCC HOUSTON COMMUNITY COLLEGE Central

CULINARY ARTS CENTER
HOUSTON, TEXAS

DRAWN: NM
CHECKED:
SCALE: 12" = 1'-0"

ISSUE: 11/18/2016
ISSUE FOR BIDDING
2 01/23/2017 Addendum 2

SHEET TITLE:
MATERIAL AND FINISH SCHEDULES

A.801

Project #: 214000169

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SCHEDULE - FAN COIL UNIT

MARK	LEVEL	SERVES	TOTAL AIR CFM	EXT. S.P. IN. W.G.	TOTAL S.P. IN. W.G.	MOTOR HP	VOLTS	PHASE	HERTZ	COOLING COIL										HEATING COIL						NOTES
										MIN. SENS. BTUH	TOTAL BTUH	MAX ROW	ENT. WTR. GPM	EWT °F	LWT °F	EAT DB °F	EAT WB °F	LAT DB °F	LAT WB °F	ENT. WTR. GPM	EWT °F	LWT °F	EAT °F	LAT °F	HEATING BTUH	
FCU-1-1	LEVEL 1	MDF A110	1800	0.30	0.65	1/2	277	1	60	45	65	6	9	45	59	78.0	65.0	53.0	52.5							1
FCU-1-2	LEVEL 1	EM. ELEC. A109	800	0.30	0.65	1/3	277	1	60	20	30	6	4	45	59	78.0	65.0	53.0	52.5							1
FCU-2-1	LEVEL 2	ELEC A202 IDF A203	1500	0.35	0.85	(2) 1/3	277	1	60	40	55	6	8	45	59	78.0	65.0	53.0	52.5							1

FAN COIL UNIT SCHEDULE GENERAL NOTES

A. UNIT SELECTION BASED ON JCI FNX (EXPOSED FCU) OR JCI FNP (CONCEALED FCU).

B. PROVIDE VIBRATION ISOLATION SPRINGS FOR SUSPENDED UNITS.

C. FAN COIL UNIT EXTERNAL STATIC PRESSURE INCLUDES LOSSED DUE TO SUPPLY AND RETURN DUCTWORK, DIFFUSERS, GRILLES, AND FILTERS (0.15 ON MERV 7 FILTER).

D. PROVIDE SEPARATE BUT ADJACENT HEAVY DUTY SERVICE DISCONNECT.

FAN COIL UNIT SCHEDULE NOTES

1. FAN COIL UNIT HAS NO HEATING COIL

SCHEDULE - EXPANSION TANK

MARK	SYSTEM	TANK VOL. (GALLONS)	MIN. ACCEPTANCE (GALLONS)	SHELL PRESSURE (PSIG)	DESIGN PRESSURE (PSIG)	MIN PRESS (PSIG)	DIA.	HEIGHT	TYPE	MANUFACTURER & MODEL	NOTES
ET-1	HW	79	41	125	36	20	24"	54"	BLADDER	TACO CX	

SCHEDULE - FLOW METER

MARK	SERVICE	SIZE	TYPE	FLOW (GPM)		TEMP (DEG F)		MAX WATER PRESS. DROP (PSI)	VOLTAGE	MANUFACTURER & MODEL	REMARKS	Schedule Name
				MIN.	MAX.	MIN.	MAX.					
FM-CHW	CHILLED WATER	4"	MAGNETIC	0	560	40	70	5	120	ROSEMOUNT 8700 SERIES		Flow Meter
FM-HHW	HEATING HOT WATER	3"	MAGNETIC	0	240	60	200	5	120	ROSEMOUNT 8700 SERIES		Flow Meter

FLOW METER SCHEDULE GENERAL NOTES

A. FLOW METERS SHALL OPERATE ON 120V POWER.

B. INSTALL WITH MANUFACTURER'S RECOMMENDED UPSTREAM AND DOWNSTREAM STRAIGHT RUN REQUIREMENTS.

SCHEDULE - HOT WATER UNIT HEATER

MARK	LOCATION	MOUNTING HEIGHT	TYPE	FAN CFM	MOTOR HP	VOLTS	PH	HZ	EAT F°	OUTPUT BTUH	GPM	EWT F°	LWT F°	REMARKS
UH-1	FIRE PUMP A114	8' - 0"	HOT WATER	300	1/25	120	1	60	50 °F	5,000	0.5	150	130	

UNIT HEATER GENERAL NOTES

A. BASIS OF DESIGN MODINE HC.

SCHEDULE - PUMP

MARK	LOCATION	SERVICE	CAP. (GPM)	HEAD (FEET)	MIN. EFF. (%)	SIZE		PUMP MOTOR			PUMP MOTOR		MANUFACTURER	MODEL	REMARKS
						SUCTION	DISCHARGE	H.P.	RPM	VOLTAGE	PHASE	HERTZ			
CHWP-1	MECH. A115	CHILLED WATER	560	80	75	5	4	20	1760	460	3	60	TACO	FI	
CHWP-2	MECH. A115	CHILLED WATER	560	80	75	5	4	20	1760	460	3	60	TACO	FI	
HWP-1	MECH. A115	HEATING WATER	240	85	75	3	2.5	15	1760	460	3	60	TACO	FI	
HWP-2	MECH. A115	HEATING WATER	240	85	75	3	2.5	15	1760	460	3	60	TACO	FI	

PUMP SCHEDULE NOTES

1. FURNISH PUMP WITH INVERTER DUTY RATED MOTOR AND VFD FOR INSTALLATION BY DIVISION 26.

SCHEDULE - AIR/DIRT SEPARATOR

MARK	LOCATION	CAPACITY GPM	INLET SIZE	OUTLET SIZE	DRAIN SIZE	WATER PRESSURE DROP (FT)	REMARKS
ADS-1	MECH A212	240	6"	6"	1"	0.7	SPIROTHERM SPIROVENT

SCHEDULE - CONTROL VALVE

MARK	SERVES	TYPE	GPM	MAX WATER PRESS. DROP (PSI)	CV	FAIL POSITION	ACTUATOR TYPE	REMARKS
CV-1	HW	BUTTERFLY	120	5	53	NORMALY OPEN	ELECTRIC MODULATING	
CV-2	HW	BUTTERFLY	120	5	53	NORMALY OPEN	ELECTRIC MODULATING	
CV-AHU-1-1	CHW	BUTTERFLY	80	5	35	NORMALY OPEN	ELECTRIC MODULATING	
CV-CHW-AHU-2-1	CHW	BUTTERFLY	365	5	163	NORMALY OPEN	ELECTRIC MODULATING	
CV-CHW-AHU-2-2	CHW	BUTTERFLY	365	5	163	NORMALY OPEN	ELECTRIC MODULATING	
CV-HW-AHU-2-1	HW	BUTTERFLY	65	5	29	NORMALY OPEN	ELECTRIC MODULATING	
CV-HW-AHU-2-2	HW	THREE-WAY	65	5	29	NORMALY OPEN	ELECTRIC MODULATING	

1

CONTROL VALVE GENERAL NOTES

A. COORDINATE FINAL EQUIPMENT WATER FLOW RATES WITH APPROVED EQUIPMENT SUBMITTALS. CONTROLS CONTRACTOR TO REVIEW ALL VALVE SIZES AND RESELECT WHERE APPROPRIATE.

B. SIZING CRITERIA FOR MODULATING VALVES (FLOW DIFFERENTIAL PRESSURE) IS GIVEN FOR A VALVE POSITION OF 70 DEGREES OPEN.

C. CONTROLS CONTRACTOR TO PROVIDE TRANSFORMERS FOR 24V POWER.

D. 1/2" AND 3/4" VALVES FOR TERMINAL UINTS AND FAN COIL UNITS NOT SCHEDULED. MAXIMUM PRESSURE DROP IS 5 PSIG.

CONTROL VALVE SCHEDULE NOTES

1. PROVIDE CONTROL VALE WITH NEMA 4X RATED ENCLOSURE.

AIR DEVICE NOMENCLATURE

[A] → DIFFUSER MARK
150 → DEVICE CFM
TYP 5 → NUMBER OF DIFFUSERS

SCHEDULE - DIFFUSER & GRILLE

MARK	CFM RANGE	NECK SIZE	SUPPLY	RETURN	EXHAUST	TYPE	PATTERN	MANUFACTURER & MODEL NUMBER
A	0-180	6"	X			24" X 24" PLAQUE	4-WAY	PRICE ASPD FULL FACE ALUMINUM CONSTRUCTION
AA	0-180	6"	X			24" X 24" PLAQUE	4-WAY	PRICE PRODIGY FULL FACE ALUMINUM CONSTRUCTION
B	181-350	8"	X			24" X 24" PLAQUE	4-WAY	PRICE ASPD FULL FACE ALUMINUM CONSTRUCTION
BB	181-350	8"	X			24" X 24" PLAQUE	4-WAY	PRICE PRODIGY FULL FACE ALUMINUM CONSTRUCTION
D	451-710	12"	X			24" X 24" PLAQUE	4-WAY	PRICE ASPD FULL FACE ALUMINUM CONSTRUCTION
E	711-840	14"	X			24" X 24" PLAQUE	4-WAY	PRICE ASPD FULL FACE ALUMINUM CONSTRUCTION
F	0-1000	22" X 22"		X		24" X 24" PERF. FACE	PERF	PRICE APDDR, NON-DUCTED ALUMINUM CONSTRUCTION
H	161-275	8"			X	24" X 24" PERF. FACE	PERF	PRICE APDDR ALUMINUM CONSTRUCTION
L	RE: DWGS	RE: DWGS	X			SIDEWALL GRILLE	DOUBLE DEFLECTION	PRICE 620 FS, 3/4" BLADE SPACING ALUMINUM FACE AND FRAME NOTE 3
M	RE: DWGS	RE: DWGS		X	X	SIDEWALL GRILLE	SINGLE DEFLECTION	PRICE 630 FL ALUMINUM FACE AND FRAME NOTE 3
R	0-100	6"	X			12" X 12" PLAQUE	4-WAY	PRICE ASPD FULL FACE ALUMINUM CONSTRUCTION
S	0-230	8"	X			1 SLOT, 1.5" SLOT WIDTH x 48"	LINEAR FLOW	PRICE AS215 LINEAR SLOT WITH ASPI215 4' INSULATED PLENUM NOTE 1
W	161-275	8"		X		24" X 24" PERF. FACE	PERF	PRICE APDDR ALUMINUM CONSTRUCTION
Z	0-100	6"	X			1 SLOT, 1.5" SLOT WIDTH x 24"	LINEAR FLOW	PRICE AS215 LINEAR SLOT WITH ASPI215 4' INSULATED PLENUM NOTE 1

DIFFUSER & GRILLE SCHEDULE NOTES

1. PROVIDE LIGHT SHIELDS FOR ALL RETURN AIR SLOTS AND BLANK-OFFS FOR ALL SLOTS DESIGNATED AS SUPPLY OR RETURN.
2. MAX NC-30 FOR ALL AIR DEVICES. NC SHALL BE CALCULATED AS PER AHRI 885-2008 ASSUMING LAY-IN ACOUSTICAL TILE.
3. PROVIDE INTEGRAL OBD FOR SIDEWALL DIFFUSERS AND GRILLES.
4. ALL DIFFUSERS IN GYP. BOARD CEILINGS TO HAVE FLOATABLE EDGE TRIM.

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ISSUED FOR BIDDING

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HOUSTON COMMUNITY COLLEGE
Central

CULINARY ARTS CENTER
HOUSTON, TEXAS

DRAWN: **DAB**
CHECKED: **CHR**
SCALE: **12" = 1'-0"**

ISSUE: 11/18/2016

	11/18/2016	ISSUED FOR BIDDING
1	01/23/2017	ADDENDUM 2

SHEET TITLE:
MECHANICAL SCHEDULES

M.003

Stantec Project: **214000169**

SEQUENCE OF OPERATION

VAV AHU WITH PRETREATED OUTSIDE AIR (AHU-1-1)

1. EACH AIR HANDLING UNIT SYSTEM SHALL BE A DRAW-THROUGH VAV TYPE, CONSISTING OF A SUPPLY FAN WITH VARIABLE FREQUENCY DRIVE, MERV 7 AND MERV 13 FILTER, AND COOLING COIL. THE OUTSIDE AIR IS PRETREATED FROM AN OUTSIDE AIR HANDLING UNIT AND PROVIDED TO THE AHU VIA AN AIRFLOW MEASURING STATION.

2. THE UNIT SHALL BE STARTED AND STOPPED THROUGH THE DDC. WHEN THE UNIT IS ENERGIZED, THE ELECTRONICALLY ACTUATED CHILLED (CHW) VALVE AND OA AND RELIEF DAMPERS SHALL BE ALLOWED TO MODULATE. WHEN THE UNIT IS STOPPED, THE CHW VALVE AND OA AND RELIEF DAMPERS WILL CLOSE.

3. A DUCT AVERAGING TEMPERATURE SENSOR LOCATED DOWNSTREAM OF THE COOLING COIL SHALL, THROUGH THE DDC, MODULATE THE NORMALLY OPEN CHW VALVE TO MAINTAIN DISCHARGE TEMPERATURE SETPOINT (53F, ADJUSTABLE, REFERENCE AIR HANDLING UNIT SCHEDULE).

4. SUPPLY DUCT STATIC PRESSURE SENSOR(S) SHALL BE LOCATED AS SHOWN ON THE PLANS. THE DDC SHALL SELECT THE LOWEST OF THE PRESSURE SIGNALS TO MODULATE THE SUPPLY FAN VFD TO MAINTAIN DUCT STATIC PRESSURE SETPOINT. THE DDC SHALL RESET SUPPLY AIR STATIC PRESSURE SETPOINT IN SMALL INCREMENTS AT 15 MINUTE INTERVALS. RESET SETPOINT ONE INCREMENT UP OR DOWN TO MAINTAIN ALL AIR TERMINAL PRIMARY AIR INLET DAMPER 90% OR LESS OF FULL OPEN. THE SYSTEM SHALL MAINTAIN A MINIMUM SUPPLY AIR STATIC PRESSURE SETPOINT OF 1.0" W.G.

5. EACH FILTER BANK (MERV 7 AND MERV 13 IS CONSIDERED TWO BANKS) WILL HAVE A DIFFERENTIAL PRESSURE SWITCH TO INDICATE HIGH DIFFERENTIAL PRESSURE ACROSS THE FILTERS. THE SWITCH SHALL BE AN ALARM INPUT TO THE DDC SYSTEM. INITIAL SET POINT TO BE 0.5" W.G. FOR MERV 7 AND 0.75" W.G. FOR MERV 13.

6. AN AIRFLOW MEASURING STATION (AFMS) SHALL MODULATE THE FLOW RATE OF OUTSIDE AIR BETWEEN THE MINIMUM AND MAXIMUM SCHEDULED OUTSIDE AIR, BASED ON CO2 READINGS OR KITCHEN HOOD AIRFLOWS. THE AFMS SHALL MODULATE THE DAMPER TO PROVIDE THE LARGER OF EITHER THE MINIMUM OUTSIDE AIR INDICATED ON THE AFMS SCHEDULE OR THE AMOUNT REQUIRED TO MAINTAIN A MAXIMUM 900 PPM CO2 FROM ANY CO2 ZONE SENSOR OR DUCT SENSOR. REFER TO CONTROLS SCHEMATICS FOR ADDITIONAL INFORMATION. THE AFMS CONTROL DAMPER SHALL CLOSE WHEN THE ASSOCIATED AIR HANDLING UNIT IS OFF. THE DDC SYSTEM SHALL ALARM WHEN THE CO2 LEVEL EXCEEDS THE SETPOINT BY MORE THAN 10%.

THE MINIMUM OUTSIDE AIR SHALL BE 2,000 CFM (BASED ON PRESSURIZATION AND CONSTANT VOLUME EXHAUST, ADJUSTABLE) AND INCREASED BASED ON THE VARIABLE KITCHEN HOOD USAGE. THE OUTSIDE AIR SHALL INCREASE BASED ON THE FOLLOWING:

IF PASTRY HOOD 1 IS OPERATIONAL THE OUTSIDE AIR SHALL BE RESET TO:

OA = MINIMUM OA + KEF-1

7. SUPPLY AIR TEMPERATURE RESET. DDC SHALL REVIEW AIR TERMINAL COOLING LOOPOUT (% OF COOLING) AT 5 MINUTE INCREMENTS TO RESET SUPPLY AIR TEMPERATURE SETPOINT. THE SUPPLY AIR TEMPERATURE SHALL BE ALLOWED TO RANGE BETWEEN 53°F AND 63°F (ADJUSTABLE). A PID LOOP OUTPUTING PERCENT OF COOLING DEMAND NECESSARY TO MAINTAIN THE NUMBER OF COOLING REQUEST SETPOINT OF [4] (ADJUSTABLE). IF NUMBER OF COOLING REQUEST IS LESS THAN OR EQUAL TO THE NUMBER OF COOLING REQUEST SETPOINT, THE DDC SYSTEM SHALL RESET THE SUPPLY AIR TEMPERATURE UP 0.1°F DEGREES (ADJUSTABLE). IF COOLING REQUEST IS GREATER THAN SETPOINT, THE DDC SYSTEM SHALL RESET THE SUPPLY AIR TEMPERATURE DOWN 0.1°F DEGREES. IF THE NUMBER OF COOLING REQUEST EXCEEDS THE SETPOINT PLUS [3] (ADJUSTABLE), THE DDC SYSTEM SHALL RESET THE SUPPLY AIR TEMPERATURE TO 53°F AND RESTART SUPPLY AIR TEMPERATURE SETPOINT STRATEGY.

SAFETIES

1. A HIGH STATIC PRESSURE CUTOUT SWITCH LOCATED IN THE FAN DISCHARGE SHALL BE HARD-WIRED TO DE-ENERGIZE THE SUPPLY FAN WHENEVER STATIC PRESSURE EXCEEDS 4.5" W.G. (FIELD ADJUSTABLE), AND AN ALARM SHALL BE SENT TO THE DDC.

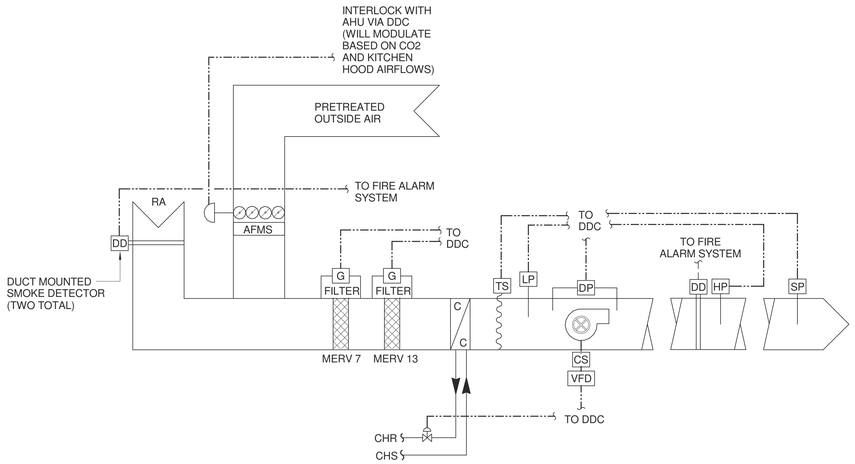
2. A LOW STATIC PRESSURE CUTOUT SWITCH LOCATED IN THE FAN INTAKE SHALL BE HARD-WIRED TO DE-ENERGIZE THE SUPPLY FAN WHENEVER STATIC PRESSURE EXCEEDS NEGATIVE 2" W.G. (FIELD ADJUSTABLE), AND AN ALARM SHALL BE SENT TO THE DDC.

3. SMOKE DETECTORS LOCATED IN THE RETURN DUCT AND FAN DISCHARGE SHALL, THROUGH THE FIRE ALARM SYSTEM, DE-ENERGIZE THE SUPPLY FAN WHENEVER PRODUCTS OF COMBUSTION ARE SENSED.

4. EACH FILTER BANK (MERV-7 AND MERV-11 IS CONSIDERED TWO BANKS) WILL HAVE A DIFFERENTIAL PRESSURE SWITCH TO INDICATE HIGH DIFFERENTIAL PRESSURE ACROSS THE FILTERS. THE SWITCH SHALL BE AN ALARM INPUT TO THE DDC SYSTEM. INITIAL SET POINT TO BE 0.6" W.G. FOR MERV 7 AND 0.75" W.G. FOR MERV 13.

5. A CURRENT SENSOR SHALL BE USED BY THE DDC SYSTEM TO CONFIRM THE FAN IS IN THE DESIRED STATE (I.E. ON OR OFF). THE DDC SYSTEM SHALL GENERATE AN ALARM IF STATUS DEVIATES FROM DDC START/STOP CONTROL SIGNAL AND DE-ENERGIZE THE SUPPLY FAN.

6. WHEN ALL SAFETY ALARMS HAVE BEEN CLEARED, THE BAS SHALL ALLOW THE AHU TO RESUME NORMAL OPERATION.



1 SINGLE ZONE DRAW-THRU AHU (AHU-1-1)
NO SCALE

POINT SUMMARY																						
HCC CULINARY ARTS CENTER	OUTPUT							INPUT												SOFTWARE		
	DIGITAL			ANALOG				DIGITAL						ANALOG								
	START/ STOP	OPEN/ CLOSE	ON/OFF	4 - 20 MA	0-10 VDC	1 - 18 PSI	OTHER	AUXILIARY CONTACT	PRESSURE SWITCH	LOW TEMP SWITCH	END SWITCH	SMOKE DET. AUX	CUR. MON. RELAY	TEMP.	PRESS.	FLOW (CFM,GPM)	HUMIDITY	OTHER	GRAPHIC	OTHER	ALARM
AHU																			X		
(SINGLE ZONE DRAW-THRU AHUs)																					
SUPPLY FAN (ON VFD)	X			X					X												
COOLING COIL					X									X							
SUPPLY DUCT STATIC PRESSURE (EA)															X						
HI-STATIC PRESSURE SWITCH									X												X
VARIABLE FREQUENCY DRIVE FAILURE								X													X
FILTER GAUGE (EA)								X													X
OUTSIDE AIR AFMS					X											X					
EXHAUST AIR TERMINAL BOX (EA)					X											X					
RA CARBON DIOXIDE SENSOR (EA)																		X			
LOW-STATIC PRESSURE SWITCH									X												X
OUTSIDE AIR DAMPER					X																

SEQUENCE OF OPERATION

VAV OUTSIDE AIR HANDLING UNIT (AHU-2-1 AND AHU-2-2)

1. EACH AIR HANDLING UNIT SYSTEM SHALL BE A DRAW-THROUGH VAV TYPE, CONSISTING OF A SUPPLY FAN WITH VARIABLE FREQUENCY DRIVE, MERV-7 AND 13 FILTERS, AND HEATING AND COOLING COILS..

2. THE UNIT SHALL BE STARTED AND STOPPED THROUGH THE DDC. WHEN THE UNIT IS ENERGIZED, THE ELECTRONICALLY ACTUATED CHILLED (CHW) VALVE SHALL BE ALLOWED TO MODULATE AND THE OA AND SA DAMPER SHALL OPEN. WHEN THE UNIT IS STOPPED, THE CHW VALVE AND OA AND SA DAMPER WILL CLOSE.

3. A DUCT AVERAGING TEMPERATURE SENSOR LOCATED DOWNSTREAM OF THE COOLING COIL SHALL, THROUGH THE DDC, MODULATE THE NORMALLY OPEN CHW VALVE TO MAINTAIN DISCHARGE TEMPERATURE SETPOINT (53F, ADJUSTABLE, REFERENCE AIR HANDLING UNIT SCHEDULE).

4. A DUCT AVERAGING TEMPURATURE SENSOR LOCATED DOWNSTREAM OF THE HEATING COIL SHALL, THRU THE DDC, MODULATE THE NORMALLY CLOSED HEATING VALVE TO MAINTAIN DISCHARGE TEMPURATURE SETPOINT (50 DEGREE F, ADJUSTABLE).

5. SUPPLY DUCT STATIC PRESSURE SENSOR(S) SHALL BE LOCATED AS SHOWN ON THE PLANS. THE DDC SHALL SELECT THE LOWEST OF THE PRESSURE SIGNALS TO MODULATE THE SUPPLY FAN VFD TO MAINTAIN DUCT STATIC PRESSURE SETPOINT. THE DDC SHALL RESET SUPPLY AIR STATIC PRESSURE SETPOINT IN SMALL INCREMENTS AT 15 MINUTE INTERVALS. RESET SETPOINT ONE INCREMENT UP OR DOWN TO MAINTAIN ALL AIR TERMINAL PRIMARY AIR INLET DAMPER 90% OR LESS OF FULL OPEN. THE SYSTEM SHALL MAINTAIN A MINIMUM SUPPLY AIR STATIC PRESSURE SETPOINT OF 1.0" W.G.

7. SUPPLY AIR TEMPERATURE RESET. DDC SHALL REVIEW AIR TERMINAL COOLING LOOPOUT (% OF COOLING) AT 5 MINUTE INCREMENTS TO RESET SUPPLY AIR TEMPERATURE SETPOINT. THE SUPPLY AIR TEMPERATURE SHALL BE ALLOWED TO RANGE BETWEEN 53°F AND 58°F (ADJUSTABLE). A PID LOOP OUTPUTING PERCENT OF COOLING DEMAND NECESSARY TO MAINTAIN THE NUMBER OF COOLING REQUEST SETPOINT OF [4] (ADJUSTABLE). IF NUMBER OF COOLING REQUEST IS LESS THAN OR EQUAL TO THE NUMBER OF COOLING REQUEST SETPOINT, THE DDC SYSTEM SHALL RESET THE SUPPLY AIR TEMPERATURE UP 0.1°F DEGREES (ADJUSTABLE). IF COOLING REQUEST IS GREATER THAN SETPOINT, THE DDC SYSTEM SHALL RESET THE SUPPLY AIR TEMPERATURE DOWN 0.1°F DEGREES. IF THE NUMBER OF COOLING REQUEST EXCEEDS THE SETPOINT PLUS [3] (ADJUSTABLE), THE DDC SYSTEM SHALL RESET THE SUPPLY AIR TEMPERATURE TO 53°F AND RESTART SUPPLY AIR TEMPERATURE SETPOINT STRATEGY.

SAFETIES

1. A HIGH STATIC PRESSURE CUTOUT SWITCH LOCATED IN THE FAN DISCHARGE SHALL BE HARD-WIRED TO DE-ENERGIZE THE SUPPLY FAN WHENEVER STATIC PRESSURE EXCEEDS 4.5" W.G. (FIELD ADJUSTABLE), AND AN ALARM SHALL BE SENT TO THE DDC.

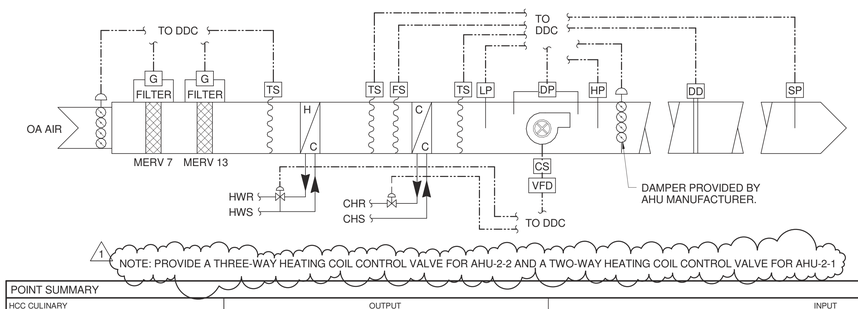
2. A LOW STATIC PRESSURE CUTOUT SWITCH LOCATED IN THE FAN INTAKE SHALL BE HARD-WIRED TO DE-ENERGIZE THE SUPPLY FAN WHENEVER STATIC PRESSURE EXCEEDS NEGATIVE 2" W.G. (FIELD ADJUSTABLE), AND AN ALARM SHALL BE SENT TO THE DDC.

3. SMOKE DETECTORS LOCATED IN THE FAN DISCHARGE SHALL, THROUGH THE FIRE ALARM SYSTEM, DE-ENERGIZE THE SUPPLY FAN WHENEVER PRODUCTS OF COMBUSTION ARE SENSED.

4. EACH FILTER BANK (MERV-7 AND MERV-11 IS CONSIDERED TWO BANKS) WILL HAVE A DIFFERENTIAL PRESSURE SWITCH TO INDICATE HIGH DIFFERENTIAL PRESSURE ACROSS THE FILTERS. THE SWITCH SHALL BE AN ALARM INPUT TO THE DDC SYSTEM. INITIAL SET POINT TO BE 0.6" W.G. FOR MERV-7 AND 0.75" W.G. FOR MERV-11.

5. UPON SENSING A DROP IN PREHEAT TEMPURATURE TO 35 DEGREE F, A MANUAL-RESET LOW TEMPURATURE THERMOSTAT LOCATED ON THE DISCHARGE SIDE OF THE PRE-HEAT COIL SHALL, THROUGH HARD-WIRE INTERLOCK, DE-ENERGIZE THE SUPPLY FAN, CLOSE THE OUTSIDE AIR DAMPER, OPEN THE CHW VALVE FULLY, AND SEND AN ALARM TO THE DDC.

6. A CURRENT SENSOR SHALL BE USED BY THE DDC SYSTEM TO CONFIRM THE FAN IS IN THE DESIRED STATE (I.E. ON OR OFF). THE DDC SYSTEM SHALL GENERATE AN ALARM IF STATUS DEVIATES FROM DDC START/STOP CONTROL SIGNAL AND DE-ENERGIZE THE SUPPLY FAN.



POINT SUMMARY																						
HCC CULINARY	OUTPUT							INPUT												SOFTWARE		
	DIGITAL			ANALOG				DIGITAL						ANALOG								
	START/ STOP	OPEN/ CLOSE	ON/OFF	4 - 20 MA	0-10 VDC	1 - 18 PSI	OTHER	AUXILIARY CONTACT	PRESSURE SWITCH	LOW TEMP SWITCH	END SWITCH	SMOKE DET. AUX	CUR. MON. RELAY	TEMP.	PRESS.	FLOW (CFM,GPM)	HUMIDITY	OTHER	GRAPHIC	OTHER	ALARM
																			X		
(SINGLE ZONE VAV DRAW-THRU AHU)																					
SUPPLY FAN (ON VFD)	X			X					X												
COOLING COIL					X									X							
SUPPLY DUCT STATIC PRESSURE (EA)															X						
HI-STATIC PRESSURE SWITCH									X												X
VARIABLE FREQUENCY DRIVE FAILURE								X													X
FILTER GAUGE (EA)								X													X
OUTSIDE AIR DAMPER					X																X
LOW-STATIC PRESSURE SWITCH									X												X
PREHEAT COIL					X									X							
FREEZE (LOW-LIMIT) SWITCH										X											

2 VAV AHU W/ 100% OUTSIDE AIR (AHU-2-1, AHU-2-2)
NO SCALE

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LICENSED PROFESSIONAL ENGINEER
1/20/2017

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SCALE: **NO SCALE**

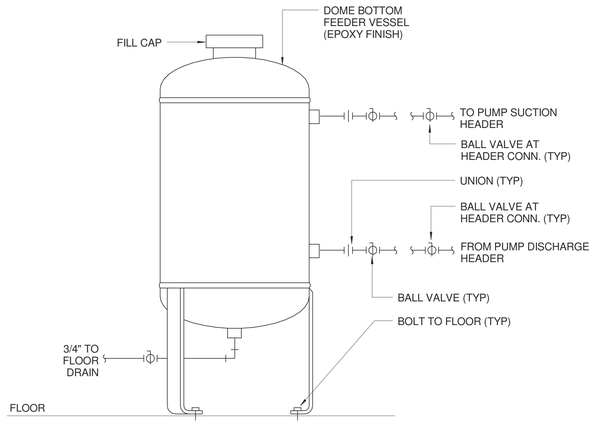
ISSUE: 11/18/2016

	11/18/2016	ISSUED FOR BIDDING
1	01/23/2017	ADDENDUM 2

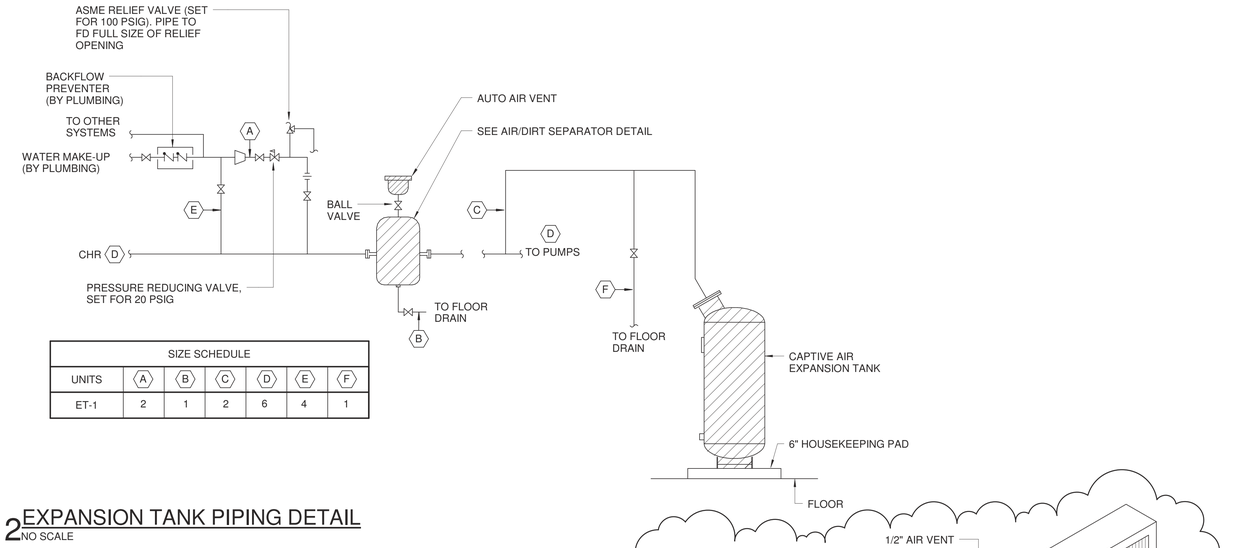
SHEET TITLE:
MECHANICAL CONTROL SCHEMATICS

M.601

Stantec Project: **214000169**

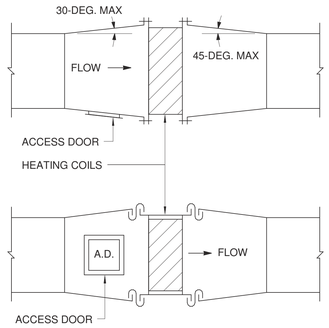


1 CHEMICAL SHOT FEEDER DETAIL
NO SCALE



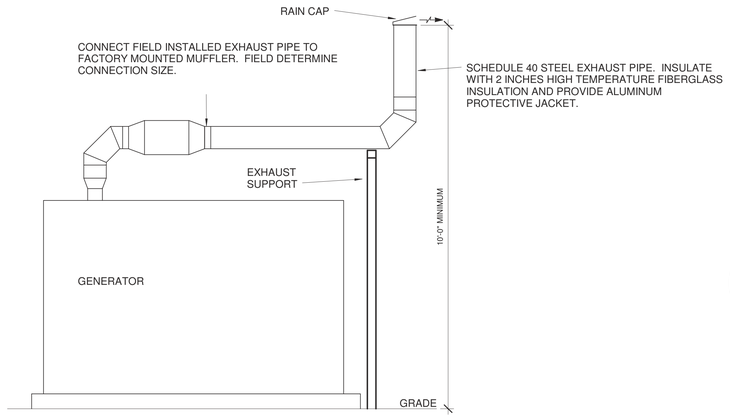
SIZE SCHEDULE						
UNITS	A	B	C	D	E	F
ET-1	2	1	2	6	4	1

2 EXPANSION TANK PIPING DETAIL
NO SCALE

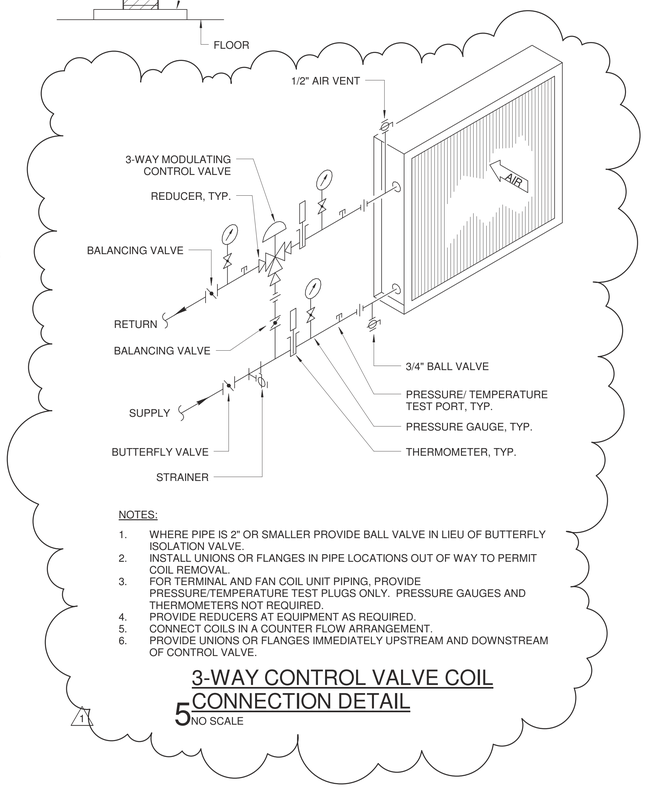


NOTE:
1. HEATING COILS MAY BE DIRECTLY CONNECTED TO DUCT.
2. INSULATE COIL CASINGS.
3. PROVIDE EXTENSION HANDLES FOR ACCESS DOOR CLOSERS.

REMOTE HEATING COIL DUCT INSTALLATION DETAIL
3 INSTALLATION DETAIL
NO SCALE



4 GENERATOR DETAIL
NO SCALE



NOTES:
1. WHERE PIPE IS 2" OR SMALLER PROVIDE BALL VALVE IN LIEU OF BUTTERFLY ISOLATION VALVE.
2. INSTALL UNIONS OR FLANGES IN PIPE LOCATIONS OUT OF WAY TO PERMIT COIL REMOVAL.
3. FOR TERMINAL AND FAN COIL UNIT PIPING, PROVIDE PRESSURE/TEMPERATURE TEST PLUGS ONLY. PRESSURE GAUGES AND THERMOMETERS NOT REQUIRED.
4. PROVIDE REDUCERS AT EQUIPMENT AS REQUIRED.
5. CONNECT COILS IN A COUNTER FLOW ARRANGEMENT.
6. PROVIDE UNIONS OR FLANGES IMMEDIATELY UPSTREAM AND DOWNSTREAM OF CONTROL VALVE.

3-WAY CONTROL VALVE COIL CONNECTION DETAIL
5 CONNECTION DETAIL
NO SCALE

1

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SCALE: **NO SCALE**

ISSUE: 11/18/2016

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1	01/23/2017	ADDENDUM 2

SHEET TITLE:
MECHANICAL DETAILS

M.905

Stantec Project: **214000169**

1/20/2017 9:54:45 AM
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