RFQ CCC-039 Instructional Building #1 - ADDENDUM 1

1. Pre-Bid RFC-001 through 004 and RFC-006 through 011 with Answers

2. Changes to the Specifications

23 0923 DIRECT DIGITAL CONTROL SYSTEM FOR HVAC (See Underlined Text)

A. Revised Section 1.1 – Work Included A (Underlined)

23 2113 HYDRONIC PIPING

A. Revised Section 1.2– Summary
B. Added Section 2.6 – Site Chilled Water Piping (Underground)
C. Added Section 3.9 - Site Chilled Water Pipe Installation

3. Changes to the Drawings

ARCHITECTURAL

Sheet A8.03 – ELEVATOR - PLANS, SECTIONS & DETAILS

A. Revised Detail 10/A8.03 – 1-HR SHAFT EDGE OF SLAB: Concrete curb adjusted, Detail callout 3/A9.01 added, keynotes added.

Sheet A8.07 – STAIR DETAILS

B. Revised Detail 8/A8.07 – SECURITY FENCE SILL: Added weld symbols to attachment of 3"x3" HSS to HSS Tube and Cap Plate to HSS.

Sheet A9.01 – WALL TYPES, EXTERIOR AND INTERIOR

C. Revised Keynote for S1, S2, and S3 Interior Wall Types: Added "Substitute 5/8" Densglass Board Substrate where tile occurs"
D. Revised Details 7 and 11 showing cove trim at corner per 4/A10.06.
E. Added Detail 3/A9.01 – TILE, SINGLE SIDED: Showing conditions in restroom wall furring.

MECHANICAL

Sheet MP1.01 – MECHANICAL PIPING PLAN – LEVEL 1

A. Edit Keynote 1 addressing underground chilled water piping.

Attachments:

Spec sections: Listed above. Drawing Sheets:
Listed above.
RFC-001 through 004 and RFC-006 through 011

END OF ADDENDUM 1

(FOR PRE-BID USE ONLY)
PRE-BID REQUEST FOR INFORMATION
COMPTON COMMUNITY COLLEGE DISTRICT
Send to ckober@pcm3.com ONLY!

Date of Pre-Bid RFI: 09/20/2018 Project Name: Instructional Building 1 Project No: CCC-039 Bid Package No.: N/A Bid Package Description: N/A	Bidder Name: GB Construction, Inc.

Bidder's Pre-Bid Request for Information (Include references to Drawing Sheet Numbers and/or Sections of the Specifications)

This RFI pertains to Question 5.13 of the Statement of Qualifications. The question asks if the Bidder has an IIPP and if submission of IIPP will be made along with the Bidder's Bid Proposal.

In answering "Yes" to the question, the Bidder will be deem "Not Qualified". Please advise and clarify

Additional pages attached by Bidder: X Yes ___ No
Number of additional pages attached by Bidder: 1

Response to Bidder's Pre-Bid Request for Information

The choices for response to questions 5.13 of the Statement of Qualifications should be the following:

___Yes ___No (Not Qualified)

Additional pages of RFI Response attached: X Yes ___ No
Number of additional RFI Response pages attached: 1

Date of RFI Response: 10/10/18

Submitted By: GB Construction, Inc. (Bidder Name) (Signature of Bidder's Authorized Employee, Officer or Representative) Submittal Date: 09/20/2018	Bidder Contact Information: Kelvin Koh (Bidder Contact Name) 310.324.3636 | 310.324.3637 (Phone and Fax) kelvinkoh@gbinc1982.net (Email Address)

__ Yes (Not Qualified) __ No

5.13. The Bidder has an Injury and Illness Prevention Program ("IIPP") and the Bidder has submitted its IIPP concurrently with submittal of the Bidder's Bid Proposal.

__ Yes (Not Qualified) __ No

6. Performance/Experience. A Bidder must receive a minimum of 65 points out of a possible 100 points in this section to be deemed "Qualified." The Bid Proposal of a Bidder who is not deemed "Qualified" will be rejected for non-responsiveness.

6.1. Within the past five (5) years has your organization has completed public works projects for California community college districts or school districts that were subject to DSA jurisdiction and approval.?

__ Yes ___ No

If yes, number of such projects: _____

Yes 1-2 Projects:	5 points
Yes 3-5 Projects:	10 points
Yes 6 or more Projects	15 points
No	0 points

If yes, list the number of project for which your organization served as the general contractor or as a subcontractor?

__ General Contractor __ Subcontractor

6.2. Has a complaint ever been filed against your organization's California Contractors' License with the California Contractors' State License Board?

__ Yes ___ No

Yes: 0 points
No: 5 points

6.3. Has your organization ever asked to be relieved of or refused to sign a contract for construction services awarded to it?

__ Yes ___ No

Yes: 0 points
No: 5 points

6.4. Has your organization ever failed to complete a construction contract?

__ Yes ___ No

Yes: 0 points
No: 10 points

6.5. Has your organization ever been declared in default of a construction contract?

__ Yes ___ No

Yes: 0 points
No: 5 points

(FOR PRE-BID USE ONLY)

PRE-BID REQUEST FOR INFORMATION
COMPTON COMMUNITY COLLEGE DISTRICT
Send to ckober@pcm3.com ONLY!

Date of Pre-Bid RFI: 10/03/2018 Project Name: Instructional Building 1 Project No: CCC-039 Bid Package No.: N/A Bid Package Description: N/A	Bidder Name: GB Construction, Inc.

Bidder's Pre-Bid Request for Information (Include references to Drawing Sheet Numbers and/or Sections of the Specifications)

This RFI pertains to Fire Department Access Plan (CP0.00) and Demolition Site Plan (AD0.11).

Item 1. The comment under the description of Local Fire Authority Review says that "Permit Required for Installation". Please advise and clarify.

Item 2. A part of the Building 'E' has no Pylons existing. Please advise.

Additional pages attached by Bidder: X Yes ___ No
Number of additional pages attached by Bidder: 2

Response to Bidder's Pre-Bid Request for Information

1. CP0.00: A permit from the local Fire Authority will be required to install the new fire hydrant and FDC (Item 3 and Item 11 on C5.01) located just east of the new building.

2. See attached plan of Building E for location of below grade pylons.

Additional pages of RFI Response attached: X Yes ___ No
Number of additional RFI Response pages attached: 1

Date of RFI Response: 10/10/2018

Submitted By: GB Construction, Inc.
(Bidder Name)

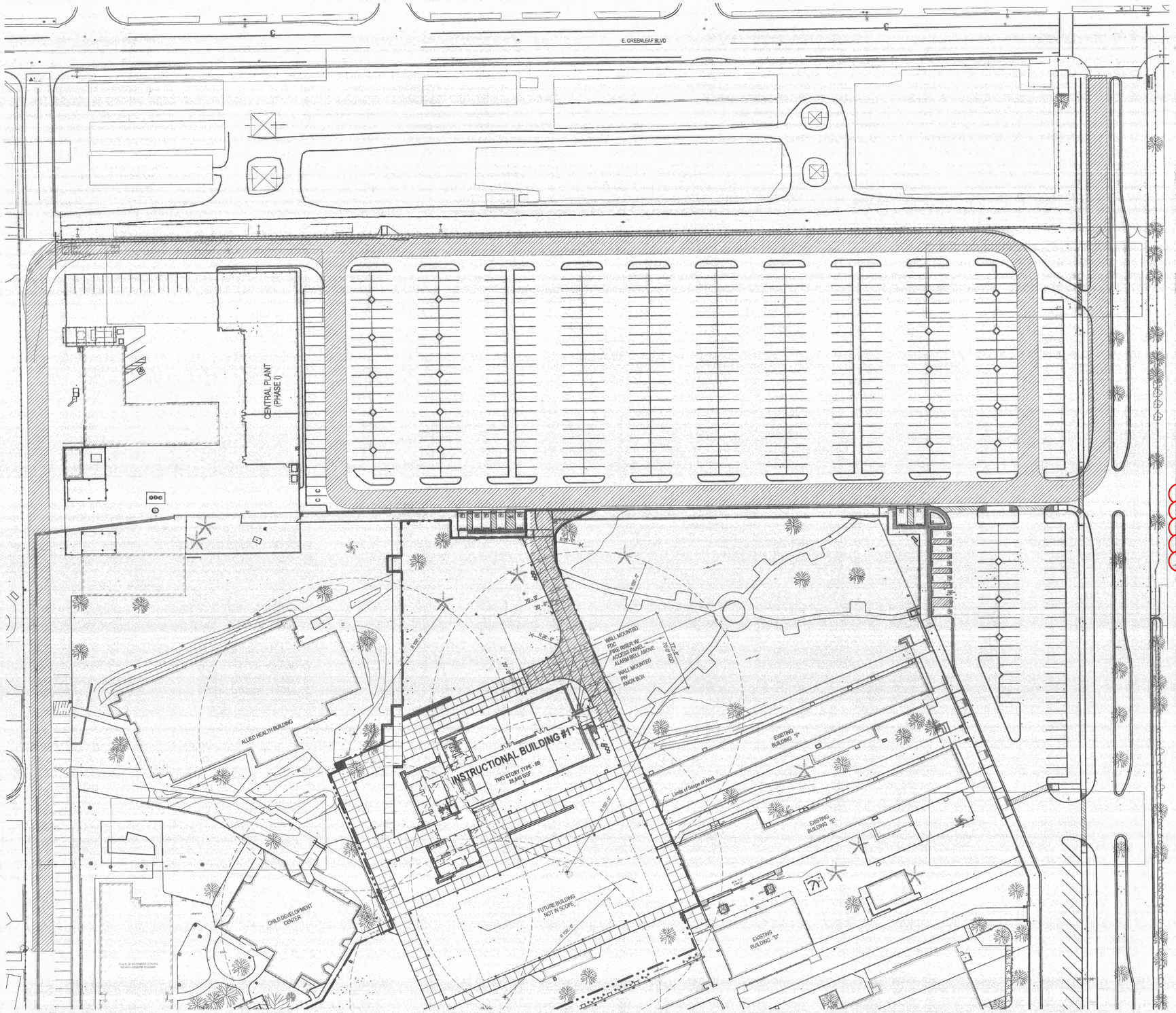
(Signature of Bidder's Authorized Employee, Officer or Representative)

Submittal Date: 10/03/2018

Bidder Contact Information: Kelvin Koh
(Bidder Contact Name)

310.324.3636 | 310.324.3637
(Phone and Fax)

kelvinkoh@gbinc1982.net
(Email Address)



1 CP0.00 FIRE DEPARTMENT ACCESS PLAN
SCALE: 1" = 40'-0"

DSA

LEGEND NOTES ARE COMMON TO ALL SOME NOTES MAY NOT APPLY TO THIS SHEET

810

LOCAL FIRE AUTHORITY REVIEW

To facilitate the Division of the State Architect's (DSA) approval of the Fire/Life Safety portion of a project, DSA requires Local Fire Authority (LFA) review of certain elements as identified in this form. Use of this form is mandatory for projects that add square footage to a campus or if any item on this form is relevant to the project. For additional information, see DSA 810 Instructions and DSA Policy 09-01.

PROJECT INFORMATION

School District/Owner: Compton Community College District

Project Name/School: Instructional Building #1 / Compton Community College

Project Address: 1111 East Artesia Blvd., Compton , CA , 90221

LOCAL FIRE AUTHORITY (LFA)

LFA Agency Name: City Of Compton Fire Department

LFA Reviewer Name: James Nash for Brian Batiste | Title: Fire Protection Specialist

Email: jbatiste@comptoncity.org | Telephone Number: 310-605-5670

I have reviewed and responded to the applicable items for this project as listed below.

***Note:** Only sign this form when it is imaged onto the site plan. A loose form is not acceptable to DSA.*

LFA Reviewer's Signature: _____ **Date:** 12/7/16

Review Key: "Y" = Complies with LFA requirements; "N" = Not approved (complete Section 8); "NA" = Not applicable to the project; "NR" = LFA elects not to review

	Description	Y	N	NA	NR
1	Where an elevator does not meet medical emergency service cab size, per the California Building Code (CBC), use of stairways for emergency rescue and patient transport is acceptable.	✓			
2	Access roads, fire lane markings, pavers and gate entrances are in accordance with Title 19, California Code of Regulations and the California Fire Code, Chapter 5.	✓			
3	Fire hydrant location and distribution complies with the California Fire Code (or see # 4).				
4	Fire hydrant location and distribution complies with NFPA 1142, "Alternate Means." If "NR" is checked, DSA can only approve on-site water storage as an alternate. The signature of the school district official is required to acknowledge the use of alternate means.	✓			
	Signature of School District Official: _____ **Date:** _____ **Print the School District Official's Name:** _____				
5	The location(s) of the proposed post indicator valve and fire department connection meet the requirements of this jurisdiction.	✓			
6	The location(s) of the detector check valve assembly meet the requirements of this jurisdiction.	✓			
7	Is the project located in a hazard severity zone area? (CBC, Chapter 7A, Section 701A.) ☐ Yes ☑ No Check type if "Yes": ☐ Moderate ☒ High ☐ Very High ☐ WIFA (If one of these boxes is checked, the project design must meet the requirements of Chapter 7A.)				
8	COMMENTS (note deficiencies): Permit required for installation				

DSA 810 (rev. 06-12-14)
DIVISION OF THE STATE ARCHITECT · DEPARTMENT OF GENERAL SERVICES · Page 1 of 1 · STATE OF CALIFORNIA

LICENSED ARCHITECT JON P. ANDERSON No. C29898 REN. 07-31-17 STATE OF CALIFORNIA

1111 E. ARTESIA BLVD.
COMPTON, CA 90221

FIRE DEPARTMENT ACCESS PLAN
COMPTON COMMUNITY COLLEGE DISTRICT
INSTRUCTIONAL BLDG. #1

CP0.00
75-14258.00
06/30/16
Revisions

City of Compton Fire Department Fire Prevention Bureau
APPROVED
Subject to field inspection approval
Subject to comments on plans
Subject to compliance with correction sheet requirements
Conceptual approval only

LEGEND NOTES :
FIRE APPARATUS ACCESS, 20' CLEAR
(E) FIRE HYDRANT

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP03 117612
AC 1 FLS 1 SS HN
Date 08-10-2017

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
APPL #XX-XXXXXX
AC____ FLS____ SS____

DLR Group
Architecture Engineering Planning Interiors

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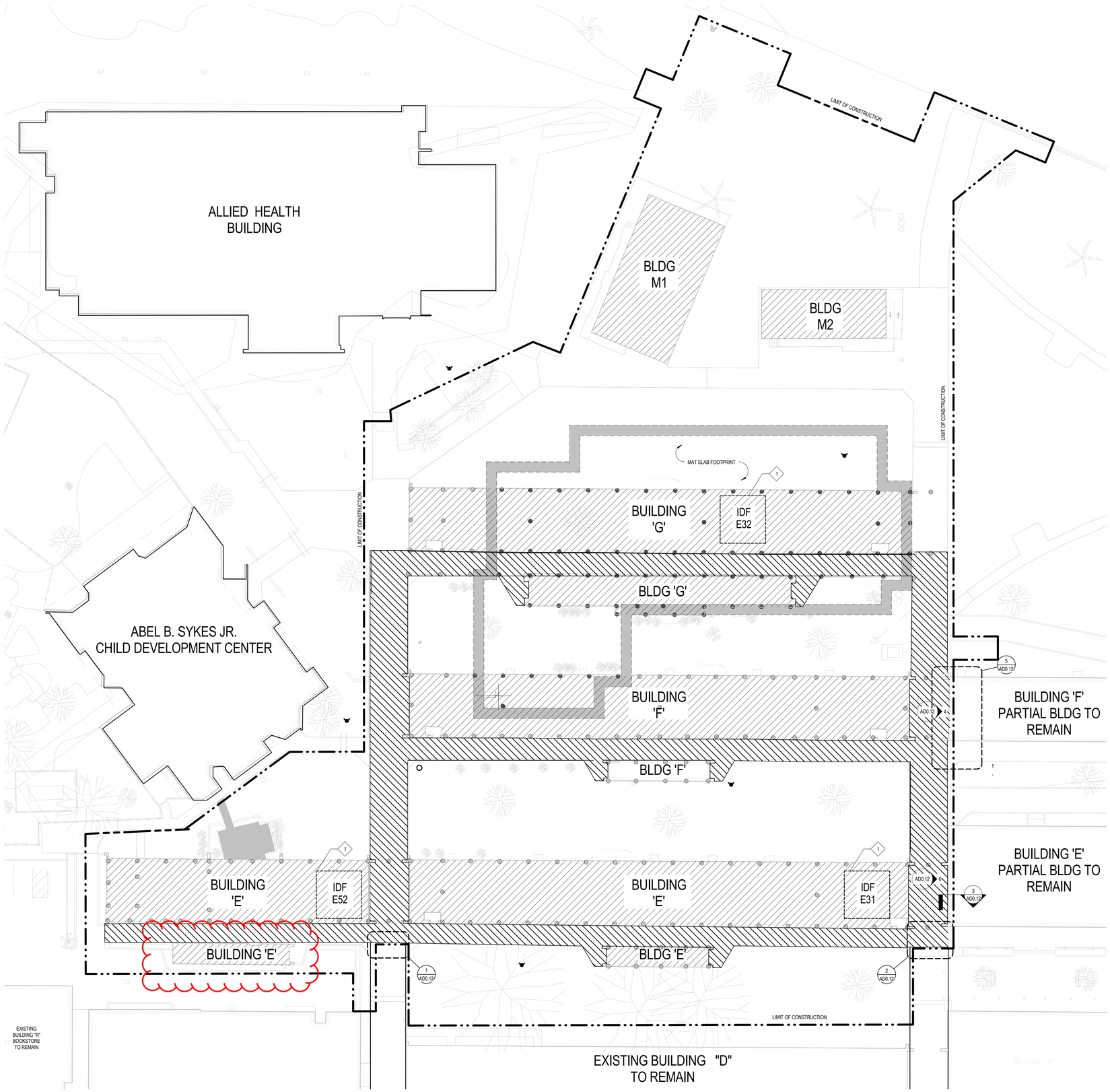

1 AD0.11 DEMOLITION SITE PLAN
SCALE: 1" = 20'-0"

N

LEGEND NOTES

LEGEND NOTES ARE COMMON TO ALL
SOME NOTES MAY NOT APPLY TO THIS SHEET

LEGEND

- LIMIT OF CONSTRUCTION
- (EX) BUILDING TO BE DEMOLISHED. REF C3.01 FOR ALL ON GRADE SITE INFO
- (EX) CANOPY, COLUMNS, FOUNDATIONS & DRAINAGE BE DEMOLISHED
- 5'-0" MIN. BEYOND BLDG EXTENTS AND APPENDAGES. OVER EXCAVATION LIMITS PER GEOTECHNICAL REPORT
- PYLONS WITHIN OVER-EXCAVATION
- PYLONS OUTSIDE OF OVER-EXCATION BOUNDARY

DEMOLITION NOTES

A. DEMOLITION GENERAL NOTES APPLY TO ALL DEMOLITION SHEETS.
B. REFERENCE C3.01 CIVIL DEMOLITION PLAN, M1.01 MECHANICAL FIRST FLOOR PLAN, AND E00.01 ELECTRICAL DEMOLITION SITE PLAN FOR ADDITIONAL DEMOLITION INFORMATION.
C. COORDINATE DEMOLITION AND PHASING EFFORTS WITH ARCHITECT AND OWNER'S REPRESENTATIVES. EVERY EFFORT SHALL BE MADE TO MINIMIZE DISRUPTION OF OWNER'S OPERATIONS AND TO PROVIDE BUILDING USER'S SAFETY. EXCESSIVE NOISE OR VIBRATION SHALL BE PRE-APPROVED AND COORDINATED WITH OWNER'S REPRESENTATIVE.
D. COORDINATE DISRUPTION OF UTILITY SERVICES WITH OWNER AND AS SPECIFIED.
E. CONSTRUCT TEMPORARY CONSTRUCTION PARTITIONS WITHIN EXISTING BUILDING WHICH OFFER A ONE-HOUR ENCLOSURE TO ISOLATE DEMOLITION AND CONSTRUCTION WORK FROM GENERAL PUBLIC AND AS DEEMED NECESSARY BY OWNER AND CODE OFFICIAL HAVING JURISDICTION. COORDINATE LOCATIONS WITH OWNER AND MAINTAIN MEANS OF EGRESS THROUGHOUT THE WORK.
F. MAINTAIN A SECURE AND WEATHER-TIGHT ENCLOSURE.
G. VERIFY EXISTING CONDITIONS, DIMENSIONS, AND ELEVATIONS AND NOTIFY ARCHITECT OF DISCREPANCIES.
H. REMOVE EXISTING WALLS, DOORS, MILLWORK, PLUMBING FIXTURES, CEILINGS, SOFFITS, MARKERBOARDS, ETC. IN THEIR ENTIRETY AND AS REQUIRED TO EXECUTE DEMOLITION AND CONSTRUCTION WORK DESCRIBED ON THE DRAWINGS.
I. THE OWNER SHALL RESERVE THE RIGHT TO SALVAGE ANY MATERIALS.
J. PROVIDE PROTECTION FOR EXISTING BUILDING MATERIALS AND EQUIPMENT FROM DAMAGE DUE TO DEMOLITION OR CONSTRUCTION-RELATED INCIDENT PERFORMED UNDER THIS CONTRACT.
K. REPAIR OR REPLACE ITEMS DAMAGED AS A RESULT OF DEMOLITION OR CONSTRUCTION TO MATCH EXISTING FINISH AND /OR CONDITION.
L. EXISTING MATERIALS SHALL NOT BE REUSED UNLESS NOTED OTHERWISE OR AS AUTHORIZED BY ARCHITECT.
M. VERIFY AND MAINTAIN LOCATION OF EXISTING POWER, COMMUNICATION AND DATA CABLES TO PREVENT INTERRUPTION OF SERVICE.
N. PATCH FLOOR, WALL AND CEILING PENETRATIONS RESULTING FROM REMOVAL OR REROUTING OF NEW OR EXISTING PIPING, DUCTWORK, CONDUIT, ETC. AS REQUIRED TO MAINTAIN FIRE SEPARATIONS. MATCH FINISH OF NEW OR EXISTING ADJACENT SURFACES.
O. CAP DISCONNECTED MECHANICAL PIPING LINES WITHIN WALL OR FLOOR. PATCH AND FINISH AS REQUIRED TO MATCH NEW OR EXISTING ADJACENT SURFACES.
P. SEE MECHANICAL AND ELECTRICAL DRAWINGS AND NOTES FOR FURTHER SEQUENCING AND SCOPE OF WORK.
Q. AVOID DISTURBING OF SOILS WITHIN ZONE OF INFLUENCE AROUND EXISTING FOOTINGS AND FLOOR SLABS AS DIRECTED BY GEOTECHNICAL ENGINEER.
R. WHERE CMU WALLS ARE INDICATED TO BE REMOVED; PREPARE ADJACENT WALLS TO RECEIVE NEW PATCH/FINISH BY REMOVING CMU IN TOOTH-IN PATTERN BOTH SIDES OF DEMOLITION FOR CONTRACTOR TO TOOTH IN NEW CMU PATCHES.
S. WHERE PLASTER/STUD WALLS ARE INDICATED TO BE REMOVED; PREPARE ADJACENT WALLS TO RECEIVE NEW PATCH/FINISH BY SAWCUTTING ADJACENT PLASTER FINISH A MINIMUM OF 12 INCHES BEYOND DEMOLITION.

KENOTES, DEMOLITION

1. (EX) IDF LOCATIONS FOR INFO ONLY. DISTRICT SHALL REMOVE ALL RELATED EQUIPMENT PRIOR TO THE START OF DEMO.
2. PYLONS WITHIN THE OVER-EXCAVATION AND BUILDING FOOTPRINT TO BE CUT 2'-0" BELOW EXCAVATION DEPTH DETERMINED BY GEOTECHNICAL REPORT. ALL OTHER PYLONS TO BE CUT BELOW DEMOED BUILDING SLAB. PYLONS VARY 4'-6" TO 18'-0" IN DEPTH.

GENERAL NOTE:

UNLESS NOTED OTHERWISE OR DIRECTED BY OWNER, ALL BUILDINGS, FOUNDATIONS, PILES, ELEVATOR AND LIFT JACKS, HARDSCAPE, LANDSCAPE, CONSTRUCTION ELEMENTS, AND SURFACE FEATURES SHALL BE REMOVED WITHIN LIMITS OF SCOPE WORK. CONTRACTOR TO NOTE THAT THERE IS TRENCHING, UTILITY WORK, AND REPAIR SCOPE BEYOND THE LIMITS OF WORK AS INDICATED IN DRAWINGS. REFERENCE ALL DRAWINGS FOR COMPLETE SCOPE OF WORK.

NO.	DATE	REVISION D	ISSUE
D	8/17/2018		

LICENSED ARCHITECT
C. GOLDEN
C-24552
EXP: 5-31-2019
STATE OF CALIFORNIA

DEMOLITION SITE PLAN
COMPTON COMMUNITY COLLEGE DISTRICT
INSTRUCTIONAL BLDG. #1

1111 E. ARTESIA BLVD. COMPTON, CA 90221

AD0.11
AS-BUILT-NO

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
APPL. # 03-117612
AC ____ FLS ____ SS ____
DATE ____

DLR Group
Architecture Engineering Planning Interiors

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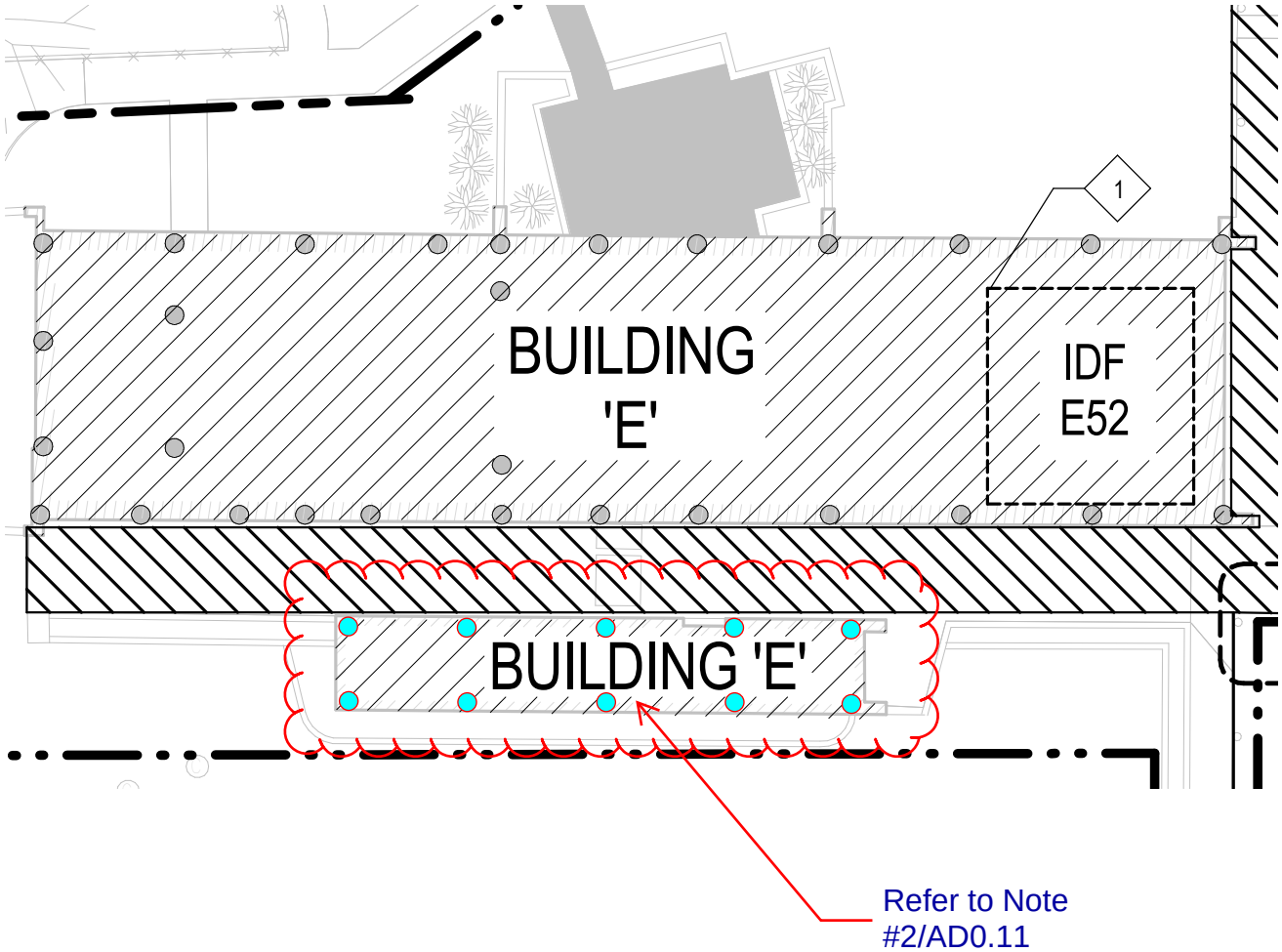


Response to RFC-002 question #2

(FOR PRE-BID USE ONLY)
PRE-BID REQUEST FOR INFORMATION
COMPTON COMMUNITY COLLEGE DISTRICT
Send to ckober@pcm3.com ONLY!

Date of Pre-Bid RFI: 10/03/2018
Project Name: Instructional Building 1
Project No: CCC-039
Bid Package No.: N/A
Bid Package Description: N/A

Bidder Name: GB Construction, Inc.

Bidder's Pre-Bid Request for Information (Include references to Drawing Sheet Numbers and/or Sections of the Specifications)

This RFI pertains to Specs of the Instructional Building 1. There are some items existing in the table, but not in contents. Missing contents are Escutcheons for HVAC Piping(230518), Instrumentation and Control for HVAC(230900), Control Valves(230923.11), Control Dampers(230923.12), Flow Instruments(230923.14), Pressure Instruments(230923.23), Temperature Instruments(230923.27), HVAC Casings(233119), and Fire Detection System(283100). Please advise.

Additional pages attached by Bidder: X Yes ___ No
Number of additional pages attached by Bidder: 3

Response to Bidder's Pre-Bid Request for Information

The referenced specification sections have been deleted. Refer to the attached Mechanical Table of Contents.

Additional pages of RFI Response attached: X Yes ___ No
Number of additional RFI Response pages attached: 1

Date of RFI Response:_____

Submitted By: GB Construction, Inc.
(Bidder Name)

(Signature of Bidder's Authorized Employee, Officer or Representative)

Submittal Date: 10/03/2018

Bidder Contact Information: Kelvin Koh
(Bidder Contact Name)

310.324.3636 | 310.324.3637
(Phone and Fax)

kelvinkoh@gbinc1982.net
(Email Address)

SECTION 000110 - TABLE OF CONTENTS

DIVISION 23 - MECHANICAL

END OF SECTION

END OF TABLE OF CONTENT

SECTION 000110 - TABLE OF CONTENTS

DIVISION 23 - MECHANICAL

END OF SECTION

(FOR PRE-BID USE ONLY)
PRE-BID REQUEST FOR INFORMATION
COMPTON COMMUNITY COLLEGE DISTRICT
Send to ckober@pcm3.com ONLY!

Date of Pre-Bid RFI: 10/03/2018 Project Name: Instructional Building 1 Project No: CCC-039 Bid Package No.: N/A Bid Package Description: N/A	Bidder Name: GB Construction, Inc.

Bidder's Pre-Bid Request for Information (Include references to Drawing Sheet Numbers and/or Sections of the Specifications)

This RFI pertains to Stair Details (A8.07). The exact location of detail #2 STR-01 Solid Surface @ Platform Overhang is not clear. Please advise.

1. The referenced item is the platform beneath Stair #1. The path to this detail is as follows: 1/A1.01 > 1/A8.01 > A8.01 elevation 12 > 19/A8.07 > 2/A8.07

Additional pages attached by Bidder: X Yes ___ No
Number of additional pages attached by Bidder: 1

Response to Bidder's Pre-Bid Request for Information

Additional pages of RFI Response attached: ___ Yes X No
Number of additional RFI Response pages attached: ____

Date of RFI Response:_____

Submitted By: GB Construction, Inc.
(Bidder Name)

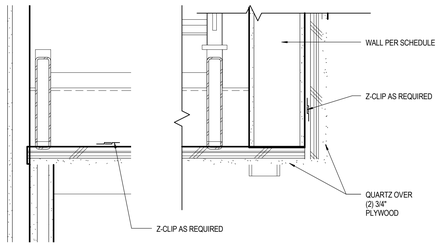
(Signature of Bidder's Authorized Employee, Officer or Representative)

Submittal Date: 10/03/2018

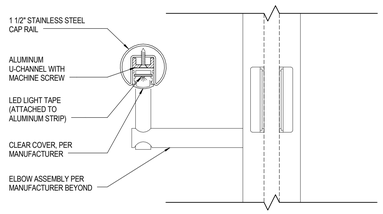
Bidder Contact Information: Kelvin Koh
(Bidder Contact Name)

310.324.3636 | 310.324.3637
(Phone and Fax)

kelvinkoh@gbinc1982.net
(Email Address)

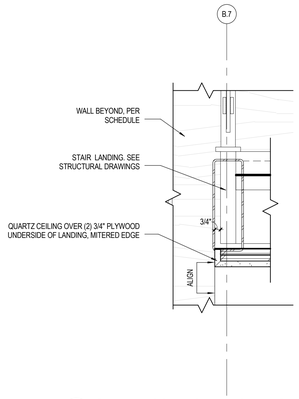


1 A8.07 STR-01 SOLID SURFACE SOFFIT
SCALE: 1 1/2" = 1'-0"



REFER TO MANUFACTURER FOR LED LIGHT ASSEMBLY IN HANDRAIL.

D 16 A8.07 LED @ HANDRAIL
SCALE: 6" = 1'-0"



12 A8.07 STR 01 - SOLID SURFACE EDGE DETAIL
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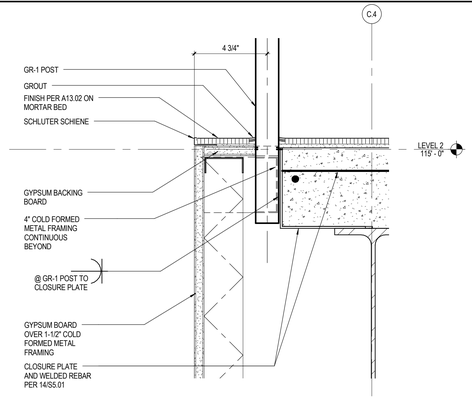
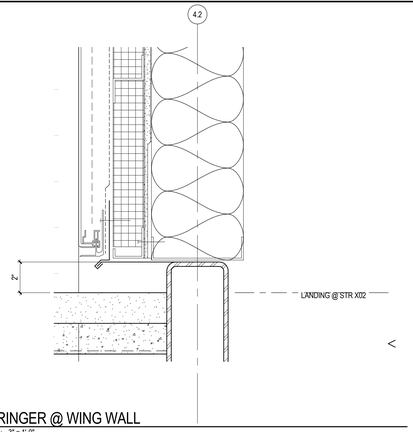
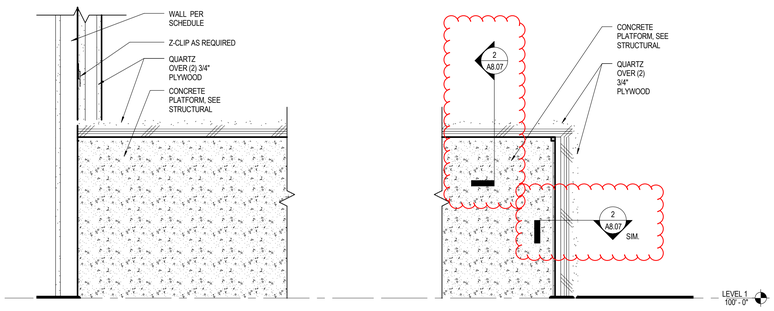


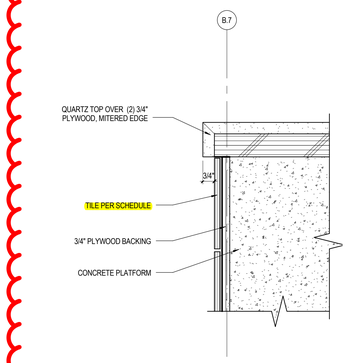
7 A8.07 GUARDRAIL @ E.O.S. NORTH
SCALE: 3" = 1'-0"



4 A8.07 STRINGER @ WING WALL
SCALE: 3" = 1'-0"



19 A8.07 STR-01 SOLID SURFACE PLATFORM
SCALE: 1 1/2" = 1'-0"



2 A8.07 STR-01 SOLID SURFACE @ PLATFORM OVERHANG
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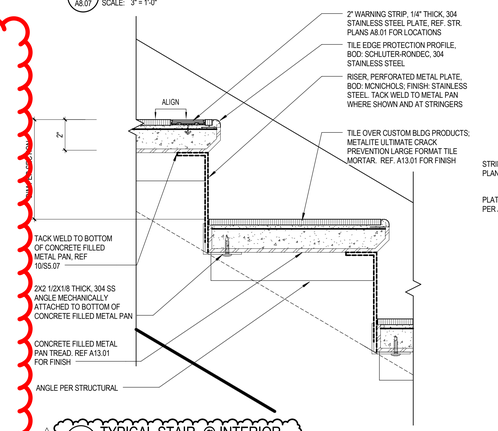
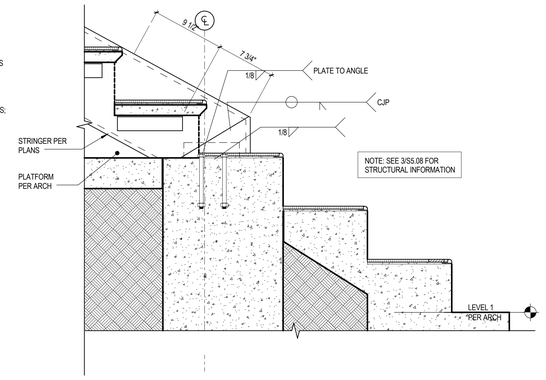


D 8 A8.07 TYPICAL STAIR @ INTERIOR
SCALE: 3" = 1'-0"



3 A8.07 STRINGER CONNECTION @ BASE
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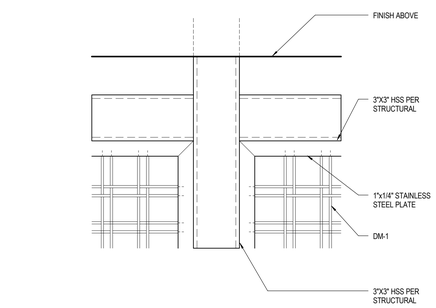
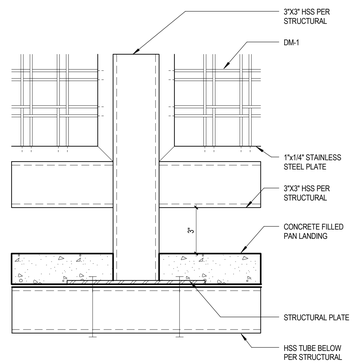
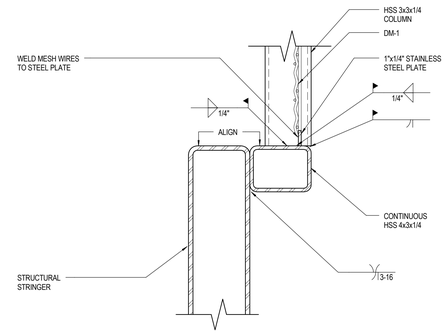


18 A8.07 SECURITY FENCE HEADER
SCALE: 3" = 1'-0"



14 A8.07 SECURITY FENCE SILL
SCALE: 3" = 1'-0"



10 A8.07 SECURITY FENCE AT STAIR COLUMN
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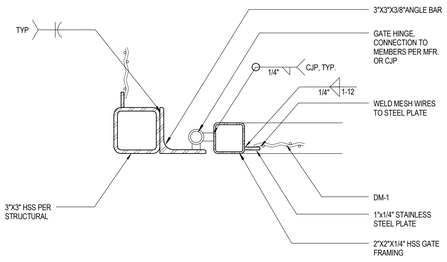
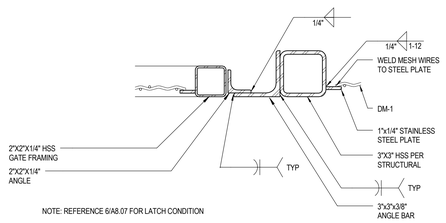
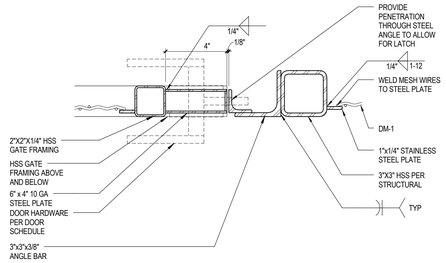


17 A8.07 SECURITY FENCE DOOR JAMB
SCALE: 3" = 1'-0"

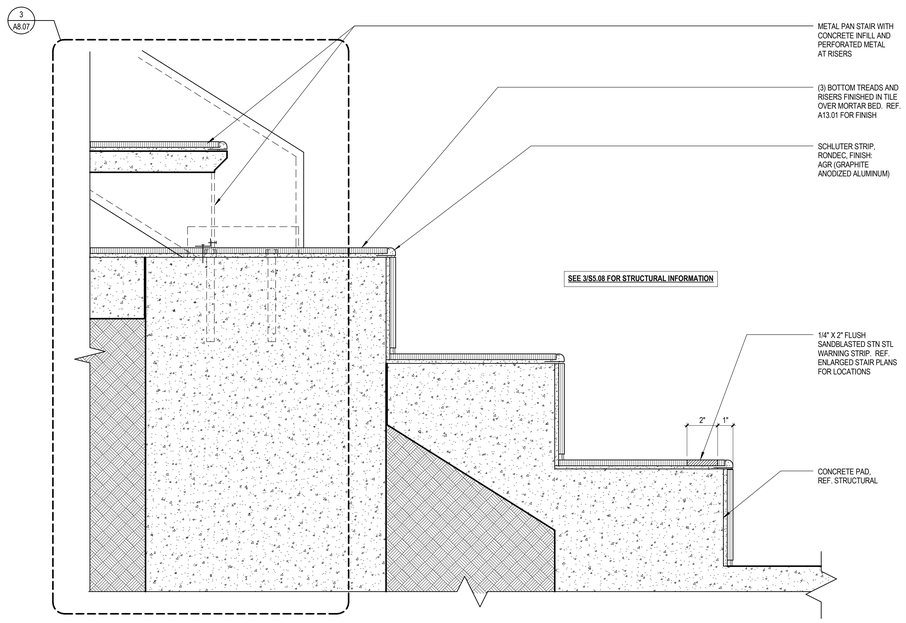


NOTE: REFERENCE 6/A8.07 FOR LATCH CONDITION

13 A8.07 SECURITY FENCE DOOR JAMB
SCALE: 3" = 1'-0"



6 A8.07 SECURITY FENCE DOOR JAMB
SCALE: 3" = 1'-0"



5 A8.07 SECTION @ STAIR BASE PLATFORM
SCALE: 3" = 1'-0"

NO.	DATE	REVISION/D	ISSUE
0	8/17/2018		

LICENSED ARCHITECT
KEVIN S. GOLDEN
C-24552
EXP: 5.31.2019
STATE OF CALIFORNIA

STAIR DETAILS
COMPTON COMMUNITY COLLEGE DISTRICT
INSTRUCTIONAL BLDG. #1
1111 E. ARTESIA BLVD, COMPTON, CA 90221

A8.07
75-15238-00

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
APPL. # 03-117612
AC. ____ FLS. ____ SS. ____
DATE ____

DLR Group
Architecture Engineering Planning Interiors

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8/17/2018 9:32:35 AM

(FOR PRE-BID USE ONLY)
PRE-BID REQUEST FOR INFORMATION
COMPTON COMMUNITY COLLEGE DISTRICT
Send to ckober@pcm3.com ONLY!

Date of Pre-Bid RFI: 10/03/2018
Project Name: Instructional Building 1
Project No: CCC-039
Bid Package No.: N/A
Bid Package Description: N/A

Bidder Name: GB Construction, Inc.

Bidder's Pre-Bid Request for Information (Include references to Drawing Sheet Numbers and/or Sections of the Specifications)

This RFI pertains to Wall Types plan(A9.01). The cold-formed metal framing of exterior walls are not clear (CP-1: 6"x18 GA / MP-1 & BR-1: 6"x16 GA). Please advise.

Additional pages attached by Bidder: X Yes ___ No
Number of additional pages attached by Bidder: 1

Response to Bidder's Pre-Bid Request for Information

The difference in gauge of the between CP-1, BR-1 and MP-1 studs is due to the masonry load, in the case of BR-1, and the total length of MP-1.

Additional pages of RFI Response attached: ___ Yes X No
Number of additional RFI Response pages attached: ____

Date of RFI Response: 10/10/18

Submitted By: GB Construction, Inc.
(Bidder Name)

(Signature of Bidder's Authorized Employee, Officer or Representative)

Submittal Date: 10/03/2018

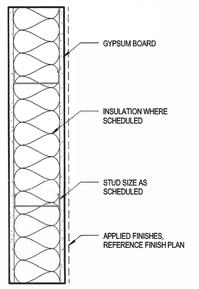
Bidder Contact Information: Kelvin Koh
(Bidder Contact Name)

310.324.3636 | 310.324.3637
(Phone and Fax)

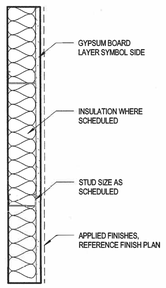
kelvinkoh@gbinc1982.net
(Email Address)

INTERIOR WALL TYPES

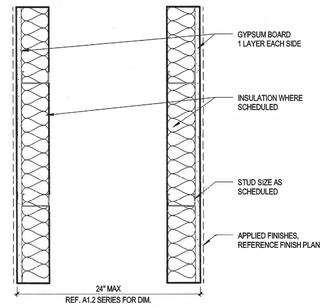
SEE WALL SECTIONS AND DETAILS FOR TOP AND BOTTOM OF WALL CONDITIONS



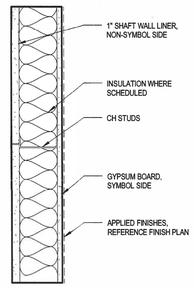
S1 REFERENCE UL# IN WALL TYPES TABLE AND SHEET CP2.00



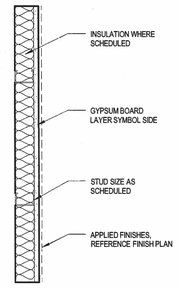
S2 REFERENCE UL# IN WALL TYPES TABLE AND SHEET CP2.00



S3 REFERENCE UL# IN WALL TYPES TABLE AND SHEET CP2.00



S4 REFERENCE UL# IN WALL TYPES TABLE AND SHEET CP2.00

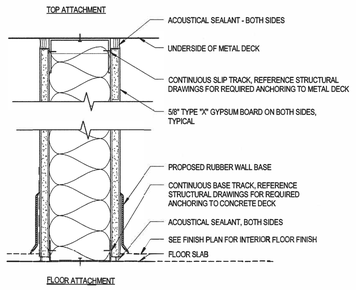


S6 REFERENCE UL# IN WALL TYPES TABLE AND SHEET CP2.00

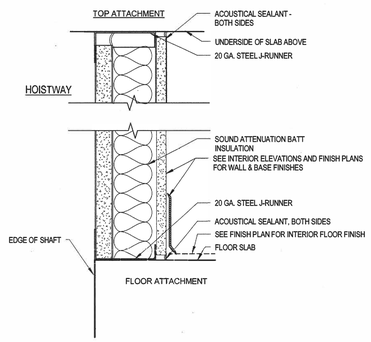
WALL TYPES - STUD

TYPE	FIRE RATING	TESTED ASSEMBLY (UL)	STUD SIZE	ACOUSTIC INSULATION	STC RATING	NOTES
S1A	"	"	3 5/8"	YES	STC 50	GYP. BOARD TO STRUCTURE ABOVE
S1B	"	"	3 5/8"	NO		GYP. BOARD TO STRUCTURE ABOVE
S1C	"	"	6"	YES	STC 50	GYP. BOARD TO STRUCTURE ABOVE
S1D	"	"	6"	NO		GYP. BOARD TO STRUCTURE ABOVE
S1E	1-HR	U465	6"	YES	STC 50	GYP. BOARD TO STRUCTURE ABOVE
S1F	1-HR	U465	6"	NO		GYP. BOARD TO STRUCTURE ABOVE
S1G	"	"	6"	YES	STC 50	ABUSE RESISTANT GYP BD. BOTH SIDES
S1H	"	"	3 5/8"	YES	STC 50	NOTE 1
S2A	"	"	3 5/8"	YES	STC 50	GYP. BOARD TO STRUCTURE ABOVE
S2B	"	"	3 5/8"	NO		GYP. BOARD TO STRUCTURE ABOVE
S2C	"	"	6"	YES	STC 50	GYP. BOARD TO STRUCTURE ABOVE
S2D	"	"	6"	NO		GYP. BOARD TO STRUCTURE ABOVE
S3A	"	"	6"	YES	STC 50	GYP. BOARD TO STRUCTURE ABOVE
S3B	"	"	6"	NO		GYP. BOARD TO STRUCTURE ABOVE
S4A	1-HR	U469	6" CH	YES	STC 50	"
S4B	1-HR	U469	6" CH	NO		"
S4C	1-HR	U469	8" CH	NO		NOTE 1
S4D	1-HR	U415	6" CH	NO		HORIZONTAL SHAFT WALL
S5	NOT USED	"	"	"		"
S6A	"	"	2 1/2"	NO		GYP. BOARD TO 6" ABOVE CEILING
S6B	"	"	2 1/2"	NO		PARTIAL HEIGHT PARTITION @ 3'-0" AFF

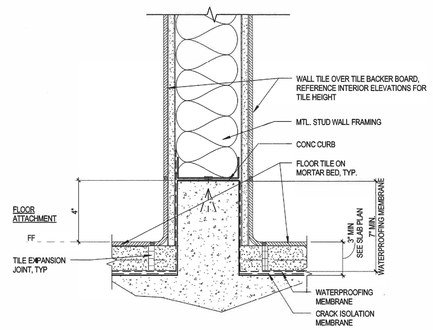
NOTES:
1. ABUSE RESISTANT GYP BD. SYMBOL SIDE ONLY, TO 8'-0" AFF AND 24" BEYOND BENCH @ A CONTINUOUS WALL. STOP AT PERPENDICULAR WALL WHERE OCCURS



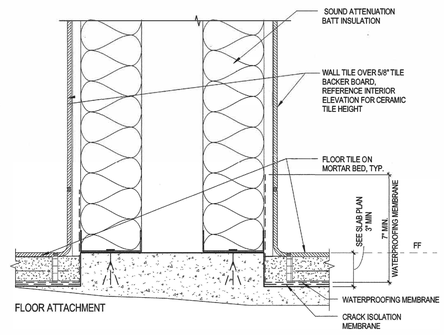
19 A9.01 STUD WALL ATTACHMENTS, TOP & BOTTOM
SCALE: 3" = 1'-0"



15 A9.01 SHAFT WALL ATTACHMENT, TOP & BOTTOM
SCALE: 3" = 1'-0"



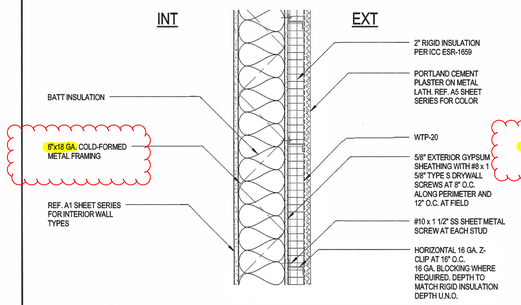
11 A9.01 TILE, DOUBLE SIDED
SCALE 3" = 1'-0"



7 A9.01 TILE, PLUMBING CHASE
SCALE: 3" = 1'-0"

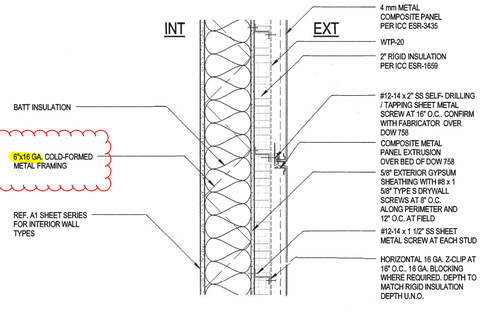
EXTERIOR WALL TYPES

SEE WALL SECTIONS AND DETAILS FOR TOP AND BOTTOM OF WALL CONDITIONS



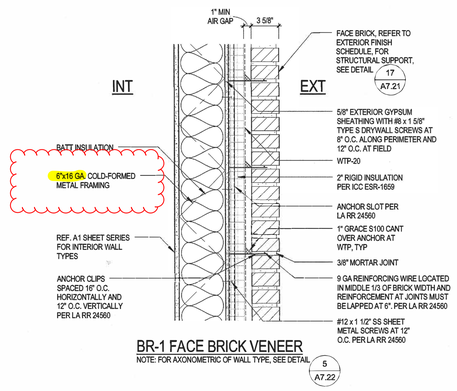
CP-1 PORTLAND CEMENT PLASTER

NOTE:
1. CP-2 SIMILAR



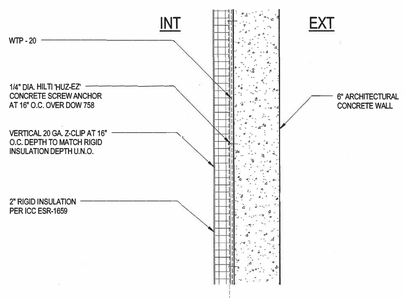
MP-1 METAL COMPOSITE PANEL

NOTE:
1. MP-3, MP-4 AND MP-5 SIMILAR
2. WHERE BLOCKING IS REQUIRED, REFERENCE DETAIL 15/A6.01



BR-1 FACE BRICK VENEER

NOTE: FOR AXONOMETRIC OF WALL TYPE, SEE DETAIL 5/A7.22



AC-1 ARCHITECTURAL CONCRETE

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP# 117612
AC ✓ FLS SS HN
Date 05-10-2017

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7/28/2017 1:14:26 PM

LICENSED ARCHITECT
JAMES K. KIM
No. C-34552
EXP: 5.31.2019
STATE OF CALIFORNIA

DSA SUBMITTAL

1111 E. ARTESIA BLVD.
COMPTON, CA 90221

WALL TYPES, EXTERIOR & INTERIOR
COMPTON COMMUNITY COLLEGE DISTRICT
INSTRUCTIONAL BLDG. #1

A9.01
75-15238-00
05/19/17
Revisions

DLR Group
Architecture Engineering Planning Interiors

(FOR PRE-BID USE ONLY)

PRE-BID REQUEST FOR INFORMATION
COMPTON COMMUNITY COLLEGE DISTRICT
Send to ckober@pcm3.com ONLY!

Date of Pre-Bid RFI: 10/03/2018
Project Name: Instructional Building 1
Project No: CCC-039
Bid Package No.: N/A
Bid Package Description: N/A

Bidder Name: GB Construction, Inc.

Bidder's Pre-Bid Request for Information (Include references to Drawing Sheet Numbers and/or Sections of the Specifications)

This RFI pertains to Stair Detail plans (A8.06, A8.07). #3/A8.06 shows LED at handrail, but #8/A8.06 has no LED. Please confirm.

Additional pages attached by Bidder: X Yes ___ No
Number of additional pages attached by Bidder: 2

Response to Bidder's Pre-Bid Request for Information

Only the inner handrail, atop the stringer, is illuminated. The handrail attached to the wall is non-illuminated.

Additional pages of RFI Response attached: ___ Yes X No
Number of additional RFI Response pages attached: 10/10/18

Date of RFI Response:_____

Submitted By: GB Construction, Inc.
(Bidder Name)

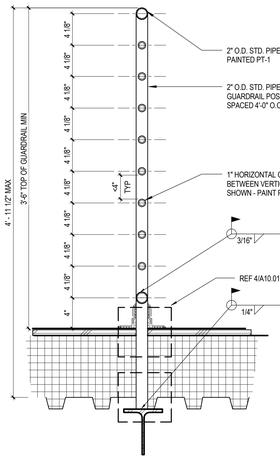
(Signature of Bidder's Authorized Employee, Officer or Representative)

Submittal Date: 10/03/2018

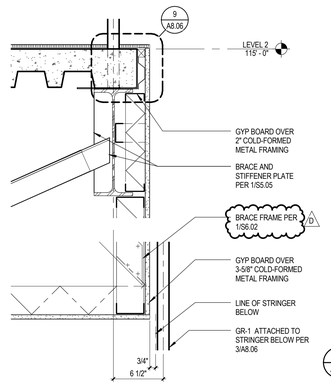
Bidder Contact Information: Kelvin Koh
(Bidder Contact Name)

310.324.3636 | 310.324.3637
(Phone and Fax)

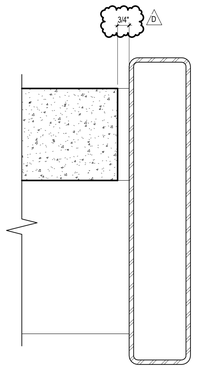
kelvinkoh@gbinc1982.net
(Email Address)



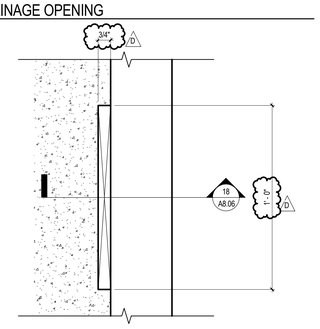
20 A8.06 GUARDRAIL @ ROOF
SCALE: 1 1/2" = 1'-0"



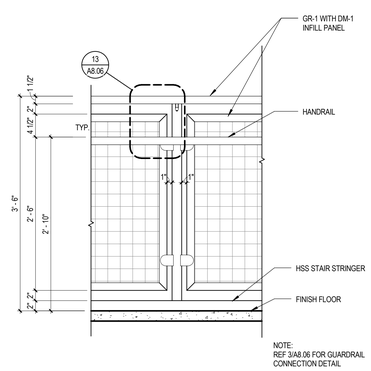
19 A8.06 STR 01 LEVEL 2 SOFFIT
SCALE: 1 1/2" = 1'-0"



18 A8.06 SECTION @ DRAINAGE OPENING
SCALE: 3" = 1'-0"

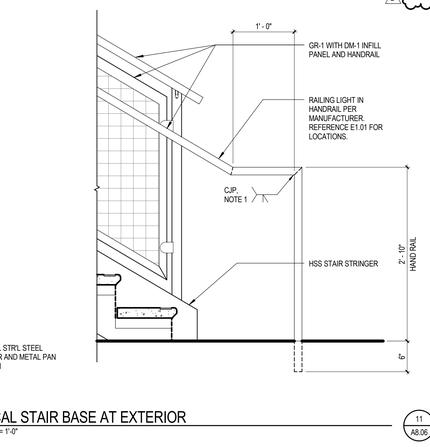


17 A8.06 PLAN @ DRAINAGE OPENING
SCALE: 3" = 1'-0"



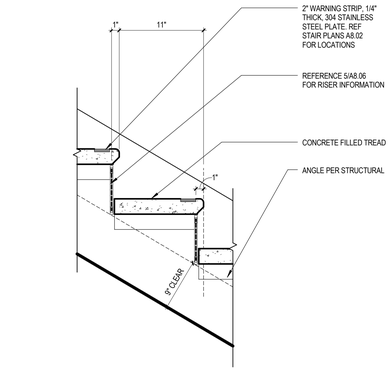
NOTE:
REF 3/A8.06 FOR GUARDRAIL CONNECTION DETAIL

16 A8.06 TYPICAL GUARDRAIL ELEVATION
SCALE: 1" = 1'-0"

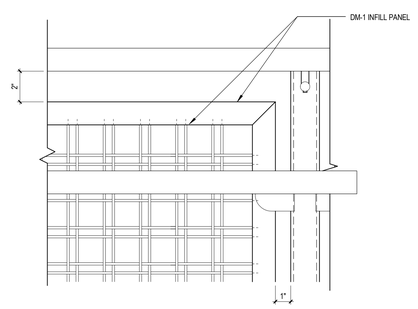


NOTE:
PAINT ALL STRL STEEL STRINGER AND METAL PAN STRS PT-1

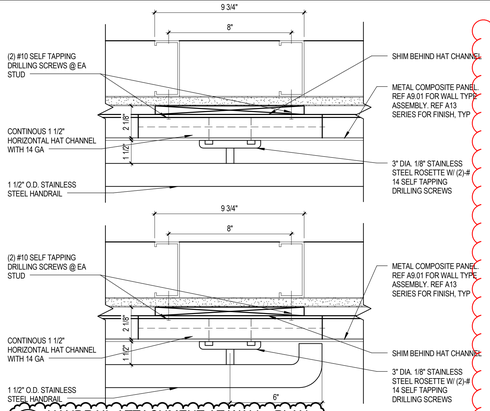
15 A8.06 TYPICAL STAIR BASE AT EXTERIOR
SCALE: 1" = 1'-0"



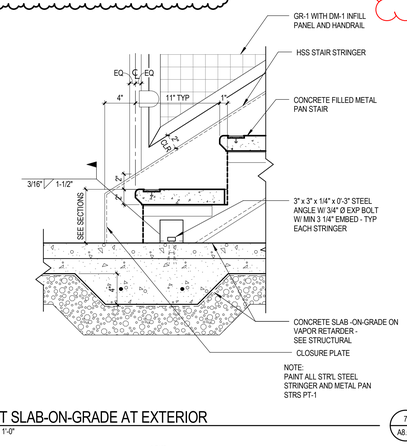
14 A8.06 TYPICAL STAIR @ EXTERIOR
SCALE: 1 1/2" = 1'-0"



13 A8.06 TYPICAL GUARDRAIL SPACER POST CONNECTION
SCALE: 3" = 1'-0"

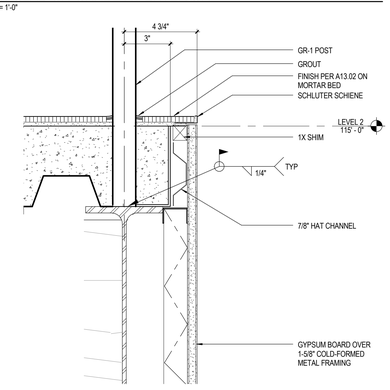


12 A8.06 HANDRAIL ATTACHMENT AT WALL - PLAN
SCALE: 3" = 1'-0"

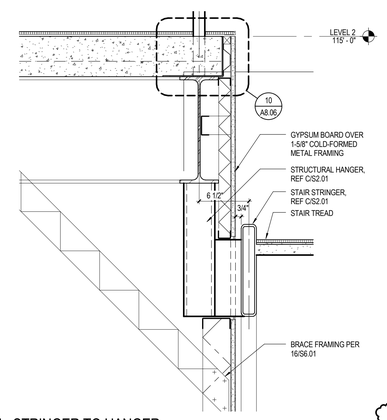


NOTE:
PAINT ALL STRL STEEL STRINGER AND METAL PAN STRS PT-1

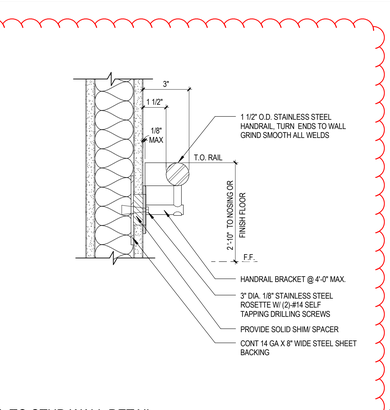
11 A8.06 STAIR AT SLAB-ON-GRADE AT EXTERIOR
SCALE: 1 1/2" = 1'-0"



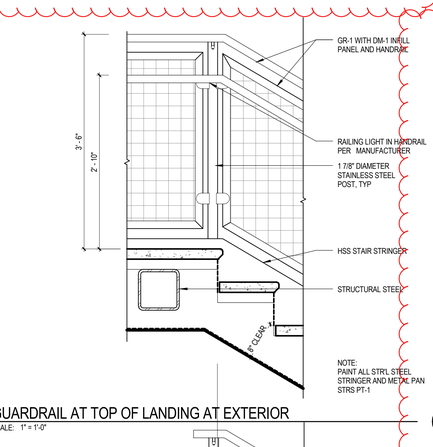
10 A8.06 SECTION - GUARDRAIL @ E.O.S.
SCALE: 3" = 1'-0"



9 A8.06 SECTION - STRINGER TO HANGER
SCALE: 1 1/2" = 1'-0"

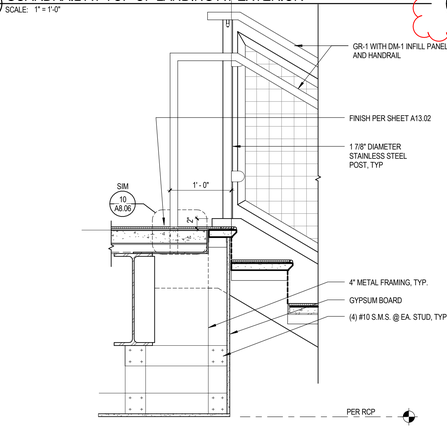


8 A8.06 HANDRAIL TO STUD WALL DETAIL
SCALE: 3" = 1'-0"

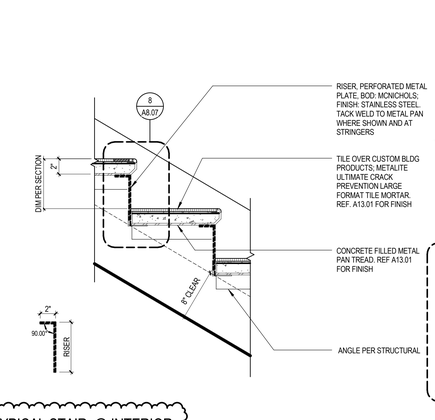


NOTE:
PAINT ALL STRL STEEL STRINGER AND METAL PAN STRS PT-1

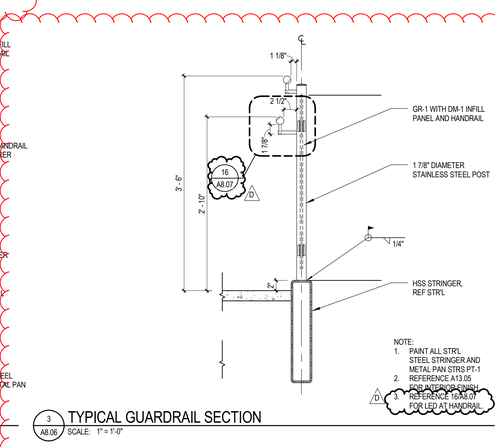
7 A8.06 GUARDRAIL AT TOP OF LANDING AT EXTERIOR
SCALE: 1" = 1'-0"



6 A8.06 GUARDRAIL @ TOP OF STAIR (INT)
SCALE: 1" = 1'-0"

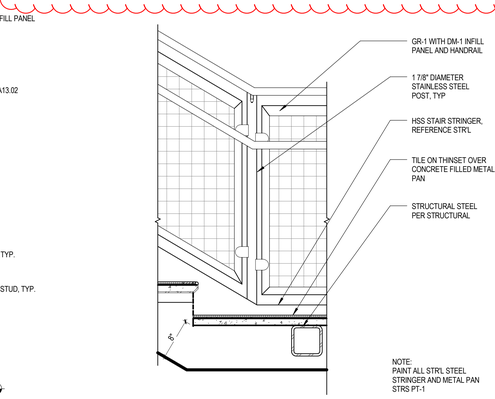


5 A8.06 TYPICAL STAIR @ INTERIOR
SCALE: 1 1/2" = 1'-0"



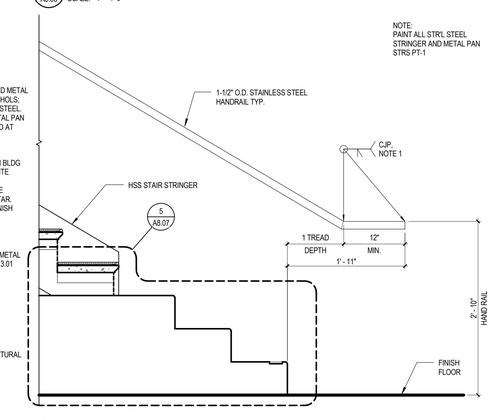
NOTE:
1. PAINT ALL STRL STEEL STRINGER AND METAL PAN STRS PT-1
2. REFERENCE A13.05 FOR INTERIOR FINISH
3. REFERENCE 16/A8.07 FOR LED AT HANDRAIL

3 A8.06 TYPICAL GUARDRAIL SECTION
SCALE: 1" = 1'-0"



NOTE:
PAINT ALL STRL STEEL STRINGER AND METAL PAN STRS PT-1

2 A8.06 GUARDRAIL AT BOTTOM OF LANDING
SCALE: 1" = 1'-0"



NOTE:
PAINT ALL STRL STEEL STRINGER AND METAL PAN STRS PT-1

1 A8.06 BOTTOM OF STAIR
SCALE: 1" = 1'-0"

NO.	DATE	REVISION/D
0	8/17/2018	ISSUE

LICENSED ARCHITECT
JAMES S. GOLDEN
C - 24552
EXP: 5-31-2019
STATE OF CALIFORNIA

STAIR DETAILS
COMPTON COMMUNITY COLLEGE DISTRICT
INSTRUCTIONAL BLDG. #1
1111 E. ARTESIA BLVD, COMPTON, CA 90221

A8.06
75-15238-00

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OFFICE OF REGULATION SERVICES
APPL. # 03-117612
AC ____ FLS ____ SS ____
DATE ____

DLR Group
Architecture Engineering Planning Interiors

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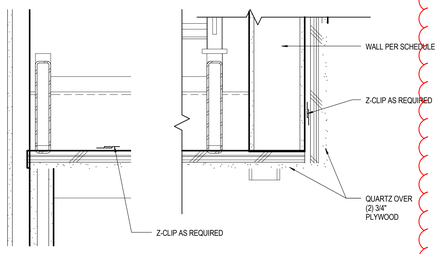
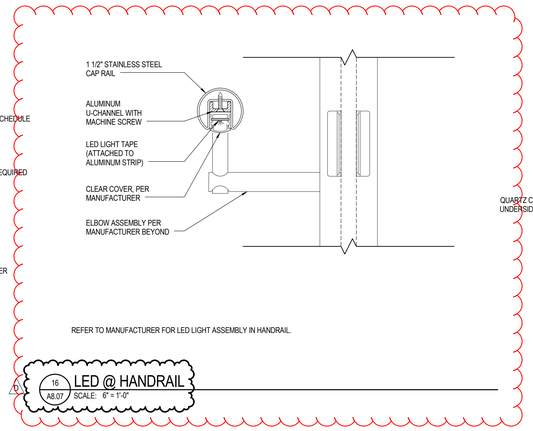
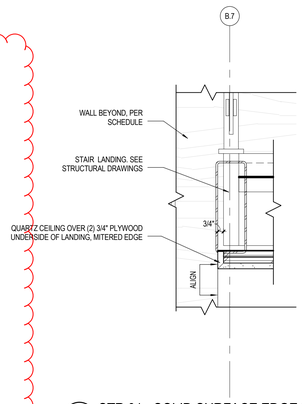


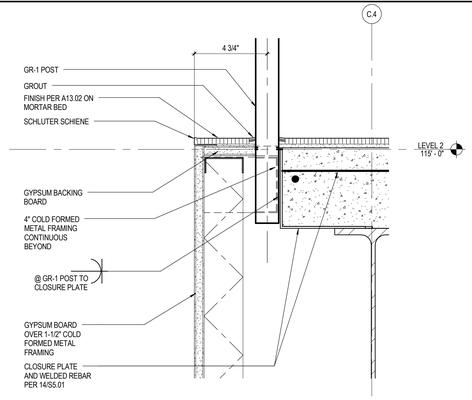
1 A8.07 STR-01 SOLID SURFACE SOFFIT
SCALE: 1 1/2" = 1'-0"



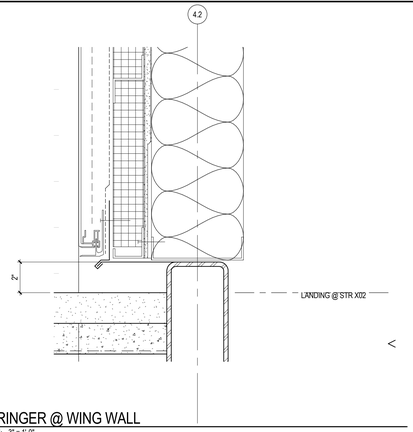
D 16 A8.07 LED @ HANDRAIL
SCALE: 6" = 1'-0"



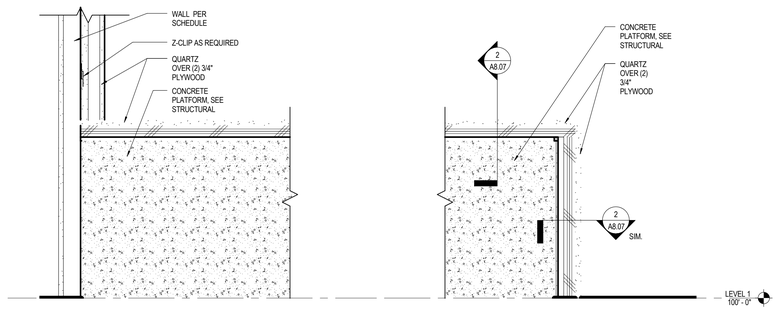
12 A8.07 STR 01 - SOLID SURFACE EDGE DETAIL
SCALE: 1 1/2" = 1'-0"



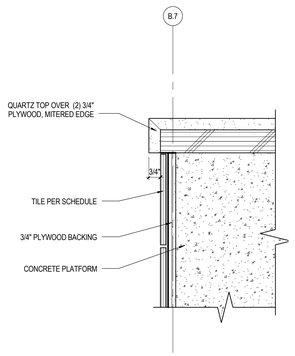
7 A8.07 GUARDRAIL @ E.O.S. NORTH
SCALE: 3" = 1'-0"



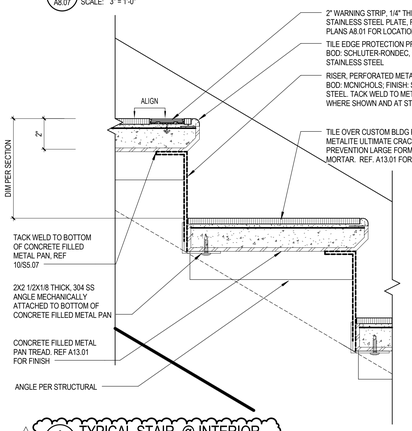
4 A8.07 STRINGER @ WING WALL
SCALE: 3" = 1'-0"



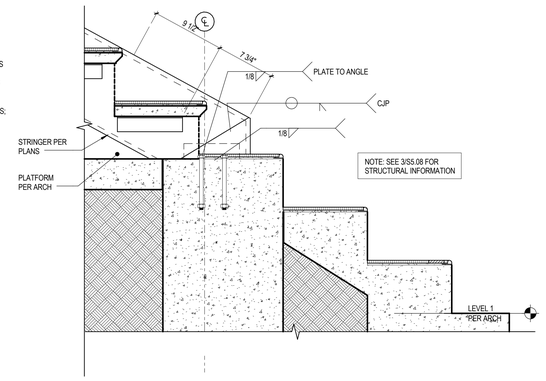
19 A8.07 STR-01 SOLID SURFACE PLATFORM
SCALE: 1 1/2" = 1'-0"



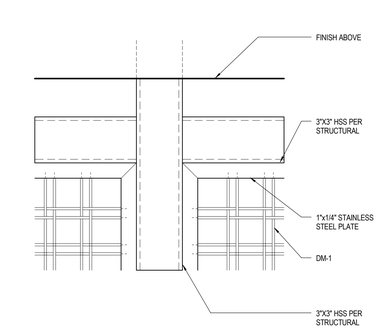
2 A8.07 STR-01 SOLID SURFACE @ PLATFORM OVERHANG
SCALE: 3" = 1'-0"



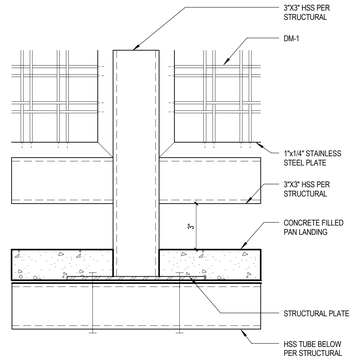
D 8 A8.07 TYPICAL STAIR @ INTERIOR
SCALE: 3" = 1'-0"



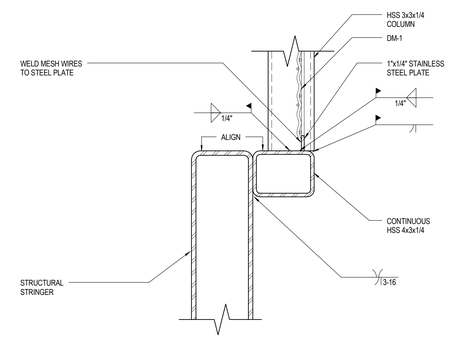
3 A8.07 STRINGER CONNECTION @ BASE
SCALE: 1 1/2" = 1'-0"



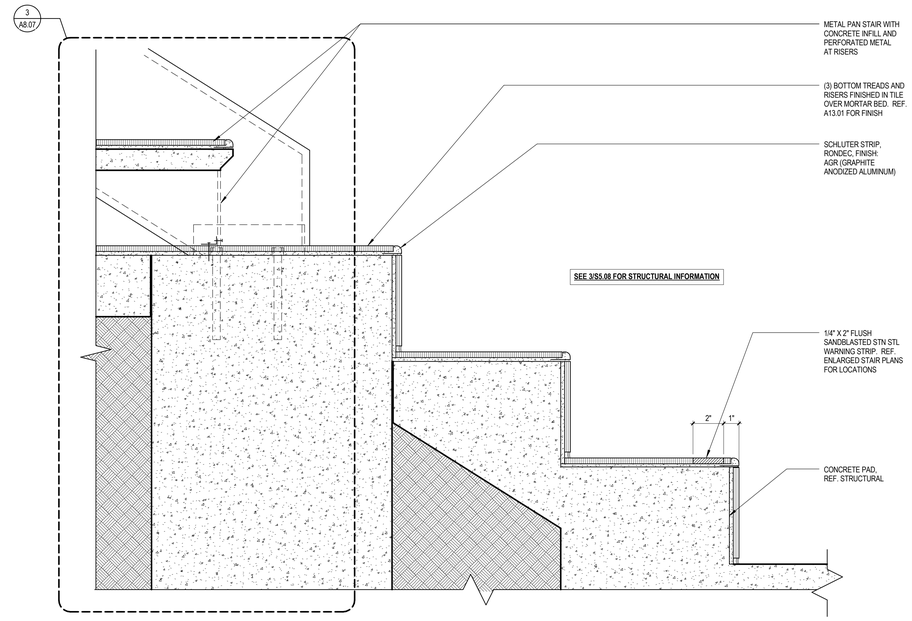
18 A8.07 SECURITY FENCE HEADER
SCALE: 3" = 1'-0"



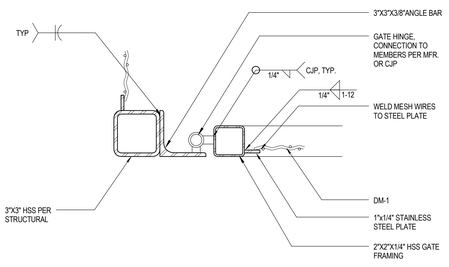
14 A8.07 SECURITY FENCE SILL
SCALE: 3" = 1'-0"



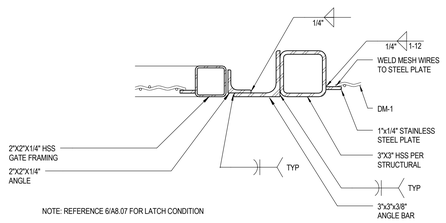
10 A8.07 SECURITY FENCE AT STAIR COLUMN
SCALE: 3" = 1'-0"



5 A8.07 SECTION @ STAIR BASE PLATFORM
SCALE: 3" = 1'-0"

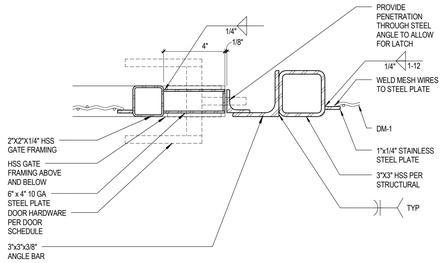


17 A8.07 SECURITY FENCE DOOR JAMB
SCALE: 3" = 1'-0"



NOTE: REFERENCE 6/A8.07 FOR LATCH CONDITION

13 A8.07 SECURITY FENCE DOOR JAMB
SCALE: 3" = 1'-0"



6 A8.07 SECURITY FENCE DOOR JAMB
SCALE: 3" = 1'-0"

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NO.	DATE	ISSUE
0	8/17/2018	REVISION D

LICENSED ARCHITECT
JEFFREY S. GOLDEN
C-24552
EXP: 5.31.2019
STATE OF CALIFORNIA

STAIR DETAILS
COMPTON COMMUNITY COLLEGE DISTRICT
INSTRUCTIONAL BLDG. #1
1111 E. ARTESIA BLVD, COMPTON, CA 90221

A8.07
75-15238-00

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
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DLR Group
Architecture Engineering Planning Interiors

(FOR PRE-BID USE ONLY)

PRE-BID REQUEST FOR INFORMATION
COMPTON COMMUNITY COLLEGE DISTRICT
Send to ckober@pcm3.com ONLY!

Date of Pre-Bid RFI: 10/03/2018
Project Name: Instructional Building 1
Project No: CCC-039
Bid Package No.: N/A
Bid Package Description: N/A

Bidder Name: GB Construction, Inc.

Bidder's Pre-Bid Request for Information (Include references to Drawing Sheet Numbers and/or Sections of the Specifications)

Per Architectural drawing A8.03 and A10.01, fireproofing material is being called out.
Please provide the specification for the fireproofing material.

Additional pages attached by Bidder: X Yes ___ No
Number of additional pages attached by Bidder: 2

Response to Bidder's Pre-Bid Request for Information

Fireproofing of the structural steel is not required per "Fire Resistive Construction - Type II-B" of the Code Analysis on sheet CP1.01. Contractor to ignore fireproofing illustrated around structural steel and/or metal decking indicated in the document details.

Additional pages of RFI Response attached: ___ Yes X No
Number of additional RFI Response pages attached: ____

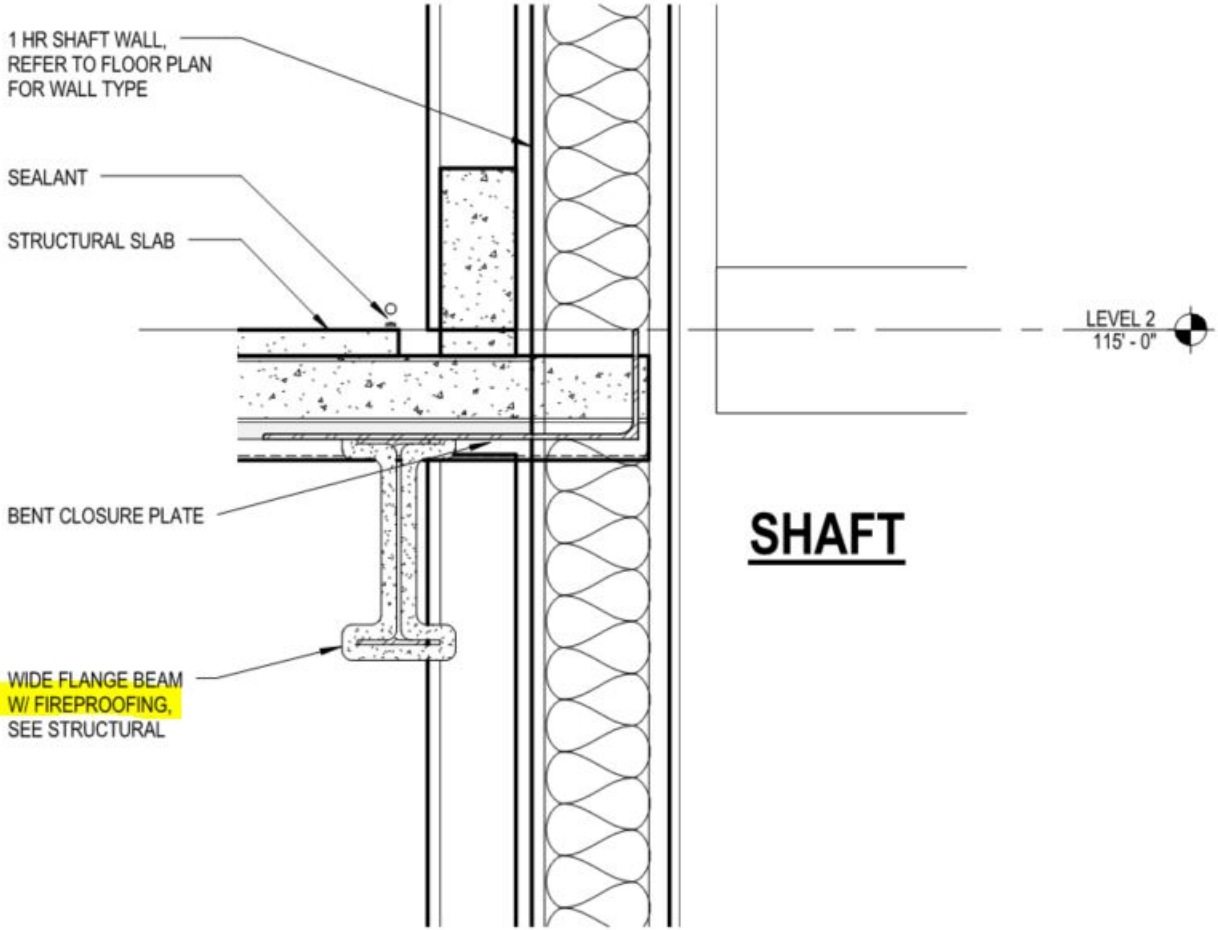
Date of RFI Response: 10/10/18

Submitted By: GB Construction, Inc.
(Bidder Name)

(Signature of Bidder's Authorized Employee, Officer or Representative)

Submittal Date: 10/03/2018

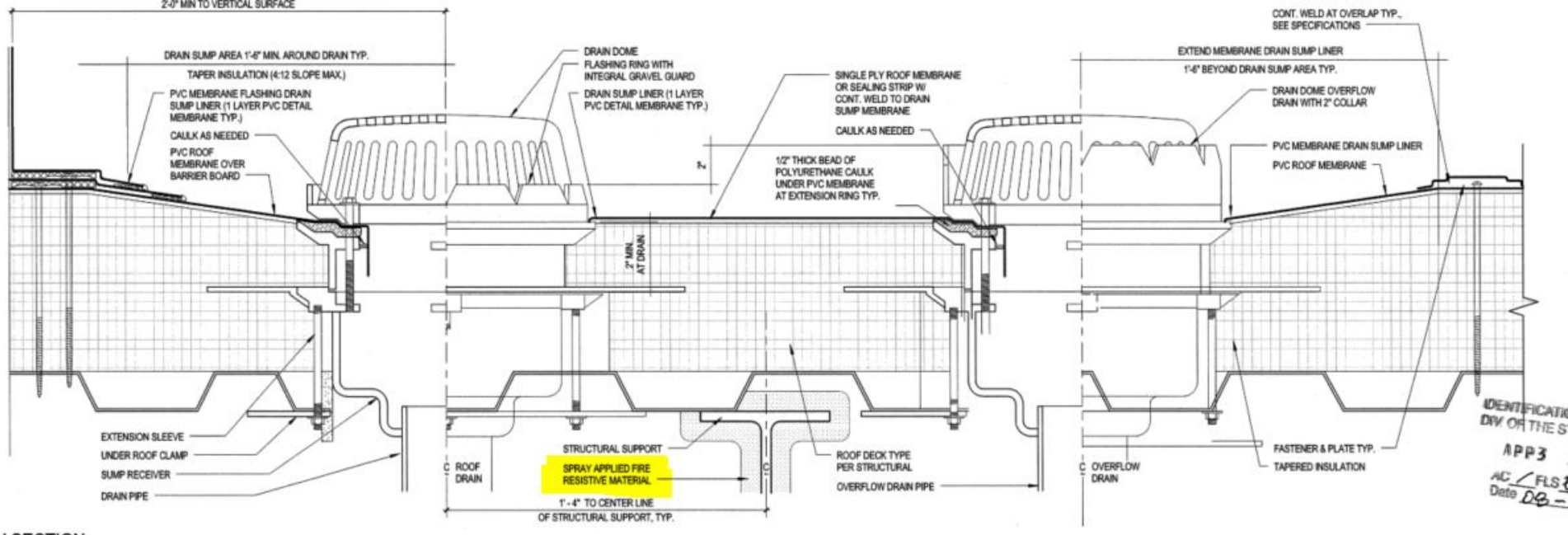
Bidder Contact Information: Kelvin Koh
(Bidder Contact Name) 310.324.3636 | 310.324.3637
(Phone and Fax) kelvinkoh@gbinc1982.net
(Email Address)



10
A8.03

1 HR SHAFT AT EDGE OF SLAB

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



9 A10.01 **ROOF DRAIN SECTION**

SCALE: 3" = 1'-0"

(FOR PRE-BID USE ONLY)

PRE-BID REQUEST FOR INFORMATION
COMPTON COMMUNITY COLLEGE DISTRICT
Send to ckober@pcm3.com ONLY!

Date of Pre-Bid RFI: 9/27/18
Project Name: Instructional Building 1
Project No: CCC-039
Bid Package No.: N/A
Bid Package Description: N/A

Bidder Name:
Digital Networks Group

Bidder's Pre-Bid Request for Information (Include references to Drawing Sheet Numbers and/or Sections of the Specifications)

1. It is noted in the 274116 - AV Systems & Eqp spec Sect. 3.A that there is an Exhibit B: Major Eqp & Approved Manufacturers List. Can you provide this AV Eqp list?

Additional pages attached by Bidder: ___ Yes ___ No
Number of additional pages attached by Bidder: _____

Response to Bidder's Pre-Bid Request for Information

Refer to attached PDFs and Excel file entitled: 180315-Exhibit B - Client Equipment List Bid Response.XLSX

Additional pages of RFI Response attached: X Yes ___ No
Number of additional RFI Response pages attached: 5 + Excel File

Date of RFI Response: 10/10/18

Submitted By:
Digital Networks Group
(Bidder Name)

(Signature of Bidder's Authorized Employee, Officer or Representative)

Submittal Date: 9/27/18

Bidder Contact Information:
Chris Kurtz
(Bidder Contact Name)
949-428-6333
(Phone and Fax)
biddesk@digitalnetworksgroup.com
(Email Address)

Exhibit B - MAJOR EQUIPMENT AND APPROVED MANUFACTURERS LIST **Version/Date:** **3/15/2018**

PlanNet *Building technology to make your business work*

ID	Qty	Description	Brand	Model #	Price	Extension	Sub-System Total
Classroom Type 2, (qty. 4) (103, 104, 202, 203)							
		Displays/Screens					
PROJ2-1	4	**Ceiling mounted, 5500 lumen, 19200x1200 (16:10)**	Epson	**Powerlite 2265U**		$ -	
MNT1-1	4	Drop Ceiling Projector mount, universal, white	Chief	SYSAUW		$ -	
							$ -
		Video Systems					
SWTX1-1	4	Three Input Switcher with Integrated DTP Transmitter and Audio Embedding	Extron	60-1551-12		$ -	
DTPRX1-1	4	DTP HDMI 4K 230 Rx,	Extron	60-1271-13		$ -	
							$ -
		Audio					
S	16	Full-Range Flat Field® Speakers with Low Profile Enclosure and 70/100 V Transformer (2 pair per room) order as pair	Extron	42-141-03		$ -	
AMP1-1	9	Stereo Amplifier - 15 Watts Per Channel (MPA 152 Plus)	Extron	60-844-03		$ -	
							$ -
		Other/Miscellaneous					
PALS1-1	1	Portible LISTEN RF system 72 MHz, 1 transmitter, 7 receiver kit	Listen Technologies	LS-06-072		$ -	
	1	Misc. Materials, cables, connectors, hardware	AVC	TBD		$ -	
							$ -
					$ -	$ -	
					$ -	$ -	
							$ -
		TOTALS					
						Equipment Total:	$ -
						Taxes:	$ -
						Installation:	$ -
						Programming:	$ -
						Testing & Commissioning:	
						Sub-Contractor Labor:	
						Room Total	$ -

Exhibit B - MAJOR EQUIPMENT AND APPROVED MANUFACTURERS LIST **Version/Date:** **3/15/2018**

PlanNet *Building technology to make your business work*

ID	Qty	Description	Brand	Model #	Price	Extension	Sub-System Total
Classroom Type 1 (qty. 9) - [101, 102,105,106, 201, 204, 205, 206, 260]							
		Displays/Screens					
PROJ1-1	9	Wall mounted short throw projector, 3300 lumens, 1280x800 (16:10), short throw wall mount	Epson	**BrightLink 695WI**		$ -	
							$ -
		Video Systems					
SWTX1-1	9	Three Input Switcher with Integrated DTP Transmitter and Audio Embedding	Extron	60-1551-12		$ -	
DTPRX1-1	9	DTP HDMI 4K 230 Rx,	Extron	60-1271-13		$ -	
							$ -
		Audio					
S	36	Full-Range Flat Field® Speakers with Low Profile Enclosure and 70/100 V Transformer (2 pair per room) order as pair	Extron	42-141-03		$ -	
AMP1-1	9	Stereo Amplifier - 15 Watts Per Channel (MPA 152 Plus)	Extron	60-844-03		$ -	
							$ -
		Other/Miscellaneous					
PALS1-1	1	Portible LISTEN RF system 72 MHz, 1 transmitter, 7 receiver kit	Listen Technologies	LS-06-072		$ -	
	9	Miscellaneous Cables, connectors and materials	TBD	TBD		$ -	
							$ -
					$ -	$ -	
					$ -	$ -	
							$ -
		TOTALS					
						Equipment Total:	**$ -**
						Taxes:	**$ -**
						Installation:	**$ -**
						Programming:	
						Testing & Commissioning:	
						Sub-Contractor Labor:	
						Room Total	**$ -**

Exhibit B - MAJOR EQUIPMENT AND APPROVED MANUFACTURERS LIST **Version/Date:** **3/15/2018**

PlanNet *Building technology to make your business work*

OFE/ OFCI?	Qty	Description	Brand	Model #	Price	Extension	Sub-System Total
Conference Room (qty. 1) (161)							
		Displays/Screens					
DISP1-1	1	55" LED display	Samsung	UN55MU8000		$ -	
MNT2-1	1	Tilting large display wall mount	Chief	LMT1U		$ -	
						$ -	
						$ -	
							$ -
		Video Systems					
SWTX1-1	1	Three Input Switcher with Integrated DTP Transmitter and Audio Embedding	Extron	60-1551-12		$ -	
DTPRX1-1	1	DTP HDMI 4K 230 Rx,	Extron	60-1271-13		$ -	
							$ -
		Audio					
S	2	Full-Range Flat Field® Speakers with Low Profile Enclosure and 70/100 V Transformer (1 pair per room) order as pair	Extron	42-141-03		$ -	
AMP1-1	1	Stereo Amplifier - 15 Watts Per Channel (MPA 152 Plus)	Extron	60-844-03		$ -	
							$ -
		Other/Miscellaneous					
	1	Miscellaneous Cables, connectors and materials	TBD	TBD		$ -	
							$ -
					$ -	$ -	
					$ -	$ -	
							$ -
		TOTALS					
						Equipment Total:	$ -
						Taxes:	$ -
						Installation:	$ -
						Programming:	
						Testing & Commissioning:	
						Sub-Contractor Labor:	
						Room Total	$ -

Exhibit B - MAJOR EQUIPMENT AND APPROVED MANUFACTURERS LIST **Version/Date:** **3/15/2018**

PlanNet *Building technology to make your business work*

OFE/ OFCI?	Qty	Description	Brand	Model #	Price	Extension	Sub-System Total
Paging System (qty.) - [room #s, separated by commas]							
		Audio					
S1-1	19	PoE+ Indoor 1' x 2' Suspended Ceiling Mount IP Loudspeaker (9 - 1st floor, 10 - 2nd floor)	AtlasIED	I128SYS+		$ -	
S2-1	6	PoE+ Indoor Wall / Ceiling Mount IP Loudspeaker System (3 - 1st floor, 3 - 2nd floor)	AtlasIED	I8S+		$ -	
							$ -
		Other/Miscellaneous					
	1	Miscellaneous Cables, connectors and materials	TBD	TBD		$ -	
							$ -
					$ -	$ -	
					$ -	$ -	
							$ -
		TOTALS					
						Equipment Total:	**$ -**
						Taxes:	**$ -**
						Installation:	**$ -**
						Programming:	
						Testing & Commissioning:	
						Sub-Contractor Labor:	
						Room Total	**$ -**

PlanNet

Building technology to make your business work

CLIENT COMPANY NAME

Audio Visual Systems

Exhibit B - MAJOR EQUIPMENT AND APPROVED MANUFACTURERS LIST AV SYSTEMS PRICING SUMMARY SHEET

3/15/2018

System	Room Type Quanitity	Equipment & Materials Cost	Taxes	Installation Cost	Programming Cost	Testing & Commssioning Cost	Sub-Contract Labor Cost	Room Total	Room Type Total
Classroom Type 1 (qty. 9) - [101, 102,105,106, 201, 204, 205, 206, 260]	1	$ -	$ -	$ -	$ -	$ -	$ -	$0.00	$0.00
Classroom Type 2, (qty. 4) (103, 104, 202, 203)	1	$ -	$ -	$ -	$ -	$ -	$ -	$0.00	$0.00
Conference Room (qty. 1) (161)	1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$0.00
Paging System (qty.) - [room #s, separated by commas]	1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$0.00

TOTAL PROJECT COST: **$0.00**

(FOR PRE-BID USE ONLY)

PRE-BID REQUEST FOR INFORMATION
COMPTON COMMUNITY COLLEGE DISTRICT
Send to ckober@pcm3.com ONLY!

Date of Pre-Bid RFI: October 4, 2018
Project Name: Instructional Building 1
Project No: CCC-039
Bid Package No.: N/A
Bid Package Description: N/A

Bidder Name:
Access Pacific, Inc

Bidder's Pre-Bid Request for Information (Include references to Drawing Sheet Numbers and/or Sections of the Specifications)

The drawing index for Compton College lists drawing # A10.03 (Details at existing building)- but that drawing is not included in the plans provided. It should be page 74, but page 74 is drawing a10.05.

Please advise

Additional pages attached by Bidder: ___ Yes ✓ No
Number of additional pages attached by Bidder: _____

Response to Bidder's Pre-Bid Request for Information

Sheet A10.03 has been deleted. The scope it illustrated has been removed from the project.

Additional pages of RFI Response attached: ___ Yes X No
Number of additional RFI Response pages attached: _____

Date of RFI Response: 10/10/18

Submitted By:
Access Pacific, Inc.
(Bidder Name)
Silvia Hernandez
(Signature of Bidder's Authorized Employee, Officer or Representative)

Submittal Date: October 4, 2018

Bidder Contact Information:
(Bidder Contact Name)
(Phone and Fax)
(Email Address)

(FOR PRE-BID USE ONLY)

PRE-BID REQUEST FOR INFORMATION
COMPTON COMMUNITY COLLEGE DISTRICT
Send to ckober@pcm3.com ONLY!

Date of Pre-Bid RFI: September 26, 2018
Project Name: Instructional Building 1
Project No: CCC-039
Bid Package No.: N/A
Bid Package Description: N/A

Bidder Name:
Access Pacific, Inc

Bidder's Pre-Bid Request for Information (Include references to Drawing Sheet Numbers and/or Sections of the Specifications)

1. • Specs 10 14 16 call for building exterior letters to be ¼" stainless steel. Sheet A5.02 specifies 18" aluminum letters 1" thick for the building exterior letters. Are the letters to be ¼" s/s or 1" aluminum? If the letters are 1" aluminum, are the letters to be fabricated (hollow) or solid aluminum?
2. • Sign Plan A. 14.02 lacks sizes for signs. Sign sizes for Room IDs, Exit/Exit Routes, Exit Down are not called out. What are the sizes for the Room ID signs and Exit signs?

Please advise.

Additional pages attached by Bidder: ___ Yes ✓ No
Number of additional pages attached by Bidder: _____

Response to Bidder's Pre-Bid Request for Information

1. The reference to 1/4" stainless steel refers to the thickness of the stainless plate. The finish should be 304 stainless steel sheet #4. The reference to 1" is the front to back side dimension of the letters. The letters are to be fabricated hollow. Contractor shall price the letters as stainless, as previously noted.

2. Refer to sheet G1.02 for sizes of the requested signs.

Additional pages of RFI Response attached: ___ Yes _X_ No
Number of additional RFI Response pages attached: _____

Date of RFI Response: 10/10/18

Submitted By:
Access Pacific, Inc
(Bidder Name)
Silvia Hernandez
(Signature of Bidder's Authorized Employee, Officer or Representative)

Submittal Date: September 26, 2018

Bidder Contact Information:
(Bidder Contact Name)
(Phone and Fax)
(Email Address)

SECTION 230923 - DIRECT DIGITAL CONTROL SYSTEM FOR HVAC (Addendum #1 text is underlined)

PART 1: GENERAL

1.1 WORK INCLUDED

A. Furnish a campus standard Alerton Compass System, including a Microsoft Windows 8 or Windows 10 compatible operator's workstation. The operator's workstation, all building controllers, application controllers, and all input/output devices shall communicate using the protocols and network standards as defined by ANSI/ASHRAE Standard 135–2012, BACnet. In other words, all workstations and controllers, including unitary controllers, shall be native BACnet MSTP or BACnet IP devices. No gateways shall be used for communication to controllers installed under this section. Gateways may be used for communication to existing systems or to systems installed under other sections.

A. Provide all necessary BACnet-compliant hardware and software to meet the system's functional specifications. Provide Protocol Implementation Conformance Statement (PICS) for Windows-based control software and every controller in system, including unitary controllers.

B. Prepare individual hardware layouts, interconnection drawings, and software configuration from project design data.

D. Implement the detailed design for all analog and binary objects, system databases, graphic displays, logs, and management reports based on control descriptions, logic drawings, configuration data, and bid documents.

E. Design, provide, and install all equipment cabinets, panels, data communication network cables needed, and all associated hardware.

F. Provide and install all interconnecting cables between supplied cabinets, application controllers, and input/output devices.

G. Provide and install all interconnecting cables between all operator's terminals and peripheral devices (such as printers, etc.) supplied under this section.

H. Provide complete manufacturer's specifications for all items that are supplied. Include vendor name of every item supplied.

I. Provide supervisory specialists and technicians at the job site to assist in all phases of system installation, startup, and commissioning.

J. Provide a comprehensive operator and technician training program as described herein.

K. Provide as—built documentation, operator's terminal software, diagrams, and all other associated project operational documentation (such as technical manuals) on approved media, the sum total of which accurately represents the final system.

L. Provide new sensors, dampers, valves, and install only new electronic actuators. No

used components shall be used as any part or piece of installed system.

M. Include as an added bid item the cost of the service contract for the remote monitoring of all BMS controlled systems in the building.

N. Include as an added bid item the cost of the scheduling modifications and refinement with the tenant.

1.2 SYSTEM DESCRIPTION

A. A distributed logic control system complete with all software and hardware functions shall be provided and installed. System shall be completely based on ANSI/ASHRAE Standard 135-2008, BACnet and achieved listing under the BACnet Testing Laboratories BACnet - Advanced Workstation Software (B-AWS). This system is to control all mechanical equipment, including all unitary equipment such as VAV boxes, AC units, etc., and all air handlers, boilers, lighting control panels, UPS, generators, building elevators, and any other listed equipment using native BACnet-compliant components. Non-BACnet-compliant or proprietary equipment or systems (including gateways) shall not be acceptable and are specifically prohibited.

B. Provide integration to the lighting system through BAEnet IP protocol so the lighting can be scheduled through the DDC system and include graphics that show whether lights are on or off on the floor plans. The DDC system shall be able to interface with the lighting control panel to facilitate scheduling, automatic daylight-saving time adjustments, etc.

C. Operator's workstation software shall use Microsoft Windows 8 or Windows 10 as the computer operating system. The Direct Digital Control system (DDC) application program shall be written to communicate specifically utilizing BACnet protocols. Software functions delivered on this project shall include password protection, scheduling (including optimum start), alarming, logging of historical data, full graphics including animation, after-hours billing program, demand limiting, and a full suite of field engineering tools including graphical programming and applications. Systems using operating systems other than that described above are strictly prohibited. All software required to program application specific controllers and all field level devices and controllers will be left with the owner. All software passwords required to program and make future changes to the system will also become the property of the owner. All software required to make any program changes anywhere in the system, along with scheduling and trending applications, will be left with the owner. All software passwords required to program and make future changes to schedules, trends and related program changes will also become the property of the owner. All software required for all field engineering tools including graphical programming and applications will be left with the owner. All software passwords required to program and make future changes to field engineering tools, including graphical programming and applications will be left with the owner.

D. Building controllers shall include complete energy management software, including scheduling building control strategies with optimum start and logging routines. All energy management software and firmware shall be resident in field hardware and shall not be dependent on the operator's terminal. Operator's terminal software is to be used

for access to field-based energy management functions only. Provide zone—by-zone direct digital logic control of space temperature, scheduling, runtime accumulation, equipment alarm reporting, and override timers for after-hours usage.

E. Room sensors shall be provided with digital readout that allows the user to view room temperature and humidity, adjust the room setpoint within preset limits and set desired override time. User shall also be able to start and stop unit from the digital sensor. Include all necessary wiring and firmware such that room sensor includes field service mode. Field service mode shall allow a technician to balance VAV zones and access any parameter in zone controller directly from the room sensor. Field service mode shall have the ability to be locked out.

F. All application controllers for every terminal unit (VAV, FCU, etc.) air handler, all central plant equipment, and any other piece of controlled equipment shall be fully programmable. Application controllers shall be mounted next to controlled equipment and communicate with building controller through BACnet MSTP.

1.3 APPROVED MANUFACTURERS

A. Alerton Compass Approved Control Manufacturers

B. Other systems will not be accepted.

1.4 QUALITY ASSURANCE

A. The Building Automation System (BAS) system shall be designed, installed, commissioned, and serviced by manufacturer authorized and trained personnel. System provider shall have an in—place support facility within 2 hours' response time of the site with technical staff, spare parts inventory, and necessary test and diagnostic equipment.

The contractor shall provide full-time, on-site, experienced project manager for this work, responsible for direct supervision of the design, installation, start-up and commissioning of the BAS system.

The Bidder shall be regularly engaged in the design, installation and maintenance of BAS systems and shall have demonstrated technical expertise and experience in the design, installation and maintenance of BAS systems similar in size and complexity to this project. Bidders shall provide a list of at least 10 projects, similar in size and scope to this project completed within the past 3 years.

B. Materials and equipment shall be manufacturer's latest standard design that complies with the specification requirements.

C. All BAS peer-to-peer network controllers, central system controllers and local user displays shall be UL Listed under Standard UL 916, category PAZX.

D. All electronic equipment shall conform to the requirements of FCC Regulation, Part 15, Governing Radio Frequency Electromagnetic Interference and be so labeled.

E. Control system shall beengineered, programmed and supported completely by representative's local office that must be within 100 miles of project site.

1.5 REFERENCE STANDARDS

A. The latest edition of the following standards and codes in effect and amended as of supplier's proposal date, and any applicable subsections thereof, shall govern design and selection of equipment and material supplied:

1. American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE).

2. ANSI/ASHRAE Standard 135-2008, BACnet.

3. Uniform Building Code (UBC), including local amendments.

4. UL 916 Underwriters Laboratories Standard for Energy Management Equipment. Canada and the US.

5. National Electrical Code (NEC).

6. FCC Part lS, Subpart J, Class A.

7. EMC Directive 89/336/EEC (European CE Mark).

8. UL-864 UUKL listing for Smoke Controls for any equipment used in smoke control sequences.

B. City, county, state, and federal regulations and codes in effect as of contract date.

C. Except as otherwise indicated, the system supplier shall secure and pay for all permits, inspections, and certifications required for his work, and arrange for necessary approvals by the governing authorities.

1.6 SUBMITTALS

A. Drawings

1. The system supplier shall submit engineered drawings, control sequence, and bill of materials for approval.

2. Drawings shall be submitted in the following standard sizes: 11" x 17" (ANSI B).

3. Eight complete sets (copies) of submittal drawings shall be provided.

4. Drawings shall be available on CD-ROM.

B. System Documentation

Include the following in submittal package:

1. System configuration diagrams in simplified block format.
2. All input/output object listings and an alarm point summary listing.
3. Electrical drawings that show all system internal and external connection points, terminal block layouts, and terminal identification.
4. Complete bill of materials, valve schedule and damper schedule.
5. Manufacturer's instructions and drawings for installation, maintenance, and operation of all purchased items.
6. Overall system operation and maintenance instructions—including preventive maintenance and troubleshooting instructions.
7. For all system elements—operator's workstation(s), building controller(s), application controllers, routers, and repeaters—provide BACnet Protocol Implementation Conformance Statements (PICS) as per ANSI/ASHRAE Standard 135-2001.
8. Provide complete description and documentation of any proprietary (non-BACnet) services and/or objects used in the system.
9. A list of all functions available and a sample of function block programming that shall be part of delivered system.

C. Project Management

1. The vendor shall provide a detailed project design and installation schedule with time markings and details for hardware items and software development phases. Schedule shall show all the target dates for transmission of project information and documents, and shall indicate timing and dates for system installation, debugging, and commissioning.

1.7 WARRANTY

A. Warranty shall cover all costs for parts, labor, associated travel, and expenses for a period of one year from completion of system acceptance.

B. Hardware and software personnel supporting this warranty agreement shall provide on-site or off-site service in a timely manner after failure notification to the vendor. The maximum acceptable response time to provide this service at the site shall be 24 hours, Monday through Friday and 48 hours on Saturday and Sunday.

C. This warranty shall apply equally to both hardware and software.

1.8 RELATED WORK IN OTHER SECTIONS

A. Refer to Division 0 and Division 1 for related contractual requirements.

B. Refer to Section 23 00 00 for General Mechanical Provisions.

C. Refer to Section 26 00 00 for General Electrical Provisions.

PART 2: PRODUCTS

2.1 OPERATOR'S WORKSTATION

A. General structure of workstation interaction shall be a standard client/server relationship. Server shall be used to archive data and store system database. Clients shall access server for all archived data. Each client shall include flexibility to access graphics from server or local drive. Server shall support a minimum of 50 simultaneous clients.

B. BACnet Conformance

1. Operator Work Station shall be approved by the BTL as meeting the BACnet Advanced Work Station requirements.

2. Please refer to Section 22.2, BACnet Functional Groups, in the BACnet standard, for a complete list of the services that must be directly supported to provide each of the functional groups listed above. All proprietary services, if used in the system, shall be thoroughly documented and provided as part of the submittal data. All necessary tools shall be supplied for working with proprietary information.

3. Standard BACnet object types accessed by the workstation shall include as a minimum: Analog Value, Analog Input, Analog Output, Binary Value, Binary Input, Binary Output, Calendar, Device, Event Enrollment, File, Notification Class, Program, and Schedule object types. All proprietary object types, if used in the system, shall be thoroughly documented and provided as part of the submittal data. All necessary tools shall be supplied for working with proprietary information.

4. The operator's workstation shall comply with Annex J of the BACnet specification for IP connections. Must support remote connection to server using a thick client application. This device shall use Ethernet to connect to the IP internetwork, while using the same Ethernet LAN for non-IP communications to other BACnet devices on the LAN. Must support interoperability on wide area networks (WANs) and campus area networks (CANs). Workstation shall support Foreign Device Registration to allow temporary workstation connection to IP network.

C. Displays

1. Operator's workstation shall display all data associated with project as called out on drawings and/or object type list supplied. Graphic files shall be created using digital, full color photographs of system installation, AutoCAD or Visio drawing files of field installation drawings and wiring diagrams from as-built drawings. Operator's workstation shall display all data using three-dimensional graphic representations of all mechanical equipment. System shall be capable of displaying graphic file, text, and dynamic object data together on each display and shall include animation. Information shall be labeled with descriptors and shall be shown with the appropriate engineering units. All information on any display shall be dynamically updated without any action by the user. Workstation shall allow user to change all field—resident EMCS functions associated with the project, such as setpoints, weekly

schedules, exception schedules, etc., from any screen, no matter if that screen shows all text or a complete graphic display. This shall be done without any reference to object addresses or other numeric/mnemonic indications.

2. All displays and programming shall be generated and customized by the local EMCS supplier and installer. Systems requiring factory development of graphics or programming of DDC logic are specifically prohibited.

3. Binary objects shall be displayed as ACTIVE/INACTIVE/NULL or with customized text such as Hand-Off-Auto. Text shall be justified left, right or center as selected by the user. Also, allow binary objects to be displayed as individual change-of-state graphic objects on the display screen such that they overlay the system graphic. Each binary object displayed in this manner shall be assigned up to three graphic files for display when the point is ON, OFF or in alarm. For binary outputs, toggle the object's commanded status when the graphic item is selected with the system mouse. Similarly, allow the workstation operator to toggle the binary object's status by selecting with the mouse, for example, a graphic of a switch or light, which then displays a different graphic (such as an "ON" switch or lighted lamp. Additionally, allow binary objects to be displayed as an animated graphic. Animated graphic objects shall be displayed as a sequence of multiple graphics to simulate motion. For example, when a pump is in the OFF condition, display a stationary graphic of the pump. When the operator selects the pump graphic with the mouse, the represented object's status is toggled, and the graphic of the pump's impeller rotates in a time-based animation. The operator shall be able to click an animated graphical object or switch it from the OFF position to ON, or ON to OFF. Allow operator to change graphic file assignment and also create new and original graphics online. System shall be supplied with a library of standard graphics, which may be used unaltered or modified by the operator. Systems that do not allow customization or creation of new graphic objects by the operator (or with third-party software) shall not be allowed.

4. Analog objects shall be displayed with operator modifiable units. Analog input objects may also be displayed as individual graphic items on the display screen as an overlay to the system graphic. Each analog input object may be assigned a minimum of five graphic files, each with high/low limits for automatic selection and display of these graphics. As an example, a graphic representation of a thermometer would rise and fall in response to either the room temperature or its deviation from the controlling setpoint. Analog output objects, when selected with the mouse, shall be displayed as a prompted dialog (text only) box. Selection for display type shall be individual for each object. Analog object values may be changed by selecting either the "increase" or "decrease" arrow in the analog object spinner box without using the keypad. Pressing the button on the right side of the analog object spinner box allows direct entry of an analog value and accesses various menus where the analog value may be used, such as trendlogs.

5. Analog objects may also be assigned to a system graphic, where the color of the defined object changes based on the analog object's value. For example, graphical thermostat device served by a single control zone would change color with respect to the temperature of the zone or its deviation from setpoint. All editing and area

assignment shall be created or modified online using simple icon tools.

6. A customized menu label (push-button) shall be used for display selection. Menu items on a display shall allow penetration to lower level displays or additional menus. Dynamic point information and menu label pushbuttons may be mixed on the same display to allow sub-displays to exist for each item. Each display may be protected from viewing unless operator has appropriate security level. A security level may be assigned to each display and system object. The menu label shall not appear on the graphic if the operator does not have the appropriate security level.

7. The BAS displays shall have the ability to link to content outside of the BAS system. Such content shall include but is not limited to: Launching external files in their native applications (for example, a Microsoft Word document) and launching a Web browser resolving to a specified Web address.

8. The BAS system shall have the ability to run multiple, concurrent displays windows showing continuously updated data.

9. Graphic items with custom geometry that offer both color gradient shading and variable opacity in scale to system variables and range setpoints (0mniGraphics). Ability to automatically resize to display (OmniZoom).

D. Password Protection

1. Provide security system that prevents unauthorized use unless operator is logged on. Access shall be limited to operator's assigned functions when user is logged on. This includes displays as outlined above.

2. Each operator's terminal shall provide security for a minimum of 200 users. Each user shall have an individual User ID, User Name, and Password. Entries are alphanumeric characters only and are case sensitive (except for User ID). User ID shall be 0—8 characters, User Name shall be 0—29 characters, and Password shall be 4—8 characters long. Each system user shall be allowed individual assignment of only those control functions, menu items, and user specific system start display, as well restricted access to *discrete BACnet devices* to which that user requires access. All passwords, user names, and access assignments shall be adjustable online at the operator's terminal. Users should have the capability to be assigned to specific user type "groups" that can share the same access levels to speed setup. Users who are members of multiple "groups" shall have the ability to activate/deactivate membership to those groups while using the BAS (without logout). Users shall also have a set security level, which defines access to displays and individual objects the user may control. System shall include 10 separate and distinct security levels for assignment to users.

3. System shall include an Auto Logout Feature that shall automatically logout user when there has been no keyboard or mouse activity for a set period of time. Time period shall be adjustable by system administrator. Auto Logout may be enabled and disabled by system administrator. Operator terminal shall display message on screen that user is logged out after Auto Logout occurs.

4. The system shall permit the assignment of an effective date range, as well as an effective time of day, that the User IDs are permitted to authenticate.

E. Operator Activity Log

1. Operator Activity Log that tracks all operator changes and activities shall be included with system. System shall track what is changed in the system, who performed this change, date and time of system activity, and value of the change before and after operator activity. Operator shall be able to display all activity, sort the changes by user and also by operation. Operator shall be able to print the Operator Activity log display.

2. Log shall be gathered and archived to hard drive on operator's workstation as needed. Operator shall be able to export data for display and sorting in a spreadsheet.

3. Any displayed data that is changeable by the operator may be selected using the right mouse button and the operator activity log shall then be selectable on the screen. Selection of the operator activity log using this method shall show all operator changes of just that displayed data.

F. Scheduling

1. Operator's workstation shall show all information in easy-to-read daily format including calendar of this month and next. All schedules shall show actual ON/OFF times for day based on scheduling priority. Priority for scheduling shall be events, holidays and daily, with events being the highest.

2. Holiday and special event schedules shall display data in calendar format. Operator shall be able to schedule holidays and special events directly from these calendars.

3. Operator shall be able to change all information for a given weekly or exception schedule if logged on with the appropriate security access.

4. System shall include a Schedule Wizard for set up of schedules. Wizard shall walk user through all steps necessary for schedule generation. Wizard shall have its own pull-down selection for startup or may be started by right-clicking on value displayed on graphic and then selecting Schedule.

5. Scheduling shall include optimum start based on outside air temperature, current heating/cooling setpoints, indoor temperature and history of previous starts. Each and every individual zone shall have optimum start time independently calculated based on all parameters listed. User shall input schedules to set time that occupied setpoint is to be attained. Optimum start feature shall calculate the startup time needed to match zone temperature to setpoint. User shall be able to set a limit for the maximum startup time allowed.

7. Any displayed data that is changeable by the operator may be selected using the right mouse button and the schedule shall then be selectable on the screen. Selection of the schedule using this method shall allow the viewing of the assigned schedule or launch the Schedule Wizard to allow the point to be scheduled.

G. Alarm Indication and Handling.

1. Operator's workstation shall provide audible, visual, printed, and email means of alarm indication. The alarm dialog box shall always become the top dialog box regardless of the application(s) currently running. Printout of alarms shall be sent to the assigned terminal and port. Alarm notification can be filtered based on the User ID's authorization level.

2. System shall provide log of alarm messages. Alarm log shall be archived to the hard disk of the system operator's terminal. Each entry shall include a description of the event-initiating object generating the alarm. Description shall be an alarm message of at least 256 characters in length. Entry shall include time and date of alarm occurrence, time and date of object state return to normal, time and date of alarm acknowledgment, and identification of operator acknowledging alarm.

3. Alarm messages shall be in user-definable text (English or other specified language) and shall be delivered either to the operator's terminal, client or through remote communication using email (Authenticated SMTP supported).

4. System shall include an Alarm Wizard for set up of alarms. Wizard shall walk user through all steps necessary for alarm generation. Wizard shall have its own pull-down selection for startup or may be started by right-clicking on value displayed on graphic and then selecting alarm setup.

5. Any displayed data that is changeable by the operator may be selected using the right mouse button and the alarm shall then be selectable on the screen. Selection of the alarm using this method shall allow the viewing of the alarm history or launch the Alarm Wizard to allow the creation of a new alarm.

H. Trendlog Information

1. System server shall periodically gather historically recorded data stored in the building controllers and store the information in the system database. Stored records shall be appended with new sample data, allowing records to be accumulated. Systems that write over stored records shall not be allowed unless limited file size is specified. System database shall be capable of storing up to 50 million records before needing to archive data. Samples may be viewed at the operator's workstation. Operator shall be able to view all trended records, both stored and archived. All trendlog records shall be displayed in standard engineering units.

2. Software that is capable of graphing the trend logged object data shall be included. Software shall be capable of creating two-axis (X, Y) graphs that display up to 10 object types at the same time in different colors. Graphs shall show object values relative to time. Each trendlog shall support a custom scale setting for the graph view that is to be stored continuously. System shall be capable of trending on an interval determined by a polling rate, or change-of—value.

3. Operator shall be able to change Trendlog setup information. This includes the information to be logged as well as the interval at which it is to be logged. All input,

output, and value object types in the system may be logged. All operations shall be password protected. Setup and viewing may be accessed directly *from* any and all graphics on which object is displayed.

4. System shall include a Trend Wizard for setup of logs. Wizard shall walk user through all necessary steps. Wizard shall have its own pull-down selection for startup or may be started by right-clicking on value displayed on graphic, and then selecting Trendlogs from the displayed menu.

5. System shall be capable of using Microsoft SQL as the system database.

6. Any displayed data that is changeable by the operator may be selected using the right mouse button and the trendlog shall then be selectable on the screen. Selection of the trendlog using this method shall allow the viewing of the trendlog view or launch the Trendlog wizard to allow the creation of a new trend.

I. Energy Log Information

1. System server shall be capable of periodically gathering energy log data stored in the field equipment and archive the information. Archive files shall be appended with new data, allowing data to be accumulated. Systems that write over archived data shall not be allowed unless limited file size is specified. Display all energy log information in standard engineering units.

2. All data shall be stored in database file format for direct use by third-party programs. Operation of system shall stay completely online during all graphing operations.

3. Operator shall be able to change the energy log setup information as well. This includes the meters to be logged, meter pulse value, and the type of energy units to be logged. All meters monitored by the system may be logged. System shall support using flow and temperature sensors for BTU monitoring.

4. System shall display archived data in tabular format form for both consumption and peak values. Data shall be shown in hourly, daily, weekly, monthly and yearly formats. In each format, the user shall be able to select a specific period of data to view.

J. Demand Limiting

1. System shall include demand limiting program that includes two types of load shedding. One type of load shedding shall shed/restore equipment in binary fashion based on energy usage when compared to shed and restore settings. The other type of shedding shall adjust operator selected control setpoints in an analog fashion based on energy usage when compared to shed and restore settings. Shedding may be implemented independently on each and every zone or piece of equipment connected to system.

2. Binary shedding shall include minimum of five (5) priority levels of equipment shedding. All loads in a given priority level shall be shed before any loads in a higher priority level are shed. Load shedding within a given priority level shall include two

methods. In one, the loads shall be shed/restored in a “first off-first on” mode, and in the other the loads are just shed/restored in a “first off-last on” (linear) fashion.

3. Analog shed program shall generate a ramp that is independently used by each individual zone or individual control algorithm to raise the appropriate cooling setting and lower appropriate heating setting to reduce energy usage.

4. Status of each and every load shed program shall be capable of being displayed on every operator terminal connected to system. Status of each load assigned to an individual shed program shall be displayed along with English description of each load.

K. Tenant Activity

1. System shall include program that monitors after-hours overrides by tenants, logs that data, and generates a bill based on usage and rate charged for each tenant space. Tenant Activity program shall be able to assign multiple zones, from a list of every zone connected to system, to a particular tenant. Every zone is monitored for after-hour override usage and that data logged in server. Operator may then generate a bill based on the usage for each tenant and the rate charged for any overtime use.

2. Configuration shall include entry of the following information for use in logging and billing:

   a. Tenant's contact name and address

   b. One or multiple tenant zones that make up a total tenant space, including a separate billing rate for each separate zone

   c. Minimum and maximum values an event duration and event limit

   d. Property management information

   e. Overall billing rate

   f. Seasonal adjustments or surcharge to billing rate

   g. Billing notification type such including, but not limited to printer, file and email

   h. Billing form template

3. Logging shall include recording the following information for each and every tenant event:

   a. Zone description

   b. Time the event begins

   c. Total override time

   d. Limits shall be applied to override time

4. A tenant bill shall be generated for a specific period using all the entered configuration data and the logged data. User with appropriate security level shall be able to view and override billing information. User shall be able to select a billing period to view and be able to delete events from billing and edit a selected tenant activity event's override time.

L. Reports

1. System server shall be capable of periodically producing repoi ts of trendlogs, alarm history, tenant activities, device summary, energy logs, and override points. The frequency, content, and delivery are to be user adjustable.

2. All reports shall be capable of being delivered in multiple formats including text- and comma-separated value (CSV) files. The files can be printed, emailed, or saved to a folder, either on the server hard drive or on any network drive location.

M. Configuration/Setup

1. Provide means for operator to display and change system configuration. This shall include, but not be limited to, system time, day of the week, date of daylight savings set forward/set back, printer termination, port addresses, modem port and speed, etc. Items shall be modified using understandable terminology with simple mouse/cursor key movements.

N. Field Engineering Tools

1. Operator's workstation software shall include field engineering tools for programming all controllers supplied. All controllers shall be programmed using graphical tools that allow the user to connect function blocks on screen that provide sequencing of all control logic. Function blocks shall be represented by graphical displays that are easily identified and distinct from other types of blocks. Graphical programming that uses simple rectangles and squares is not acceptable.

2. User shall be able to select a graphical function block from menu and place on screen. Provide zoom in and zoom out capabilities. Function blocks shall be downloaded to controller without any reentry of data.

3. Programming tools shall include a real-time operation mode. Function blocks shall display real-time data and be animated to show status of data inputs and outputs when in real-time operation. Animation shall show change of status on logic devices and countdown of timer devices in graphical format.

4. Field engineering tools shall also include a database manager of applications that include logic files for controllers and associated graphics. Operator shall be able to select unit type, input/output configuration and other items that define unit to be controlled. Supply minimum of 250 applications as part of workstation software.

5. Field engineering tool shall include Device Manager for detection of devices connected anywhere on the BACnet network by scanning of the entire network. This function shall display device instance, network identification, model number, and description of connected devices. It shall record, and display software file loaded

into each controller. A copy of each file shall be stored on the computer's hard drive. If needed, this file shall be downloaded to the appropriate controller using the mouse.

6. System shall automatically notify the user when a device that is not in the database is added to the network.

7. System shall include backup/restore function that will back up entire system to selected medium and then restore system from that media. The system shall be capable of creating a backup for the purpose of instantiating a new client PC.

8. The system shall provide a means to scan, detect, interrogate, and edit third-party BACnet devices and BACnet objects within those devices.

0. Workstation Hardware

1. Provide operator's workstation(s) at location(s) noted on the plans.

2. Workstation/server computer minimum requirements

a. PC Processor of 2.5 GHz quad-core or better

b. 8 GB RAM or better

c. 1TB hard disk or better

d. High-performance graphics adapter

e. Ethernet 10/100 network interface card

f. Keyboard, monitor, mouse, USB port and CD-ROM

g. Microsoft Windows 8 or Windows 10

h. Monitor size shall be 22" minimum

i. Color printer (inkjet, color dye or laser)

P. Software

1. At the conclusion of project, contractor shall leave with owner a CD ROM that includes the complete software operation system and project graphics, setpoints, system parameters, etc. This backup shall allow the owner how to completely restore the system in the case of a computer malfunction.

2.2 GRAPHICAL USER INTERFACE

A. Display of Data

1. Graphics displays shall include animation of all Fans shall turn, pilot lights shall blin1‹, coils shall change colors, and so on.

2. Real-time data shall beshown. This data must be directly gathered using the BACnet

network and automatically updated without any user action.

3. It shall be possible for user to change data if the user is logged on with the appropriate password. Clicking on a button or typing in a new value shall change digital data. Using pull-down menus or typing in a new value shall change analog data.

4. Data displays shall be navigated using pushbuttons on the displays that are simply clicked on with the mouse to select a new display.

B. Time Schedule Adjustment

1. Logged in access shall allow user to view and edit all schedules in the system. This includes standard, holiday and event schedules as described in BAS specification. Display of schedules shall show interaction of all schedules on a single display, so user sees an overview of how all work together. User shall be able to edit schedules from this display.

2. Display of all three schedules must show all ON times for standard, holiday and event schedules in different colors on a given day. In addition, OFF times for each must also be shown in additional colors. User shall be able to select from standard calendar what days are to be scheduled and same display shall show all points and zones affected. User shall be able to set time for one day and select all days of the week that shall be affected as a recurrence of that same schedule for that given day.

3. Schedule list shall show all schedules currently defined. This list shall include all standard, holiday and event schedules. In addition, user shall be able to select a list that shows all scheduled points and zones.

C. Logging of Information

User shall use standard browser technology to view all trendlogs in system. User shall be able to view logged data in tabular form or graphical format. User shall be able to adjust time interval of logged data viewed and shall be able to adjust Y axis of data viewed in graphical format. Data shall be in CSV format.

D. Alarm Handling

The front end shall display alarms as they occur. User shall be able to acknowledge a1ai'ms using browser technology. In addition, user shall be able to view history of alarm occurrence over a user-selected time frame. In addition, those alarms may be filtered for viewing per user-selected options. A single selection shall display all alarms that have not been acknowledged.

E. BACnet Communication

The Alerton system shall directly communicate to all devices on the BAS network using BACnet protocol. No intermediate devices shall be necessary for BACnet communication.

2.3 BUILDING CONTROLLER

A. General Requirements

1. BACnet Conformance

a. Building Controller shall be approved by the BTL as meeting the BACnet Building Controller requirements.

b. Please refer to section 22.2, BACnet Functional Groups, in the BACnet standard, for a complete list of the services that must be directly supported to provide each of the functional groups listed above. All proprietary services, if used in the system, shall be thoroughly documented and provided as part of the submittal data. All necessary tools shall be supplied for working with proprietary information.

2. Building controller shall be of modular construction such that various modules may be selected to fit the specific requirements of a given project. At a minimum, modules shall consist of a power supply module, a BACnet Ethernet-MS/TP (master slave token passing) module, a BACnet MS/TP-only module, and a modem module for telephone communication. Those projects that require special interfaces may use Modbus modules as needed. However, all Ethernet communications and all controllers—including central plant controllers, advanced application controllers and unitary controllers—supplied by BAS manufacturer shall utilize the BACnet protocol standard.

3. Modules shall be selected to fit the particular project application. Up to seven modules shall be powered by a single power supply module. All modules shall be panel-mounted on DIN rail for ease of addition and shall be interconnected using a simple plug-in cable. A module in the middle shall be replaceable without removing any other modules.

4. All modules shall be capable of providing global control strategies for the system based on information from any objects in the system, regardless if the object is directly monitored by the building controller module or by another controller. The software program implementing these strategies shall be completely flexible and user-definable. All software tools necessary for programming shall be provided as part of project software. Any systems utilizing factory pre—programmed global strategies that cannot be modified by field personnel on-site, using a WAN or downloaded through remote communications are not acceptable. Changing global strategies using firmware changes is also unacceptable.

5. Programming shall be object-oriented using control function blocks, and support DDC functions, 1000 Analog Values and 1000 Binary Values. All flowcharts shall be generated and automatically downloaded to controller. Programming tool shall be supplied and be resident on workstation. The same tool shall be used for all controllers.

6. Provide means to graphically view inputs and outputs to each program block in real-time as program is executing. This function may be performed using the operator's workstation or field computer.

7. Controller shall have sufficient memory to ensure high performance and data reliability. Battery shall provide power for orderly shutdown of controller and storage of data in nonvolatile flash memory, Battery backup shall maintain real-time clock functions for a minimum of 20 days.

8. Global control algorithms and automated control functions shall execute using 32-bit processor.

9. Schedules

10. Each building controller module shall support a minimum of 80 BACnet Schedule Objects and 80 BACnet Calendar Objects.

11. Building controller modules shall provide normal seven-day scheduling, holiday scheduling and event scheduling.

12. Logging Capabilities

    a. Each building controller shall log as minimum 320 values. Any object in the system (real or calculated) may be logged. Sample time interval shall be adjustable at the operator's workstation.

    b. Logs may be viewed both on-site or off-site using WAN or remote communication.

    c. Building controller shall periodically upload trended data to networked operator's workstation for long-term archiving if desired.

    d. Archived data stored in database format shall be available for use in third-party spreadsheet or database programs.

13. Alarm Generation

    a. Alarms may be generated within the system for any object change of value or state (either real or calculated). This includes things such as analog object value changes, binary object state changes, and various controller communication failures.

    b. Each alarm may be dialed out as noted elsewhere.

    c. Alarm log shall be provided for alarm viewing. Log may be viewed on—site at the operator's terminal or off—site using remote communications.

    d. Controller must be able to handle up to 320 alarm setups stored as BACnet event enrollment objects, with system destination and actions individually configurable.

14. Demand Limiting

    a. Demand limiting of energy shall be a built-in, user-configurable function. Each controller module shall support shedding of up to 200 loads using a minimum of two types of shed programs.

b. Load shedding programs in building controller modules shall operate as defined in section 2.1.J of this specification.

15. Tenant Activity Logging

a. Tenant Activity logging shall be supported by building controller module. Each independent module shall support a minimum of 80 zones.

b. Tenant Activity logging shall function as defined in section 2.1.K of this specification.

B. Ethernet — MS/TP Module

1. Ethernet — MS/TP Module shall support every function as listed under paragraph A, General Requirements, of this section and the following.

2. All communication with operator's workstation and all application controllers shall be through BACnet. Building controller Ethernet — MS/TP module shall incorporate as a minimum, the functions of a 2-way BACnet router. Controller shall route BACnet messages between the high-speed LAN (Ethernet 10/100M Hz) and MS/TP LAN. Ethernet — MS/TP module shall also route messages from all other building controller modules onto the BACnet Ethernet network.

a. MS/TP LAN must be software-configurable from 9.6 to 76.8Kbps.

b. The RJ-45 Ethernet connection must accept either 10Base—T or 100Base-TX BACnet over twisted pair cable (UTP).

3. BACnet Conformance

a. Ethernet — MS/TP module shall, as a minimum, support MS/TP and Ethernet BACnet LAN types. It shall communicate directly using these BACnet LANs as a native BACnet device and shall support simultaneous routing functions between all supported LAN types. Global controller shall be approved by the BACnet Testing Laboratory (BTL) as meeting the BACnet Building Controller requirements.

b. All proprietary object types, if used in the system, shall be thoroughly documented and provided as part of the submittal data. All necessary tools shall be supplied for working with proprietary information.

c. The building controller shall comply with Annex J of the BACnet specification for IP connections. This device shall use Ethernet to connect to the IP internetwork, while using the same Ethernet LAN for non-IP communications to other BACnet devices on the LAN. Must support interoperability on WANs and CANs and function as a BACnet Broadcast Management Device (BBMD).

C. MS/TP Module

1. MS/TP Module shall support every function as listed under paragraph A, General Requirements, of this section and the following.

2. Building controller MS/TP module communications shall be though BACnet MS/TP LAN to all advanced application and application-specific controllers. MS/TP module shall also route messages to Ethernet - MS/TP module for communication over WAN.

   a. MS/TP LAN must be software configurable from 9.6 to 76.8Kbps

   b. Configuration shall be through RS-232 connection.

3. BACnet Conformance

   a. MS/TP module shall be approved by the BTL (BACnet Testing Laboratory) as meeting the BACnet Building Controller requirements. MS/TP module shall as a minimum support MS/TP BACnet LAN type. It shall communicate directly using this BACnet LAN as a native BACnet device and shall support simultaneous routing functions between all supported LAN types.

   b. Standard BACnet object types supported shall include, as a minimum, Analog Value, Binary Value, Calendar, Device, File, Group, Notification Class, Program, and Schedule object types. All proprietary object types, if used in the system, shall be thoroughly documented and provided as part of the submittal data. All necessary tools shall be supplied for working with proprietary information.

F. Power Supply Module

1. Power supply module shall power up to seven building controller modules. Input for power shall accept between 17-30VAC, 47—65Hz.

2. Power supply module shall include rechargeable battery for orderly shutdown of controller modules including storage of all data in flash memory and for continuous operation of real-time clocks for minimum of 20 days.

2.4 AIR HANDLER APPLICATION CONTROLLERS

A. Provide one or more native BACnet application controllers for each air handler and provide native BACnet application controllers as needed for central plant control that adequately cover all objects listed in object list. All controllers shall interface to building controller through either MS/TP LAN using BACnet protocol, or Ethernet LAN using BACnet over Ethernet or BACnet TCP/IP. No gateways shall be used. Controllers shall include input, output and self-contained logic program as needed for complete control of units. Controllers shall be fully programmable using graphical programming blocks. Programming tool shall be resident on operator workstation and be the same tool as used for the building controller. No auxiliary or non—BACnet controllers shall be used.

B. BACnet Conformance

1. Application controllers shall be approved by the BTL as meeting the BACnet Advanced Application Controller requirements.

2. Please refer to section 22.2, BACnet Functional Groups, in the BACnet standard, for a complete list of the services that must be directly supported to provide each of the

functional groups listed above. All proprietary services, if used in the system, shall be thoroughly documented and provided as part of the submittal data. All necessary tools shall be supplied for working with proprietary information.

3. Standard BACnet object types supported shall include, as a minimum, Analog Input, Analog Output, Analog Value, Binary Input, Binary Output, Binary Value, Multi-state Values, Device, File, and Program object types. All proprietary object types, if used in the system, shall be thoroughly documented and provided as part of the submittal data. All necessary tools shall be supplied for working with proprietary information.

C. Application controllers shall include universal inputs with 12-bit resolution that accept 3K and 10K thermistors, 0—10VDC, Platinum 1000-ohm RTD, 0—5VDC, 4—20mA and dry contact signals. Any input on a controller may be either analog or digital with a minimum of three inputs that accept pulses. Controller shall also include support and modifiable programming for interface to intelligent room sensor with digital display. Controller shall include binary and analog outputs on board. Analog outputs with 12—bit resolution shall support either 0—10VDC or 0—20mA. Binary outputs shall have LED indication of status. Software shall include scaling features for analog outputs. Application controller shall include 2OVDC voltage supply for use as power supply to external sensors.

1. All outputs must have onboard Hand-Off-Auto (HOA) switches and a status indicator light. HOA switch position shall be monitored. Each analog output shall include a potentiometer for manually adjusting the output when the HOA switch is in the Hand position.

2. The position of each and every HOA switch shall be available system wide as a BACnet object property.

D. All program sequences shall be stored on board application controller in EEPROM. No batteries shall be needed to retain logic program. All program sequences shall be executed by controller up to 20 times per second (minimum of 10 times per second) and capable of multiple PID loops for control of multiple devices. All calculations shall be completed using floating-point math and system shall support display of all information in floating-point nomenclature at operator's terminal.

1. The following control blocks shall be supported:

a. Natural Log

b. Exponential

c. Log base 10

d. X to the power of Y

e. Nth square root of X

f. 5th Order Polynomial Equations

g. Astronomical Clock (sunrise/sunset calculation)

h. Time basedschedules

E. Programming of application controller shall be completely modifiable in the field over installed BACnet LANs or remotely using modem interface. Operator shall program logic sequences by graphically moving function blocks on screen and tying blocks together on screen. Application controller shall be programmed using programming tools as described in operator's terminal section.

F. Application controller shall include support for intelligent room sensor (see Section 2.10.B.) Display on intelligent room sensor shall be programmable at application controller and include an operating mode and a field service mode. All button functions and display data shall be programmable to show specific controller data in each mode, based on which button is pressed on the sensor. See sequence of operation for specific display requirements at intelligent room sensor.

G. Schedules

1. The controller shall support a minimum of 3 BACnet Schedule Objects and have a real time clock on board with battery backup to maintain time through a power loss.

H. Logging Capabilities

1. Controller shall support a minimum of S0 trendlogs. Any object in the controller (real or calculated) may be logged. Sample time interval shall be adjustable at the operator's workstation.

2. Controller shall periodically upload trended data to system server for long-term archiving if desired. Archived data stored in (MS Jet Database or SQL) database form and shall be available for use in third-party spreadsheet or database programs.

I. Alarm Generation

1. Alarms may be generated within the controller for any object change of value or state (either real or calculated). This includes things such as analog object value changes, and binary object state changes.

2. Alarm log shall be provided for alarm viewing. Log may be viewed on—site at the operator’s terminal or off-site using remote communications.

3. Controller must be able to handle up to 25 alarm setups stored as BACnet event enrollment objects, with system destination and actions individually configurable.

J. The controller processor shall be a 32-bit processor.

K. The packaging of the controller shall provide operable doors to cover the terminals once installation is complete. The housing of the controller shall provide for DIN rail mounting and also fully enclose circuit board.

2.5 TERMINAL UNIT APPLICATION CONTROLLERS (Fan-Coils)

A. Provide one native BACnet application controller for each piece of unitary mechanical equipment that adequately covers all objects listed in object list for unit. All controllers

shall interface to building controller through MS/TP LAN using BACnet protocol. No gateways shall be used. Controllers shall include input, output and self—contained logic program as needed for complete control of unit.

B. BACnet Conformance

1. Application controllers shall, as a minimum, support MS/TP BACnet LAN types. They shall communicate directly using this BACnet LAN at 9.6, 19.2, 38.4 and 76.8 Kbps, as a native BACnet device. Application controllers shall be approved by the BTL as meeting the BACnet Application Specific Controller requirements and support all BACnet services necessary to provide the following BACnet functional groups:

   a. Files Functional Group

   b. Reinitialize Functional Group

   c. Device Communications Functional Group

2. Please refer to Section 22.2, BACnet Functional Groups in the BACnet standard, for a complete list of the services that must be directly supported to provide each of the functional groups listed above. All proprietary services, if used in the system, shall be thoroughly documented and provided as part of the submittal data. All necessary tools shall be supplied for working with proprietary information.

3. Standard BACnet object types supported shall include, as a minimum, Analog Input, Analog Output, Analog Value, Binary Input, Binary Output, Binary Value, Device, File, and Program Object Types. All proprietary object types, if used in the system, shall be thoroughly documented and provided as part of the submittal data. All necessary tools shall be supplied for working with proprietary information.

C. Application controllers shall include universal inputs with 10-bit resolution that can accept 3K and l0K thermistors, 0—5VDC, 4—20mA, dry contact signals and a minimum of 3 pulse inputs. Any input on controller may be either analog or digital. Controller shall also include support and modifiable programming for interface to intelligent room sensor. Controller shall include binary outputs on board with analog outputs as needed.

D. All program sequences shall be stored on board controller in EEPROM. No batteries shall be needed to retain logic program. All program sequences shall be executed by controller 10 times per second and shall be capable of multiple PID loops for control of multiple devices. Programming of application controller shall be completely modifiable in the field over installed BACnet LANs or remotely through modem interface. Operator shall program logic sequences by graphically moving function blocks on screen and tying blocks together on screen. Application controller shall be programmed using same programming tools as building controller and as described in operator workstation section. All programming tools shall be provided and installed as part of system.

E. Application controller shall include support for intelligent room sensor (see Section 2.10.B.) Display on room sensor shall be programmable at controller and include an operating mode and a field service mode. All button functions and display data shall be

programmable to show specific controller data in each mode based on which button is pressed on the sensor. See sequence of operation for specific display requirements at intelligent room sensor.

2.6 VAV BOX CONTROLLERS—SINGLE DUCT WITH HOT WATER REHEAT

A. Provide one native BACnet application controller for each VAV box that adequately covers all objects listed in object list for unit. All controllers shall interface to building controller through MS/TP LAN using BACnet protocol. No gateways shall be used. Controllers shall include on board CFM flow sensor, inputs, outputs and programmable, self-contained logic program as needed for control of units.

B. BACnet Conformance

1. Application controllers shall, at a minimum, support MS/TP BACnet LAN types. They shall communicate directly through this BACnet LAN at 9.6, 19.2, 38.4 and 76.8 Kbps, as a native BACnet device. Application controllers shall be approved by the BTL as meeting the BACnet Application Specific Controller requirements.

2. Please refer to Section 22.2, BACnet Functional Groups, in the BACnet standard, for a complete list of the services that must be directly supported to provide each of the functional groups listed above. All proprietary services, if used in the system, shall be thoroughly documented and provided as part of the submittal data. All necessary tools shall be supplied for working with proprietary information.

3. Standard BACnet object types supported shall include, as a minimum, Analog Input, Analog Output, Analog Value, Binary Input, Binary Output, Binary Value, Device, File, and Program Object Types. All proprietary object types, if used in the system, shall be thoroughly documented and provided as part of the submittal data. All necessary tools shall be supplied for working with proprietary information.

C. Application controllers shall include universal inputs with 10—bit resolution that can accept 3K and 10K thermistors, 0—5 VDC, and dry contact signals. Inputs on controller may be either analog or digital. Controller shall also include support and modifiable programming for interface to intelligent room sensor with digital display. Controller shall also include binary outputs on board. For applications using variable speed parallel fans, provide a single analog output selectable for 0-10 V or 0—20 mA control signals. Application controller shall include microprocessor driven flow sensor for use in pressure independent control logic. All boxes shall be controlled using pressure-independent control algorithms and all flow readings shall be in CFM (LPS if metric).

D. All program sequences shall be stored on board application controller in EEPROM. No batteries shall be needed to retain logic program. All program sequences shall be executed by controller 10 times per second and shall be capable of multiple PID loops *for* control of multiple devices. Programming of application controller shall be completely modifiable in the field over installed BACnet LANs or remotely using modem interface. Operator shall program logic sequences by graphically moving function blocks on screen and tying blocks together on screen. Application controller shall be programmed using the same programming tool as Building Controller and as described in operator's workstation section. All programming tools shall be provided as part of

system.

E. Application controller shall include support for intelligent room sensor (see Section 2.10.B.) Display on room sensor shall be programmable at application controller and include an operating mode and a field service mode. All button functions and display data shall be programmable to show specific controller data in each mode based on which button is pressed on the sensor. See sequence of operations for specific display requirements for intelligent room sensor.

F. On board flow sensor shall be microprocessor-driven and pre-calibrated at the factory. Pre-calibration shall be at 16 flow points as a minimum. All factory calibration data shall be stored in non-volatile memory. Calibration data shall be field adjustable to compensate for variations in VAV box type and installation. All calibration parameters shall be adjustable through intelligent room sensor. Operator's workstation, portable computers, and special hand-held field tools shall not be needed for field calibration.

G. Provide duct temperature sensor at discharge of each VAV box that is connected to controller for reporting back to operator's workstation.

2.7 AUXILIARY CONTROL DEVICES

A. Temperature Sensors

1. All temperature sensors to be solid-state electronic, interchangeable with housing appropriate for application. Wall sensors to be installed as indicated on drawings. Mount 48 inches above finished floor. Duct sensors to be installed such that the sensing element is in the main air stream. Immersion sensors to be installed in wells provided by control contractor but installed by mechanical contractor. Immersion wells shall be filled with thermal compound before installation of immersion sensors. Outside air sensors shall be installed away from exhaust or relief vents, not in an outside air intake, and in a location that is in the shade most of the day.

B. Intelligent Room Sensor with LCD Readout

1. All room sensors shall be a combination temperature and humidity sensor and integrated Co2 where shown on the floor plans. The sensor shall contain a backlit LCD digital display and user function keys along with temperature sensor. Controller shall function as room control unit, and shall allow occupant to raise and lower setpoint, and activate terminal unit for override use—all within limits as programmed by building operator. Sensor shall also allow service technician access to hidden functions as described in sequence of operation.

2. Override time may be set and viewed in half-hour increments. Override time countdown shall be automatic but may be reset to zero by occupant from the sensor. Time remaining shall be displayed. Display shall show the word "OFF" in unoccupied mode unless a function button is pressed.

3. See sequence of operation for specific operation of LCD displays and function keys in field service mode and in normal occupant mode. Provide intelligent room sensors as specified in point list.

4. Field service mode shall be customizable to fit different applications. If intelligent room sensor is connected to VAV controller, VAV box shall be balanced and all air flow parameters shall be viewed and set from the intelligent room sensor with no computer or other field service tool needed.

C. Wall Sensor

1. Standard wall sensor shall use solid-state sensor identical to intelligent room sensor and shall be packaged in aesthetically pleasing enclosure. Sensor shall provide override function, warmer/cooler lever for set point adjustment and port for plug-in of Field Service Tool for field adjustments. Override time shall be stored in controller and be adjustable on a zone-by-zone basis. Adjustment range for warmer/cooler lever shall also be stored in EEPROM on controller. All programmable variables shall be available to field service tool through wall sensor port.

D. Wireless Wall Sensor

1. Wireless wall sensor shall use solid-state sensor and shall be packaged in aesthetically pleasing enclosure. Sensor shall provide override function, warmer/cooler dial for set point adjustment. Override time shall be stored in controller and be adjustable on a zone-by-zone basis. Adjustment range for warmer/cooler lever shall also be stored in EEPROM on controller. All programmable variables shall be available to field service tool through wall sensor port. There shall be a mechanical means the lock the wall sensor to the base to prevent theft and vandalism.

2. Wireless wall sensor shall have a battery life of 5 year with alkaline batteries and 7.5 years with lithium batteries. A low battery indication shall be signaled to the controller prior to the battery being exhausted. The wireless sensor shall run on industry standard AA style batteries.

3. The wireless range in open air shall meet or exceed 300 ft. The strength of the wireless signal must be indicated at the wireless sensor to aid in placement and trouble shooting. The receiver shall have a wireless communication received light that indicates the proper communication is occurring.

4. The wireless wall sensor and receiver must be paired in an addressable mean to facilitate easy replacement and reassignment.

E. Airflow Control:

1 Where indicated, provide airflow measuring stations and control.
2 A factory-furnished and calibrated controller shall be programmed, in nonvolatile EPROM, with application-specific airflow set point and range.
3 The controller and actuator shall communicate to control the desired airflow.
4 The controller shall receive a zero- to 10—V dc input signal and report a zero- to 20-mA output signal that is proportional to the airflow.
5 Airflow measurement and control range shall be suitable for operation between 150 to 2000 fpm (0.8 to 10 m/s).

6 Ambient Operating Temperature Range: Minus 40 to plus 140 deg F (Minus 40 to plus 60 deg C).
7 Ambient Operating Humidity Range: 5 to 95 percent relative humidity, non-condensing.
8 Provide unit with control transformer rated for not less than 85 VA. Provide transformer with primary and secondary protection and primary disconnecting means. Coordinate requirements with field power connection.
9 Provide screw terminals for interface to field wiring.
10 Factory mount electronics within a NEMA 250, Type 1 painted steel enclosure.

F. THERMAL ENERGY METERS

1 Performance Requirements: Manufacturer shall certify that each energy meter indicated complies with specified performance requirements and characteristics.

a. Product certificates are required.

Insertion-Type Thermal Energy Meters:

b. Manufacturer: Subject to compliance with requirements, provide products by the following:

ONICON Incorporated Turbine Flow Meter Model F-1210 and BTU Meter Model System-10-BAC.

c. Description:

1) Factory-packaged meter consisting of supply and return temperature sensors, flow sensor, digital display, keypad user interface, installation hardware, color-coded interconnecting cabling, and installation instructions.
2) Each thermal energy meter shall be individually calibrated and provided with calibration certification traceable to NIST.

d. Alphanumeric display of the following on face of enclosure:

1) Total energy consumption.
2) Energy rate.
3) Flow rate.
4) Supply temperature.
5) Return temperature.
6) Visual indication of power status (on/off) on face of enclosure.

e. Electronics Enclosure:
1) Remote from temperature and flow sensors.
2) NEMA 250, Type 12 or Type 13 for indoor applications and NEMA 250, Type 4 or Type 4X for outdoor applications.

3) Labeled terminal strip for field wiring connections.

f. Programming:

1) Factory programmed for specific application and field programmable through keypad on face of enclosure.
2) Programmed parameters and total energy consumption shall be stored in non-volatile EEPROM memory.

g. Output Signals:

1) Total Energy Consumption: Isolated solid—state dry contact with 100 mA, 50—V rating and contact duration of 0.5, 1, 2, or 6 seconds.
2) Energy Rate, Flow Rate, Supply Temperature, Return Temperature: 4 to 20 mA or zero- to 10-V dc for each.

h. Temperature Sensors:

1) Temperature range matched to application.
2) Temperature accuracy within 0.15 deg F (0.08 deg C) over the calibrated range.
3) Stainless-steel or brass thermowell with NPS 1/2 (DN lS) NPT connection for each sensor.

i. Current Sensors:

1) Veris Model H-908 or equal.

). Differential Pressure Transmitters & Switches:

1) Duct Static Pressure shall be Dwyer Model MS2-D102 or equal.
2) Space Static Pressure shall be Dwyer Model MS2-W111 or equal.
3) Hydronic Differential Pressure shall be Dwyer Model 629-05-CH-P2—E5-51-3V or equal.
4) Filter Switches shall be Dwyer Model ADPS-04-1-N or equal.

2.8 ELECTRONIC ACTUATORS AND VALVES (insert as required, sample requirements follow)

A. Quality Assurance for Actuators and Valves

1. UL Listed Standard 873 and C.S.A. Class 4813 02 certified.

2. NEMA 2 rated enclosures for inside mounting, provide with weather shield for outside mounting.

3. Five-year manufacturer's warranty. Two-year unconditional and three-year product defect from date of installation.

B. Execution Details for Actuators and Valves

1. Furnish a Freeze-stat and install "Hard Wire" interlock to disconnect the mechanical spring return actuator power circuit for fail-safe operation. Use of the control signal to drive the actuators closed is not acceptable.

2. Each DDC analog output point shall have an actuator feedback signal, independent of control signal, wired and terminated in the control panel for true position information and troubleshooting. Or the actuator feedback signal may be wired to the DDC as an analog input for true actuator position status.

3. VAV box damper actuation shall be floating type or analog (2—10VDC, 4—20mA).

4. Booster—heat valve actuation shall be floating type or analog (2-l0vdc, 4-20ma).

5. Primary valve control shall be analog (2—10VDC, 4—20mA).

C. Actuators for damper and control valves 0.5—6 inches shall be electric unless otherwise specified, provide actuators as follows:

1. UL Listed Standard 873 and Canadian Standards Association Class 481302 shall CeYtify actuators.

2. NEMA 2 rated actuator enclosures for inside mounting. Use additional weather shield to protect actuator when mounted outside.

3. Five—year manufacturer's warranty. Two-year unconditional and Three year product defect from date of installation.

4. Mechanical spring shall be provided when specified. Capacitors or other non-mechanical forms of fail-safe are not acceptable.

5. Position indicator device shall be installed and made visible to the exposed side of the actuator. For damper short shaft mounting, a separate indicator shall be provided to the exposed side of the actuator.

6. Overload Protection: Actuators shall provide protection against actuator burnout by using an internal current limiting circuit or digital motor rotation sensing circuit. Circuit shall insure that actuators cannot burn out due to stalled damper or mechanical and electrical paralleling. End switches to deactivate the actuator at the end of rotation are acceptable only for butterfly valve actuators.

7. A Pushbutton gearbox release shall be provided for all non-spring actuators.

8. Modulating actuators shall be 24VAC and consume 10VA power or less.

9. Conduit connectors are required when specified and when code requires it.

D. Damper Actuators:

1. Outside air and exhaust air damper actuators shall be mechanical spring return. Capacitors or other non-mechanical forms of fail-safe are not acceptable. The actuator mounting arrangement and spring return feature shall permit normally open or normally closed positions of the damper as required.

2. Economizer actuators shall utilize analog control 2—10VDC, floating control is not acceptable.

3. Electric damper actuators (including VAV box actuators) shall be direct shaft—mounted and use a V-bolt and toothed V-clamp causing a cold weld effect for positive gripping. Single bolt or set-screw type fasteners are not acceptable.

4. One electronic actuator shall be direct shaft-mounted per damper section. No connecting rods or jackshafts shall be needed. Small outside air and return air economizer dampers may be mechanically linked together if one actuator has sufficient torque to drive both and damper drive shafts are both horizontal installed.

S. Multi—section dampers with electric actuators shall be arranged so that each damper section operates individually. One electronic actuator shall be direct shaft-mounted per damper section. (See below execution section for more installation details.)

E. Valve Actuators 0.S—6 inches

1. Mechanical spring shall be provided on all actuators for pre-heat coil and actuators for AHU heating or cooling coil when units are mounted outside. See plans for fail-safe flow function: Normal Open or Normal Closed. Capacitors or other non-mechanical forms of fail-safe are not acceptable.

2. All zone service actuators shall be non-spring return unless otherwise specified.

3. The valve actuator shall be capable of providing the minimum torque required for proper valve close—off for the required application.

4. All control valves actuators shall have an attached 3-foot cable for easy installation to a junction box.

5. Override handle and gearbox release shall be provided for all non-spring return valve actuators.

F. Control Valves 0.5—6 inches

1. The BAS contractor shall furnish all specified motorized control valves and actuators. BAS contractor shall furnish all control wiring to actuators. The contractor shall install all valves. Equal percentage control characteristic shall be provided for all water coil control valves. Linear valve characteristic is acceptable for 3—way valves that are 2.5 inches and above.

2. Characterized control valves shall be used for hydronic heating or cooling applications and small to medium AHU water-coil applications to 200 GPM. Cooling tower coil control valves shall be for water-coil applications up to 550 GPM Actuators are non-spring retui n for terminal unit coil control unless otherwise noted. If the coil is exposed to the outside air stream, see plans for spring return requirement.

   a. Leakage is aero percent, close—off is 200psi, maximum differential is 30psi; rangeability is 500:1.

b. Valves 0.5—2 inches shall be nickel-plated forged brass body, NPT screw type connections.

c. Valves 0.5—1.25 inches shall be rated for ANSI Class 600 working pressure. Valves over 1.5 inches shall be rated for ANSI Class 400 working pressure. Two—position control valves shall be line size.

d. The operating temperature range shall be 0—250 degrees F.

e. Stainless steel ball and stem shall be furnished on all modulating valves.

f. Seats shall be fiberglass reinforced Teflon.

g. Two-way and three-way valves shall have an equal percentage control port. Full stem rotation is required for maximum flow to insure stable BTU control of the coil.

h. Three-way valve shall be applicable for both mixing and diverting.

i. The characterizing disc is made of TEFZEL and shall be keyed and held secure by a retaining ring.

j. The valves shall have a blow-out proof stem design.

k. The stem pac1‹ing shall consist of 2 lubricated 0-rings designed for on-off or modulating service and require no maintenance.

1. The valves shall have an ISO type, 4-bolt flange for mounting actuator in any orientation parallel or perpendicular to the pipe.

m. A non-metallic thermal isolation adapter shall separate valve flange from actuator.

n. One fastening screw shall secure the direct coupling of the thermal isolation adapter between the actuator and the valve. This will prevent all lateral or rotational forces from affecting the stem and its packing 0-rings.

3. Globe valves 0.5—2 inches shall be single port, top or bottom guided plug control or water flow applications.

a. Valves shall be bronze body, NPT screw type, and shall be rated for ANSI Class 250 working pressure.

b. Valves 0.5 inches (DN15) through 2 inches (DN50) with spring return actuators shall close off against 50 psi pressure differential with Class III leakage (0.1%).

c. The operating temperature range shall be 20—280 degrees F.

d. Spring loaded TFE packing shall protect against leakage at the stem.

e. Two-way valves shall have an equal percentage control port.

f. Three-way valves shall have a linear control and bypass port.

g. Mixing and diverting valves must be installed specific to the valve design.

4. Globe Valve 2.5—6 inches

a. Valves 2.5 inches (DN6S) through 6 inches (DN 50) shall be iron body, 125 lb. flanged with Class III (0.1%) close-off leakage at 50 psi differential.

b. Valves with spring return actuators shall close off against 50 psi pressure differential with Class III leakage (0.1%).

c. Flow type for two-way valves shall be equal percentage. Flow type for three-way valves shall be linear.

d. Mixing and diverting valves must be installed specific to the valve design.

G. Butterfly valves

1. Butterfly valves shall be sized for modulating service at 60—70-degree stem rotation. Isolation valves shall be line-size. Design velocity shall be less than 12 feet per second when used with standard EPDM seats.

a. Body is cast iron.

b. Disc is aluminum bronze standard.

c. Seat is EPDM standard.

d. Body Pressure is 200 psi, -30—275-degrees F.

e. Flange is ANSI 125/250.

f. Media Temperature Range is -22—240-degrees F.

g. Maximum Differential Pressure is 200 psi for 2- to 6- inch size.

H. Butterfly Valve Industrial Actuators

1, Actuators shall be approved under Canadian Standards Association or other Nationally Recognized Testing Laboratory to UL standards. CSA Class 4813 02 or equal. Enclosure shall be NEMA 4 (weatherproof) enclosure and will have an industrial quality coating.

a. Actuator shall have a motor rated for continuous duty. The motor shall be fractional horsepower; permanent split capacitor type designed to operate on a 120VAC, lpH, 60Hz supply. Two adjustable cam-actuated end travel limit switches shall be provided to control direction of travel. A self-resetting thermal switch shall be imbedded in the motor for overload protection.

b. Reduction gearing shall be designed to withstand the actual motor stall torque. Gears shall be hardened alloy steel, permanently lubricated. A self-locking gear

assembly or a brake shall be supplied.

c. Actuator shall have a 6 ft wiring harness provided for ease in field wiring (above 1500 in-lbs). Two adjustable SPDT cam-actuated auxiliary switches, rated at 250VAC shall be provided for indication of open and closed position. Actuator shall have heater and thermostat to minimize condensation within the actuator housing.

d. Actuator shall be equipped with a hand wheel for manual override to permit operation of the valve in the event of electrical power failure or system malfunction. Hand wheel must be permanently attached to the actuator and when in manual operation electrical power to the actuator will be permanently interrupted. The hand wheel will not rotate while the actuator is electrically driven.

e. The actuator shall be analog, floating, or two positions as called out in the control sequence of operation. All Analog valves shall be positive positioning, and respond to a 2—10VDC, 4-20mA, or adjustable signal as required. Analog actuators shall have a digital control card allowing any voltage input for control and any DC voltage feedback signal for position indication.

1. Performance Verification Test

a. Control loops shall cause productive actuation with each movement of the actuator and actuators shall modulate at a rate that is stable and responsive. Actuator movement shall not occur before the effects of previous movement have affected the sensor.

b. Actuator shall have capability of signaling a trouble alarm when the actuator Stop-Go Ratio exceeds 30%.

2. Actuator mounting for damper and valve arrangements shall comply with the following:

a. Damper actuators: Shall not be installed in the air stream

b. A weather shield shall be used if actuators are located outside. For damper actuators, use clear plastic enclosure.

c. Damper or valve actuator ambient temperature shall not exceed 122 degrees F through any combination of medium temperature or surrounding air. Appropriate air gaps, thermal isolation washers or spacers, standoff legs, or insulation shall be provided as necessary.

d. Actuator cords or conduit shall incorporate a drip leg if condensation is possible. Water shall not be allowed to contact actuator or internal parts. Location of conduits in temperatures dropping below dew point shall be avoided to prevent water from condensing in conduit and running into actuator.

e. Damper mounting arrangements shall comply with the following:

1. The contractor shall furnish and install damper channel supports and sheet metal collars.

2. No jack shafting of damper sections shall be allowed.

3. Multi-section dampers shall be arranged so that each damper section operates individually. One electronic actuator shall be direct shaft mounted per section.

4. Valve Sizing for Water Coil

b. Modulating control valve body size may be reduced, at most, two pipe sizes from the line size or not less than half the pipe size. The BAS contractor shall size all water coil control valves for the application as follows:

1. Booster-heat valves shall be sized not to exceed 4—9psi differential pressure. Size valve for 50% valve authority. Valve design pressure drop is equal to the sum of coil drop plus the balance valve drop.

2. Primary valves shall be sized not to exceed S—15psi differential pressure. Size valve for 50% valve authority. Valve design pressure drop is equal to the sum of coil drop plus the balance valve drop.

3. Butterfly valves shall be sized for modulating service at 60—70-degree rotation. Design velocity shall be 12 feet per second or less when used with standard EPDM seats.

c. Valve mounting arrangements shall comply to the following:

1. Unions shall be provided on all ports of two-way and three—way valves.

2. Install three-way equal percentage characterized control valves in a mixing configuration with the “A” port piped to the coil.

3. Install 2.5 inches and above, three-way globe valves, as manufactured for mixing or diverting service to the coil.

2.9 CONTROL PANELS

A. All controllers, power supplies and relays shall be mounted in enclosures.

B. Enclosures may be NEMA l when located in a clean, dry, indoor environment. Indoor enclosures shall be NEMA 12 when installed in other than a clean environment.

C. Enclosures shall have hinged, locking doors.

D. Provide laminated plastic nameplates for all enclosures in any mechanical room or electrical room. Include location and unit served on nameplate. Laminated plastic shall be 0.125 inches thick and appropriately sized to make label easy to read.

E. Control panels must be assembled by a UL authorized fabricator in accordance with UL508A standards and labeled with separate UL label numbers.

PART 3: EXECUTION

3.1 EXAMINATION

A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence.

B. Notify the owner's representative in writing of conditions detrimental to the proper and timely completion of the work.

C. Do not begin work until all unsatisfactory conditions are resolved.

3.2 INSTALLATION (GENERAL)

A. Install in accordance with manufacturer's instructions.

B. Provide all miscellaneous devices, hardware, software, interconnections, installation, and programming required to ensure a complete operating system in accordance with the sequences of operation and point schedules.

3.3 LOCATION AND INSTALLATION OF COMPONENTS

A. Locate and install components for easy accessibility; in general, mount 48 inches above floor with minimum 3 feet of clear access space in front of units. Obtain approval on locations from owner's representative prior to installation.

B. All instruments, switches, transmitters, etc., shall be suitably wired and mounted to protect them from vibration, moisture, and high or low temperatures.

C. Identify all equipment and panels. Provide permanently mounted tags for all panels.

D. Provide stainless steel or brass thermowells suitable for respective application and for installation under other sections, and sized to suit pipe diameter without restricting

3.4 INTERLOCKING AND CONTROL WIRING

A. Provide all interlock and control wiring. All wiring shall be installed neatly and professionally, in accordance with Specification Division 16 and all national, state and local electrical codes.

B. Provide wiring as required by functions as specified and as recommended by equipment manufacturers, to serve specified control functions. Provide shielded low capacitance wire for all communications trunks.

C. Control wiring shall not be installed in power circuit raceways. Magnetic starters and disconnect switches shall not be used as junction boxes. Provide auxiliary junction boxes as required. Coordinate location and arrangement of all control equipment with the owner's representative prior to rough-in.

D. Provide auxiliary pilot duty relays on motor starters as required for control function.

E. Provide power for all control components from nearest electrical control panel or as indicated on the electrical drawings; coordinate with electrical contractor.

F. All control wiring in the mechanical, electrical, telephone and boiler rooms to be installed in raceways. All other wiring to be installed neatly and inconspicuously per local code requirements. If local code allows, control wiring above accessible ceiling spaces may be run with plenum-rated cable (without conduit).

3.5 DDC OBJECT TYPE SUMMARY

A. Provide all database generation.

B. Displays

1. System displays shall show all analog and binary object types within the system. They shall be logically laid out for easy use by the owner. Provide outside air temperature indication on all system displays associated with economizer cycles.

C. Run Time Totalization

1. At a minimum, run time totalization shall be incorporated for each monitored supply fan, return fan, exhaust fan, hot water and chilled water pumps. Warning limits for each point shall be entered for alarm and or maintenance purposes.

D. Trendlog

1. All binary and analog object types (including zones) shall have the capability to be automatically trended.

E. Alarm

1. All analog inputs (High/Low Limits) and selected binary input alarm points shall be prioritized and routed (locally or remotely) with alarm message per owner's requirements.

F. Database Save

1. Provide backup database for all standalone application controllers on disk.

3.6 FIELD SERVICES

A. Prepare and start logic control system under provisions of this section.

B. Start up and commission systems. Allow sufficient time for startup and commissioning prior to placing control systems in permanent operation.

C. Provide the capability for off-site monitoring at control contractor's local or main office. At a minimum, off-site facility shall be capable of system diagnostics and software download. Owner shall provide phone line for this service for one year or as specified.

D. Provide owner's representative with spare parts list. Identify equipment critical to maintaining the integrity of the operating system.

3.7 AS-BUILT DOCUMENTATION REQUIRED

A. Complete set of accurate control drawings and programming.

3.8 TRAINING

A. Provide application engineer to instruct owner in operation of systems and equipment.

B. Provide system operator's training to include (but not be limited to) such items as the following: modification of data displays, alarm and status descriptors, requesting data, execution of commands and request of logs. Provide this training to a minimum of three persons.

C. Provide on-site training above as required, up to 16 hours as part of this contract.

D. Provide tuition for at least two individuals to attend for a two—day factory training class. If applicable, costs for travel, lodging and meals will be the responsibility of the owner.

3.9 DEMONSTRATION

A. Demonstrate complete operating system to owner’s representative.

B. Provide certificate stating that control system has been tested and adjusted for proper operation.

END OF SECTION 230923

SECTION 232113 - HYDRONIC PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes pipe and fitting materials and joining methods for the following:

1. Hot-water heating piping.
2. Makeup-water piping.
3. Condensate-drain piping.
4. Air-vent piping.
5. Safety-valve-inlet and -outlet piping.
6. Chemical treatment piping.
7. Site chilled water piping (underground).

1.3 ACTION SUBMITTALS

A. Delegated-Design Submittal:

1. Design calculations and detailed fabrication and assembly of pipe anchors and alignment guides, hangers and supports for multiple pipes, expansion joints and loops, and attachments of the same to the building structure.
2. Locations of pipe anchors and alignment guides and expansion joints and loops.
3. Locations of and details for penetrations, including sleeves and sleeve seals for exterior walls, floors, basement, and foundation walls.
4. Locations of and details for penetration and firestopping for fire- and smoke-rated wall and floor and ceiling assemblies.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Piping layout, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Suspended ceiling components.
2. Other building services.
3. Structural members.

B. Qualification Data: For Installer.

C. Welding certificates.

D. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Installer Qualifications:

B. Steel Support Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

C. Pipe Welding: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code: Section IX.

1. Comply with ASME B31.9, "Building Services Piping," for materials, products, and installation.
2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.

PART 2 - PRODUCTS

2.1 COPPER TUBE AND FITTINGS

A. Drawn-Temper Copper Tubing: ASTM B 88, Type L.

B. Grooved, Mechanical-Joint, Wrought-Copper Fittings: ASME B16.22.

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

a. Anvil International.
b. Star Pipe Products.
c. Victaulic Company.

2. Grooved-End Copper Fittings: ASTM B 75, copper tube or ASTM B 584, bronze casting.

3. Grooved-End-Tube Couplings: Rigid pattern unless otherwise indicated; gasketed fitting. Ductile-iron housing with keys matching pipe and fitting grooves, prelubricated EPDM gasket rated for minimum 230 deg F for use with housing, and steel bolts and nuts.

2.2 STEEL PIPE AND FITTINGS

A. Steel Pipe: ASTM A 53/A 53M, black steel with plain ends; welded and seamless, Grade B, and wall thickness as indicated in "Piping Applications" Article.

B. Cast-Iron Pipe Flanges and Flanged Fittings: ASME B16.1, Classes 25, 125, and 250; raised ground face, and bolt holes spot faced as indicated in "Piping Applications" Article.

C. Wrought-Steel Fittings: ASTM A 234/A 234M, wall thickness to match adjoining pipe.

D. Wrought Cast- and Forged-Steel Flanges and Flanged Fittings: ASME B16.5, including bolts, nuts, and gaskets of the following material group, end connections, and facings:

1. Material Group: 1.1.
2. End Connections: Butt welding.
3. Facings: Raised face.

E. Grooved Mechanical-Joint Fittings and Couplings:

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

a. Central Sprinkler Company.
b. S. P. Fittings.
c. Smith-Cooper International.
d. Victaulic Company.

2. Joint Fittings: ASTM A 536, Grade 65-45-12 ductile iron; ASTM A 47/A 47M, Grade 32510 malleable iron; ASTM A 53/A 53M, Type F, E, or S, Grade B fabricated steel; or ASTM A 106/A 106M, Grade B steel fittings with grooves or shoulders constructed to accept grooved-end couplings; with nuts, bolts, locking pin, locking toggle, or lugs to secure grooved pipe and fittings.
3. Couplings: Ductile- or malleable-iron housing and EPDM or nitrile gasket of central cavity pressure-responsive design; with nuts, bolts, locking pin, locking toggle, or lugs to secure grooved pipe and fittings.

F. Steel Pipe Nipples: ASTM A 733, made of same materials and wall thicknesses as pipe in which they are installed.

2.3 JOINING MATERIALS

A. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.

1. ASME B16.21, nonmetallic, flat, asbestos free, 1/8-inch maximum thickness unless otherwise indicated.

a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.

B. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.

C. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.

D. Brazing Filler Metals: AWS A5.8/A5.8M, BCuP Series, copper-phosphorus alloys for joining copper with copper; or BAg-1, silver alloy for joining copper with bronze or steel.

E. Welding Filler Metals: Comply with AWS D10.12M/D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

F. Gasket Material: Thickness, material, and type suitable for fluid to be handled and working temperatures and pressures.

2.4 DIELECTRIC FITTINGS

A. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.

B. Dielectric Unions:
   1. Description:
      a. Standard: ASSE 1079.
      b. Pressure Rating: 125 psig minimum at 180 deg F.
      c. End Connections: Solder-joint copper alloy and threaded ferrous.

C. Dielectric Flanges:
   1. Description:
      a. Standard: ASSE 1079.
      b. Factory-fabricated, bolted, companion-flange assembly.
      c. Pressure Rating: 125 psig minimum at 180 deg F.
      d. End Connections: Solder-joint copper alloy and threaded ferrous; threaded solder-joint copper alloy and threaded ferrous.

D. Dielectric-Flange Insulating Kits:
   1. Description:
      a. Nonconducting materials for field assembly of companion flanges.
      b. Pressure Rating: 150 psig.
      c. Gasket: Neoprene or phenolic.
      d. Bolt Sleeves: Phenolic or polyethylene.
      e. Washers: Phenolic with steel backing washers.

E. Dielectric Nipples:
   1. Description:
      a. Standard: IAPMO PS 66.
      b. Electroplated steel nipple, complying with ASTM F 1545.
      c. Pressure Rating: 300 psig at 225 deg F.
      d. End Connections: Male threaded or grooved.
      e. Lining: Inert and noncorrosive, propylene.

2.5 BYPASS CHEMICAL FEEDER

A. Description: Welded steel construction; 125-psig working pressure; 5-gal. capacity; with fill funnel and inlet, outlet, and drain valves.

1. Chemicals: Specially formulated, based on analysis of makeup water, to prevent accumulation of scale and corrosion in piping and connected equipment.

2.6 SITE CHILLED WATER PIPING (UNDERGROUND)

A. Description: Pre-insulated steel pipe for direct burial – chilled water.

B. Pre-insulated Steel Pipe for Direct Burial.

1. Carrier Pipe: Black Steel conforming to ASTM A-53 Grade B Schedule 40. All exposed pipe ends shall be corrosion-resistant at the factory.

2. Insulation: Polyurethane foam with following minimum characteristics: K-factor, 14 density 2 PCF, closed cell content 90-95% in conromance with MIL-I-24172 and ASTM C-591 completely filling the annular space between Carrier pipe and jacketing.

3. Jacketing Material: High impact, seamless high-density polyethylene (HDPE) in accordance with ASTM D 1248, type 3, Class C. Minimum jacket thickness shall be as follows:

Pipe Size (in)	Insul. Thick CHW (in)	Jacket Thick (in)
16	1.50	0.15
14	1.50	0.15
12	1.50	0.125
10	1.50	0.125
8	1.50	0.125
6	1.50	0.125
5	1.50	0.125
4	1.50	0.125
3	1.50	0.125
2-1/2	1.50	0.125
2	1.50	0.125

4. Joining Method: Straight lengths of pipe will be joined by welding.

5. Fittings: All fittings will conform to pipe type and will be insulated and jacketed with materials supplied by the system suppliers and as per manufacturer's standard procedures.

6. End Seal: Each length of pre-insulated pipe will be fitted with a water-tight mastic end seal at jacket and pipe surfaces. All field cuts will be sealed with a field applied end seal.

7. Insulation of Straight Joints: After welding and testing, all joints shall be insulated and sealed as per manufacturer's standard procedures.

   Anchors: ½" thick steel anchor plate is attached to internal pipe and sealed to pipe jacketing as per system supplier's recommendations.

PART 3 - EXECUTION

3.1 PIPING APPLICATIONS

A. Water piping, aboveground, NPS 2 and smaller, shall be the following:

   1. Type L, drawn-temper copper tubing, wrought-copper fittings, and soldered joints.

B. Water piping, aboveground, NPS 2-1/2 and larger, shall be the following:
   1. Schedule 40 steel pipe, wrought-steel fittings and wrought-cast or forged-steel flanges and flange fittings, and welded and flanged joints (in shafts and inside the building).
   2. Schedule 40 steel pipe; grooved, mechanical joint coupling and fittings; and grooved, mechanical joints (on roof only).

C. Makeup-water piping installed aboveground shall be the following:

   1. Type L, drawn-temper copper tubing, wrought-copper fittings, and soldered joints.

D. Condensate-Drain Piping: Type M, drawn-temper copper tubing, wrought-copper fittings, and soldered joints.

E. Air-Vent Piping:

   1. Inlet: Same as service piping.
   2. Outlet: Type M, annealed-temper copper tubing with soldered or flared joints.

F. Safety-Valve-Inlet and -Outlet Piping for Hot-Water Piping: Same materials and joining methods as for piping specified for the service in which safety valve is installed.

3.2 PIPING INSTALLATIONS

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.

B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.

C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

E. Install piping to permit valve servicing.

F. Install piping at indicated slopes.

G. Install piping free of sags and bends.

H. Install fittings for changes in direction and branch connections.

I. Install piping to allow application of insulation.

J. Select system components with pressure rating equal to or greater than system operating pressure.

K. Install groups of pipes parallel to each other, spaced to permit applying insulation and servicing of valves.

L. Install drains, consisting of a tee fitting, NPS 3/4 ball valve, and short NPS 3/4 threaded nipple with cap, at low points in piping system mains and elsewhere as required for system drainage.

M. Install piping at a uniform grade of 0.2 percent upward in direction of flow.

N. Reduce pipe sizes using eccentric reducer fitting installed with level side up.

O. Install branch connections to mains using tee fittings in main pipe, with the branch connected to the bottom of the main pipe. For up-feed risers, connect the branch to the top of the main pipe.

P. Install unions in piping, NPS 2-1/2 and smaller, adjacent to valves, at final connections of equipment, and elsewhere as indicated.

Q. Install flanges in piping, NPS 3 and larger, at final connections of equipment and elsewhere as indicated.

R. Install shutoff valve immediately upstream of each dielectric fitting.

S. Comply with requirements in Section 230516 "Expansion Fittings and Loops for HVAC Piping" for installation of expansion loops, expansion joints, anchors, and pipe alignment guides.

T. Comply with requirements in Section 230553 "Identification for HVAC Piping and Equipment" for identifying piping.

U. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 230517 "Sleeves and Sleeve Seals for HVAC Piping."

V. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 230517 "Sleeves and Sleeve Seals for HVAC Piping."

W. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 230518 "Escutcheons for HVAC Piping."

3.3 DIELECTRIC FITTING INSTALLATION

A. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.

B. Dielectric Fittings for NPS 2 and Smaller: Use dielectric unions.

C. Dielectric Fittings for NPS 2-1/2 to NPS 4: Use dielectric flanges.

D. Dielectric Fittings for NPS 5 and Larger: Use dielectric flange kits.

3.4 HANGERS AND SUPPORTS

A. Comply with requirements in Section 230529 "Hangers and Supports for HVAC Piping and Equipment" for hanger, support, and anchor devices. Comply with the following requirements for maximum spacing of supports.

B. Comply with requirements in Section 230548 "Vibration and Seismic Controls for HVAC" for seismic restraints.

C. Install the following pipe attachments:

1. Adjustable steel clevis hangers for individual horizontal piping less than 20 feet long.
2. Adjustable roller hangers and spring hangers for individual horizontal piping 20 feet or longer.
3. Pipe Roller: MSS SP-58, Type 44 for multiple horizontal piping 20 feet or longer, supported on a trapeze.
4. Spring hangers to support vertical runs.
5. Provide copper-clad hangers and supports for hangers and supports in direct contact with copper pipe.
6. On plastic pipe, install pads or cushions on bearing surfaces to prevent hanger from scratching pipe.

D. Install hangers for steel piping with the following maximum spacing and minimum rod sizes:

1. NPS 3/4: Maximum span, 7 feet.
2. NPS 1: Maximum span, 7 feet.
3. NPS 1-1/2: Maximum span, 9 feet.
4. NPS 2: Maximum span, 10 feet.
5. NPS 2-1/2: Maximum span, 11 feet.
6. NPS 3 and Larger: Maximum span, 12 feet.

E. Install hangers for drawn-temper copper piping with the following maximum spacing and minimum rod sizes:

1. NPS 3/4: Maximum span, 5 feet; minimum rod size, 1/4 inch.
2. NPS 1: Maximum span, 6 feet; minimum rod size, 1/4 inch.
3. NPS 1-1/4: Maximum span, 7 feet; minimum rod size, 3/8 inch.
4. NPS 1-1/2: Maximum span, 8 feet; minimum rod size, 3/8 inch.
5. NPS 2: Maximum span, 8 feet; minimum rod size, 3/8 inch.
6. NPS 2-1/2: Maximum span, 9 feet; minimum rod size, 3/8 inch.
7. NPS 3 and Larger: Maximum span, 10 feet; minimum rod size, 3/8 inch.

F. Support vertical runs at roof, at each floor, and at 10-foot intervals between floors.

3.5 PIPE JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

C. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.

D. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8/A5.8M.

E. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

F. Welded Joints: Construct joints according to AWS D10.12M/D10.12, using qualified processes and welding operators according to "Quality Assurance" Article.

G. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

H. Grooved Joints: Assemble joints with coupling and gasket, lubricant, and bolts. Cut or roll grooves in ends of pipe based on pipe and coupling manufacturer's written instructions for pipe wall thickness. Use grooved-end fittings and rigid, grooved-end-pipe couplings.

3.6 TERMINAL EQUIPMENT CONNECTIONS

A. Sizes for supply and return piping connections shall be the same as or larger than equipment connections.

B. Install control valves in accessible locations close to connected equipment.

C. Install bypass piping with butterfly valve around control valve.

D. Install ports for pressure gages and thermometers at coil inlet and outlet connections. Comply with requirements in Section 230519 "Meters and Gages for HVAC Piping."

3.7 CHEMICAL TREATMENT

A. Install bypass chemical feeders in each hydronic system where indicated.

1. Install in upright position with top of funnel not more than 48 inches above the floor.
2. Install feeder in minimum NPS 3/4 bypass line, from main with full-size, full-port, ball valve in the main between bypass connections.
3. Install NPS 3/4 #316 stainless steel pipe and #316 all stainless steel ball valve from chemical pot feeder to the heating hot water mains. Provide dissimilar metal unions as required.
4. Install NPS 3/4 #316 stainless steel pipe drain to nearest approved drain receptor and include a full-size, full-port, #316 all stainless steel ball valve.

B. Fill system with fresh water and add liquid alkaline compound with emulsifying agents and detergents to remove grease and petroleum products from piping. Circulate solution for a minimum of 24 hours, drain, clean strainer screens, and refill with fresh water.

C. Add initial chemical treatment and maintain water quality in ranges noted above for the first year of operation.

3.8 FIELD QUALITY CONTROL

A. Prepare hydronic piping according to ASME B31.9 and as follows:

1. Leave joints, including welds, uninsulated and exposed for examination during test.

2. Provide temporary restraints for expansion joints that cannot sustain reactions due to test pressure. If temporary restraints are impractical, isolate expansion joints from testing.
3. Flush hydronic piping systems with clean water; then remove and clean or replace strainer screens.
4. Isolate equipment from piping. If a valve is used to isolate equipment, its closure shall be capable of sealing against test pressure without damage to valve. Install blinds in flanged joints to isolate equipment.
5. Install safety valve, set at a pressure no more than one-third higher than test pressure, to protect against damage by expanding liquid or other source of overpressure during test.

B. Perform the following tests on hydronic piping:

1. Use ambient temperature water as a testing medium unless there is risk of damage due to freezing. Another liquid that is safe for workers and compatible with piping may be used.
2. While filling system, use vents installed at high points of system to release air. Use drains installed at low points for complete draining of test liquid.
3. Isolate expansion tanks and determine that hydronic system is full of water.
4. Subject piping system to hydrostatic test pressure that is not less than 1.5 times the system's working pressure. Test pressure shall not exceed maximum pressure for any vessel, pump, valve, or other component in system under test. Verify that stress due to pressure at bottom of vertical runs does not exceed 90 percent of specified minimum yield strength or 1.7 times the "SE" value in Appendix A in ASME B31.9, "Building Services Piping."
5. After hydrostatic test pressure has been applied for at least 10 minutes, examine piping, joints, and connections for leakage. Eliminate leaks by tightening, repairing, or replacing components, and repeat hydrostatic test until there are no leaks.
6. Prepare written report of testing.

C. Perform the following before operating the system:

1. Open manual valves fully.
2. Inspect pumps for proper rotation.
3. Set makeup pressure-reducing valves for required system pressure.
4. Inspect air vents at high points of system and determine if all are installed and operating freely (automatic type), or bleed air completely (manual type).
5. Set temperature controls so all coils are calling for full flow.
6. Inspect and set operating temperatures of hydronic equipment, such as boilers, chillers, cooling towers, to specified values.
7. Verify lubrication of motors and bearings.

3.9 SITE CHILLED WATER PIPE INSTALLATION

A. Provide and install factory pre-fabricated and pre-insulated chilled water piping for direct-buried piping systems complete with all necessary bedding, fittings, trenching, backfilling, and hardware as necessary for fully functional piping systems.

B. Use pre-insulated steel Carrier, direct-burial pressure pipe with a minimum of 1-1/2" polyurethane insulation for all below-grade chilled water pipe. Fittings shall be welded as recommended by the manufacturer.

C. Use flanges on piping 2-1/2" and larger and unions on piping 2" and smaller for connection to steel or copper piping systems. Provide services valves at all equipment and at all branch takeoffs and elsewhere as indicated on drawings using gate valves in piping 2" and smaller and butterfly valves on piping 2-1/2" and larger.

D. Install all piping as close as possible to layout indicated.

E. Install all direct-burial piping as per the manufacturer's recommendations, including thrust blocks, anchoring of steel pipe prior to connection installation of insulation at straight joints, etc.

F. Install concrete or steel valve boxes with cast iron covers at all valved locations in the yard. Boxes shall be as detailed on the drawings and of sufficient size to allow replacement of valves within the box.

G. Install all black steel fittings in accordance with Section 15105.

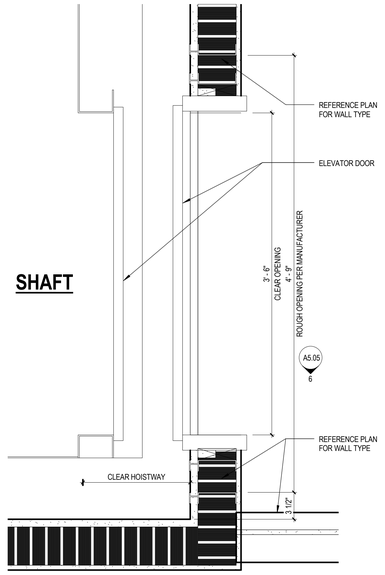
H. Clean inside of pipe before installing it. Keep installed piping clean and protect ends from foreign matter by capping or plugging them.

I. Run pipes in straight lines. Install risers plumb. Keep installed piping clean and protect ends from foreign matter by capping or plugging them.

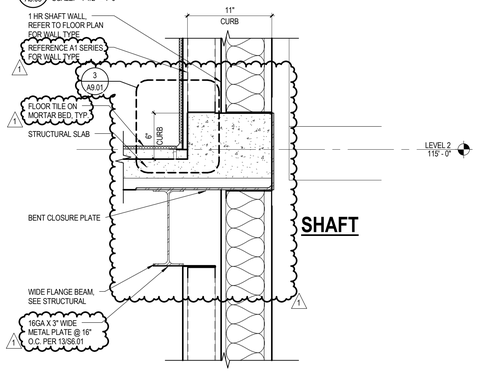
J. Before piping is concealed, check it for leaks. Pipe and fittings shall be tested to 150 psig.

K. Re-work or replace defective and leaking joints and joints which are otherwise unsatisfactory.

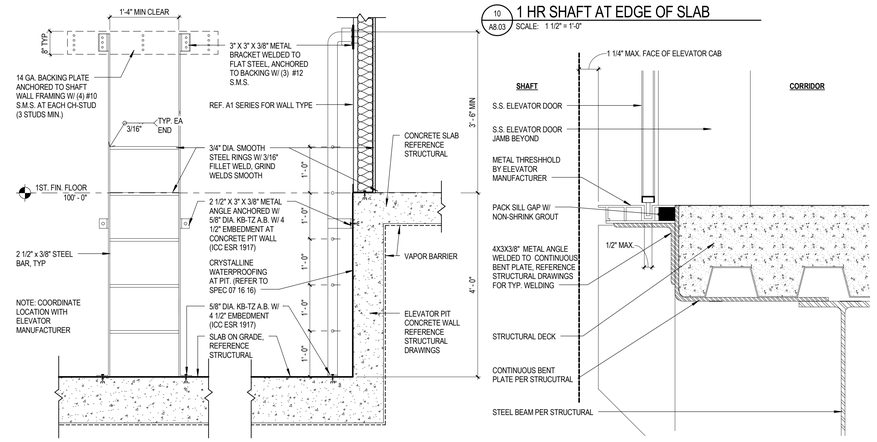
END OF SECTION 232113



11 A8.03 ELEVATOR JAMB
SCALE: 1 1/2" = 1'-0"

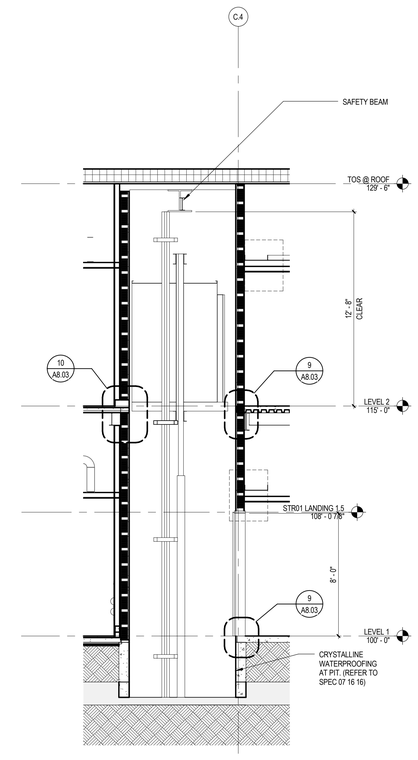


10 A8.03 1 HR SHAFT AT EDGE OF SLAB
SCALE: 1 1/2" = 1'-0"

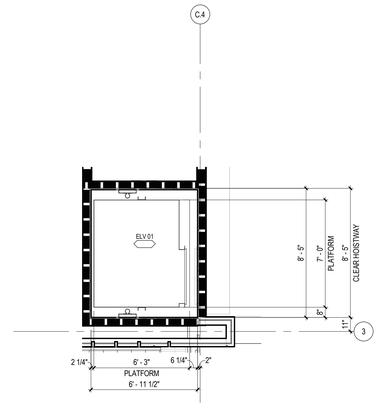


13 A8.03 ELEVATOR PIT LADDER
SCALE: 3/4" = 1'-0"

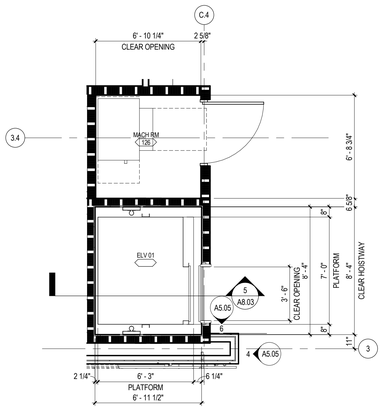
9 A8.03 ELEVATOR DOOR SILL
SCALE: 3" = 1'-0"



5 A8.03 ELEVATOR - SECTION
SCALE: 1/4" = 1'-0"



3 A8.03 ELV 01 - LEVEL 2
SCALE: 1/4" = 1'-0"



2 A8.03 ELV 01 - LEVEL 1
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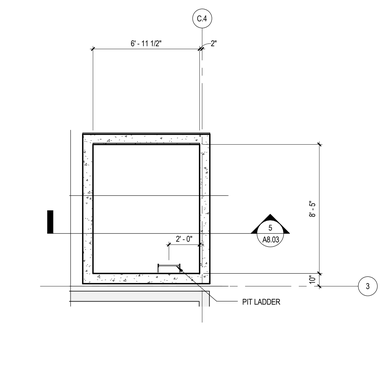

1 A8.03 ELV 01 - PIT
SCALE: 1/4" = 1'-0"

NO.	DATE	ISSUE
0	8/17/2018	REVISION D
1	10/10/2018	ADDENDA 1

LICENSED ARCHITECT
MICHAEL S. GOLDBERG
C - 24552
EXP: 5.31.2019
STATE OF CALIFORNIA

ELEVATOR - PLANS, SECTIONS & DETAILS
COMPTON COMMUNITY COLLEGE DISTRICT
INSTRUCTIONAL BLDG. #1
1111 E. ARTESIA BLVD. COMPTON, CA 90221

A8.03
75-15238-00

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Architecture Engineering Planning Interiors

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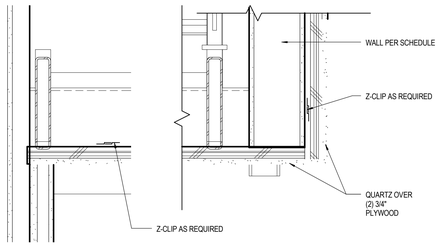
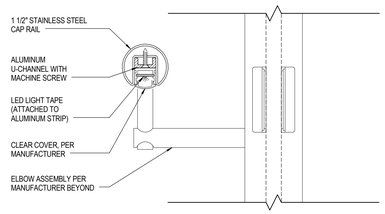
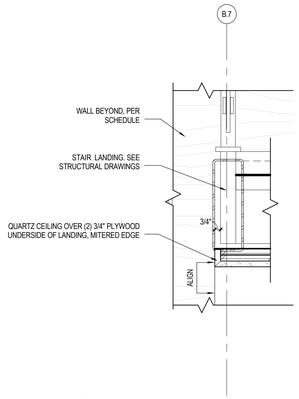


1 A8.07 STR-01 SOLID SURFACE SOFFIT
SCALE: 1 1/2" = 1'-0"

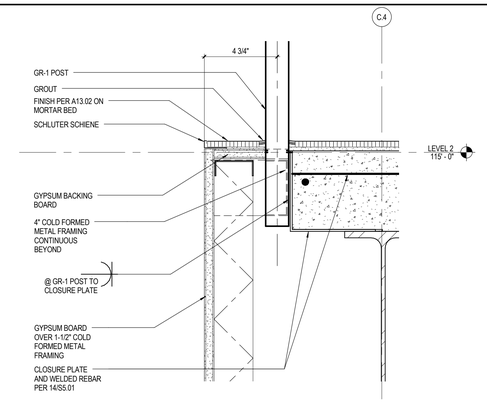


REFER TO MANUFACTURER FOR LED LIGHT ASSEMBLY IN HANDRAIL.

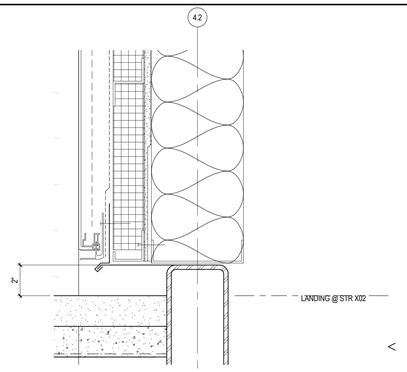
16 A8.07 LED @ HANDRAIL
SCALE: 6" = 1'-0"



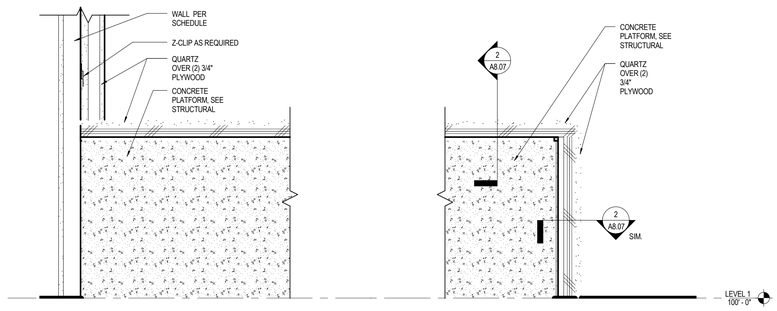
12 A8.07 STR 01 - SOLID SURFACE EDGE DETAIL
SCALE: 1 1/2" = 1'-0"



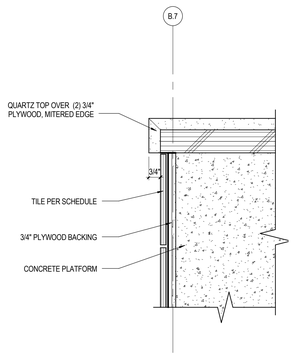
7 A8.07 GUARDRAIL @ E.O.S. NORTH
SCALE: 3" = 1'-0"



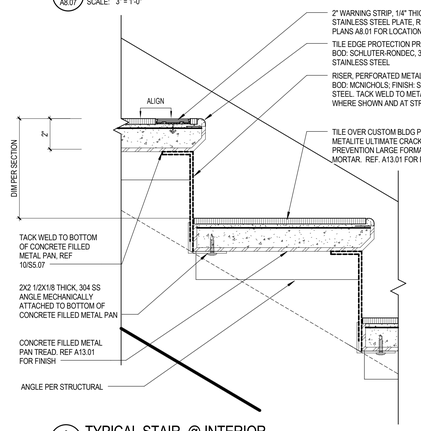
4 A8.07 STRINGER @ WING WALL
SCALE: 3" = 1'-0"



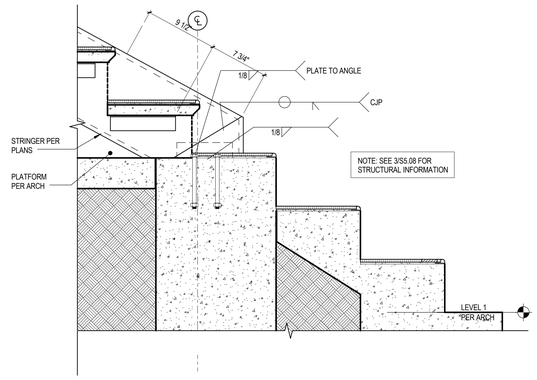
19 A8.07 STR-01 SOLID SURFACE PLATFORM
SCALE: 1 1/2" = 1'-0"



2 A8.07 STR-01 SOLID SURFACE @ PLATFORM OVERHANG
SCALE: 3" = 1'-0"



8 A8.07 TYPICAL STAIR @ INTERIOR
SCALE: 3" = 1'-0"



3 A8.07 STRINGER CONNECTION @ BASE
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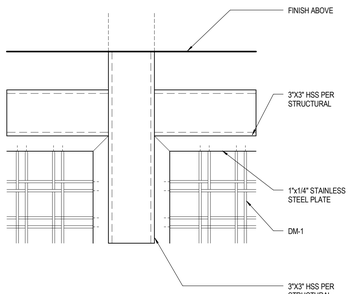
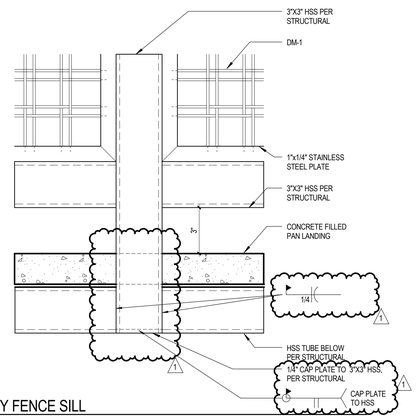


18 A8.07 SECURITY FENCE HEADER
SCALE: 3" = 1'-0"



14 A8.07 SECURITY FENCE SILL
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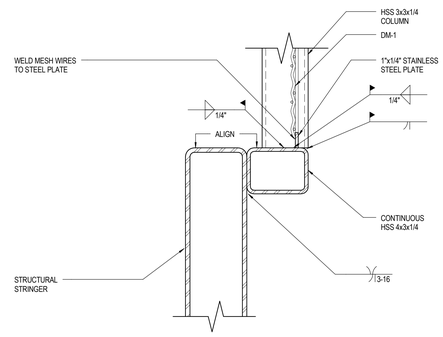
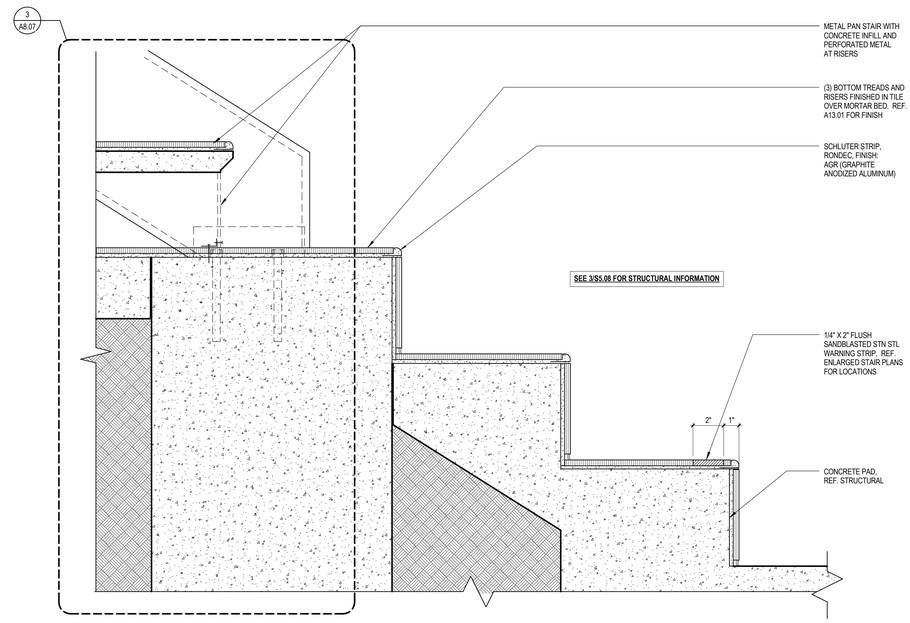
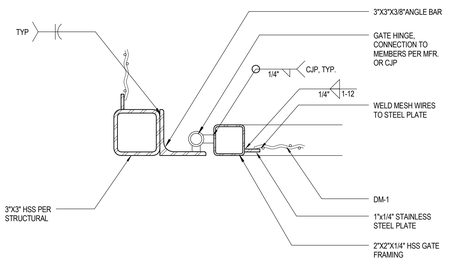


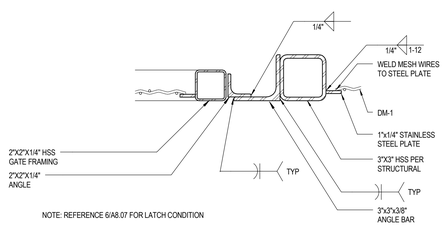
10 A8.07 SECURITY FENCE AT STAIR COLUMN
SCALE: 3" = 1'-0"



5 A8.07 SECTION @ STAIR BASE PLATFORM
SCALE: 3" = 1'-0"

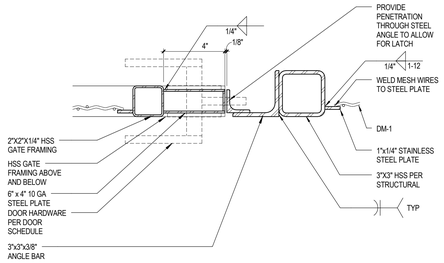


17 A8.07 SECURITY FENCE DOOR JAMB
SCALE: 3" = 1'-0"



NOTE: REFERENCE 6/A8.07 FOR LATCH CONDITION

13 A8.07 SECURITY FENCE DOOR JAMB
SCALE: 3" = 1'-0"



6 A8.07 SECURITY FENCE DOOR JAMB
SCALE: 3" = 1'-0"

NO.	DATE	ISSUE
0	8/17/2018	REVISION D
1	10/1/2018	ADDENDA 1

LICENSED ARCHITECT
C. S. GOLDEN
C-24552
EXP: 5-31-2019
STATE OF CALIFORNIA

STAIR DETAILS
COMPTON COMMUNITY COLLEGE DISTRICT
INSTRUCTIONAL BLDG. #1
1111 E. ARTESIA BLVD, COMPTON, CA 90221

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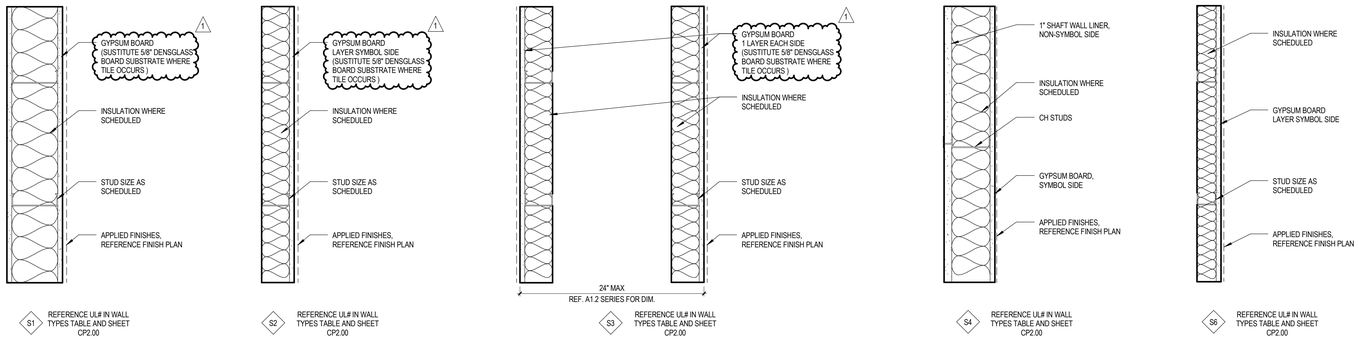
INTERIOR WALL TYPES

SEE WALL SECTIONS AND DETAILS FOR TOP AND BOTTOM OF WALL CONDITIONS



S1 REFERENCE UL# IN WALL TYPES TABLE AND SHEET CP2.00

S2 REFERENCE UL# IN WALL TYPES TABLE AND SHEET CP2.00

S3 REFERENCE UL# IN WALL TYPES TABLE AND SHEET CP2.00

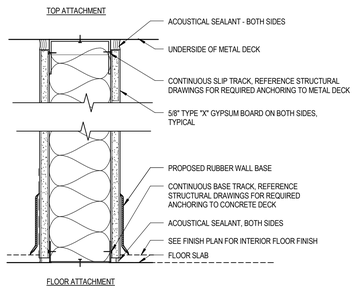
S4 REFERENCE UL# IN WALL TYPES TABLE AND SHEET CP2.00

S6 REFERENCE UL# IN WALL TYPES TABLE AND SHEET CP2.00

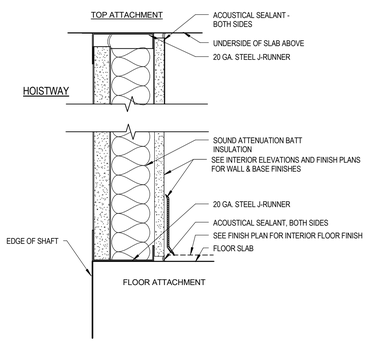
WALL TYPES - STUD

TYPE	FIRE RATING	TESTED ASSEMBLY (UL)	STUD SIZE	ACOUSTIC INSULATION	STC RATING	NOTES
S1A	~	~	3 5/8"	YES	STC 50	GYP. BOARD TO STRUCTURE ABOVE
S1B	~	~	3 5/8"	NO		GYP. BOARD TO STRUCTURE ABOVE
S1C	~	~	6"	YES	STC 50	GYP. BOARD TO STRUCTURE ABOVE
S1D	~	~	6"	NO		GYP. BOARD TO STRUCTURE ABOVE
S1E	1-HR	U465	6"	YES	STC 50	GYP. BOARD TO STRUCTURE ABOVE
S1F	1-HR	U465	6"	NO		GYP. BOARD TO STRUCTURE ABOVE
S1G	~	~	6"	YES	STC 50	ABUSE RESISTANT GYP BD, BOTH SIDES
S1H	~	~	3 5/8"	YES	STC 50	NOTE 1
S2A	~	~	3 5/8"	YES	STC 50	GYP. BOARD TO STRUCTURE ABOVE
S2B	~	~	3 5/8"	NO		GYP. BOARD TO STRUCTURE ABOVE
S2C	~	~	6"	YES	STC 50	GYP. BOARD TO STRUCTURE ABOVE
S2D	~	~	6"	NO		GYP. BOARD TO STRUCTURE ABOVE
S3A	~	~	6"	YES	STC 50	GYP. BOARD TO STRUCTURE ABOVE
S3B	~	~	6"	NO		GYP. BOARD TO STRUCTURE ABOVE
S4A	1-HR	U469	6" CH	YES	STC 50	~
S4B	1-HR	U469	6" CH	NO		~
S4C	1-HR	U469	6" CH	NO		NOTE 1
S4D	1-HR	U415	6" CH	NO		HORIZONTAL SHAFT WALL
S5	NOT USED	~	~	~		~
S6A	~	~	2 1/2"	NO		GYP. BOARD TO 6" ABOVE CEILING
S6B	~	~	2 1/2"	NO		PARTIAL HEIGHT PARTITION @ 3'-0" AFF

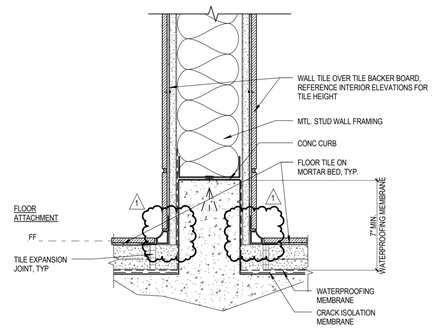
NOTES:
1. ABUSE RESISTANT GYP BD, SYMBOL SIDE ONLY, TO 8'-0" AFF AND 24" BEYOND BENCH @ A CONTINUOUS WALL. STOP AT PERPENDICULAR WALL WHERE OCCURS



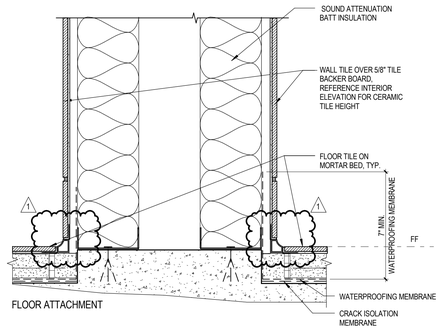
19 / A9.01 STUD WALL ATTACHMENTS, TOP & BOTTOM
SCALE: 3" = 1'-0"



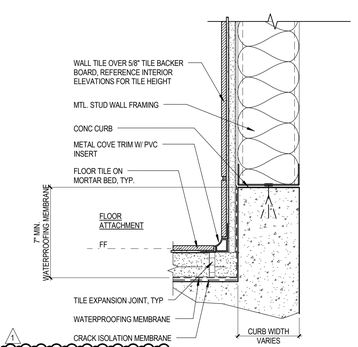
15 / A9.01 SHAFT WALL ATTACHMENT, TOP & BOTTOM
SCALE: 3" = 1'-0"



11 / A9.01 TILE, DOUBLE SIDED
SCALE: 3" = 1'-0"



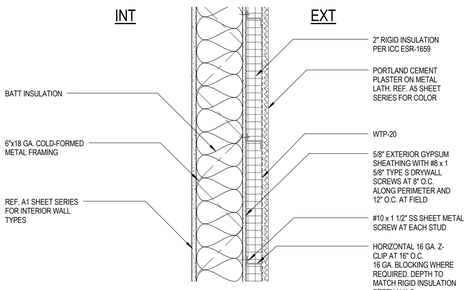
7 / A9.01 TILE, PLUMBING CHASE
SCALE: 3" = 1'-0"



3 / A9.01 TILE, SINGLE SIDED
SCALE: 3" = 1'-0"

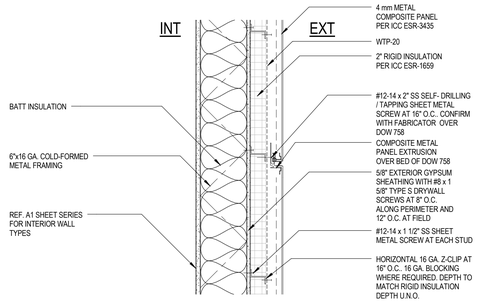
EXTERIOR WALL TYPES

SEE WALL SECTIONS AND DETAILS FOR TOP AND BOTTOM OF WALL CONDITIONS



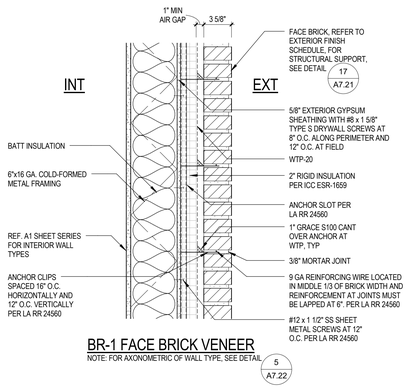
CP-1 PORTLAND CEMENT PLASTER

NOTE:
1. CP-2 SIMILAR



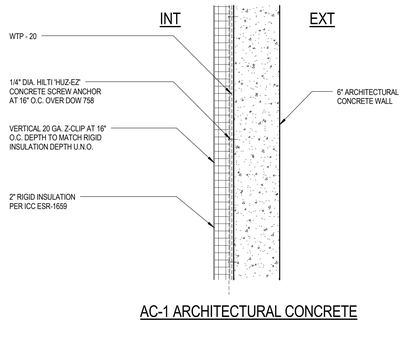
MP-1 METAL COMPOSITE PANEL

NOTE:
1. MP-3, MP-4 AND MP-5 SIMILAR
2. WHERE BLOCKING IS REQUIRED, REFERENCE DETAIL 15 / S6.01



BR-1 FACE BRICK VENEER

NOTE: FOR AXONOMETRIC OF WALL TYPE, SEE DETAIL 5 / A7.22



AC-1 ARCHITECTURAL CONCRETE

NO.	DATE	ISSUE
1	10/10/2018	ADDENDA 1

LICENSED ARCHITECT
JEFFREY S. GOLDEN
C-24552
EXP: 5-31-2019
STATE OF CALIFORNIA

WALL TYPES, EXTERIOR & INTERIOR
COMPTON COMMUNITY COLLEGE DISTRICT
INSTRUCTIONAL BLDG. #1

1111 E. ARTESIA BLVD. COMPTON, CA 90221

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75-15238-00

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Architecture Engineering Planning Interiors

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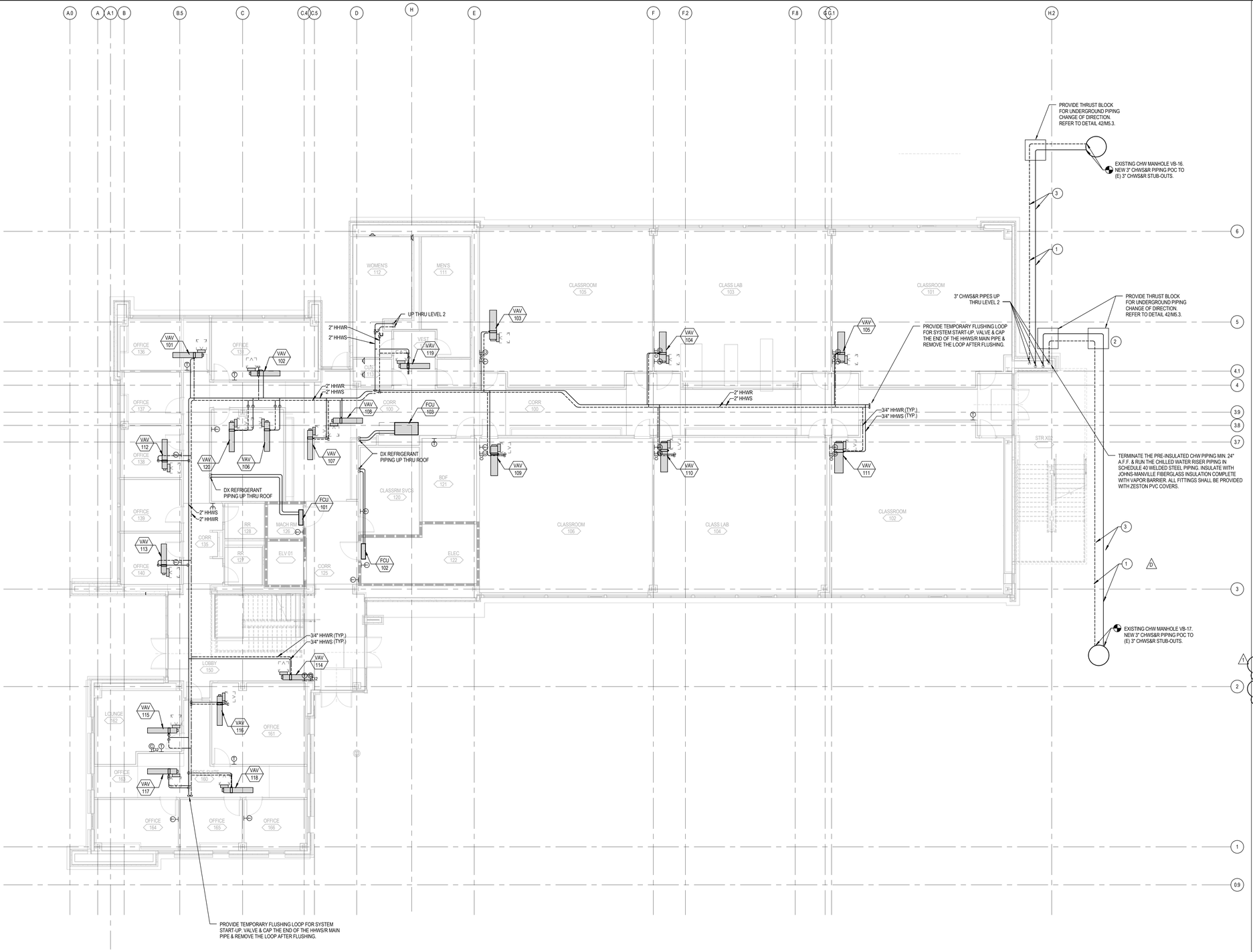

1 MP1.01 MECHANICAL PIPING PLAN - LEVEL 1
SCALE: 1/8" = 1'-0"

LEGEND NOTES

1. CONTRACTOR SHALL VERIFY ALL WALL PENETRATIONS TYPES, CEILING TYPES AND RATINGS IN ORDER TO PROVIDE COMBINATIONS FIRE/SMOKE DAMPERS AND FIRE STOPPING AT PENETRATIONS TO FIRE RATED AREAS IN ACCORDANCE WITH THE 2013 MECHANICAL CODE.
2. CONTRACTOR SHALL COORDINATE MECHANICAL EQUIPMENT LAYOUT IN ORDER TO AVOID FIRE SPRINKLER LINES.
3. CONTRACTOR SHALL COORDINATE FINAL MECHANICAL DISTRIBUTION AND NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CLEARANCE ISSUES PRIOR TO INSTALLATION.
4. CONTRACTOR SHALL PROVIDE ACCESS PANELS FOR ALL NEW EQUIPMENT, INCLUDING DAMPERS AND VALVES, LOCATED ABOVE HARD LID CEILING. ALL ACCESS PANELS, INCLUDING THOSE IN ACCESSIBLE CEILINGS SHALL BE DESIGNATED AND PROPERLY FRAMED TO ALLOW PROPER ACCESS WITHOUT DRAGGING THE CEILING TILE OR GRID. AVOID LOCATING ANY CONDUIT DIRECTLY ABOVE ACCESS TO EQUIPMENT. COORDINATE FINAL LOCATION OF ACCESS PANELS WITH ARCHITECT AND ENGINEER.
5. ALL PIPING PENETRATIONS THROUGH FULL HEIGHT WALLS SHALL BE ACOUSTICALLY SEALED.
6. CONTRACTOR SHALL PROVIDE ARMACELL CLOSED FOAM INSULATION ON REFRIGERANT PIPING BETWEEN INDOOR AND OUTDOOR UNIT. PROVIDE ALUMINUM ALL WEATHER JACKET ON ALL OUTDOOR REFRIGERANT PIPING.
7. ALL HIGH LEVEL VENTING AND AUTO AIR VENTS ON HVAC EQUIPMENT COILS NEED TO BE PIPED TO THE NEAREST DRAIN OR CONDENSATE PAN.
8. REFER TO DETAILS FOR UNDERGROUND CHILLED WATER PIPING INSTALLATION DETAILS.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD-VERIFYING ALL LOCATIONS OF POINTS OF CONNECTION & PIPE ROUTING.

KEYNOTES

1. UNDERGROUND PIPING SHALL BE HDPE PRE-INSULATED SDR-11. THE MECH. CONTRACTOR SHALL PROVIDE UNDERGROUND PIPING SHOP DRAWINGS COMPLETE WITH NECESSARY FITTING DETAILS, BUILDING ENTRY DETAILS, ETC.
2. PROVIDE THRUST BLOCKS ON THE 90 DEGREE UP-TURN INTO THE BUILDING. TYPICAL 4.
3. THE CONTRACTOR SHALL EXCAVATE THE TRENCH, COORDINATE WITH THE MECHANICAL CONTRACTOR FOR PIPE LAYING & SLURRY BACKFILL OF THE TRENCH. ALL PIPING SHAL BE PRESSURE-TESTED BEFORE & DURING BACK-FILLING. UNDERGROUND PIPING SHALL BE PRE-INSULATED PVC PIPING BY THERMOCOR PROCESS INC. (MODEL: CHILL-THERM SDR 21). ALL FITTINGS SHALL BE PROVIDED WITH THERMOCOR INSULATED HDPE FITTING COVERS.

SHOP DRAWING NOTE

CONTRACTOR SHALL PROVIDE FIELD LAYOUT SHOP DRAWINGS FOR ENGINEER/ARCHITECT REVIEW PRIOR TO FABRICATION AND INSTALLATION.

NO.	DATE	ISSUE
0	06/17/2018	REVISION D
1	10/10/2018	ADDENDUM 1

REGISTERED PROFESSIONAL ENGINEER — No. M 34323 Exp. 12/31/18 — MECHANICAL — STATE OF CALIFORNIA

MECHANICAL PIPING PLAN - LEVEL 1
COMPTON COMMUNITY COLLEGE DISTRICT
INSTRUCTIONAL BLDG. #1
1111 E. ARTESIA BLVD, COMPTON, CA 90221

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