BID ADDENDUM NO. 5

October 08, 2018

Johnson Student Center
Building Demolition, Increment 1 (Demolition) and Increment 2

RANCHO SANTIAGO COMMUNITY COLLEGE DISTRICT
SANTA ANA, CA

DSA App. Nos.
04-116810-1 and 04-116810-2

TO: PROSPECTIVE BIDDERS

This Addendum forms a part of the Contract Documents and modifies the original Bidding Drawings and Specifications. Acknowledge receipt of this Addendum in spaces provided on the Bid Form. Failure to acknowledge may subject Bidder to disqualification.

- **Drawings**
  Architectural:
  - Increment #2: General note: Where there is conflict/overlapping with restroom accessories with access panels, move the access panel up/above the accessory. Be consistent with vertical heights.

  Landscape:
  - Increment #2: Refer to attached Landscape plans and attached narrative, clouded/deltaed no. 5:
    i. L1.10 – Hardscape plan.
    ii. L1.20 – Hardscape plan.
    iii. L2.10 – Hardscape plan enlargement
    iv. L2.20 – Hardscape plan enlargement
    v. L2.30 – Hardscape plan enlargement
    vi. L5.50 – Hardscape Details
    vii. L9.10 – Planting plan
    viii. L11.10 – Furniture plan

- **Specifications**
  - Revised specification 230900 Building Management System to reflect Rancho Santiago Community College District Standard. Replace in its entirety.

- **Photos**
  - Refer to attached Exhibits A and B and PDF's (photos-114 pages) of identified rooms within the existing Johnson Student Center Building that has existing equipment, furniture, appliances, etc. to be removed by the Contractor.

- **Pre-Bid Clarification (PBC) Responses**
  - Responses to PBC's, refer to attachments and list of PBC's included - below.

ATTACHMENTS

Drawings full size:

- Increment 2:
  - Landscape: L1.10, L1.20, L2.10, L2.20, L2.30, L5.50, L9.10, L11.10
  - Electrical: E0.02, E0.10, E3.01

Specification(s)

- 230900

Exhibits

- A (existing Johnson Student Center 1st floor layout)
- B (existing Johnson Student Center 2nd floor layout)

Photo(s)

- Existing Johnson Student Center Rooms (114 pages 8.5”x11”)

Requests for Clarifications:

- PBC 80 w/ attachments
- PBC 81
- PBC 82
- PBC 83
- PBC 84
- PBC 85
- PBC 86
- PBC 87
- PBC 88
- PBC 89 w/ attachments
- PBC 90
- PBC 91
- PBC 93
- PBC 93 w/ attachments
- PBC 94
- PBC 95
- PBC 96

PBC Log *

* *Should there be a discrepancy between the PBC log and the PBC response, the PBC form shall takes precedence.*

JSC Extra Stock and Spare Materials Provisions
Created: September 27, 2018
Increment No. 2

Specification	Description	Quantity	Notes
093000	Porcelain Tile	1% of total	
095113	Acoustical Tile	5% of total	
096500	Resilient Tile	1% of total	
096517	Linoleum Tile	1% of total	
096536	Static Control Resilient Flooring	1% of total	
096816	Sheet Carpeting	2% of total	
098413	Sound Absorptive Panels	Provide 5 panels max	
099000	Painting	Per current specifications	
099600	High Performance Painting	Per current specifications	
099623	Graffiti Resistant Coatings	Per current specifications	
102220	Pefab walls	**Remove from extra stock**	
102600	Wall & Door Protection	100 LF	
105113	Metal Lockers	**Remove from extra stock**	
105613	Metal Storage Shelving	**Remove from extra stock**	
230549	VFDs	Per current specifications	
232123	Hydronic Pumps	Per current specifications	
233300	Air Duct Accessories	Per current specifications	
233423	HVAC Power Ventilators	Per current specifications	
238126	Split Systems Air Conditioners	Per current specifications	
262413	Switchboards	Per current specifications	
262416	Panel boards	Per current specifications	
265100	Interior Lighting	Per current specifications	Add LED ballasts to the stock. 1% of each type of ballast.
265600	Exterior Lighting	Per current specifications	
281300	Access Control	Include 50 unprogrammed additional cards as extra stock	
328400	Irrigation System	Per current specifications	

If a system specification is not listed here and currently calls for extra materials, than it shall be assumed it is required.

Santa Ana Collage – Johnson Student Center

September 28, 2018

Narrative of Changes for Addendum #5

Sheet L1.10 – Hardscape Plan:
- Added Construction Keynote #31 to Legend
- Fence Schedule: Removed 'F2' finish alternates. Guardrails to be hot dipped galvanized per districts request.

Sheet L1.20 – Hardscape Plan:
- Added Construction Keynote #31 to Legend
- Fence Schedule: Removed 'F2' finish alternates. Guardrails to be hot dipped galvanized per districts request.

Sheet L2.10 – Hardscape Plan Enlargement:
- Fence Schedule: Removed 'F2' finish alternates. Guardrails to be hot dipped galvanized per districts request.

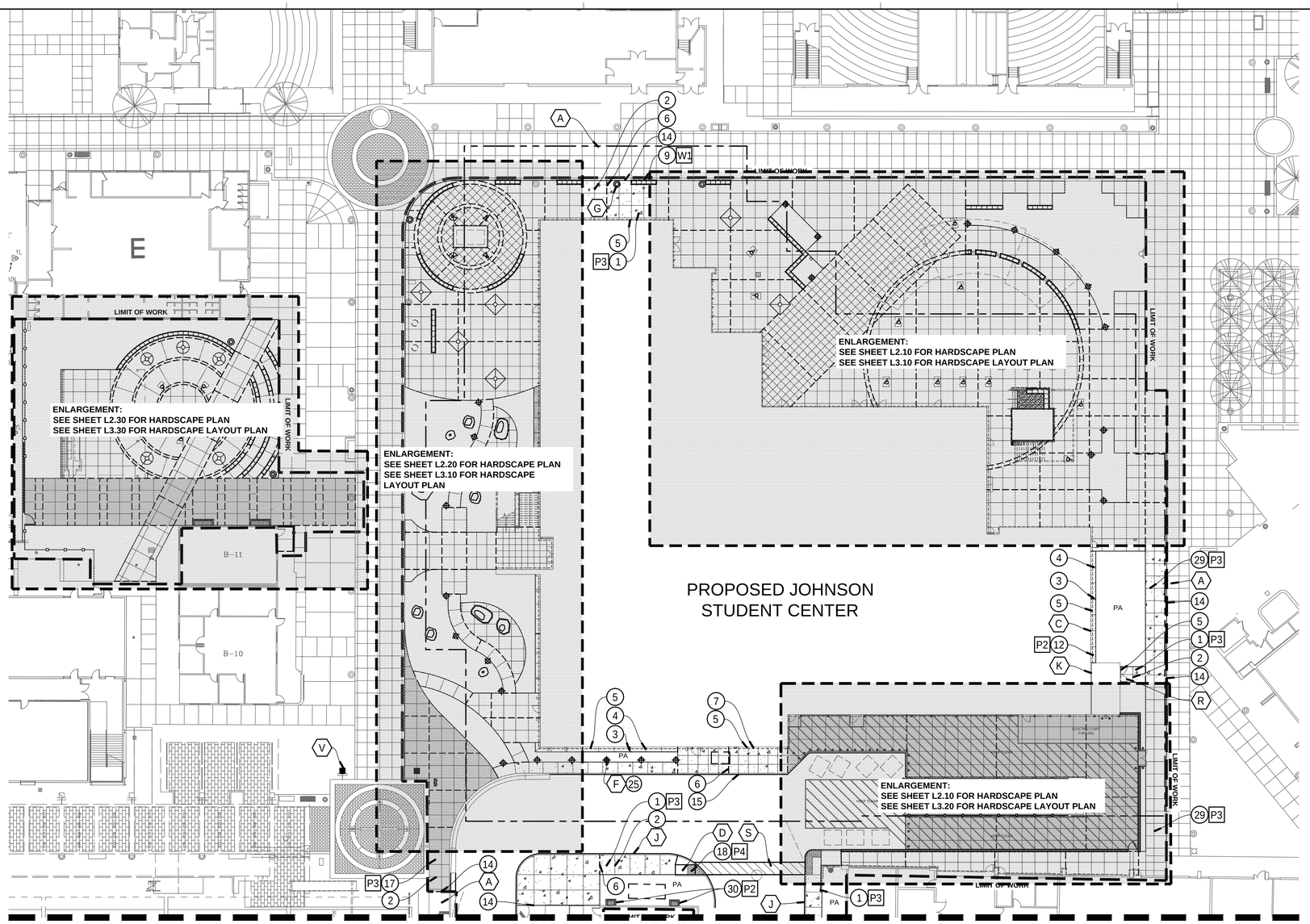
Sheet L2.20 – Hardscape Plan Enlargement:
- Added Construction Keynote #31 to Legend
- Fence Schedule: Removed 'F2' finish alternates. Guardrails to be hot dipped galvanized per districts request.

Sheet L2.30 – Hardscape Plan Enlargement:
- Added Construction Keynote #31 to Legend
- Fence Schedule: Removed 'F2' finish alternates. Guardrails to be hot dipped galvanized per districts request.
- Detail #4: Added new Callout to plan

Sheet L5.50 – Hardscape Details:
- Detail 'A': Removed Color and Finish from detail. Added reference back to Fence Schedule for color and finish.
- Detail 'B': Removed Color and Finish from detail. Added reference back to Fence Schedule for color and finish.
- Detail 'C': Removed Color and Finish from detail. Added reference back to Fence Schedule for color and finish.
- Detail 'D': Removed Color and Finish from detail. Added reference back to Fence Schedule for color and finish.
- Hardscape Notes: Omit Note 'B', not Applicable.

Sheet L9.10 – Planting Plan:
- Revised quantity of Honey Mesquite trees

Sheet L11.10 – Furniture Plan:
- Site Furnishings Legend: Revised description and quantities of S1, S3, and S9.



CONSTRUCTION KEYNOTES

SYMBOL	DESCRIPTION	DETAIL REF.
1	CONSTRUCT PEDESTRIAN RATED CONCRETE PAVING	A, L5.10
2	CONSTRUCT SAWCUT CONTRACTION JOINT	B, L5.10
3	CONSTRUCT TOOLED DOWELED CONSTRUCTION JOINT	B, L5.10
4	CONSTRUCT TOOLED CONTRACTION JOINT	B, L5.10
5	CONSTRUCT ISOLATION JOINT	B, L5.10
6	CONSTRUCT SAWCUT DOWELED CONSTRUCTION JOINT	B, L5.10
7	CONSTRUCT CONCRETE FILLED PIPE BOLLARD	I, L5.10
8	CONSTRUCT CONCRETE BAND	C, L5.10
9	CONSTRUCT P.I.P. CONCRETE LOW WALL	D, L5.10
10	NOT USED.	
11	FURNISH AND INSTALL LANDSCAPE BOULDER	F, L5.10
12	CONSTRUCT P.I.P. CONCRETE MAINTENANCE BAND	H, L5.10
13	FURNISH AND INSTALL TREE GRATE	E, L5.10
14	CONSTRUCT NEW TO EXISTING PAVING CONNECTION	B, L5.10
15	CONSTRUCT CONCRETE PAVING AT CURB CONNECTION	G, L5.10
16	CONSTRUCT TUBE STEEL SLIDING AND PEDESTRIAN ACCESS GATES AT WEST PLAZA	A-D, L5.40, F, L5.30
17	CONSTRUCT VEHICULAR RATED CONCRETE	SEE CIVIL
18	FURNISH AND INSTALL TRUNCATED DOME PANELS	A, L5.30
19	CONSTRUCT TUBE STEEL GUARDRAIL AT LOADING DOCK	B, L5.30
20	4" WIDE EPOXY BASED PAINTED STRIPING. COLOR TO BE WHITE.SEE PAVEMENT MARKINGS SPECIFICATION FOR MORE INFORMATION.	
21	NOT USED.	
22	CONSTRUCT TUBE STEEL SINGLE PEDESTRIAN ACCESS GATE	D & G, L5.20
23	CONSTRUCT TUBE STEEL DOUBLE PEDESTRIAN ACCESS GATE	B & F, L5.20
24	CONSTRUCT TUBE STEEL FENCE	A, L5.20
25	CONSTRUCT LIGHT BOLLARD BASE AT PAVING.	J, L5.10
26	CONSTRUCT SLOPED WALK WITH GUARD RAIL.	A-D, L5.50
27	FURNISH AND INSTALL LOOSE LAID COBBLE	C, L5.30
28	12" HIGH LETTERING PAINT TO BE EPOXY BASED	--
29	REMOVE AND REPLACE (+/-6'-4") OF EXISTING CONCRETE PAVING AS NEEDED FOR EXISTING BUILDING FOOTING REMOVAL. REMOVE PAVING TO NEAREST JOINT.	A, L5.10
30	EXISTING VENTS REINSTALLED ON 6" CONCRETE CURB.	D, L5.30
31	CONSTRUCT NEW GUARDRAIL ON TOP OF EXISTING CURB	A-D, L5.50 (SIMILAR)

REFERENCE KEYNOTES

A	EXISTING CONCRETE PAVING - PROTECT IN PLACE
B	NOT USED.
C	BUILDING - PER ARCHITECT'S DRAWINGS.
D	CURB CUT RAMP - PER CIVIL ENGINEER'S DRAWINGS.
E	SERVICE YARD WALL - SEE STRUCTURAL DETAIL #15, SHEET S4.11.
F	LIGHT BOLLARD - SEE ELECTRICAL ENGINEER'S PLANS FOR ADDITIONAL INFORMATION.
G	LIGHT POLE FOOTING BASE - SEE ELECTRICAL ENGINEER'S PLANS FOR ADDITIONAL INFORMATION.
H	TRELLIS STRUCTURE - PER ARCHITECT'S DRAWINGS.
I	NOT USED.
J	CONCRETE CURB PER CIVIL ENGINEER'S PLANS.
K	BOILER ROOM ENCLOSURE PER ARCHITECT'S DRAWINGS.
L	6' LONG RUBBER WHEEL STOP SECURE IN PLACE WITH (2) 18" LONG REBAR STALKS.
M	EMERGENCY PHONE - SEE SHEET G1.30.
N	EXISTING SIGN - PROTECT IN PLACE.
O	DIGITAL SIGN BY OTHERS.
P	EXISTING LIGHT TO BE RELOCATED SEE ELECTRICAL ENGINEER'S PLANS.
Q	LUNCH SHELTER PER ARCHITECT'S PLANS.
R	BOILER ROOM GATES PER ARCHITECTURAL DOOR SCHEDULE.
S	CROSSWALK STRIPING PER CIVIL DRAWINGS.
T	EXISTING TUBE STEEL FENCE TO BE PROTECTED IN PLACE.
U	FUTURE BIKE REPAIR STATIONS BY OTHERS (N.I.C.).
V	EXISTING CMU BANNER COLUMN PROTECT IN PLACE.
W	GAS METER - SEE PLUMBING ENGINEER'S DRAWINGS.
X	EXISTING VENT GRATES - PROTECT IN PLACE.

SYMBOL	KEY	DESCRIPTION	SUPPLIER	SIZE (L X W X H)
BOULDERS				
	B1	SANDSTONE WITH NATURAL BEIGE, PINK, AND BUFF TONES	SOUTHWEST BOULDER AND STONE	10'+/- X 6'+/- X 28" MIN.
	B2	SANDSTONE WITH NATURAL BEIGE, PINK, AND BUFF TONES	SOUTHWEST BOULDER AND STONE	8'-6"+/- X 7' X 28" MIN.
	B3	SANDSTONE WITH NATURAL BEIGE, PINK, AND BUFF TONES	SOUTHWEST BOULDER AND STONE	5'+/- X 4'-6"+/- X 28" MIN.
	B4	SANDSTONE WITH NATURAL BEIGE, PINK, AND BUFF TONES	SOUTHWEST BOULDER AND STONE	4'+/- X 3'-6"+/- X 28" MIN.

NOTE: ALL BOULDERS BY SOUTHWEST BOULDER AND STONE, (877) 792-7625.
CONTRACTOR TO PROVIDE A 12"x12"x12" SAMPLE FOR REVIEW AND APPROVAL BY OWNER AND LANDSCAPE ARCHITECT PRIOR TO DELIVERY ON SITE.

SYMBOL LEGEND

- EXPANSION JOINT
- SCORE / SAWCUT JOINT
- *PA* PLANTER AREA
- *TURF* TURF AREA
- ALIGN

GRADING & DRAINAGE NOTES

A. CROSS SLOPE OF SIDEWALK TO BE A MAX. OF 1.9%.

B. SLOPE ALL HARDSCAPE TO ACHIEVE POSITIVE DRAINAGE AWAY FROM BUILDING.

C. VERIFY GRADES WITH CIVIL ENGINEER'S SHEETS.

D. CONNECT LANDSCAPE DRAINS TO STORM DRAIN SYSTEM AS INDICATED ON CIVIL ENGINEER'S DRAWINGS.

SYMBOL	KEY	DESCRIPTION	MANUFACTURER	COLOR	FINISH	COMMENTS
WALLS						
	W1	P.I.P CONCRETE LOW WALL	--	NATURAL GRAY	ACID WASH FINISH TO MATCH EXISTING.	JOINTS: VERTICAL SAWCUT CONTRACTION
	W2	SERVICE YARD WALL	CMU BLOCK	TO BE DETERMINED	VISIBLE FACES TO BE SPLIT FACE	WALL CAP: 10"x4"x16" SPLIT FACE ON 2 SIDES
FENCE						
	F1	TUBE STEEL FENCE / GATES	CUSTOM	BLACK TO MATCH EXISTING CAMPUS FENCING	SHOP APPLIED PAINTED	5
	F2	TUBE STEEL GUARDRAIL	CUSTOM	FINISH TO BE SELECTED BY OWNER	HOT DIPPED GALVANIZED	42" ABOVE FINISH SURFACE

NOTES:
A: CONTRACTOR SHALL PREPARE 3' LONG SAMPLE OF ALL WALL FINISHES, PER SPECIFICATIONS, AND MOCK UP REQUIREMENT NOTES ON SHEET L5.50, FOR REVIEW AND APPROVAL BY OWNER AND LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
B: PROVIDE AN ISOLATION JOINT WHERE PAVING ABUTS VERTICAL SURFACES SUCH AS BUILDINGS, WALLS, STEPS, ETC., SEE DETAIL B, SHEET L5.10
C: AT THE END OF CONSTRUCTION, CLEAN SITE WALLS AND APPLY ANTI-GRAFFITI COATING ON ALL VISIBLE PORTIONS OF WALL PER SPECIFICATION SECTION 099623 GRAFFITI-RESISTANT COATINGS.

SYMBOL	DESCRIPTION
PAVING	
	REPRESENTS LIMITS OF VEHICULAR RATED CONCRETE PAVING. SEE CIVIL ENGINEER'S DRAWINGS FOR PAVING THICKNESS AND REBAR REQUIREMENTS.

SEE SHEET L11.10 FOR SITE FURNITURE PLAN

COLOR AND FINISH SCHEDULE

SYMBOL	KEY	DESCRIPTION	CONCRETE MIX DESIGN	COLOR	FINISH	COMMENTS
PAVING						
	P1	CONCRETE PAVING BAND	70% PEA GRAVEL & 30% SAND; 4200 PSI	NATURAL GRAY	GRACE TOP-CAST #75 (HEAVY EXPOSED AGGREGATE)	JOINTS: VARIES PER AREA
	P2	CONCRETE MAINTENANCE BAND	50% PEA GRAVEL & 50% SAND; 4200 PSI	NATURAL GRAY	SMOOTH HARD TROWEL	JOINTS: TOOLED CONTRACTION AT 5' O.C. AND CHANGES IN DIRECTION
	P3	CONCRETE PAVING TYPE 1	50% PEA GRAVEL & 50% SAND; 4200 PSI	NATURAL GRAY	MED. BROOM DIRECTION TO MATCH EXISTING	JOINTS: SAWCUT AND DOWELED CONSTRUCTION
	P4	TRUNCATED DOME PANEL BY ARMOR-TILE 1-800-682-2525	--	FEDERAL YELLOW	CAST IN PLACE MODEL	FIELD VERIFY PANEL SIZE PRIOR TO PLACING ORDER
	P5	CONCRETE PAVING TYPE 2	50% PEA GRAVEL & 50% SAND; 3000 PSI	NATURAL GRAY	GRACE TOP-CAST #03 (ACID WASH FINISH)	JOINTS: SAWCUT AND DOWELED CONSTRUCTION
	P6	LOOSE LAID COBBLE FROM SOUTHWEST BOULDER AND STONE (760) 451-3333	--	1"-2" MEXICAN BEACH BLACK PEBBLES		5" MINIMUM THICK LAYER

NOTES:
A: CONTRACTOR SHALL PREPARE 4' SQ. SAMPLE OF ALL PAVING FINISHES, PER SPECIFICATIONS, AND MOCK UP REQUIREMENT NOTES ON SHEET L5.50 FOR REVIEW AND APPROVAL BY OWNER AND LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
B: PROVIDE AN ISOLATION JOINT WHERE PAVING ABUTS VERTICAL SURFACES SUCH AS BUILDINGS, WALLS, STEPS, ETC., SEE DETAIL B, SHEET L5.10

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SEALS / APPROVALS

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
FILE: 30-C2
A# 0 4 - 116810
AC _____ FLS _____ SS _____
DATE _____

PROJECT TITLE
JOHNSON STUDENT CENTER
INCREMENT 2
1530 W 17TH ST SANTA ANA CA 92706

RANCHO SANTIAGO Community College District

SUBMITTALS

#	DATE	DESCRIPTION
	08/13/2018	DSA FINAL SUBMITTAL
5	10/01/2018	ADDENDUM #5

PROJECT IDENTIFICATION Project Number

THE ORIGINAL SIZE OF THIS SHEET IS 30" X 42".

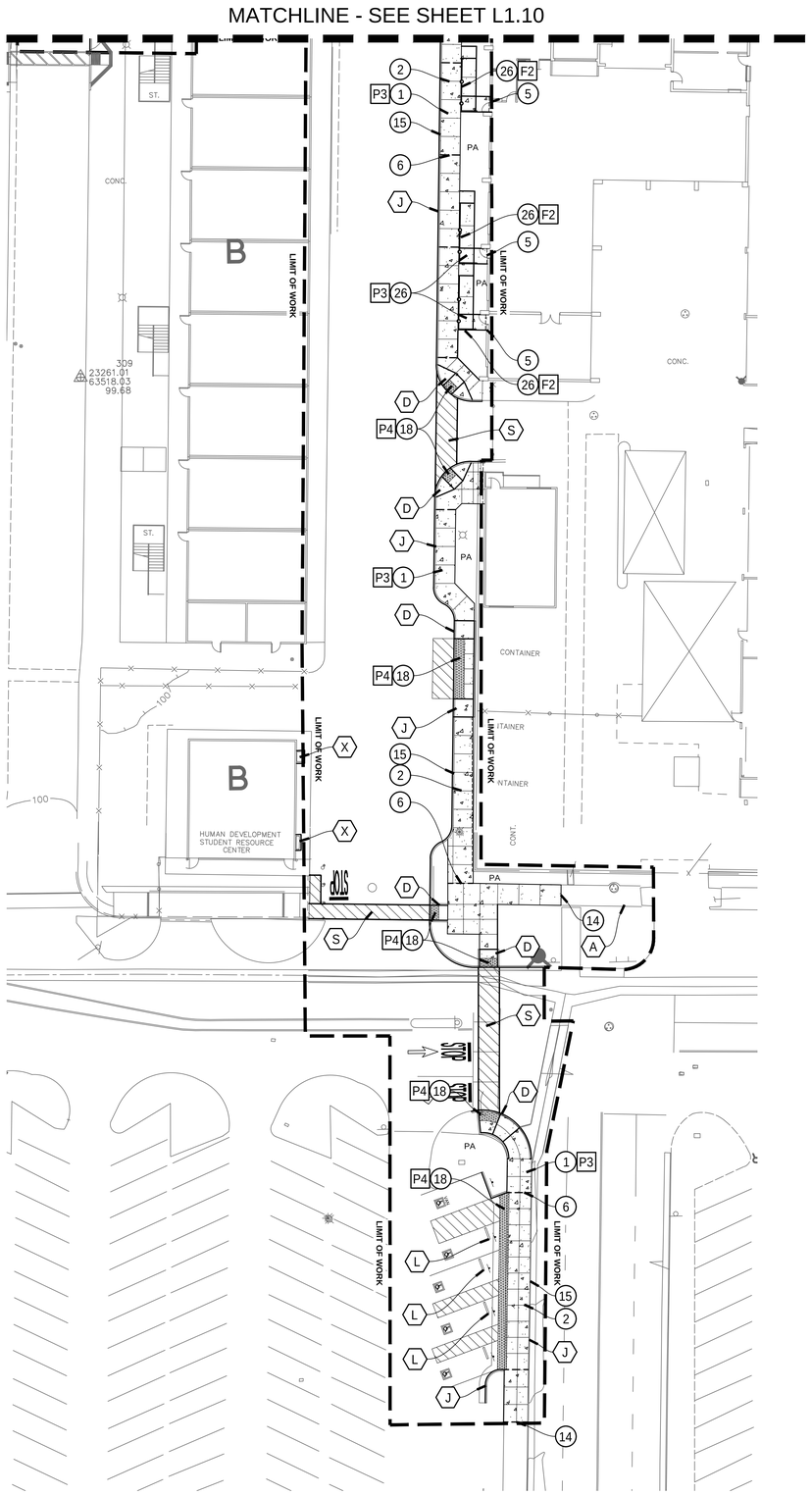
DRAWN BY RLA

CHECKED BY RLA

SHEET TITLE
HARDSCAPE PLAN

SHEET NUMBER
L1.10

100% CONSTRUCTION DOCUMENTS



REFERENCE KEYNOTES

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B	NOT USED.
C	BUILDING - PER ARCHITECT'S DRAWINGS.
D	CURB CUT RAMP - PER CIVIL ENGINEER'S DRAWINGS.
E	SERVICE YARD WALL - SEE STRUCTURAL DETAIL #15, SHEET S4.11.
F	LIGHT BOLLARD - SEE ELECTRICAL ENGINEER'S PLANS FOR ADDITIONAL INFORMATION.
G	LIGHT POLE FOOTING BASE - SEE ELECTRICAL ENGINEER'S PLANS FOR ADDITIONAL INFORMATION.
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CONSTRUCTION KEYNOTES

SYMBOL	DESCRIPTION	DETAIL REF.
1	CONSTRUCT PEDESTRIAN RATED CONCRETE PAVING	A, L5.10
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19	CONSTRUCT TUBE STEEL GUARDRAIL AT LOADING DOCK	B, L5.30
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24	CONSTRUCT TUBE STEEL FENCE	A, L5.20
25	CONSTRUCT LIGHT BOLLARD BASE AT PAVING.	J, L5.10
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27	FURNISH AND INSTALL LOOSE LAID COBBLE	C, L5.30
28	12" HIGH LETTERING PAINT TO BE EPOXY BASED	--
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31	CONSTRUCT NEW GUARDRAIL ON TOP OF EXISTING CURB	A-D, L5.50 (SIMILAR)

5

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	REPRESENTS LIMITS OF VEHICULAR RATED CONCRETE PAVING. SEE CIVIL ENGINEER'S DRAWINGS FOR PAVING THICKNESS AND REBAR REQUIREMENTS.

SYMBOL LEGEND

	EXPANSION JOINT
	SCORE / SAWCUT JOINT
PA	PLANTER AREA
TURF	TURF AREA
	ALIGN

GRADING & DRAINAGE NOTES

A. CROSS SLOPE OF SIDEWALK TO BE A MAX. OF 1.9%.

B. SLOPE ALL HARDSCAPE TO ACHIEVE POSITIVE DRAINAGE AWAY FROM BUILDING.

C. VERIFY GRADES WITH CIVIL ENGINEER'S SHEETS.

D. CONNECT LANDSCAPE DRAINS TO STORM DRAIN SYSTEM AS INDICATED ON CIVIL ENGINEER'S DRAWINGS.

SYMBOL	KEY	DESCRIPTION	SUPPLIER	SIZE (L X W X H)
BOULDERS				
	B1	SANDSTONE WITH NATURAL BEIGE, PINK, AND BUFF TONES	SOUTHWEST BOULDER AND STONE	10'+/- X 6'+/- X 28" MIN.
	B2	SANDSTONE WITH NATURAL BEIGE, PINK, AND BUFF TONES	SOUTHWEST BOULDER AND STONE	8'-6"+/- X 7' X 28" MIN.
	B3	SANDSTONE WITH NATURAL BEIGE, PINK, AND BUFF TONES	SOUTHWEST BOULDER AND STONE	5'+/- X 4'-6"+/- X 28" MIN.
	B4	SANDSTONE WITH NATURAL BEIGE, PINK, AND BUFF TONES	SOUTHWEST BOULDER AND STONE	4'+/- X 3'-6"+/- X 28" MIN.

NOTE: ALL BOULDERS BY SOUTHWEST BOULDER AND STONE, (877) 792-7625. CONTRACTOR TO PROVIDE A 12"x12"x12" SAMPLE FOR REVIEW AND APPROVAL BY OWNER AND LANDSCAPE ARCHITECT PRIOR TO DELIVERY ON SITE.

LIGHTING LEGEND

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL	COLOR	FINISH
LIGHTING					
	LIGHT BOLLARD	ARCHITECTURAL AREA LIGHTING (826) 968-5666	SPB SPECTRA BOLLARD	---	---
	POST TOP	ARCHITECTURAL AREA LIGHTING (626) 968-5666	SP1 (LED) SPECTRA LARGE SCALE	---	---
	CHARGING BOX	C.W. COLE & COMPANY (626) 443-2473	TL310-WCS SERIES	---	---
	SCULPTURE UPLIGHT	LUMINIS (866) 586-4647	SQ600 SERIES SYRIOS SQUARE - LED	---	---

NOTES:
LIGHTING SYMBOLS ARE SHOWN ON THESE PLANS FOR REFERENCE ONLY. SEE ELECTRICAL ENGINEER'S SHEETS FOR LIGHT QUANTITIES, MANUFACTURER, AND LOCATIONS.

COLOR AND FINISH SCHEDULE

SYMBOL	KEY	DESCRIPTION	CONCRETE MIX DESIGN	COLOR	FINISH	COMMENTS
PAVING						
	P1	CONCRETE PAVING BAND	70% PEA GRAVEL & 30% SAND; 4200 PSI	NATURAL GRAY	GRACE TOP-CAST #75 (HEAVY EXPOSED AGGREGATE)	JOINTS: VARIES PER AREA
	P2	CONCRETE MAINTENANCE BAND	50% PEA GRAVEL & 50% SAND; 4200 PSI	NATURAL GRAY	SMOOTH HARD TROWEL	JOINTS: TOOLED CONTRACTION AT 5' O.C. AND CHANGES IN DIRECTION
	P3	CONCRETE PAVING TYPE 1	50% PEA GRAVEL & 50% SAND; 4200 PSI	NATURAL GRAY	MED. BROOM DIRECTION TO MATCH EXISTING	JOINTS: SAWCUT AND DOWELED CONSTRUCTION
	P4	TRUNCATED DOME PANEL BY ARMOR-TILE 1-800-682-2525	--	FEDERAL YELLOW	CAST IN PLACE MODEL	FIELD VERIFY PANEL SIZE PRIOR TO PLACING ORDER
	P5	CONCRETE PAVING TYPE 2	50% PEA GRAVEL & 50% SAND; 3000 PSI	NATURAL GRAY	GRACE TOP-CAST #03 (ACID WASH FINISH)	JOINTS: SAWCUT AND DOWELED CONSTRUCTION
	P6	LOOSE LAID COBBLE FROM SOUTHWEST BOULDER AND STONE (760) 451-3333	--	1"-2" MEXICAN BEACH BLACK PEBBLES		5" MINIMUM THICK LAYER

NOTES:
A: CONTRACTOR SHALL PREPARE 4' SQ. SAMPLE OF ALL PAVING FINISHES, PER SPECIFICATIONS, AND MOCK UP REQUIREMENT NOTES ON SHEET L5.50 FOR REVIEW AND APPROVAL BY OWNER AND LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
B: PROVIDE AN ISOLATION JOINT WHERE PAVING ABUTS VERTICAL SURFACES SUCH AS BUILDINGS, WALLS, STEPS, ETC., SEE DETAIL B, SHEET L5.10

SYMBOL	KEY	DESCRIPTION	MANUFACTURER	COLOR	FINISH	COMMENTS
WALLS						
	W1	P.I.P CONCRETE LOW WALL	--	NATURAL GRAY	ACID WASH FINISH TO MATCH EXISTING.	JOINTS: VERTICAL SAWCUT CONTRACTION
	W2	SERVICE YARD WALL	CMU BLOCK	TO BE DETERMINED	VISIBLE FACES TO BE SPLIT FACE	WALL CAP: 10"x4"x16" SPLIT FACE ON 2 SIDES
FENCE						
	F1	TUBE STEEL FENCE / GATES	CUSTOM	BLACK TO MATCH EXISTING CAMPUS FENCING	SHOP APPLIED PAINTED	5
	F2	TUBE STEEL GUARDRAIL	CUSTOM	FINISH TO BE SELECTED BY OWNER	HOT DIPPED GALVANIZED	42" ABOVE FINISH SURFACE

NOTES:
A: CONTRACTOR SHALL PREPARE 3' LONG SAMPLE OF ALL WALL FINISHES, PER SPECIFICATIONS, AND MOCK UP REQUIREMENT NOTES ON SHEET L5.50, FOR REVIEW AND APPROVAL BY OWNER AND LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
B: PROVIDE AN ISOLATION JOINT WHERE PAVING ABUTS VERTICAL SURFACES SUCH AS BUILDINGS, WALLS, STEPS, ETC., SEE DETAIL B, SHEET L5.10
C: AT THE END OF CONSTRUCTION, CLEAN SITE WALLS AND APPLY ANTI-GRAFFITI COATING ON ALL VISIBLE PORTIONS OF WALL PER SPECIFICATION SECTION 099623 GRAFFITI-RESISTANT COATINGS.

SEE SHEET L11.10 FOR SITE FURNITURE PLAN

0 10 20 40 60

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115 22nd street
Newport Beach, CA 92663
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949.387.1323
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SEALS / APPROVALS

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
FILE: 30-C2
A# 0 4 - 116810
AC _____ FLS _____ SS _____
DATE _____

PROJECT TITLE
JOHNSON STUDENT CENTER
INCREMENT 2
1530 W 17TH ST SANTA ANA CA 92706

RANCHO SANTIAGO Community College District

SUBMITTALS

#	DATE	DESCRIPTION
	08/13/2018	DSA FINAL SUBMITTAL
1	10/01/2018	ADDENDUM #5

PROJECT IDENTIFICATION Project Number

THE ORIGINAL SIZE OF THIS SHEET IS 30" X 42".

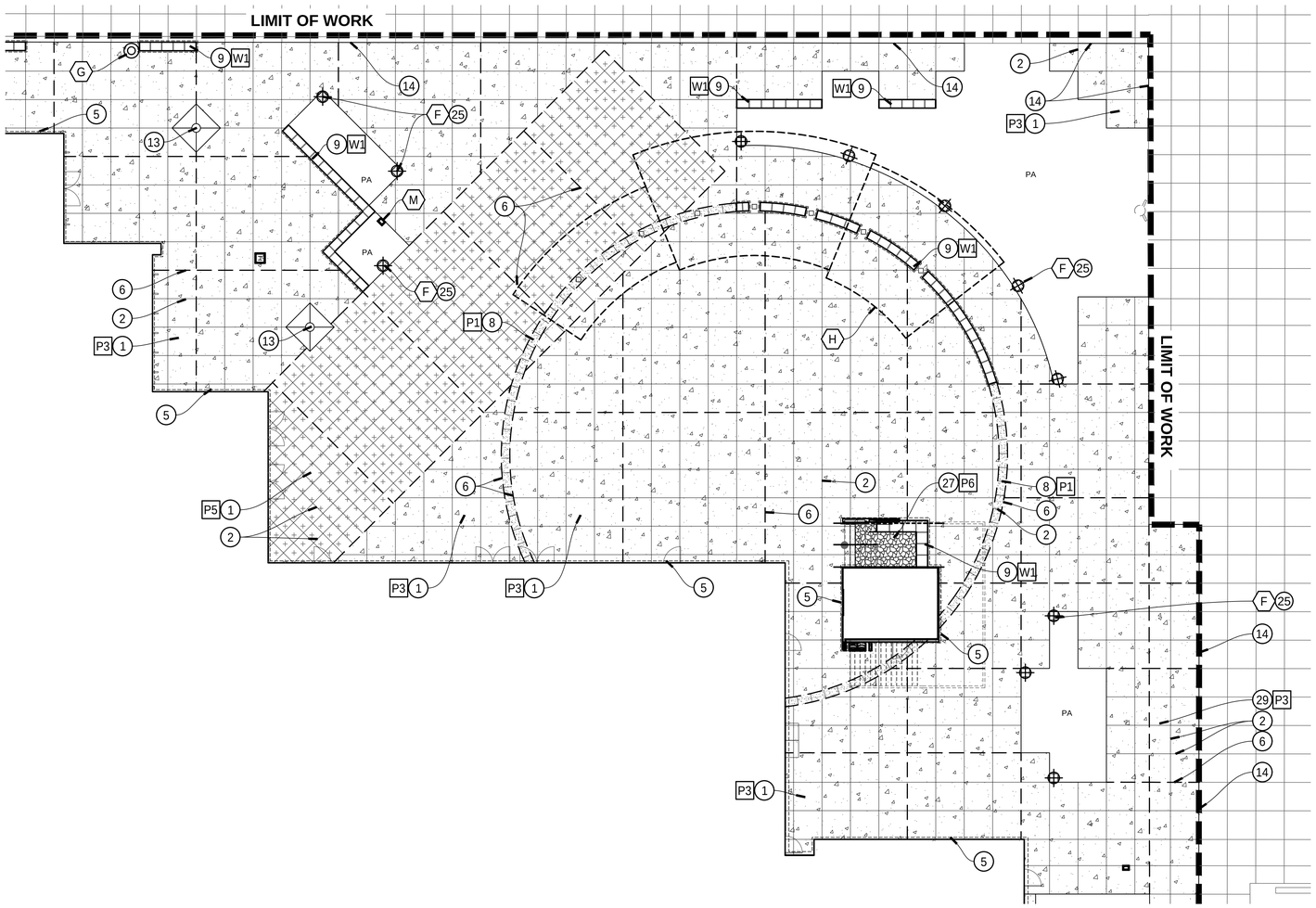
DRAWN BY RLA

CHECKED BY RLA

SHEET TITLE
HARDSCAPE PLAN

SHEET NUMBER
L1.20

100% CONSTRUCTION DOCUMENTS



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1 PATIO 'A' ENLARGEMENT AREA

SCALE: 1" = 10'-0"

2 PATIO 'B' ENLARGEMENT AREA

SCALE: 1" = 10'-0"

KEYMAP

SCALE: N.T.S.

SYMBOL	DESCRIPTION
PAVING	
▨	REPRESENTS LIMITS OF VEHICULAR RATED CONCRETE PAVING. SEE CIVIL ENGINEER'S DRAWINGS FOR PAVING THICKNESS AND REBAR REQUIREMENTS.

SEE SHEET L11.10 FOR SITE FURNITURE PLAN

REFERENCE KEYNOTES

A	EXISTING CONCRETE PAVING - PROTECT IN PLACE
B	NOT USED.
C	BUILDING - PER ARCHITECT'S DRAWINGS.
D	CURB CUT RAMP - PER CIVIL ENGINEER'S DRAWINGS.
E	SERVICE YARD WALL - SEE STRUCTURAL DETAIL #15, SHEET S4.11.
F	LIGHT BOLLARD - SEE ELECTRICAL ENGINEER'S PLANS FOR ADDITIONAL INFORMATION.
G	LIGHT POLE FOOTING BASE - SEE ELECTRICAL ENGINEER'S PLANS FOR ADDITIONAL INFORMATION.
H	TRELLIS STRUCTURE - PER ARCHITECT'S DRAWINGS.
I	NOT USED.
J	CONCRETE CURB PER CIVIL ENGINEER'S PLANS.
K	BOILER ROOM ENCLOSURE PER ARCHITECT'S DRAWINGS.
L	6' LONG RUBBER WHEEL STOP SECURE IN PLACE WITH (2) 18" LONG REBAR STALKS.
M	EMERGENCY PHONE - SEE SHEET G1.30.
N	EXISTING SIGN - PROTECT IN PLACE.
O	DIGITAL SIGN BY OTHERS.
P	EXISTING LIGHT TO BE RELOCATED SEE ELECTRICAL ENGINEER'S PLANS.
Q	LUNCH SHELTER PER ARCHITECT'S PLANS.
R	BOILER ROOM GATES PER ARCHITECTURAL DOOR SCHEDULE.
S	CROSSWALK STRIPING PER CIVIL DRAWINGS.
T	EXISTING TUBE STEEL FENCE TO BE PROTECTED IN PLACE.
U	FUTURE BIKE REPAIR STATIONS BY OTHERS (N.I.C.).
V	EXISTING CMU BANNER COLUMN PROTECT IN PLACE.
W	GAS METER - SEE PLUMBING ENGINEER'S DRAWINGS.
X	EXISTING VENT GRATES - PROTECT IN PLACE.

CONSTRUCTION KEYNOTES

SYMBOL	DESCRIPTION	DETAIL REF.
①	CONSTRUCT PEDESTRIAN RATED CONCRETE PAVING	A, L5.10
②	CONSTRUCT SAWCUT CONTRACTION JOINT	B, L5.10
③	CONSTRUCT TOOLED DOWELED CONSTRUCTION JOINT	B, L5.10
④	CONSTRUCT TOOLED CONTRACTION JOINT	B, L5.10
⑤	CONSTRUCT ISOLATION JOINT	B, L5.10
⑥	CONSTRUCT SAWCUT DOWELED CONSTRUCTION JOINT	B, L5.10
⑦	CONSTRUCT CONCRETE FILLED PIPE BOLLARD	I, L5.10
⑧	CONSTRUCT CONCRETE BAND	C, L5.10
⑨	CONSTRUCT P.I.P. CONCRETE LOW WALL	D, L5.10
⑩	NOT USED.	
⑪	FURNISH AND INSTALL LANDSCAPE BOULDER	F, L5.10
⑫	CONSTRUCT P.I.P. CONCRETE MAINTENANCE BAND	H, L5.10
⑬	FURNISH AND INSTALL TREE GRATE	E, L5.10
⑭	CONSTRUCT NEW TO EXISTING PAVING CONNECTION	B, L5.10
⑮	CONSTRUCT CONCRETE PAVING AT CURB CONNECTION	G, L5.10
⑯	CONSTRUCT TUBE STEEL SLIDING AND PEDESTRIAN ACCESS GATES AT WEST PLAZA	A-D, L5.40; F, L5.30
⑰	CONSTRUCT VEHICULAR RATED CONCRETE	SEE CIVIL
⑱	FURNISH AND INSTALL TRUNCATED DOME PANELS	A, L5.30
⑲	CONSTRUCT TUBE STEEL GUARDRAIL AT LOADING DOCK	B, L5.30
⑳	4" WIDE EPOXY BASED PAINTED STRIPING. COLOR TO BE WHITE.SEE PAVEMENT MARKINGS SPECIFICATION FOR MORE INFORMATION.	
㉑	NOT USED.	
㉒	CONSTRUCT TUBE STEEL SINGLE PEDESTRIAN ACCESS GATE	D & G, L5.20
㉓	CONSTRUCT TUBE STEEL DOUBLE PEDESTRIAN ACCESS GATE	B & F, L5.20
㉔	CONSTRUCT TUBE STEEL FENCE	A, L5.20
㉕	CONSTRUCT LIGHT BOLLARD BASE AT PAVING.	J, L5.10
㉖	CONSTRUCT SLOPED WALK WITH GUARD RAIL.	A-D, L5.50
㉗	FURNISH AND INSTALL LOOSE LAID COBBLE	C, L5.30
㉘	12" HIGH LETTERING PAINT TO BE EPOXY BASED	--
㉙	REMOVE AND REPLACE (+/-6'-4") OF EXISTING CONCRETE PAVING AS NEEDED FOR EXISTING BUILDING FOOTING REMOVAL. REMOVE PAVING TO NEAREST JOINT.	A, L5.10
㉚	EXISTING VENTS REINSTALLED ON 6" CONCRETE CURB.	D, L5.30

COLOR AND FINISH SCHEDULE

SYMBOL	KEY	DESCRIPTION	CONCRETE MIX DESIGN	COLOR	FINISH	COMMENTS
PAVING						
▨	P1	CONCRETE PAVING BAND	70% PEA GRAVEL & 30% SAND; 4200 PSI	NATURAL GRAY	GRACE TOP-CAST #75 (HEAVY EXPOSED AGGREGATE)	JOINTS: VARIES PER AREA
▨	P2	CONCRETE MAINTENANCE BAND	50% PEA GRAVEL & 50% SAND; 4200 PSI	NATURAL GRAY	SMOOTH HARD TROWEL	JOINTS: TOOLED CONTRACTION AT 5' O.C. AND CHANGES IN DIRECTION
▨	P3	CONCRETE PAVING TYPE 1	50% PEA GRAVEL & 50% SAND; 4200 PSI	NATURAL GRAY	MED. BROOM DIRECTION TO MATCH EXISTING	JOINTS: SAWCUT AND DOWELED CONSTRUCTION
▨	P4	TRUNCATED DOME PANEL BY ARMOR-TILE 1-800-682-2525	--	FEDERAL YELLOW	CAST IN PLACE MODEL	FIELD VERIFY PANEL SIZE PRIOR TO PLACING ORDER
▨	P5	CONCRETE PAVING TYPE 2	50% PEA GRAVEL & 50% SAND; 3000 PSI	NATURAL GRAY	GRACE TOP-CAST #03 (ACID WASH FINISH)	JOINTS: SAWCUT AND DOWELED CONSTRUCTION
▨	P6	LOOSE LAID COBBLE FROM SOUTHWEST BOULDER AND STONE (760) 451-3333	--	1"-2" MEXICAN BEACH BLACK PEBBLES		5" MINIMUM THICK LAYER

NOTES:
A: CONTRACTOR SHALL PREPARE 4' SQ. SAMPLE OF ALL PAVING FINISHES, PER SPECIFICATIONS, AND MOCK UP REQUIREMENT NOTES ON SHEET L5.50 FOR REVIEW AND APPROVAL BY OWNER AND LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
B: PROVIDE AN ISOLATION JOINT WHERE PAVING ABUTS VERTICAL SURFACES SUCH AS BUILDINGS, WALLS, STEPS, ETC., SEE DETAIL B, SHEET L5.10

SYMBOL	KEY	DESCRIPTION	MANUFACTURER	COLOR	FINISH	COMMENTS
WALLS						
▭	W1	P.I.P CONCRETE LOW WALL	--	NATURAL GRAY	ACID WASH FINISH TO MATCH EXISTING.	JOINTS: VERTICAL SAWCUT CONTRACTION
▨	W2	SERVICE YARD WALL	CMU BLOCK	TO BE DETERMINED	VISIBLE FACES TO BE SPLIT FACE	WALL CAP: 10"x4"x16" SPLIT FACE ON 2 SIDES
FENCE						
—□—□—	F1	TUBE STEEL FENCE / GATES	CUSTOM	BLACK TO MATCH EXISTING CAMPUS FENCING	SHOP APPLIED PAINTED	
—○—○—	F2	TUBE STEEL GUARDRAIL	CUSTOM	FINISH TO BE SELECTED BY OWNER	HOT DIPPED GALVANIZED	42" ABOVE FINISH SURFACE

5

NOTES:
A: CONTRACTOR SHALL PREPARE 3' LONG SAMPLE OF ALL WALL FINISHES, PER SPECIFICATIONS, AND MOCK UP REQUIREMENT NOTES ON SHEET L5.50, FOR REVIEW AND APPROVAL BY OWNER AND LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
B: PROVIDE AN ISOLATION JOINT WHERE PAVING ABUTS VERTICAL SURFACES SUCH AS BUILDINGS, WALLS, STEPS, ETC., SEE DETAIL B, SHEET L5.10
C: AT THE END OF CONSTRUCTION, CLEAN SITE WALLS AND APPLY ANTI-GRAFFITI COATING ON ALL VISIBLE PORTIONS OF WALL PER SPECIFICATION SECTION 099623 GRAFFITI-RESISTANT COATINGS.

SYMBOL	KEY	DESCRIPTION	SUPPLIER	SIZE (L X W X H)
BOULDERS				
⬡	B1	SANDSTONE WITH NATURAL BEIGE, PINK, AND BUFF TONES	SOUTHWEST BOULDER AND STONE	10'+/- X 6'+/- X 28" MIN.
⬡	B2	SANDSTONE WITH NATURAL BEIGE, PINK, AND BUFF TONES	SOUTHWEST BOULDER AND STONE	8'-6"+/- X 7' X 28" MIN.
⬡	B3	SANDSTONE WITH NATURAL BEIGE, PINK, AND BUFF TONES	SOUTHWEST BOULDER AND STONE	5'+/- X 4'-6"+/- X 28" MIN.
⬡	B4	SANDSTONE WITH NATURAL BEIGE, PINK, AND BUFF TONES	SOUTHWEST BOULDER AND STONE	4'+/- X 3'-6"+/- X 28" MIN.

NOTE: ALL BOULDERS BY SOUTHWEST BOULDER AND STONE, (877) 792-7625.
CONTRACTOR TO PROVIDE A 12"x12"x12" SAMPLE FOR REVIEW AND APPROVAL BY OWNER AND LANDSCAPE ARCHITECT PRIOR TO DELIVERY ON SITE.

SYMBOL LEGEND

– – – –	EXPANSION JOINT
——	SCORE / SAWCUT JOINT
PA	PLANTER AREA
TURF	TURF AREA
ALIGN	ALIGN

GRADING & DRAINAGE NOTES

A. CROSS SLOPE OF SIDEWALK TO BE A MAX. OF 1.9%.

B. SLOPE ALL HARDSCAPE TO ACHIEVE POSITIVE DRAINAGE AWAY FROM BUILDING.

C. VERIFY GRADES WITH CIVIL ENGINEER'S SHEETS.

D. CONNECT LANDSCAPE DRAINS TO STORM DRAIN SYSTEM AS INDICATED ON CIVIL ENGINEER'S DRAWINGS.

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6-30-19

JAMES J. RIDGE
LIC. #2809
09/07/18
(Date)
05/31/19
(Exp. Date)

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
FILE: 30-C2
A# 0 4 - 116810
AC ____ FLS ____ SS ____
DATE ________

PROJECT TITLE

JOHNSON STUDENT CENTER
INCREMENT 2
1530 W 17TH ST SANTA ANA CA 92706

RANCHO SANTIAGO
Community College District

SUBMITTALS		
#	DATE	DESCRIPTION
	08/13/2018	DSA FINAL SUBMITTAL
5	10/01/2018	ADDENDUM #5

PROJECT IDENTIFICATION Project Number

THESE DRAWINGS ORIGINALLY CREATED IN AUTODESK REVIT V. 2016 U.O.N.

THE ORIGINAL SIZE OF THIS SHEET IS 30" X 42".

DRAWN BY RLA

CHECKED BY RLA

SHEET TITLE

HARDSCAPE PLAN ENLARGEMENT

SHEET NUMBER

L2.10

100% CONSTRUCTION DOCUMENTS

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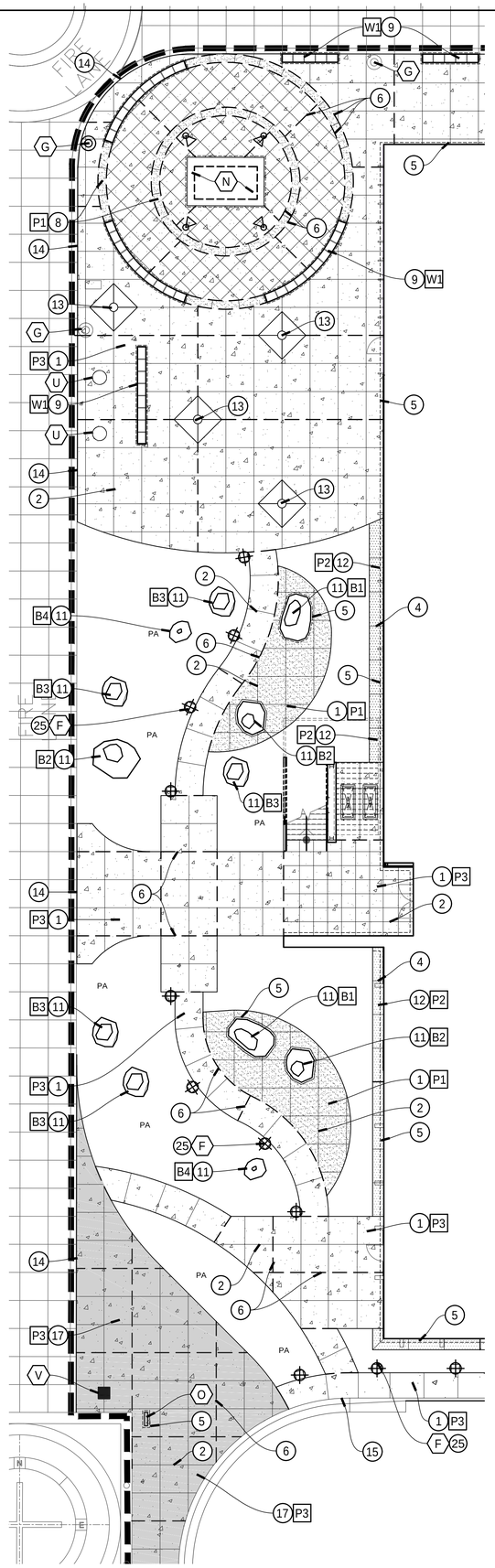

3 PATIO 'C' ENLARGEMENT AREA

SCALE: 1" = 10'-0"

SYMBOL	KEY	DESCRIPTION	SUPPLIER	SIZE (L X W X H)
BOULDERS				
	B1	SANDSTONE WITH NATURAL BEIGE, PINK, AND BUFF TONES	SOUTHWEST BOULDER AND STONE	10'+/- X 6'+/- X 28" MIN.
	B2	SANDSTONE WITH NATURAL BEIGE, PINK, AND BUFF TONES	SOUTHWEST BOULDER AND STONE	8'-6"+/- X 7' X 28" MIN.
	B3	SANDSTONE WITH NATURAL BEIGE, PINK, AND BUFF TONES	SOUTHWEST BOULDER AND STONE	5'+/- X 4'-6"+/- X 28" MIN.
	B4	SANDSTONE WITH NATURAL BEIGE, PINK, AND BUFF TONES	SOUTHWEST BOULDER AND STONE	4'+/- X 3'-6"+/- X 28" MIN.

NOTE: ALL BOULDERS BY SOUTHWEST BOULDER AND STONE, (877) 792-7625.
CONTRACTOR TO PROVIDE A 12"x12"x12" SAMPLE FOR REVIEW AND APPROVAL BY OWNER AND LANDSCAPE ARCHITECT PRIOR TO DELIVERY ON SITE.

LIGHTING LEGEND

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL	COLOR	FINISH
LIGHTING					
	LIGHT BOLLARD	ARCHITECTURAL AREA LIGHTING (826) 968-5666	SPB SPECTRA BOLLARD	---	---
	POST TOP	ARCHITECTURAL AREA LIGHTING (626) 968-5666	SP1 (LED) SPECTRA LARGE SCALE	---	---
	CHARGING BOX	C.W. COLE & COMPANY (626) 443-2473	TL310-WCS SERIES	---	---
	SCULPTURE UPLIGHT	LUMINIS (866) 586-4647	SQ600 SERIES SYRIOS SQUARE - LED	---	---

NOTES:
LIGHTING SYMBOLS ARE SHOWN ON THESE PLANS FOR REFERENCE ONLY. SEE ELECTRICAL ENGINEER'S SHEETS FOR LIGHT QUANTITIES, MANUFACTURER, AND LOCATIONS.

SYMBOL	DESCRIPTION
PAVING	
	REPRESENTS LIMITS OF VEHICULAR RATED CONCRETE PAVING. SEE CIVIL ENGINEER'S DRAWINGS FOR PAVING THICKNESS AND REBAR REQUIREMENTS.

REFERENCE KEYNOTES

A	EXISTING CONCRETE PAVING - PROTECT IN PLACE
B	NOT USED.
C	BUILDING - PER ARCHITECT'S DRAWINGS.
D	CURB CUT RAMP - PER CIVIL ENGINEER'S DRAWINGS.
E	SERVICE YARD WALL - SEE STRUCTURAL DETAIL #15, SHEET S4.11.
F	LIGHT BOLLARD - SEE ELECTRICAL ENGINEER'S PLANS FOR ADDITIONAL INFORMATION.
G	LIGHT POLE FOOTING BASE - SEE ELECTRICAL ENGINEER'S PLANS FOR ADDITIONAL INFORMATION.
H	TRELLIS STRUCTURE - PER ARCHITECT'S DRAWINGS.
I	NOT USED.
J	CONCRETE CURB PER CIVIL ENGINEER'S PLANS.
K	BOILER ROOM ENCLOSURE PER ARCHITECT'S DRAWINGS.
L	6' LONG RUBBER WHEEL STOP SECURE IN PLACE WITH (2) 18" LONG REBAR STALKS.
M	EMERGENCY PHONE - SEE SHEET G1.30.
N	EXISTING SIGN - PROTECT IN PLACE.
O	DIGITAL SIGN BY OTHERS.
P	EXISTING LIGHT TO BE RELOCATED SEE ELECTRICAL ENGINEER'S PLANS.
Q	LUNCH SHELTER PER ARCHITECT'S PLANS.
R	BOILER ROOM GATES PER ARCHITECTURAL DOOR SCHEDULE.
S	CROSSWALK STRIPING PER CIVIL DRAWINGS.
T	EXISTING TUBE STEEL FENCE TO BE PROTECTED IN PLACE.
U	FUTURE BIKE REPAIR STATIONS BY OTHERS (N.I.C.).
V	EXISTING CMU BANNER COLUMN PROTECT IN PLACE.
W	GAS METER - SEE PLUMBING ENGINEER'S DRAWINGS.
X	EXISTING VENT GRATES - PROTECT IN PLACE.

CONSTRUCTION KEYNOTES

SYMBOL	DESCRIPTION	DETAIL REF.
1	CONSTRUCT PEDESTRIAN RATED CONCRETE PAVING	A, L5.10
2	CONSTRUCT SAWCUT CONTRACTION JOINT	B, L5.10
3	CONSTRUCT TOOLED DOWELED CONSTRUCTION JOINT	B, L5.10
4	CONSTRUCT TOOLED CONTRACTION JOINT	B, L5.10
5	CONSTRUCT ISOLATION JOINT	B, L5.10
6	CONSTRUCT SAWCUT DOWELED CONSTRUCTION JOINT	B, L5.10
7	CONSTRUCT CONCRETE FILLED PIPE BOLLARD	I, L5.10
8	CONSTRUCT CONCRETE BAND	C, L5.10
9	CONSTRUCT P.I.P. CONCRETE LOW WALL	D, L5.10
10	NOT USED.	
11	FURNISH AND INSTALL LANDSCAPE BOULDER	F, L5.10
12	CONSTRUCT P.I.P. CONCRETE MAINTENANCE BAND	H, L5.10
13	FURNISH AND INSTALL TREE GRATE	E, L5.10
14	CONSTRUCT NEW TO EXISTING PAVING CONNECTION	B, L5.10
15	CONSTRUCT CONCRETE PAVING AT CURB CONNECTION	G, L5.10
16	CONSTRUCT TUBE STEEL SLIDING AND PEDESTRIAN ACCESS GATES AT WEST PLAZA	A-D, L5.40; F, L5.30
17	CONSTRUCT VEHICULAR RATED CONCRETE	SEE CIVIL
18	FURNISH AND INSTALL TRUNCATED DOME PANELS	A, L5.30
19	CONSTRUCT TUBE STEEL GUARDRAIL AT LOADING DOCK	B, L5.30
20	4" WIDE EPOXY BASED PAINTED STRIPING. COLOR TO BE WHITE.SEE PAVEMENT MARKINGS SPECIFICATION FOR MORE INFORMATION.	
21	NOT USED.	
22	CONSTRUCT TUBE STEEL SINGLE PEDESTRIAN ACCESS GATE	D & G, L5.20
23	CONSTRUCT TUBE STEEL DOUBLE PEDESTRIAN ACCESS GATE	B & F, L5.20
24	CONSTRUCT TUBE STEEL FENCE	A, L5.20
25	CONSTRUCT LIGHT BOLLARD BASE AT PAVING.	J, L5.10
26	CONSTRUCT SLOPED WALK WITH GUARD RAIL.	A-D, L5.50
27	FURNISH AND INSTALL LOOSE LAID COBBLE	C, L5.30
28	12" HIGH LETTERING PAINT TO BE EPOXY BASED	--
29	REMOVE AND REPLACE (+/-6'-4") OF EXISTING CONCRETE PAVING AS NEEDED FOR EXISTING BUILDING FOOTING REMOVAL. REMOVE PAVING TO NEAREST JOINT.	A, L5.10
30	EXISTING VENTS REINSTALLED ON 6" CONCRETE CURB.	D, L5.30
31	CONSTRUCT NEW GUARDRAIL ON TOP OF EXISTING CURB	A-D, L5.50 (SIMILAR)

COLOR AND FINISH SCHEDULE

SYMBOL	KEY	DESCRIPTION	CONCRETE MIX DESIGN	COLOR	FINISH	COMMENTS
PAVING						
	P1	CONCRETE PAVING BAND	70% PEA GRAVEL & 30% SAND; 4200 PSI	NATURAL GRAY	GRACE TOP-CAST #75 (HEAVY EXPOSED AGGREGATE)	JOINTS: VARIES PER AREA
	P2	CONCRETE MAINTENANCE BAND	50% PEA GRAVEL & 50% SAND; 4200 PSI	NATURAL GRAY	SMOOTH HARD TROWEL	JOINTS: TOOLED CONTRACTION AT 5' O.C. AND CHANGES IN DIRECTION
	P3	CONCRETE PAVING TYPE 1	50% PEA GRAVEL & 50% SAND; 4200 PSI	NATURAL GRAY	MED. BROOM DIRECTION TO MATCH EXISTING	JOINTS: SAWCUT AND DOWELED CONSTRUCTION
	P4	TRUNCATED DOME PANEL BY ARMOR-TILE 1-800-682-2525	--	FEDERAL YELLOW	CAST IN PLACE MODEL	FIELD VERIFY PANEL SIZE PRIOR TO PLACING ORDER
	P5	CONCRETE PAVING TYPE 2	50% PEA GRAVEL & 50% SAND; 3000 PSI	NATURAL GRAY	GRACE TOP-CAST #03 (ACID WASH FINISH)	JOINTS: SAWCUT AND DOWELED CONSTRUCTION
	P6	LOOSE LAID COBBLE FROM SOUTHWEST BOULDER AND STONE (760) 451-3333	--	1"-2" MEXICAN BEACH BLACK PEBBLES		5" MINIMUM THICK LAYER

NOTES:
A: CONTRACTOR SHALL PREPARE 4' SQ. SAMPLE OF ALL PAVING FINISHES, PER SPECIFICATIONS, AND MOCK UP REQUIREMENT NOTES ON SHEET L5.50 FOR REVIEW AND APPROVAL BY OWNER AND LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
B: PROVIDE AN ISOLATION JOINT WHERE PAVING ABUTS VERTICAL SURFACES SUCH AS BUILDINGS, WALLS, STEPS, ETC., SEE DETAIL B, SHEET L5.10

SYMBOL	KEY	DESCRIPTION	MANUFACTURER	COLOR	FINISH	COMMENTS
WALLS						
	W1	P.I.P CONCRETE LOW WALL	--	NATURAL GRAY	ACID WASH FINISH TO MATCH EXISTING.	JOINTS: VERTICAL SAWCUT CONTRACTION
	W2	SERVICE YARD WALL	CMU BLOCK	TO BE DETERMINED	VISIBLE FACES TO BE SPLIT FACE	WALL CAP: 10"x4"x16" SPLIT FACE ON 2 SIDES
FENCE						
	F1	TUBE STEEL FENCE / GATES	CUSTOM	BLACK TO MATCH EXISTING CAMPUS FENCING	SHOP APPLIED PAINTED	
	F2	TUBE STEEL GUARDRAIL	CUSTOM	FINISH TO BE SELECTED BY OWNER	HOT DIPPED GALVANIZED	42" ABOVE FINISH SURFACE

NOTES:
A: CONTRACTOR SHALL PREPARE 3' LONG SAMPLE OF ALL WALL FINISHES, PER SPECIFICATIONS, AND MOCK UP REQUIREMENT NOTES ON SHEET L5.50, FOR REVIEW AND APPROVAL BY OWNER AND LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
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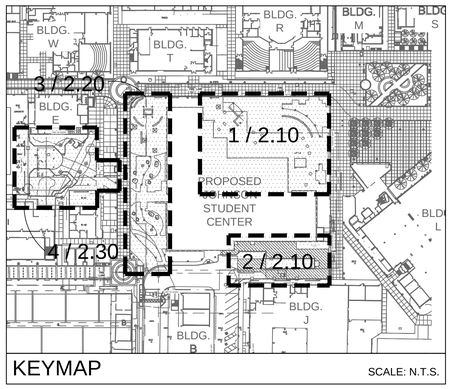
C: AT THE END OF CONSTRUCTION, CLEAN SITE WALLS AND APPLY ANTI-GRAFFITI COATING ON ALL VISIBLE PORTIONS OF WALL PER SPECIFICATION SECTION 099623 GRAFFITI-RESISTANT COATINGS.

0 5 10 20 30



KEYMAP

SCALE: N.T.S.

SEE SHEET L11.10 FOR SITE FURNITURE PLAN

SYMBOL LEGEND

- EXPANSION JOINT
- SCORE / SAWCUT JOINT
- PA PLANTER AREA
- TURF TURF AREA
- ALIGN

GRADING & DRAINAGE NOTES

A. CROSS SLOPE OF SIDEWALK TO BE A MAX. OF 1.9%.

B. SLOPE ALL HARDSCAPE TO ACHIEVE POSITIVE DRAINAGE AWAY FROM BUILDING.

C. VERIFY GRADES WITH CIVIL ENGINEER'S SHEETS.

D. CONNECT LANDSCAPE DRAINS TO STORM DRAIN SYSTEM AS INDICATED ON CIVIL ENGINEER'S DRAWINGS.

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SEALS / APPROVALS

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
FILE: 30-C2
A# 0 4 - 116810
AC _____ FLS _____ SS _____
DATE _____

PROJECT TITLE

JOHNSON STUDENT CENTER
INCREMENT 2

1530 W 17TH ST SANTA ANA CA 92706

RANCHO SANTIAGO Community College District

SUBMITTALS

#	DATE	DESCRIPTION
	08/13/2018	DSA FINAL SUBMITTAL
1	10/01/2018	ADDENDUM #5

PROJECT IDENTIFICATION Project Number

THESE DRAWINGS ORIGINALLY CREATED IN AUTODESK REVIT V. 2016 U.O.N.

THE ORIGINAL SIZE OF THIS SHEET IS 30" X 42".

DRAWN BY RLA

CHECKED BY RLA

SHEET TITLE

HARDSCAPE PLAN ENLARGEMENT

SHEET NUMBER

L2.20

100% CONSTRUCTION DOCUMENTS

4/19/2017 11:37:57 AM C:\My Documents\RSCCD_SAC_Johnson Center_Central_R16_mstuart.rvt

SYMBOL	KEY	DESCRIPTION	SUPPLIER	SIZE (L X W X H)
BOULDERS				
	B1	SANDSTONE WITH NATURAL BEIGE, PINK, AND BUFF TONES	SOUTHWEST BOULDER AND STONE	10'+/- X 6'+/- X 28" MIN.
	B2	SANDSTONE WITH NATURAL BEIGE, PINK, AND BUFF TONES	SOUTHWEST BOULDER AND STONE	8'-6"+/- X 7' X 28" MIN.
	B3	SANDSTONE WITH NATURAL BEIGE, PINK, AND BUFF TONES	SOUTHWEST BOULDER AND STONE	5'+/- X 4'-6"+/- X 28" MIN.
	B4	SANDSTONE WITH NATURAL BEIGE, PINK, AND BUFF TONES	SOUTHWEST BOULDER AND STONE	4'+/- X 3'-6"+/- X 28" MIN.

NOTE: ALL BOULDERS BY SOUTHWEST BOULDER AND STONE, (877) 792-7625.
CONTRACTOR TO PROVIDE A 12"x12"x12" SAMPLE FOR REVIEW AND APPROVAL BY OWNER AND LANDSCAPE ARCHITECT PRIOR TO DELIVERY ON SITE.

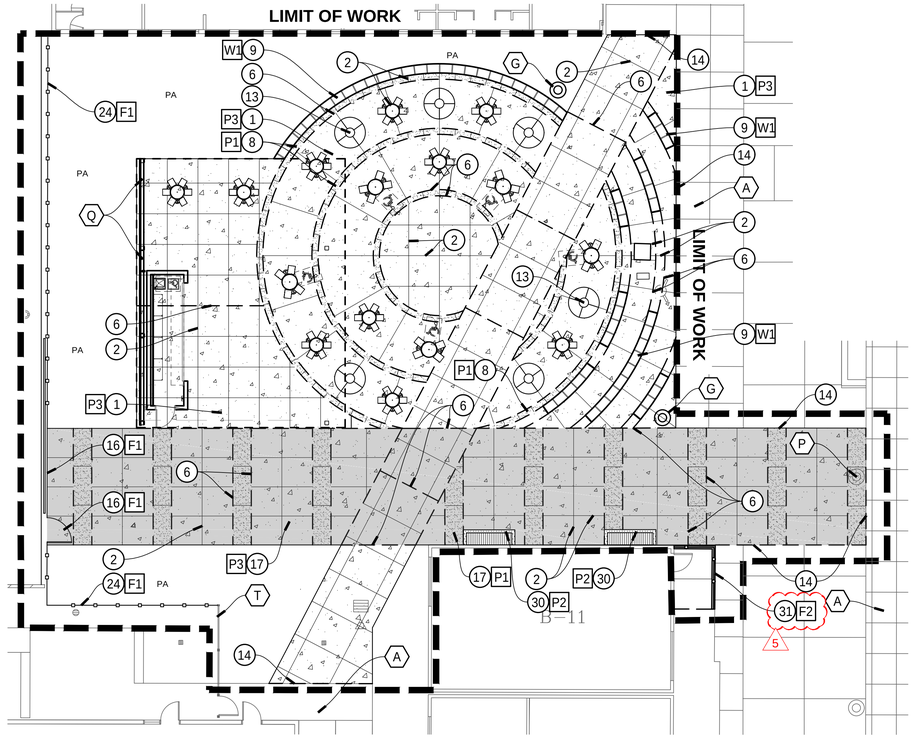
REFERENCE KEYNOTES

A	EXISTING CONCRETE PAVING - PROTECT IN PLACE
B	NOT USED.
C	BUILDING - PER ARCHITECT'S DRAWINGS.
D	CURB CUT RAMP - PER CIVIL ENGINEER'S DRAWINGS.
E	SERVICE YARD WALL - SEE STRUCTURAL DETAIL #15, SHEET S4.11.
F	LIGHT BOLLARD - SEE ELECTRICAL ENGINEER'S PLANS FOR ADDITIONAL INFORMATION.
G	LIGHT POLE FOOTING BASE - SEE ELECTRICAL ENGINEER'S PLANS FOR ADDITIONAL INFORMATION.
H	TRELLIS STRUCTURE - PER ARCHITECT'S DRAWINGS.
I	NOT USED.
J	CONCRETE CURB PER CIVIL ENGINEER'S PLANS.
K	BOILER ROOM ENCLOSURE PER ARCHITECT'S DRAWINGS.
L	6' LONG RUBBER WHEEL STOP SECURE IN PLACE WITH (2) 18" LONG REBAR STALKS.
M	EMERGENCY PHONE - SEE SHEET G1.30.
N	EXISTING SIGN - PROTECT IN PLACE.
O	DIGITAL SIGN BY OTHERS.
P	EXISTING LIGHT TO BE RELOCATED SEE ELECTRICAL ENGINEER'S PLANS.
Q	LUNCH SHELTER PER ARCHITECT'S PLANS.
R	BOILER ROOM GATES PER ARCHITECTURAL DOOR SCHEDULE.
S	CROSSWALK STRIPING PER CIVIL DRAWINGS.
T	EXISTING TUBE STEEL FENCE TO BE PROTECTED IN PLACE.
U	FUTURE BIKE REPAIR STATIONS BY OTHERS (N.I.C.).
V	EXISTING CMU BANNER COLUMN PROTECT IN PLACE.
W	GAS METER - SEE PLUMBING ENGINEER'S DRAWINGS.
X	EXISTING VENT GRATES - PROTECT IN PLACE.

CONSTRUCTION KEYNOTES

SYMBOL	DESCRIPTION	DETAIL REF.
1	CONSTRUCT PEDESTRIAN RATED CONCRETE PAVING	A, L5.10
2	CONSTRUCT SAWCUT CONTRACTION JOINT	B, L5.10
3	CONSTRUCT TOOLED DOWELED CONSTRUCTION JOINT	B, L5.10
4	CONSTRUCT TOOLED CONTRACTION JOINT	B, L5.10
5	CONSTRUCT ISOLATION JOINT	B, L5.10
6	CONSTRUCT SAWCUT DOWELED CONSTRUCTION JOINT	B, L5.10
7	CONSTRUCT CONCRETE FILLED PIPE BOLLARD	I, L5.10
8	CONSTRUCT CONCRETE BAND	C, L5.10
9	CONSTRUCT P.I.P. CONCRETE LOW WALL	D, L5.10
10	NOT USED.	
11	FURNISH AND INSTALL LANDSCAPE BOULDER	F, L5.10
12	CONSTRUCT P.I.P. CONCRETE MAINTENANCE BAND	H, L5.10
13	FURNISH AND INSTALL TREE GRATE	E, L5.10
14	CONSTRUCT NEW TO EXISTING PAVING CONNECTION	B, L5.10
15	CONSTRUCT CONCRETE PAVING AT CURB CONNECTION	G, L5.10
16	CONSTRUCT TUBE STEEL SLIDING AND PEDESTRIAN ACCESS GATES AT WEST PLAZA	A-D, L5.40; F, L5.30
17	CONSTRUCT VEHICULAR RATED CONCRETE	SEE CIVIL
18	FURNISH AND INSTALL TRUNCATED DOME PANELS	A, L5.30
19	CONSTRUCT TUBE STEEL GUARDRAIL AT LOADING DOCK	B, L5.30
20	4" WIDE EPOXY BASED PAINTED STRIPING. COLOR TO BE WHITE.SEE PAVEMENT MARKINGS SPECIFICATION FOR MORE INFORMATION.	
21	NOT USED.	
22	CONSTRUCT TUBE STEEL SINGLE PEDESTRIAN ACCESS GATE	D & G, L5.20
23	CONSTRUCT TUBE STEEL DOUBLE PEDESTRIAN ACCESS GATE	B & F, L5.20
24	CONSTRUCT TUBE STEEL FENCE	A, L5.20
25	CONSTRUCT LIGHT BOLLARD BASE AT PAVING.	J, L5.10
26	CONSTRUCT SLOPED WALK WITH GUARD RAIL.	A-D, L5.50
27	FURNISH AND INSTALL LOOSE LAID COBBLE	C, L5.30
28	12" HIGH LETTERING PAINT TO BE EPOXY BASED	--
29	REMOVE AND REPLACE (+/-6'-4") OF EXISTING CONCRETE PAVING AS NEEDED FOR EXISTING BUILDING FOOTING REMOVAL. REMOVE PAVING TO NEAREST JOINT.	A, L5.10
30	EXISTING VENTS REINSTALLED ON 6" CONCRETE CURB.	D, L5.30
31	CONSTRUCT NEW GUARDRAIL ON TOP OF EXISTING CURB	A-D, L5.50 (SIMILAR)

5



4 WEST PLAZA 'D' ENLARGEMENT PLAN
SCALE: 1" = 10'-0"

SYMBOL	DESCRIPTION
PAVING	
	REPRESENTS LIMITS OF VEHICULAR RATED CONCRETE PAVING. SEE CIVIL ENGINEER'S DRAWINGS FOR PAVING THICKNESS AND REBAR REQUIREMENTS.

COLOR AND FINISH SCHEDULE

SYMBOL	KEY	DESCRIPTION	CONCRETE MIX DESIGN	COLOR	FINISH	COMMENTS
PAVING						
	P1	CONCRETE PAVING BAND	70% PEA GRAVEL & 30% SAND; 4200 PSI	NATURAL GRAY	GRACE TOP-CAST #75 (HEAVY EXPOSED AGGREGATE)	JOINTS: VARIES PER AREA
	P2	CONCRETE MAINTENANCE BAND	50% PEA GRAVEL & 50% SAND; 4200 PSI	NATURAL GRAY	SMOOTH HARD TROWEL	JOINTS: TOOLED CONTRACTION AT 5' O.C. AND CHANGES IN DIRECTION
	P3	CONCRETE PAVING TYPE 1	50% PEA GRAVEL & 50% SAND; 4200 PSI	NATURAL GRAY	MED. BROOM DIRECTION TO MATCH EXISTING	JOINTS: SAWCUT AND DOWELED CONSTRUCTION
	P4	TRUNCATED DOME PANEL BY ARMOR-TILE 1-800-682-2525	--	FEDERAL YELLOW	CAST IN PLACE MODEL	FIELD VERIFY PANEL SIZE PRIOR TO PLACING ORDER
	P5	CONCRETE PAVING TYPE 2	50% PEA GRAVEL & 50% SAND; 3000 PSI	NATURAL GRAY	GRACE TOP-CAST #03 (ACID WASH FINISH)	JOINTS: SAWCUT AND DOWELED CONSTRUCTION
	P6	LOOSE LAID COBBLE FROM SOUTHWEST BOULDER AND STONE (760) 451-3333	--	1"-2" MEXICAN BEACH BLACK PEBBLES		5" MINIMUM THICK LAYER

NOTES:
A: CONTRACTOR SHALL PREPARE 4' SQ. SAMPLE OF ALL PAVING FINISHES, PER SPECIFICATIONS, AND MOCK UP REQUIREMENT NOTES ON SHEET L5.50 FOR REVIEW AND APPROVAL BY OWNER AND LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
B: PROVIDE AN ISOLATION JOINT WHERE PAVING ABUTS VERTICAL SURFACES SUCH AS BUILDINGS, WALLS, STEPS, ETC., SEE DETAIL B, SHEET L5.10

SYMBOL	KEY	DESCRIPTION	MANUFACTURER	COLOR	FINISH	COMMENTS
WALLS						
	W1	P.I.P CONCRETE LOW WALL	--	NATURAL GRAY	ACID WASH FINISH TO MATCH EXISTING.	JOINTS: VERTICAL SAWCUT CONTRACTION
	W2	SERVICE YARD WALL	CMU BLOCK	TO BE DETERMINED	VISIBLE FACES TO BE SPLIT FACE	WALL CAP: 10"x4"x16" SPLIT FACE ON 2 SIDES
FENCE						
	F1	TUBE STEEL FENCE / GATES	CUSTOM	BLACK TO MATCH EXISTING CAMPUS FENCING	SHOP APPLIED PAINTED	
	F2	TUBE STEEL GUARDRAIL	CUSTOM	FINISH TO BE SELECTED BY OWNER	HOT DIPPED GALVANIZED	42" ABOVE FINISH SURFACE

5

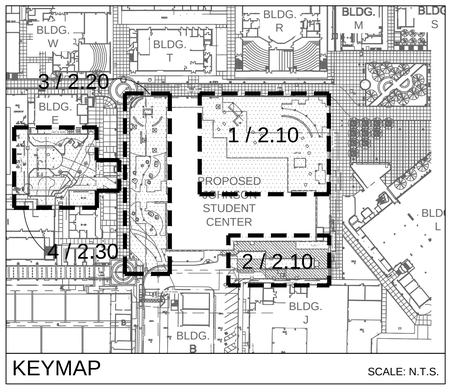
NOTES:
A: CONTRACTOR SHALL PREPARE 3' LONG SAMPLE OF ALL WALL FINISHES, PER SPECIFICATIONS, AND MOCK UP REQUIREMENT NOTES ON SHEET L5.50, FOR REVIEW AND APPROVAL BY OWNER AND LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
B: PROVIDE AN ISOLATION JOINT WHERE PAVING ABUTS VERTICAL SURFACES SUCH AS BUILDINGS, WALLS, STEPS, ETC., SEE DETAIL B, SHEET L5.10
C: AT THE END OF CONSTRUCTION, CLEAN SITE WALLS AND APPLY ANTI-GRAFFITI COATING ON ALL VISIBLE PORTIONS OF WALL PER SPECIFICATION SECTION 099623 GRAFFITI-RESISTANT COATINGS.

LIGHTING LEGEND

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL	COLOR	FINISH
LIGHTING					
	LIGHT BOLLARD	ARCHITECTURAL AREA LIGHTING (826) 968-5666	SPB SPECTRA BOLLARD	---	---
	POST TOP	ARCHITECTURAL AREA LIGHTING (626) 968-5666	SP1 (LED) SPECTRA LARGE SCALE	---	---
	CHARGING BOX	C.W. COLE & COMPANY (626) 443-2473	TL310-WCS SERIES	---	---
	SCULPTURE UPLIGHT	LUMINIS (866) 586-4647	SQ600 SERIES SYRIOS SQUARE - LED	---	---

NOTES:
LIGHTING SYMBOLS ARE SHOWN ON THESE PLANS FOR REFERENCE ONLY. SEE ELECTRICAL ENGINEER'S SHEETS FOR LIGHT QUANTITIES, MANUFACTURER, AND LOCATIONS.

0 5 10 20 30



KEYMAP SCALE: N.T.S.

SEE SHEET L11.10 FOR SITE FURNITURE PLAN

SYMBOL LEGEND

- EXPANSION JOINT
- SCORE / SAWCUT JOINT
- PA PLANTER AREA
- TURF TURF AREA
- ALIGN

GRADING & DRAINAGE NOTES

A. CROSS SLOPE OF SIDEWALK TO BE A MAX. OF 1.9%.
B. SLOPE ALL HARDSCAPE TO ACHIEVE POSITIVE DRAINAGE AWAY FROM BUILDING.
C. VERIFY GRADES WITH CIVIL ENGINEER'S SHEETS.
D. CONNECT LANDSCAPE DRAINS TO STORM DRAIN SYSTEM AS INDICATED ON CIVIL ENGINEER'S DRAWINGS.

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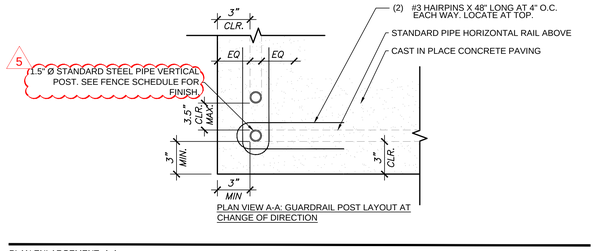
CHECKED BY RLA

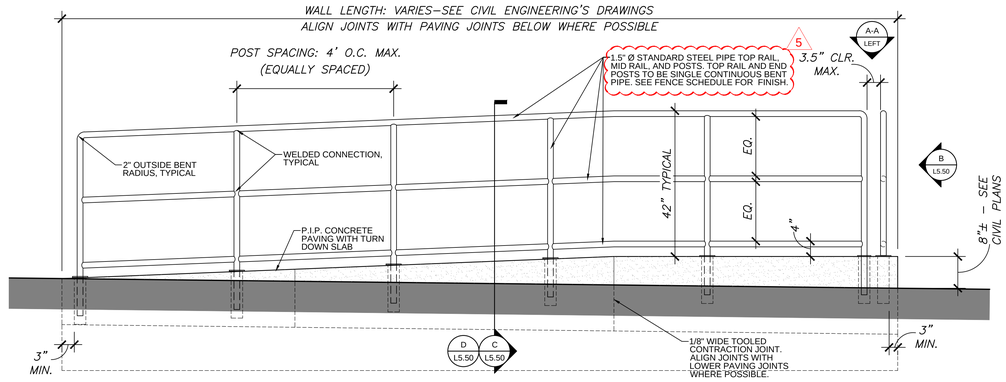
SHEET TITLE
HARDSCAPE PLAN ENLARGEMENT

SHEET NUMBER
L2.30

100% CONSTRUCTION DOCUMENTS



PLAN ENLARGEMENT: A-A
SCALE: 1-1/2" = 1'-0"



A TUBE STEEL SAFETY RAILING - TYPICAL ELEVATION

SCALE: 3/4" = 1'-0"

HARDSCAPE NOTES

A. VISIT THE SITE PRIOR TO SUBMITTING BIDS.

B. ~~SUBMIT A UNIT COST FOR IMPS TO REACH THE SATISFACTORY~~ OMIT NOTE ~~WARE OF THE AMOUNT OF SOIL NECESSARY~~ 5

C. VERIFY ALL PROPERTY LINES OR OTHER LIMIT OF WORK LINES PRIOR TO COMMENCING WORK.

D. REPAIR OR REPLACE ANY DAMAGE TO ADJACENT PROPERTIES, CURBS, WALKS, PLANTING, WALLS, ETC. AT NO ADDITIONAL COST TO THE OWNER.

E. VERIFY ALL EXISTING CONDITIONS, DIMENSIONS AND ELEVATIONS BEFORE PROCEEDING WITH THE WORK. NOTIFY THE LANDSCAPE ARCHITECT IMMEDIATELY SHOULD FIELD CONDITIONS VARY FROM THOSE SHOWN ON PLAN.

F. REPORT DISCREPANCIES IN THE DRAWINGS OR BETWEEN THE DRAWINGS AND ACTUAL FIELD CONDITIONS TO THE LANDSCAPE ARCHITECT. CORRECTED DRAWINGS OR INSTRUCTIONS SHALL BE ISSUED PRIOR TO THE CONTINUATION OF THIS WORK. ASSUME FULL RESPONSIBILITY FOR ALL NECESSARY CORRECTIONS DUE TO FAILURE TO REPORT KNOWN DISCREPANCIES.

G. LOCATE ALL EXISTING UTILITIES WHETHER SHOWN HEREON OR NOT AND PROTECT THEM FROM DAMAGE. NOTIFY THE OWNER IMMEDIATELY IF DAMAGE OCCURS AND ASSUME FULL RESPONSIBILITY FOR EXPENSE OF REPAIR OR REPLACEMENT.

H. COMPLY WITH ALL PROVISIONS OF THE LATEST BUILDING CODE, AMERICANS WITH DISABILITIES ACT OF 2010, AND WITH OTHER CURRENT RULES, REGULATIONS AND ORDINANCES GOVERNING THE PLACE OF THE WORK. BUILDING CODE REQUIREMENTS TAKE PRECEDENCE OVER THE DRAWINGS AND IT SHALL BE THE RESPONSIBILITY OF ANYONE SUPPLYING LABOR OR MATERIALS OR BOTH TO BRING TO THE ATTENTION OF THE ARCHITECT ANY DISCREPANCIES OR CONFLICTS BETWEEN THE REQUIREMENTS OF THE CODE AND THE DRAWINGS.

I. LOCATIONS OF N.I.C. CONSTRUCTION ELEMENTS SUCH AS LIGHTS, SIGNS, VENTS, HYDRANTS, TRANSFORMERS, ETC., ARE APPROXIMATE. NOTIFY THE LANDSCAPE ARCHITECT IMMEDIATELY SHOULD THE LOCATION OF THESE ITEMS INTERFERE WITH THE PROPER EXECUTION OF WORK.

J. VERIFY ALL PAVING AND HARDSCAPE CONSTRUCTION DRAWINGS WITH SOIL ENGINEER'S REPORT WITH REGARD TO BASE PREPARATION AND FOOTING REQUIREMENTS. NOTIFY THE OWNER IMMEDIATELY IF SOILS REPORT RECOMMENDATIONS DIFFER FROM DRAWINGS. THE SOILS REPORT RECOMMENDATIONS, IF MORE STRINGENT THAN THE DRAWINGS, SHALL TAKE PRECEDENCE.

K. BE RESPONSIBLE FOR COORDINATION BETWEEN SUBCONTRACTORS FOR PROPER AND TIMELY PLACEMENT OF SLEEVING, PIPING AND / OR CONDUIT INSTALLATION UNDER OR THROUGH LANDSCAPE ELEMENTS.

L. LANDSCAPE LIGHT FIXTURE LOCATIONS AS INDICATED ON THESE PLANS ARE APPROXIMATE. FINAL LOCATION TO BE VERIFIED BY LANDSCAPE ARCHITECT ON SITE.

M. DO NOT SCALE DRAWINGS.

N. PROVIDE A REPRESENTATIVE SAMPLE OF EACH PAINTED OR STAINED ELEMENT TO THE OWNER FOR REVIEW AND APPROVAL PRIOR TO APPLYING FINISH. REFER TO DETAILS AND SPECIFICATIONS FOR SPECIFIC SUBMITTAL REQUIREMENTS.

O. PROVIDE A SAMPLE OF EACH HARDSCAPE ELEMENT. ITEMS TO INCLUDE, BUT ARE NOT LIMITED TO PAVING AND WALL TYPES NOTED IN THE COLOR AND FINISH SCHEDULES. SAMPLES TO BE PLACED IN A LOCATION SPECIFIED BY THE OWNER'S AUTHORIZED REPRESENTATIVE FOR REVIEW AND APPROVAL BY THE OWNER AND LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. REFER TO MOCK-UP REQUIREMENTS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.

P. WHERE PAVING AND FINISH GRADE MEET, DEPRESS FINISH GRADE 1" IN TURF AREAS AND 1-1/2" IN GROUND COVER / SHRUB AREAS, UNLESS OTHERWISE INDICATED.

Q. PROJECT WALKS SHALL NOT EXCEED A SLOPE OF 20:1 (4.8% GRADIENT) UNLESS OTHERWISE INDICATED.

R. ACCESSIBLE RAMPS SHALL NOT EXCEED 7.5%.

S. PLANTER AREAS SHALL NOT EXCEED 2:1 SLOPE UNLESS OTHERWISE INDICATED.

T. HOLD FINISH GRADE A MINIMUM OF 6" BELOW FINISH FLOOR, UNLESS OTHERWISE INDICATED.

U. CONSTRUCT ALL CURVE TO CURVE AND CURVE TO TANGENT LINES TO BE NEAT, TRIM, SMOOTH AND UNIFORM.

V. CONSTRUCT ALL PEDESTRIAN RATED CONCRETE WALKWAYS WITH A MINIMUM COMPRESSIVE STRENGTH OF 4,200 PSI @ 28 DAYS, UNLESS OTHERWISE INDICATED.

W. ALL CONCRETE PAVING BANDS AND CONCRETE CAPS SHALL HAVE CONTROL JOINTS AT 5'-0" ON CENTER MAXIMUM UNLESS NOTED OTHERWISE ON THE PLANS.

X. PROVIDE THE OWNER WITH ALL WARRANTIES, GUARANTEES, AND INSTRUCTION MANUALS FOR EQUIPMENT, APPLIANCES, FIXTURES, ETC. AS DESCRIBED IN THE SPECIFICATIONS.

MOCK-UP REQUIREMENTS

A. HARDSCAPE PAVING - PROVIDE (1) 4' x 4' SQUARE MOCK-UP FOR EACH PAVING TYPE NOTED IN THE HARDSCAPE AND PAVING SCHEDULE. EACH MOCK-UP TO INCLUDING THE SPECIFIED COLOR, FINISH, AND AN EXAMPLE OF EACH JOINTING TYPE NOTED IN THE CONSTRUCTION KEYNOTES AND DETAILS.

B. MOCK-UP LEAD TIMES. BE AWARE OF POSSIBLE LEAD TIMES FOR ITEMS SUCH AS BUT NOT LIMITED TO PRE-CAST CONCRETE PAVERS. SIMILAR COLORS AND SIZES WILL NOT BE ACCEPTED AS A MOCK-UP REVIEW.

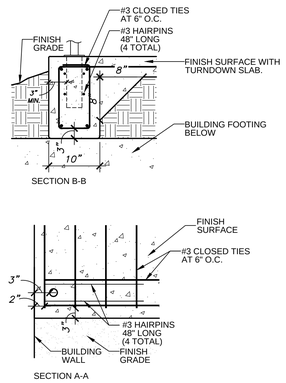
C. HARDSCAPE ELEMENTS - PROVIDE A PHYSICAL SAMPLE OF SPECIFIED MATERIALS (COLOR, FINISH, AND SEALER) TO THE OWNER AND LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL PRIOR TO PLACING ORDER. ITEMS SUCH AS BUT NOT LIMITED TO PLANTER POTS AND OTHER SITE FURNISHINGS.

D. WALLS - PROVIDE (1) 3' TALL BY 3' LONG BY 8" WIDE MOCK-UP FOR EACH WALL TYPE NOTED IN THE WALL SCHEDULE. EACH MOCK-UP TO INCLUDING THE SPECIFIED COLOR, FINISH, JOINTING, EDGING, AND CAP AS NOTED IN CONSTRUCTION KEYNOTES AND DETAILS.

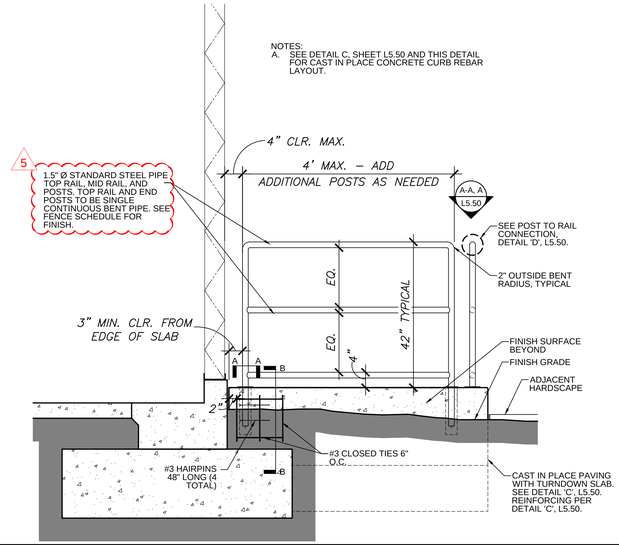
E. MOCK-UPS TO BE PROTECTED ON-SITE THROUGHOUT THE DURATION OF THE CONSTRUCTION SCHEDULE.

F. REMOVE MOCK-UPS AT COMPLETION OF CONSTRUCTION WHEN DIRECTED BY THE OWNER OR LANDSCAPE ARCHITECT.

G. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

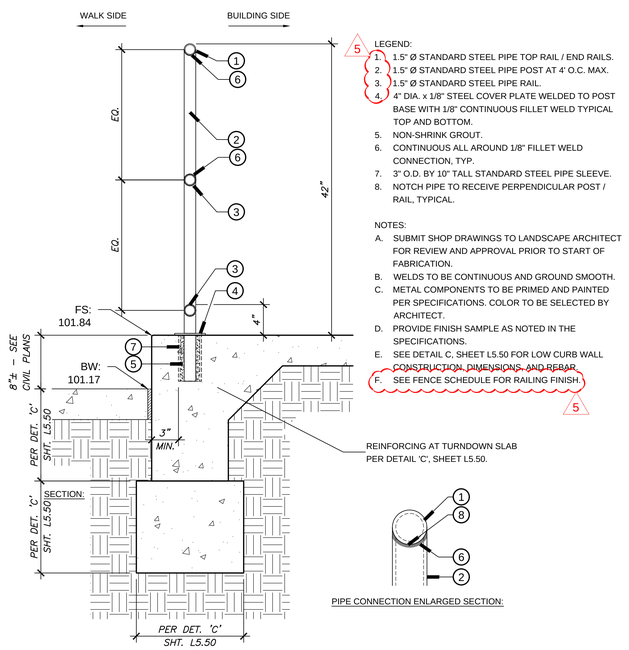


SCALE: 1" = 1'-0"



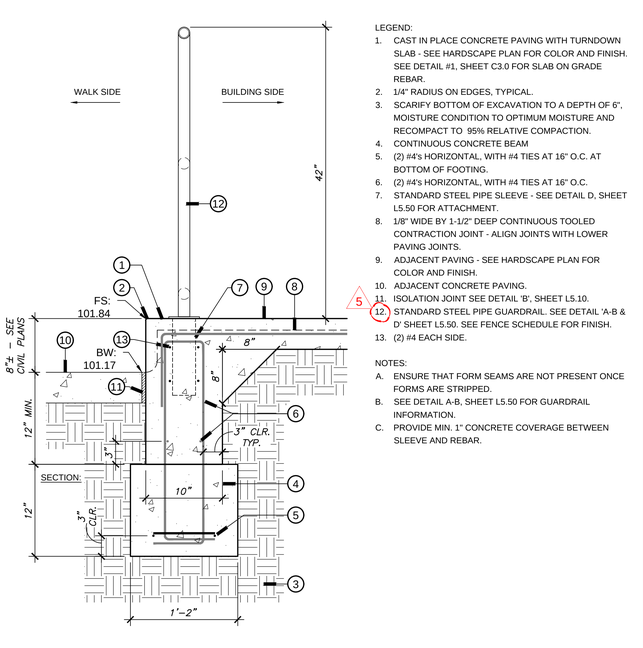
B TUBE STEEL SAFETY RAILING - TYPICAL ELEVATION (B-B)

SCALE: 3/4" = 1'-0"



D TUBE STEEL GUARDRAIL SECTION

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



C CAST IN PLACE CONCRETE PAVING WITH TURNDOWN SLAB

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

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HARDSCAPE DETAILS

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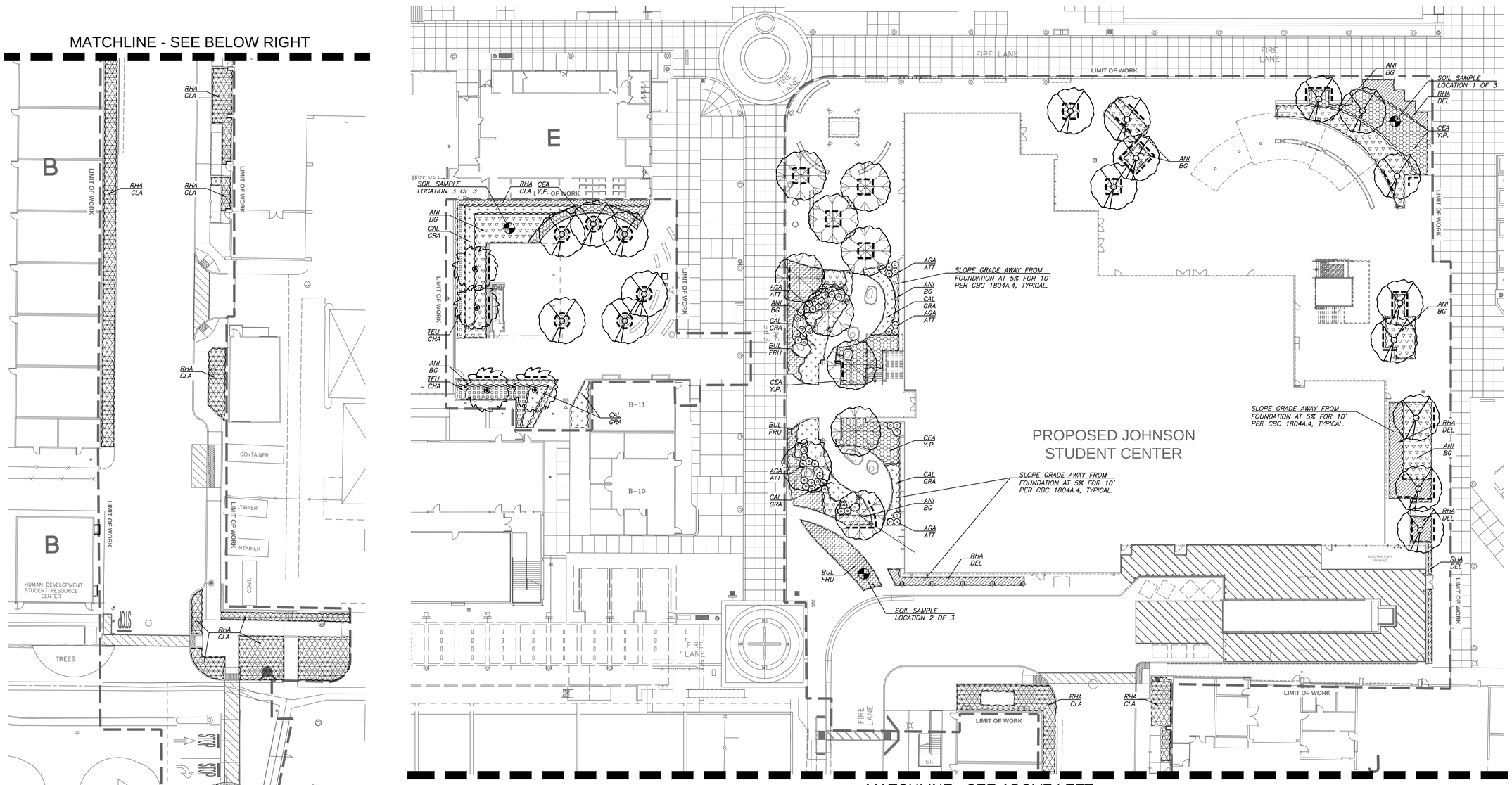

SHRUB PLANT PALETTE

SYMBOL	KEY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	WATER USE *	QTY.	DETAILS
SHRUBS AND GROUNDCOVERS								
⊙	AGA ATT	AGAVE ATTENUATA	FOXTAIL AGAVE	1 GAL.	36" O.C.	LOW	56	C,D, L10.10
	ANI B.G.	ANIGOZANTHOS 'BUSH GOLD'	BUSH GOLD KANGAROO PAW	1 GAL.	30" O.C.	MOD	522	C,D, L10.10
	BUL FRU	BULBINE FRUTESCENS	STALKED BULBINE	1 GAL.	24" O.C.	LOW	425	C,D, L10.10
	RHA DEL	RHAPHIOLEPIS x DELACOURII	GEORGIA PETITE	1 GAL.	30" O.C.	LOW	219	C,D, L10.10
	CAL GRA	CALANDRINIA GRANDIFLORA	ROCK PURSLANE	1 GAL.	30" O.C.	LOW	279	C,D, L10.10
	CEA Y.P.	CEANOTHUS G. 'YANKEE POINT'	YANKEE POINT CEANOTHUS	1 GAL.	36" O.C.	LOW	245	C,D, L10.10
	TEU CHA	TEUCRIUM CHAMAEDRYS	GERMANDER	1 GAL.	24" O.C.	LOW	177	C,D, L10.10
	RHA CLA	RAPHIOLEPIS INDICA 'CLARA'	INDIA HAWTHORN	1 GAL.	36" O.C.	LOW	539	C,D, L10.10

NOTE: ALL PLANTING AREAS TO RECEIVE 3" THICK LAYER OF UN-STABILIZED DECOMPOSED GRANITE OVER SINGLE LAYER OF MIRAFI 140 W FILTER FABRIC . SECURE FABRIC WITH 12" LONG SOIL STAPLES AT 24" O.C.. BOTH WAYS. OVERLAP SEAMS 24" MINIMUM. DECOMPOSED GRANITE TO BE CALIFORNIA GOLD FINES AVAILABLE THROUGH SOUTHWEST BOULDER AND STONE OR APPROVED EQUAL.

* WATER USE BASED ON WUCOLS IV SPECIES EVALUATION LIST 2011 FOR REGION 6.

TREE PLANT PALETTE

SYMBOL	KEY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	WATER USE *	QTY.	DETAILS
TREES								
	--	PROSOPIS GLANDULOSA 'MAVERICK'	'MAVERICK' HYBRID HONEY MESQUITE	48" BOX	PER PLAN	LOW	10 (5)	A,B L10.10
	--	PARKINSONIA 'DESERT MUSEUM'	'DESERT MUSEUM' PALO VERDE	48" BOX	PER PLAN	VERY LOW	18	A,B L10.10
	--	LOPHOSTEMON CONFERTUS	BRISBANE BOX	48" BOX	PER PLAN	MOD	4	E L10.10

DENOTES SOIL SAMPLE LOCATION - REFER TO NOTE 'H' OF PLANTING NOTES, SHEET L10.10, FOR ADDITIONAL INFORMATION.

DENOTES ROOT BARRIER, REFER TO NOTE 'X' OF PLANTING NOTES, SHEET L10.10 FOR ADDITIONAL INFORMATION.

NOTES:

1. ON-CENTER SPACING NOTED ON THE PLANT LEGEND TAKE PRECEDENCE OVER PLANT COUNTS OR SYMBOLS SHOWN ON THE DRAWING.
2. CONTRACTOR TO SUBMIT SOIL PREPARATION AND BACKFILL SPECIFICATIONS TO LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL AT LEAST FOURTEEN (14) DAYS PRIOR TO INSTALLATION OF SOIL PREPARATION OR PLANT MATERIALS.
3. SOIL PREPARATION AND BACKFILL AMENDMENTS PER SPECIFICATION AS RECOMMENDED BY AGRONOMIC SOIL TEST REPORT.

0 10 20 40 60

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SEALS / APPROVALS

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
FILE: 30-C2
A# 0 4 - 116810
AC _____ FLS _____ SS _____
DATE _____

PROJECT TITLE
JOHNSON STUDENT CENTER
INCREMENT 2
1530 W 17TH ST SANTA ANA CA 92706

RANCHO SANTIAGO Community College District

SUBMITTALS		
#	DATE	DESCRIPTION
	08/13/2018	DSA FINAL SUBMITTAL
1	10/01/2018	ADDENDUM #5

PROJECT IDENTIFICATION Project Number

THE ORIGINAL SIZE OF THIS SHEET IS 30" X 42".

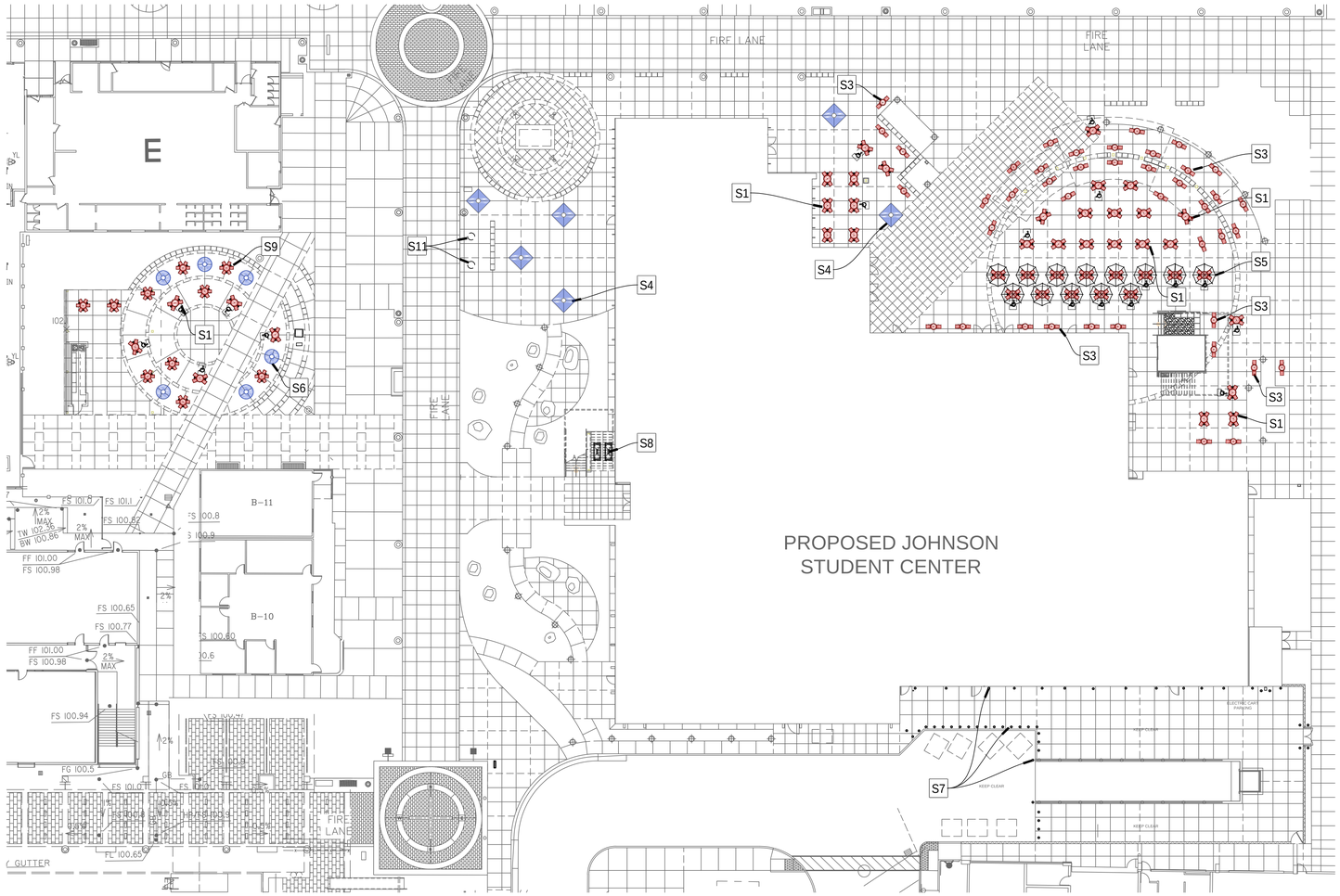
DRAWN BY RLA

CHECKED BY RLA

SHEET TITLE
PLANTING PLAN

SHEET NUMBER
L9.10

100% CONSTRUCTION DOCUMENTS



SITE FURNISHINGS LEGEND

SYMBOL	KEY	DESCRIPTION	MANUFACTURER	MODEL	COLOR/FINISH	COMMENTS	QTY
SITE FURNISHINGS							
	S1	4 SEAT TABLE WITH FIXED SEATS	ANOVA REP: COREY PHILIPS 949-285-0433	L1740S W/ UMBRELLA HOLE AND BRACE	BLACK / POWDER COATED	W/ UMBRELLA HOLE, SURFACE MOUNTED W/ STAINLESS STEEL HARDWARE	44
	S2	3 SEAT ACCESSIBLE TABLE WITH FIXED SEATS	LANDSCAPE FORMS SHAEFER DSA (818) 541-6691	OMIT	BLACK / POWDER COATED	TABLE TOP: SOILD STEELHEAD , W/ UMBRELLA HOLE, SURFACE MOUNTED W/ STAINLESS STEEL HARDWARE	24
	S3	2 SEAT TABLE WITH FIXED SEATS	ANOVA REP: COREY PHILIPS 949-285-0433	L1701 W/ UMBRELLA HOLE AND BRACE	BLACK / POWDER COATED	W/ UMBRELLA HOLE, SURFACE MOUNTED W/ STAINLESS STEEL HARDWARE	42
	S4	SQUARE TREE GRATE	URBAN ACCESSORIES (877) 487-0488	ACCESSIBLE 6' SQUARE FLAT RAINBOW TREE GRATE	POWDER COATED CAST IRON COLOR-BRONZE BROWN	RETROFIT ATTACHMENT METHOD. SEE DETAIL E, L5.10.	6
	S5	UMBRELLA	SITE AMENITIES FROM WEBCOAT (866) 423-3343	7.5' PATIO UMBRELLA WITH STEEL FRAME	VINYL FABRIC: RED FRAME: STEEL	BASE: INTEGRATED INTO TABLE	13
	S6	ROUND TREE GRATE	URBAN ACCESSORIES (877) 487-0488	ACCESSIBLE 6' ROUND FLAT RAINBOW TREE GRATE	POWDER COATED CAST IRON COLOR-BRONZE BROWN	RETROFIT ATTACHMENT METHOD. SEE DETAIL E, L5.10.	6
	S7	CONCRETE BOLLARDS	--	CUSTOM	PAINT COLOR PER ARCHITECT	.625" THICK STEEL PIPE WITH CONCRETE INFILL. SEE DETAIL I, L5.10.	46
	S8	BIKE LOCKER	GROUND CONTROL SYSTEMS	FIBERGLASS BIKE VAULT LOCKER FBV1	GRAY WITH MESH SCREEN DOOR	SURFACE MOUNTED PER MANUFACTURER'S RECOMMENDATIONS W/ STAINLESS STEEL HARDWARE	2
	S9	6 SEAT TABLE WITH FIXED SEATS	ANOVA REP: COREY PHILIPS 949-285-0433	L1760 W/ UMBRELLA HOLE AND BRACE	BLACK / POWDER COATED	W/ UMBRELLA HOLE, SURFACE MOUNTED W/ STAINLESS STEEL HARDWARE	10
	S10	5 SEAT ACCESSIBLE TABLE WITH FIXED SEATS	LANDSCAPE FORMS SHAEFER DSA (818) 541-6691	OMIT	BLACK / POWDER COATED	TABLE TOP: SOILD STEELHEAD , W/ UMBRELLA HOLE, SURFACE MOUNTED W/ STAINLESS STEEL HARDWARE	3
	S11	(FUTURE-N.I.C.) BIKE REPAIR STATION	DERO (888) 337-6729	FIXIT AIR KIT 3 BIKE REPAIR STATION	POWDER COATED DEEP RED	INSTALL PER MANUFACTURER'S RECOMMENDATIONS	2
		48" x 30" ACCESSIBLE SEATING AREA STANDARD SEATS PROVIDED = 320 ACCESSIBLE SEATING AREAS REQUIRED = 16 (5%) ACCESSIBLE SEATING AREAS PROVIDED = 19 (5.9%) [ACCESSIBLE SEATING AREAS TO BE DISTRIBUTED EVENLY THROUGHOUT THE DIFFERENT SEATING AREAS]					

NOTES:
CONTRACTOR SHALL LOCATE FURNITURE AS INDICATED ON THIS PLAN AND OBTAIN OWNER'S APPROVAL PRIOR TO ANCHORING IN PLACE.

S4 6' SQUARE TREE GRATE

S7 CONCRETE FILLED PIPE BOLLARD

S5 7.5' PATIO UMBRELLA

S8 BICYCLE LOCKER

S6 6' ROUND TREE GRATE

MINIMUM OF 5% OF SEATING IN GA AREA MUST PROVIDE ACCESSIBLE SEATING W/ 30" W. X 27" H. X 19" D. KNEE SPACE (TYP.) 11B-226.1.

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L1740S— Cosmopolitan Table with 4 Contour Swivel Seats

46" diameter steel table with four contour swivel seats, portable/surface mount

Material
The table has a 46.25" diameter table top and features four contour swivel seats and two wheelchair accessible positions that are federally ADA compliant when table is surface mounted. The solid surface top is 12 gauge steel and features a durable 1.5" square steel tube edge. The top also features a 1.64" diameter umbrella hole in the center and is designed to support 100 lbs. per square foot.
The seats are 12 gauge steel with a reinforced frame connection and feature a uniformly spaced Moroccan perforated pattern. The seats swivel 90 degrees to each side for easy entry and exit. The seats are designed to support 200 lbs. per linear foot.
The table frame and legs are made of 2.38" O.D. steel tubing and designed to be portable for flexibility in placement; legs also feature feet with predrilled .5" diameter holes for surface mounting to prevent movement. Mounting hardware is not included.

Finish
Solid surface steel table top and steel seats are protected by the patented Fusion Advantage™ finish. The plastisol coating has an average thickness of .125" and is encapsulated with a richly tinted, high performance powder coating that won't rust, fade, peel, chip, crack, mold or mildew. The finish has been tested to the requirements of ASTM E1354 and determined to be in compliance with California Uniform Fire Code 1103.2.1.4.2.
Fade resistant, powder coated steel frame and legs feature a state-of-the-art primer proven to prevent rusting. Treated components exceed the industry standard by 34% in testing by independent sources.

Accessories

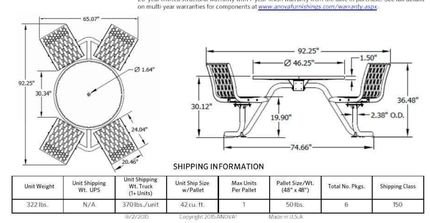
9' Standard Fabric Color Umbrella	9LPU
9' Premium Fabric Color Umbrella	9LPU-NS
Umbrella Table Brace	UBrace
15" Umbrella Base	UBTS

Color
See website or sales representative for color choices.

Assembly
The table requires some assembly. Stainless steel assembly hardware is included.

Maintenance
The product is virtually maintenance-free and requires only periodic cleaning with a sponge and a solution of mild detergent and water to remove surface dirt. Do not clean with solvent or petroleum base products.

Warranty
20-year limited structural warranty with 7-year finish warranty from the date of purchase. See full details on multi-year warranties for components at www.anovafurnishings.com/warranty.aspx.



SHIPPING INFORMATION

Unit Weight	Unit Shipping Wt. UPS	Unit Shipping Wt. Truck (1+ Units)	Unit Ship Size w/Pallet	Max Units Per Pallet	Pallet Size/Wt. (48" x 48")	Total No. Pkgs.	Shipping Class
322 lbs.	N/A	370 lbs./unit	42 cu. ft.	1	50 lbs.	6	150

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L1701— Cosmopolitan Bistro Table with 2 Contour Seats

36" diameter steel table with two contour seats, surface mount

Material
The bistro table has a 36.25" diameter table top and features two contour seats. The solid surface top is 12-gauge steel and features a durable 1.5" square steel tube edge. The top also features a 1.64" diameter umbrella hole in the center and is designed to support 100 lbs. per square foot.
The seats are 12-gauge steel with a reinforced frame connection and feature a uniformly spaced Moroccan perforated pattern. The seats are designed to support 200 lbs. per linear foot.
The table frame and legs are made of 2.38" O.D. steel tubing and feature a built-in umbrella holder. Table legs have steel feet with predrilled .5" diameter holes for surface mounting to prevent movement. **Surface mounting is required**; mounting hardware is not included.

Finish
Solid surface steel table top and steel seats are protected by the patented Fusion Advantage™ finish. The plastisol coating has an average thickness of .125" and is encapsulated with a richly tinted, high performance powder coating that won't rust, fade, peel, chip, crack, mold or mildew. The finish has been tested to the requirements of ASTM E1354 and determined to be in compliance with California Uniform Fire Code 1103.2.1.4.2.
Fade resistant, powder coated steel frame and legs feature a state-of-the-art primer proven to prevent rusting. Treated components exceed the industry standard by 34% in testing by independent sources.

Accessories

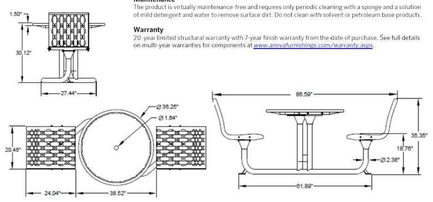
9' Standard Fabric Color Umbrella	9LPU-CSC
9' Premium Fabric Color Umbrella	9LPU-CPC
Umbrella Table Brace	UBrace

Color
See website or sales representative for color choices.

Assembly
The table requires some assembly. Stainless steel assembly hardware is included.

Maintenance
The product is virtually maintenance-free and requires only periodic cleaning with a sponge and a solution of mild detergent and water to remove surface dirt. Do not clean with solvent or petroleum base products.

Warranty
20-year limited structural warranty with 7-year finish warranty from the date of purchase. See full details on multi-year warranties for components at www.anovafurnishings.com/warranty.aspx.



SHIPPING INFORMATION

Unit Weight	Unit Shipping Wt. UPS	Unit Shipping Wt. Truck (1+ Units)	Unit Ship Size w/Pallet	Max Units Per Pallet	Pallet Size/Wt. (48" x 58")	Total No. Pkgs.	Shipping Class
202 lbs.	N/A	231 lbs./unit	95 cu. ft.	2	50 lbs.	4	250

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L1760— Cosmopolitan Table with 6 Contour Seats

46" diameter steel table with six contour seats, portable/surface mount

Material
The table has a 46.25" diameter table top and features six contour seats. The solid surface top is 12-gauge steel and features a durable 1.5" square steel tube edge. The top also features a 1.64" diameter umbrella hole in the center and is designed to support 100 lbs. per square foot.
The seats are 12-gauge steel with a reinforced frame connection and feature a uniformly spaced Moroccan perforated patterns. The seats are designed to support 200 lbs. per linear foot.
The table frame and legs are made of 2.38" O.D. steel tubing and designed to be portable for flexibility in placement; legs also feature feet with predrilled .5" holes for surface mounting to prevent movement. Mounting hardware is not included.

Finish
Solid surface steel table top and steel seats are protected by the patented Fusion Advantage™ finish. The plastisol coating has an average thickness of .125" and is encapsulated with a richly tinted, high performance powder coating that won't rust, fade, peel, chip, crack, mold or mildew. The finish has been tested to the requirements of ASTM E1354 and determined to be in compliance with California Uniform Fire Code 1103.2.1.4.2.
Fade resistant, powder coated steel frame and legs feature a state-of-the-art primer proven to prevent rusting. Treated components exceed the industry standard by 34% in testing by independent sources.

Accessories

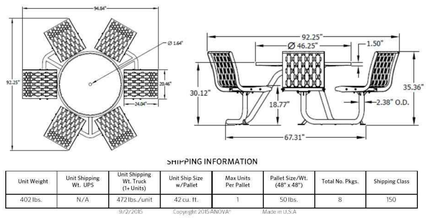
9' Standard Fabric Color Umbrella	9LPU
9' Premium Fabric Color Umbrella	9LPU-NS
Umbrella Table Brace	UBrace
15" Umbrella Base	UBTS

Color
See website or sales representative for color choices.

Assembly
The table requires some assembly. Stainless steel assembly hardware is included.

Maintenance
The product is virtually maintenance-free and requires only periodic cleaning with a sponge and a solution of mild detergent and water to remove surface dirt. Do not clean with solvent or petroleum base products.

Warranty
20-year limited structural warranty with 7-year finish warranty from the date of purchase. See full details on multi-year warranties for components at www.anovafurnishings.com/warranty.aspx.



SHIPPING INFORMATION

Unit Weight	Unit Shipping Wt. UPS	Unit Shipping Wt. Truck (1+ Units)	Unit Ship Size w/Pallet	Max Units Per Pallet	Pallet Size/Wt. (48" x 48")	Total No. Pkgs.	Shipping Class
402 lbs.	N/A	472 lbs./unit	42 cu. ft.	1	50 lbs.	8	150

S1 4 SEAT TABLE WITH FIXED SEATS (ACCESSIBLE)

S3 2 SEAT TABLE WITH FIXED SEATS (NOT ACCESSIBLE)

S9 6 SEAT TABLE WITH FIXED SEATS (NOT ACCESSIBLE)

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SEALS / APPROVALS

IDENTIFICATION STAMP
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A# 0 4 - 116810
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DATE _____

PROJECT TITLE
JOHNSON STUDENT CENTER
INCREMENT 2
1530 W 17TH ST SANTA ANA CA 92706

RANCHO SANTIAGO Community College District

SUBMITTALS

#	DATE	DESCRIPTION
	08/13/2018	DSA FINAL SUBMITTAL
5	10/01/2018	ADDENDUM #5

PROJECT IDENTIFICATION Project Number

THESE DRAWINGS ORIGINALLY CREATED IN AUTODESK REVIT V. 2016 U.O.N.

THE ORIGINAL SIZE OF THIS SHEET IS 30" X 42".

DRAWN BY RLA

CHECKED BY RLA

SHEET TITLE
SITE FURNITURE PLAN

SHEET NUMBER
L11.10

100% CONSTRUCTION DOCUMENTS

SECTION 230900 - BUILDING MANAGEMENT SYSTEM

PART 1 - GENERAL

1.1 GENERAL RSCCD BMS OVERVIEW:

A. The existing Tridium Niagara N4 Supervisor version 4.6 is installed on a campus virtual server currently located at Santiago Canyon College and is supported by RSCCD ITS. The server includes Niagara Historical Databases and Workplaces AX, OBIX client/server drivers for connecting to Niagara-based controllers such as the Vykon JACE Global Controller.

B. The software is licensed to the RSCCD with no license restrictions. Each building shall have its own JACE Global Controller of differing modules at the building level. The JACE is the building level controller which connects to systems as defined in the contract documents.

1.2 PROJECT SPECIFIC BMS OVERVIEW

A. The control system shall consist of a high-speed, peer-to-peer network of BACnet IP and MSTP field level controllers, building level Java Application Control Engine (JACE) Global Controllers, and seamless integration of building level controllers with an existing RSCCD Tridium Building Management System Server utilizing the Niagara 4 version 4.6 Platform.

B. The new building management system (BMS) shall be a native BACnet system for integration into the existing Tridium Niagara 4 server version 4.6. The building JACE Global Controllers and equipment controllers shall integrate with control systems. The system shall be able to integrate multiple building functions, including equipment supervision and control, alarm management, energy management, historical data management, archiving, and utility metering monitoring.

C. Systems shall use the BACnet protocol for communication to the operator workstations and web server and for communication between control modules. I/O points, schedules, set-points, trends and alarms specified in Sequence of Operation shall be BACnet objects.

D. JACE Global Controllers shall be stand-alone in memory, networking, and control operations. The design of the controls shall be in a modular format, permitting future expansion capabilities. The system shall monitor and control equipment according to the sequence of operations, as well as additional input and output points. The building control system shall operate to ensure operational safety, regulatory compliance and to satisfy process constraints as well as occupant comfort.

E. HVAC unit operating schedules shall be controlled by the Building Management System (BMS).

F. AHU’s are to have digital controllers with BACNet capability for full control through the BMS. The AHU’s are to have a large selection of BACNet points to monitor system. The monitoring points shall be coordinated to provide the most flexibility in monitoring and management of the AHUs.

G. Thermostats shall be used in lieu of wall sensors when a Building Management System does not exist at the building and when the District Project Manager does not wish to extend the campus BMS to the building.

H. Thermostats shall be programmable with time control, deadband and set back features along with bypass switch. Provide suitable sub-base and locking cover with key lock. Confirm exact features with the District Project Manager.

I. Lighting Control System Integration
   1. The BMS shall integrate the following lighting devices as described on Sheet E0.04 and Sheet E0.05 (Interior Lobbies) and site lighting circuits:
      a. Lighting Device ID 7-QSN.
      b. Lighting Device ID 17-QSN.
      c. Lighting Device ID 5-QSN.
      d. Lighting Device ID 14-QSN.
      e. Lighting Device ID 15-QSN
      f. Lighting Device ID 25-QSN.
   2. The BMS shall provide control, scheduling and monitoring for these devices to accommodate the following point::
      a. On/Off Status

J. Coordinate the BMS graphics with the District Project Manager.

1.3 WORK INCLUDED:

A. GENERAL - Building Management System (BMS) Contractor shall provide and install:
   1. A fully integrated Building Automation System (BAS), incorporating direct digital control (DDC) for energy management, equipment monitoring and control, and subsystems with open communications capabilities as herein specified.
   2. Complete temperature control system to be DDC with electric actuation as specified herein.
   3. All wiring, conduit, panels, and accessories for a complete operational system.
   4. BMS Contractor shall be responsible for all electrical work associated with the BMS. Refer to Division 26 - Electrical for power to control panels.
      a. Perform all wiring in accordance with all local and national codes.
      b. Install all line voltage wiring, concealed or exposed, in conduit in accordance with Division 26 - Electrical, NEC and local building code.
      c. Surge transient protection shall be incorporated in design of system to protect electrical components in all DDC Controllers and operator's workstations.
      d. All low voltage electrical control wiring throughout the building when exposed or in an un-accessible location shall be run in conduit in accordance with Division 26 - Electrical, local building code and the NEC. Low voltage wiring throughout the building, when in concealed accessible locations, can be run using plenum rated wire and supported from duct work or ceiling supports, or run in existing cable tray.
   5. All pipe wells for water monitoring devices, flow switches and alarms, as required.
   6. Provide open communications system. The system shall be an open architecture with the capabilities to support a multi-vendor environment. To accomplish this effectively, system shall be capable of utilizing standard protocols as follows as well as be able to integrate third-party systems via existing vendor protocols.

a. System shall be capable of high-speed Ethernet communication using TCP/IP protocol.
b. System shall be capable of BACnet communication according to ANSI/ASHRAE 135-2004.
c. System shall be capable of OPC server communications according to OPC Data Access 2.0 and Alarms and Events 1.0.
d. The system shall be capable of supporting both standard and vendor specific protocols to integrate a wide variety of third-party devices and legacy systems.
e. The system shall be capable of supporting wireless field level networks and sensor communications using a mesh topology and IEEE 802.15.4 network.
f. Existing Operator Workstations in the Central may be used. Additional site licenses may also be required. Contractor shall coordinate with the Owner's Representative to determine the needs of the project.

7. Provide system graphics for each controlled device and/or integrated systems as required by the owner. Origin of information shall be transparent to the operator and shall be controlled, displayed, trended, etc. as if the points were hardwired to the BMS.
8. Stand-alone Application Specific Controllers (ASCs) for terminal equipment (CAV, VAV, fan coil units, heat pumps, AC units, fume hoods, etc).

B. GENERAL PRODUCT DESCRIPTION

1. The installation of the control system shall be performed under the direct supervision of the controls manufacturer with the shop drawings, flow diagrams, bill of materials, component designation, or identification number and sequence of operation all bearing the name of the manufacturer. The installing manufacturer shall certify in writing, that the shop drawings have been prepared by the equipment manufacturer and that the equipment manufacturer has supervised their installation. In addition, the equipment manufacturer shall certify, in writing, that the shop drawings were prepared by their company and that all temperature control equipment was installed under their direct supervision.
2. All materials and equipment used shall be standard components, regularly manufactured for this and/or other systems and not custom designed specially for this project.
3. The system shall be scalable in nature and shall permit expansion of both capacity and functionality through the addition of sensors, actuators, DDC Controllers, and operator devices.
4. System architectural design shall eliminate dependence upon any single device for alarm reporting and control execution. Each DDC Controller shall operate independently by performing its own specified control, alarm management, operator I/O, and data collection. The failure of any single component or network connection shall not interrupt the execution of any control strategy, reporting, alarming and trending function, or any function at any operator interface device.
5. DDC Controllers shall be able to access any data from, or send control commands and alarm reports directly to, any other DDC Controller or combination of controllers on the network without dependence upon a central or intermediate processing device. DDC Controllers shall also be able to send alarm to multiple operator workstations without dependence upon a central or intermediate processing device.
6. DDC Controllers shall be able to assign password access and control priorities to each point individually. The logon password (at any PC workstation or portable operator terminal) shall enable the operator to monitor, adjust or control only the points that the operator is authorized for. All other points shall not be displayed at the PC workstation or portable terminal. (e.g. all base building and all tenant points shall be accessible to any base building operators, but only certain base building and tenant points shall be

accessible to tenant building operators). Passwords and priority levels for every point shall be fully programmable and adjustable.

1.4 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

A. Hydronic Piping:
   1. Control Valves
   2. Temperature Sensor Wells and Sockets
   3. Flow Switches
   4. Flow Meters
   5. Differential Pressure Transmitters

B. Refrigerant Piping:
   1. Pressure and Temperature Sensor Wells and Sockets

C. Duct-work Accessories:
   1. Air-flow Stations in ductwork. Air flow stations mounted in AHU's or fans are supplied and mounted by unit or fan manufacturer.
   2. Terminal Unit Controls

1.5 PRODUCTS INTEGRATED BUT NOT FURNISHED OR INSTALLED UNDER THIS SECTION

A. Heat Generation Equipment:
   1. Boiler Controls if available from boiler manufacturer.

B. Variable Frequency Drives:

C. BACnet System
   1. Server
   2. Client

D. Lighting Controls

E. Electric meters and submeters

F. Gas meters

G. Domestic water meters

1.6 RELATED SECTIONS

A. The General Conditions of the Contract, Supplementary Conditions, and General Requirements are part of this specification and shall be used in conjunction with this section as part of the contract documents.

1.7 QUALITY ASSURANCE

A. The BAS system shall be designed and installed, commissioned and serviced by factory trained personnel. BMS contractor shall have an in-place support facility within 250 miles of the site with technical staff, spare parts inventory and necessary test and diagnostic equipment. The B.M.S. contractor shall provide full time, experienced project manager for this work, responsible for direct supervision of the design, installation, start up and commissioning of the B.M.S. The PM should be available by cell phone during normal working hours and on-site when directed for related meetings and coordination. The bidder shall be regularly engaged in the installation and maintenance of BMS systems and shall have a minimum of twenty (20) years of demonstrated technical expertise and experience in the installation and maintenance of B.M.S. systems similar in size and complexity to this project in the greater Los Angeles/Southern California area.

B. The BMS contractor shall have established a 10-year working relationship with control manufacture and evidence of successful prior performance and Tridium installation and integration.

C. The BMS contractor shall maintain an established service organization consisting of factory trained service personnel and provide a list of 10 projects, similar in size and scope to this project, completed within the last five years. Upon request, BMS contractor shall present record of completed Tridium certification training and/or field controller training for control system, including course outlines for review by the District.

D. Materials and equipment shall be the catalogued products of manufacturers regularly engaged in production and installation of automatic temperature control systems and shall be manufacturer's latest standard design that complies with the specification requirements.

E. All BAS peer-to-peer network controllers, central system controllers, and local user displays shall be UL Listed under Standard UL 916, category PAZX; Standard ULC C100, category UUKL7; and under Standard UL 864, categories UUKL, UDTZ, and QVAX and be so listed at the time of bid. All floor level controllers shall comply, at a minimum, with UL Standard UL 916 category PAZX; Standard UL 864, categories UDTZ, and QVAX and be so listed at the time of Bid.

F. The BAS peer-to-peer network controllers and local user display shall also comply with the European Electromagnetic Compatibility (EMC) Framework, and bear the C-Tic Mark to show compliance. The purpose of the regulation is to minimize electromagnetic interference between electronic products, which may diminish the performance of electrical products or disrupt essential communications.

G. DDC peer-to-peer controllers shall be compliant with the European EMC Directive, Standards EN 50081-2 and EN 50082-2, at the Industrial Levels. Additionally the equipment shall be compliant with the European LVD Directive and bear the CE mark in order to show compliance to both directives.

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

I. All wireless devices, if used, shall conform to:

1. The requirements of Title 47 of the Code of Federal Regulations, FCC Part 15, governing radio frequency intentional radiating devices and be issued a FCC user identification and be so labeled.

J. The manufacturer of the building automation system shall provide documentation supporting compliance with ISO-9002 (Model for Quality Assurance in Production, Installation, and Servicing) and ISO-14001 (The application of well-accepted business management principles to the environment). The intent of this specification requirement is to ensure that the products from the manufacturer are delivered through a Quality System and Framework that will assure consistency in the products delivered for this project.

K. This system shall have a documented history of compatibility by design for a minimum of 15 years. Future compatibility shall be supported for no less than 10 years. Compatibility shall be defined as the ability to upgrade existing field panels to current level of technology, and extend new field panels on a previously installed network. Compatibility shall be defined as the ability for any existing field panel microprocessor to be connected and directly communicate with new field panels without bridges, routers or protocol converters.

1.8 CODES AND STANDARDS

A. Work, materials, and equipment shall comply with the most restrictive of local, state, and federal authorities' codes and ordinances or these plans and specifications. As a minimum, the installation shall comply with current editions in effect 30 days prior to receipt of bids of the following codes:
   1. National Electric Code (NEC)
   2. Uniform Building Code (UBC)
      a. Section 710.5, Wiring in Plenums
      b. Section 1106, Refrigeration Machinery Rooms
      c. Section 1107, Refrigeration Machinery Room Ventilation
      d. Section 1108, Refrigeration Machinery Room Equipment and Controls
   3. Uniform Mechanical Code (UMC)
   4. ANSI/ASHRAE Standard 135- 2004, BACnet--A Data Communication Protocol for Building Automation and Control Networks

1.9 SYSTEM PERFORMANCE

A. Performance Standards. System shall conform to the following minimum standards over network connections. Systems shall be tested using manufacturer's recommended hardware and software for operator workstation (server and browser for web-based systems).
   1. Graphic Display. A graphic with 20 dynamic points shall display with current data within 10 sec.
   2. Graphic Refresh. A graphic with 20 dynamic points shall update with current data within 8 sec. and shall automatically refresh every 15 sec.
   3. Configuration and Tuning Screens. Screens used for configuring, calibrating, or tuning points, PID loops, and similar control logic shall automatically refresh within 6 sec.
   4. Object Command. Devices shall react to command of a binary object within 2 sec. Devices shall begin reacting to command of an analog object within 2 sec.
   5. Alarm Response Time. An object that goes into alarm shall be annunciated at the workstation within 45 sec.

6. Program Execution Frequency. Custom and standard applications shall be capable of running as often as once every 5 sec. Select execution times consistent with the mechanical process under control.
7. Performance. Programmable controllers shall be able to completely execute DDC control loops at a frequency adjustable down to once per sec. Select execution times consistent with the mechanical process under control.
8. Multiple-Alarm Annunciation. Each workstation on the network shall receive alarms within 5 sec of other workstations.

1.10 SUBMITTALS

A. Product Submittal Requirements. Meet requirements of Section 25 03 00 on Shop Drawings, Product Data, and Samples. Provide four copies of shop drawings and other submittals on hardware, software, and equipment to be installed or furnished. Begin no work until submittals have been approved for conformity with design intent. Provide drawings as AutoCAD 2004 (or newer) compatible files on optical disk (file format: .dwg, .dxf, .vsd, or comparable) or hard copies on 11" x 17" prints of each drawing. When manufacturer's cutsheets apply to a product series rather than a specific product, clearly indicate applicable data by highlighting or by other means. Clearly reference covered specification and drawing on each submittal. General catalogs shall not be accepted as cut sheets to fulfill submittal requirements. Select and show submittal quantities appropriate to scope of work.

B. Provide submittals within 12 weeks of contract award.

C. Submittal data shall consist of the following:
   1. Direct Digital Control System Hardware:
      a. Complete bill of materials indicating quantity, manufacturer, model number, and relevant technical data of equipment to be used.
      b. Manufacturer's description and technical data, such as product specification sheets, installation and maintenance instructions for items listed below and for relevant items not listed below:
         1) Direct Digital Controllers (controller panels)
         2) Transducers and transmitters
         3) Sensors (including accuracy data)
         4) Valves
         5) Dampers
         6) Relays and Switches
         7) Control Panels
         8) Power Supplies
         9) Operator Interface Equipment including workstations, portable laptops, monitors, and printers
      c. Wiring diagrams and layouts for each control panel. Show all termination numbers.
      d. Floor plan schematic diagrams indicating control panel and space temperature sensor locations.
   2. Central System Hardware and Software:
      a. Complete bill of material indicating quantity, manufacturer, model number, and relevant technical data of equipment used.
      b. Schematic diagrams of all control, communication, and power wiring for central system installation. Show interface wiring to control system.

c. Provide a list of BMS point naming convention. Indicate the format, structure and standards of typical point names. The naming convention shall follow the "Building_Floor_Equipment_Function" format. Provide a list of point names for typical equipment and functions with specific examples. Point naming conventions shall match the District's existing conventions.

3. Controlled Systems:
   a. Riser diagrams showing control network layout, communication protocol, and wire types.
   b. Schematic diagram of each controlled system. Label control points with point names. Graphically show locations of control elements.
   c. Schematic wiring diagram of each controlled system. Label control elements and terminals. Where a control element is also shown on control system schematic use the same name.
   d. Instrumentation list for each controlled system. List control system element in a table. Show element name, type of device, manufacturer, model number, and product data sheet number.
   e. Complete description of control system operation including sequences of operation. Include and reference schematic diagram of controlled system.
   f. Point list for each system controller including both inputs and outputs (I/O), point numbers, controlled device associated with each I/O point, and location of I/O device.
4. Description of process, report formats and checklists to be used in Part 3: "Control System Demonstration and Acceptance."
5. Contractor shall submit documentation in the following phased delivery schedule:
   a. Valve and damper schedules
   b. Point Naming Convention
   c. Sample Graphics
   d. System schematics, including:
      1) System Riser Diagrams
      2) Sequence of Operations
      3) Mechanical Control Schematics
      4) Electrical Wiring Diagrams
      5) Control Panel Layouts
      6) Product Specification Sheets
   e. As-Built drawings

D. Project Record Documents: Submit three copies of record (as-built) documents upon completion of installation. Submittal shall consist of:
1. Project Record Drawings. As-built versions of the submittal shop drawings provided as AutoCAD 2004 (or newer) compatible files on optical media and as 11" x 17" prints.
2. Testing and Commissioning Reports and Checklists. Completed versions of reports, checklists, and trend logs used to meet requirements of Part 3: "Control System Demonstration and Acceptance."
3. Operation and Maintenance (O & M) Manual.
   a. As-built versions of the submittal product data.
   b. Names, addresses, and 24-hour telephone numbers of installing contractors and service representatives for equipment and control systems.
   c. Operator's Manual with procedures for operating control systems, logging on and off, handling alarms, producing point reports, trending data, overriding computer control, and changing set points and variables.

d. Programming manual or set of manuals with description of programming language and of statements for algorithms and calculations used, of point database creation and modification, of program creation and modification, and of editor use.
e. Engineering, installation, and maintenance manual or set of manuals that explains how to design and install new points, panels, and other hardware; how to perform preventive maintenance and calibration; how to debug hardware problems; and how to repair or replace hardware.
f. Documentation of all programs created using custom programming language, including set points, tuning parameters, and object database.
g. Graphic files, programs, and database on magnetic or optical media.
h. Complete original-issue documentation, installation, and maintenance information for furnished third-party hardware, including computer equipment and sensors.
i. Complete original original-issue copies of furnished software, including operating systems, custom programming language, operator workstation software, and graphics software.
j. Licenses, guarantees, and warranty documents for equipment and systems.

E. Training Materials. Provide course outline and manuals at least four weeks before training.

1.11 WARRANTY

A. Warrant labor and materials for specified control system free from defects for a period of 24 months after final acceptance. Failures on control systems that include all computer equipment, transmission equipment and all sensors and control devices during warranty period shall be adjusted, repaired, or replaced at no additional cost or reduction in service to Owner. Respond during normal business hours within 24 hours of Owner's warranty service request. If opposite seasons testing is required per 230593 to test during near-peak summer and/or winter conditions, provide support during warranty phase.

B. Work shall have a single warranty date, even if Owner receives beneficial use due to early system start-up. If specified work is split into multiple contracts or a multi-phase contract, each contract or phase shall have a separate warranty start date and period.

C. If Engineer determines that equipment and systems operate satisfactorily at the end of final start-up, testing, and commissioning phase, Engineer will certify in writing that control system operation has been tested and accepted in accordance with the terms of this specification. Date of acceptance shall begin warranty period.

D. Provide updates to operator workstation software, project-specific software, graphic software, database software, and firmware that resolve Contractor identified software deficiencies at no charge during warranty period. If available, Owner can purchase in-warranty service agreement to receive upgrades for functional enhancements associated with the above-mentioned items. Do not install updates or upgrades without Owner's written authorization.

E. Exception:
1. Contractor shall not be required to warrant reused devices, except those that have been rebuilt or repaired. Installation labor and materials shall be warranted. Demonstrate operable condition of reused devices at time of Engineer's acceptance.

2. Contractor shall not be required to warrant systems, equipment and devices or software if the damages and/or failures were caused by lack of training, unauthorized use, negligence or deliberate action of other parties, or job site conditions.

PART 2 - PRODUCTS

2.1 APPROVED CONTROL SYSTEM CONTRACTORS

A. System must match existing using campus standards as dictated by this specification. Gateway, integrator, or “blackbox” communications interfaces are not acceptable. All functionality of the new control system shall be provided at new and existing workstations including but not limited to: trending, archiving, custom reporting, FDD analytics, system profiler, programming scheduling etc.

B. The following are the approved Control System Contractors and Manufacturers:
1. Automatated Logic
2. Alerton
3. Delta Controls
4. Or District approved equal capable of integrating into Tridium Niagara N4 Supervisor .

2.2 MATERIALS:

A. Provide a Tridium Niagara based front end to interface with the existing RSCCD Control system.

B. All products used in this project installation shall be new and currently manufactured and shall have been applied in similar installations. Do not use this installation as a product test site unless explicitly approved in writing by Owner or Owner's representative. Spare parts shall be available for at least five years after completion of this contract.

2.3 COMMUNICATION:

A. The design of the BMS shall support networking of operator workstations and Building Controllers. The network architecture shall consist of two levels, an Ethernet based primary network for all operator workstations, servers, and primary DDC controllers along with secondary Floor Level Networks (FLN) for terminal equipment application specific controllers. The Ethernet network will use the campus backbone whenever possible. Contractor will coordinate with the campus IT personnel to locate and identify proper connections.
1. Ethernet connections will use a campus standard 3 port faceplate, with two ports configured and enabled. One shall be for the Management Level Network, and shall be connected to the field panel. The second port shall be for connection of a laptop computer for field panel operations and troubleshooting. Contractor shall coordinate with campus IT for assignment of static IP addresses.

B. Access to system data shall not be restricted by the hardware configuration of the building management system. The hardware configuration of the BMS network shall be totally transparent to the user when accessing data or developing control programs.

C. Operator Workstation Communication:
   1. All color graphic operator workstations shall reside on the Ethernet network and the consoles shall be set up in a client/server configuration.
   2. The servers will act as the central database for system graphics and databases to provide consistency throughout all system workstations.
   3. The network shall allow concurrent use of multiple BMS software site licenses.

D. Management Level Network Communication (MLN)
   1. All PCs shall simultaneously direct connect to the Ethernet Management Level Network without the use of an interposing device.
   2. Operator Workstation shall be capable of simultaneous direct connection and communication with BACnet/IP, OPC and TCP/IP corporate level networks without the use of interposing devices.
   3. The Management Level Network shall not impose a maximum constraint on the number of operator workstations.
   4. Any controller residing on the primary building level networks shall connect to Ethernet network without the use of a PC or a gateway with a hard drive.
   5. Any PC on the Management Level Network shall have transparent communication with controllers on the building level networks connected via Ethernet.
   6. Any break in Ethernet communication from the PC to the controllers on the building level networks shall result in a notification at the PC.
   7. The standard client and server workstations on the Management Level Network shall reside on industry standard Ethernet utilizing standard TCP/IP, IEEE 802.3.
   8. System software applications will run as a service to allow communication with Primary Network Controllers without the need for user log in. Closing the application or logging off shall not prevent the processing of alarms, network status, panel failures, and trend information.
   9. Any break in Ethernet communication between the standard client and server workstations on the Management Level Network shall result in a notification at each workstation.
   10. Access to the system database shall be available from any standard client workstation on the Management Level Network.

E. Primary Network - Panel to Panel Communication:
   1. All Building Controllers shall directly reside on the primary BACnet/IP Ethernet network such that communications may be executed directly between Building Controllers, directly between server and Building Controllers on a peer-to-peer basis.
   2. Systems that operate via polled response or other types of protocols that rely on a central processor, file server, or similar device to manage panel-to-panel or device-to-device communications shall not be acceptable.
   3. All operator interfaces shall have the ability to access all point status and application report data or execute control functions for any and all other devices. Access to data shall be based upon logical identification of building equipment. No hardware or software limits shall be imposed on the number of devices with global access to the network data.
   4. The primary network shall use BACnet/IP over Ethernet. All devices must:
      a. Auto-sense 10/100 Mbps networks.
      b. Be configured with a Fixed IP Address.
      c. Resolve Name to IP Addresses for devices using a Domain Name Service (DNS) Server on the Ethernet network.

d. Allow MMI access to an individual Primary Network Controller using industry standard Telnet software to view and edit entire Primary Network.

5. The primary network shall provide the following minimum performance:
   a. Provide high-speed data transfer rates for alarm reporting, report generation from multiple controllers and upload/download efficiency between network devices. System performance shall insure that an alarm occurring at any Building Controller is displayed at any PC workstations, all Building controllers, and other alarm printers within 15 seconds.
   b. Message and alarm buffering to prevent information from being lost.
   c. Error detection, correction, and re-transmission to guarantee data integrity.
   d. Synchronization of real-time clocks between Building Controllers, including automatic daylight savings time corrections.
   e. The primary network shall allow the Building Controllers to access any data from, or send control commands and alarm reports directly to, any other Building Controller or combination of controllers on the network without dependence upon a central or intermediate processing device. Building Controllers shall send alarm reports to multiple operator workstations without dependence upon a central or intermediate processing device. The network shall also allow any Building controller to access, edit, modify, add, delete, back up, restore all system point database and all programs.
   f. The primary network shall allow the Building Controllers to assign password access and control priorities to each point individually. The logon password (at any PC workstation or portable operator terminal) shall enable the operator to monitor, adjust and control only the points that the operator is authorized for. All other points shall not be displayed at the PC workstation or portable terminal. (e.g. all base building and all tenant points shall be accessible to any base building operators, but only certain base building and tenant points shall be accessible to tenant building operators). Passwords and priorities for every point shall be fully programmable and adjustable.
   g. Devices containing custom programming must reside on the Primary Network

F. Secondary Network – Application Specific Controller Communication:
   1. Communication over the secondary network can be the manufacturer's standard protocol
   2. Communication over the secondary network must allow BACnet MS/TP protocol.
   3. This level communication shall support a family of application specific controllers for terminal equipment.
   4. The Application Specific Controllers shall communicate bi-directionally with the primary network through Building Controllers for transmission of global data.
   5. A maximum of 30 terminal equipment controllers may be configured on individual secondary network trunks to insure adequate global data and alarm response times.

2.4 OPERATOR INTERFACE:

A. Operator Interface Software:
   1. Basic Interface Description
      a. Operator interface software shall minimize operator training through the use of user-friendly and interactive graphical applications, 30-character English language point identification, on-line help, and industry standard Windows application software. Interface software shall simultaneously communicate with and share data between Ethernet-connected building level networks.

b. Provide a graphical user interface that shall minimize the use of keyboard through the use of a mouse or similar pointing device, with a "point and click" approach to menu selection and a “drag and drop” approach to inter-application navigation.
c. The navigation shall be user friendly by utilizing “forward & back” capability between screens and embedded hyperlinks to open graphics, documents, drawings, etc.
d. Selection of applications within the operator interface software shall be via a graphical toolbar menu – the application toolbar menu shall have the option to be located in a docked position on any of the four sides of the visible desktop space on the workstation display monitor, and the option to automatically hide itself from the visible monitor workspace when not being actively manipulated by the user.
e. The software shall provide a multi-tasking type environment that allows the user to run several applications simultaneously. BMS software shall run on a Windows XP, 2000, or comparable 32 bit operating system. System database parameters shall be stored within an object-oriented database. Standard Windows applications shall run simultaneously with the BMS software. The mouse or Alt-Tab keys shall be used to quickly select and switch between multiple applications. The operator shall be able to work in Microsoft Word, Excel, and other Windows based software packages, while concurrently annunciating on-line BMS alarms and monitoring information
f. The software shall provide, as a minimum, the following functionality:
    1) Real-time graphical viewing and control of the BMS environment
    2) Reporting
    3) Scheduling and override of building operations
    4) Collection and analysis of historical data
    5) Point database editing, storage and downloading of controller databases.
    6) Utility for combining points into logical Point Groups. The Point Groups shall then be manipulated in Graphics, trend graphs and reports in order to streamline the navigation and usability of the system.
    7) Alarm reporting, routing, messaging, and acknowledgment
    8) “Collapsible tree,” dynamic system architecture diagram application:
        a) Showing the real-time status and definition details of all workstations and devices on a management level network
        b) Showing the real-time status and definition details of all Building Controllers at the Primary Network.
        c) Showing the definition details of all application specific controllers
    9) Definition and construction of dynamic color graphic displays.
    10) Online, context-sensitive help, including an index, glossary of terms, and the capability to search help via keyword or phrase.
    11) On-screen access to User Documentation, via online help or PDF-format electronic file.
    12) Automatic database backup at the operator interface for database changes initiated at Building Controllers.
    13) Display dynamic trend data graphical plot.
        a) Must be able to run multiple plots simultaneously
        b) Each plot must be capable of supporting 10 pts/plot minimum
        c) Must be able to command points directly off dynamic trend plot application.
        d) Must be able to plot both real-time and historical trend data
    14) Program editing
    15) Transfer trend data to 3rd party spreadsheet software

a) Scheduling reports
b) Operator Activity Log
c) Open communications via OPC Server
d) Open communications via BACnet Client & Server

g. Enhanced Functionality:
1) Provide functionality such that any of the following may be performed simultaneously on-line, and in any combination, via adjustable user-sized windows. Operator shall be able to drag and drop information between the following applications, reducing the number of steps to perform a desired function (e.g., Click on a point on the alarm screen and drag it to the dynamic trend graph application to initiate a dynamic trend on the desired point):
a) Dynamic color graphics application
b) Alarm management application
c) Scheduling application
d) Dynamic trend graph data plotter application
e) Dynamic system architecture diagram application
f) Control Program and Point database editing applications
g) Reporting applications
2) Report and alarm printing shall be accomplished via Windows Print Manager, allowing use of network printers.

h. Security: Operator-specific password access protection shall be provided to allow the administrator/manager to limit users' workstation control, display and data base manipulation capabilities as deemed appropriate for each user, based upon an assigned password. Operator privileges shall "follow" the operator to any workstation logged onto (up to 999 user accounts shall be supported). The administrator or manager shall be able to grant discrete levels of access and privileges, per user, for each point, graphic, report, schedule, and BMS workstation application. And each BMS workstation user account shall use a Windows Operating System user account as a foundation.

i. The operator interface software shall also include an application to track the actions of each individual operator, such as alarm acknowledgement, point commanding, schedule overriding, database editing, and logon/logoff. The application shall list each of the actions in a tabular format, and shall have sorting capabilities based on parameters such as ascending or descending time of the action, or name of the object on which the action was performed. The application shall also allow querying based on object name, operator, action, or time range.

j. Dynamic Color Graphics application shall include the following:
1) Must include graphic editing and modifying capabilities
2) A library of standard control application graphics and symbols must be included
3) Must be able to command points directly off graphics application
4) Graphic display shall include the ability to depict real-time point values dynamically with animation, picture/frame control, symbol association, or dynamic informational text-blocks
5) Navigation through various graphic screens shall be optionally achieved through a hierarchical "tree" structure
6) Graphics viewing shall include zoom capabilities
7) Graphics shall be capable of displaying the status of points that have been overridden by a field HAND switch, for points that have been designed to provide a field HAND override capability.

8) Advanced linking within the Graphics application shall provide the ability to navigate to outside documents (e.g., .doc, .pdf, .xls, etc.), Internet web addresses, e-mail, external programs, and other workstation applications, directly from the Graphics application window with a mouse-click on a customizable link symbol.

k. Reports shall be generated on demand or via pre-defined schedule, and directed to displays, printers or file. As a minimum, the system shall allow the user to easily obtain the following types of reports:
   1) A general listing of all or selected points in the network
   2) List of all points currently in alarm
   3) List of all points currently in override status
   4) List of all disabled points
   5) List of all points currently locked out
   6) List of user accounts and access levels
   7) List all weekly schedules and events
   8) List of holiday programming
   9) List of control limits and deadbands
   10) Custom reports from 3rd party software
   11) System diagnostic reports including, list of Building panels on line and communicating, status of all Building terminal unit device points
   12) List of programs
   13) List of point definitions
   14) List of logical point groups
   15) List of alarm strategy definitions
   16) List of Building Control panels
   17) Point totalization report
   18) Point Trend data listings
   19) Initial Values report
   20) User activity report

l. Scheduling and override
   1) Provide a calendar type format for simplification of time and date scheduling and overrides of building operations. Schedule definitions reside in the PC workstation and in the Building Controller to ensure time equipment scheduling when PC is off-line, PC is not required to execute time scheduling. Provide override access through menu selection, graphical mouse action or function key. Provide the following capabilities as a minimum:
      a) Weekly schedules
      b) Zone schedules
      c) Event schedules – an event consists of logical combinations of equipment and/or zones
      d) Report schedules
      e) Ability to schedule for a minimum of up to ten (10) years in advance.
   2) Additionally, the scheduling application shall:
      a) Provide filtering capabilities of schedules, based on name, time, frequency, and schedule type (event, zone, report)
      b) Provide sorting capabilities of schedules, based on name, time and type of schedule (zone, event, report)
      c) Provide searching capabilities of schedules based on name – with wildcarding options

m. Collection and Analysis of Historical Data

1) Provide trending capabilities that allow the user to easily monitor and preserve records of system activity over an extended period of time. Any system point may be trended automatically at time-based intervals (up to four time-based definitions per point) or change of value, both of which shall be user-definable. Trend data shall be collected stored on hard disk for future diagnostics and reporting. Automatic Trend collection may be scheduled at regular intervals through the same scheduling interface as used for scheduling of zones, events, and reports. Additionally, trend data may be archived to network drives or removable disk media for future retrieval.
2) Trend data reports shall be provided to allow the user to view all trended point data. Reports may be customized to include individual points or predefined groups of selected points. Provide additional functionality to allow predefined groups of up to 250 trended points to be easily transferred on-line to Microsoft Excel. BMS contractor shall provide custom designed spreadsheet reports for use by the owner to track energy usage and cost, equipment run times, equipment efficiency, and/or building environmental conditions. BMS contractor shall provide setup of custom reports including creation of data format templates for monthly or weekly reports.
3) Provide additional functionality that allows the user to view real-time trend data on trend graphical plot displays. A minimum of ten points may be plotted, of either real-time or historical data. The dynamic graphs shall continuously update point values. At any time the user may redefine sampling times or range scales for any point. In addition, the user may pause the display and take "snapshots" of plot screens to be stored on the workstation disk for future recall and analysis. Exact point values may be viewed and the graphs may be printed. A minimum of ten (10) dynamic graphs shall run simultaneously. Operator shall be able to command points directly on the trend plot by double clicking on the point. Operator shall be able to zoom in on a specific time range within a plot. The dynamic trend plotting application shall support the following types of graphs, with option to graph in 3D: line graph, area graph, curve graph, area-curve graph, step graph, and scatter graph. Each graph may be customized by the user, for graph type, graph text, titles, line styles and weight, colors, and configurable x- and y-axes.

n. Dynamic Color Graphic Displays
1) Capability to create color graphic floor plan displays and system schematics for each piece of mechanical equipment, including, but not limited to, air handling units, chilled water systems, hot water boiler systems, and room level terminal units.
2) The operator interface shall allow users to access the various system schematics and floor plans via a graphical penetration scheme, menu selection, point alarm association, or text-based commands. Graphics software shall permit the importing of AutoCAD or scanned pictures for use in the system.
3) Dynamic temperature values, humidity values, flow values and status indication shall be shown in their actual respective locations within the system schematics or graphic floor plan displays, and shall automatically update to represent current conditions without operator intervention and without pre-defined screen refresh rates.
a) Provide the user the ability to display real-time point values by animated motion or custom picture control visual representation.

Animation shall depict movement of mechanical equipment, or air or fluid flow. Picture Control shall depict various positions in relation to assigned point values or ranges. A library (set) of animation and picture control symbols shall be included within the operator interface software's graphics application. Animation shall reflect, ON or OFF conditions, and shall also be optionally configurable for up to five rates of animation speed.

b) Sizable analog bars shall be available for monitor and control of analog values; high and low alarm limit settings shall be displayed on the analog scale. The user shall be able to "click and drag" the pointer to change the setpoint.

c) Provide the user the ability to display blocks of point data by defined point groups; alarm conditions shall be displayed by flashing point blocks.

d) Equipment state or values can be changed by clicking on the associated point block or graphic symbol and selecting the new state (on/off) or setpoint.

e) State text for digital points can be user-defined up to eight characters.

4) Colors shall be used to indicate status and change as the status of the equipment changes. The state colors shall be user definable.

5) Advanced linking within the Graphics application shall provide the ability to navigate to outside documents (e.g., .doc, .pdf, .xls, etc.), Internet web addresses, e-mail, external programs, and other workstation applications, directly from the Graphics application window with a mouse-click on a customizable link symbol.

6) The Windows environment of the PC operator workstation shall allow the user to simultaneously view several applications at a time to analyze total building operation or to allow the display of a graphic associated with an alarm to be viewed without interrupting work in progress.

7) Off the shelf graphic software shall be provided to allow the user to add, modify or delete system graphic background displays.

8) A clipart library of HVAC application and automation symbols shall be provided including fans, valves, motors, chillers, AHU systems, standard ductwork diagrams and laboratory symbols. The user shall have the ability to add custom symbols to the clipart library. The clipart library shall include a minimum of 400 application symbols. In addition, a library consisting of a minimum of 700 graphic background templates shall be provided.

9) The Graphics application shall include a set of standard Terminal Equipment controller application-specific background graphic templates. Templates shall provide the automatic display of a selected Terminal Equipment controller's control values and parameters, without the need to create separate and individual graphic files for each controller.

o. System Configuration & Definition

1) A "Collapsible tree," dynamic system architecture diagram/display application of the site-specific BMS architecture showing status of controllers, PC workstations and networks shall be provided. This application shall include the ability to add and configure workstations, Building Controllers, as well as 3rd-party integrated components. Symbols/Icons representing the system architecture components shall be user-configurable and customizable, and a library of customized icons

representing 3rd-party integration solutions shall be included. This application shall also include the functionality for real-time display, configuration and diagnostics connections to Building Controllers.

2) Network wide control strategies shall not be restricted to a single Building Controller, but shall be able to include data from any and all other network panels to allow the development of Global control strategies.
3) Provide automatic backup and restore of all Building controller databases on the workstation hard disk. In addition, all database changes shall be performed while the workstation is on-line without disrupting other system operations. Changes shall be automatically recorded and downloaded to the appropriate Building Controller. Changes made at the user-interface of Building Controllers shall be automatically uploaded to the workstation, ensuring system continuity.
4) System configuration, programming, editing, graphics generation shall be performed on-line.
5) Point database configuration shall be available to the user within a dedicated point database editor application included in the operator interface software. The editor shall allow the user to create, view existing, modify, copy, and delete points from the database.
6) The point editor shall have the capability to assign "informational text" to points as necessary to provide critical information about the equipment.
7) The point editor shall also allow the user to configure the alarm management strategy for each point. The editor shall provide the option for editing the point database in an online or offline mode with the Building Controllers.
8) The operator interface software shall also provide the capability to perform bulk modification of point definition attributes to a single or multiple user-selected points. This function shall allow the user to choose the properties to copy from a selected point to another point or set of points. The selectable attributes shall include, but are not limited to, Alarm management definitions and Trend definitions.
9) Control program configuration shall be available to the user within a dedicated control program editor application included in the operator interface software. The editor shall allow for creation, modification and deletion of control programs. The editor shall include a programming assistance feature that interactively guides the user through parameters required to generate a control program. The editor shall also include the ability to automatically compile the program to ensure its compatibility with the Building Controllers. The editor shall provide the option for editing the control programs in an online or offline mode, and also the ability to selectively enable or disable the live program execution within the Building Controllers.

p. Alarm Management

1) Alarm Routing shall allow the user to send alarm notification to selected printers or workstation location(s) based on time of day, alarm severity, or point type.
2) Alarm Notification shall be presented to each workstation in a tabular format application, and shall include the following information for each alarm point: name, value, alarm time & date, alarm status, priority, acknowledgement information, and alarm count. Each alarm point or priority shall have the ability to sound a discrete audible notification.

3) Alarm Display shall have the ability to list & sort the alarms based on alarm status, point name, ascending or descending alarm time.
4) Directly from the Alarm Display, the user shall have the ability to acknowledge, silence the alarm sound, print, or erase each alarm. The interface shall also have the option to inhibit the erasing of active acknowledged alarms, until they have returned to normal status. The user shall also have the ability to command, launch an associated graphic or trended graphical plot, or run a report on a selected alarm point directly on the Alarm Display.
5) Each alarm point shall have a direct link from the Alarm Display to further user-defined point informational data. The user shall have the ability to also associate real-time electronic annotations or notes to each alarm.
6) Alarm messages shall be customizable for each point, or each alarm priority level, to display detailed instructions to the user regarding actions to take in the event of an alarm. Alarm messages shall also have the optional ability to individually enunciate on the workstation display via a separate pop-up window, automatically being generated as the associated alarm condition occurs. The system shall have the ability to modify the priority text based on operator preference.
7) Alarm Display application shall allow workstation operators to send and receive real-time messages to each other, for purposes of coordinating Alarm and BMS system management.

q. Global Control Function
1) The system shall control settings globally at all VAV boxes through the Supervisor. The Global Thermostat Settings shall manage the following points (The District will provide a template prior to graphics development):
a) Occupied Setpoint
b) High Limit Setpoint
c) Low Limit Setpoint
d) Heating Offset
e) Cooling Offset
f) Unoccupied Heating Setpoint
g) Unoccupied Cooling Setpoint

r. VAV Zone Information (The District will provide a template prior to graphics development)

1) The system shall display the following zone information:
a) VAV Number , Zone Group, Rooms Serviced by Box, and T-Stat Location
b) Unit Status- Occupied Status
c) Unit Status- Occupied Command
d) Unit Status- Override Status
e) Unit Status- Space Temperature
f) Unit Status- Current Cooling Setpoint
g) Unit Status- Current Heating Setpoint
h) Unit Status- Zero Temp Input
i) Unit Status- Zero Cutoff
j) Unit Status- Force Damper Open
k) Unit Status- Force Damper Close

l) Unit Status- Force Max Airflow
m) Unit Status- Force Min Airflow
n) Unit Status- Force Reheat Airflow
o) Unit Status- Lockout Damper
p) Unit Status- Stroke Time Damper
q) Unit Status- Box Size
r) Unit Status- CO2 PPM (for VAV zones with CO2)
s) Unit Status- CO2 Setpoint (for VAV zones with CO2)

2) The system shall display the following space temperature setpoints:
a) Cooling Offset Setpoint
b) Heating Offset setpoint
c) Unoccupied Cooling Setpoint
d) Unoccuped Heating Setpoint
e) Zone Temp Setpoint
f) Alarm Zone Setpoint
g) Current Airflow Setpoint
h) Zone Hi Limit Setpoint
i) Zone Low Limit Setpoint
j) Timer limit

3) The system shall display the following space temperature performance:
a) Current space temperature dynamic graph able to review with a time range adjustment.

4) The system shall display the following general VAV information:
a) Outside Air Temp and Humidity
b) Airflow Schedule (Max SP , Min SP , and Reheat SP)
c) Alarms (Space Temp Sensor Fail, Space Temp Too Hot, Space Temp Too Cold, Airflow Out of Limit, Communication Failure, High CO2 (10% past setpoint))
d) Current Air Flow CFM
e) Damper Position
f) Discharge Air Temperature

s. Fault Detection Diagnostics (FDD)
1) The system shall display the fault condition description, possible diagnosis, water, gas, and energy use analytical information. Coordinate graphics with the District (Reference specification 230993 for more information)
a) AHU (1 and 2) FDD
b) VAV FDD
c) Boiler System FDD
d) Gas , Water, and Electric Analytics

B. PORTABLE OPERATOR'S TERMINAL (POT)
1. Provide Notebook style industry standard, commercially available portable operator terminals with a LCD display and a full-featured keyboard. When shown on contract drawings. The POT shall be handheld and plug directly into all Building Controllers as described below. Provide a user-friendly, English language-prompted interface for quick

access to system information, not codes requiring look-up charts. Notebook selection shall be submitted to owner for review and approval based on current campus standards.

2. Functionality of the portable operator's terminal connected at any Building Controller:
   a. Access all Building Controllers and Application Specific Controllers (ASCs) on the network.
   b. Backup and/or restore Building Controller data bases for all system panels, not just the Building Controller connected to.
   c. Display all point, selected point and alarm point summaries.
   d. Display trending and totalization information.
   e. Add, modify and/or delete any existing or new system point.
   f. Command, change, and enable/disable any system point.
   g. Program and load custom control sequences as well as standard energy management programs.
   h. Acknowledge alarms
3. Functionality of the portable operator's terminal connected to any application specific controller:
   a. Provide connection capability at either the Floor Level Network Controller or a related room sensor to access controller information.
   b. Provide status, setup and control reports.
   c. Modify, select and store controller data base.
   d. Command, change, and enable/disable any controller point.
4. Connection of a POT to a Building or ASC Controller shall not interrupt nor interfere with normal network operation in any way, prevent alarms from being transmitted or preclude centrally-initiated commands and system modification.
5. Portable operator terminal access to controller shall be password-controlled. Password protection shall be configurable for each operator based on function, points (designating areas of the facility), and edit/view capability.

2.5 BUILDING CONTROLLER SOFTWARE

A. General:
1. Furnish the following applications software to form a complete operating system for building and energy management as described in this specification.
2. The software programs specified in this Section shall be provided as an integral part of Building Controllers and shall not be dependent upon any higher level computer or another controller for execution.
3. All points, panels and programs shall be identified by a 30 character name. All points shall also be identified by a 16 character point descriptor. The same names shall be displayed at both Building Controller and the Operator Interface.
4. All digital points shall have a user defined two-state status indication with 8 characters minimum (e.g. Summer, Enabled, Disabled, Abnormal).
5. The Building Controller Software shall be capable of BACnet communications. The BACnet Building Controller (B-BC) shall have demonstrated interoperability during at least one BTL Interoperability Workshop and shall substantially conform to BACnet Building Controller (B-BC) device profile as specified in ANSI/ASHRAE 135-2004, Annex L.
6. Building Controllers shall have the ability to perform energy management routines including but not limited to time of day scheduling, calendar-based scheduling, holiday scheduling, temporary schedule overrides, start stop time optimization, automatic daylight savings time switch over, night setback control, enthalpy switch over, peak

demand limiting, temperature-compensated duty cycling, heating / cooling interlock, supply temperature reset, priority load shedding, and power failure restart.

7. The Building Controllers shall have the ability to perform the following pre tested control algorithms:
   a. Two position control
   b. Proportional control
   c. Proportional plus integral control
   d. Proportional, integral, plus derivative control
   e. Automatic tuning of control loops
   f. Model-Free Adaptive Control
8. Each controller shall be provided with an interactive HELP function to assist operators using POTs and remote connected operators.
9. Building Controllers shall not be susceptible` to Microsoft Windows operating systems based viruses.

B. System Security
   1. User access shall be secured using individual security passwords and user names.
   2. Passwords shall restrict the user to the objects, applications, and system functions as assigned by the system manager.
   3. User Log On / Log Off attempts shall be recorded.
   4. The system shall protect itself from unauthorized use by automatically logging off following the last keystroke. The delay time shall be user-definable.
   5. Use of workstation resident security as the only means of access control is not an acceptable alternative to resident system security in the field panel.

C. User Defined Control Applications:
   1. Controllers shall be able to execute custom, job-specific processes defined by the user, to automatically perform calculations and special control routines.
   2. It shall be possible to use any system measured point data or status, any system calculated data, a result from any process, or any user-defined constant in any controller in the system.
   3. Any process shall be able to issue commands to points in any and all other controllers in the system.
   4. Processes shall be able to generate operator messages and advisories to other operator I/O devices. A process shall be able to directly send a message to a specified device or cause the execution of a dial-up connection to a remote device such as a printer or pager.
   5. Each controller shall support plain language text comment lines in the operating program to allow for quick troubleshooting, documentation, and historical summaries of program development.
   6. Controller shall provide a HELP function key, providing enhanced context sensitive on-line help with task oriented information from the user manual.

D. Alarm Management:
   1. Alarm management shall be provided to monitor and direct alarm information to operator devices. Each Building Controller shall perform distributed, independent alarm analysis, minimize network traffic and prevent alarms from being lost. At no time shall the Building Controllers ability to report alarms be affected by either operator or activity at a PC workstation, local I/O device or communications with other panels on the network.
   2. Conditional alarming shall allow generation of alarms based upon user defined multiple criteria.

3. An Alarm “shelving” feature shall be provided to disable alarms during testing. (Pull the Plug, etc.).
4. Binary Alarms. Each binary object shall be set to alarm based on the operator-specified state. Provide the capability to automatically and manually disable alarming.
5. Analog Alarms. Each analog object shall have both high and low alarm limits. Alarming must be able to be automatically and manually disabled.
6. All alarm or point change reports shall include the point's user defined language description and the time and date of occurrence.
7. Alarm reports and messages shall be routed to user-defined list of operator workstations, or other devices based on time and other conditions. An alarm shall be able to start programs, print, be logged in the event log, generate custom messages, and display graphics.
8. In addition to the point's descriptor and the time and date, the user shall be able to print, display or store a 200 character alarm message to more fully describe the alarm condition or direct operator response.
9. Each Building Controller shall be capable of storing a library of at least 50 alarm messages. Each message may be assignable to any number of points in the Controller.

E. Scheduling:
1. Provide a comprehensive menu driven program to automatically start and stop designated multiple objects or events in the system according to a stored time.
2. Schedules shall reside in the building controller and shall not rely on external processing or network.
3. It shall be possible to define a group of objects as a custom event (i.e. meeting, athletic activity, etc.). Events can then be scheduled to operate all necessary equipment automatically.
4. For points assigned to one common load group, it shall be possible to assign variable time delays between each successive start and/or stop within that group.
5. The operator shall be able to define the following information:
    a. Time, day
    b. Commands such as on, off, auto, etc.
    c. Time delays between successive commands.
    d. There shall be provisions for manual overriding of each schedule by an authorized operator.
6. It shall be possible to schedule calendar-based events up to one year in advance based on the following:
    a. Weekly Schedule. Provide separate schedules for each day of the week. Each of these schedules should include the capability for start, stop, optimal start, optimal stop, and night economizer. When a group of objects are scheduled together as an Event, provide the capability to adjust the start and stop times for each member.
    b. Exception Schedules. Provide the ability for the operator to designate any day of the year as an exception schedule. Exception schedules may be defined up to a year in advance. Once an exception schedule is executed, it will be discarded and replaced by the standard schedule for that day of the week.

F. Automatic Daylight Savings Time Switchover: The system shall provide automatic time adjustment for switching to/from Daylight Savings Time.

G. Night setback control. The system shall provide the ability to automatically adjust setpoints for night control.

H. Loop Control. A Model-Free Adaptive Control algorithm or alternatively a PID (proportional-integral-derivative) closed-loop control algorithm with direct or reverse action and anti-windup shall be supplied. The algorithm shall calculate a time-varying analog value that is used to position an output or stage a series of outputs. The controlled variable, set point, and weighting parameters shall be user-selectable.

I. Sequencing. Provide application software based upon the sequences of operation specified to properly sequence equipment.

J. Staggered Start:
1. This application shall prevent all controlled equipment from simultaneously restarting after a power outage. The order in which equipment (or groups of equipment) is started, along with the time delay between starts, shall be user definable.
2. Upon the resumption of power, each Building Controller shall analyze the status of all controlled equipment, compare it with normal occupancy scheduling and turn equipment on or off as necessary to resume normal operations.

K. Totalization:
1. Run-Time Totalization. Building Controllers shall automatically accumulate and store run-time hours for all digital input and output points. A high runtime alarm shall be assigned, if required, by the operator.
2. Consumption totalization. Building Controllers shall automatically sample, calculate and store consumption totals on a daily, weekly or monthly basis for all analog and digital pulse input type points.
3. Event totalization. Building Controllers shall have the ability to count events such as the number of times a pump or fan system is cycled on and off. Event totalization shall be performed on a daily, weekly or monthly basis for all points. The event totalization feature shall be able to store the records associated with events before reset.

L. Data Collection:

1. A variety of historical data collection utilities shall be provided to manually or automatically sample, store, and display system data for all points.
2. Building Controllers shall store point history data for selected analog and digital inputs and outputs:
    a. Any point, physical or calculated may be designated for trending. Any point, regardless of physical location in the network, may be collected and stored in each Building Controllers point group.
3. Trend data shall be stored at the Building Controllers and uploaded to the workstation when retrieval is desired. Uploads shall occur based upon either user-defined interval, manual command or when the trend buffers are full. All trend data shall be available for use in 3rd party personal computer applications.
4. Loop Tuning. Building Controllers shall also provide high resolution sampling capability for verification of DDC control loop performance. Documented evidence of tuned control loop performance shall be provided on a seasonal basis, at the beginning of the heating season in the Fall, and at the beginning of the cooling season in the Spring.
    a. For Model-Free Adaptive Control loops, evidence of tuned control loop performance shall be provided via graphical plots or trended data logs. Graphical plots shall minimally include depictions of setpoint, process variable (output), and control variable (e.g., temperature). Other parameters that may influence loop control shall also be included in the plot (e.g., fan on/off, mixed-air temp).

b. For PID control loops, operator-initiated automatic and manual loop tuning algorithms shall be provided for all operator-selected PID control loops. Evidence of tuned control loop performance shall be provided via graphical plots or trended data logs for all loops.
   1) In automatic mode, the controller shall perform a step response test with a minimum one-second resolution, evaluate the trend data, calculate the new PID gains and input these values into the selected LOOP statement.
   2) Loop tuning shall be capable of being initiated either locally at the Building Controller, from a network workstation or remotely using dial-in modems. For all loop tuning functions, access shall be limited to authorized personnel through password protection.

2.6 BUILDING CONTROLLERS

A. Building Controllers shall be 32 bit, multi-tasking, multi-user, real-time 48 MHz digital control processors consisting of modular hardware with plug-in enclosed processors, communication controllers, power supplies and input/output point modules. Controller size shall be sufficient to fully meet the requirements of this specification and the attached point list.

B. Each Building Controller shall support a minimum of 3 directly connected Secondary Networks.

C. Each Building Controller shall have sufficient memory, a minimum of 72 megabyte, to support its own operating system and databases, including control processes, energy management applications, alarm management applications, historical/trend data for points specified, maintenance support applications, custom processes, operator I/O, and dial-up communications.

D. Building Controller shall have an integral real-time clock.

E. Each Building Controller shall support firmware upgrades without the need to change hardware.

F. Each Building Controller shall support:
   1. Monitoring of industry standard analog and digital inputs, without the addition of equipment outside the Building Controller cabinet.
   2. Monitoring of industry standard analog and digital outputs, without the addition of equipment outside the Building Controller cabinet.

G. Spare Point Capacity. Each Building Controller shall have a minimum of 10 percent spare point capacity.
   1. The type of spares shall be in the same proportion as the implemented I/O functions of the panel, but in no case shall there be less than one spare of each implemented I/O type.
   2. Provide all processors, power supplies, and communication controllers so that the implementation of adding a point to the spare point location only requires the addition of the appropriate:
   3. Expansion modules
   4. Sensor/actuator
   5. Field wiring/tubing.

H. Serial Communication. Building Controllers shall provide at least two EIA-232C serial data communication ports for operation of operator I/O devices such as industry standard printers, operator terminals, and portable laptop operator's terminals. Building Controllers shall allow temporary use of portable devices without interrupting the normal operation of permanently connected printers or terminals.

I. Manual Override. The operator shall have the ability to manually override automatic or centrally executed commands at the Building Controller via local, point discrete, integral hand/off/auto operator override switches for all digital control type points and gradual switches for all analog control type points. These override switches shall be operable whether the panel processor is operational or not. Each Building Controller shall monitor and alarm the hand, off and auto positions of integral HOA switches.

J. I/O Status and Indication. Building Controllers shall provide local LED status indication for each digital input and output for constant, up-to-date verification of all point conditions without the need for an operator I/O device. Graduated intensity LEDs or analog indication of value shall also be provided for each analog output. All wiring connections shall be made to field-removable terminals.

K. Self Diagnostics. Each Building Controller shall continuously perform self diagnostics, communication diagnosis, and diagnosis of all panel components. The Building Controller shall provide both local and remote annunciation of any detected component failures, low battery conditions or repeated failure to establish communication for any system.

L. Power loss. In the event of the loss of power, there shall be an orderly shutdown of all Building Controllers to prevent the loss of database or operating system software. Non-volatile memory shall be incorporated for all critical controller configuration data and battery backup shall be provided to support the real-time clock and all volatile memory for a minimum of 100 hours.

M. Environment.
1. Controller hardware shall be suitable for the anticipated ambient conditions.
2. Controllers used outdoors and/or in wet ambient conditions shall be mounted within weather proof NEMA 4 enclosures and shall be rated for operation at 0°C to 49°C (32°F to 120°F).
3. Controllers used in conditioned space shall be mounted in dust-proof NEMA 12 enclosures and shall be rated for operation at 0°C to 49°C (32°F to 120°F).

N. Immunity to power and noise.
1. Controller shall be able to operate at 90% to 110% of nominal voltage rating and shall perform an orderly shutdown below 80% nominal voltage.
2. Operation shall be protected against electrical noise of 5 to 120 Hz and from keyed radios up to 5 W at 1 m (3 ft).
3. Isolation shall be provided at all primary network terminations, as well as all field point terminations to suppress induced voltage transients consistent with:
    a. RF-Conducted Immunity (RFCI) per ENV 50141 (IEC 1000-4-6) at 3 V
    b. Electro Static Discharge (ESD) Immunity per EN 61000-4-2 (IEC 1000-4-2) at 8 kV air discharge, 4 kV contact
    c. Electrical Fast Transient (EFT) per EN 61000-4-4 (IEC 1000-4-4) at 500 V signal, 1 kV power
    d. Output Circuit Transients per UL 864 (2,400V, 10A, 1.2 Joule max)

4. Isolation shall be provided at all Building Controller's AC input terminals to suppress induced voltage transients consistent with:
   a. IEEE Standard 587 1980
   b. UL 864 Supply Line Transients
   c. Voltage Sags, Surge, and Dropout per EN 61000-4-11 (EN 1000-4-11)

O. Minimum Approved Building Controllers. BMS Contractors shall furnish Building Controllers as listed below. Providing an approved controller does not release the contractor from meeting all performance, software and hardware specifications for Building Controllers and system operations.
1. Delta Control Controllers
2. Alerton Control Controllers
3. ALC Control Controllers

2.7 APPLICATION SPECIFIC CONTROLLERS (ASC)

A. General:
1. Provide for control of each piece of equipment , including, but not limited to the following:
   a. Variable Air Volume (VAV) boxes
   b. Reheat Coils (RH)
   c. Unit Conditioners
   d. Heat Pumps
   e. Exhaust Fans
   f. Air handling units
2. Each Building Controller shall be able to communicate with application specific controllers (ASCs) over the Secondary Network to control terminal equipment only.
3. The use of Secondary Network controllers with custom program applications to control AHU's, water systems, etc. is not acceptable.
4. Each ASC shall operate as a stand-alone controller capable of performing its specified control responsibilities independently of other controllers in the network. Each ASC shall be a microprocessor-based, multi-tasking, real-time digital control processor.
5. Each ASC shall include all point inputs and outputs necessary to perform the specified control sequences. The ASC shall accept input and provide output signals that comply with industry standards. Controllers utilizing proprietary control signals shall not be acceptable. Outputs utilized either for two-state, modulating floating, or proportional control, allowing for additional system flexibility.
6. Space Temperature Sensors. Each controller performing space temperature control shall be provided with a matching room temperature sensor. For private offices and conference rooms, space temperature sensors shall be user adjustable, with temperature and setpoint indication. For classrooms, laboratories, corridors, and other public spaces, space temperature sensors shall be non-adjustable with tamper proof cover. All conditioned spaces other than corridors shall be provided with an occupancy override switch for after hours operation.
   a. Wired Sensor specifications. The sensor may be either RTD or thermistor type providing the following.
      1) Accuracy: + .36 F
      2) Operating Range: 35 to 115 F
      3) Set Point Adjustment Range: 55 to 95 F
      4) Calibration Adjustments: None required

5) Installation: Up to 100 ft. from controller
6) Auxiliary Communications Port:
7) Local LCD Temperature Display: as required
8) Set Point Adjustment Dial as required
9) Occupancy Override Switch as required

b. Set Point Modes:
1) Independent Heating, Cooling
2) Night Setback-Heating
3) Night Setback-Cooling

c. Auxiliary Communication Port. Each room temperature sensor shall include a terminal jack integral to the sensor assembly. The terminal jack shall be used to connect a portable operator's terminal to control and monitor all hardware and software points associated with the controller. RS-232 communications port shall allow the operator to query and modify operating parameters of the local room terminal unit from the portable operator's terminal.

d. Set Point Adjustment Dial. The set point adjustment dial shall allow for modification of the temperature by the building operators. Set point adjustment may be locked out, overridden, or limited as to time or temperature through software by an authorized operator at any central workstation, Building Controller, room sensor two-line display, or via the portable operator's terminal.

e. Override Switch. An override switch shall initiate override of the night setback mode to normal (day) operation when activated by the occupant and enabled by building operators. The override shall be limited to two (2) hours (adjustable.) The override function may be locked out, overridden, or limited through software by an authorized operator at the operator interface, Building Controller, room sensor two-line display or via the portable operator's terminal.

7. Communication. Each controller shall perform its primary control function independent of other Secondary Network communication, or if Secondary Network communication is interrupted. Reversion to a fail-safe mode of operation during Secondary Network interruption is not acceptable.

8. Control Algorithms. The controller shall receive its real-time data from the Building Controller time clock to insure Secondary Network continuity. Each controller shall include algorithms incorporating proportional, integral and derivative (PID) gains for all applications. All PID gains and biases shall be field-adjustable by the user via room sensor LCD or the portable operator's terminal as specified herein. Controllers that incorporate proportional and integral (PI) control algorithms only shall not be acceptable.

9. Control Applications. Operating programs shall be field-selectable for specific applications. In addition, specific applications may be modified to meet the user's exact control strategy requirements, allowing for additional system flexibility. Controllers that require factory changes of all applications are not acceptable.

10. Calibration. Each controller shall include provisions for manual and automatic calibration of the differential pressure transducer in order to maintain stable control and insuring against drift over time.

a. Manual calibration may be accomplished by either commanding the actuator to 0% via the POT or by depressing the room sensor override switch. Calibration of the transducer at the controller location shall not be necessary

b. Calibration shall be accomplished by stroking the terminal unit damper actuator to a 0% position so that a 0 CFM air volume reading is sensed. The controller shall automatically accomplish this whenever the system mode switches from occupied to unoccupied or vice versa.

c. Calibration shall be accomplished by zeroing out the pressure sensor and holding damper at last known position until calibration is complete. The controller shall automatically accomplish this whenever the system mode switches from occupied to unoccupied or vice versa.

11. Memory.
    a. Provide each ASC with sufficient memory to accommodate point databases, operating programs, local alarming and local trending. All databases and programs shall be stored in non-volatile EEPROM, EPROM and PROM, or minimum of 72-hour battery backup shall be provided. The controllers shall be able to return to full normal operation without user intervention after a power failure of unlimited duration.
    b. Upon replacement, new ASCs shall recover control function and site specific defaults automatically and resume normal operation.
12. Power Supply. The ASCs shall be powered from a 24 VAC source and shall function normally under an operating range of 18 to 28 VAC, allowing for power source fluctuations and voltage drops. Power supply for the ASC must be rated at a minimum of 125% of ASC power consumption and shall be of the fused or current limiting type. The BMS contractor shall provide 24 VAC power to the terminal units by utilizing:
    a. The existing line voltage power trunk and installing separate isolation transformers for each controller
    b. Dedicated line voltage power source and isolation transformers at a central location and installing 24VAC power trunk to supply multiple ASCs in the area.
13. Environment. The controllers shall function normally under ambient conditions of 32 to 122 F (0 to 50 C) and 10% to 95%RH (non-condensing). Provide each controller with a suitable cover or enclosure to protect the circuit board assembly.
14. Immunity to noise. Operation shall be protected against electrical noise of 5-120 Hz and from keyed radios up to 5 W at 1 m (3 ft).
15. Manufacturer Installed Controls.
    a. BMS manufacturer shall furnish ASC and actuator for factory mounting to equipment manufacturer.
    b. Cost of factory mounting shall be borne by equipment manufacturer.
    c. For VAV terminals, equipment manufacturer shall provide and install flow-cross sensor, 24 Vac transformer, controls enclosure, fan relay, SCR and factory install, wire and tube the ASC controller and actuator provided by BMS.

B. Controllers for VAV terminals.
1. All VAV terminal control applications shall be field-selectable such that a single controller may be used in conjunction with any of the above types of terminal units to perform the specified sequences of control. ASC's that require factory application changes are not acceptable. The VAV terminal ASC shall support the following types of pressure independent terminal boxes as a minimum:
    a. VAV cooling only
    b. VAV with hot water
2. The controller shall include a differential pressure transducer that shall connect to the terminal unit manufacturer's standard averaging air velocity sensor to measure the average differential pressure in the duct. The controller shall convert this value to actual air flow. Single point air velocity sensing is not acceptable. The differential pressure transducer shall have a measurement range of 0 to 4000 fpm (0 to 20.4 m/s) and measurement accuracy of +5% at 400 to 4000 fpm (2 to 20 m/s), insuring primary air flow conditions shall be controlled and maintained to within +5% of set point at the

specified parameters. The BMS contractor shall provide the velocity sensor if required to meet the specified functionality.

2.8 INPUT/OUTPUT INTERFACE:

A. Hardwired inputs and outputs may tie into the system through building or application specific controllers.

B. All input points and output points shall be protected such that shorting of the point to itself, to another point, or to ground will cause no damage to the controller. All input and output points shall be protected from voltage up to 24 V of any duration, such that contact with this voltage will cause no damage to the controller.

C. Binary inputs shall allow the monitoring of On/Off signals from remote devices. The binary inputs shall provide a wetting current of at least 12 mA to be compatible with commonly available control devices and shall be protected against the effects of contact bounce and noise. Binary inputs shall sense “dry contact” closure without external power (other than that provided by the controller) being applied.

D. Pulse accumulation input objects. This type of object shall conform to all the requirements of binary input objects and also accept up to 10 pulses per second for pulse accumulation.

E. Analog inputs shall allow the monitoring of low-voltage (0 to 10 VDC), current (4 to 20 mA), or resistance signals (thermistor, RTD). Analog inputs shall be compatible with—and field configurable to— commonly available sensing devices.

F. Binary outputs shall provide for On/Off operation or a pulsed low-voltage signal for pulse width modulation control. Binary outputs on building and custom application controllers shall have three-position (On/Off/Auto) override switches and status lights. Outputs shall be selectable for either normally open or normally closed operation.

G. Analog outputs shall provide a modulating signal for the control of end devices. Outputs shall provide either a 0 to 10 VDC, 4 to 20 mA or 0-20 PSI signal as required to provide proper control of the output device. Analog outputs on building or custom application controllers shall have status lights and a two-position (AUTO/MANUAL) switch and manually adjustable potentiometer for manual override. Analog outputs shall not exhibit a drift of greater than 0.4% of range per year.

H. Tri-State Outputs. Provide tri-state outputs (two coordinated binary outputs) for control of three-point floating type electronic actuators without feedback. Use of three-point floating devices shall be limited to zone control and terminal unit control applications (VAV terminal units, duct-mounted heating coils, zone dampers, radiation, etc.). Control algorithms shall run the zone actuator to one end of its stroke once every 24 hours for verification of operator tracking.

I. System Object Capacity. The system size shall be expandable to at least twice the number of input/ output objects required for this project. Additional controllers (along with associated devices and wiring) shall be all that is necessary to achieve this capacity requirement. The operator interfaces installed for this project shall not require any hardware additions or software revisions in order to expand the system.

2.9 POWER SUPPLIES AND LINE FILTERING

A. Control transformers shall be UL listed. Furnish Class 2 current-limiting type or furnish over-current protection in both primary and secondary circuits for Class 2 service in accordance with NEC requirements. Limit connected loads to 80% of rated capacity.

B. DC power supply output shall match output current and voltage requirements. Unit shall be full-wave rectifier type with output ripple of 5.0 mV maximum peak-to-peak. Regulation shall be 1.0% line and load combined, with 100-microsecond response time for 50% load changes. Unit shall have built-in over-voltage and over-current protection and shall be able to withstand a 150% current overload for at least three seconds without trip-out or failure.
   1. Unit shall operate between 0°C and 50°C (32°F and 120°F). EM/RF shall meet FCC Class B and VDE 0871 for Class B and MILSTD 810C for shock and vibration.
   2. Line voltage units shall be UL recognized and CSA approved.

C. Power line filtering.
   1. Provide transient voltage and surge suppression for all workstations and controllers either internally or as an external component. Surge protection shall have the following at a minimum:
      a. Dielectric strength of 1000 volts minimum
      b. Response time of 10 nanoseconds or less
      c. Transverse mode noise attenuation of 65 dB or greater
      d. Common mode noise attenuation of 150 dB or better at 40 Hz to 100 Hz.

2.10 AUXILIARY CONTROL DEVICES

A. GENERAL
   1. Specified in this section are the following hard wired input/output devices connected to the Building Controller or ASC. Devices only required if specified by points list, control diagram or sequence of operation.
      a. Electric Damper Actuators
      b. Motorized Isolation Valves
      c. Ball Valves
      d. Automatic Control Valves
      e. Airflow Measuring Stations
      f. Binary Temperature Devices
      g. Temperature Sensors
      h. Dew Point/Humidity Sensors
      i. Pressure Sensors
      j. Water Differential Pressure Sensors
      k. Differential Pressure Switches
      l. Analog Water Level Sensors
      m. Water Leak Detection Systems
      n. Audio/Visual Alarm Units
      o. Fuel Oil Meters
      p. Water BTU Meters
      q. Ultrasonic Flow Meters
      r. Indoor Air Quality (CO2/VOC) Space Sensors
      s. Relays
      t. Override Timers

u. Current Transformers
v. Voltage Transmitters
w. Voltage Transformers
x. Power Monitors
y. Current Switches
z. Pressure Electric Switches
aa. Electro-pneumatic Transducers
bb. Local Control panels
cc. Local User Display

B. Electric Damper Actuators (For AHU-1 & 2)
1. General
a. The actuator shall have mechanical or electronic stall protection to prevent damage to the actuator throughout the rotation of the actuator.
b. Where shown, for power-failure/safety applications, an internal mechanical, spring-return mechanism shall be built into the actuator housing. Alternatively, an uninterruptible power supply (UPS) may be provided. On terminal unit valves actuators capacitor driven fail action is permitted.
c. Proportional actuators shall accept a 0 to 10 VDC or 0 to 20 mA control signal and provide a 2 to 10 VDC or 4 to 20 mA operating range.
d. All 24 VAC/VDC actuators shall operate on Class 2 wiring.
e. All actuators shall have an external manual gear release to allow manual positioning of the damper when the actuator is not powered. Spring-return actuators with more than 7 Nm (60 in.-lb) torque capacity shall have a manual crank for this purpose.
f. Electric actuators for emergency generator damper control shall be rated for 350 degree F. maximum operating temperature and capable to drive fully open and close within 15 seconds.

C. MOTORIZED ISOLATION VALVES
1. Butterfly Valves. (For AHU-1 & AHU-2 Chilled Water Coils)
a. Furnish automatic butterfly valves for isolation requirements as shown on the drawings or required herein. All butterfly valves shall have body ratings in accordance with the piping specifications. Valves shall be high performance, fully lugged with carbon steel body ANSI 150/300. Valves shall be rated for bubble tight dead-end closure, with 316 stainless steel disc, stainless steel shaft and reinforced Teflon seat and seals.
b. Motorized valves located outdoors or in areas subject to outdoor air conditions provide fail in place, electric operators with water proof enclosure, crankcase heater, and open and closed position limit switches. Valve and all accessories shall be constructed for outdoor use. All electrical devices shall be weather proof and NEMA 4 rated.
c. All valves shall be provided with external position indicators and a speed control device to prevent to rapid closure.
d. All valves shall be provided with manual override hand wheels for operating the valve.
e. The valves shall be line size as shown on plans.
f. Motorized isolation valves shall be Belimo, Keystone, Bray, Jamesbury 815/830L, Fisher, or DeZurik Model HP II.

D. AUTOMATIC BALL VALVES. (For AHU-1 & 2 Heating Hot Water Coils)

1. Furnish automatic full port ball valves for isolation requirements on line sizes up to 2'as shown on the drawings or required herein. All ball valves shall have ANSI 250 body rating. Valves shall bronze body and stainless-steel trim.
2. Valves shall close against a differential pressure equal to the design pump head pressure plus 10%.
3. The valves shall fail to their safe position upon power loss as specified in the sequence of operation.
4. All valves shall be provided with manual override.
5. Provide valve position indicator end switches with the actuator.
6. The valves shall be line size as shown on plans.
7. Motorized isolation valves shall be Siemens, Belimo, Dezurik or Neptronic.

E. AUTOMATIC CONTROL VALVES. (For VAV box Reheat Coils)
1. General:
   a. Control valves shall be two-way or three-way type single seated globe type for two-position or modulating service as shown. Valves shall meet ANSI Class IV leakage rating.
   b. Body pressure rating and connection type construction shall conform to pipe, fitting and valve schedules. Where pressure and flow combinations exceed ratings for commercial valves and operators, industrial class valves and operators shall be provided.
   c. Valve operators shall be of pneumatic or electric type.
   d. The valves shall be quiet in operation and fail-safe in either normally open or normally closed position in the event of power failure.
   e. Control valve operators shall be sized to close against a differential pressure equal to the design pump head plus 10 percent.
   f. Furnish differential pressure control valves for all water systems as shown on plans and/or specified in the sequence of operations.
   g. Provide valves 2" and smaller with screwed end bronze bodies and stainless steel trim. Provide valves 2-1/2" and larger with flanged ends, cast iron body and stainless steel trim.
   h. For modulating service that require large valve size (above 6"), such as cooling tower temperature bypass, chiller head pressure ,etc. where proper control with globe type control valve cannot be achieved or the application is not economical butterfly or v-port ball valves are allowed.
2. Water Valves:
   a. Control valves shall be of equal percentage flow characteristics for modulating service.
3. Steam Valves:
   a. Control valves shall be of linear flow characteristics for modulating service.

F. AIR FLOW MEASURING STATIONS (AMS - As indicated on Control Diagram on plans)
1. Fan Inlet Type:
   a. Air Handling Unit Manufacturer to provide airflow measuring stations where shown on the fan inlet. Fan Inlet flow stations will be provided with the air handling unit or fan manufacturer. See Spec Section 237416 Custom Air handling units. Fan airflow measurement shall be calculated via differential pressure between piezometric ring measurement around fan inlet and discharge plenum.
   b. Probes shall be capable of operating with an accuracy of 3% of actual volume over the fan operating range. A 4-20mA control signal with a linear out put reading the fan CFM shall be provided.

2. Outside Air Type:
   a. Contractor to provide where indicated on the plans. Outside air applications will use the thermal dispersion airflow measurement flow stations for accurate flow at low air velocity. Linear 4-20mA flow transmitter will be used for inputting probes and transmitting air flow. Ebtron P series with Silver series transmitter or equal.

G. BINARY TEMPERATURE DEVICES (As indicated on Control Diagram on plans)
1. Line-voltage space thermostat:
   a. Line-voltage thermostats shall be bimetal-actuated, snap acting SPDT contact, enclosed, UL listed for electrical rating. The thermostat cover shall provide exposed set point adjustment knob. The thermostat shall operate within the 55°F to 85°F setpoint range, with 2°F maximum differential.
2. Low-temperature safety thermostat:
   a. Low-limit air stream thermostats shall be UL listed, vapor pressure type, with a sensing element of 20 ft. minimum length. Element shall respond to the lowest temperature sensed by any 1 ft. section. The low-limit thermostat shall be automatic reset, SPDT type.
3. Aquastat:
   a. Strap-on type thermostats shall be provided for low or high temperature limit service on hot water or steam condensate pipes. The thermostats shall be UL listed, with a liquid-filled bulb type sensing element and capillary tubing. The thermostat shall operate within the 20°F to 120°F, or 100°F to 240°F, setpoint range, with an adjustable 6°F differential.
   b. The low-limit thermostat shall be automatic reset, snap acting SPDT type with concealed set point adjustment.

H. TEMPERATURE SENSORS. (T - As indicated on the mechanical floor plans)
1. Provide the following instrumentation as required by the monitoring, control and optimization functions. All temperature sensors shall use platinum RTD elements only, nickel or silicon are not acceptable. All control signals shall be via a 4-20 mA loop. Where platinum RTD temperature sensors are available, thermistors shall not be used.
2. Room Temperature:
   a. Temperature monitoring range +20/+120 F or +40/+90 F
   b. Output signal 4-20 mA
   c. Installation adjustments none required
   d. Element Platinum
   e. Factory calibration point 77 deg F
   f. Accuracy at calibration point +0.36 deg F at 77F
3. Liquid Immersion Temperature
   a. Temperature monitoring range +30/+250 F
   a. Output signal 4-20 mA
   b. Installation adjustments none required
   c. Element Platinum
   d. Factory calibration point 32 deg F
   e. Accuracy at calibration point +0.36 deg F at 32F
4. Duct (Single Point) Temperature
   a. Temperature monitoring range 20/+120 F
   b. Output signal 4-20 mA
   c. Installation adjustments none required
   d. Element Platinum
   e. Factory calibration point 32 deg F

	f.	Accuracy at calibration point	+0.36 deg F at 32F
5.	Duct (Averaging) Temperature		
	a.	Temperature monitoring range	20/+120 F
	b.	Output signal	4-20 mA
	c.	Installation adjustments	none required
	d.	Element	Platinum
	e.	Factory calibration point	32 deg F
	f.	Accuracy at calibration point	+0.36 deg F at 32F
6.	Outside Air Temperature		
	a.	Temperature monitoring range	-58/+122 F
	b.	Output signal	4-20 mA
	c.	Installation adjustments	none required
	d.	Element	Platinum
	e.	Factory calibration point	32 deg F
	f.	Accuracy at calibration point	+0.36 deg F at 32F

I. DEW POINT/HUMIDITY SENSORS (HS - As indicated on Control Diagram on plans)

1.	Outside Air Dew Point Temperature		
	a.	Dew point monitoring range	-40/+115 F DP, 12% to 99% RH
	b.	Output signal	4-20 mA
	c.	Calibration adjustments	zero & span
	d.	Factory calibration point	70 F
	e.	Accuracy at calibration point	+2.0 Fdp
2.	Room/duct Relative Humidity		
	a.	Sensor Humidity range	0 to 100%
	b.	Operating temperature	15 F to +170 F
	c.	Accuracy	+2% RH
	d.	Sensing element	Capacitive sensor
	e.	Output signal	4-20 mA DC
	f.	Installation adjustments	zero & span
	g.	Operating temperature	15 F to +170 F
	h.	Voltage requirement	12-36 VDC

J. AIR DIFFERNTAIL PRESSURE SENSORS (DPS - As indicated on Control Diagram on plans)

1.	Air Static Pressure Sensor		
	a.	Duct Static range	-.5 to + 7.5"wg
	b.	Accuracy	+ .05" w.g.
	c.	Output signal	4 - 20 mA
	d.	Actual sensor used will be sized for its application so that it is accurate in the range it will be reading. (e.g. room -0.5- +0.5, fan static pressure 0-5.0", etc.)	

K. WATER DIFFERENTIAL PRESSURE SENSOR (DPS indicated on Control Diagram on plans)

1. Transducer shall have linear output signal. Zero and span shall be field adjustable.
2. Transducer sensing elements shall withstand continuous operating conditions of positive or negative pressure up to 250 psig without damage.
3. Water pressure transducer shall have stainless steel diaphragm construction with elastomer seals. Transducer shall be complete with 4 to 20 mA output, required mounting brackets, and block and bleed valves.

4. Provide NEMA 4 construction differential pressure sensors for all differential pressure sensors and bypass valves. Sensor shall be factory calibrated for operating range and rated for system pressure. Constructed of 316L Stainless steel. Provide manufacturers standard 3 valve manifold. Output shall be 4-20 ma. Sensor shall be Rosemount model 1151 with 3 port manifold Model 0305 or approved equal.

L. DIFFERENTIAL PRESSURE SWITCHES. (PS - As indicated on Control Diagram on plans)
1. Water Differential Pressure Switch
   a. Differential pressure type switches (air or water service) shall be UL listed, SPDT snap-acting, pilot duty rated (125 VA minimum), NEMA 12 enclosure, with scale range and differential suitable for intended application or as shown.
   b. The differential switches shall meet the following requirements:
      1) Range 8 to 70 psi
      2) Differential 3 psi
      3) Maximum differential pressure 200 psi
      4) Maximum pressure 325 psi
2. Air Differential Pressure Switch
   a. Differential pressure switches shall be diaphragm type, with die-cast aluminum housing and adjustable set point. Switch rating shall be a minimum 5 amps at 120 VAC. Switches shall be SPDT and be used for fan status if specified in the point schedule. Switch pressure range shall be suited for application. (e.g. filter 0-2.0", fan status 0-5.0", etc.)
   b. Differential pressure switches used for duct high static pressure shall be the manual reset type to avoid fan cycling in an over pressure situation.

M. BTU Meters (As indicated on Control Diagram on plans)
1. Provide Onicon F-3100 Inline Magmeter Flow Sensor with System 10 BTU Interface including matched temperature sensors. Integration shall be through bacnet. See Mechanical Drawings for location and sizes.
   a. General Water Flow Meter
   b. Operating Range: 0.033 to 33 ft/s
   c. Pipe Size Range: 1 in. to 48 in.
   d. Accuracy: ±0.2% of reading from 1.6 to 33 ft/s, +/- 0.0033 ft/s from 0.033 to 1.6 ft/s
   e. Minimum Conductivity: 5 µS/cm
   f. Class 150 flanges.
   g. Flow tube shall be epoxy coated steel and the sensing electrodes shall be 316 stainless steel.
2. Display/Controller/Temperature Sensors
   a. Provide Onicon System-10 or approved equal.
   b. Shall provide the following points both at the integral LCD and as outputs to the BMS:
      1) Energy Total
      2) Energy Rate
      3) Flow Rate
      4) Supply and Return Temperatures
   c. Provide BacNet interface.
   d. Output shall be either serial network (compliant with the BMS system) or via individual analog and pulse outputs.

e. Temperature sensors shall be loop-powered current based (mA) sensors and shall be bath calibrated and matched (NIST traceable). Sensors shall be matched to an accuracy better than ± 0.15°F
f. Meter shall be provided per section above.
g. Meter shall be re-programmable using the front panel keypad.

3. Max. Temperature/Pressure Rating
   a. Storage Temperature: -4 °F to 158 °F
   b. Relative Humidity: 0 to 95% (non-condensing)
   c. Operating Temperature: Ambient: 14 °F to 158 °F, Media: 32 °F to 185 °F
   d. Maximum Operating Pressure: 150 psi @ 77 °F
4. Standards and Approvals
   a. NEMA 4X / IP65 Enclosure (with cap installed)

N. INDOOR AIR QUALITY (CO2/VOC) SENSORS (As indicated on mechanical floor)

1. Provide indoor air quality sensors to monitor Carbon Dioxide (CO2) and Volatile Organic Compound (VOC) levels.
2. The sensors shall be of microprocessor-based photoacoustic type with heated stannic dioxide semiconductor.
3. The CO2 sensors shall have no more than 1% drift during the first year of operation and minimal drift thereafter so that no calibration will be required.
4. The units shall be wall or duct mounted type as indicated on plans and in the sequence of operation.
5. Wall mounted sensors shall be provided with white plastic cover, without LED indicators.
6. Duct mounted sensors shall be provided with LED indicators in a dust proof plastic housing with transparent cover.
7. The VOC sensor shall have automatic self calibrating capability to ensure accuracy.
8. The sensor shall meet the following requirements:
   a. Operating voltage: 24 VAC +/- 20%
   b. Frequency: 50/60 Hz
   c. Power consumption: max. 6 VA
   d. CO2 measuring range: 0 – 2000 ppm
   e. Tolerance: +/- 100 ppm
   f. Output: 0 – 10 VAC
   g. Calibration: none required
   h. VOC measurement range: 0 – 10 V VOC
   i. Permissible air velocity in duct: <26.2 Ft/s.

O. RELAYS.

1. Control relays shall be UL listed plug-in type with dust cover and LED “energized” indicator. Contact rating, configuration, and coil voltage shall be suitable for application.
2. Time delay relays shall be UL listed solid-state plug-in type with adjustable time delay. Delay shall be adjustable ±200% (minimum) from set point shown on plans. Contact rating, configuration, and coil voltage shall be suitable for application. Provide NEMA 12 enclosure when not installed in local control panel.

P. OVERRIDE TIMERS. (where specified in points list)

1. Override timers shall be spring-wound line voltage, UL Listed, with contact rating and configuration as required by application. Provide 0-to-6-hour calibrated dial unless otherwise specified. Timer shall be suitable for flush mounting on control panel face and located on local control panels or where shown.

Q. CURRENT TRANSMITTERS. (As indicated on Control Diagram on plans)
1. AC current transmitters shall be the self-powered, combination split-core current transformer type with built-in rectifier and high-gain servo amplifier with 4 to 20 mA two-wire output. Unit ranges shall be 10 A, 20 A, 50 A, 100 A, 150 A, and 200 A full scale, with internal zero and span adjustment and ±1% full-scale accuracy at 500 ohm maximum burden.
2. Transmitter shall meet or exceed ANSI/ISA S50.1 requirements and shall be UL/CSA Recognized.
3. Unit shall be split-core type for clamp-on installation on existing wiring.

R. CURRENT TRANSFORMERS. (As indicated on Control Diagram on plans)
1. AC current transformers shall be UL/CSA Recognized and completely encased (except for terminals) in approved plastic material.
2. Transformers shall be available in various current ratios and shall be selected for ±1% accuracy at 5 A full-scale output.
3. Transformers shall be fixed-core or split-core type for installation on new or existing wiring, respectively.

S. POWER MONITORS. (where specified in points list)
1. Power monitors shall be the three-phase type furnished with three-phase disconnect/shorting switch assembly, UL Listed voltage transformers, and UL Listed split-core current transformers.
2. They shall provide a selectable rate pulse output for kWh reading and a 4 to 20 mA output for kW reading. They shall operate with 5 A current inputs with a maximum error of ±2% at 1.0 power factor or ±2.5% at 0.5 power factor.

T. LOCAL CONTROL PANELS.
1. All indoor control cabinets shall be fully enclosed NEMA 12 construction with (hinged door) key-lock latch and removable sub panels. A single key shall be common to all field panels and sub panels.
2. Interconnections between internal and face mounted devices shall be prewired with color-coded stranded conductors neatly installed in plastic troughs and/or tie-wrapped. Terminals for field connections shall be UL listed for 600 volt service, individually identified per control/ interlock drawings, with adequate clearance for field wiring. Control terminations for field connection shall be individually identified per control drawings.
3. Provide ON/OFF power switch with overcurrent protection for control power sources to each local panel.

2.11 COMMUNICATION AND CONTROL WIRING

A. General:
1. Provide copper wiring, plenum cable, and raceways as specified in the Division 26 - Electrical unless otherwise noted.
1. All insulated wire to be copper conductors, UL labeled for 90°C minimum service.

B. Wire Sizing and Insulation
1. Wiring shall comply with minimum wire size and insulation based on services listed below:
a. Service Minimum Gage/Type Insulation Class

b.	AC 24V Power	12 Ga Solid	600 Volt
c.	DC 24V Power	10 Ga Solid	600 Volt
d.	Class 1	14 Ga Stranded	600 Volt
e.	Class 2	18 Ga Stranded	300 Volt
f.	Class 3	18 Ga Stranded	300 Volt

2. Provide plenum-rated cable when open cable is permitted in supply or return air plenum where allowed per execution specifications defined in Paragraph 3.07

C. Control Wiring:
1. Digital Input/Output wiring shall use Class 2 twisted pair, insulated.
2. Analog inputs shall use Class 2 twisted shielded pair, insulated and jacketed and require a grounded shield.
3. Actuators with tri-state control shall use 3 conductor with same characteristics

D. Communication Wiring
1. Ethernet Cable shall be minimum CAT5
2. Secondary level network shall be 24 gage, TSP, low capacitance cable

E. Approved Cable Manufacturers:
1. Wiring from the following manufacturers which meet the above criteria shall be acceptable:
a. Anixter
b. Belden

PART 3 - EXECUTION

3.1 EXAMINATION:

A. The project plans shall be thoroughly examined for control device and equipment locations. Any discrepancies, conflicts, or omissions shall be reported to the architect/engineer for resolution before rough-in work is started.

B. The contractor shall inspect the site to verify that equipment may be installed as shown. Any discrepancies, conflicts, or omissions shall be reported to the engineer for resolution before rough-in work is started..

3.2 PROTECTION:

A. The contractor shall protect all work and material from damage by its employees and/or subcontractors and shall be liable for all damage thus caused.

B. The contractor shall be responsible for its work and equipment until finally inspected, tested, and accepted.

3.3 COORDINATION:

A. Site

1. The project coordination between trades is the responsibility of the prime contractor who is the one tier higher contractual partner such as mechanical contractor, general contractor, construction manager, owner or owner's representative as applicable.
2. The controls contractor shall follow prime contractor's job schedule and coordinate all project related activities through the prime contactor except otherwise agreed or in minor job site issues. Reasonable judgment shall be applied.
3. Where the work will be installed in close proximity to, or will interfere with, work of other trades, the contractor shall assist in working out space conditions to make a satisfactory adjustment.
4. If the contractor deviates form the job schedule and installs work without coordinating with other trades, so as to cause interference with work of other trades, the contractor shall make the necessary changes to correct the condition without extra charge.
5. Coordinate and schedule work with all other work in the same area, or with work that is dependent upon other work, to facilitate mutual progress.

B. Submittals.
1. Refer to the "Submittals" article in Part 1 of this specification for requirements.

C. Test and Balance
1. The contractor shall furnish a single set of all tools necessary to interface to the control system for test and balance purposes.

D. Life Safety
1. Duct smoke detectors required for air handler shutdown are supplied under Section 28 31 00 – Fire Detection and Alarm . That contractor shall interlock smoke detectors to air handlers for shutdown as described in Part 3, "Sequences of Operation." That contractor will also provide auxiliary contacts for when necessary to monitor fire alarm status.
2. Fire/smoke dampers and actuators required for fire rated walls are provided under Division 23 – Heating, Ventilating and Air Conditioning. For control and interlock of these dampers refer to Section 28 31 00 – Fire Detection and Alarm.

E. Coordination with controls specified in other sections or divisions.
1. Other sections and/or divisions of this specification include controls and control devices that are to be part of or interfaced to the control system specified in this section. These controls shall be integrated into the system and coordinated by the contractor as follows:
    a. All communication media and equipment shall be provided as specified in Part 2, "Communication" of this specification.
    b. Each supplier of controls product is responsible for the configuration, programming, startup, and testing of that product to meet the sequences of operation described in this section. This contractor will monitor and adjust their parameters only through the system specified here.
    c. The Contractor shall coordinate and identify any incompatibility issues that arise between the control products provided under this section and those provided under other sections or divisions of this specification.
    d. Each supplier of controls product is responsible for providing software database for properly configuring the communications to that system 8 weeks prior to scheduled start-up. Contractor will notify all appropriate parallel contractors of this need.
    e. The contractor is responsible for the interface of control products provided by multiple suppliers when the supplier has a BacNet or another acceptable open

protocol device. Systems to be integrated will be shown on the drawings, points list, control details or sequence of operation.

3.4 GENERAL WORKMANSHIP:

A. Install equipment, piping, and wiring/raceway parallel to building lines (i.e., horizontal, vertical, and parallel to walls) wherever possible.

B. Provide sufficient slack and flexible connections to allow for vibration of piping and equipment.

C. Install all equipment in readily accessible locations as defined by Chapter 1, Article 100, Part A of the National Electrical Code (NEC).

D. Verify integrity of all wiring to ensure continuity and freedom from shorts and grounds.

E. All equipment, installation, and wiring shall comply with acceptable industry specifications and standards for performance, reliability, and compatibility and be executed in strict adherence to local codes and standard practices.

3.5 FIELD QUALITY CONTROL:

A. Contractor shall have a quality manager on staff to inspect the project execution and to enforce quality standards.

B. All work, materials, and equipment shall comply with the rules and regulations of applicable local, state, and federal codes and ordinances as identified in Part 1 of this specification.

C. Contractor shall continually monitor the field installation for code compliance and quality of workmanship.

D. Contractor shall have work inspected by local and/or state authorities having jurisdiction over the work.

3.6 WIRING:

A. All control and interlock wiring shall comply with national and local electrical codes and Division 26 – Electrical of this specification. Where the requirements of this section differ from those in Division 26 – Electrical, the requirements of this section shall take precedence.

B. All NEC Class 1 (line voltage) wiring shall be UL Listed in approved conduit according to NEC and Division 26 – Electrical requirements.

C. All low-voltage wiring shall meet NEC Class 2 requirements. (Low-voltage power circuits shall be sub fused when required to meet Class 2 current limit.)

D. Where NEC Class 2 (current-limited) wires are in concealed and accessible locations, including ceiling return air plenums, approved cables not in conduit may be used provided that cables are UL Listed for the intended application. For example, cables used in ceiling plenums shall be UL Listed specifically for that purpose.

E. All wiring in mechanical, electrical, or service rooms—or where subject to mechanical damage— shall be installed in EMT conduit.

F. Do not install Class 2 wiring in conduit containing Class 1 wiring. Boxes and panels containing high voltage wiring and equipment may not be used for low-voltage wiring except for the purpose of interfacing the two (e.g., relays and transformers).

G. Where plenum rated cable is run exposed, wiring is to be run parallel along a surface or perpendicular to it and neatly tied at 3 m (10 ft) intervals.

H. Where plenum rated cable is used without conduit, it shall be supported from or anchored to structural members. Cables can be supported by or anchored to ductwork or ceiling suspension systems. Cables can not be supported by conduit or sprinkler piping.

I. All wire-to-device connections shall be made at a terminal block or wire nut. All wire-to-wire connections shall be at a terminal strip or wire nut.

J. All wiring within enclosures shall be neatly bundled and anchored to permit access and prevent restriction to devices and terminals.

K. Maximum allowable voltage for control wiring shall be 120 V. If only higher voltages are available, the contractor shall provide step-down transformers or interposing relays.

L. All plenum rated wiring shall be installed as continuous lengths, with no splices permitted between termination points

M. All wiring in conduit shall be installed as continuous lengths, with no splices permitted between termination points or junction boxes.

N. Maintain fire rating at all penetrations. Install plenum wiring in sleeves where it passes through walls and floors.

O. Size and type of conduit and size and type of wire shall be the responsibility of the contractor, in keeping with the manufacturer's recommendations and NEC requirements, except as noted elsewhere.

P. Include one pull string in each conduit ¾ in. or larger.

Q. Control and status relays are to be located in designated enclosures only. These enclosures can include packaged equipment control panel enclosures unless they also contain Class 1 starters.

R. Conceal all conduit, except within mechanical, electrical, or service rooms. Install conduit to maintain a minimum clearance of 15 cm (6 in.) from high-temperature equipment (e.g., steam pipes or flues).

S. Secure conduit with conduit clamps fastened to the structure and spaced according to code requirements. Conduit and pull boxes may not be hung on flexible duct strap or tie rods. Conduits may not be run on or attached to ductwork.

T. Adhere to this specification's Division 26 – Electrical requirements where conduit crosses building expansion joints.

U. The Contractor shall terminate all control and/or interlock wiring and shall maintain updated (as-built) wiring diagrams with terminations identified at the job site.

V. Flexible metal conduits and liquid-tight, flexible metal conduits shall not exceed 1 m (3 ft) in length and shall be supported at each end.. In areas exposed to moisture, including chiller and boiler rooms, liquid-tight, flexible metal conduits shall be used.

W. Conduit must be adequately supported, properly reamed at both ends, and left clean and free of obstructions. Conduit sections shall be joined with couplings (according to code). Terminations must be made with fittings at boxes, and ends not terminating in boxes shall have bushings installed.

3.7 COMMUNICATION WIRING:

A. The contractor shall adhere to the items listed in the "Wiring" article in Part 3 of the specification.

B. All cabling shall be installed in a neat and workmanlike manner. Follow manufacturer's installation recommendations for all communication cabling.

C. Do not install communication wiring in raceway or junction boxes containing Class 1 or other Class 2 wiring from another trade such as fire alarm or security.

D. Maximum pulling, tension, and bend radius for cable installation, as specified by the cable manufacturer, shall not be exceeded during installation.

E. Contractor shall verify the integrity of the entire network following the cable installation. Use appropriate test measures for each particular cable.

F. All runs of communication wiring shall be unspliced length when that length is commercially available.

G. All communication wiring shall be labeled to indicate origination and destination data.

H. Grounding of coaxial cable shall be in accordance with NEC regulations article on "Communications Circuits, Cable, and Protector Grounding."

3.8 INSTALLATION OF SENSORS:

A. General:
   1. Install sensors in accordance with the manufacturer's recommendations.
   2. Mount sensors rigidly and adequately for the environment within which the sensor operates.
   3. Room temperature sensors shall be installed on concealed junction boxes properly supported by the wall framing.
   4. All wires attached to sensors shall be air sealed in their raceways or in the wall to stop air transmitted from other areas affecting sensor readings.
   5. Sensors used in mixing plenums shall be of the averaging type.

6. Low-limit sensors when specifically called out for use in mixing plenums shall be installed in a serpentine manner horizontally across the full face of the coil.
7. All pipe-mounted temperature sensors shall be installed in wells. Install all liquid temperature sensors with heat-conducting fluid in thermal wells.
8. Install outdoor air temperature sensors on north wall, complete with sun shield at designated location.

B. Room Instrument Mounting.(where specified)
1. Room instruments, including but not limited to wall mounted thermostats and sensors located in occupied spaces shall be mounted at the same height as the light switches to provide a uniform look. Drawing notes take precedence to this height requirement.

C. Temperature Limit Switch.(where specified)
1. A temperature limit switch (Low Temperature Detector) shall be provided to sense the temperature.
2. A sufficient number of temperature limit switches shall be installed to provide complete coverage of the duct section.
3. Manual reset limit switches shall be installed in approved, accessible locations where they can be reset easily.
4. The temperature limit switch sensing element shall be installed in a serpentine pattern and in accordance with the manufacturer's installation instructions.
5. Each bend shall be supported with a capillary clip. Provide 3 m of sensing element for each 1 m^2 (1 ft of sensing element for each 1 ft^2) of coil area.

D. Averaging Temperature Sensing Elements.(where specified)
1. Sensing elements shall be installed in a serpentine pattern.
2. Averaging sensors shall be installed in a serpentine manner vertically across the duct. Each bend shall be supported with a capillary clip.

E. Outside Air Flow Measuring Stations (AFMS) .(where specified)
1. Outside Air AFMS's shall be located downstream from the Outside Air filters.
2. Pitot Tube type AFMS shall not be used if the expected velocity measurement is below 3.5 m/s (700 fpm) [or for outside airflow measurements].

F. Differential air static pressure. (where specified in point list)
1. Supply Duct Static Pressure: Pipe the high-pressure tap to the duct using a pitot tube. Pipe the low-pressure port to a ceiling tile in a common hallway.
2. Return Duct Static Pressure: Pipe the high-pressure tap to the duct using a pitot tube. Pipe the low-pressure port to a ceiling tile in a common hallway.
3. Building Static Pressure: Pipe the low-pressure port of the pressure sensor to the static pressure port located on the outside of the building through a high-volume accumulator. Pipe the high-pressure port to a ceiling tile in a common hallway.

G. Water Differential pressure sensors. (where specified in point list)
1. Differential pressure sensors shall be installed with valved taps into the piping to ensure serviceability without draining the system
2. Sensors shall be mounted with bleed valves
3. After sensor installation any air shall be eliminated using the bleed valves to ensure reading accuracy
4. The sensors shall be located to ensure accessibility

H. Relative Humidity Sensors .(where specified)
   1. Relative humidity sensors in supply air ducts shall be installed at least 3m (10 feet) downstream of humidity injection elements.

I. Flow Switch .(where specified)
   1. Use manufacturers designated paddle for pipe diameter.
   2. Adjust flow switch in accordance with manufacturer's instructions.
   3. This contractor only responsible for identifying the location of the switch. Piping contractor installs the switch on the pipe.

3.9 WIRELESS TRANSCEIVER INSTALLATION. (WHERE SPECIFIED):

A. Mount transceivers in a grid like pattern not exceeding more than 25 – 100 feet line of sight between devices. Location of each transceiver shall be optimally chosen to get the best line of sight between it and at least two of its neighbors.

B. Transceivers may be mounted in the plenum space. Transceivers mounted in a metal enclosure shall utilize a remote mount antenna attached outside the metal enclosure to maintain adequate signal strength.

C. All transceiver antennas must be oriented in the vertical plane for proper RF communication.

D. Once installed ensure good communication is taking place between each device and at least two of its neighbors. Install extra transceivers if necessary to act as routers\repeaters for isolated devices with poor communication to the network.

E. Contractor shall provide a report to the owner or owner's representative illustrating good communication between all devices on the wireless network.

3.10 ACTUATORS:

A. Mount and link control damper actuators according to manufacturer's instructions.
   1. To compress seals when spring-return actuators are used on normally closed dampers, power actuator to approximately 5° open position, manually close the damper, and then tighten the linkage.
   2. Check operation of damper/actuator combination to confirm that actuator modulates damper smoothly throughout stroke to both open and closed positions.
   3. Damper manufacturer shall provide all mounting hardware and linkages for actuator installation.

B. Electric/Electronic
   1. Dampers: Actuators shall be direct-mounted on damper shaft or jackshaft unless shown as a linkage installation. For low-leakage dampers with seals, the actuator shall be mounted with a minimum 5° available for tightening the damper seals. Actuators shall be mounted following manufacturer's recommendations.
   2. Valves: Actuators shall be connected to valves with adapters approved by the actuator manufacturer. Actuators and adapters shall be mounted following the actuator manufacturer's recommendations.

3.11 WARNING LABELS AND IDENTIFICATION TAGS

A. Equipment and Device labeling:
   1. Labels and tags shall be keyed to the unique identifiers shown on the As-Built drawings.
   2. All Enclosures and DDC Hardware shall be labeled.
   3. Airflow measurement arrays shall be tagged to show flow rate range for signal output range, duct size, and pitot tube AFMS flow coefficient.
   4. Labels exterior to protective enclosures shall be engraved plastic and mechanically attached to the DDC panels.
   5. Labels inside protective enclosures may be attached using adhesive, but shall not be hand written.
   6. Identify all other control components with p-touch labels. All plug-in components shall be labeled such that removal of the component does not remove the label.
   7. Identify room sensors relating to terminal box or valves in permanent ink inside the door of the sensor.
   8. Manufacturers' nameplates and UL or CSA labels are to be visible and legible after equipment is installed.

B. Identification of Tubing and Wiring
   1. All wiring and cabling including that within factory-fabricated panels shall be labeled at each end within 5 cm (2 in.) of termination with the DDC address or termination number.
   2. Permanently label or code each point of field terminal strips to show the instrument or item served.

3.12 IDENTIFICATION OF HARDWARE AND WIRING:

A. All wiring and cabling, including that within factory-fabricated panels shall be labeled at each end within 5 cm (2 in.) of termination with the DDC address or termination number.

B. Permanently label or code each point of field terminal strips to show the instrument or item served.

C. Identify control panels with minimum 1 cm (½ in.) letters on laminated plastic nameplates.

D. Identify room sensors relating to terminal box or valves with permanent ink inside the door of the sensor.

E. Manufacturers' nameplates and UL or CSA labels are to be visible and legible after equipment is installed.

F. Identifiers shall match record documents.

3.13 PROGRAMMING:

A. Provide sufficient internal memory for the specified sequences of operation and trend logging. There shall be a minimum of 25% of available memory free within the primary controller for future use.

B. Programming files shall be stored at each JACE Global Controller, as well as the Niagara N4 Supervisor. In the event of power or communications loss with main server, JACE Global Controllers and Field Controllers shall continue to operate based on the last known system status and operations shall be based on the programming residing on the Global Controllers. Once power/communication is restored, Global Controllers shall send all updates to the server including historical data and alarm data to the Supervisor and shall resume normal operations. A copy of the program files shall be saved in a folder under the Supervisor file directory.

C. Point Naming: System point names shall be modular in design, allowing easy operator interface without the use of a written point index. Refer to Submittals section in the General Section. The contractor shall use the point naming protocol already established by the District and programmed under the existing system. The BAS contractor shall coordinate the point naming with the District prior to any programming being written.

D. Software Programming
   1. Provide programming for the system and adhere to the sequences of operation provided. The contractor also shall provide all other system programming necessary for the operation of the system, but not specified in this document. Imbed into the control program sufficient comment statements to clearly describe each section of the program. The comment statements shall reflect the language used in the sequences of operation and be of different font and color in text editor. Use the appropriate technique based on one of the following programming types:
      a. Text-based:
         1) Must provide actions for all possible situations
         2) Must be modular and structured
         3) Must be commented
         4) Must provide line by line programming and compilation wizard to allow for ease of editing.

E. Operator Interface
   1. Standard graphics—Provide graphics for all mechanical systems and floor plans of the building (architect is responsible for providing floor plans of job to the contractor). This includes each chilled water system, hot water system, chiller, boiler, air handler, and all terminal equipment. To ensure system uniformity, all graphics shall utilize the existing RSCCD Tridium Niagara graphics library of standard HVAC equipment graphics. Graphics not currently included in the RSCCD Tridium Niagara graphics library shall be coordinated with the District Representative. Point information on the graphic displays shall dynamically update. Show on each graphic all input and output points for the system. Also show relevant calculated points such as set points. The graphics shall also include lighting circuits that are to be integrated into the BAS.
   2. Show terminal equipment information on a “graphic” summary table. Provide dynamic information for each point shown.
   3. The contractor shall provide all the labor necessary to install, initialize, start up, and troubleshoot all operator interface software and its functions as described in this section. This includes any operating system software, the operator interface database, and any third-party software installation and integration required for successful operation of the operator interface.
   4. Contractor shall provide necessary programming to create all reports referred to in Part 2 Operator Interface Software

3.14 CONTROL SYSTEM COMMISSIONING

A. Perform a two-phase commissioning procedure consisting of field I/O calibration and commissioning, system commissioning and integrated system program commissioning. Document all commissioning information on commissioning data sheets that shall be submitted prior to acceptance testing. Commissioning work that requires shutdown of system or deviation from normal function shall be performed when the operation of the system is not required. The commissioning must be coordinated with the owner and construction manager to ensure systems are available when needed. Notify the operating personal in writing of the testing schedule so that authorized personnel from the owner and construction manager are present throughout the commissioning procedure.

B. Phase I – Field I/O Calibration and Commissioning
   1. Verify that each control panel has been installed according to plans, specifications and approved shop drawings. Calibrate, test, and have signed off each control sensor and device. Contractor will fill out daily reports with the general contractor when this work is being done so that the general contractor can notify the owner if they want to review this work. Contractor will provide a detailed commissioning report showing that this work was done. Commissioning to include, but not be limited to:
      a. Sensor accuracy at 10, 50 and 90% of range. This will be done at the factory prior to field installation. Certificate will be provided to owner during commissioning process.
      b. Sensor range.
      c. Verify analog limit and binary alarm reporting.
      d. Point value reporting.
      e. Binary alarm and switch settings.
      f. Actuator and positioned spring ranges if pneumatic actuation is utilized.
      g. Fail safe operation on loss of control signal, pneumatic air, electric power, network communications, etc.

C. Phase II – System Commissioning
   1. Each BMS program shall be put on line and commissioned. The contractor shall, in the presence of the owner, his engineer or their designated representative, demonstrate each programmed sequence of operation and compare the results in writing. In addition, each control loop shall be tested to verify proper response and stable control, within specified accuracy. System program test results shall be recorded on commissioning data sheets and submitted for record. Any discrepancies between the specification and the actual performance will be immediately rectified and re-tested.
   2. The demonstration process shall follow that approved in Phase 1. The approved checklists and forms shall be completed for all systems as part of the demonstration.
   3. The contractor shall provide at least one person equipped with two-way communication and shall demonstrate actual field operation of each control process for all modes of operation including day, night, occupied, unoccupied, fire/smoke alarm, seasonal changeover, and power failure modes. The purpose is to demonstrate the response, and action of every point and system while under control. Any test equipment required to prove the proper operation shall be provided by and operated by the contractor.
   4. Demonstrate compliance with sequences of operation through all modes of operation.
   5. Demonstrate complete operation of operator interface.
   6. Additionally, the following items shall be demonstrated:
      a. DDC loop response. The contractor shall supply trend data output in a graphical form showing the step response of each DDC loop. The test shall show the

loop's response to a change in set point, which represents a change of actuator position of at least 25% of its full range. The sampling rate of the trend shall be from 10 seconds to 3 minutes, depending on the speed of the loop. The trend data shall show for each sample the set point, actuator position, and controlled variable values. Any loop that yields unreasonably under-damped or over-damped control shall require further tuning by the Contractor.

b. Demand limiting (if specified in sequence). The contractor shall supply a trend data output showing the action of the demand-limiting algorithm. The data shall document the action on a minute-by-minute basis over at least a 30-minute period. Included in the trend shall be building Kw, demand limiting set point, and the status of sheddable equipment outputs.

c. Optimum start/stop(if specified in sequence). The contractor shall supply a trend data output showing the capability of the algorithm. The change-of value or change-of-state trends shall include the output status of all optimally started and stopped equipment, as well as temperature sensor inputs of affected areas.

d. Operational logs for each system that indicate all set points, operating points, valve positions, mode, and equipment status shall be submitted to the architect/engineer. These logs shall cover three 48-hour periods and have a sample frequency of not more than 10 minutes. The logs shall be provided in both printed and electronic formats.

7. Any tests that fail to demonstrate the operation of the system shall be repeated at a later date. The contractor shall be responsible for any necessary repairs or revisions to the hardware or software to successfully complete all tests.

D. Acceptance

1. All tests described in this specification shall have been performed to the satisfaction of both the Engineer and owner prior to the acceptance of the control system as meeting the requirements of completion. Any tests that cannot be performed due to circumstances beyond the control of the contractor may be exempt from the completion requirements if stated as such in writing by the Engineer. Such tests shall then be performed as part of the warranty.
2. The system shall not be accepted until all forms and checklists completed as part of the demonstration are submitted and approved for both phase I and phase II

3.15 CLEANING

A. The contractor shall clean up all debris resulting from their activities daily. The contractor shall remove all cartons, containers, crates, etc., under his/her control as soon as their contents have been removed. Waste shall be collected and placed in a designated location.

B. At the completion of work in any area, the contractor shall clean all work, equipment, etc., keeping it free from dust, dirt, and debris, etc.

C. At the completion of work, all equipment furnished under this section shall be checked for paint damage, and any factory-finished paint that has been damaged shall be repaired to match the adjacent areas. Any cabinet or enclosure that has been deformed shall be replaced with new material and repainted to match the adjacent areas.

3.16 TRAINING

A. The Contractor shall provide competent instructors to give full instruction to designated personnel in the adjustment, operation and maintenance of the system installed. Factory employed/certified instructors shall be thoroughly familiar with all aspects of the subject matter they are to teach. All training shall be held during normal work hours of 8:00 a.m. to 4:30 p.m. weekdays. All sessions will be scheduled three weeks in advance. If no one shows up after one hour from the start time, that session will be forfeited.

B. Provide a minimum of four (4) on-site, on-line, or classroom training sessions throughout the contract period for personnel designated by the owner. Each session shall be a minimum of four (4) hours each.

C. Provide one additional training/follow-up session at 6 – 8 months, or after seasonal commissioning, following building's turnover. This session shall be four hours long and must be coordinated with the building owner to review operation and any seasonal adjustments.

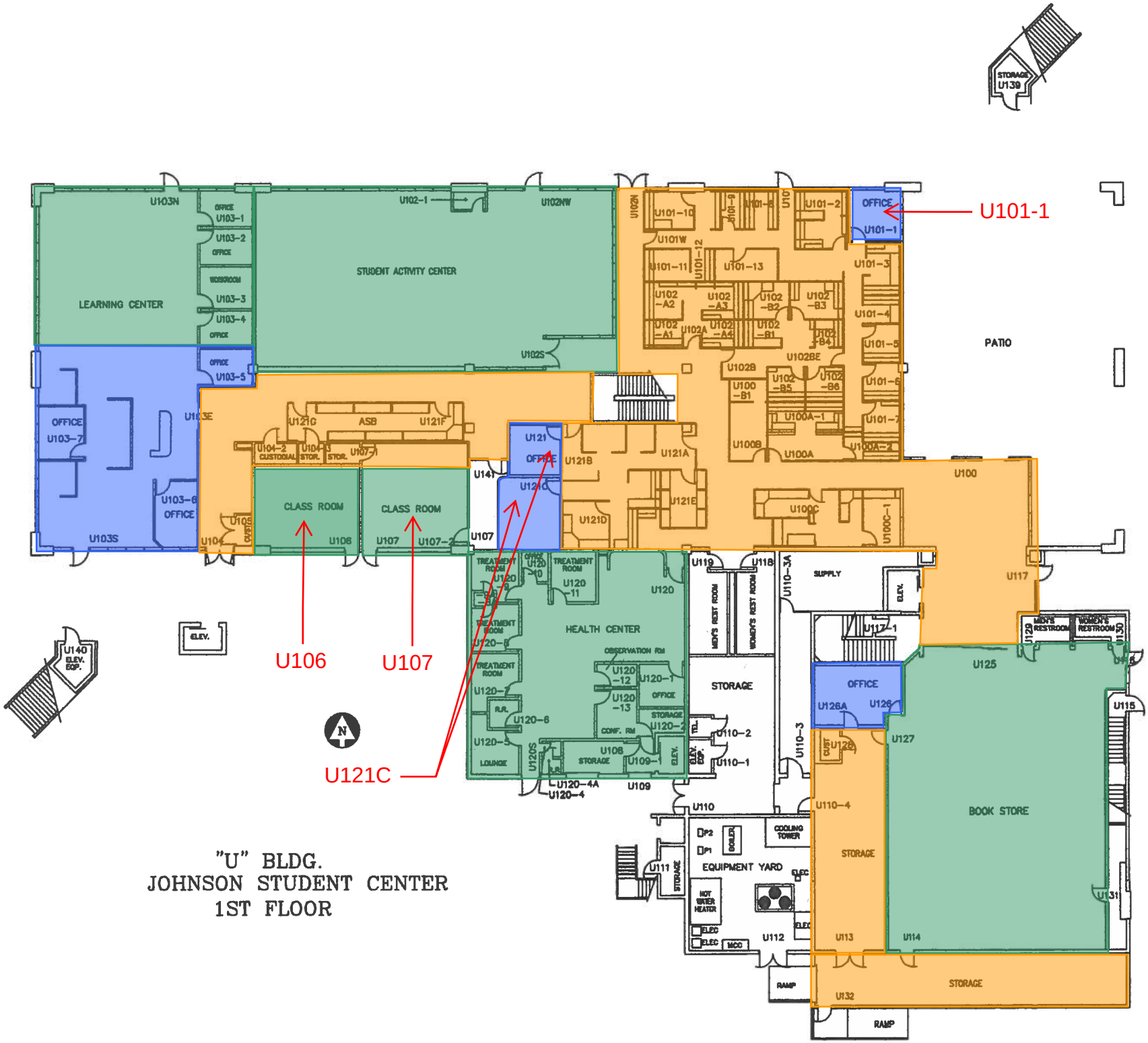
D. The instructor(s) shall be factory-trained instructors experienced in presenting this material.

E. Training shall be digitally recorded.

3.17 SEQUENCES OF OPERATION

A. See Campus Standards Section 23 09 93

END OF SECTION 230900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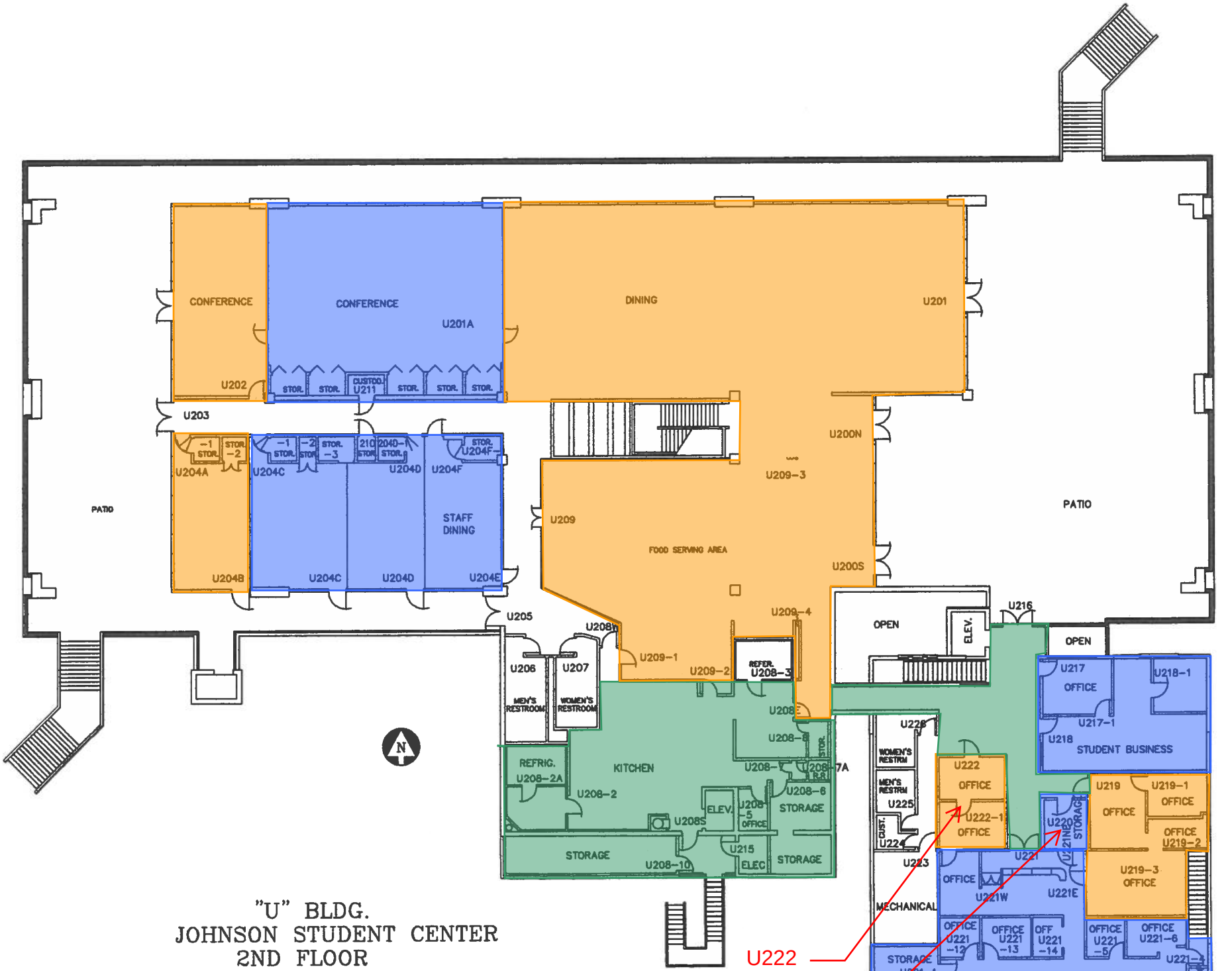

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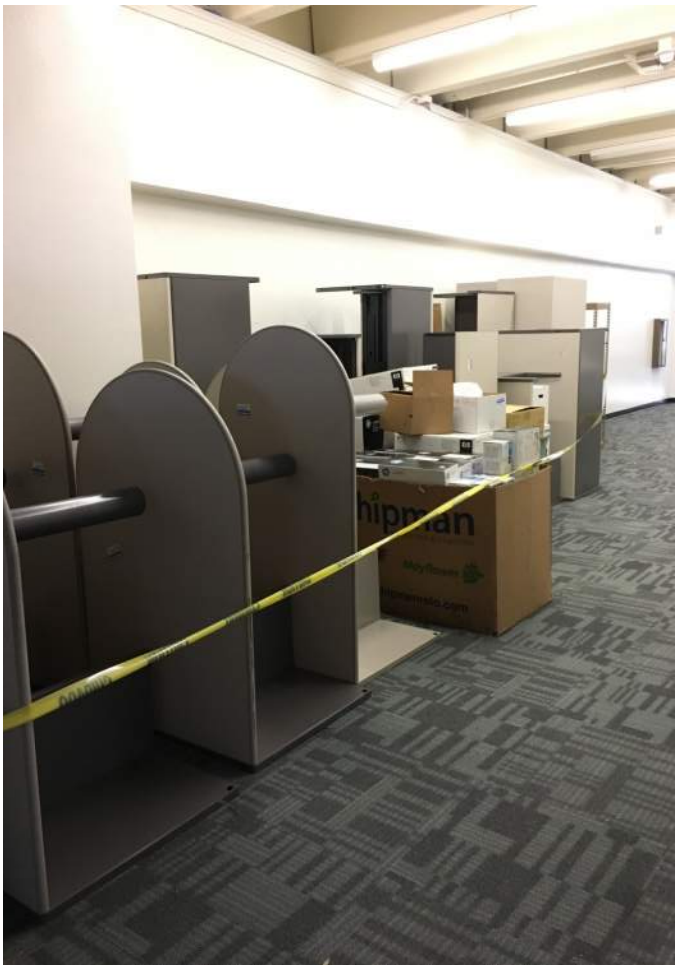
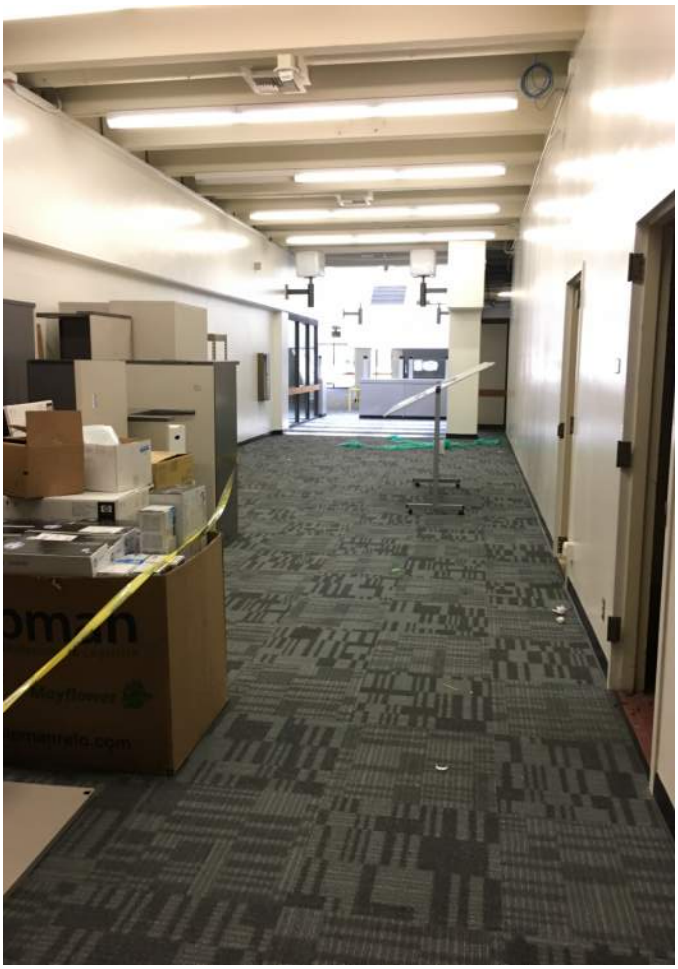
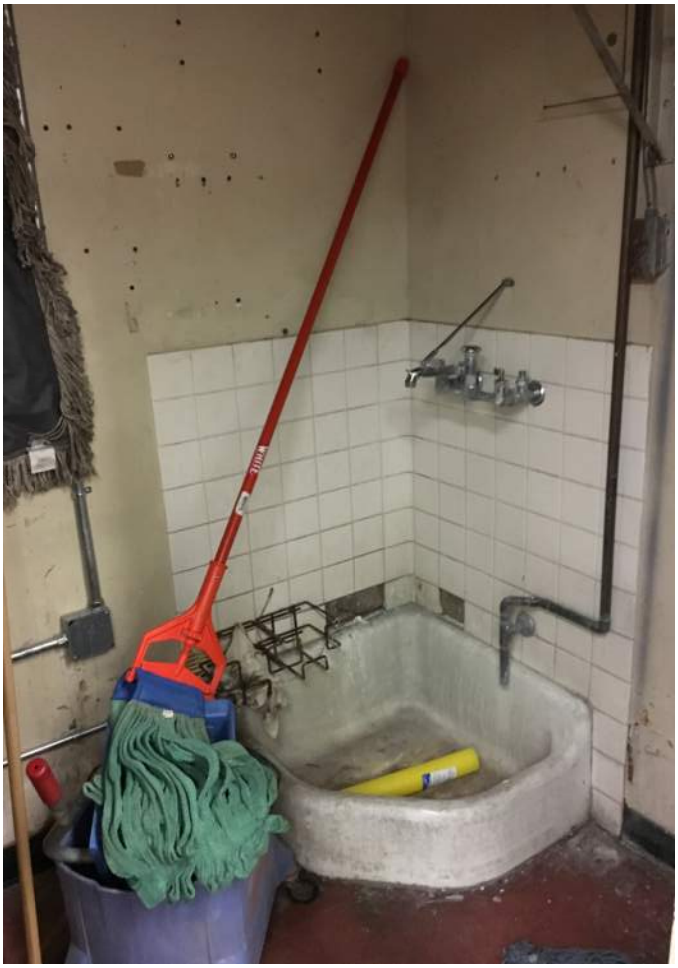
FIRST FLOOR HALL page 1 of 5





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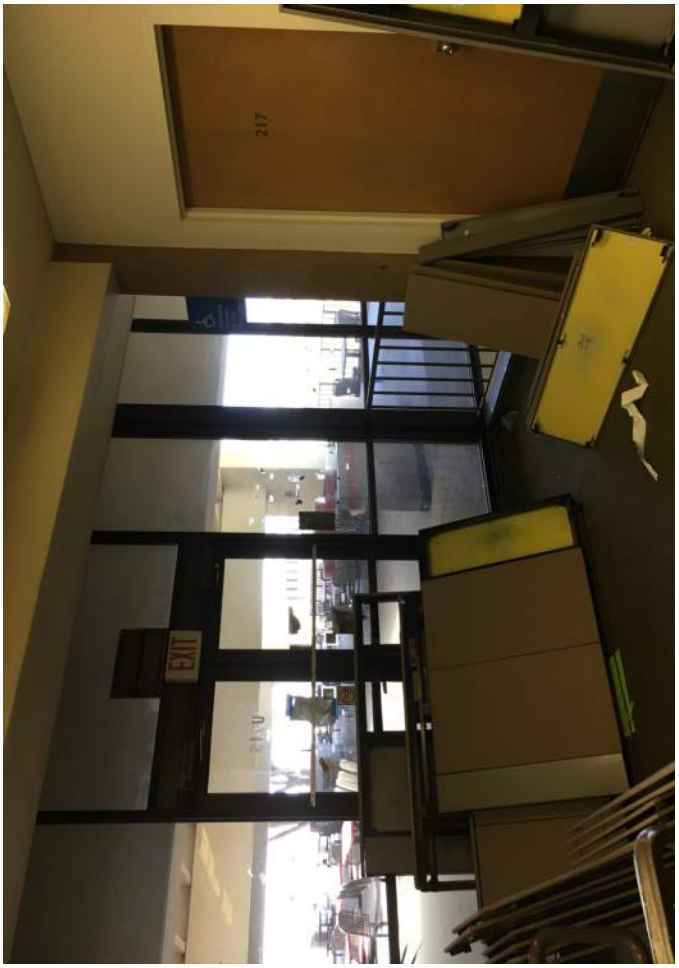


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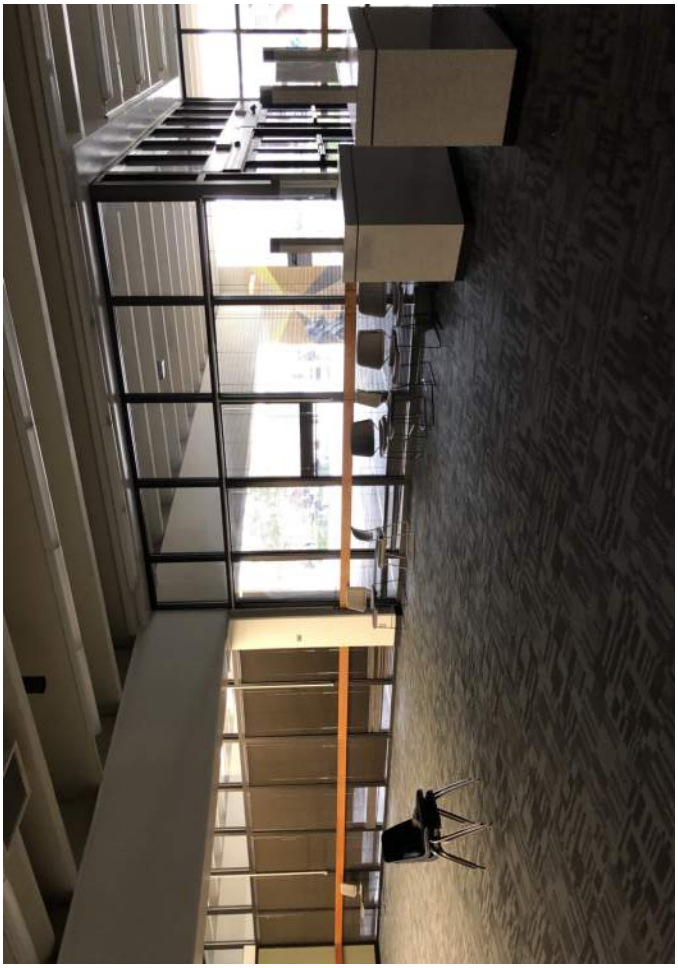


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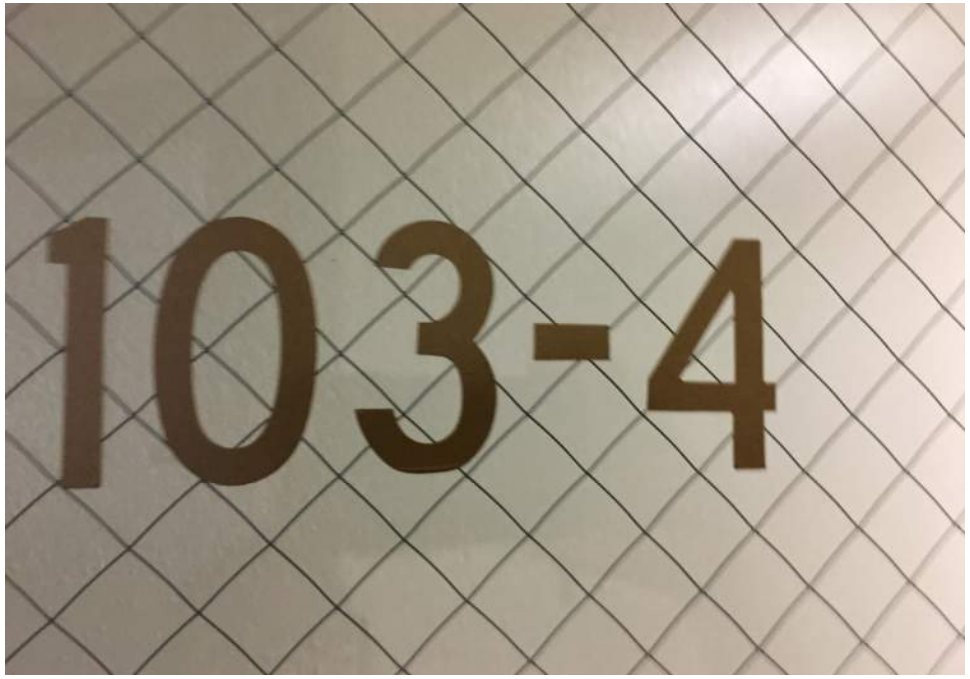
EliteDisplay E232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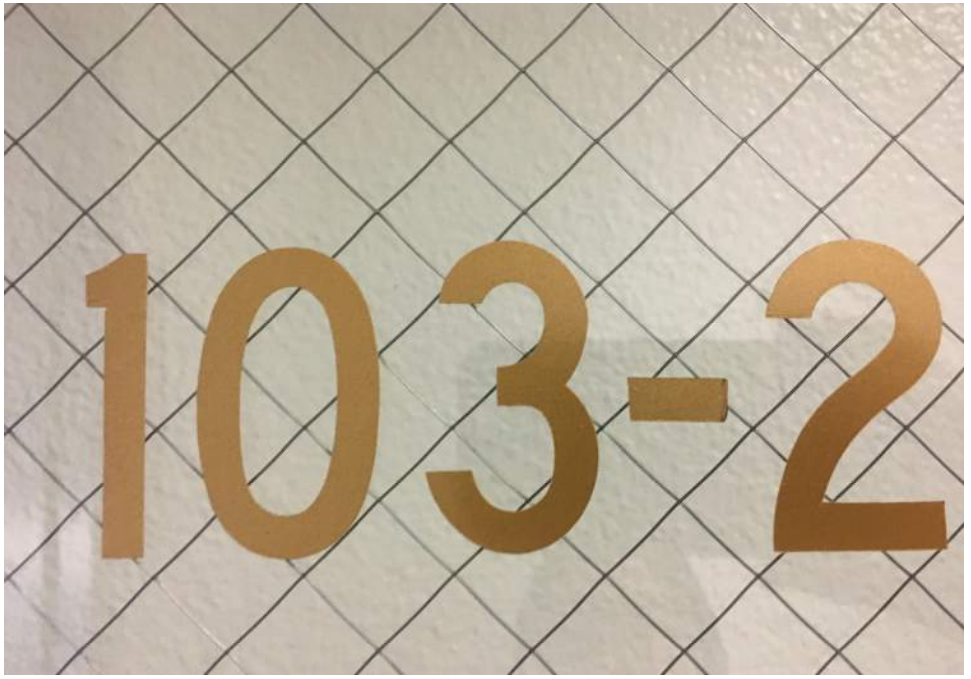
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CAUTION
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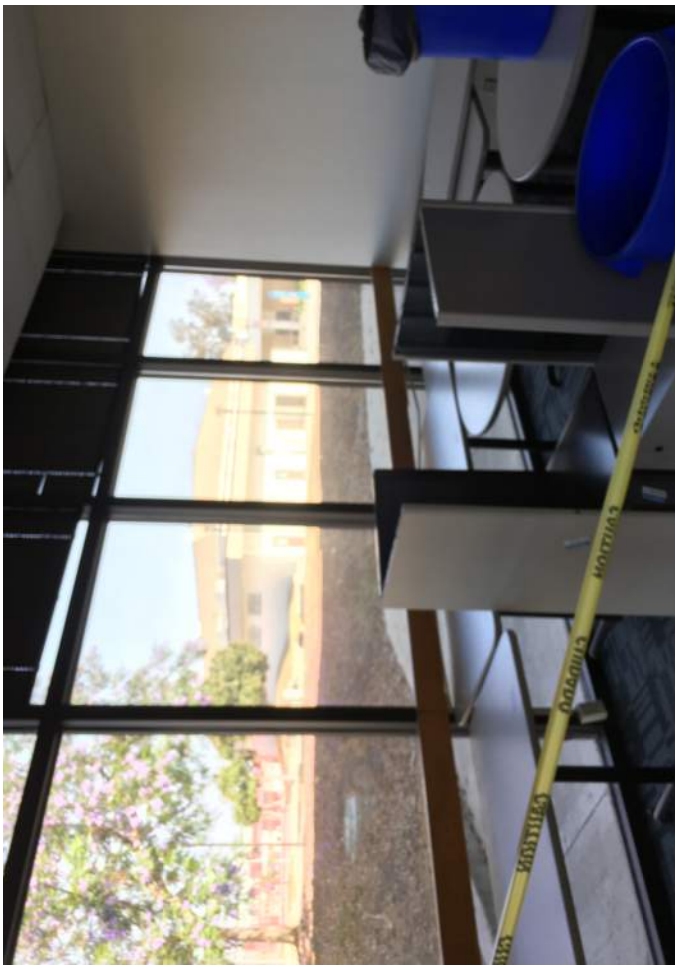

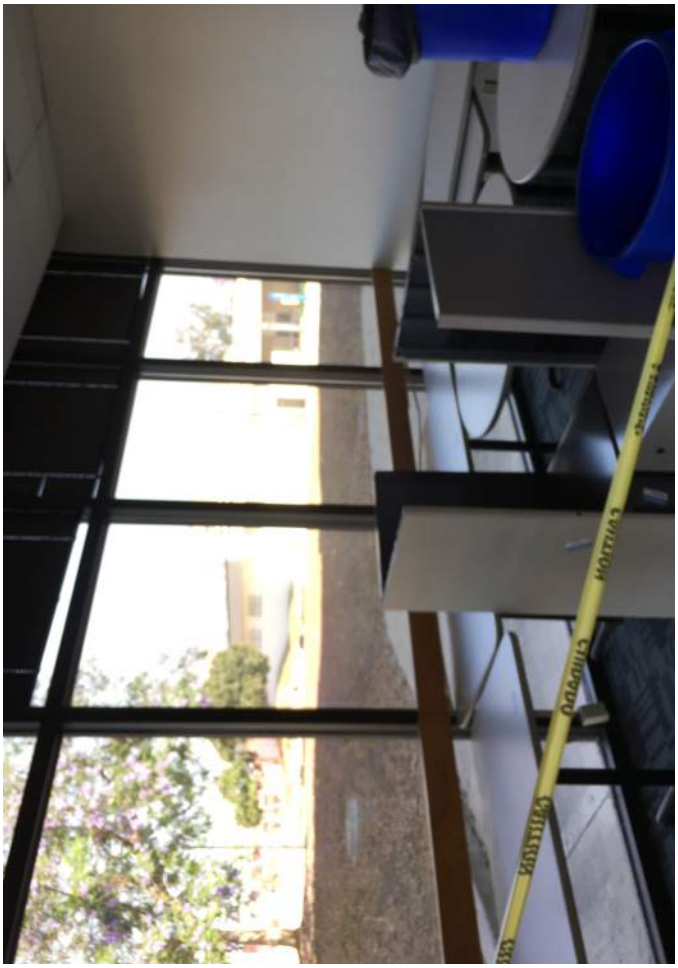


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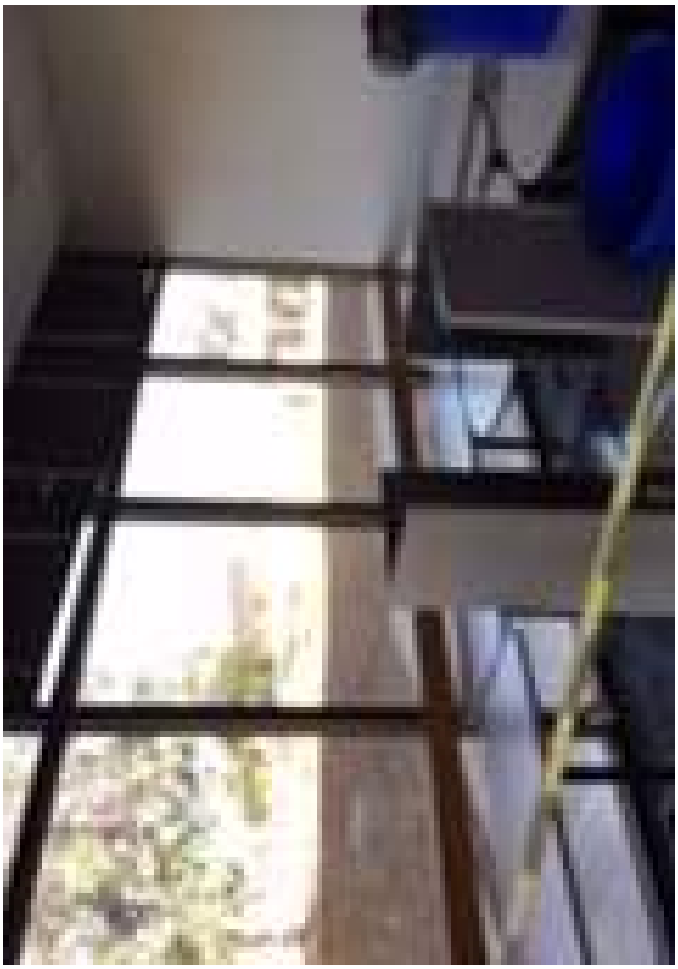


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CAUTION
CAUTION


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Chairman


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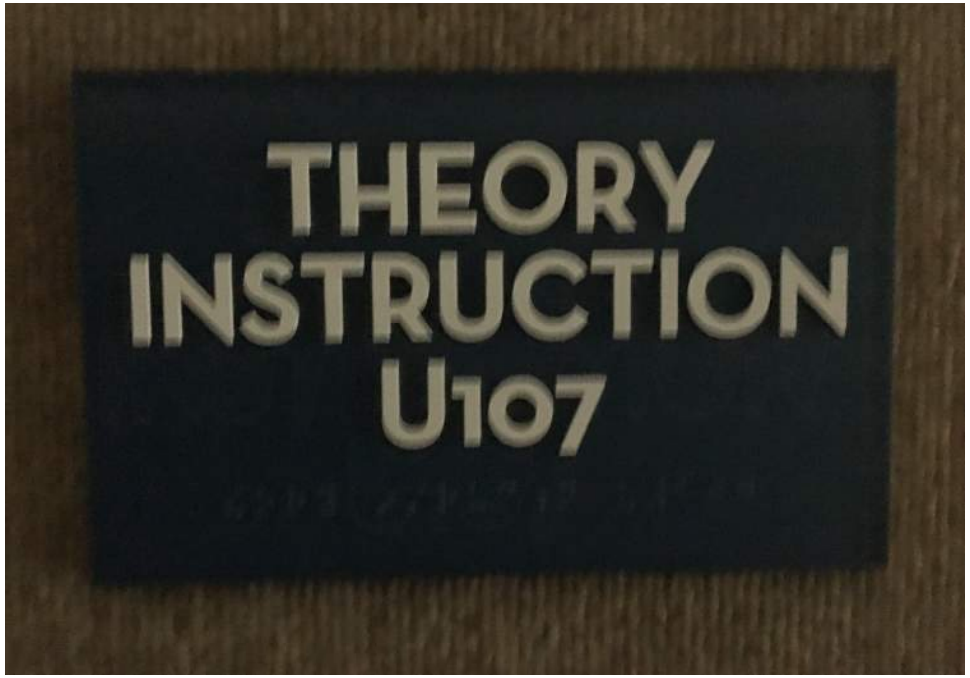
THEORY
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STOP
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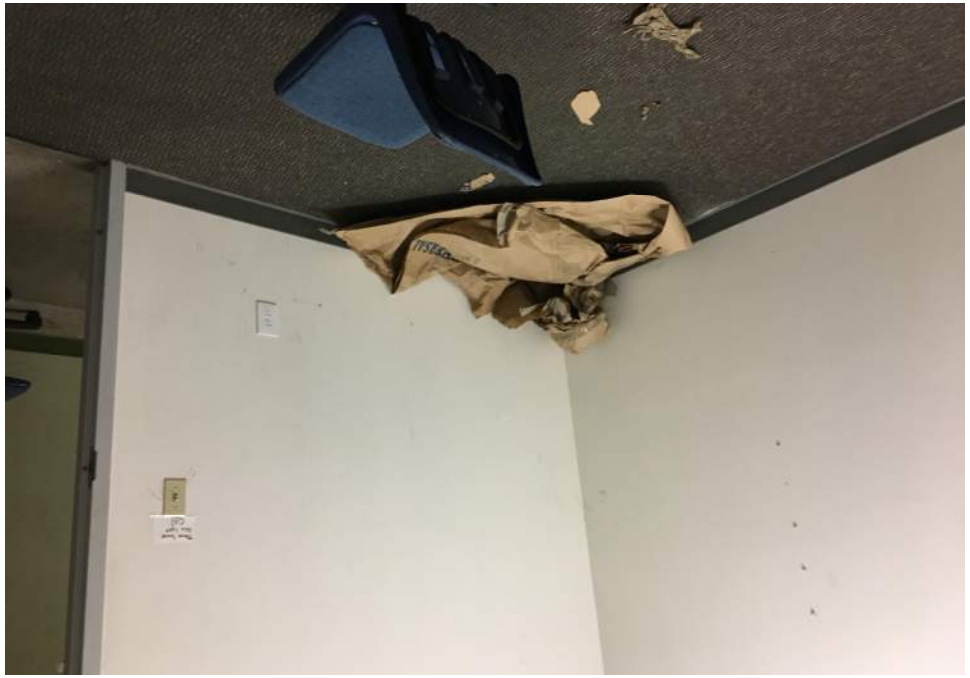

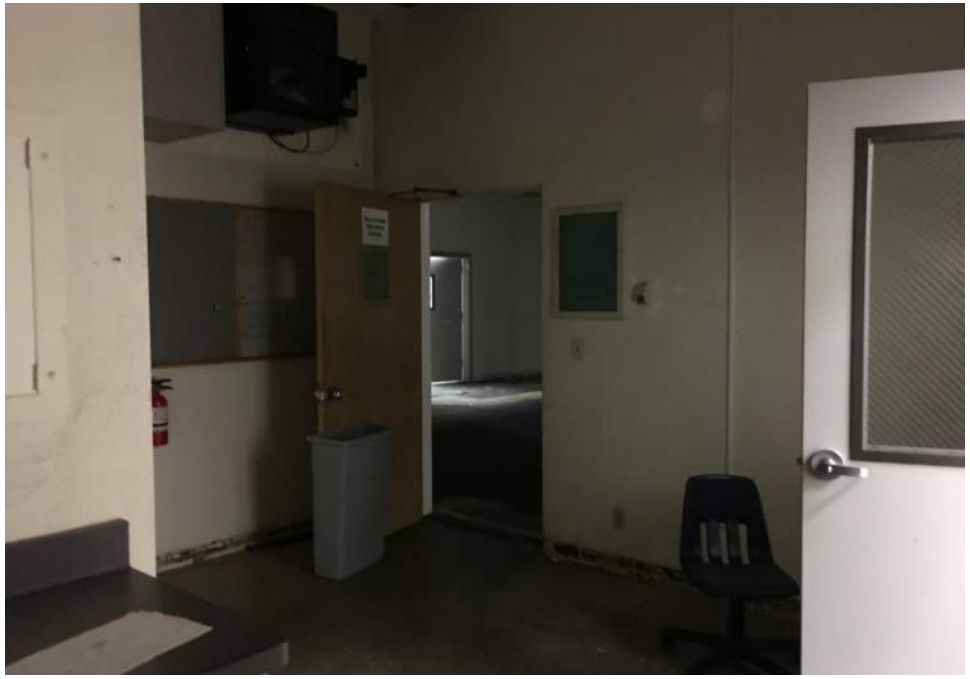


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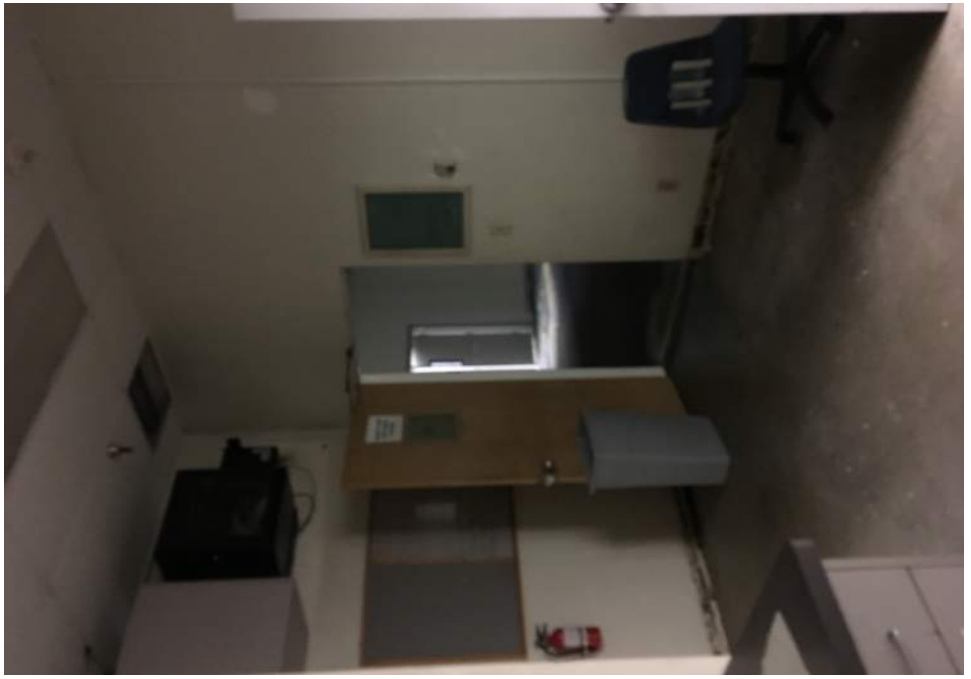

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STUDENTS
When
Shopping for
textbooks
Please leave
your backpacks
in the cubbies

TOSHIBA


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THIS IS NOT AN
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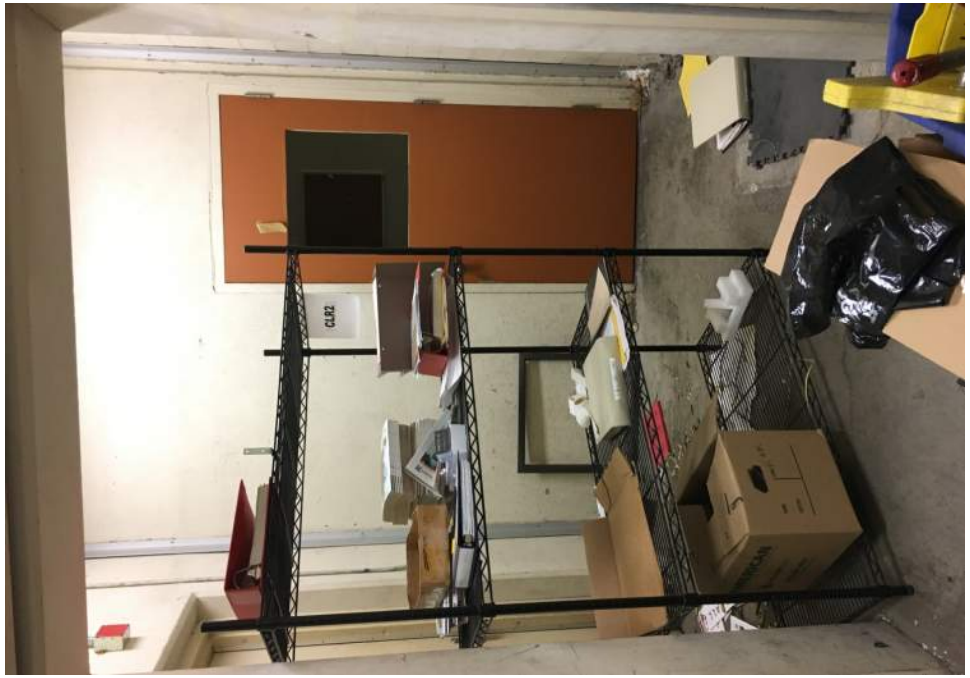
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PRACTICE
ROOM 8
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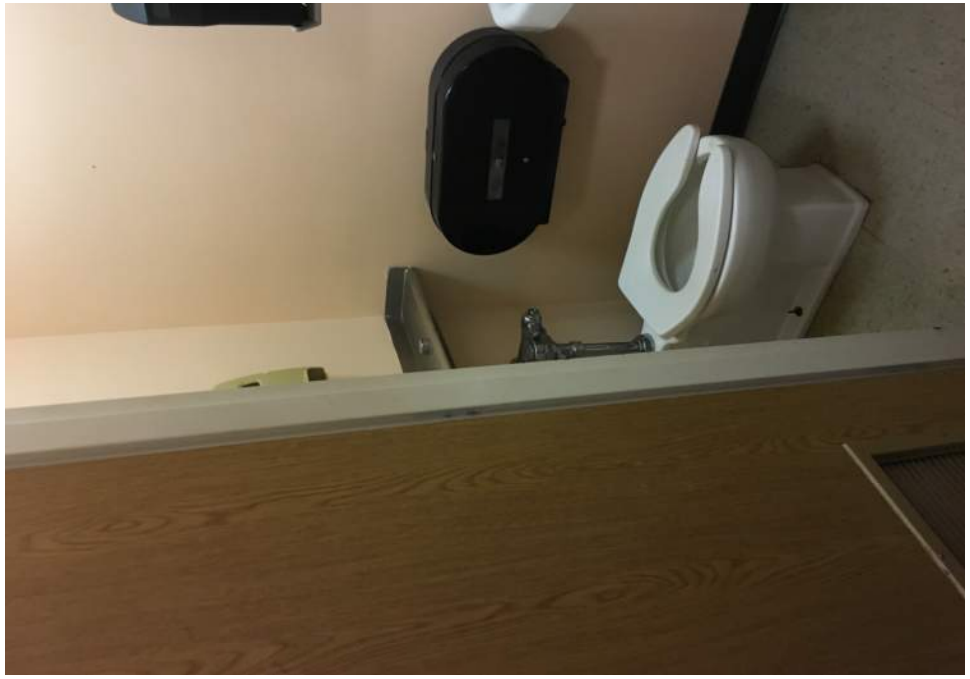


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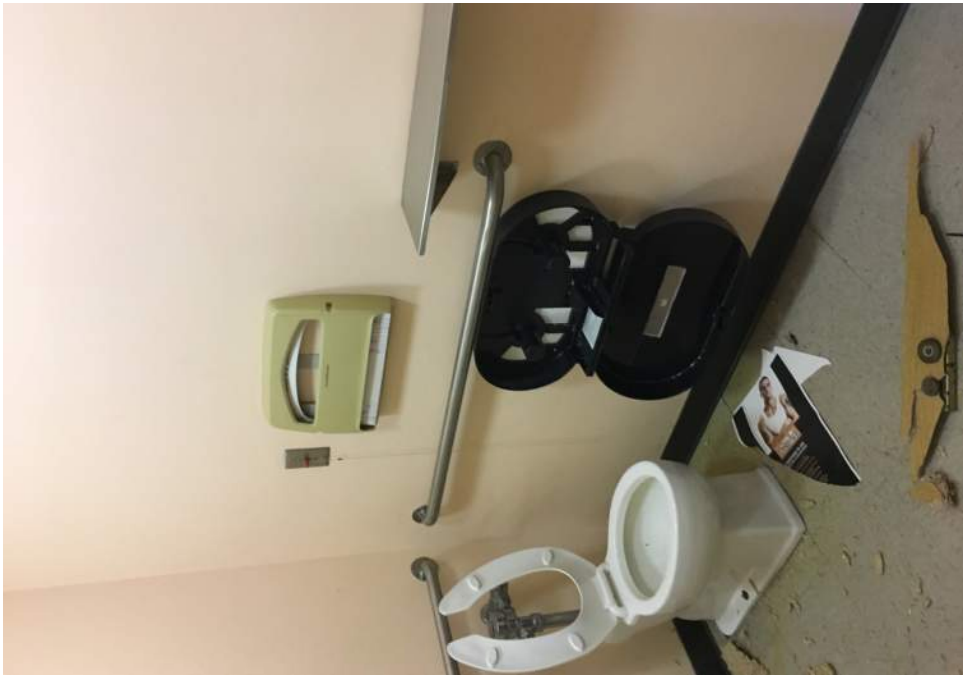

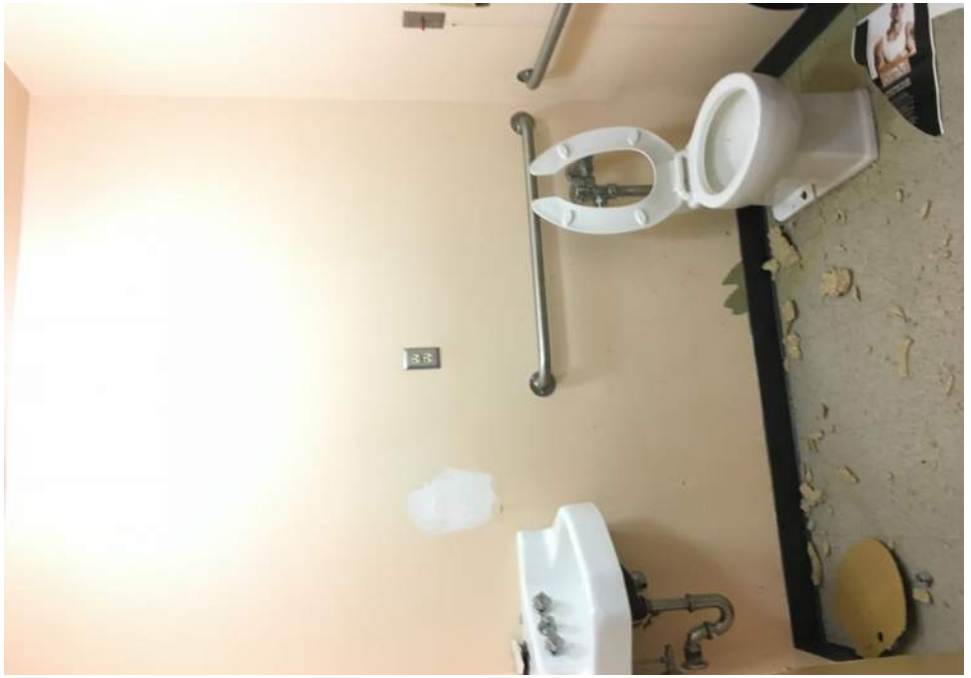


PRACTICE
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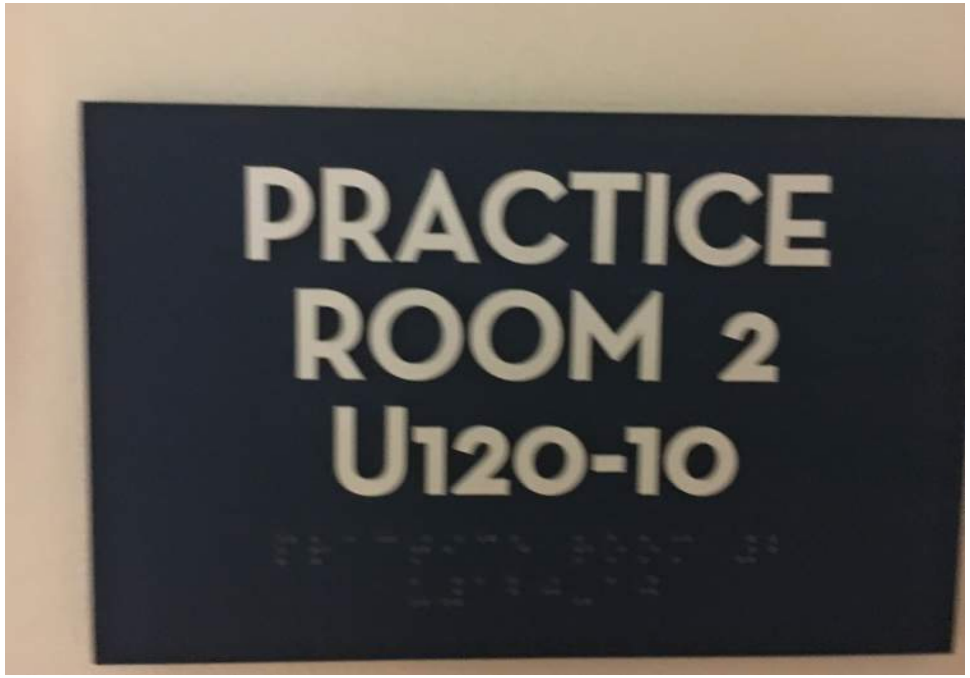
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PRACTICE
ROOM 1
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PRACTICE
ROOM 7
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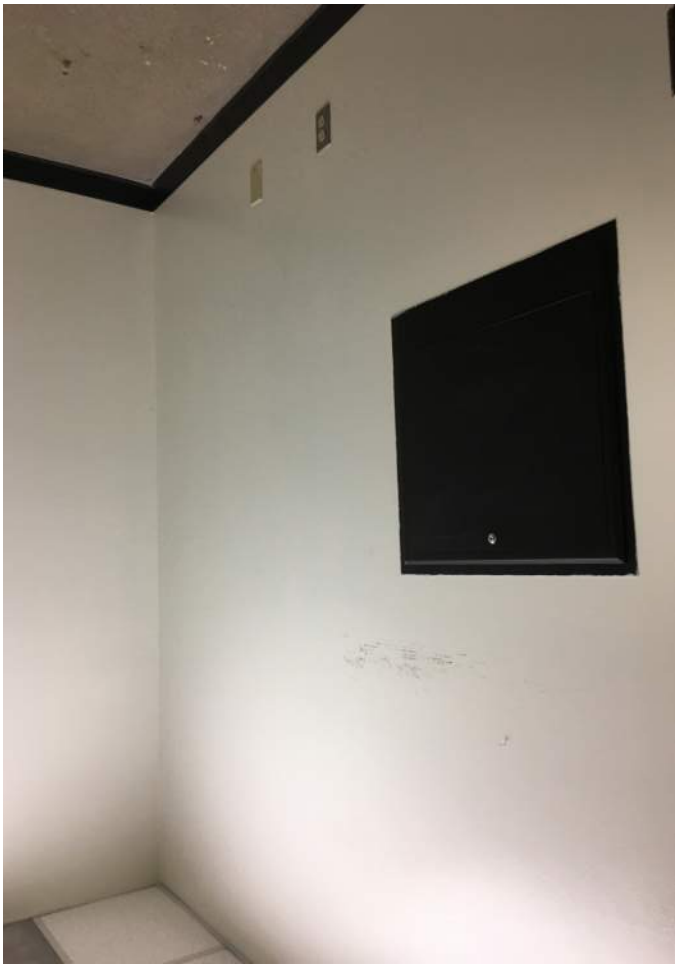


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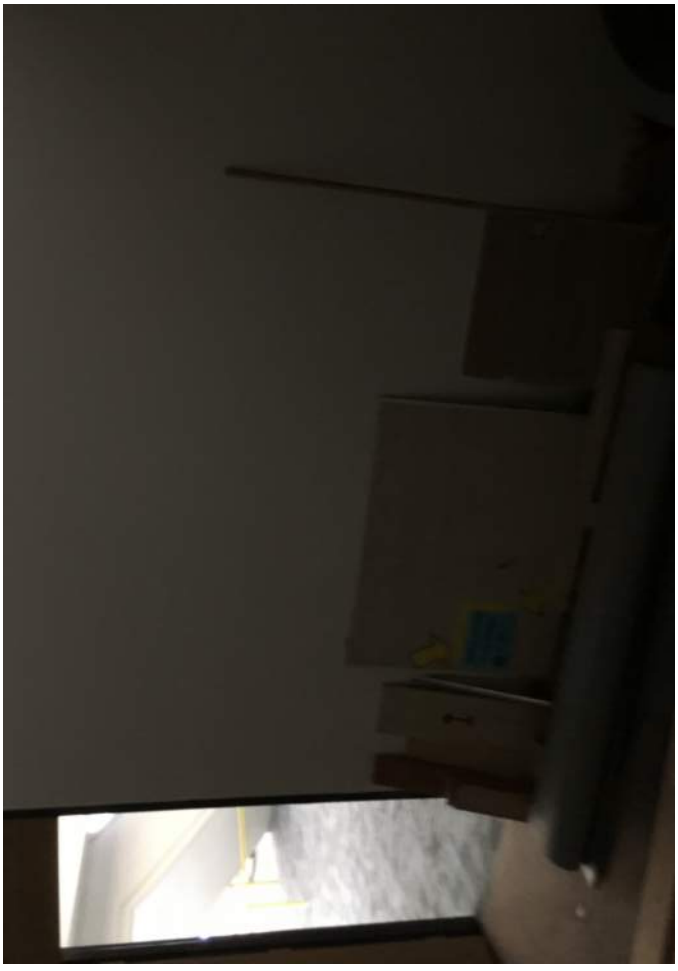

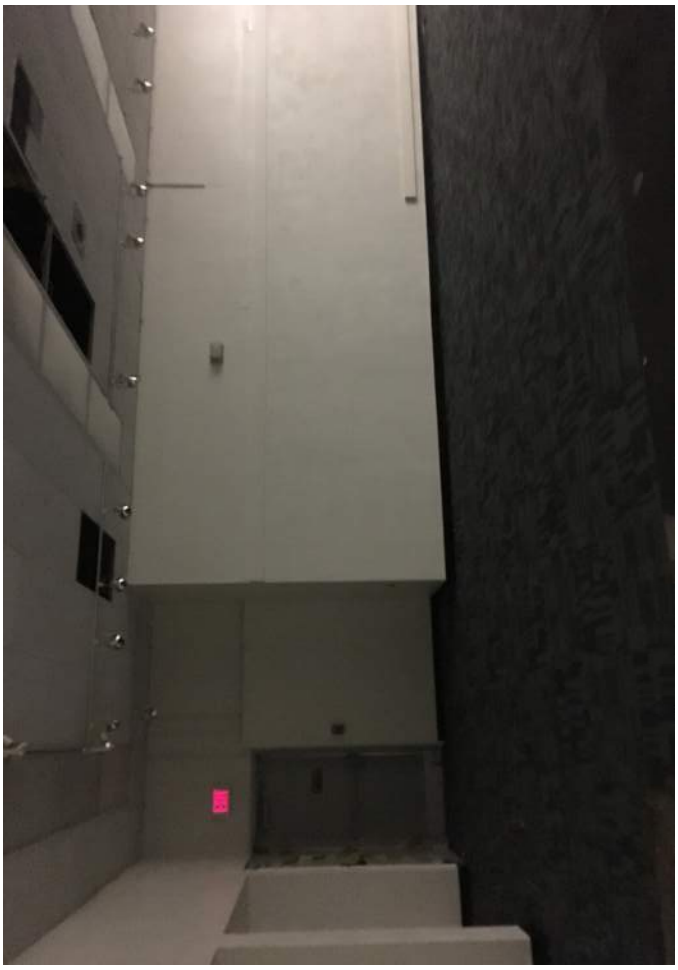


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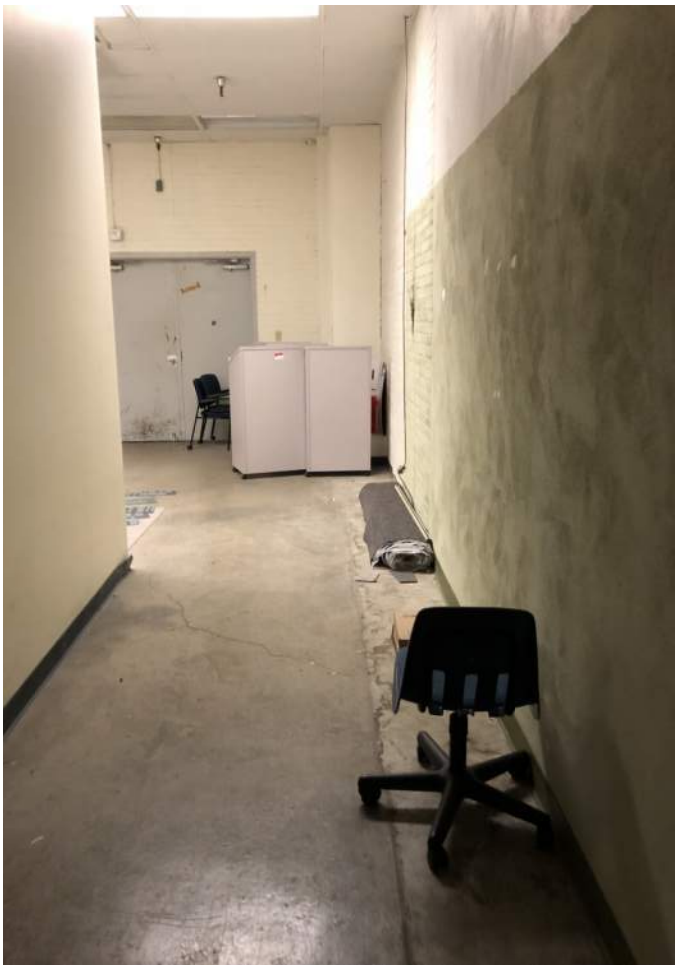
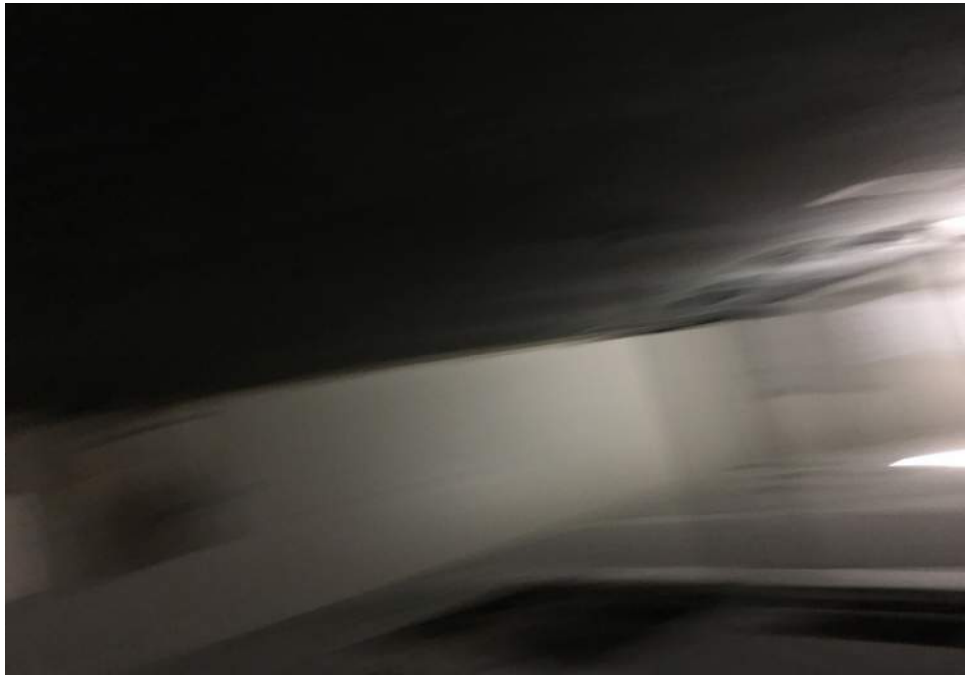
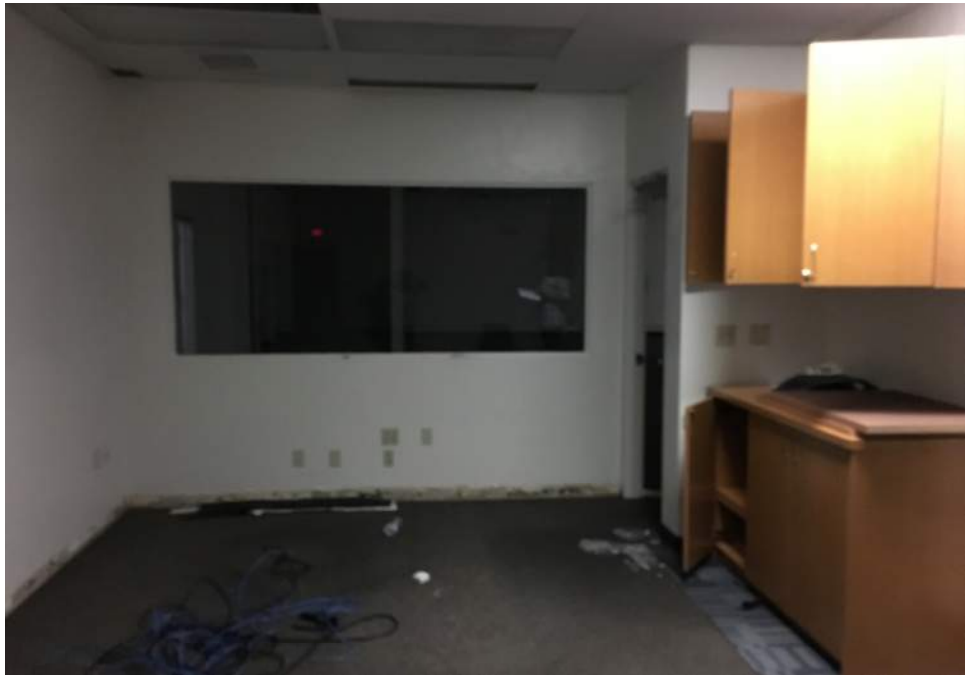
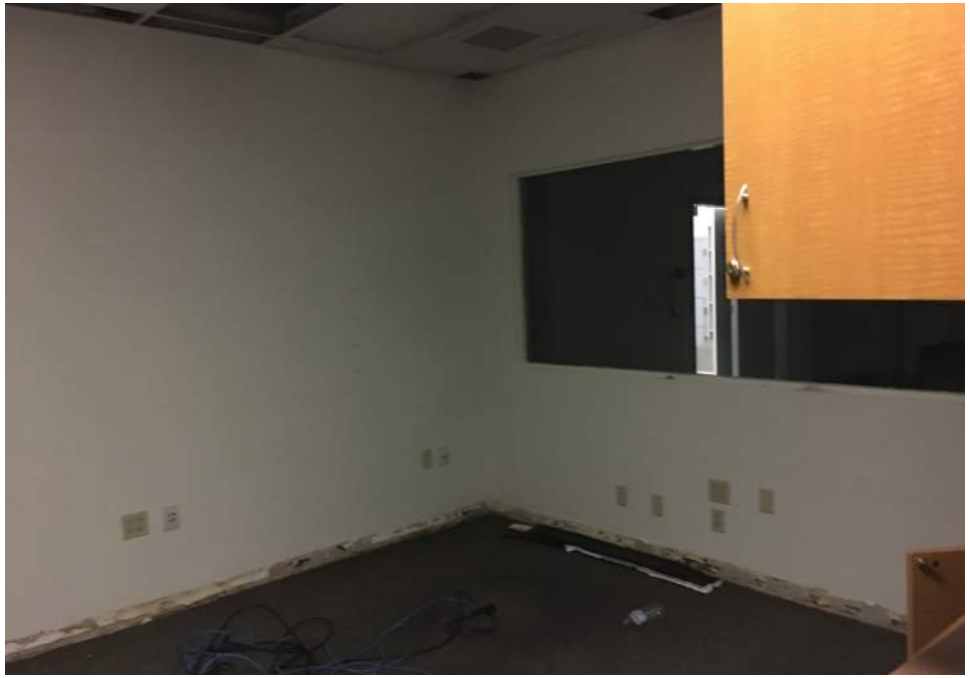







126




EXIT


EXIT

202


204 A, B

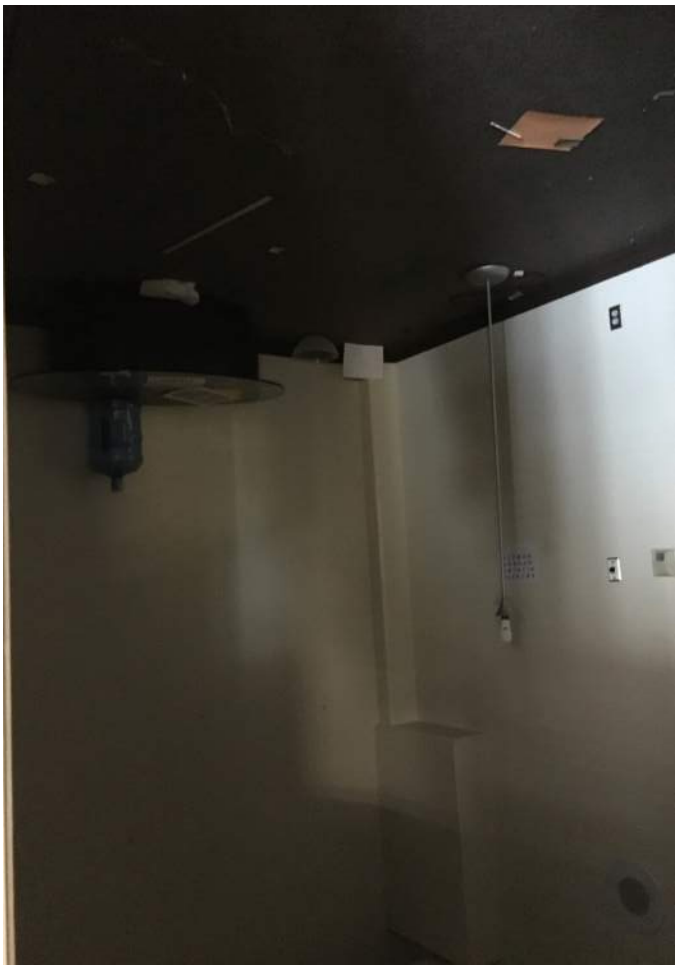

204 C

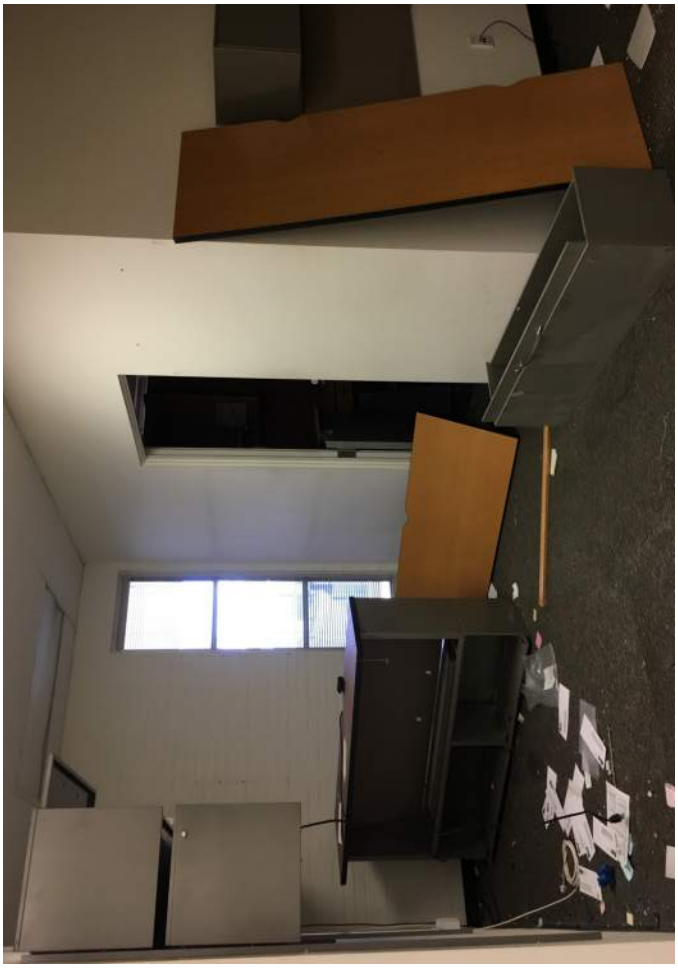

EXIT


204 D

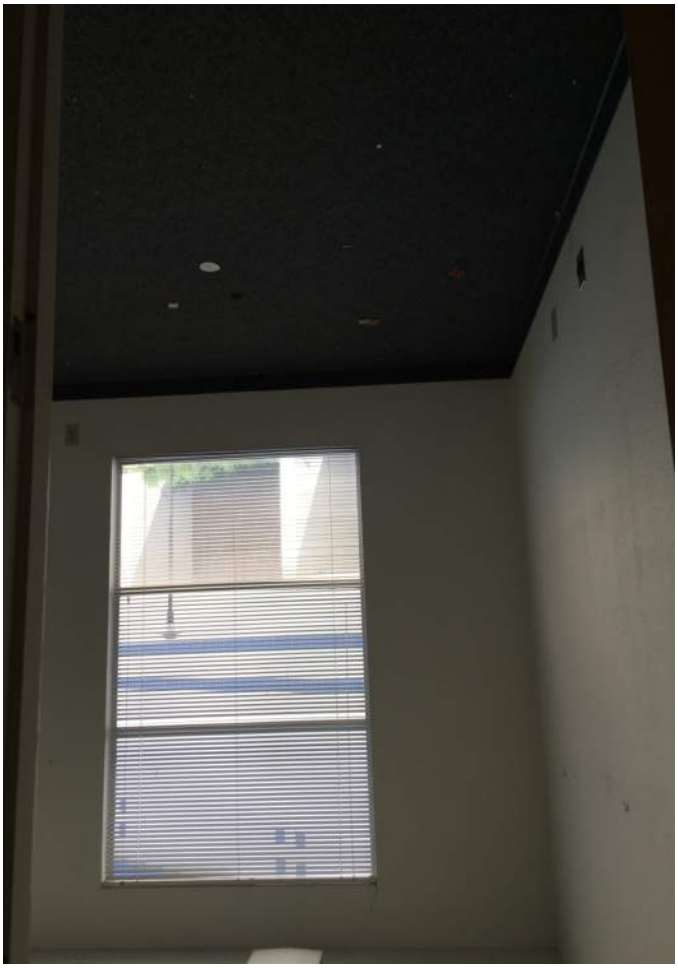
ABCDEFGHI
JKLMNOPQR
STUVWXYZ
1234567890


EXIT





219




220


U-221-5


THIS DOOR
& STAIRWAY TO
BE USED
ONLY DURING
EMERGENCIES
U-221-4
FOR
EMERGENCY
USE ONLY
(NOT AN
EXIT)


U-221-7


U-221-8


U-221-8

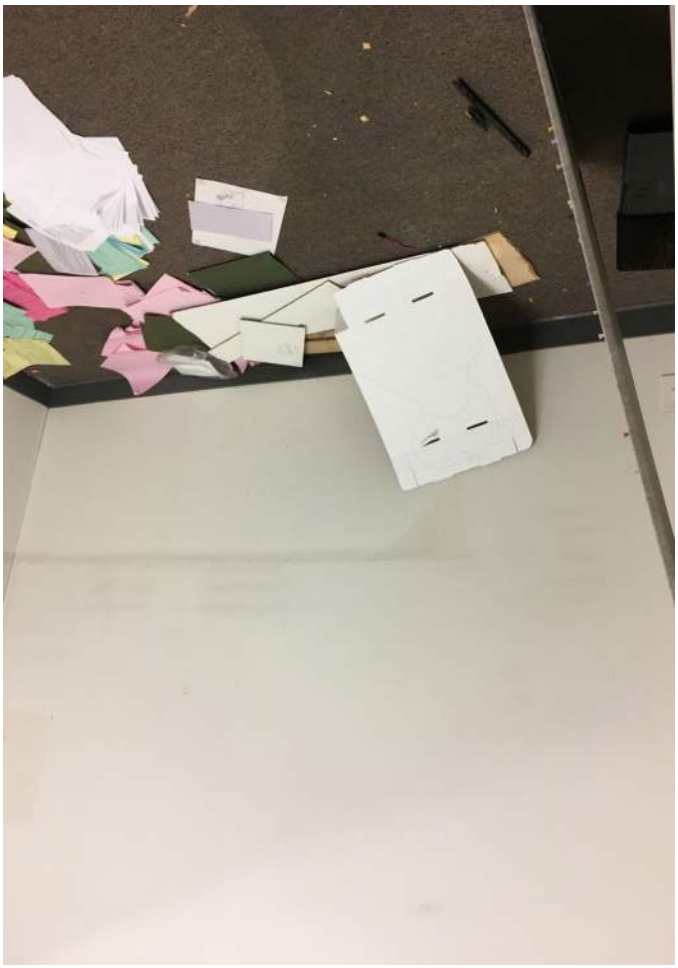

U-221-9

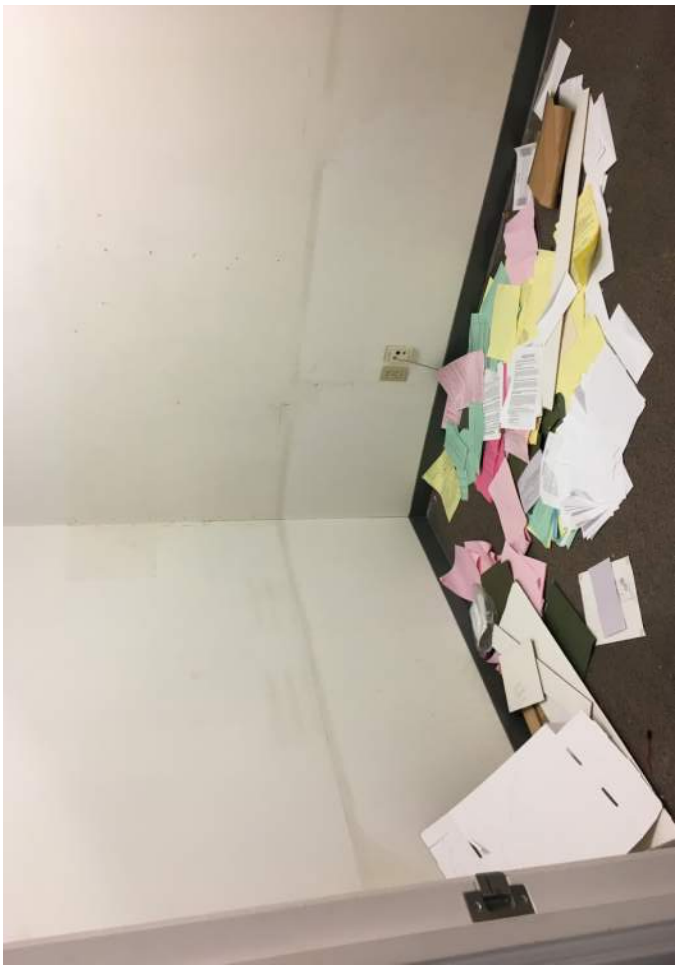

U-221-9


U-221-10


U-221-11

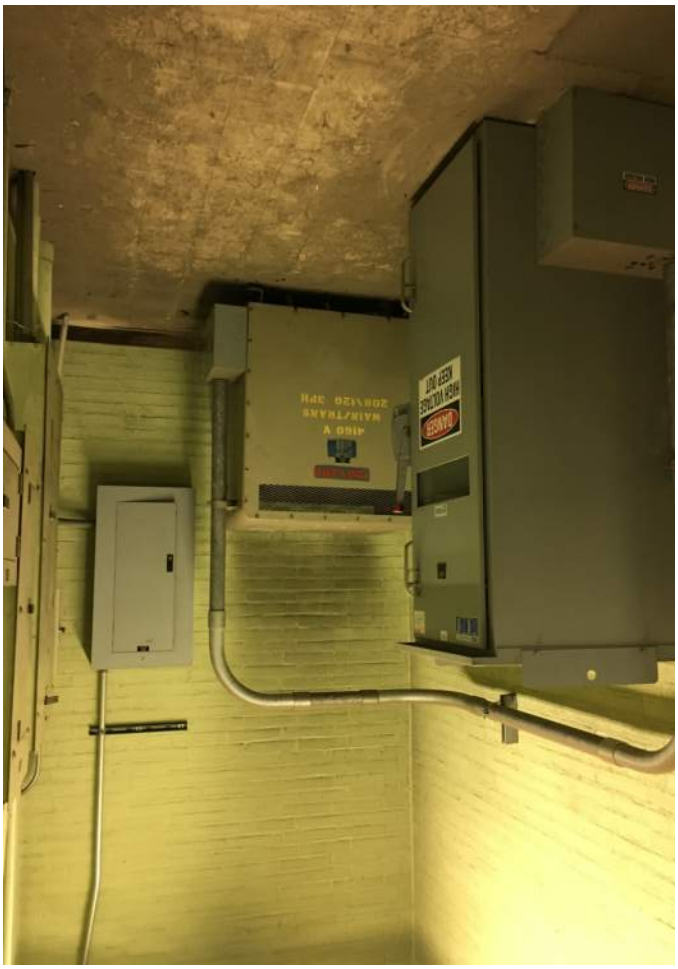

U-221-13






U-221-12


DANGER
HIGH VOLTAGE
KEEP OUT


DANGER
HIGH VOLTAGE
KEEP OUT

U 221-16

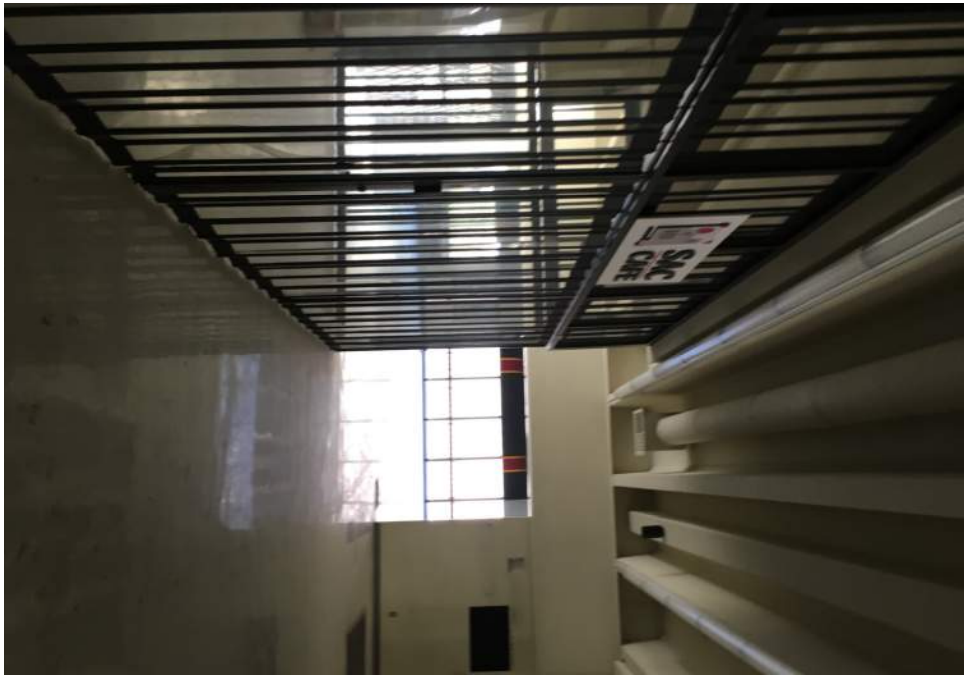
U 221-15

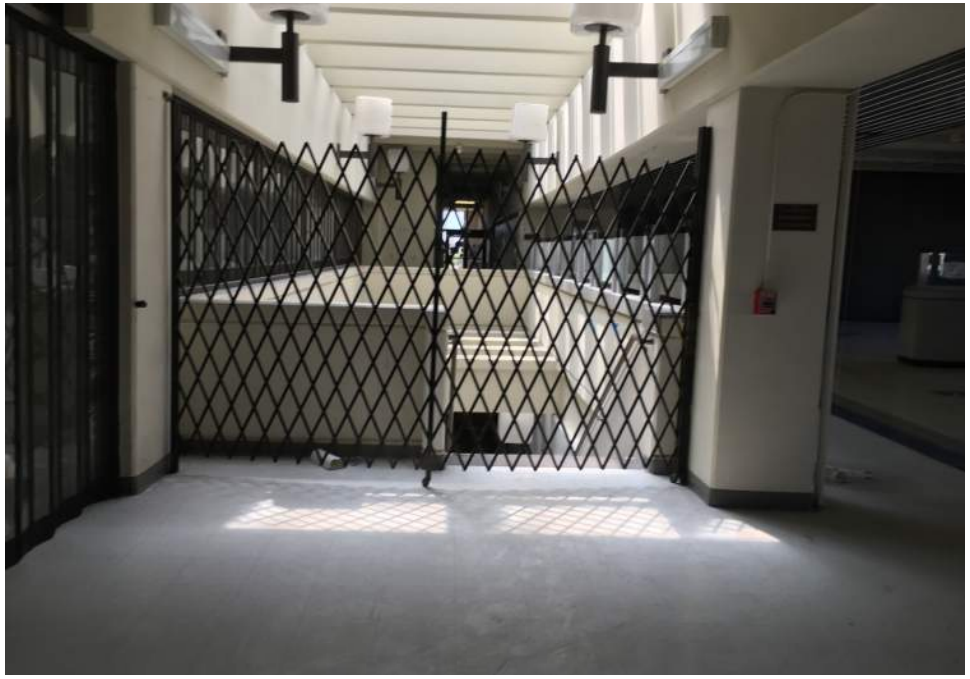

U222
Student Placement

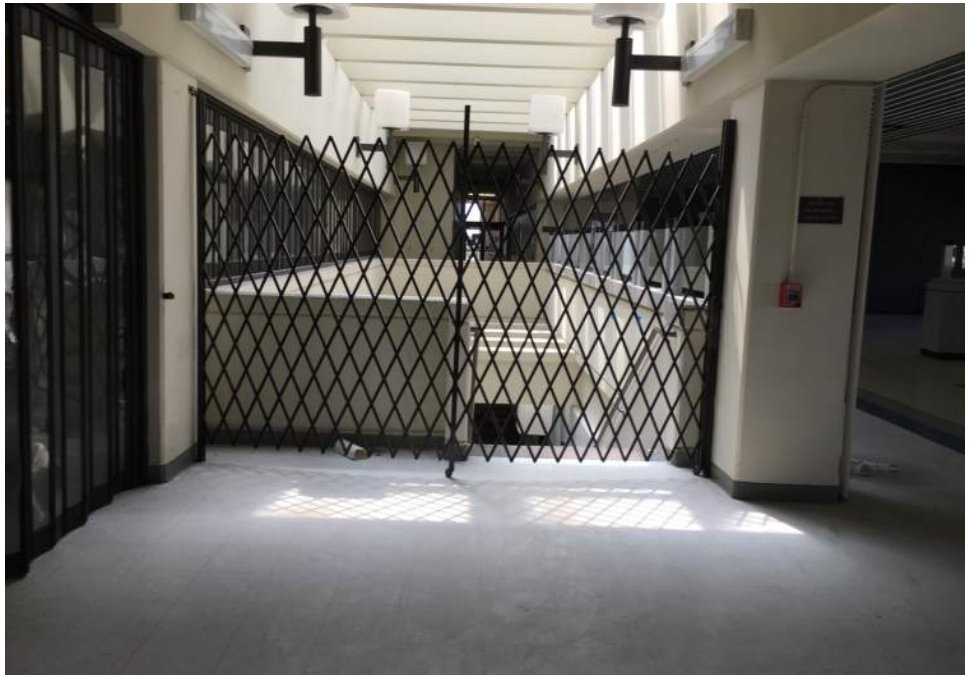

U-222-1

DINING - FOOD SERVING page 1 of 5


GRILL 155°







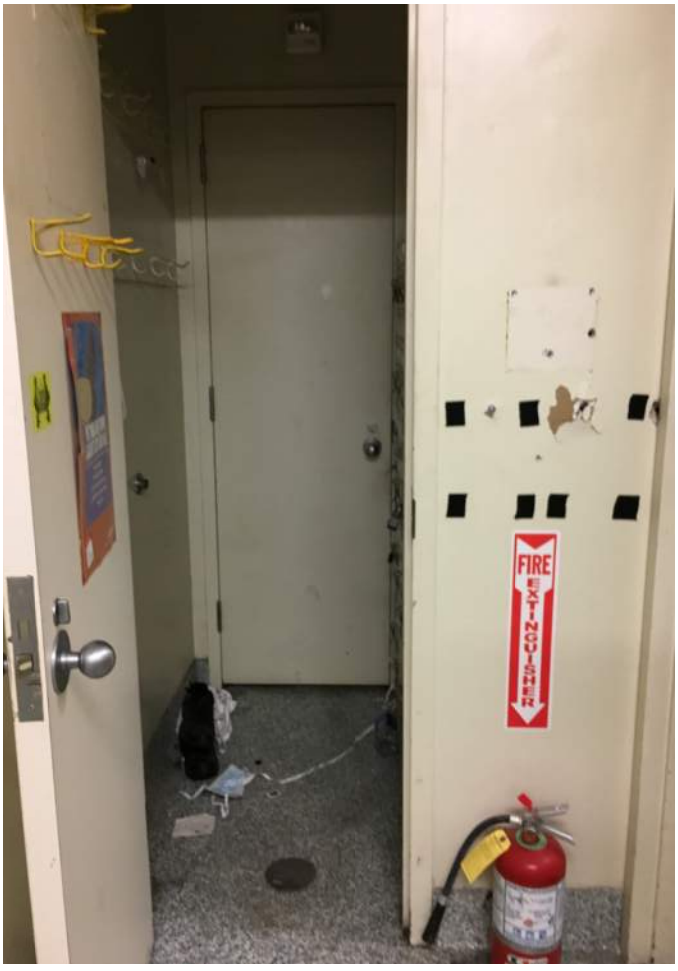

EXIT


pepsi


pepsi

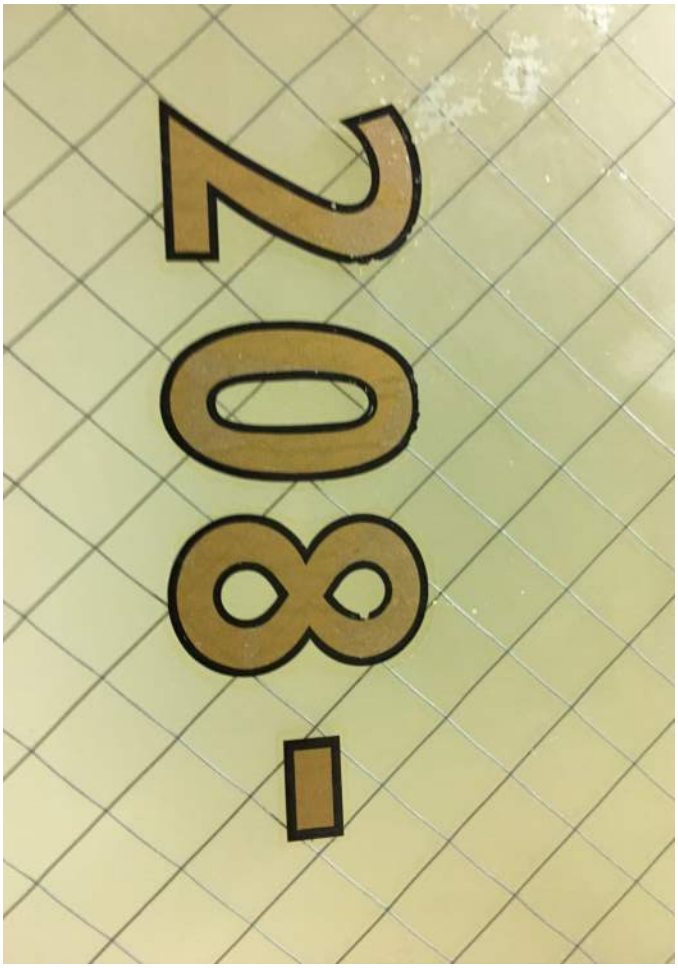

EXIT


ICED CAFÉ


FIRE
EXTINGUISHER


3712
3711


3712

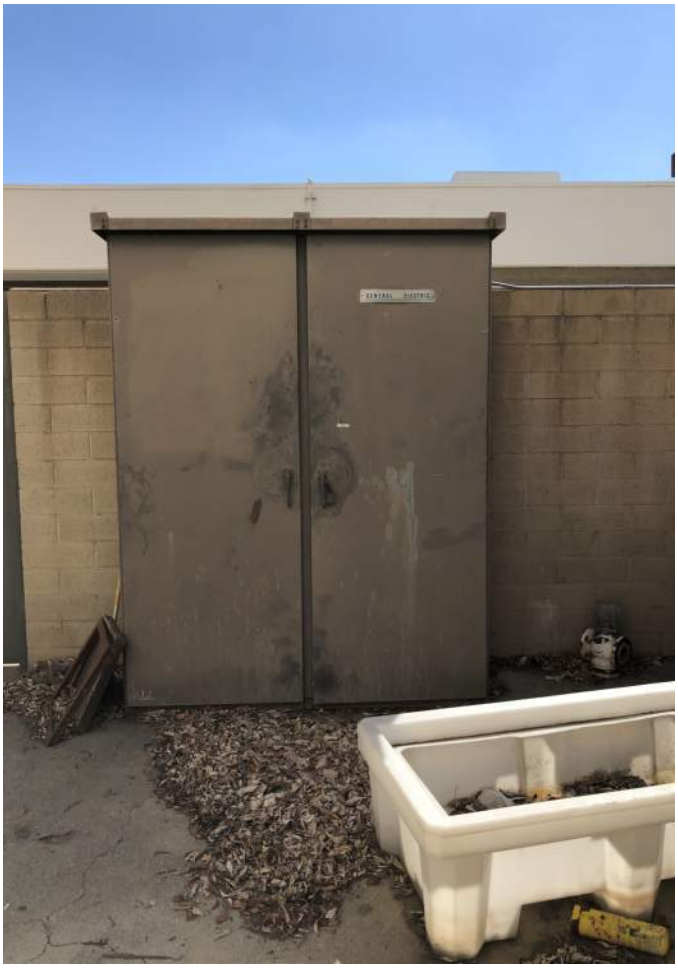

208


208


EXIT
CLEAN AS YOU GO
FIRE EXTINGUISHER


SANITIZER
TEST
STATION

MECHANICAL YARD page 1 of 4




TRANE


ACID


ACID


CIR 011
TO
MSA

ROOF page 1 of 3

Attachment 3

PRE-BID CLARIFICATION ("PBC") FORM
(ALL questions to be submitted on this form ONLY)

PBC # *(RSCCD USE ONLY)*:	80

PROJECT NAME:	RFP #1819-224 Johnson Student Center at Santa Ana College		
PROJECT NUMBER:	3035	DSA NUMBER:	Demolition, #04-116810 INC 1 and INC 2
EMAIL:	**FacilitiesRFP@rsccd.edu**		

DATE:	09/20/2018		
FROM:	S.Monsen - McCarthy	EMAIL:	SMonsen@McCarthy.com
SPECIFICATION NUMBER:	Multiple	DRAWING NUMBER:	

REQUESTED CLARIFICATION:

The following sections & paragraphs call for Extra Materials which in totality will take up a lot of storage space. Please confirm that the bidders are to include providing all of these as listed, OR if some of these could be excluded:

093000 par. 1.10 Porcelain Tile of 3%
095113 par. 1.10 Acoustical Tile & components of 2%
096500 par. 1.8 Resilient Floor Tile of 1 box per 50 for each type-color-pattern-size plus 10 LF base per 500 LF
096517 par. 1.8 Linoleum Sheet of 10 LF per each 500 LF for each color-pattern-type
096816 par. 1.06 Sheet Carpeting of 5%
098413 par. 1.5-A Sound Absorptive Panels of 10% (10 yards minimum) of each fabric-color-pattern plus mounting devices of 5%
102220 par. 1.6-A-1 Prefab Walls of 2% (2 units minimum)
102600 par. 1.5 Wall & Door Protection --- Extra Materials are mentioned but not quantity nor percentage is listed
105113 par. 1.9-A Metal Lockers of 10% full-sized units of each type-finish (minimum of 5)
105613 par. 1.8-A Metal Storage Shelving of 5% for each type (minimum of 5) plus connectors of 5% (minimum of 10)
122413 par. 1.7-A-1 Roller Shades of 5% for each size-color-texture-pattern (minimum of 2 per each

RESPONSE TO CLARIFICATION, **SUBMITTED AS PART OF AN ADDENDUM**:

REFER TO ATTACHED REVISED EXTRA STOCK/MATERIAL QUANTITIES.

RESPONSE PROVIDED BY:	Julia D. Jones / hpi	DATE:	10/08/18

Attach additional numbered sheets as necessary; however, only one (1) request shall be contained on each submitted form.

JSC Extra Stock and Spare Materials Provisions
Created: September 27, 2018
Increment No. 2

Specification	Description	Quantity	Notes
093000	Porcelain Tile	1% of total	
095113	Acoustical Tile	5% of total	
096500	Resilient Tile	1% of total	
096517	Linoleum Tile	1% of total	
096536	Static Control Resilient Flooring	1% of total	
096816	Sheet Carpeting	2% of total	
098413	Sound Absorptive Panels	Provide 5 panels max	
099000	Painting	Per current specifications	
099600	High Performance Painting	Per current specifications	
099623	Graffiti Resistant Coatings	Per current specifications	
102220	Pefab walls	**Remove from extra stock**	
102600	Wall & Door Protection	100 LF	
105113	Metal Lockers	**Remove from extra stock**	
105613	Metal Storage Shelving	**Remove from extra stock**	
230549	VFDs	Per current specifications	
232123	Hydronic Pumps	Per current specifications	
233300	Air Duct Accessories	Per current specifications	
233423	HVAC Power Ventilators	Per current specifications	
238126	Split Systems Air Conditioners	Per current specifications	
262413	Switchboards	Per current specifications	
262416	Panel boards	Per current specifications	
265100	Interior Lighting	Per current specifications	Add LED ballasts to the stock. 1% of each type of ballast.
265600	Exterior Lighting	Per current specifications	
281300	Access Control	Include 50 unprogrammed additional cards as extra stock	
328400	Irrigation System	Per current specifications	

If a system specification is not listed here and currently calls for extra materials, than it shall be assumed it is required.

Attachment 3

PRE-BID CLARIFICATION ("PBC") FORM
(ALL questions to be submitted on this form ONLY)

PBC # *(RSCCD USE ONLY)*:	81

PROJECT NAME:	RFP #1819-224 Johnson Student Center at Santa Ana College		
PROJECT NUMBER:	3035	DSA NUMBER:	Demolition, #04-116810 INC 1 and INC 2
EMAIL:	**FacilitiesRFP@rsccd.edu**		

DATE:	09/24/2018		
FROM:	S.Monsen - McCarthy	EMAIL:	SMonsen@McCarthy.com
SPECIFICATION NUMBER:	074200 & 074213	DRAWING NUMBER:	A4.02

REQUESTED CLARIFICATION:

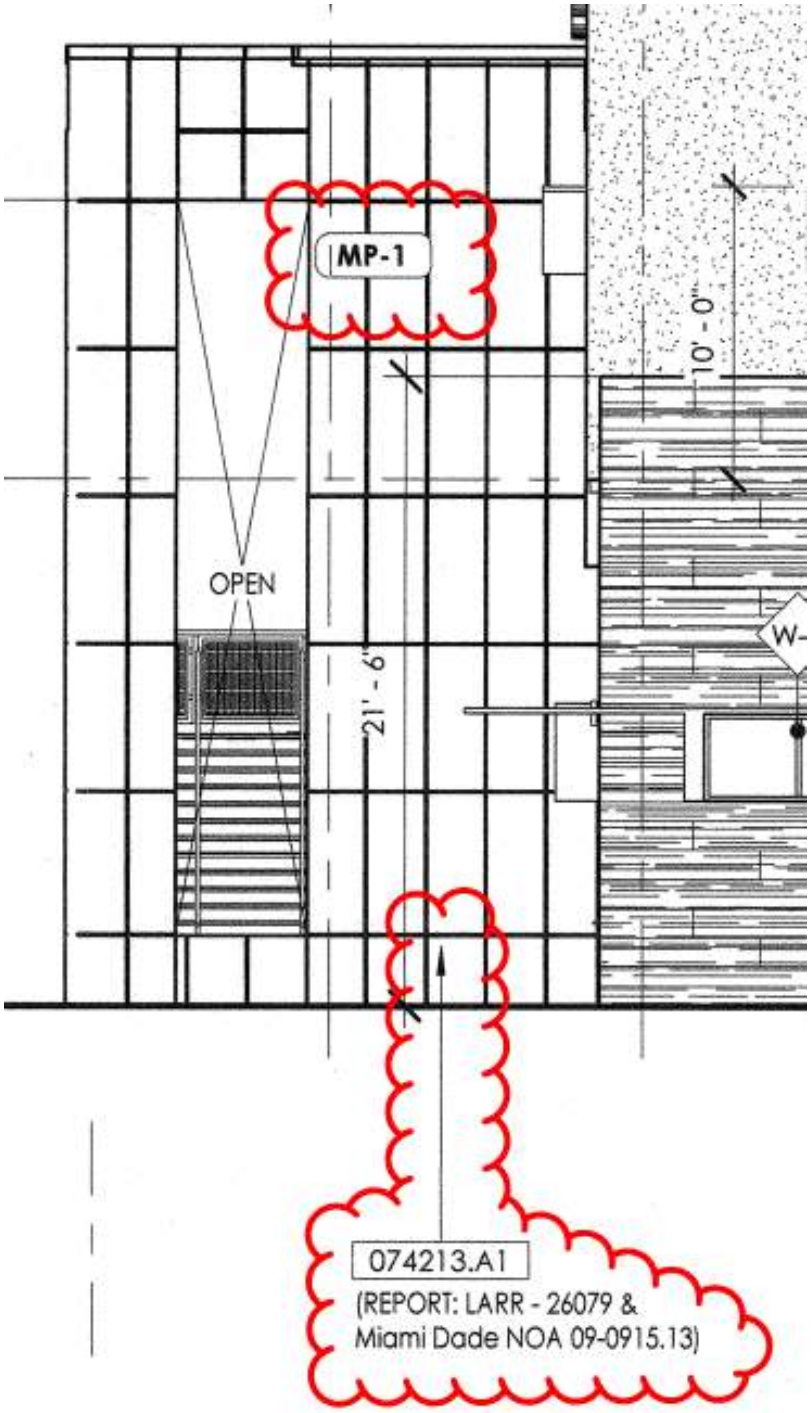
Increment #2 - Please clarify the finish on Stair 1 wall along gridline 8.6.
Detail 1/A4.02 indicates MP-1, which is Trespa 074200. However there is also a note for the same wall on 1/A4.02 indicating 074213.A1, which is Dri-Design 074213. Please clarify finish product at this location.

RESPONSE TO CLARIFICATION, **SUBMITTED AS PART OF AN ADDENDUM**:

THE FINISH IS MP-1 (DRI-DESIGN 074213.A1) PER KEYNOTES ON SHEET A4.02, A6.10 AND SHEET A8.21 UNDER WALL FINISHES / WALL PANELS.

RESPONSE PROVIDED BY:	Julia D. Jones / hpi	DATE:	10/08/18

Attach additional numbered sheets as necessary; however, only one (1) request shall be contained on each submitted form.


MP-1
10' - 0"
OPEN
21' - 6"
W-
074213.A1
(REPORT: LARR - 26079 &
Miami Dade NOA 09-0915.13)

Attachment 3

PRE-BID CLARIFICATION ("PBC") FORM
(ALL questions to be submitted on this form ONLY)

PBC # *(RSCCD USE ONLY)*: 82

PROJECT NAME:	RFP #1819-224 Johnson Student Center at Santa Ana College		
PROJECT NUMBER:	3035	DSA NUMBER:	Demolition, #04-116810 INC 1 and INC 2
EMAIL:	**FacilitiesRFP@rsccd.edu**		

DATE:	09/24/2018		
FROM:	S.Monsen - McCarthy	EMAIL:	SMonsen@McCarthy.com
SPECIFICATION NUMBER:	074200 & 074213	DRAWING NUMBER:	A6.10; A4.02; 10/A9.72; 1/A9.41

REQUESTED CLARIFICATION:

Increment #2 - Please clarify the finish of the Stair 1 center divider.
Elevation 2 on A4.02 calls out WP-2 which is Trespa High Pressure Laminate 074200. Stair 1 blow up elevations 5 & 10/A6.10 call out Metal Wall Panel Dri-Design 074213. Detail 10/A9.72 calls for High Pressure Laminate system (Trespa 074200) and corner detail 1/A9.41 indicates metal panel system (Dri-Design 074213). Please clarify finish product at this location.

RESPONSE TO CLARIFICATION, **SUBMITTED AS PART OF AN ADDENDUM**:

CENTER DIVIDER AT STAIR 1 IS 074200.A1 (TRESPA WP-2). REVISE KEYNOTES AT 5 & 10/A6.10 TO READ 074200.A1. DETAIL 10/A9.72 IS CORRECT CORNER DETAIL. ENLARGED CORNER DETAIL REFERENCE ON 10/A9.72 TO READ 6/A9.40.

RESPONSE PROVIDED BY:	Julia D. Jones / hpi	DATE:	10/08/18

Attach additional numbered sheets as necessary; however, only one (1) request shall be contained on each submitted form.

Attachment 3

PRE-BID CLARIFICATION ("PBC") FORM
(ALL questions to be submitted on this form ONLY)

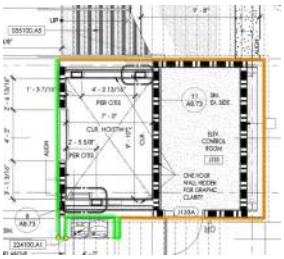
PBC # *(RSCCD USE ONLY)*: 83

PROJECT NAME:	RFP #1819-224 Johnson Student Center at Santa Ana College		
PROJECT NUMBER:	3035	DSA NUMBER:	Demolition, #04-116810 INC 1 and INC 2
EMAIL:	**FacilitiesRFP@rsccd.edu**		

DATE:	09/19/2018		
FROM:	S.Monsen - McCarthy	EMAIL:	SMonsen@McCarthy.com
SPECIFICATION NUMBER:		DRAWING NUMBER:	A6.02 & A6.03

REQUESTED CLARIFICATION:

Increment #2 - From all of the documents it can be determined that the North, South and East walls of Elevator 2 are tiled full height, however it is unclear if the western wall is tiled as well. What about within the drinking fountain alcove, is this tile too? See green highlighted areas. Please confirm these are tile and provide which type/s.



RESPONSE TO CLARIFICATION, **SUBMITTED AS PART OF AN ADDENDUM**:

PER CONTRACT DOCS. ELEV NO 2 TO RECEIVE 09300.A4 (WT-1).
ALL EXTERIOR WALLS ON THE ELEVATOR TOWER ARE TILED INCLUDING THE DRINKING FOUNTAIN ALCOVE.

RESPONSE PROVIDED BY:	Julia D. Jones / hpi	DATE:	10/08/18

Attach additional numbered sheets as necessary; however, only one (1) request shall be contained on each submitted form.

Attachment 3

PRE-BID CLARIFICATION ("PBC") FORM
(ALL questions to be submitted on this form ONLY)

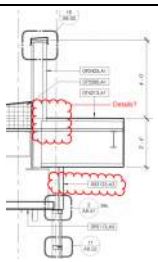
PBC # *(RSCCD USE ONLY)*:	84

PROJECT NAME:	RFP #1819-224 Johnson Student Center at Santa Ana College		
PROJECT NUMBER:	3035	DSA NUMBER:	Demolition, #04-116810 INC 1 and INC 2
EMAIL:	**FacilitiesRFP@rsccd.edu**		

DATE:	09/19/2018		
FROM:	S.Monsen - McCarthy	EMAIL:	SMonsen@McCarthy.com
SPECIFICATION NUMBER:		DRAWING NUMBER:	A5.13

REQUESTED CLARIFICATION:

Increment #2 – Detail 3/A5.13 calls out 053123.A2 above the storefront, however this call out is for the metal panel at the west plaza shade structure. Please review and confirm should this be changed to Metal Panel 074213.A1. Also please provide details for how the metal panel roof transitions to plaster.



RESPONSE TO CLARIFICATION, **SUBMITTED AS PART OF AN ADDENDUM**:

THE METAL PANEL ABOVE THE STOREFONT IS METAL PANEL MP-2 AND THE KEYNOTE IS 074213.A1 PER THE EXTERIOR ELEVATION SHEET A4.01. KEYNOTE ON 3/A5.13 TO READ 074213.A1. TRANSITION DETAIL FROM METAL PANEL ROOF TO PLASTER WALL WOULD BE SIMILAR TO THE SOUTH METAL CANOPY IN THE SERVICE YARD, REFERENCE DETAIL 9/A9.42.

RESPONSE PROVIDED BY:	Julia D. Jones / hpi	DATE:	10/08/18

Attach additional numbered sheets as necessary; however, only one (1) request shall be contained on each submitted form.

Attachment 3

PRE-BID CLARIFICATION ("PBC") FORM
(ALL questions to be submitted on this form ONLY)

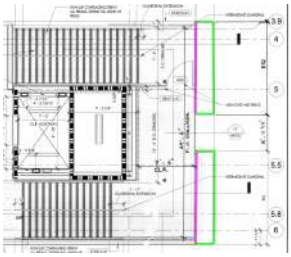
PBC # *(RSCCD USE ONLY)*: 85

PROJECT NAME:	RFP #1819-224 Johnson Student Center at Santa Ana College		
PROJECT NUMBER:	3035	DSA NUMBER:	Demolition, #04-116810 INC 1 and INC 2
EMAIL:	**FacilitiesRFP@rsccd.edu**		

DATE:	09/19/2018		
FROM:	S.Monsen - McCarthy	EMAIL:	SMonsen@McCarthy.com
SPECIFICATION NUMBER:		DRAWING NUMBER:	A6.02

REQUESTED CLARIFICATION:

Increment #2 Sheet A6.02 - At stair #3 the framed areas along gridline N have metal panel called out along the north, south and east elevations. Please confirm that the metal wall panel wraps all the way around and is also on the west side (highlighted in pink) of these walls (no elevations or details can be found to confirm).



RESPONSE TO CLARIFICATION, **SUBMITTED AS PART OF AN ADDENDUM**:

YES. THE METAL PANEL WRAPS ALL AROUND AS SHOWN ON 7/A6.03. ARROW IS SHOWN CORRECTLY.

RESPONSE PROVIDED BY:	Julia D. Jones / hpi	DATE:	10/08/18

Attach additional numbered sheets as necessary; however, only one (1) request shall be contained on each submitted form.

Attachment 3

PRE-BID CLARIFICATION ("PBC") FORM
(ALL questions to be submitted on this form ONLY)

PBC # *(RSCCD USE ONLY)*: 86

PROJECT NAME:	RFP #1819-224 Johnson Student Center at Santa Ana College		
PROJECT NUMBER:	3035	DSA NUMBER:	Demolition, #04-116810 INC 1 and INC 2
EMAIL:	**FacilitiesRFP@rsccd.edu**		

DATE:	09/18/2018		
FROM:	S.Monsen - McCarthy	EMAIL:	SMonsen@McCarthy.com
SPECIFICATION NUMBER:		DRAWING NUMBER:	A3.10, A3.11, A6.10, A9.72

REQUESTED CLARIFICATION:

Increment #2 - Sheets A3.10 & A3.11 near gridlines A.1 & 7 and A.1 & 6.3 please clarify the ceiling finish south of Stair #1 at the West Lobby Entrance and at the intermediate landing. Details 1, 5 & 10/A6.10 seem to show soffit ceilings, but no material is called out and details 20 & 25/A9.72 which should show the ceiling at the stairs do not show a ceiling. Please clarify.

RESPONSE TO CLARIFICATION, **SUBMITTED AS PART OF AN ADDENDUM**:

THE LOBBY ENTRANCE CEILING(S) SHOULD BE METAL PANEL MP-1 TO MATCH THE WALLS. THERE IS NO "FINISH" UNDER THE RUN(S) AND LOWER LANDING(S) OF THE STAIRS. THEY ARE EXPOSED STRUCTURE, PAINTED WITH AESS PAINT/FINISH. COLOR TBD.

RESPONSE PROVIDED BY:	Julia D. Jones / hpi	DATE:	10/08/18

Attach additional numbered sheets as necessary; however, only one (1) request shall be contained on each submitted form.

Attachment 3

PRE-BID CLARIFICATION ("PBC") FORM
(ALL questions to be submitted on this form ONLY)

PBC # *(RSCCD USE ONLY)*:	87

PROJECT NAME:	RFP #1819-224 Johnson Student Center at Santa Ana College		
PROJECT NUMBER:	3035	DSA NUMBER:	Demolition, #04-116810 INC 1 and INC 2
EMAIL:	**FacilitiesRFP@rsccd.edu**		

DATE:	9/12/2018		
FROM:	S.Monsen - McCarthy	EMAIL:	SMonsen@McCarthy.com
SPECIFICATION NUMBER:		DRAWING NUMBER:	C1.0-D & A0.00D

REQUESTED CLARIFICATION:

Increment #1 - Sheet C1.0-D - Demolition Keynote 5 - The Pile Caps are each listed with a Demo Keynote 5 and a depth "D", however when comparing with Detail 1/A0.00D there are 18 pile caps that do not match, please coordinate and confirm which supersedes the other. See attached marked up sketch.

RESPONSE TO CLARIFICATION, **SUBMITTED AS PART OF AN ADDENDUM**:

REFER TO ADDENDUM NO 4, REVISED INCREMENT NO 1, SHEET C1.00-D FOR COORDINATED PILE DEMO DEPTHS WITH ARCHITECTURAL.

RESPONSE PROVIDED BY:	Julia D. Jones / hpi	DATE:	10/08/18

Attach additional numbered sheets as necessary; however, only one (1) request shall be contained on each submitted form.

Attachment 3

PRE-BID CLARIFICATION ("PBC") FORM
(ALL questions to be submitted on this form ONLY)

PBC # *(RSCCD USE ONLY)*:	88

PROJECT NAME:	RFP #1819-224 Johnson Student Center at Santa Ana College		
PROJECT NUMBER:	3035	DSA NUMBER:	Demolition, #04-116810 INC 1 and INC 2
EMAIL:	**FacilitiesRFP@rsccd.edu**		

DATE:	09/18/2018		
FROM:	S.Monsen - McCarthy	EMAIL:	SMonsen@McCarthy.com
SPECIFICATION NUMBER:	057300	DRAWING NUMBER:	A9.70, A9.71

REQUESTED CLARIFICATION:

Increment #2 –
Specification Section 057300-2.3D calls out the in-fill woven wire mesh as stainless steel, square 2" pattern, by McNichols or equal.
Detail 24/A9.70 calls for stainless steel woven wire infill panel and frame, by Wagner "Versatile Spine".
Details 12, 17 & 27/A9.70 calls for woven metal mesh infill per spec (with calls for stainless steel)
Details 14&19/A9.70 call for woven mesh screen, galvanized and then painted.
Details 2, 22, 24 & 30/A9.71 calls for 2"x1" rectangular pattern trimmed steel wire mesh, then painted.
Detail 26/A9.71 calls for galvanized wire infill and then painted.

Please clarify what it to be provided at the woven wire mesh panels.
1) 2" square pattern or 2"x1" rectangular pattern?
2) Is the wire mesh to be by McNichols or Wagner?
3) Is the wire mesh supposed to be Stainless Steel, Galvanized or Carbon Steel?

RESPONSE TO CLARIFICATION, **SUBMITTED AS PART OF AN ADDENDUM**:

REVISE SPEC 057300-2.3, D LANGUAGE TO READ "....RECTANGULAR PATTERN, 2"X1" WOVEN WIRE MESH WITH U-EDGING. REVISE SPEC 057300-2.3, D ADD PRODUCT 2. WAGNER "VERSATILE SPINE" OR EQUAL. DETAILS 12, 14, 17, 19, 24 & 27/A9.70 REVISE LANGUAGE TO READ "RECTANGULAR WOVEN-WIRE MESH INFILL, PAINTED PER SPEC". DETAILS 2, 22, 24, 26 & 30/A9.71 REVISE LANGUAGE TO READ "RECTANGULAR WOVEN-WIRE MESH INFILL, PAINTED PER SPEC". 1) PATTERN IS 2"X1" 2) WELDED WIRE MESH IS EITHER, BOTH ARE AN APPROVED EQUAL 3) HIGH-PERFORMANCE COATINGS/PAINTED STEEL.

RESPONSE PROVIDED BY:	Julia D. Jones / hpi	DATE:	10/08/18

Attach additional numbered sheets as necessary; however, only one (1) request shall be contained on each submitted form.

Attachment 3

PRE-BID CLARIFICATION ("PBC") FORM
(ALL questions to be submitted on this form ONLY)

PBC # *(RSCCD USE ONLY)*:	89

PROJECT NAME:	RFP #1819-224 Johnson Student Center at Santa Ana College		
PROJECT NUMBER:	3035	DSA NUMBER:	Demolition, #04-116810 INC 1 and INC 2
EMAIL:	**FacilitiesRFP@rsccd.edu**		

DATE:	09/27/2018		
FROM:	S.Monsen - McCarthy	EMAIL:	SMonsen@McCarthy.com
SPECIFICATION NUMBER:	E0.10	DRAWING NUMBER:	

REQUESTED CLARIFICATION:

Increment #2 - Panelboard "4M" on drawing E0.10 is missing required amperage, main breaker or main lug size and missing required quantity and sizes of branch circuit breakers. Please advise what will be required.

RESPONSE TO CLARIFICATION, **SUBMITTED AS PART OF AN ADDENDUM**:

Panelboard 4M was shown with a distribution board schedule. Refer to Addendum #5 for revised schedule including all information.

Melissa Klug, P2S 10/1/18

RESPONSE PROVIDED BY:	Melissa Klug / P2s	DATE:	10/08/18

Attach additional numbered sheets as necessary; however, only one (1) request shall be contained on each submitted form.

MECHANICAL AND PLUMBING ELECTRICAL CONNECTION SCHEDULE

EQUIP ID		DESCRIPTION	LOCATION		VOLTAGE	PHASE	HP	VOLT-AMPS	MCA	DISCONNECT	FUSE	FEEDER	PANEL: CIRCUIT	REMARKS
TYPE	NO.		NAME	NUMBER										
AC	1	SPLIT SYSTEM (INDOOR)	BDF	J111	208	1	-	-	-	-	-	-	PER RESPECTIVE CU	1,3,4
AC	2	SPLIT SYSTEM (INDOOR)	IDF	J210	208	1	-	-	-	-	-	-	PER RESPECTIVE CU	1,3,4
AC	3	SPLIT SYSTEM (INDOOR)	INVERTER	J125	208	1	-	-	-	-	-	-	PER RESPECTIVE CU	1,3,4
AC	4	SPLIT SYSTEM (INDOOR)	ELEV. CONTROL ROOM	J113	208	1	-	-	-	-	-	-	PER RESPECTIVE CU	1,3,4
AC	5	Mitsubishi Electric 12000 Btu/h Ceiling Concealed-Ducted, PEA Series Air Conditioner	ELEV. CONTROL ROOM	J133	208	1	-	-	-	-	-	-	PER RESPECTIVE CU	1,3,4
AHU	1	AIR HANDLING UNIT	S.S.S.P. & UPWARD BOUND	J209	480	3	(2) 15, (2) 5	-	85	3P100	95	1 1/2"C - 3#2, 1#8G	4B - 1,3,5,7;2M2 - 1, 15	2,10
AHU	2	AIR HANDLING UNIT	OFFICE	J212-4	480	3	(2) 15	-	69	3P100	80	1 1/2"C - 3#2, 1#8G	4B - 2,4,6;2M2 - 1, 15	2,10
			ROOF	-										
B	1	HOT WATER BOILER	ROOF	-	120	1	-	1176	-	2P30	15	3/4"C - 2#10, 1#10G	2M1 - 21	1,5
B	2	HOT WATER BOILER			120	1	-	1176	-	2P30	15	3/4"C - 2#10, 1#10G	2M1 - 23	1,5
			BOILER ROOM	J132										
CP	1	CIRCULATING PUMP	BOILER ROOM	J132	120	1	-	197	-	2P30	20	3/4"C - 2#12, 1#12G	2M1 - 18	
CP	2	CIRCULATING PUMP	BOILER ROOM	J132	120	1	-	197	-	2P30	20	3/4"C - 2#12, 1#12G	2M1 - 20	
CU	1	SPLIT SYSTEM (OUTDOOR)			208	1	-	5408	25	2P60	30	1"C - 2#8, 1#10G	2M2 - 6,8	3,9
CU	2	SPLIT SYSTEM (OUTDOOR)			208	1	-	5200	25	2P60	30	1"C - 2#8, 1#10G	2M2 - 2,4	3,9
CU	3	SPLIT SYSTEM (OUTDOOR)	ROOF	-	208	1	-	3000	19	2P30	25	1"C - 2#8, 1#10G	2M2 - 10,12	3,9
CU	4	SPLIT SYSTEM (OUTDOOR)	ROOF	-	208	1	-	2164	11	2P30	25	1"C - 2#8, 1#10G	2M2 - 22,24	3,9
CU	5	SPLIT SYSTEM (OUTDOOR)	ROOF	-	208	1	-	2164	11	2P30	25	1"C - 2#8, 1#10G	2M2 - 26,28	3,9
			ROOF	-										
EF	1	EXHAUST FAN	WOMENROOFITROOM	-	208	1	2	2500	-	2P30	20	1"C - 2#8, 1#10G	2M2 - 7,9	8
EF	2	EXHAUST FAN	EAST LOBBY	J200-3	208	1	1/4	650	-	2P30	15	3/4"C - 2#10, 1#10G	2M2 - 11,13	8
EF	3	EXHAUST FAN	ROOF	-	120	1	1/2	1125	-	1P20	-	1"C - 2#8, 1#10G	2M2 - 21	8
EF	4	EXHAUST FAN	ROOF	-	120	1	1	1700	-	1P20	-	1"C - 2#8, 1#10G	2M2 - 19	8
EF	5	EXHAUST FAN	ROOF	-	208	1	1/4	650	-	2P30	15	3/4"C - 2#10, 1#10G	2M2 - 11,13	8
EF	6	EXHAUST FAN	ROOF	-	120	1	1/2	1125	-	1P20	-	1"C - 2#8, 1#10G	2M2 - 23	8
EF	7	EXHAUST FAN	ROOF	-	120	1	1/2	1125	-	1P20	-	1"C - 2#8, 1#10G	2M2 - 25	8
EF	8	EXHAUST FAN	ROOF	-	208	1	0.167	500	-	2P30	15	3/4"C - 2#10, 1#10G	2M2 - 27	8
EF	9	EXHAUST FAN	ROOF	-	480	3	0.75	1330	-	3P30	20	3/4"C - 3#10, 1#10G	4B - 7,9,11	8
			ROOF	-										
GWH	1	Ultra High Efficiency Water Heater	ROOF	-	120	1	-	800	-	2P30	15	3/4"C - 2#12, 1#12G	2M1 - 16	
GWH	2	Ultra High Efficiency Water Heater			120	1	-	800	-	2P30	15	3/4"C - 2#12, 1#12G	2M1 - 14	
HHWP	1	HEATING HOT WATER PUMP	BOILER ROOM	J132	208	3	1/2	900	-	3P30	15	1"C - 3#10, 1#10G	2M1 - 1,3,5	5,9
HHWP	2	HEATING HOT WATER PUMP	BOILER ROOM	J132	208	3	1/2	900	-	3P30	15	1"C - 3#10, 1#10G	2M1 - 7,9,11	5,9
HHWP	3	HEATING HOT WATER PUMP	BOILER ROOM	J132	208	1	3/4	1440	-	2P30	15	1"C - 2#10, 1#10G	2M1 - 13,15	5,9
HHWP	4	HEATING HOT WATER PUMP	BOILER ROOM	J132	208	1	3/4	1440	-	2P30	15	1"C - 2#10, 1#10G	2M1 - 17,19	5,9

NOTES

1. PROVIDE MOTOR RATED TOGGLE SWITCH.
2. MOTOR STARTERS/VFDS FURNISHED WITH AIR HANDLING UNITS. ELECTRICAL CONTRACTOR TO INSTALL.
3. CONDENSING UNIT POWERS RESPECTIVE AC FAN COIL, CIRCUITED BY OTHERS.
4. CONDENSATE PUMP SHALL BE INTERLOCKED WITH AND POWERED FROM FAN COIL.
5. ROUTE CIRCUIT VIA VFD. VFD FURNISHED BY MECHANICAL CONTRACTOR.
6. PROVIDE CONDUIT, WIRE, AND INSTALL LINE VOLTAGE THERMOSTAT FURNISHED BY MECHANICAL CONTRACTOR. ROUTE CIRCUIT VIA LINE VOLTAGE THERMOSTAT.
7. SEE MECHANICAL DRAWINGS FOR LOCATION OF THERMOSTAT.
8. CIRCUIT VIA ECM CONTROLLER AND MANUFACTURER PROVIDED FUSED DISCONNECT SWITCH.
9. PROVIDE FUSED DISCONNECT SWITCH AND FUSES AS NOTED, NEMA-3R RATED.
10. PROVIDE (2) 120V CIRCUITS TO AHU FOR LIGHTING AND CONVENIENCE POWER.

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CONSULTANTS

P2S ENG
Long Beach | Los Angeles
San Diego San Jose
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SIGNED: 08/06/18

SEALS / APPROVALS

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
FILE: 30-C2
A# 0 4 - 1 1 6 8 1 0
AC _____ FLS _____ SS _____
DATE _____

PROJECT TITLE
JOHNSON STUDENT CENTER
INCREMENT 2
1530 W 17TH ST SANTA ANA CA 92706

RANCHO SANTIAGO
Community College District

SUBMITTALS

#	DATE	DESCRIPTION
	05/18/18	HEALTH DEPT. SUBMITTAL
	08/13/18	DSA FINAL SUBMITTAL
	09/24/18	ADDENDUM #3
	10/08/18	ADDENDUM #5

PROJECT IDENTIFICATION 7411
THESE DRAWINGS ORIGINALLY CREATED IN AUTODESK REVIT V. 2016
THE ORIGINAL SIZE OF THIS SHEET IS 30" X 42".

DRAWN BY C Naranjo
CHECKED BY C S Musser

SHEET TITLE
SCHEDULES

SHEET NUMBER
E0.02

100% CONSTRUCTION DOCUMENTS

LOAD SUMMARY

PANEL: MSB

VOLTAGE/PHASE 277/480V **FED FROM:**

CKT	LOAD	Load	AMPS
1	TRANSFORMER TDB1	352021 VA	423 A
2	TRANSFORMER TDB2, FLOOR 2	240285 VA	289 A
3	PANEL 4M, FLOOR 2	129362 VA [1]	156 A
4	PANEL 4L1	21541 VA	26 A
5	ELEV-2	18290 VA	22 A
6	ELEV-1	18290 VA	22 A
7	PANEL 4L2, FLOOR 2	12506 VA	15 A
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			

LOAD TYPE	CONNECTED	DEMAND FACTOR	ESTIMATED	PANEL TOTALS		
L	34070 VA	125.00%	42587 VA			
Other	0 VA	0.00%	0 VA			
N	84980 VA	100.00%	84980 VA			
R	339557 VA	51.47%	174779 VA			
C	61231 VA	125.00%	76539 VA			
K	53780 VA	65.00%	34957 VA			
M	191560 VA	100.00%	191560 VA			
P	24620 VA	100.00%	24620 VA	Total Conn. Load:	792318 VA	953 A
O	2520 VA	100.00%	2520 VA	Total Est. Demand:	632542 VA	761 A

LOAD SUMMARY

PANEL: 2DB1

VOLTAGE/PHASE 120/208V **FED FROM: TDB1**

CKT	LOAD	Load	AMPS
1	ELV-2	760 VA	2 A
2	PANEL 2M1	18971 VA	53 A
3	PANEL 2R1	70790 VA	196 A
4	PANEL 2K1	74230 VA	206 A
5	PANEL 2R2	75040 VA	208 A
6	PANEL 2T1	17920 VA	50 A
7	PANEL 2R6	57568 VA	160 A
8	ELV-1	760 VA	2 A
9	PANEL 2G1	35982 VA	100 A
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

LOAD TYPE	CONNECTED	DEMAND FACTOR	ESTIMATED	PANEL TOTALS		
Other	0 VA	0.00%	0 VA			
N	64380 VA	100.00%	64380 VA			
R	182769 VA	52.74%	96385 VA			
C	28641 VA	125.00%	35801 VA			
K	48740 VA	65.00%	31681 VA			
M	11011 VA	100.00%	11011 VA			
P	13960 VA	100.00%	13960 VA			
O	2520 VA	100.00%	2520 VA	Total Conn. Load:	352021 VA	977 A
				Total Est. Demand:	255738 VA	710 A

LOAD SUMMARY

PANEL: 2DB2

VOLTAGE/PHASE 120/208V **FED FROM: TDB2**

CKT	LOAD	Load	AMPS
1	PANEL 2M2	34997 VA	97 A
2	PANEL 2R3	69240 VA	192 A
3	PANEL 2R4	68290 VA	190 A
4	PANEL 2R5	44290 VA	123 A
5	PE 006 J120	5200 VA	25 A
6	PANEL 2K2	18268 VA	51 A
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			

LOAD TYPE	CONNECTED	DEMAND FACTOR	ESTIMATED	PANEL TOTALS		
Other	0 VA	0.00%	0 VA			
N	20600 VA	100.00%	20600 VA			
R	156788 VA	53.19%	83394 VA			
C	14300 VA	125.00%	17875 VA			
K	5040 VA	65.00%	3276 VA			
M	32897 VA	100.00%	32897 VA			
P	10660 VA	100.00%	10660 VA			
				Total Conn. Load:	240285 VA	667 A
				Total Est. Demand:	168702 VA	468 A

PANEL: 4M

LOCATION: ELECTRICAL ROOM J213 VOLTAGE/PHASE: 277/480V,3PH,4W FED FROM: MSB
FLOOR: SECOND BUS AMPS: 225 A RATING 14kAIC
MOUNTING: SURFACE MAIN BREAKER: 225 A

CKT	TYPE	LOAD	BKR/POLE		A	B	C	A	B	C	BKR/POLE		LOAD	TYPE	CKT
1					23556...			19122...							2
3	M	AHU-1 ROOFTOP	100 A	3		23556...			19122...		3	100 A	AHU-2 ROOFTOP	M	4
5							23556...			19122...					6
7					443 VA			0 VA							8
9	M	EF-9	30 A	3		443 VA			0 VA		3	50 A	SPARE	N	10
11							443 VA			0 VA					12
13	--	SPARE	30 A	1	0 VA			0 VA							14
15	--	SPARE	30 A	1		0 VA			0 VA		3	30 A	SPARE	N	16
17	--	SPARE	20 A	1			0 VA			0 VA					18
19	--	SPARE	20 A	1	0 VA			0 VA			1	20 A	SPARE	--	20
21	--	SPARE	20 A	1		0 VA			0 VA		1	20 A	SPARE	--	22
23	--	SPARE	20 A	1			0 VA			0 VA	1	20 A	SPARE	--	24
25	--	SPARE	20 A	1	0 VA			0 VA			1	20 A	SPARE	--	26
27	--	SPARE	20 A	1		0 VA			0 VA		1	20 A	SPARE	--	28
29	--	SPARE	20 A	1			0 VA			0 VA	1	20 A	SPARE	--	30
31	--	SPARE	20 A	1	0 VA			0 VA			1	20 A	SPARE	--	32
33	--	SPARE	20 A	1		0 VA			0 VA		1	20 A	SPARE	--	34
35	--	SPARE	20 A	1			0 VA			0 VA	1	20 A	SPARE	--	36
37	--	SPACE	--	--	0 VA			0 VA			--	--	SPACE	--	38
39	--	SPACE	--	--		0 VA			0 VA		--	--	SPACE	--	40
41	--	SPACE	--	--			0 VA			0 VA	--	--	SPACE	--	42

LOAD TYPE KEY:

N= NON CONTINUOUS M=MECH EQUIP
R=RECEPTACLE R=RECEPTACLE
L=LIGHTING K=KITCHEN

TOTAL A: 43121 VA 156 A
TOTAL B 43121 VA 156 A
TOTAL C: 43121 VA 156 A

LOAD TYPE	CONNECTED	DEMAND FACTOR	ESTIMATED	PANEL TOTALS		
N	0 VA	0.00%	0 VA			
M	129362 VA	100.00%	129362 VA			
				TOTAL LOAD:	129362 VA	156 A
				TOTAL DEMAND LOAD:	129362 VA	156 A

LOAD SUMMARY

PANEL: INV1

VOLTAGE/PHASE 277/480V **FED FROM: 4L1**

CKT	LOAD	Load	AMPS
1	FIRST FLOOR NORTH EM LTG	1389 VA	5 A
2	FIRST FLOOR SOUTH EM LTG	1072 VA	4 A
3	SECOND FLOOR EM LTG SOUTH	1259 VA	5 A
4	SECOND FLOOR EM LTG NORTH	324 VA	1 A
5	EXTERIOR EM LTG NORTH/EAST	45 VA	0 A
6	EXTERIOR EM LTG SOUTH/WEST	105 VA	0 A
7	EXTERIOR EM LTG PERIMETER	871 VA	3 A
8	EXTERIOR EM LTG PERIMETER SECOND FLOOR	610 VA	2 A
9	SPARE	0 VA	--
10	SPARE	0 VA	--
11	SPARE	0 VA	--
12	SPARE	0 VA	--
13	SPARE	0 VA	--
14	SPARE	0 VA	--
15	SPARE	0 VA	--
16	SPARE	0 VA	--
17	SPARE	0 VA	--
18	SPARE	0 VA	--

LOAD TYPE	CONNECTED	DEMAND FACTOR	ESTIMATED	PANEL TOTALS		
L	5676 VA	125.00%	7095 VA			
				Total Conn. Load:	5676 VA	7 A
				Total Est. Demand:	7095 VA	9 A

PANEL: 2G1

LOCATION: REPROGRAPHICS J120 VOLTAGE/PHASE: 120/208V,3PH,4W FED FROM: 2DB1
FLOOR: FIRST BUS AMPS: 150 A RATING 10,000
MOUNTING: SURFACE MAIN BREAKER: 150 A

CKT	TYPE	LOAD	BKR/POLE		A	B	C	A	B	C	BKR/POLE		LOAD	TYPE	CKT
1	R	PE 011 SHRINK WRAP J120	20 A	1	180 VA			400 VA			1	20 A	PE 014 PAPER CUTTER J120	N	2
3	R	PE 011 SHRINK WRAP J120	20 A	1		180 VA			1150 VA		1	20 A	PE 008 TAPE BINDER J120	N	4
5	R	CONV REC RM J120	20 A	1			720 VA			100 VA	1	20 A	PE 012 MOBILE PRESS J120	N	6
7	R	QC 004 PAPER FOLDER J120	20 A	1	180 VA			250 VA			1	20 A	PE 009 PAPER JOGGER J120	N	8
9	R	QC 005 POSTER MAKER J120	20 A	1		210 VA			800 VA		1	20 A	PE 016 LIGHT TABLE J120	R	10
11	R	PE 007 DRILL PRESS J120	30 A	2			1872 VA			600 VA	1	20 A	DOOR MTR REC RM J120, J129	P	12
13					1872 VA			360 VA			1	20 A	PE 003 J120	R	14
15	N	PE 013 MOBILE PRESS RM J120	20 A	1		400 VA			1383 VA						16
17	N	PE 002 J120	20 A	1			360 VA			1383 VA	3	50 A	PE 003 J120	N	18
19					1383 VA			1383 VA							20
21	N	PE 002 J120	50 A	3		1383 VA			1440 VA		1	20 A	PN 001 PRINTER J120	N	22
23							1383 VA			180 VA	1	20 A	PE 004 J120	R	24
25	N	PN 003 PAPER CUTTER RM J120	20 A	1	360 VA			900 VA			1	20 A	PE 004 J120	N	26
27	N	PE 001 RM J120	20 A	1		1260 VA			1000 VA		1	20 A	PE 005	N	28
29	N	PE 001 COLOR PRINTER J120	20 A	2			1100 VA			936 VA	1	20 A	PN 002 PRINTER J120	C	30
31					1100 VA			2496 VA			2	20 A	QC 003 COPIER J120	R	32
33	N	PE 001 RM J120	20 A	1		1260 VA			0 VA						34
35	R	R REPROGRAPHICS J120	20 A	1			720 VA			500 VA	1	20 A	QC 003 COPIER J120	R	36
37	--	SPARE	20 A	1	0 VA			2496 VA			2	20 A	QC 001 208V COPIER	R	38
39	--	SPARE	20 A	1		0 VA			0 VA						40
41	--	SPARE	20 A	1			0 VA			800 VA	1	20 A	QC 001 COPIER	R	42
43	--	SPARE	20 A	1	0 VA			1500 VA			1	20 A	QC 002 RM J119 LAMINATOR	R	44
45	--	SPARE	20 A	1		0 VA			0 VA		1	20 A	SPARE	--	46
47	--	SPARE	20 A	1			0 VA			0 VA	1	20 A	SPARE	--	48
49	--	SPARE	20 A	1	0 VA			0 VA			1	20 A	SPARE	--	50
51	--	SPARE	20 A	1		0 VA			0 VA		1	20 A	SPARE	--	52
53	--	SPARE	20 A	1			0 VA			0 VA	1	20 A	SPARE	--	54
55	--	SPACE	--	--	0 VA			0 VA			--	--	SPACE	--	56
57	--	SPACE	--	--		0 VA			0 VA		--	--	SPACE	--	58
59	--	SPACE	--	--			0 VA			0 VA	--	--	SPACE	--	60

LOAD TYPE KEY:

N= NON CONTINUOUS M=MECH EQUIP
R=RECEPTACLE R=RECEPTACLE
L=LIGHTING K=KITCHEN

TOTAL A: 14861 VA 124 A
TOTAL B 10467 VA 87 A
TOTAL C: 10655 VA 89 A

LOAD TYPE	CONNECTED	DEMAND FACTOR	ESTIMATED	PANEL TOTALS		
N	19380 VA	100.00%	19380 VA			
R	15066 VA	83.19%	12533 VA			
C	936 VA	125.00%	1170 VA			
P	600 VA	100.00%	600 VA			
				TOTAL LOAD:	35982 VA	100 A
				TOTAL DEMAND LOAD:	33683 VA	93 A

NOTES

[1] REFER TO SINGLE LINE DIAGRAM, SHEET E5.01, FOR ADDITIONAL INFORMATION.

PANEL: 4L1

LOCATION: ELECTRICAL J126 VOLTAGE/PHASE: 277/480V,3PH,4W FED FROM: MSB
FLOOR: FIRST FLOOR BUS AMPS: 125 A RATING 14kAIC
MOUNTING: SURFACE MAIN BREAKER: 100A

CKT	TYPE	LOAD	BKR/POLE		A	B	C	A	B	C	BKR/POLE		LOAD	TYPE	CKT
1	L	FIRST FLOOR NORTH LTG	20 A	1	3533 VA			5676 VA			1	60 A	INV1	L	2
3	L	FIRST FLOOR NORTH LTG	20 A	1		3542 VA			0 VA		1	20 A	SPARE	--	4
5	L	FIRST FLOOR SOUTH WEST LTG	20 A	1			3391 VA			0 VA	1	20 A	SPARE	--	6
7	L	FIRST FLOOR SOUTH EAST LTG	20 A	1	4032 VA			0 VA			1	20 A	SPARE	--	8
9	L	EXTERIOR LTG	20 A	1		1367 VA			0 VA		1	20 A	SPARE	--	10
11	--	SPARE	20 A	1			0 VA			0 VA	1	20 A	SPARE	--	12
13	--	SPARE	20 A	1	0 VA			0 VA			1	20 A	SPARE	--	14
15	--	SPARE	20 A	1		0 VA			0 VA		1	20 A	SPARE	--	16
17	--	SPARE	20 A	1			0 VA			0 VA	1	20 A	SPARE	--	18
19	--	SPARE	20 A	1	0 VA			0 VA			1	20 A	SPARE	--	20
21	--	SPARE	20 A	1		0 VA			0 VA		1	20 A	SPARE	--	22
23	--	SPARE	20 A	1			0 VA			0 VA	1	20 A	SPARE	--	24
25	--	SPARE	20 A	1	0 VA			0 VA			1	20 A	SPARE	--	26
27	--	SPARE	20 A	1		0 VA			0 VA		1	20 A	SPARE	--	28
29	--	SPARE	20 A	1			0 VA			0 VA	1	20 A	SPARE	--	30
31	--	SPARE	20 A	1	0 VA			0 VA			1	20 A	SPARE	--	32
33	--	SPARE	20 A	1		0 VA			0 VA		1	20 A	SPARE	--	34
35	--	SPARE	20 A	1			0 VA			0 VA	1	20 A	SPARE	--	36
37	--	SPACE	--	--	0 VA			0 VA			--	--	SPACE	--	38
39	--	SPACE	--	--		0 VA			0 VA		--	--	SPACE	--	40
41	--	SPACE	--	--			0 VA			0 VA	--	--	SPACE	--	42

LOAD TYPE KEY:

N= NON CONTINUOUS M=MECH EQUIP
R=RECEPTACLE R=RECEPTACLE
L=LIGHTING K=KITCHEN

TOTAL A: 13241 VA 49 A
TOTAL B 4909 VA 19 A
TOTAL C: 3391 VA 12 A

LOAD TYPE	CONNECTED	DEMAND FACTOR	ESTIMATED	PANEL TOTALS		
L	21547 VA	125.00%	26934 VA			
				TOTAL LOAD:	21547 VA	26 A
				TOTAL DEMAND LOAD:	26934 VA	32 A

PANEL: 4L2

LOCATION: ELECTRICAL ROOM J213 VOLTAGE/PHASE: 277/480V,3PH,4W FED FROM: MSB
FLOOR: SECOND FLOOR BUS AMPS: 125 A RATING 14kAIC
MOUNTING: SURFACE MAIN BREAKER: 100 A

CKT	TYPE	LOAD	BKR/POLE		A	B	C	A	B	C	BKR/POLE		LOAD	TYPE	CKT
1	L	2ND FLOOR NORTH LTG	20 A	1	2915 VA			0 VA			1	20 A	SPARE	--	2
3	L	2ND FLOOR NORTH EAST LTG	20 A	1		2845 VA			0 VA		1	20 A	SPARE	--	4
5	L	2ND FLR HALL&SOUTH EAST LTG	20 A	1			2287 VA			0 VA	1	20 A	SPARE	--	6
7	L	SECOND FLOOR SOUTH LTG	20 A	1	3476 VA			0 VA			1	20 A	SPARE	--	8
9	L	L	20 A	1		984 VA			0 VA		1	20 A	SPARE	--	10
11	--	SPARE	20 A	1			0 VA			0 VA	1	20 A	SPARE	--	12
13	--	SPARE	20 A	1	0 VA			0 VA			1	20 A	SPARE	--	14
15	--	SPARE	20 A	1		0 VA			0 VA		1	20 A	SPARE	--	16
17	--	SPARE	20 A	1			0 VA			0 VA	1	20 A	SPARE	--	18
19	--	SPARE	20 A	1	0 VA			0 VA			1	20 A	SPARE	--	20
21	--	SPARE	20 A	1		0 VA			0 VA		1	20 A	SPARE	--	22
23	--	SPARE	20 A	1			0 VA			0 VA	1	20 A	SPARE	--	24
25	--	SPARE	20 A	1	0 VA			0 VA			1	20 A	SPARE	--	26
27	--	SPARE	20 A	1		0 VA			0 VA		1	20 A	SPARE	--	28
29	--	SPARE	20 A	1			0 VA			0 VA	1	20 A	SPARE	--	30
31	--	SPARE	20 A	1	0 VA			0 VA			1	20 A	SPARE	--	32
33	--	SPARE	20 A	1		0 VA			0 VA		1	20 A	SPARE	--	34
35	--	SPARE	20 A	1			0 VA			0 VA	1	20 A	SPARE	--	36
37	--	SPACE	--	--	0 VA			0 VA			--	--	SPACE	--	38
39	--	SPACE	--	--		0 VA			0 VA		--	--	SPACE	--	40
41	--	SPACE	--	--			0 VA			0 VA	--	--	SPACE	--	42

LOAD TYPE KEY:

N= NON CONTINUOUS M=MECH EQUIP
R=RECEPTACLE R=RECEPTACLE
L=LIGHTING K=KITCHEN

TOTAL A: 6391 VA 24 A
TOTAL B 3829 VA 15 A
TOTAL C: 2287 VA 8 A

LOAD TYPE	CONNECTED	DEMAND FACTOR	ESTIMATED	PANEL TOTALS		
L	12523 VA	125.00%	15654 VA			
				TOTAL LOAD:	12523 VA	15 A
				TOTAL DEMAND LOAD:	15654 VA	19 A

PANEL LEGEND		
MSB	4M	4L1
2DB1	INV1	4L2
2DB2	-	-

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o: 949. 675. 6442

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SEALS / APPROVALS

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
FILE: 30-C2
A# 04-116810
AC _____ FLS _____ SS _____
DATE _____

PROJECT TITLE
JOHNSON STUDENT CENTER
INCREMENT 2
1530 W 17TH ST SANTA ANA CA 92706

RANCHO SANTIAGO Community College District

SUBMITTALS

#	DATE	DESCRIPTION
	05/18/18	HEALTH DEPT. SUBMITTAL
	08/13/18	DSA FINAL SUBMITTAL
	09/24/18	ADDENDUM #3
	10/08/18	ADDENDUM #5

PROJECT IDENTIFICATION 7411
THESE DRAWINGS ORIGINALLY CREATED IN AUTODESK REVIT V. 2016
THE ORIGINAL SIZE OF THIS SHEET IS 30" X 42".

DRAWN BY C Naranjo
CHECKED BY C S Musser

SHEET TITLE
PANEL SCHEDULES

SHEET NUMBER
E0.10

100% CONSTRUCTION DOCUMENTS

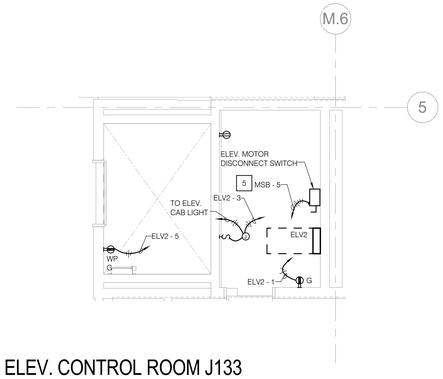
10/1/2018 1:21:16 PM C:\Revit Files\J7411_R16_MEPFA_Central_Melissa Jackson.rvt

GENERAL NOTES

1. LOW VOLTAGE TRANSFORMERS SHALL BE PROVIDED WITH CLASS 220 INSULATION SYSTEM PER SPECIFICATION 262200-2.3.J.

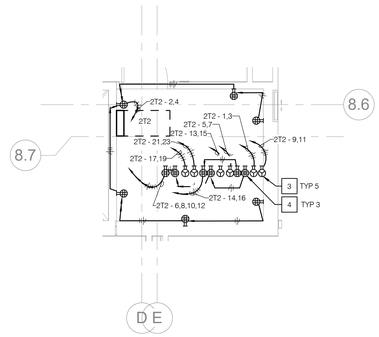
NOTES

1. PROVIDE UPS AS SHOWN. REFER TO SINGLE LINE DIAGRAM SHEET E5.01 FOR ADDITIONAL INFORMATION. FIELD COORDINATE EXACT LOCATION PRIOR TO INSTALLATION.
2. PROVIDE 120V, 1P, 20A CONNECTION TO SECURITY AND ACCESS CONTROL SYSTEM. REFER TO TELECOM PLANS FOR EXACT LOCATION.
3. PROVIDE 208V, 1P, 30A RECEPTACLE NEMA L6-30R MOUNTED ON SIDE OF CABLE TRAY. REFER TO TELECOM PLANS FOR EXACT LOCATION AND ADDITIONAL INFORMATION.
4. PROVIDE DEDICATED QUAD RECEPTACLE MOUNTED ON SIDE OF CABLE TRAY. REFER TO TELECOM PLANS FOR EXACT LOCATION AND ADDITIONAL INFORMATION.
5. PROVIDE FEEDER AND DISCONNECT PER SINGLE LINE DIAGRAM ON SHEET E5.01.
6. PROVIDE RECEPTACLE TO ALLOW CHARGING OF AUTO SCRUBBER.
7. PROVIDE (2) #CXP12-277-4-T12 LIGHTING CONTROL PANELS FOR CONTROL OF EXTERIOR LIGHTS. LCP-1 SHALL CONTROL NORMAL CIRCUITS AND LCP-2 SHALL CONTROL EMERGENCY CIRCUITS. PROVIDE LUT-ELI RELAY FOR POWER SENSING. INSTALL PER MANUFACTURER REQUIREMENTS. REFER TO SHEET E0.05 FOR RELAY SCHEDULE.
8. PROVIDE 8-RELAY PANEL LUTRON #XPS8-120V4ML-20 TO ALLOW TIMECLOCK CONTROL OF THE EXTERIOR RECEPTACLES. COORDINATE PROGRAMMING WITH COLLEGE REPRESENTATIVE. PROVIDE WITH 1-BUTTON OVERRIDE SWITCH FOR RELAY PANEL. LOCATE ADJACENT TO RELAY PANEL. REFER TO RELAY PANEL SCHEDULE ON SHEET E0.05 FOR ADDITIONAL INFORMATION.
9. PROVIDE LUTRON #QP3-1PL QUANTUM MANAGEMENT HUB.



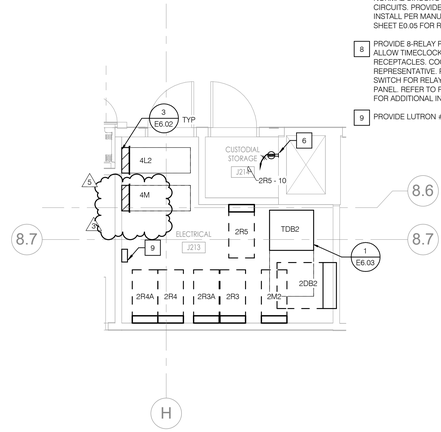
6 ELEV. CONTROL ROOM J133

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



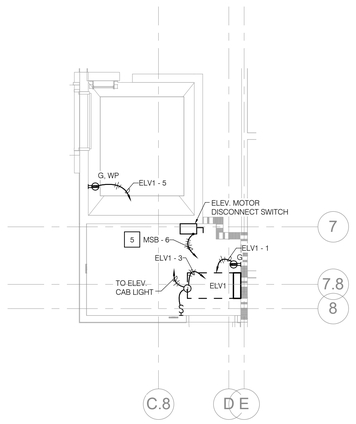
4 SECOND FLOOR IDF ROOM

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



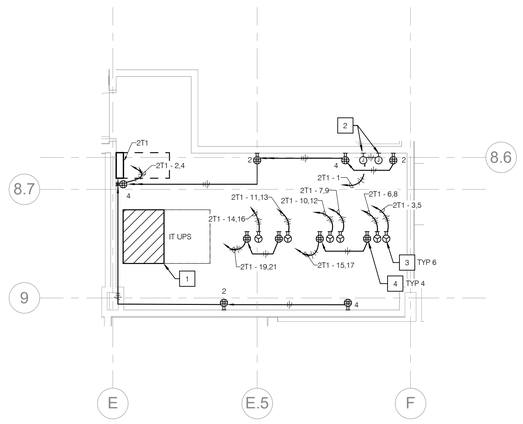
2 SECOND FLOOR ELECTRICAL ROOM

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



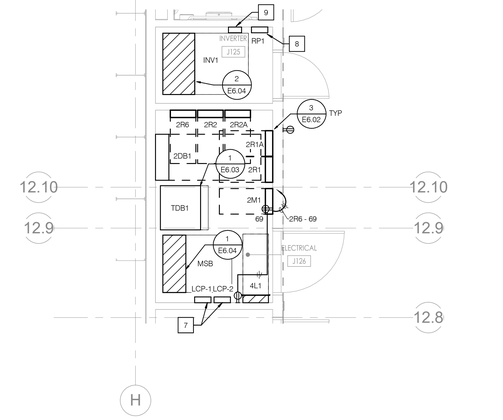
5 ELEV. CONTROL ROOM J113

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



3 FIRST FLOOR BDF ROOM

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



1 FIRST FLOOR ELECTRICAL ROOM

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

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SEALS / APPROVALS

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
FILE: 30-C2
A# 04-116810

AC _____ FLS _____ SS _____

DATE _____

PROJECT TITLE

JOHNSON STUDENT CENTER
INCREMENT 2
1530 W 17TH ST SANTA ANA CA 92706

RANCHO SANTIAGO
Community College District

SUBMITTALS		
#	DATE	DESCRIPTION
	05/18/18	HEALTH DEPT. SUBMITTAL
	08/13/18	DSA FINAL SUBMITTAL
	09/24/18	ADDENDUM #3
	10/08/18	ADDENDUM #5

PROJECT IDENTIFICATION 7411

THESE DRAWINGS ORIGINALLY CREATED IN AUTODESK REVIT V. 2016

THE ORIGINAL SIZE OF THIS SHEET IS 30" X 42".

DRAWN BY C Naranjo

CHECKED BY C S Musser

SHEET TITLE

ENLARGED FLOOR PLANS

SHEET NUMBER

E3.01

100% CONSTRUCTION DOCUMENTS

Attachment 3

PRE-BID CLARIFICATION ("PBC") FORM
(ALL questions to be submitted on this form ONLY)

PBC # *(RSCCD USE ONLY)*:	90

PROJECT NAME:	RFP #1819-224 Johnson Student Center at Santa Ana College		
PROJECT NUMBER:	3035	DSA NUMBER:	Demolition, #04-116810 INC 1 and INC 2
EMAIL:	**FacilitiesRFP@rsccd.edu**		

DATE:	09/26/2018		
FROM:	S.Monsen - McCarthy	EMAIL:	SMonsen@McCarthy.com
SPECIFICATION NUMBER:		DRAWING NUMBER:	E601

REQUESTED CLARIFICATION:

Increment #2 - Sheet E601 Detail #3 shows an 8" concrete slab for the (N) 750KVA XFMR.
Often times with this pad configuration, 200A loadbreak elbows if required, are ineffective as a disconnecting means due to the restrictions of conduits with respect to the short distance between the HV bushing wells and finish surface of the pad. These restrictions prevent someone from disconnecting the cables while energized, and utilizing the parking bushings as intended.

Please confirm that Detail #3 is the correct choice for the pad mount XFMR as opposed to Detail #1.

RESPONSE TO CLARIFICATION, **SUBMITTED AS PART OF AN ADDENDUM**:

Detail 3/E601 is the correct detail for the 750kVA transformer. Wire size is #4/0 per single line diagram. Contractor shall provide enough slack to allow for the bends.

Melissa Klug, P2S 10/1/18

RESPONSE PROVIDED BY:	Melissa Klug / P2s	DATE:	10/08/18

Attach additional numbered sheets as necessary; however, only one (1) request shall be contained on each submitted form.

Attachment 3

PRE-BID CLARIFICATION ("PBC") FORM
(ALL questions to be submitted on this form ONLY)

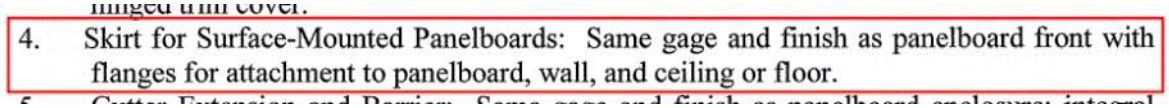
PBC # *(RSCCD USE ONLY)*: 91

PROJECT NAME:	RFP #1819-224 Johnson Student Center at Santa Ana College		
PROJECT NUMBER:	3035	DSA NUMBER:	Demolition, #04-116810 INC 1 and INC 2
EMAIL:	**FacilitiesRFP@rsccd.edu**		

DATE:	09/27/2018		
FROM:	S.Monsen - McCarthy	EMAIL:	SMonsen@McCarthy.com
SPECIFICATION NUMBER:	262416	DRAWING NUMBER:	E5.01

REQUESTED CLARIFICATION:

Increment #2 - General note #1 on Sheet E5.01 calls for enclosure skirts to floor for surface mounted panelboards but specification section 262416-2.1B.4. calls for ceiling and floor skirts for surface mounted panelboards. Please clarify which is correct.


4. Skirt for Surface-Mounted Panelboards: Same gage and finish as panelboard front with flanges for attachment to panelboard, wall, and ceiling or floor.

RESPONSE TO CLARIFICATION, **SUBMITTED AS PART OF AN ADDENDUM**:

Provide per note on E5.01.

Melissa Klug, P2S 10/1/18

RESPONSE PROVIDED BY:	Melissa Klug / P2s	DATE:	10/08/18

Attach additional numbered sheets as necessary; however, only one (1) request shall be contained on each submitted form.

Attachment 3

PRE-BID CLARIFICATION ("PBC") FORM
(ALL questions to be submitted on this form ONLY)

PBC # *(RSCCD USE ONLY)*:	92

PROJECT NAME:	RFP #1819-224 Johnson Student Center at Santa Ana College		
PROJECT NUMBER:	3035	DSA NUMBER:	Demolition, #04-116810 INC 1 and INC 2
EMAIL:	**FacilitiesRFP@rsccd.edu**		

DATE:	09/27/2018		
FROM:	S.Monsen - McCarthy	EMAIL:	SMonsen@McCarthy.com
SPECIFICATION NUMBER:		DRAWING NUMBER:	L2.30

REQUESTED CLARIFICATION:

Increment #2 - Sheet L2.30 - In Alternate #1 - there is a tube steel guardrail called for as part of the alternate pricing. Within this scope there is also request for alternate prcing on the guardrial (Hot Dipped Galvanized or Stainless Steel). Please advise which should be included with the Alternate #1 pricing - Galvalnized or Stainless Steel.

RESPONSE TO CLARIFICATION, **SUBMITTED AS PART OF AN ADDENDUM**:

REMOVE NOTE FOR ALTERNATE #1. BASE BID IS FOR HOT-DIPPED GALVANIZED TUBE STEEL GUARDRAIL

RESPONSE PROVIDED BY:	Julia D. Jones / hpi	DATE:	10/08/18

Attach additional numbered sheets as necessary; however, only one (1) request shall be contained on each submitted form.

Attachment 3

PRE-BID CLARIFICATION ("PBC") FORM
(ALL questions to be submitted on this form ONLY)

PBC # *(RSCCD USE ONLY)*: 93

PROJECT NAME:	RFP #1819-224 Johnson Student Center at Santa Ana College		
PROJECT NUMBER:	3035	DSA NUMBER:	Demolition, #04-116810 INC 1 and INC 2
EMAIL:	**FacilitiesRFP@rsccd.edu**		

DATE:	09/26/2018		
FROM:	S.Monsen - McCarthy	EMAIL:	SMonsen@McCarthy.com
SPECIFICATION NUMBER:		DRAWING NUMBER:	ED1.01, E5.01, E1.11

REQUESTED CLARIFICATION:

Increment #2 - Reference drawings ED1.01 Note #4, E5.01 single line and E1.11 site.

To bypass the switch and keep the campus loop operational per note #4 on DWG ED1.01, a current single line is needed, DWG E5.01 reflects new construction only from MH #22. Is there a current single line of the backbone showing MV circuits from MH #22 to PB #7 and beyond?

RESPONSE TO CLARIFICATION, **SUBMITTED AS PART OF AN ADDENDUM**:

See attached single lines from Linik Corporation; on site CM.

REFER TO Bulletins 010, 011, 014 and E401 (For Reference Only)

Kirk Anglin, P2S

RESPONSE PROVIDED BY:	Kirk Anglin / P2s	DATE:	10/08/18

Attach additional numbered sheets as necessary; however, only one (1) request shall be contained on each submitted form.

LINIK CORP
11/19/2015
RECEIVED

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	BULLETIN # 10			
PROJECT:	**Santa Ana College Quad & Infrastructure David Gonzales**		**W+W # DSA#**	**13022.02 04-113798**
ARCHITECT:	**Westberg + White, Inc. Bill Gamache**		**Date:**	**11/18/15**
CM:	**Linik Corp. Matt Schoeneman**		**Page:**	**1 of**
Contractor:	**McCarthy Building Companies, Inc. Curtis Horner**			

CONSTRUCTION DOCUMENT REFERENCE: DSA Approved C405, C415, E105, E206, E401 and MP101

DESCRIPTION OF CHANGE: Provide POC's for future Health Science Building.

ATTACHMENTS: SKC-1,2,3, SKE-1,2,3,4 and SKMP101

ACTION TO BE TAKEN/AUTHORIZATION TO PROCEED:

1. _____ Make the described change in the work at no change in the Contract Sum and no change in the Contract Time of Completion.

2. _____ Contractor is authorized to proceed with the work outlined in this Bulletin, with credit, cost, and/or schedule impact, if any, to be determined in accordance with the General and Supplementary Conditions of the Contract. The amount for this change, if any, will be reviewed and approved upon submittal and then will be added to the Contract in a forthcoming Change Order.

3. __X_____ Contractor is authorized to determine cost and schedule impact to the project due to the work outlined in this Bulletin, with credit or cost, if any, to be determined in accordance with the General and Supplementary Conditions of the Contract. The amount for this change, if any, will be reviewed and if approved by the Owner, and would then be added to the Contract in a future Change Order. Only upon receipt of such a Change Order is the Contractor approved to proceed with the Work. This document is not an authorization to proceed with the Work at this time.

NOTES:

1. ___X___ It is not presently envisioned that the Work covered in this Bulletin will require approval from the DSA in the form of a CCD.

2. _____ The Work covered in this Bulletin will be submitted to the DSA in the form of a CCD, but approval has not been received. Any such Work performed shall be considered "at risk" until final DSA approval has been received.

3. _____ The Work covered in this Bulletin has been approved by the DSA in the form of a CCD that is attached to this Bulletin.

Bill Gamache _____ 11/19/15

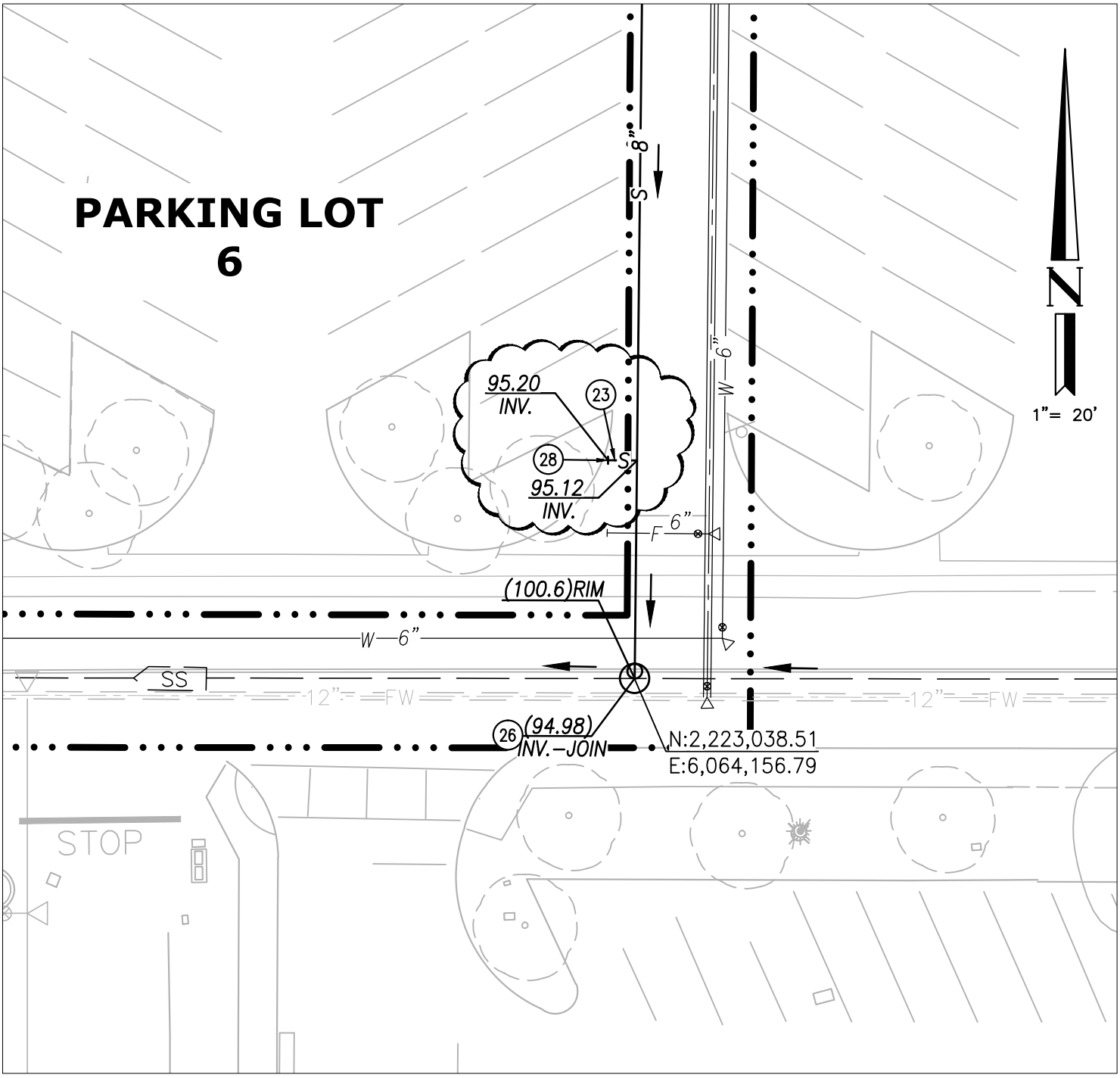
Westberg + White — Date

TERMS: If Contractor is required to prepare a cost/credit proposal associated with the work outlined in this BULLETIN, such cost/credit proposal shall breakout any cost changes as follows (all costs must be itemized for review): Additions, Deductions, and No Change items. Time and Material (T & M) Work is discouraged unless this revision to the scope of work adversely impacts the project's critical path. The contractor must justify such a request in writing, stating that T & M is limited to pre-Proposal Acceptance. The Project Inspector (PI) is to be notified when T & M work begins, what is the scope of T & M work and when T & M work has stopped. When a Change Order for this Work is approved by the Owner, the Contractor agrees to furnish all labor and materials and perform all of the above-described work in accordance with the above terms in compliance with the applicable sections of the Contract Documents. The amount of the changes under this Bulletin is limited to the charges allowed according to the General Conditions. The adjustment in the contract sum, if any, and the adjustment in the contract time, if any, set out in this Bulletin, shall constitute the entire compensation and/or adjustment in the contract time and contract sum due to the Contractor arising out of the change in the Work covered by this Bulletin, unless otherwise provided in this Bulletin.

DISTRIBUTION:

Inspector:
W+W Project File

Any additions and/or corrections shall be transmitted to the Architect within two (2) days.



CONSTRUCTION NOTES

(23) — INSTALL 6" SDR–35, PVC SEWER MAIN

(26) — INSTALL SEWER MANHOLE PER CITY OF SANTA ANA PUBLIC WORKS AGENCY STANDARD PLAN NO 1201

(28) — CAP END FOR FUTURE USE

20 0 20 40
scale 1"= 20' feet

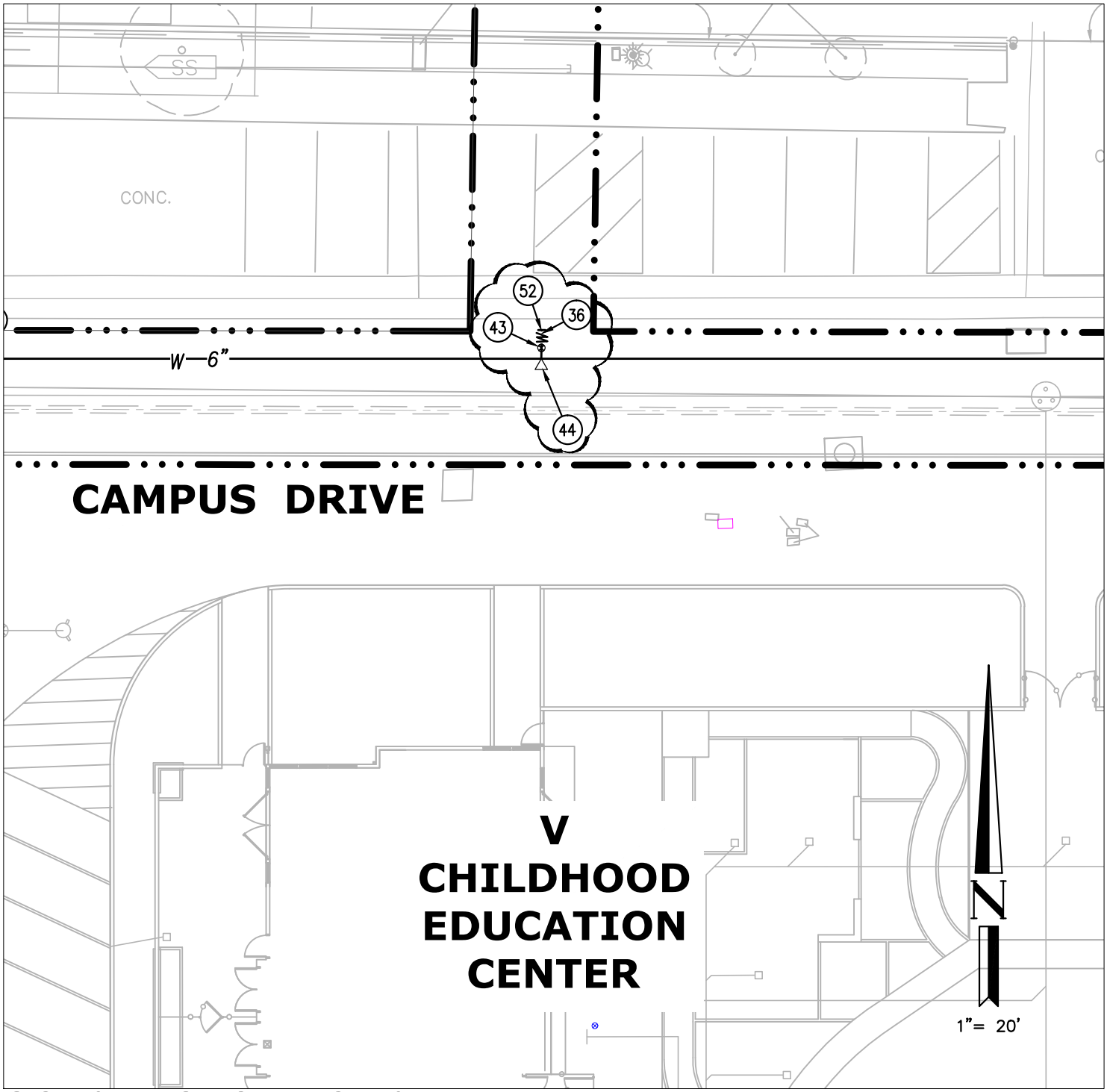
architecture westbergwhite
14471 CHAMBERS RD, SUITE 210
TUSTIN, CA 92780
(714) 508-1780 508-1790 FAX

ARCHITECT:
Hall & Foreman
A Division of David Evans and Associates, Inc.
17782 17TH STREET, SUITE 200 • TUSTIN, CA 92780 • 714-665-4500
17781 E. 17TH STREET, SUITE 200
TUSTIN, CA 92780
(714) 665-4500

PROJECT:
Santa Ana College
QUAD / INFRASTRUCTURE
SANTA ANA COMMUNITY COLLEGE DISTRICT

SHEET DESCRIPTION:
FUTURE SCIENCE BLDG SEWER LATERAL POC STUB
SHEET C405

DSA FILE NO:	DATE: 11/19/2015
DSA #:	JOB NO: 140204.0000
ADDENDA #:	DRAWN: MSO
CCD #:	SHEET
BULLETIN #: 10	SKC-01
RFI #:	



CONSTRUCTION NOTES

(36) — INSTALL 4" C-900, CLASS 235, PVC WATER LINE
(43) — INSTALL 4" GATE VALVE
(44) — CONSTRUCT THRUST BLOCK PER DETAIL 44, SHEET C601
(52) — CAP END FOR FUTURE USE

20 0 20 40
scale 1"= 20' feet

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ARCHITECT:
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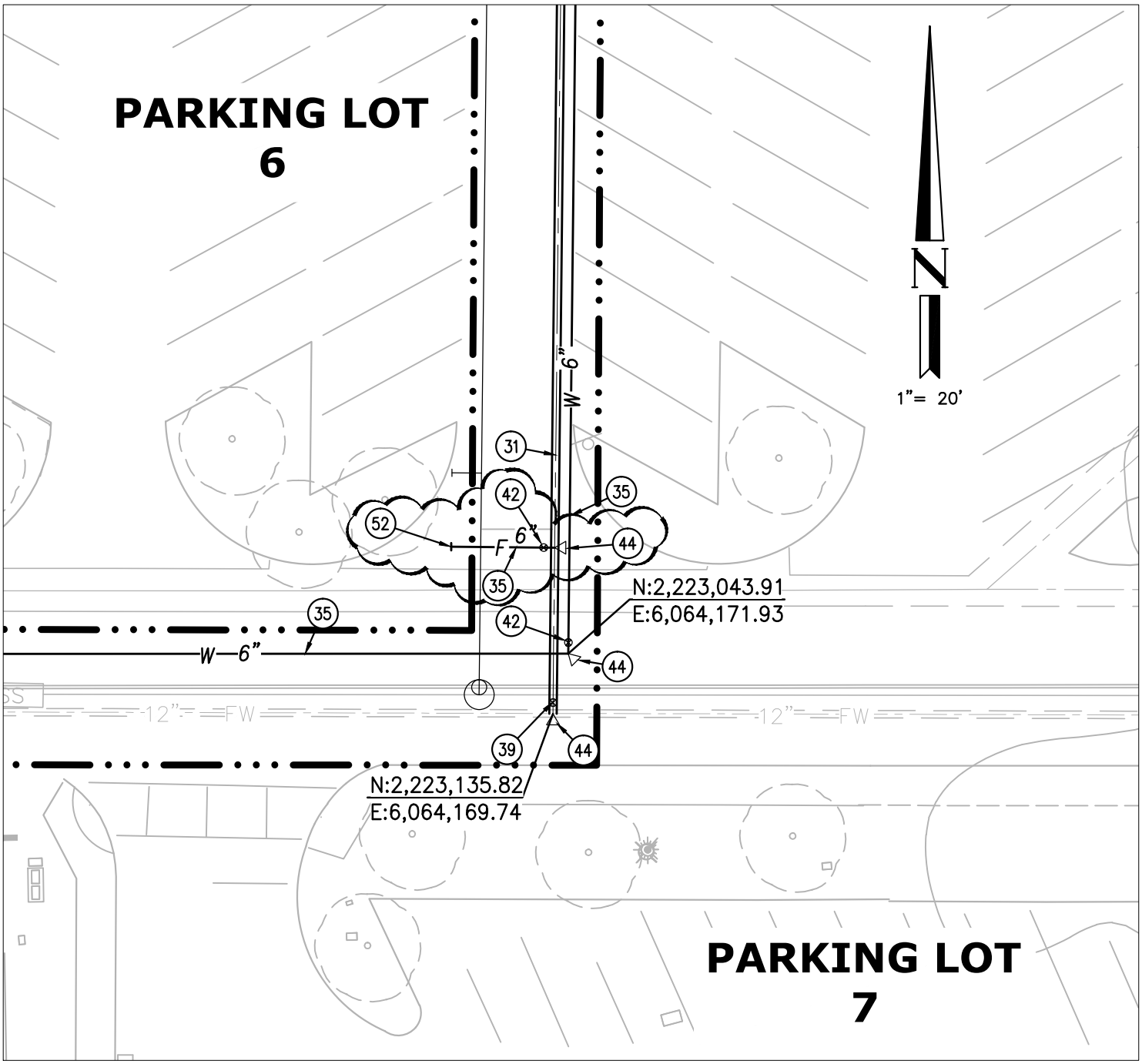
17781 E. 17TH STREET, SUITE 200
TUSTIN, CA 92780
(714) 665-4500

PROJECT:
Santa Ana College
QUAD / INFRASTRUCTURE
SANTA ANA COMMUNITY COLLEGE DISTRICT

SHEET DESCRIPTION:
FUTURE SCIENCE BLDG DOMESTIC WATER
LATERAL POC STUB
SHEET C415

DSA FILE NO:	DATE: 11/19/2015
DSA #:	JOB NO: 140204.0000
ADDENDA #:	DRAWN: MSO
CCD #:	SHEET
BULLETIN #: 10	SKC-02
RFI #:	



CONSTRUCTION NOTES

(31)— *INSTALL 12" C-900, CLASS 235, PVC FIRE WATER LINE*
(35)— *INSTALL 6" C-900, CLASS 235, PVC WATER LINE*
(39)— *INSTALL 12" GATE VALVE*
(42)— *INSTALL 6" GATE VALVE*
(44)— *CONSTRUCT THRUST BLOCK PER DETAIL 44, SHEET C601*
(52)— *CAP END FOR FUTURE USE*

20 0 20 40
scale 1"= 20' feet

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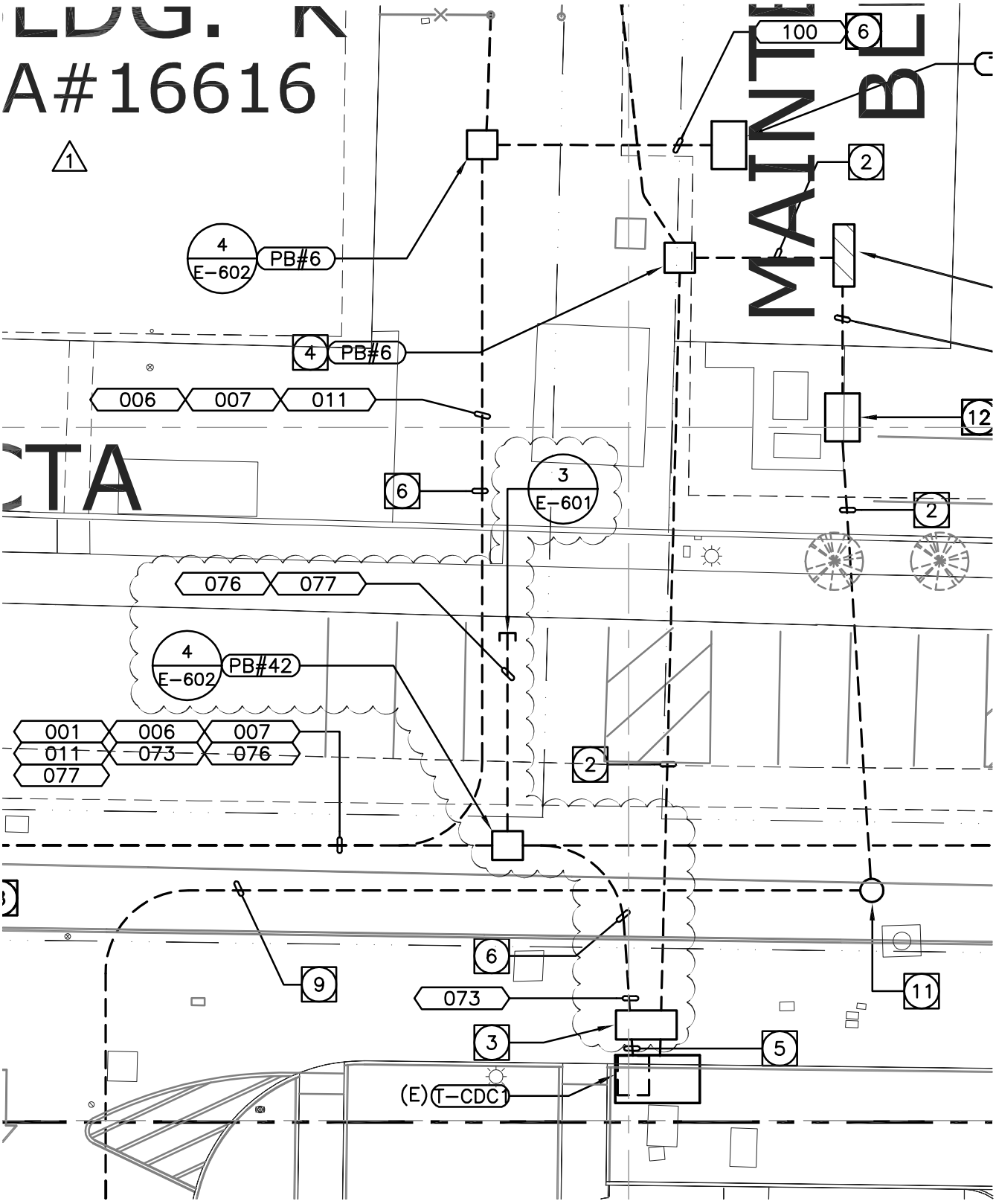
(714) 665-4500

PROJECT:
Santa Ana College
QUAD / INFRASTRUCTURE
SANTA ANA COMMUNITY COLLEGE DISTRICT

SHEET DESCRIPTION:
FUTURE SCIENCE BLDG FIRE WATER LATERAL POC STUB
SHEET C415

DSA FILE NO:	DATE: 11/19/2015
DSA #:	JOB NO: 140204.0000
ADDENDA #:	DRAWN: MSO
CCD #:	SHEET
BULLETIN #: 10	SKC-03
RFI #:	



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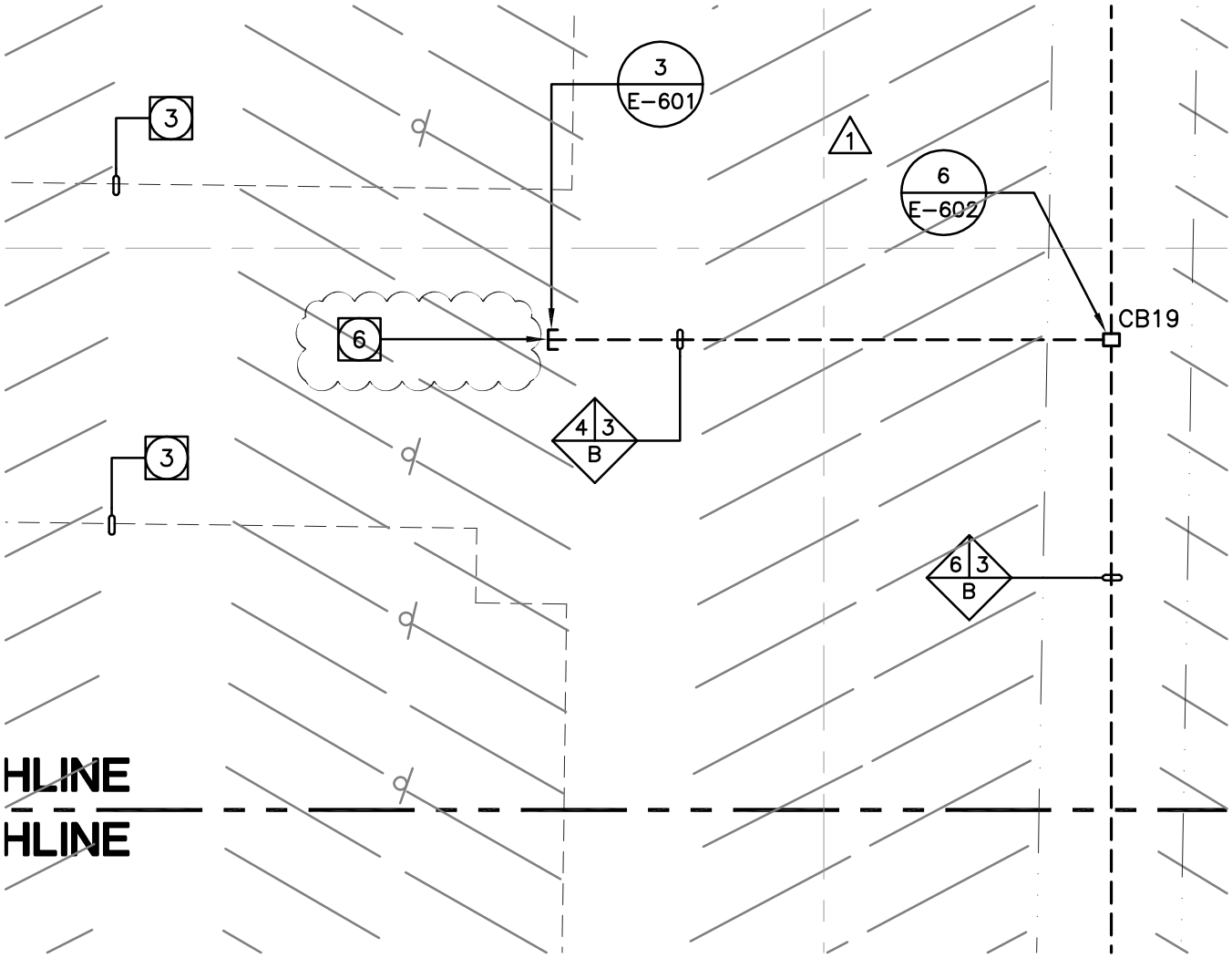
14471 CHAMBERS RD, SUITE 210
TUSTIN, CA 92780
(714) 508-1780 508-1790 FAX

ARCHITECT:
tk1sc
COLLABORATIVE
15231 Laguna Canyon Road, Suite 100
Irvine, California 92618
949.751.5800 www.tk1sc.com
Jerry Leonhardt
tk1sc Job #: 2013-0539

PROJECT:
Santa Ana College
QUAD AND INFRASTRUCTURE RENOVATION
SANTA ANA COMMUNITY COLLEGE DISTRICT

SHEET DESCRIPTION:
PARTIAL SITE POWER PLAN
SHEET E-105

DSA FILE NO: 30-C2	DATE: 11/17/15
DSA #: 04-113798	JOB NO: 13022.02
ADDENDA #:	DRAWN: TK1SC
CCD #:	SHEET
BULLETIN #: 10	SKE-01
RFI #:	



NOTES:

1. (1)3"C. AND (1)2"C. WITH CABLES AS SPECIFIED ROUTED ABOVE CEILING
2. CONDUITS SHALL BE ROUTED UP THE EXTERIOR OF THE BUILDING TO A 24"x24"x12" PULLBOX.
3. OUTLINE OF FUTURE BUILDING.
4. (1)3"C. AND (1)2"C. WITH CABLES AS SPECIFIED ROUTED EXPOSED.
5. PROVIDE CONNECTION TO THE EXISTING EMS SYSTEM. SEE SPECIAL EMS SYSTEM NOTE ON SHEET MP002 FOR REQUIREMENTS.
6. CONTRACTOR SHALL COORDINATE EXACT LOCATION IN FIELD.

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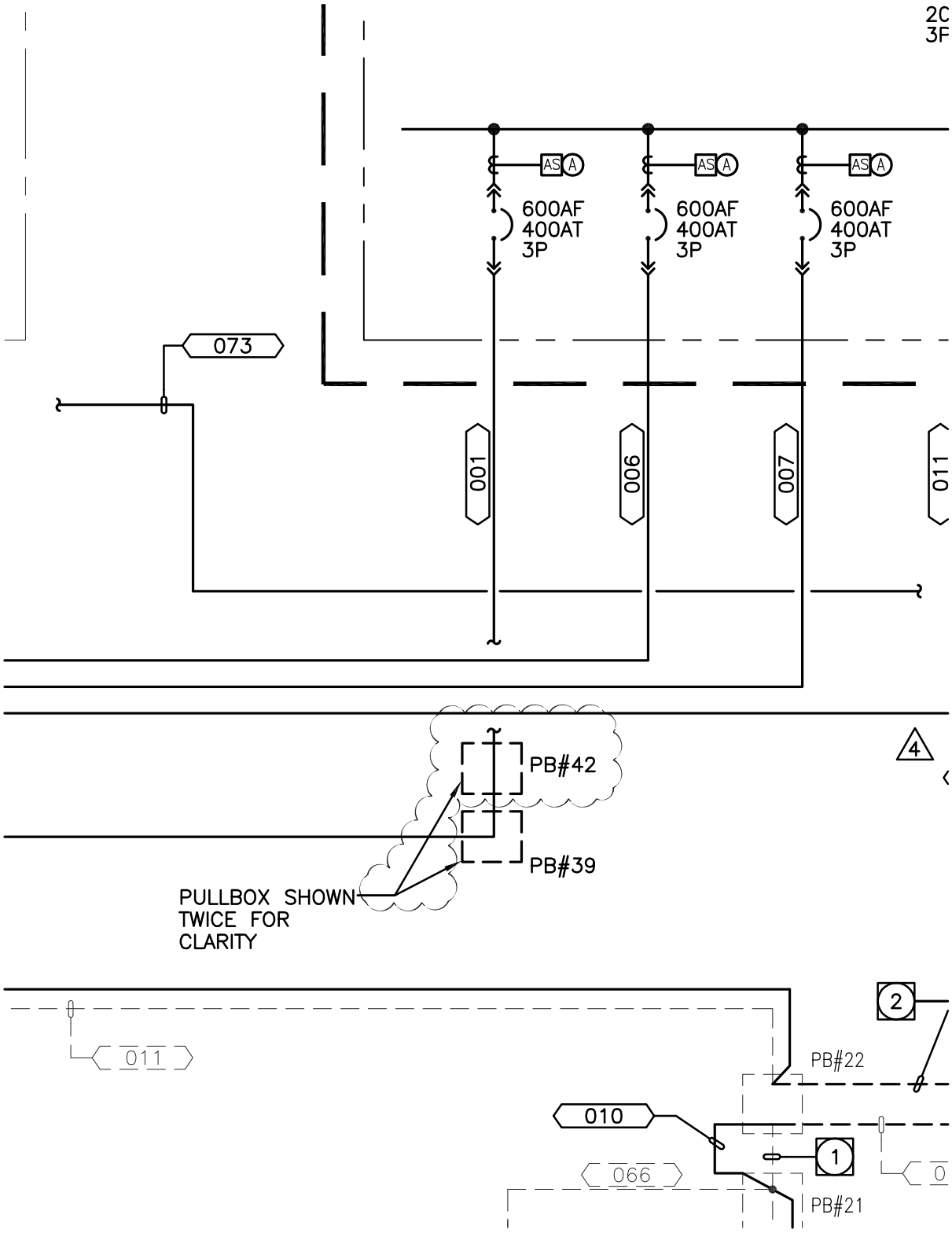
Jerry Leonhardt
tk1sc Job #: 2013-0539

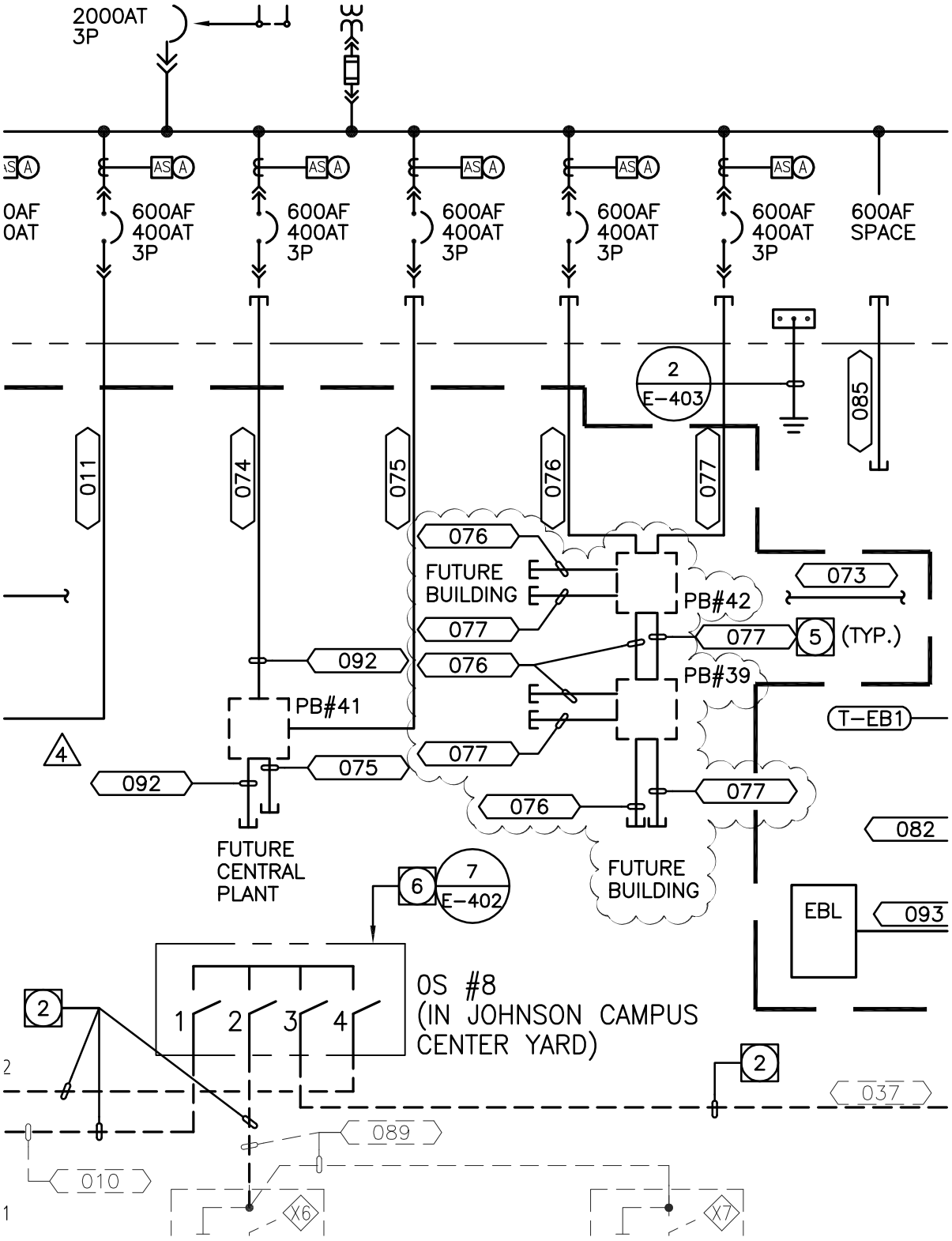
PROJECT:
Santa Ana College
QUAD AND INFRASTRUCTURE RENOVATION
SANTA ANA COMMUNITY COLLEGE DISTRICT

SHEET DESCRIPTION:
PARTIAL SITE POWER PLAN
SHEET E-206

DSA FILE NO: 30-C2	DATE: 11/17/15
DSA #: 04-113798	JOB NO: 13022.02
ADDENDA #:	DRAWN: TK1SC
CCD #:	SHEET
BULLETIN #: 10	SKE-02
RFI #:	



architecture westbergwhite 14471 CHAMBERS RD, SUITE 210 TUSTIN, CA 92780 (714) 508-1780 508-1790 FAX	ARCHITECT: tk1sc COLLABORATIVE 15231 Laguna Canyon Road, Suite 100 Irvine, California 92618 949.751.5800 www.tk1sc.com Jerry Leonhardt tk1sc Job #: 2013-0536	PROJECT: Santa Ana College QUAD AND INFRASTRUCTURE RENOVATION SANTA ANA COMMUNITY COLLEGE DISTRICT	DSA FILE NO: 30-C2 DSA #: 04-113798 ADDENDA #:	DATE: 11/17/15 JOB NO: 13022.02 DRAWN: TK1SC
		SHEET DESCRIPTION: PARTIAL SINGLE LINE DIAGRAM SHEET E-401	CCD #: BULLETIN #: 10 RFI #:	SHEET SKE-03



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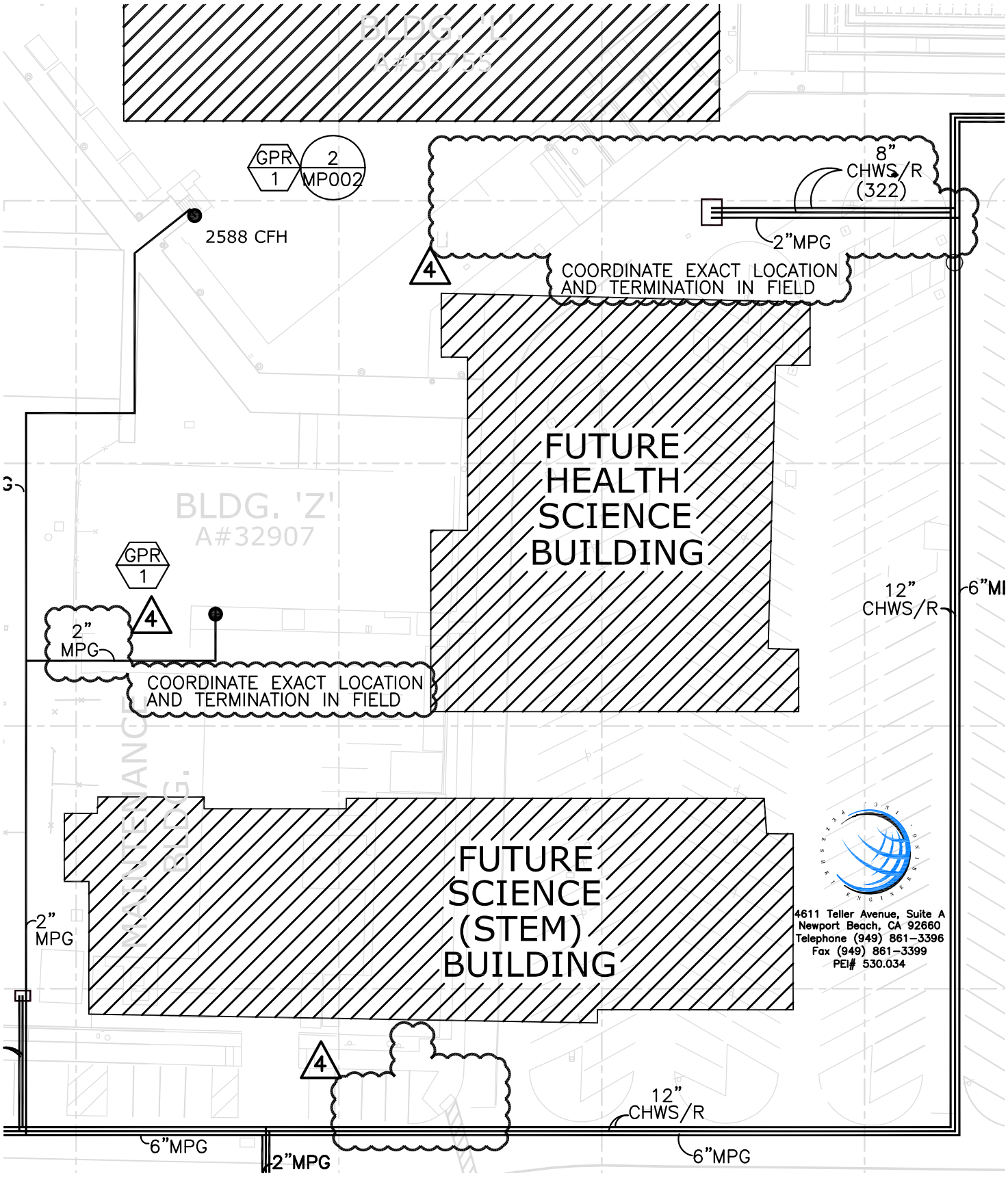
tk1sc Job #: 2013-0536

PROJECT:
Santa Ana College
QUAD AND INFRASTRUCTURE RENOVATION
SANTA ANA COMMUNITY COLLEGE DISTRICT

SHEET DESCRIPTION:
PARTIAL SINGLE LINE DIAGRAM
SHEET E-401

DSA FILE NO: 30-C2	DATE: 11/17/15
DSA #: 04-113798	JOB NO: 13022.02
ADDENDA #:	DRAWN: TK1SC
CCD #:	SHEET
BULLETIN #: 10	SKE-04
RFI #:	



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PEI# 530.034

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ENGINEER:

REGISTERED PROFESSIONAL ENGINEER MATTHEW M. PEZESHKI No. M 29925 Exp. 6-30-2016 MECHANICAL STATE OF CALIFORNIA

PROJECT:
Santa Ana College
Quad and Infrastructure Renovation
Rancho Santiago Community College District

DSA FILE NO.: 30-C2	DATE: 11-17-15
DSA NO.: 04-113798	JOB NUMBER: 13022.02
ADDENDA NO.: 4	BULLETIN NO.: 10

SHEET DESCRIPTION:
MP101 - Mechanical & Plumbing Site Plan

SHEET
SKMP-1
OF " SHEETS

LINIK CORP
01/25/2016
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	BULLETIN # 11			
PROJECT:	**Santa Ana College Quad & Infrastructure David Gonzales**		**W+W # DSA#**	**13022.02 04-113798**
ARCHITECT:	**Westberg + White, Inc. Bill Gamache**		**Date:**	**1/22/16**
CM:	**Linik Corp. Matt Schoeneman**		**Page:**	**1 of**
Contractor:	**McCarthy Building Companies, Inc. Curtis Horner**			

CONSTRUCTION DOCUMENT REFERENCE: DSA Approved Sheets E-105, E-401, E-402, E403

DESCRIPTION OF CHANGE: Provide Revise Electrical for Johnson Building the is scheduled to be demoed, prepare power for future Building..

ATTACHMENTS: SKE-1,2,3, 4, 5, 6, and 71

ACTION TO BE TAKEN/AUTHORIZATION TO PROCEED:

1. _____ Make the described change in the work at no change in the Contract Sum and no change in the Contract Time of Completion.

2. _____ Contractor is authorized to proceed with the work outlined in this Bulletin, with credit, cost, and/or schedule impact, if any, to be determined in accordance with the General and Supplementary Conditions of the Contract. The amount for this change, if any, will be reviewed and approved upon submittal and then will be added to the Contract in a forthcoming Change Order.

3. X Contractor is authorized to determine cost and schedule impact to the project due to the work outlined in this Bulletin, with credit or cost, if any, to be determined in accordance with the General and Supplementary Conditions of the Contract. The amount for this change, if any, will be reviewed and if approved by the Owner, and would then be added to the Contract in a future Change Order. Only upon receipt of such a Change Order is the Contractor approved to proceed with the Work. This document is not an authorization to proceed with the Work at this time.

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NOTES:

1. X It is not presently envisioned that the Work covered in this Bulletin will require approval from the DSA in the form of a CCD.

2. _____ The Work covered in this Bulletin will be submitted to the DSA in the form of a CCD, but approval has not been received. Any such Work performed shall be considered "at risk" until final DSA approval has been received.

3. _____ The Work covered in this Bulletin has been approved by the DSA in the form of a CCD that is attached to this Bulletin.

Bill Gamache — Westberg + White

1/22/16 — Date

TERMS: If Contractor is required to prepare a cost/credit proposal associated with the work outlined in this BULLETIN, such cost/credit proposal shall breakout any cost changes as follows (all costs must be itemized for review): Additions, Deductions, and No Change items. Time and Material (T & M) Work is discouraged unless this revision to the scope of work adversely impacts the project's critical path. The contractor must justify such a request in writing, stating that T & M is limited to pre-Proposal Acceptance. The Project Inspector (PI) is to be notified when T & M work begins, what is the scope of T & M work and when T & M work has stopped. When a Change Order for this Work is approved by the Owner, the Contractor agrees to furnish all labor and materials and perform all of the above-described work in accordance with the above terms in compliance with the applicable sections of the Contract Documents. The amount of the changes under this Bulletin is limited to the charges allowed according to the General Conditions. The adjustment in the contract sum, if any, and the adjustment in the contract time, if any, set out in this Bulletin, shall constitute the entire compensation and/or adjustment in the contract time and contract sum due to the Contractor arising out of the change in the Work covered by this Bulletin, unless otherwise provided in this Bulletin.

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Inspector:
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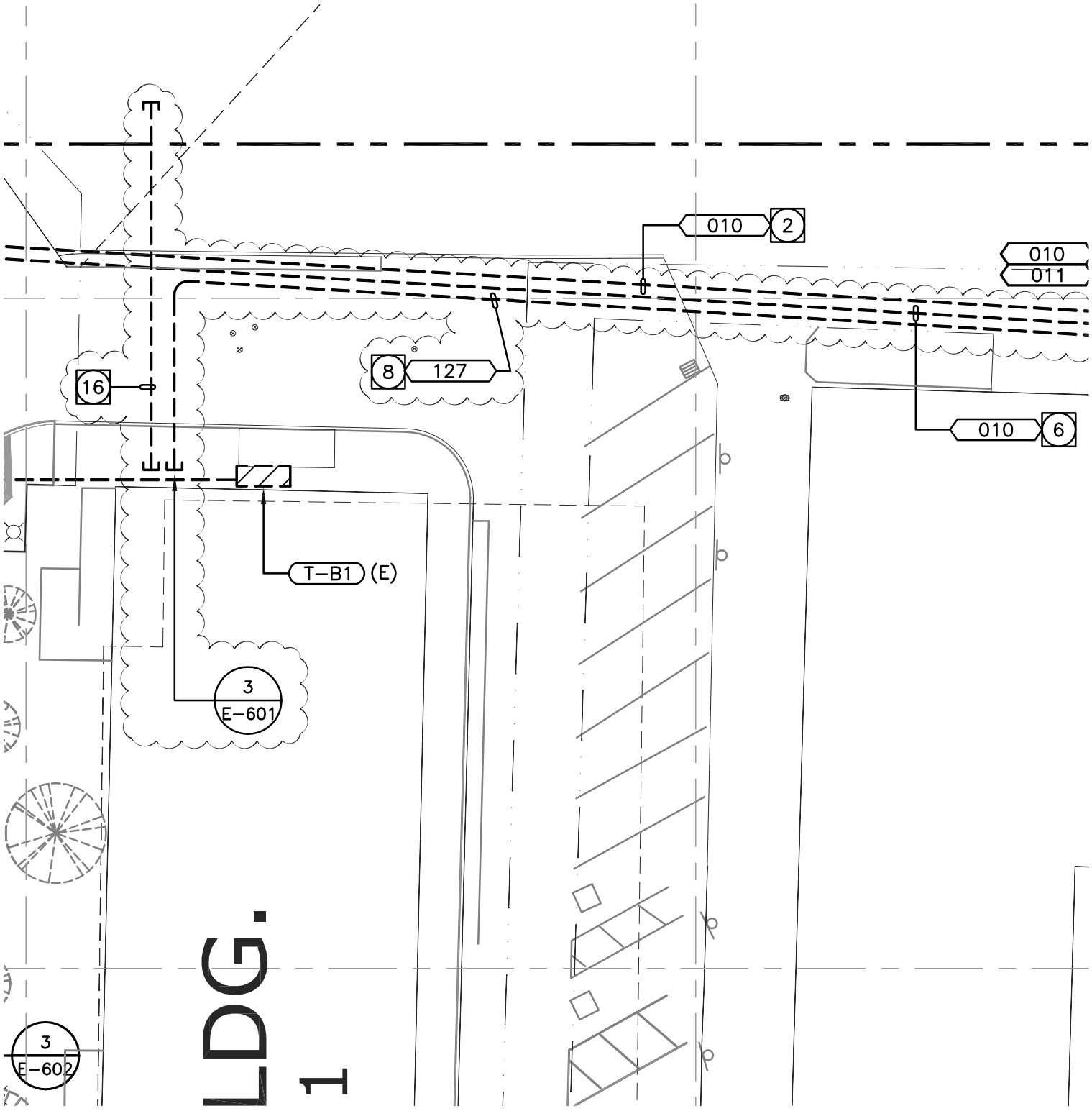
Any additions and/or corrections shall be transmitted to the Architect within two (2) days.



16 (2) 5"C.O. FOR FUTURE USE. VERIFY EXACT STUB–UP LOCATIONS AND ROUTING IN FIELD.

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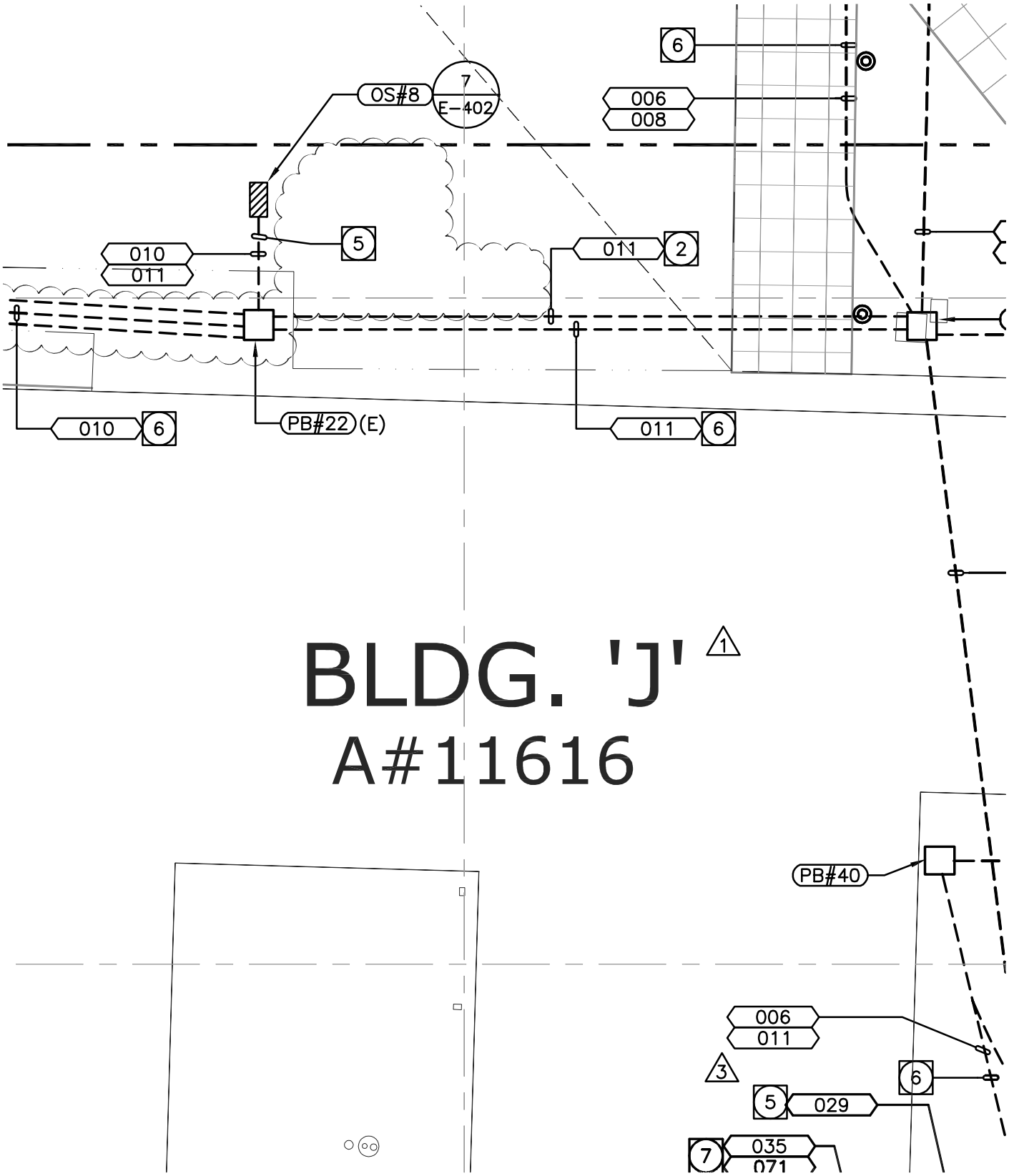
tk1sc Job #: 2013-0636

PROJECT:
Santa Ana College
QUAD AND INFRASTRUCTURE RENOVATION
SANTA ANA COMMUNITY COLLEGE DISTRICT

SHEET DESCRIPTION:
PARTIAL SITE POWER PLAN
SHEET E-105

DSA FILE NO: 30-C2	DATE: 12/07/15
DSA #: 04-113798	JOB NO: 13022.02
ADDENDA #:	DRAWN: TK1SC
CCD #:	SHEET
BULLETIN #: 11	SKE-01
RFI #:	



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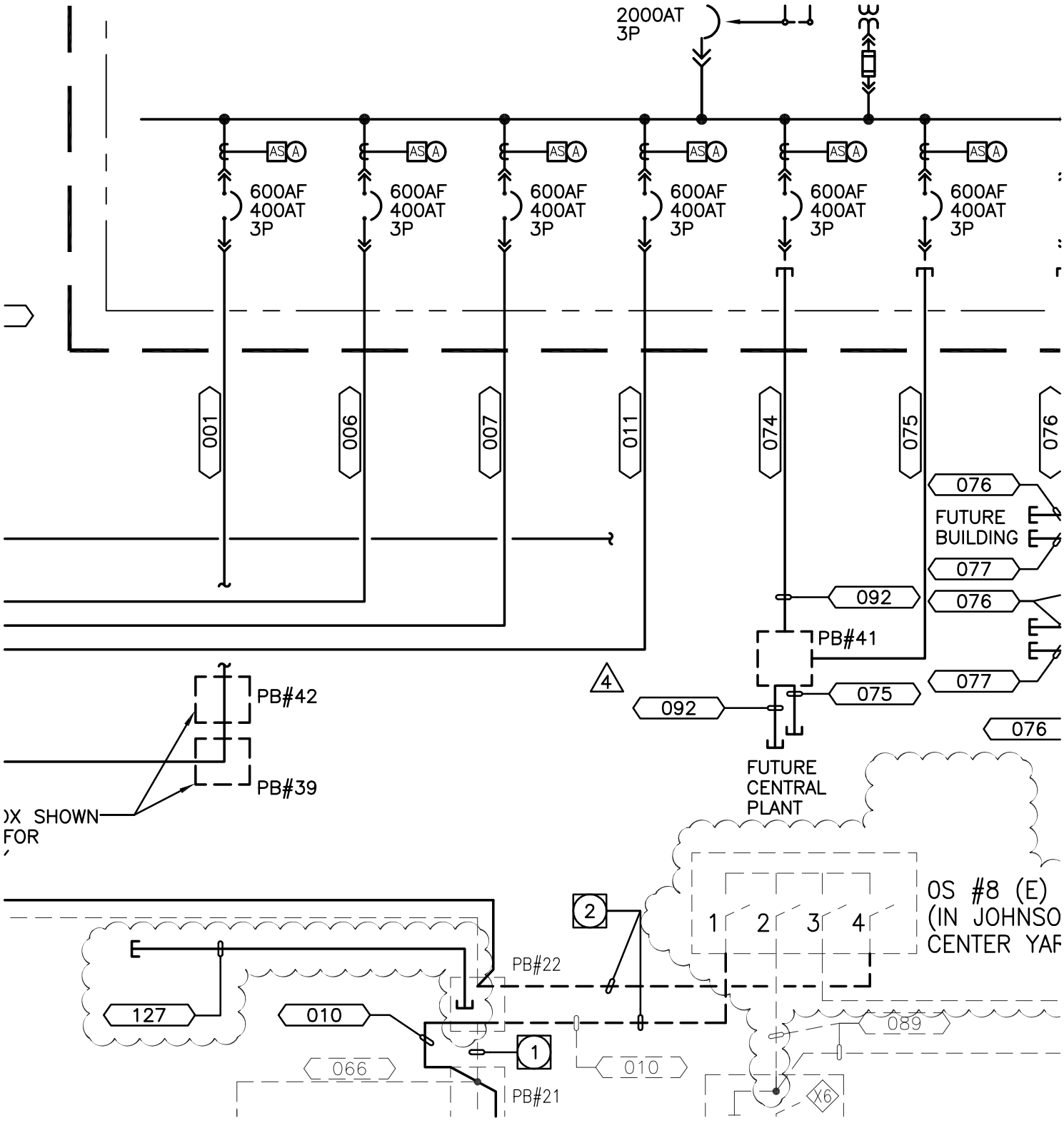
PROJECT:
Santa Ana College
QUAD AND INFRASTRUCTURE RENOVATION
SANTA ANA COMMUNITY COLLEGE DISTRICT

SHEET DESCRIPTION:
PARTIAL SITE POWER PLAN
SHEET E-105

DSA FILE NO: 30-C2	DATE: 12/07/15
DSA #: 04-113798	JOB NO: 13022.02
ADDENDA #:	DRAWN: TK1SC
CCD #:	SHEET
BULLETIN #: 11	SKE-02
RFI #:	



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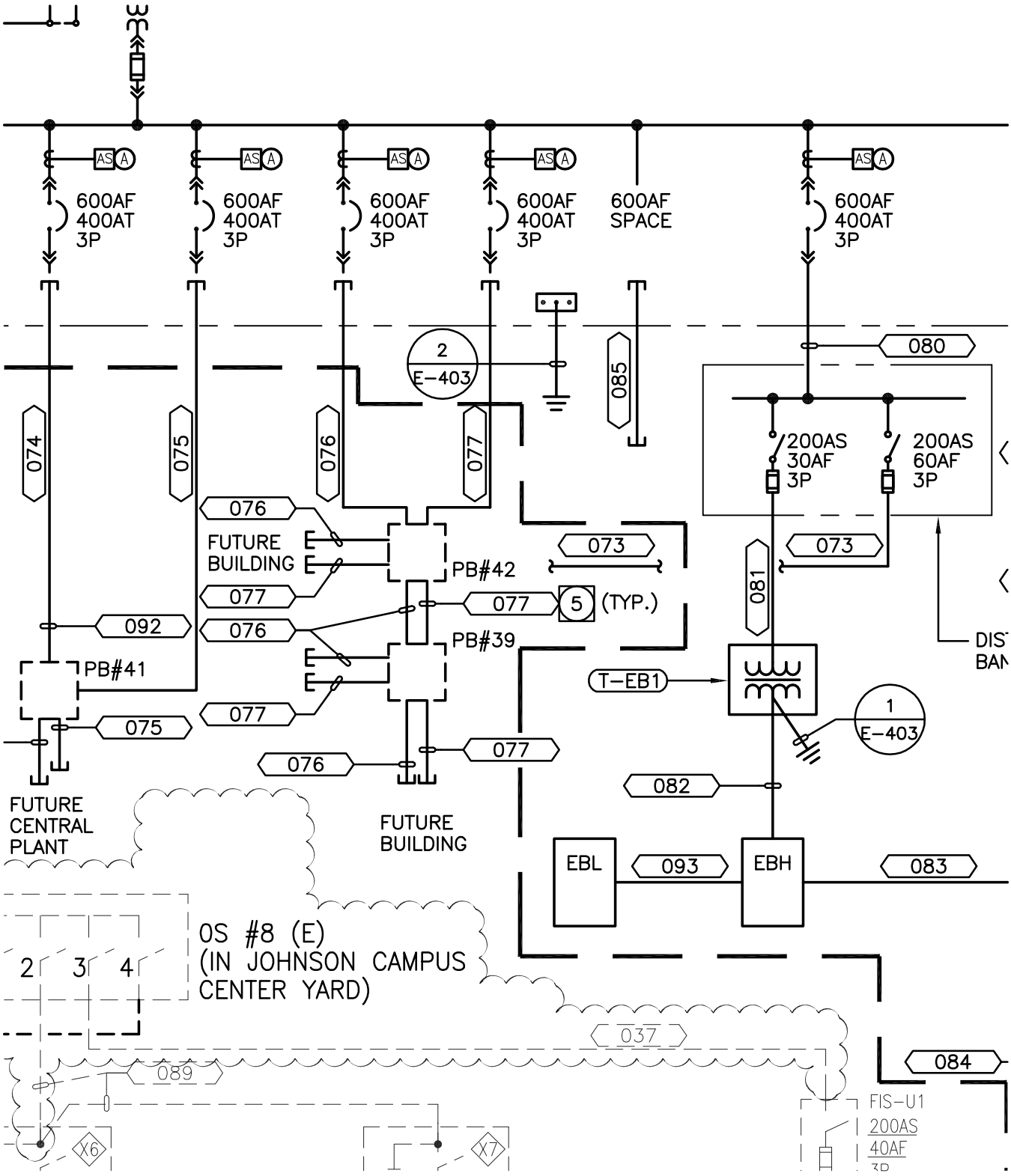
PROJECT:
Santa Ana College
QUAD AND INFRASTRUCTURE RENOVATION
SANTA ANA COMMUNITY COLLEGE DISTRICT

SHEET DESCRIPTION:
PARTIAL SINGLE LINE DIAGRAM
SHEET E-401

DSA FILE NO: 30-C2	DATE: 12/07/15
DSA #: 04-113798	JOB NO: 13022.02
ADDENDA #:	DRAWN: TK1SC
CCD #:	SHEET
BULLETIN #: 11	SKE-03
RFI #:	



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PROJECT:
Santa Ana College
QUAD AND INFRASTRUCTURE RENOVATION
SANTA ANA COMMUNITY COLLEGE DISTRICT

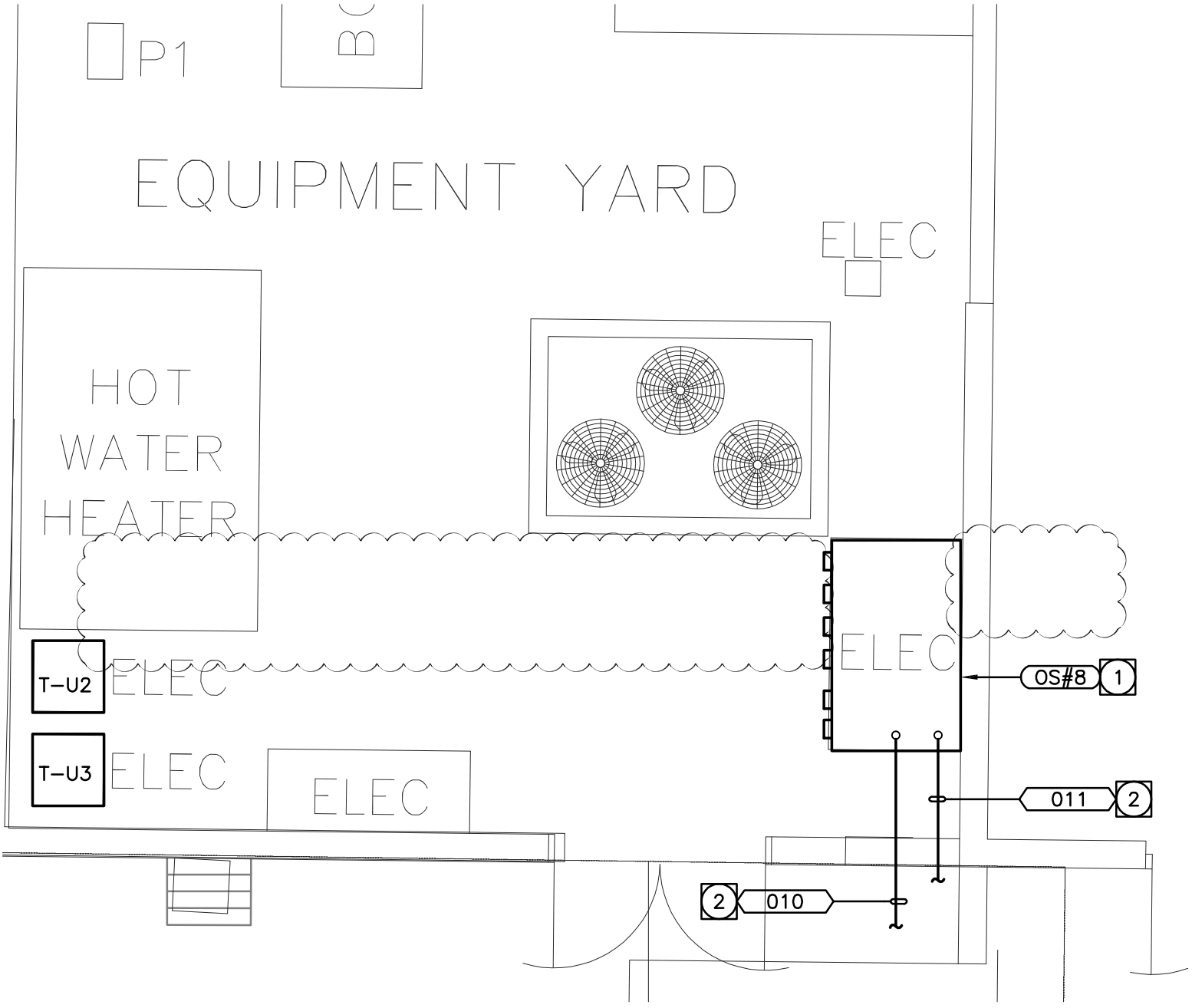
SHEET DESCRIPTION:
PARTIAL SINGLE LINE DIAGRAM
SHEET E-401

DSA FILE NO: 30-C2	DATE: 12/07/15
DSA #: 04-113798	JOB NO: 13022.02
ADDENDA #:	DRAWN: TK1SC
CCD #:	SHEET
BULLETIN #: 11	SKE-04
RFI #:	

NOTES:

1. EXISTING SWITCH TO REMAIN.

2. PROVIDE NEW CONDUCTORS IN EXISTING CONDUIT. DISCONNECT AND REMOVE EXISTING CONDUCTORS AS REQUIRED.



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tk1sc Job #: 2013-0606

PROJECT:
Santa Ana College
QUAD AND INFRASTRUCTURE RENOVATION
SANTA ANA COMMUNITY COLLEGE DISTRICT

SHEET DESCRIPTION:
ELECTRICAL DETAILS
SHEET E-402

DSA FILE NO: 30-C2	DATE: 12/07/15
DSA #: 04-113798	JOB NO: 13022.02
ADDENDA #:	DRAWN: TK1SC
CCD #:	SHEET
BULLETIN #: 11	SKE-05
RFI #:	

088	4"C, 3#500KCMIL & 1#2 GND	–	–	–	–	5KV (EXISTING CONDUIT AND CONDUCTORS)
089	4"C, 3#500KCMIL & 1#2 GND	–	–	–	–	5KV (EXISTING CONDUIT AND CONDUCTORS)
090	4"C.O.	–	–	–	–	5KV
091	4"C.O.	–	–	–	–	5KV
092	4"C.O.	–	–	–	–	5KV
093	1–1/4"C. 4#2 & 1#8 GND	–	–	–	–	– (3)
094	2"C. 4#3/0 & 1#4 GND	(80)	370'	1.4	–	– (3)
095	2"C. 4#1 & 1#3 GND	(32)	850'	1.8	–	–
096	4"C.O.	–	–	–	–	5KV FOR FUTURE USE
097	1–1/2"C. 3#2/0 & 1#6 GND	(140)	–	–	–	–
098	2"C. 4#3/0 & 1#6 GND	(160)	10'	–	–	–
099	1–1/4"C. 4#2 & 1#8 GND	(80)	10'	–	–	–
100	4"C. 3#500KCMIL	–	–	–	–	5KV –
P01	CABLE TRENCH	–	–	–	–	PROVIDE PER S.C.E. REQUIREMENTS
P02	CABLE TRENCH	–	–	–	–	PROVIDE PER S.C.E. REQUIREMENTS
–	–	–	–	–	–	– –
124	3/4"C. 3#10 & 1#12 GND.	(24)	25'	–	–	–
125	3/4"C. 3#10 & 1#12 GND.	(24)	25'	–	–	–
126	3/4"C.O.	–	50'	–	–	–
127	(2) 5"C.O.	–	–	–	–	5KV –

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Jerry Leonhardt
tk1sc Job #: 2013-0538

PROJECT:
Santa Ana College
QUAD AND INFRASTRUCTURE RENOVATION
SANTA ANA COMMUNITY COLLEGE DISTRICT

SHEET DESCRIPTION:
PARTIAL FEEDER SCHEDULE
SHEET E-403

DSA FILE NO: 30-C2	DATE: 12/07/15
DSA #: 04-113798	JOB NO: 13022.02
ADDENDA #:	DRAWN: TK1SC
CCD #:	SHEET
BULLETIN #: 11	SKE-06
RFI #:	

023	3"C. 3#2, 1#6 GND	–	–	–	–	5KV –	(EXISTING CONDUIT AND CONDUCTORS)
024	3"C. 3#1/0, 1#2 GND	–	–	–	–	5KV –	(EXISTING CONDUIT AND CONDUCTORS)
025	2 1/2"C. 3#2, 1#6 GND	–	–	–	–	5KV –	(EXISTING CONDUIT AND CONDUCTORS)
026	2 1/2"C. 3#2, 1#6 GND	–	–	–	–	5KV –	(EXISTING CONDUIT AND CONDUCTORS)
027	4" (NIPPLE) 4#1/0, 1#2 GND	–	–	–	–	5KV –	(1)
028	3"C. 1#1/0, 1#1/0 NEUTRAL 1#2 GND	–	–	–	–	5KV –	(EXISTING CONDUIT AND CONDUCTORS)
029	4"C. 3#1/0, 1#2 GND	–	–	–	–	5KV –	(1)
030	3"C. 1#1/0, 1#1/0 NEUTRAL 1#2 GND	–	–	–	–	5KV –	(EXISTING CONDUIT AND CONDUCTORS)
031	3"C. 3#1/0, 1#1/0 NEUTRAL 1#2 GND	–	–	–	–	5KV –	(EXISTING CONDUIT AND CONDUCTORS)
032	2 1/2"C. 3#2, 1#6 GND	–	–	–	–	5KV –	(EXISTING CONDUIT AND CONDUCTORS)
033	2 1/2"C. 1#2, 1#2 NEUTRAL 1#6 GND	–	–	–	–	5KV –	(EXISTING CONDUIT AND CONDUCTORS)
034	2 1/2"C. 3#2, 1#6 GND	–	–	–	–	5KV –	(EXISTING CONDUIT AND CONDUCTORS)
035	3"C. 3#1/0, 1#2 GND	–	–	–	–	5KV –	(EXISTING CONDUIT AND CONDUCTORS)
036	2 1/2"C. 3#2, 1#6 GND	–	–	–	–	5KV –	(EXISTING CONDUIT AND CONDUCTORS)
037	4"C. 3#1/0, 1#2 GND	–	–	–	–	5KV –	(EXISTING CONDUIT AND CONDUCTORS)
038	2 1/2"C. 3#2, 1#6 GND	–	–	–	–	5KV –	(EXISTING CONDUIT AND CONDUCTORS)
039	3"C. 3#1/0, 1#2 GND	–	–	–	–	5KV –	(1)
040	4"C. 3#1/0, 1#2 GND	–	–	–	–	5KV –	(1)
041	4"C. 3#1/0, 1#2 GND	–	–	–	–	5KV –	(1)
042	3"C. 3#1/0, 1#2 GND	–	–	–	–	5KV –	(EXISTING CONDUIT AND CONDUCTORS)
043	3"C. 3#1/0, 1#2 GND	–	–	–	–	5KV –	(EXISTING CONDUIT AND CONDUCTORS)
044	2 1/2"C. 3#2, 1#6 GND	–	–	–	–	5KV	(EXISTING CONDUIT

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Jerry Leonhardt
tk1sc Job #: 2013-0606

PROJECT:
Santa Ana College
QUAD AND INFRASTRUCTURE RENOVATION
SANTA ANA COMMUNITY COLLEGE DISTRICT

SHEET DESCRIPTION:
PARTIAL FEEDER SCHEDULE
SHEET E-403

DSA FILE NO: 30-C2	DATE: 12/07/15
DSA #: 04-113798	JOB NO: 13022.02
ADDENDA #:	DRAWN: TK1SC
CCD #:	SHEET
BULLETIN #: 11	SKE-07
RFI #:	

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	BULLETIN # 14			
PROJECT:	**Santa Ana College Quad & Infrastructure David Gonzales**		**W+W # DSA#**	**13022.02 04-113798**
ARCHITECT:	**Westberg + White, Inc. Bill Gamache**		**Date:**	**5/16/16**
CM:	**Linik Corp. Matt Schoeneman**		**Page:**	**1 of**
Contractor:	**McCarthy Building Companies, Inc. Curtis Horner**			

CONSTRUCTION DOCUMENT REFERENCE: DSA Approved Sheets and Specs, including all addendum

DESCRIPTION OF CHANGE: Reroute 5KV line, add pull box. Reroute Sewer, water lines to provide 6' clear from trees. Demo all conduit and encasement's to a min 6' clear around center of trees.

ATTACHMENTS: SKC-01, 2 and 3, SKE-01, 2 and 3

ACTION TO BE TAKEN/AUTHORIZATION TO PROCEED:

1. _____ Make the described change in the work at no change in the Contract Sum and no change in the Contract Time of Completion.

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NOTES:

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2. _____ The Work covered in this Bulletin will be submitted to the DSA in the form of a CCD, but approval has not been received. Any such Work performed shall be considered "at risk" until final DSA approval has been received.

3. _____ The Work covered in this Bulletin has been approved by the DSA in the form of a CCD that is attached to this Bulletin.

Bill Gamache — Westberg + White

5/16/16 — Date

TERMS: If Contractor is required to prepare a cost/credit proposal associated with the work outlined in this BULLETIN, such cost/credit proposal shall breakout any cost changes as follows (all costs must be itemized for review): Additions, Deductions, and No Change items. Time and Material (T & M) Work is discouraged unless this revision to the scope of work adversely impacts the project's critical path. The contractor must justify such a request in writing, stating that T & M is limited to pre-Proposal Acceptance. The Project Inspector (PI) is to be notified when T & M work begins, what is the scope of T & M work and when T & M work has stopped. When a Change Order for this Work is approved by the Owner, the Contractor agrees to furnish all labor and materials and perform all of the above-described work in accordance with the above terms in compliance with the applicable sections of the Contract Documents. The amount of the changes under this Bulletin is limited to the charges allowed according to the General Conditions. The adjustment in the contract sum, if any, and the adjustment in the contract time, if any, set out in this Bulletin, shall constitute the entire compensation and/or adjustment in the contract time and contract sum due to the Contractor arising out of the change in the Work covered by this Bulletin, unless otherwise provided in this Bulletin.

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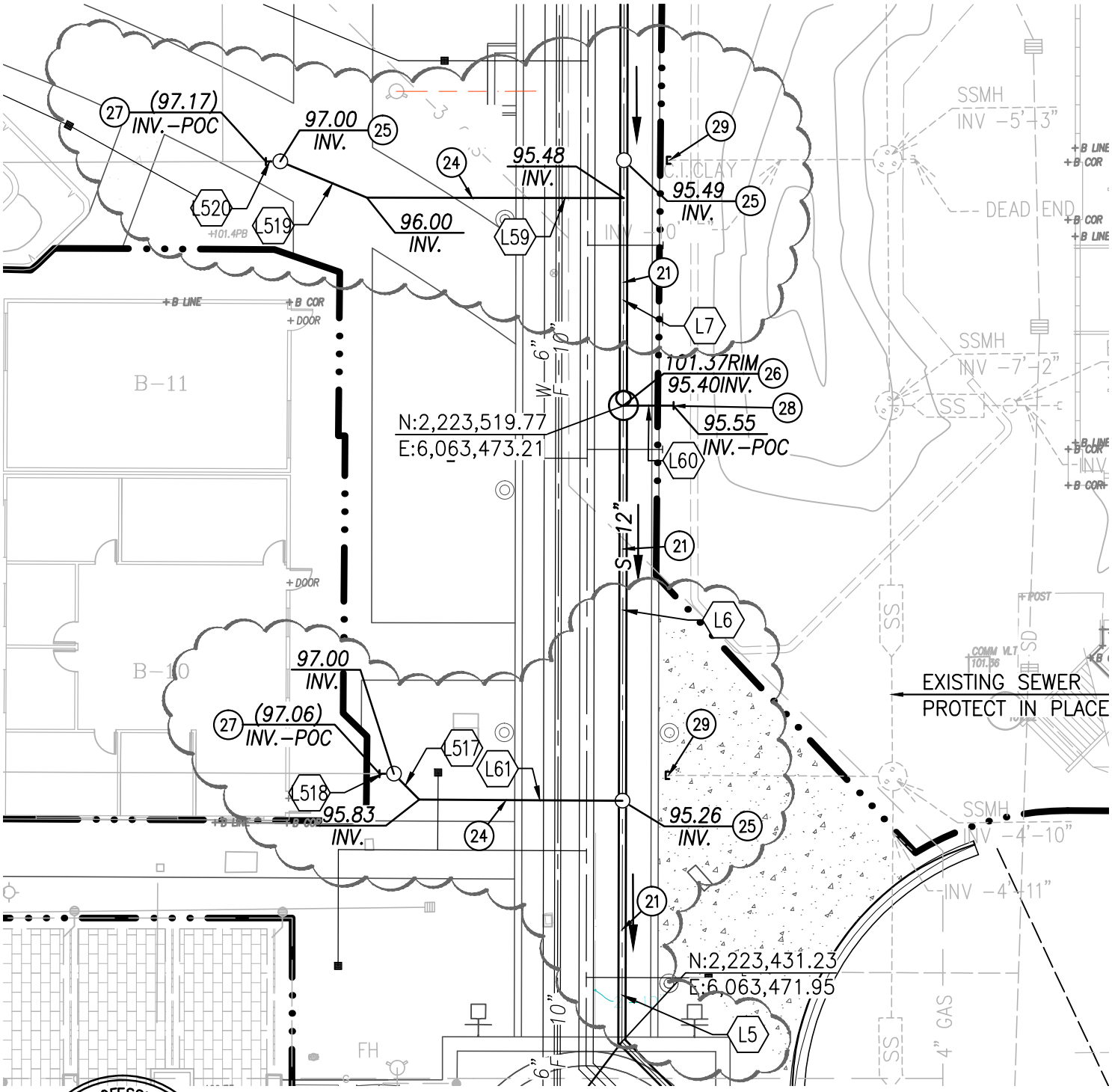
Any additions and/or corrections shall be transmitted to the Architect within two (2) days.



REGISTERED PROFESSIONAL ENGINEER
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No.C–62159
Exp.9/30/11
CIVIL
STATE OF CALIFORNIA

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scale 1"= 20' feet

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ARCHITECT:
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A Division of David Evans and Associates, Inc.
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PROJECT:
Santa Ana College
QUAD AND INFRASTRUCTURE RENOVATION
SANTA ANA COMMUNITY COLLEGE DISTRICT

SHEET DESCRIPTION:
SHEET C-401

DSA FILE NO: 30-C2	DATE: 5/09/16
DSA #: 04-113798	JOB NO: 140204.0000
ADDENDA #: N/A	DRAWN: H&F
CCD #: N/A	SHEET
BULLETIN #: 14	SKC-01
RFI #: 61	

LINE TABLE

LINE	DIRECTION	LENGTH
L1	N89°09'43"W	180.78'
L2	N1°28'50"E	57.82'
L3	N1°28'50"E	291.29'
L4	N44°11'11"W	65.13'
L5	N0°48'49"E	33.56'
L6	N0°48'49"E	55.00'
L7	N0°48'49"E	34.17'
L8	N0°48'49"E	92.07'
L53	S89°28'42"E	45.97'
L54	N0°48'49"E	76.76'
L55	N0°48'49"E	101.86'
L56	S89°11'11"E	31.20'
L57	N0°39'14"E	48.66'
L58	S89°15'35"E	4.49'
L59	N89°11'11"W	35.78'
L60	S89°03'30"E	7.00'
L61	N89°00'20"W	28.29'
L62	N45°48'43"E	6.98'
L65	N1°19'04"E	322.25'

LINE TABLE

LINE	DIRECTION	LENGTH
L380	N38°06'30"W	2.95'
L381	S38°06'30"E	4.68'
L382	S89°18'13"E	37.81'
L383	S89°11'11"E	121.91'
L384	S44°11'11"E	47.67'
L386	N45°48'49"E	7.70'
L387	S89°11'11"E	158.15'
L388	N0°44'08"E	74.29'
L389	S89°11'11"E	147.97'
L390	S44°11'11"E	8.53'
L391	S89°20'46"E	14.88'
L392	N89°20'46"W	71.15'
L393	N0°39'14"E	8.52'
L394	N0°48'49"E	87.40'
L395	N89°11'11"W	37.84'
L396	N0°48'49"E	201.44'
L398	N0°48'49"E	201.44'
L399	N89°11'17"W	41.33'
L400	S89°11'17"E	101.23'

LINE TABLE

LINE	DIRECTION	LENGTH
L506	S0°48'49"W	8.73'
L507	N89°11'11"W	3.27'
L508	S0°48'49"W	15.56'
L509	S0°39'14"W	18.14'
L510	N0°48'49"E	20.43'
L511	N64°14'54"E	5.34'
L512	N89°11'11"W	42.34'
L513	S0°48'49"W	18.00'
L514	N89°20'46"W	34.18'
L515	N0°39'14"E	15.99'
L516	S0°48'49"W	4.82'
L517	N43°52'17"W	5.05'
L518	N89°29'47"W	2.00'
L519	N66°41'11"W	13.05'
L520	N89°29'47"W	2.00'
L521	N0°48'49"E	8.69'
L522	N89°11'11"W	3.62'
L523	N0°48'49"E	21.22'
L524	N89°11'11"W	4.00'

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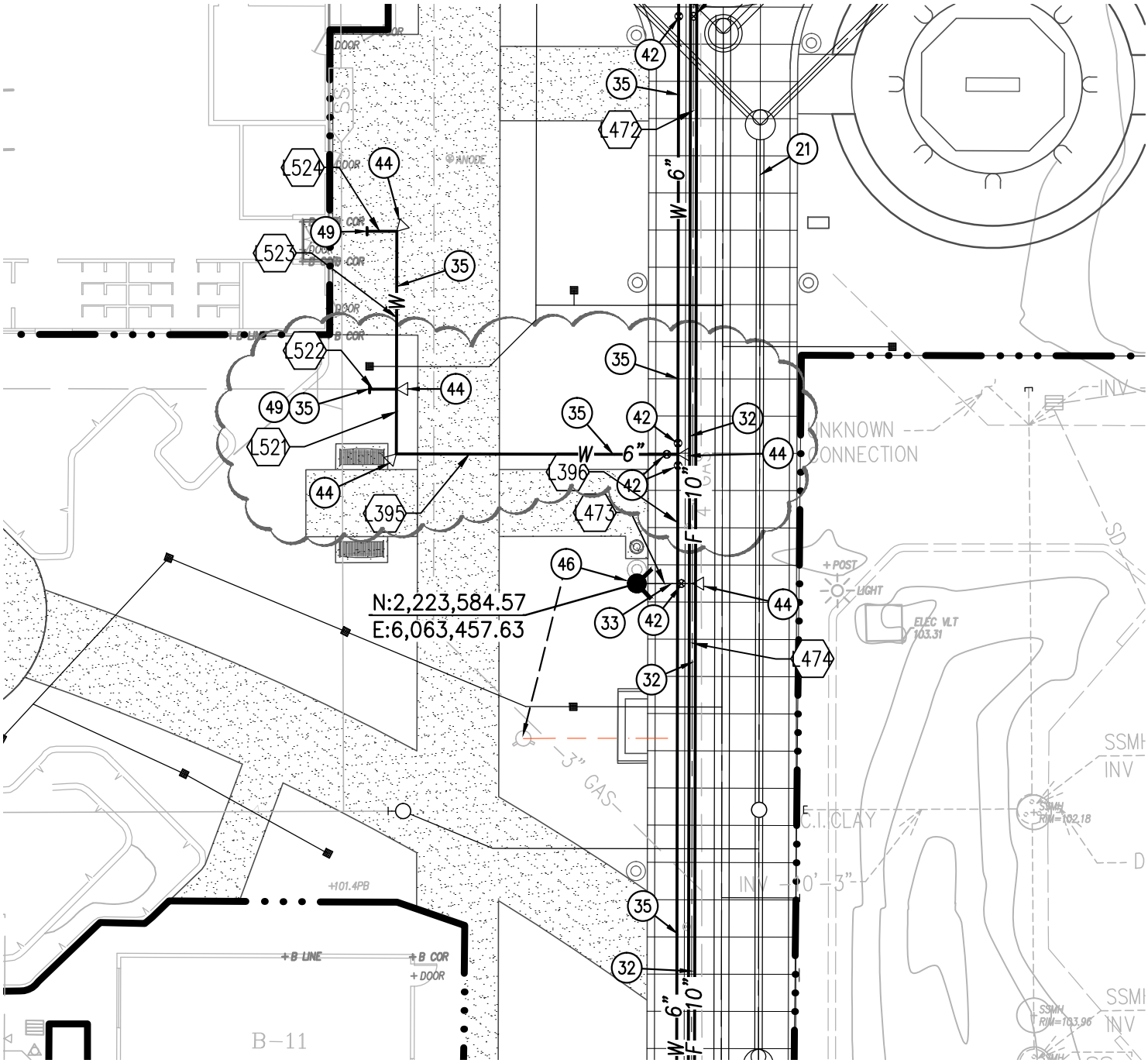
PROJECT:
Santa Ana College
QUAD AND INFRASTRUCTURE RENOVATION
SANTA ANA COMMUNITY COLLEGE DISTRICT

SHEET DESCRIPTION:
SHEET C-406

DSA FILE NO:	30-C2	DATE:	5/09/16
DSA #:	04-113798	JOB NO:	140204.0000
ADDENDA #:	N/A	DRAWN:	H&F
CCD #:	N/A	SHEET	SKC-02
BULLETIN #:	14		
RFI #:	61		



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20 0 20 40
scale 1"= 20' feet

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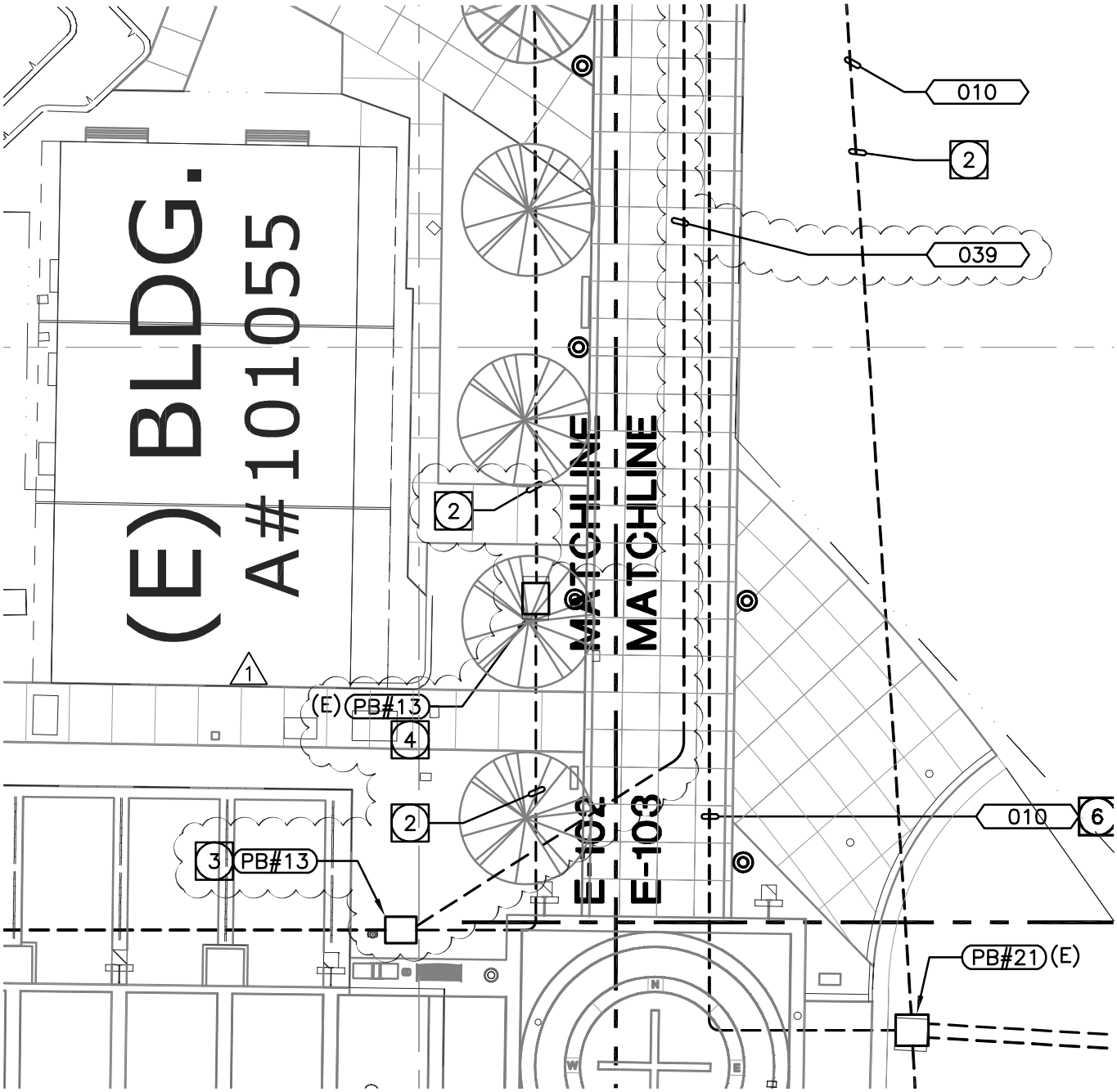
PROJECT:
Santa Ana College
QUAD AND INFRASTRUCTURE RENOVATION
SANTA ANA COMMUNITY COLLEGE DISTRICT

SHEET DESCRIPTION:
SHEET C-411

DSA FILE NO: 30-C2	DATE: 5/09/16
DSA #: 04-113798	JOB NO: 140204.0000
ADDENDA #: N/A	DRAWN: H&F
CCD #: N/A	SHEET
BULLETIN #: 14	SKC-03
RFI #: 61	



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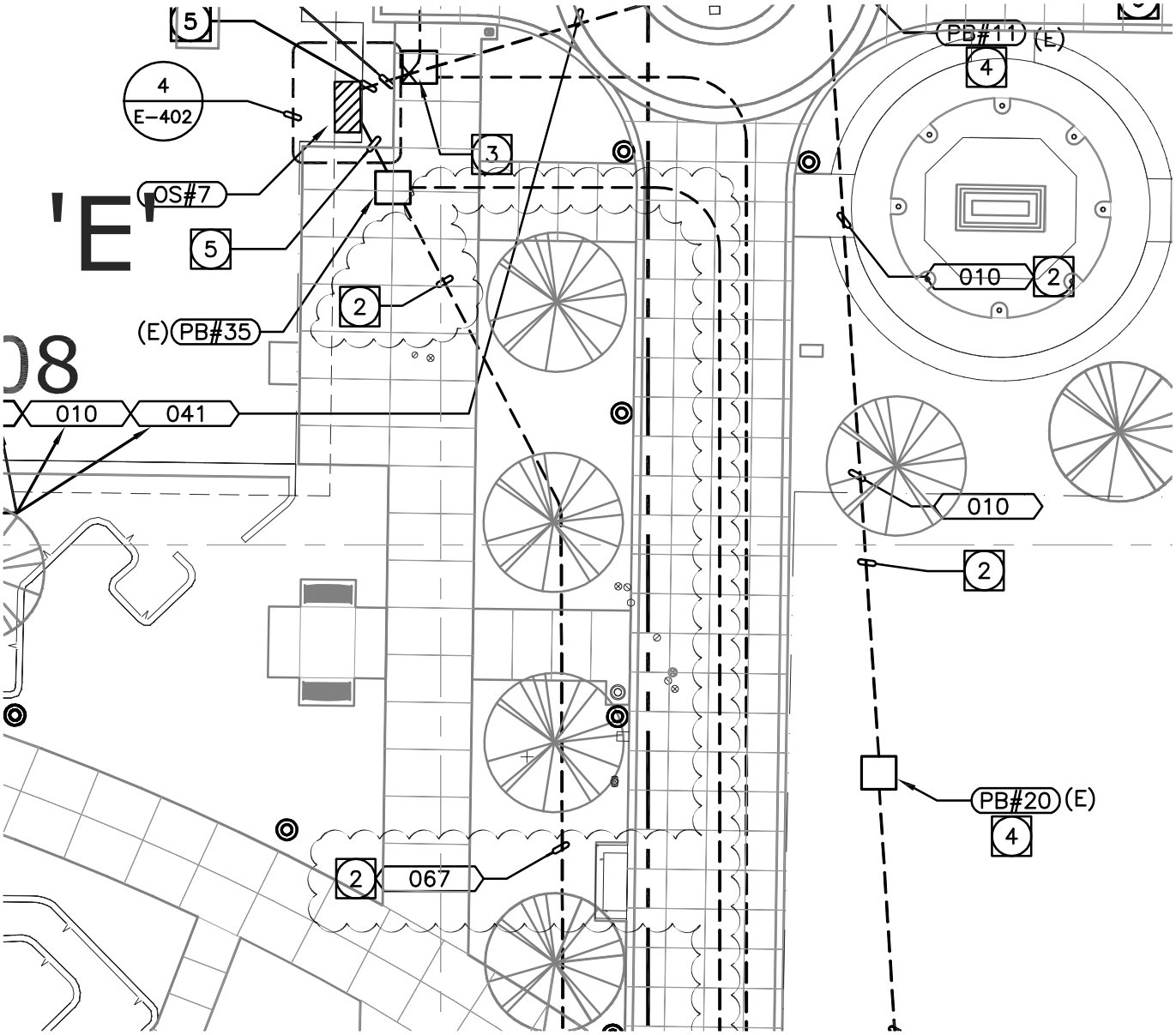
PROJECT:
Santa Ana College
QUAD AND INFRASTRUCTURE RENOVATION
SANTA ANA COMMUNITY COLLEGE DISTRICT

SHEET DESCRIPTION:
SHEET E-102

DSA FILE NO: 30-C2	DATE: 5/16/16
DSA #: 04-113798	JOB NO: 13022.02
ADDENDA #: N/A	DRAWN: TK1SC
CCD #: N/A	SHEET
BULLETIN #: 14	SKE-01
RFI #: 61	



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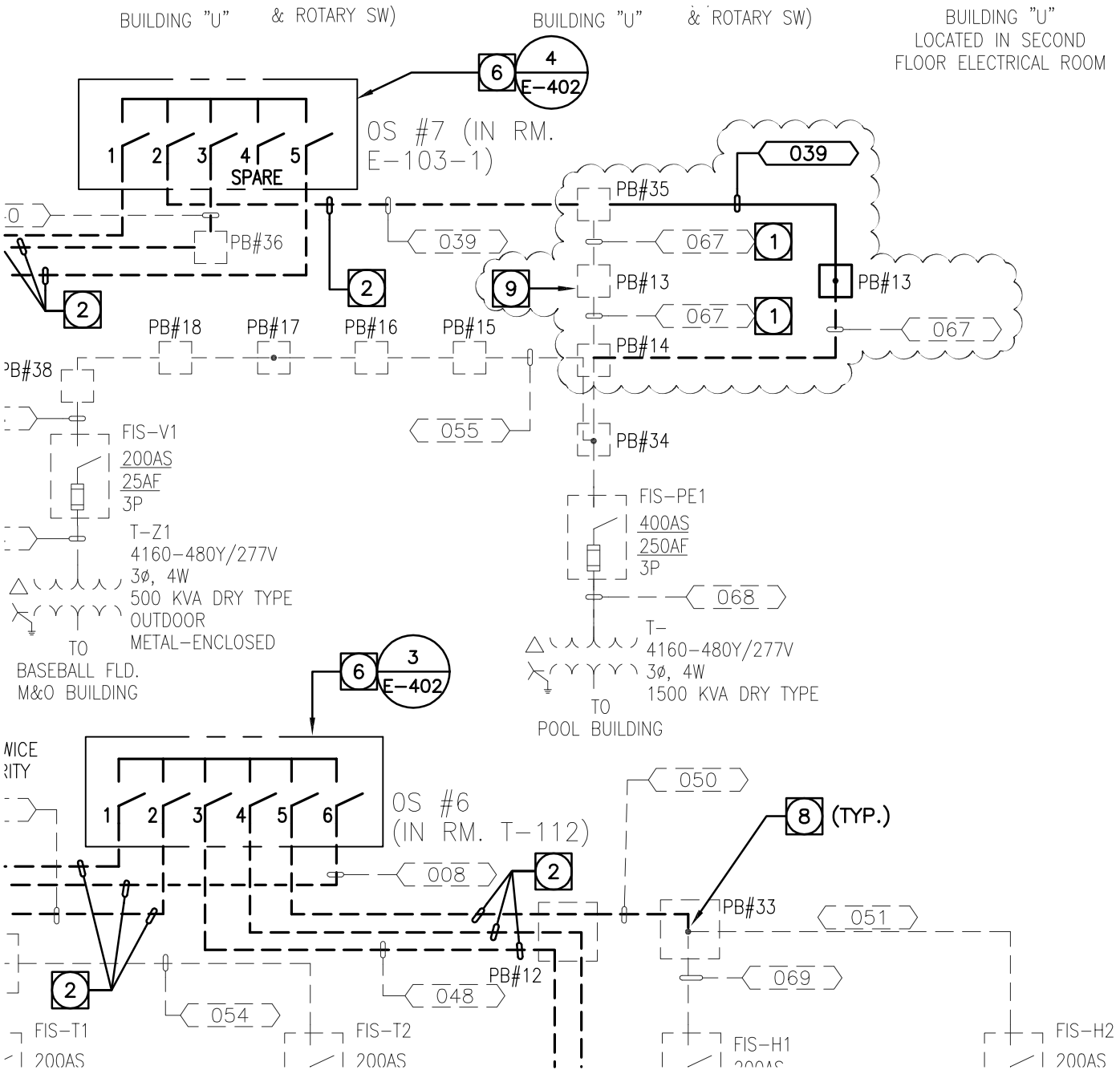
ARCHITECT:

PROJECT:
Santa Ana College
QUAD AND INFRASTRUCTURE RENOVATION
SANTA ANA COMMUNITY COLLEGE DISTRICT

SHEET DESCRIPTION:
SHEET E-102

DSA FILE NO: 30-C2	DATE: 5/16/16
DSA #: 04-113798	JOB NO: 13022.02
ADDENDA #: N/A	DRAWN: TK1SC
CCD #: N/A	SHEET
BULLETIN #: 14	SKE-02
RFI #: 61	



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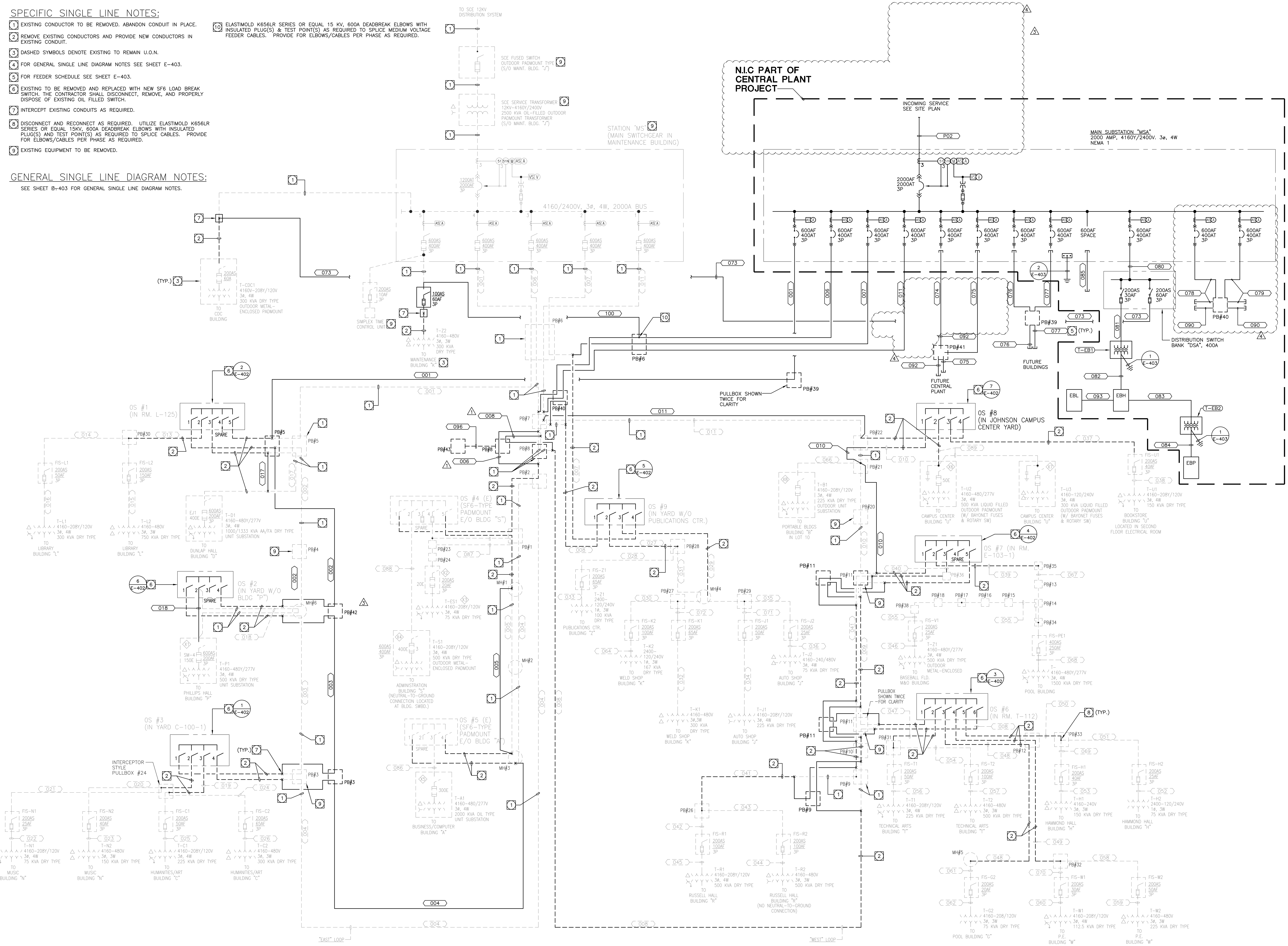
architecture westbergwhite 14471 CHAMBERS RD, SUITE 210 TUSTIN, CA 92780 (714) 508-1780 508-1790 FAX	ARCHITECT:	PROJECT: Santa Ana College QUAD AND INFRASTRUCTURE RENOVATION SANTA ANA COMMUNITY COLLEGE DISTRICT	DSA FILE NO: 30-C2 DSA #: 04-113798 ADDENDA #: N/A	DATE: 5/16/16 JOB NO: 13022.02 DRAWN: TK1SC
		SHEET DESCRIPTION: SHEET E-401	CCD #: N/A BULLETIN #: 14 RFI #: 61	SHEET SKE-03

SPECIFIC SINGLE LINE NOTES:

1. EXISTING CONDUCTOR TO BE REMOVED. ABANDON CONDUIT IN PLACE.
2. REMOVE EXISTING CONDUCTORS AND PROVIDE NEW CONDUCTORS IN EXISTING CONDUIT.
3. DASHED SYMBOLS DENOTE EXISTING TO REMAIN U.O.N.
4. FOR GENERAL SINGLE LINE DIAGRAM NOTES SEE SHEET E–403.
5. FOR FEEDER SCHEDULE SEE SHEET E–403.
6. EXISTING TO BE REMOVED AND REPLACED WITH NEW SF6 LOAD BREAK SWITCH. THE CONTRACTOR SHALL DISCONNECT, REMOVE, AND PROPERLY DISPOSE OF EXISTING OIL FILLED SWITCH.
7. INTERCEPT EXISTING CONDUITS AS REQUIRED.
8. DISCONNECT AND RECONNECT AS REQUIRED. UTILIZE ELASTIMOLD K656LR SERIES OR EQUAL 15KV, 600A DEADBREAK ELBOWS WITH INSULATED PLUG(S) AND TEST POINT(S) AS REQUIRED TO SPLICE CABLES. PROVIDE FOR ELBOWS/CABLES PER PHASE AS REQUIRED.
9. EXISTING EQUIPMENT TO BE REMOVED.
10. ELASTIMOLD K656LR SERIES OR EQUAL 15 KV, 600A DEADBREAK ELBOWS WITH INSULATED PLUG(S) & TEST POINT(S) AS REQUIRED TO SPLICE MEDIUM VOLTAGE FEEDER CABLES. PROVIDE FOR ELBOWS/CABLES PER PHASE AS REQUIRED.

GENERAL SINGLE LINE DIAGRAM NOTES:

SEE SHEET E-403 FOR GENERAL SINGLE LINE DIAGRAM NOTES.



4160 VOLT PRIMARY POWER
SINGLE LINE DIAGRAM

SCALE: N.T.S.

architecture
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PROJECT NAME:

Santa Ana College
Quad and Infrastructure Renovation
1530 West 17th Street
Santa Ana, California 92706

CLIENT:
Rancho Santiago Community College District
2323 North Broadway
Santa Ana, CA 92706

No.	Rev. Date	Description
4	06/16/2015	ADDENDUM 04

JOB NO:	13022.02
DATE:	03/06/2015
DRAWN:	MM / RR / RB
CHECK:	JG / MM
ARCHITECT:	PDW
ENGINEER:	

ARCHITECT:

CONSULTANT:

No. E15610
Exp. 12/31/15

STATE:

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
APP NO: 04-113798
FILE NO: 30-C2
AC ______ FLS ______ SS ______
DATE ______

SHEET DESCRIPTION:
4160V PRIMARY POWER
SINGLE LINE DIAGRAM

SHEET NO:
E-401

Attachment 3

PRE-BID CLARIFICATION ("PBC") FORM
(ALL questions to be submitted on this form ONLY)

PBC # *(RSCCD USE ONLY)*:	94

PROJECT NAME:	RFP #1819-224 Johnson Student Center at Santa Ana College		
PROJECT NUMBER:	3035	DSA NUMBER:	Demolition, #04-116810 INC 1 and INC 2
EMAIL:	**FacilitiesRFP@rsccd.edu**		

DATE:	09/19/2018		
FROM:	S.Monsen - McCarthy	EMAIL:	SMonsen@McCarthy.com
SPECIFICATION NUMBER:		DRAWING NUMBER:	A5.13

REQUESTED CLARIFICATION:

Increment #2 - Detail 2/A5.13 please clarify if the interior side of the parapet is 22 Ga sheet metal flashing as it is marked 076200.A1 or modified bituminous membrane roofing as shown on 17/A9.30. Same thing is shown in detail 3/A5.13, please confirm this should be modified bituminous membrane roofing as well.

RESPONSE TO CLARIFICATION, **SUBMITTED AS PART OF AN ADDENDUM**:

REVISE THE KEYNOTE AT 2/A5.13 TO 075500.A1, INTERIOR OF PARAPET WILL BE VERICALLY APPLIED MODIFIED BITUMINOUS MEMBRANE FLASHING. THE DETAIL REFERENCE 17/A9.30 IS CORRECT.

RESPONSE PROVIDED BY:	Julia D. Jones / hpi	DATE:	10/08/18

Attach additional numbered sheets as necessary; however, only one (1) request shall be contained on each submitted form.

Attachment 3

PRE-BID CLARIFICATION ("PBC") FORM
(ALL questions to be submitted on this form ONLY)

PBC # *(RSCCD USE ONLY)*:	95

PROJECT NAME:	RFP #1819-224 Johnson Student Center at Santa Ana College		
PROJECT NUMBER:	3035	DSA NUMBER:	Demolition, #04-116810 INC 1 and INC 2
EMAIL:	**FacilitiesRFP@rsccd.edu**		

DATE:	09/19/2018		
FROM:	S.Monsen - McCarthy	EMAIL:	SMonsen@McCarthy.com
SPECIFICATION NUMBER:	Section 101116	DRAWING NUMBER:	A7.51

REQUESTED CLARIFICATION:

Increment #2 - Sheet A7.51 - Keynote 101116.A2 - This frosted glass Markerboard is not specified in Section 101116, nor is Egan Visual listed as an approved manufacturer. Provide a specification section for this markerboard, or confirm that the bidders are to provide & install this system per manufacturers information.

RESPONSE TO CLARIFICATION, **SUBMITTED AS PART OF AN ADDENDUM**:

PROVIDE 1/4" THICK FRAMELESS TEMPERED GLASS, DRY ERASE, FROSTED ON THE BACKSIDE. BASIS OF DESIGN: EGAN-GLASSWRITE MARKERBOARD PER MANUFACTURERS INSTALLATION REQUIREMENTS OR A PRODUCT OF EQUAL VALUE.

RESPONSE PROVIDED BY:	Julia D. Jones / hpi	DATE:	10/08/18

Attach additional numbered sheets as necessary; however, only one (1) request shall be contained on each submitted form.

Attachment 3

PRE-BID CLARIFICATION ("PBC") FORM
(ALL questions to be submitted on this form ONLY)

PBC # *(RSCCD USE ONLY)*:	96

PROJECT NAME:	RFP #1819-224 Johnson Student Center at Santa Ana College		
PROJECT NUMBER:	3035	DSA NUMBER:	Demolition, #04-116810 INC 1 and INC 2
EMAIL:	**FacilitiesRFP@rsccd.edu**		

DATE:	09/20/2018		
FROM:	S.Monsen - McCarthy	EMAIL:	SMonsen@McCarthy.com
SPECIFICATION NUMBER:		DRAWING NUMBER:	A8.31, A2.22 & A7.23

REQUESTED CLARIFICATION:

Increment #2 - On sheet A8.31 door J208A is marked as a "pair", but is called out as a Type D2 which is a single door. On sheets A2.22 & A7.23 this door is drawn as a single door. Please confirm Door J208A is a single door and the mark indicating this is a pair should be removed from sheet A8.31

RESPONSE TO CLARIFICATION, **SUBMITTED AS PART OF AN ADDENDUM**:

CONFIRMED DOOR J208A IS A SING DOOR. REMOVE THE "X" FROM THE DOOR SCHEDULE AT DOOR J208A.

RESPONSE PROVIDED BY:	Julia D. Jones / hpi	DATE:	10/08/18

Attach additional numbered sheets as necessary; however, only one (1) request shall be contained on each submitted form.

MASTER PBC Log

PROJECT: Rancho Santiago Community College District
Santa Ana College - Johnson Student Center Building Demolition, Increment 1 and 2
DSA #04-116810-1
DSA #04-116810-2

PBC #	GC	Addendum	Package(s)	TRADE/CATEGORY	SHEET / SECTION	DETAIL / PAGE	QUESTION / COMMENT	ISSUED TO DESIGN TEAM	RESPONSE TO COMMENT	Addendum Date	Consultant
1	MCC1	2	Increment 2	Campus Store Design	CS2.02, CS6.10		Sheet CS2.02 Equipment Schedules lists Mannequins and Public Guidance and references Sheet CS6.10, however no quantity is provided in the QTY column. Sheet CS6.10 provides a specification for the Mannequins and the Public guidance products. Please confirm that these items are to be provided as part of the GMP.	9/13/18	REFER TO SHEET CS6.10, LISTED AS PHM-1, PHF-1 AND PHF-2 FOR QUANTITIES TO PROVIDE.	9/17/2018	NBCI
2	MCC2	2	Building Demo	Civil	C1.00		Bldg. Demo - Sheet C1.00, Sewer Demolition Notes 1 - Confirm that the bidders are to assume that connection to BLDG L has been established and are to exclude any work to "reroute existing sewer as required".	9/13/18	ALL BUILDINGS TO THE EAST, INCLUDING BLDG L HAVE BEEN ESTABLISHED (connected). THEREFORE REMOVE/DEMO EXISTING SEWER WITHIN BOUNDARY.	9/17/2018	CM
3	MCC3	2	Building Demo	Civil	C1.00		Bldg. Demo - Sheet C1.00, Grading Notes 1 - Confirm the Soils Engineer has approved the existing base rock under concrete can be re-used or not.	9/13/18	REMOVE/STRIKE REFERENCE OF "BASE ROCK UNDER CONCRETE CAN BE REUSED AS A GENERAL FILL IF APPROVED BY SOILS ENGINEER". REFER TO INCREMENT 2 FOR DESIGN OF ENGINEERED FILL AND GEO-TECH REPORT DATED NOVEMBER 21, 2016.	9/17/2018	GeoTech
4	MCC4	2	Building Demo	Civil/Arch	C1.00, A0.01, A0.02		Bldg. Demo - Sheet C1.00, Grading Notes 1 - The bidders are to assume 4-inch of concrete over 6-inch base, however Sheets A0.01 & A0.02 Legend - Demolition Site Plan calls for the upper "gray" shaded areas to assume 6-inch of concrete over 6-inch base. Confirm which thickness supersede the other.	9/13/18	REFER TO A0.01 and A0.02 AND ASSUME 6" OVER 6". REVISE SHEET C1.00, GRADING NOTE 1 TO ASSUME 6" OF CONC...	9/17/2018	H&F/hpi
5	MCC5	2	Building Demo	Civil	C1.00		Bldg. Demo - Sheet C1.00, General Note 6 - Confirm that the bidders are to include laying 2-inch thick crushed aggregate base over the entire demolition area, and if so that this base is assumed to be included in the calculations of the final rough grade elevations.	9/13/18	REMOVE GENERAL NOTE 6. THIS WILL NOT BE REQUIRED SINCE ALL 3 PACKAGES WILL BE CONSTRUCTED TOGETHER.	9/17/2018	BKF
6	MCC6	2	Building Demo	Arch/District	A0.01, A0.02		Bldg. Demo - Sheet A0.01 & A0.02, Demolition General Note 6 - Confirm that the bidders are to include salvage of the "cameras, WAPs, and network gear", and if so provide the quantity, types, models, limits, details, specifications, packing expectations, delivery location(s), warranty, and any other information necessary, or possibly delete this note and have the District remove these devices prior to mobilization by the GC, or we suggest including a stipulated allowance for this work.	9/13/18	DISTRICT WILL BE REMOVING/SALVAGING CAMERAS, WAPs AND NETWORK GEAR PRIOR TO MOBILIZATION BY GC.	9/17/2018	hpi/District
7	MCC7	2	Building Demo	Arch/District/Elec	ED1.01		Bldg. Demo - Sheet ED1.01, Demolition Note 7-C - If bidders are to include salvage of any items, please provide a list with quantities to the bidders.	9/13/18	REMOVE DEMOLITION NOTE 7-C IN ITS ENTIRETY. DISTRICT HAS REMOVED ANY/ALL ITEMS.	9/17/2018	District
8	MCC8	2	Building Demo	Elec/District	ED1.01		Bldg. Demo - Sheet ED1.01, "Square" Notes 15 - Confirm that D4 Contractors are subcontracted directly by the owner.	9/13/18	REVISED NOTE TO REMOVE "D4" CONTRACTOR AND TO READ "CONTRACTOR to pull back....". REFER TO ATTACHED REVISED SHEET ED1.01.	9/17/2018	P2s/District
	MCC9		Increment 2	Arch/District/Civil	C1.0D, A0.00D	McCarthy\9-PBC.PDF.pdf	Increment #1 - Sheet C1.0D, Demolition Keynote 5 - The Pile Caps are each listed with a Demo Keynote 5 and a depth "D", however when comparing with Detail 1/A0.00D there are 18 pile caps that do not match, please coordinate and confirm which supersedes the other. see attached marked up sketch.	9/13/18		9/24/2018	BKF/hpi
10	MCC10	2	Increment 2	Mechanical	Spec 23 05 93		Reference Specification 23 05 93 - Testing, Adjusting and Balancing for HVAC: 1.2,A,6 references vibration tests, however, there are no procedures, requirements addressed in the balance of the specification section. Confirm Vibration Testing is required and, if so, provide test and reporting requirements.	9/13/18	VIBRATION TESTS ARE NOT REQUIRED. REMOVE REFERENCE TO 23 05 93 PART 1, 1.2. A.6	9/17/2018	P2S
9	MCC11	3	Increment 2	Plumbing	13/A6.10, P2.21, P2.22	P2.12, P2.22	Reference drawing A6.10, Detail 13 - Architectural drawing indicates trench drain at second floor, Stair 1, Keynote 221319.A4. Plumbing drawings P2.21 & P2.22 do not indicate a trench drain at this location. Please clarify	9/13/18	REFER TO ATTACHED REVISED PLUMBING SHEETS P2.12 & P2.22 SHOWING THE ADDED TRENCH DRAINS (TD-1) WITH ASSOCIATED PIPING AS PART OF ADDENDUM 3.	9/24/2018	P2S/hpi
11	MCC12	3	Increment 2	Architectural	24&27/G3.11	G3.12	The CMU at the Boiler room is called out to be precision block with the color "Shoreline". The CMU for the Service Yard Site wall is called out to be Split Face, however no color provided. Please provide a color for bidding purposes. Please provide a color and type of CMU for Lunch Shelter. The vehicular directional signage CMU call for CMU-6 however no spec can be found for this. It appears to be drawn as split face per detail 24&27/G3.11. Please confirm and provide the color.	9/14/18	a. SERVICE YARD TO BE SPLIT FACE COLOR "SHORELINE" b. PROVIDE: 8"h CMU, ANGELUS BLOCK - PRECISION "SHORELINE" c. PROVIDE: 8"h CMU, ORCO BLOCK CO/WHITE - SPLITFACE 2-SIDES, MEDIUM WEIGHT BELOW THE SQUARE PRE-CAST CONCRETE BLOCK PILASTER 2" CAP. REFER TO NEW DETAIL SHEET G3.12 FOR ADDITIONAL INFORMATION	9/24/2018	hpi
12	MCC13	3	Increment 2	Architectural	24/G3.11	G3.12	Detail 24/G3.11 calls for a Custom Tile inset flush to the CMU wall. We are assuming this should read Custom "Tile". Please confirm. Please also indicated who will provide this custom tile. If the contractor is to provide please provide details so it can be custom made.	9/14/18	ADDED DETAIL 13&14/G3.12 (NEW SHEET)	9/24/2018	hpi
13	MCC14	3	Increment 2	Architectural	24&27/G3.11	G3.12	Please provide a detailed section view of the aluminum monument sign shown in details 24&27/G3.11	9/14/18	ADDED DETAIL 17/G3.12 (NEW SHEET)	9/24/2018	hpi
14	MCC15	3	increment 2	Architectural	071910, A8.21		Specification Section 071910-2.1B - Concrete Floor Sealer list Scofield, Consolideck LS by Prosoco, Degussa or ChemMasters as acceptable manufacturers for concrete clear sealer. Sheet A8.21 Finish Schedule list Ardex as a manufacturer for Sealed Concrete. Please confirm that Ardex can be used as an "or equal" as they are no listed in the specification (071910-2.1B). Please also confirm Ardex can be added to the list of acceptable patching manufacturers (071910-2.1A).	9/18/18	ARDEX CONCRETE SEALER AND ARDEX PATCHING COMPOUND IS ACCEPTABLE AS AN APPROVED EQUAL.	9/24/2018	hpi
15	MCC16	3	Increment 2	Architectural	A8.30, A8.31		Doors J100-2A & J200-2A are called out as a Type D4 and Door J101-1A is called out as Type D3 on the Door Schedule however no D3 or D4 door is included in the Door Type Legend. Please either revise these doors in the schedule or provide the missing D3 and D4 door type.	9/18/18	REFER TO SHEET A8.41 REFERENCE STOREFRONT SF-3 FOR DOOR J100-2A, SF-7 FOR DOOR J200-2A. FOR DOOR J101-1A TO BE A TYPE B.	9/24/2018	hpi

MASTER PBC Log

PROJECT: Rancho Santiago Community College District
Santa Ana College - Johnson Student Center Building Demolition, Increment 1 and 2
DSA #04-116810-1
DSA #04-116810-2

PBC #	GC	Addendum	Package(s)	TRADE/CATEGORY	SHEET / SECTION	DETAIL / PAGE	QUESTION / COMMENT	ISSUED TO DESIGN TEAM	RESPONSE TO COMMENT	Addendum Date	Consultant
16	MCC17	3	Increment 2	Architectural	071909, 071920, 096816		Specification Section 071909-3.4C states "Do no allow floor coverings to be installed in areas above 3.0 pounds per ASTM F 1869 and pH levels greater than 10 or floor covering manufacturer's requirements." 1) The flooring specifications (Resilient Tile 096500 & linoleum 096517 call to "Provide barrier as specified in Division 7 Section "Concrete Moisture and Alkalinity Barrier" if test exceed floor covering limits." Since the concrete cannot be tested until it is constructed, we recommend the District include an allowance for concrete moisture and alkalinity barrier to level all bidders. 2) The Sheet Carpeting Specification 096816-1.05B calls for Powerbond Cushion installation which does not require moisture vapor emission rate (MVER) testing nor relative humidity (RH) testing provided that no free liquids are present. Please confirm that the Concrete Moisture and Alkalinity Barrier specification section 071920 does not apply to the carpeted areas.	9/18/18	1) ALLOWANCE FOR CONCRETE MOISTURE AND ALKALINITY BARRIER TO BE $15,000.00 2) REFER TO SPECIFICATION SECTION 096816 PART 1, 1.05.B. IF THERE IS FREE LIQUIDS AND/OR MOISTURE STAINED CONCRETE OBSERVED A MVER AND RH TESTING MUST BE DONE.	9/24/2018	hpi
17	MCC18	3	Building Demo	Civil	C1.00		Building Demo - Sheet C1.00, Grading Note 2 refers to the City of Cerritos. Please confirm this should be Santa Ana instead.	9/18/18	CONFIRMED TO READ CITY OF "SANTA ANA" . REFER TO REVISED SHEET C1.00	9/24/2018	H&F
18	MCC19	3	Building Demo	Civil	C1.00		Building Demo - Sheet C1.00, Detail 1 - There are several utility structures & piping that are listed as "Protect in Place", however these will need to be removed. Please revise this drawing to show which specific utility items are to be protected in place & which are to be removed, especially those that are in the zone of the building over excavation.	9/18/18	REVISED SHEET C1.00 DETAIL 1 TO SHOW ALL WET/DRY UTILITIES AND ALL ASSOCIATED ACCESSORIES TO BE REMOVED IN THEIR ENTIRETY AND CUT BACK/CAPPED IF NECESSARY AT BOUNDARY OF CONSTRUCTION.	9/24/2018	H&F
19	MCC20	3	Building Demo	Civil	C2.00, C2.0-D, C6.0		Building Demo/Increment 1 - Sheets C2.00, C2.0-D, Please confirm that these Erosion Control & Grading Plans are assumed to be superseded by Increment 2, Sheet C6.0	9/18/18	REMOVE SHEET C2.00 IN ITS ENTIRETY FROM THE BUILDING DEMOLITION PACKAGE. REFER TO INCREMENT 1 AND 2 FOR EROSION CONTROL & GRADING PLANS	9/24/2018	H&F/BkF
20	MCC29	3	Increment 2	Civil	033010, 321313		Increment #2 - Specification Section 033010 par., 1.2-E calls for a 3x3x8-inch sample of each site wall finish for review, and Section 321313 par., 1.2-C calls for a 4x4 job site sample of each paving finish. There are numerous existing site walls and new site paving recently installed on the campus, could these "in place" samples serve as a the representative samples of finish types to match in lieu of a new mock-up, thus saving the District money.	9/18/18	PROVIDE MOCK-UPS PER SPECIFICATION SECTIONS (DSA APPROVED CONTRACT DOCUMENTS)	9/24/2018	hpi/District
21	MCC46	3	Increment 2	Landscape	L5.50		Increment 32 - Sheet L5.50, Mock-Up requirements - Confirm that the bidders are to provide these mock-ups since the existing site-work & site walls that were recently installed could serve as representative samples of finish types to match, thus saving the District money.	9/18/18	PROVIDE MOCK-UPS PER SPECIFICATION SECTIONS (DSA APPROVED CONTRACT DOCUMENTS)	9/24/2018	RLA/District
22	MCC51	3	Increment 2	Arch/Structural	A1.03, S5.11, 053123	21	Increment #2 - Sheet A1.03, Detail 21 - At the right, there is a callout for 053123.A2 and handwritten is "Deck D5 Type per 1/S5.11. Detail 1/S5.11 calls out D5 as Deep-Dek to be "(18 GA)", however Section 053123 par., 2.2-A-1 calls for this corrugated deck to be "20 Ga. or greater as determined by design". Please confirm that the bid is to be based upon 18 GA thick decking per the deck schedule on S5.11	9/18/18	Confirmed, provide D5 deck per detail 1/S5.11 (18GA).	9/24/2018	MHP/hpi
23	MCC52	3	Increment 2	Structural	S2.50	6/S5.17	Increment #2 - Sheet S2.50, Detail A - The west lunch shelter is shown with an 18" concrete mat foundation. Detail 16/S4.11 does not show a mat foundation, however Detail 6/S5.17 does. Please confirm that Detail 6/S5.17 is the correct typical detail for these walls. Please also provide the TOF elevator for this Mat Foundation as well as slab edge details at the CMU walls (thickened edge?) and slab edge details at the door openings (transition to site concrete?)	9/18/18	DETAIL 6/S5.17 SHOWS THE CORRECT DETAILING FOR THE MAT FOUNDATION. MAT FOUNDATOIN TOF IS PER PLAN REF NOTE DIRECTING TO S2.11 - FOUNDATION PLAN NOTES / NOTE 8. SLAB EDGE PER PLAN REF DETAIL 16/S4.11 AT CMU WALL. PROVIDE DOWELING FOR SLAB EDGE AT OPENING TO MAT FOUNDATION SIMLAR TO DETAIL 1/S4.11.	9/24/2011	MHP
24	MCC53	3	Increment 2	Structural	SS1.02.1		Increment #2 - Sheet SS1.02.1 - Rear elevation, The reference call out to Detail F/A1.03 for the Shade footing should be Detail A/SS1.03 instead.	9/18/18	Sheet SS1.02.1 - Rear Elevation - The reference call out Detail F/A1.03 for the shade footing should be Detail F/SS1.03	9/24/2018	MHP
25	MCC55	3	Increment 2	Electrical	E0.03		Increment #2 - Sheet E0.03, Exterior Fixtures S2 - Option 1 lists the model Ligman-FS-UEU-20286, however a search of the Ligman Lighting web site does not have this model, although there are some similar models which are #20281 thru #20286 is in production, and if not, provide the model that should be selected for this project.	9/18/18	Model UEU-20286 does exist and is on their website. Please see attached cut sheet downloaded from their website.	9/24/2018	P2s
26	MCC56	3	Increment 2	Architectural	A7.05, 055100, 055213, 057300	19/A9.71	Increment #2 - Sheet A7.05, Detail 4 - Keynote 055100.A9 calls for a 12" HIGH, 1 1/2" dia. Stainless Steel Pipe Rail and then it refers to detail 19/A9.71 which shows a much different guardrail condition. Please provide correct detail for this 12" high pipe rail with mounting details. Also Specialization section 055100 is for assembled steel stairs, stainless steel pipe rail. Please review and advise which specification section applies to this pipe rail (055213 or 057300 maybe?)	9/19/18	DETAIL REFERENCE IS 3/A9.72. KEYNOTE TO READ 055213.A9. SPECIFICATION FOR PIPE AND TUBE RAILING, INCLUDING SS RAILING USE 055213 PIPE AND TUBE RAILINGS	9/24/2018	hpi
27	MCC57	3	Increment 2	Architectural	A7.21, 055100	8	Increment #2 - Sheet A7.21, detail 8 - Keynote 055100.A8 calls for 1 1/2" dia Stainless Steel Pipe Rail. There is no elevation provided for this side of the room. Please provide details to clarify the height, length and mounting requirements. Also in Spec 055100 the correct spec to be used for this item.	9/19/18	DETAIL REFERENCE IS 3/A9.72. KEYNOTE TO READ 055213.A8. SPECIFICATION FOR PIPE AND TUBE RAILING, INCLUDING SS RAILING USE 055213 PIPE AND TUBE RAILINGS. PROVIDE LENGTH OF 19'-0" FROM CENTERLINE 2, RUNNING SOUTH	9/24/2018	hpi
28	MCC58	3	Increment 2	Architectural	A7.52	15/A9.71, 26&27/A9.71	Increment #2 - Sheet A7.52, Keynote 057300.A1 calls for Ornamental Metal Guardrail - Stainless Steel Top Rail & Post, Painted infill panel at the 2nd floor balcony. Detail 15/A9.71 is called out for this guardrail. This detail references details 26&27/A9.71. 1) These details call out a 1" thick post, but do not call out a stainless steel post. This should be corrected. 2) These details refer to drawings 20/S5.03 for post and stiffener plate size and connection. Sheet S5.03 does not exist. Please provide missing detail/sheet or correct this call out.	9/19/18	1) DETAILS 26/A9.71 NOTE REFERENCING 1" THICK STEEL POST TO READ "1" THICK STEEL POST STAINLESS STEEL". 2) DETAILS 26&27/A9.71 NOTE REVISE TO READ "...STIFFENER PLATE SIZE AND CONNECTION SEE 11/S5.13". 1) DETAIL 27/A9.71 NOTE REFERENCING 1" THICK STEEL POST TO READ "1" THICK STEEL POST STAINLESS STEEL". REMOVE LEADER OF SAME NOTE THAT IS POINTING TO STRUCTURAL STIFFENER.	9/24/2018	hpi
29	MCC63	3	Increment 1 & 2	Architectural	ALL		Increment 1 & @ drawings have been provided in scanned format to bidders with handwritten notes. Is it possible to have a clean copy provided to bidders with handwritten notes incorporated into the test so that drawings are searchable.	9/20/18	THESE ARE DSA APPROVED DOCUMENTS, SO THEY WILL NOT BE REISSUED WITH TEXT AS REQUESTED.	9/24/2018	hpi
30	MCC69	3	Increment 2	Architectural	A8.20		Increment #2 - Please confirm that the room finish schedule on A8.20 takes precedence over the floor plans at conflicting locations. For example, Lounge room J208-4 shows RSF-4 flooring in the room finish schedule and RSF-2 on floor plan A8.11.	9/20/18	CONFIRMED. ROOM FINISH SCHEDULE ON A8.20 TAKES PRECEDENCE OVER FINISH FLOOR PLANS.	9/24/2018	hpi

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31	MCC70	3	Increment 2	Architectural	A8.11		Increment #2 - the floor plan on A8.11 shows Stair 2 labeled with RST-1 landings and treads, however RST-1 is not found in the flooring legend. Should this call out be revised to RSF-1? Please clarify	9/20/18	YES. THIS SHOULD BE REVISED TO RSF-1	9/24/2018	hpi
32	MCC71	3	Increment 2	Architectural	A8.20		Increment #2 - Gender Neutral Restrooms J110-10, J110-15 & J110-18 show the use of coved tile base in elevations and details 16, 21, 27 & 28 on A7.02. The room finish schedule on A8.20 calls for RSB-2 base. Please clarify what base is required in these restrooms.	9/20/18	THE BASE THAT SHOULD BE USED IN ROOM J110-10, J110-15 AND J110-18 SHOULD BE THE RSB-2 (FORBO-INTERGRAL COVE BASE).	9/24/2018	hpi
33	MCC72	3	Increment 2	Architectural	A8.20		Increment #2 - Room finish Schedule A8.20 contains comment "Gyp-6 behind tile" for Gender Neutral restrooms J110-10, J110-15 and J110-18. No tile is shown in the finish schedule (FRP and Green board is call for). Please confirm that there is no tile in these three restrooms, and remove the comment stating Gyp 6.	9/20/18	CONFIRMED. THERE IS NO TILE IN THESE THREE ROOMS	9/24/2018	hpi
34	MCC73	3	Increment 2	Architectural	101123		Increment #2 - Specification Section 101123 par., 2.2-A.4 calls for "Series 5 by Claridge" and the Panel thickness is listed as 1 inch, however in a review of the Claridge website Series 5 lists the "O.A. panel thickness at approx. 1/2 inch". Please review and advise.	9/20/18	TACKBOARD: CLARIDGE SERIES 5 IS CORRECT PRODUCT, 1/2" CONFIRMED WITH 5/8" WIDE PERIMETER TRIM. SPECIFICATION SECTION PAR., 2.2-A.4 TO READ Panel Thickness: 1/2"	9/24/2018	hpi
35	MCC74	3	Increment 2	Architectural	101123		Increment #2 - Specification Section 101123 par., 2.3-A, B, C, D - These paragraphs are the exact same as in Section 101116 Markerboards, and appear to be specifications for the fabrication of Markerboards instead of Tackboards. Please review and correct as necessary.	9/20/18	REMOVE SPECIFICATION SECTION 101123 PAR., 2.3-B AND PAR., 2.4-A.	9/24/2018	hpi
36	MCC76	3	Increment 2	Architectural	A6.01	3	Increment #2 - Sheet A6.01, detail 3 - On the east wall of J221 Custodial is a callout for keynote 102813.B1 which is for a Bobrick B-29744, however Detail 25/A6.01 calls for Keynote 102813.A1 which is for a Bobrick B-39747 (or B-3974) instead. Please confirm which is correct	9/20/18	KEYNOTE ON 3/A6.01 TO READ 102813.A1	9/24/2018	hpi
37	MCC77	3	Increment 2	Architectural	A7.19		Increment #2 - Sheet A7.19, keynote 101123.A3, This keynote calls out an Acoustic Tackboards, however section 101123 does not specify an "acoustic tackboard" product. Please provide the specifications, mfr., product, details for this item of work.	9/20/18	ADD MANUFACTURER TO SPECIFICATION SECTION 101123 PAR., 2, 2.1-A ACOUSTIC TACKBOARD - BASIS OF DESIGN: ACOUSTICAL SOLUTIONS (ALPHASORB). ADD PRODUCT TO SPECIFICATION SECTION 101123 PAR., 2, 2.2-B Product: ALPHASORB BY ACOUSTICAL SOLUTIONS OR EQUAL: Sizes: up to 4' x 8' (nominal) Thickness: 7/8" (3/4" Micore + 1/8" Fiberglass) Tolerance: +/- 1/8" Core: 24 lb. per cubic foot mineral fiber core + 1/8" fiberglass Intended Use: Interior, sound absorption Fabric Finish: Guilford of Maine FR701 Style 2100 (other fabrics available as specified) Fire Rating: Class 1 or A per ASTM E84 Edge Detail: Square only Mounting options: nails and construction adhesive (provided by installer) NRC: 7/8" (0.60). ALUMINUM FRAME, REFER TO SPECIFICATION SECTION 101123 PAR., 2, 2.3-A	9/24/2018	hpi
38	MCC75	4	Increment 2	Architectural	102113		Increment #2 - Specification Section 102113 par., 2.3-A.1. Please provide a basis of bid color for the toilet partition HDPE panels.	9/20/18	THE COLOR OF THE TOILET PARTITIONS ARE TO BE NICKEL WITH A HAMMERED FINISH FROM SCRANTON HINY HIDERS	10/1/2018	hpi
39	MCC91	4	Increment 2	Architectural	A8.10		Increment #2 - The first floor finish plan Sheet A8.10 appears to show Elevators 1 & 2 with sealed concrete (SC) however no flooring type is specifically called out per the finish legend. Please confirm the desired floor finish inside the elevator is Sealed Concrete. If not provide what type of flooring should be provided in the elevators.	9/24/18	NO - ELEVATORS 1 & 2 WILL BE RSF-1	10/1/2018	hpi
40	MCC21	4	Building Demo	Architectural	A0.02, C2.0, C3.0		Building Demo/Increment 2 - Sheet A0.02, Detail #10 - at the upper-right is a callout for 4 bollards at an existing Fire Hydrant. Please confirm that these bollards are not required since they are part of the Building Demo drawings & are not shown on the more current Increment 2 drawings. If required, provide a callout on the Increment 2 drawings along with a detail reference.	9/18/18	TEMPORARY PROTECTION WILL BE REQUIRED FOR THIS EXISTING FIRE HYRDRANT DURING DEMOLITION. THIS TEMPORARY PROTECTION WILL BE REQUIRED TO BE REMOVED PRIOR TO NEW SITE WORK. HPI SUGGESTS PROVIDING THESE 4 TEMPORARY SURFACE MOUNT BOLLARDS TO PROTECT THE EXISTING FIRE HYDRANT.	10/1/2018	hpi
41	MCC37	4	Increment 2	Civil	C2.1		Increment #2 - Sheet C2.1, Demo Keynotes 17 - Please confirm that the bidders are to include removal of the Emergency Call Box even though this note indicated "by others".	9/18/18	THE CONTRACTOR IS TO REMOVE THE EMERGENCY CALL BOX AND DELIIVER TO THE DISTRICT.	10/1/2018	District
42	MCC79	4	Increment 2	Mechanical/Structural	M2.11, M2.14, S7.20		Increment #2 - Keynote 3/M2.11 and 1/M2.14 state "Provide pipe anchor, See 2/S7.20 does not provide a pipe anchor detail. Please provide a detail for the pipe anchors and also correct the keynotes.	9/24/18	THE NOTE REFERS TO THE CORRECT STRUCTURAL DETAIL. ALL PIPE SHALL BE ANCHORED AS INDICATED IN 2/S7.20	10/1/2018	P2s/MHP
43	MCC25	4	Increment 2	Civil	312333		Increment #2 - Specification section 312333 par., 3.6-B refers to Section 017400, however this specification section was not provided in the bid documents. Please either delete this reference or provide this missing specification section.	9/18/18	REVISED REFER TO SPECIFICATION SECTION 017419	10/1/2018	
44	MCC26	4	Increment 2	Landscape	320523		Increment #2 - Specification Section 320523 par., 2.11-A refers to Section 321300 Rigid Paving, however this section was not provided. Please remove this reference or provide the missing specification section.	9/18/18	SECTION 321300 REPLACED WITH SPECIFICATION SECTION 321313. REFER TO ATTACHED.	10/1/2018	
45	MCC27	4	Increment 2	Civil	321200		Increment #2 - Specification Section 321200 par., 3.06 refers to Pavement Reinforcing fabric. Please confirm this section does not apply to this project, as none is shown nor called out on the drawings.	9/18/18	CONFIRMED, DOES NOT APPLY. REMOVED FROM SPECIFICATIONS 321200	10/1/2018	
46	MCC35	4	Increment 2	Landscape	334600		Increment #2 - Specification section 334600 par., 1.01-A calls for subdrains are at "walls or foundations", however none were located on the drawings. If required, provide the location for the dubdrains and connections to the main Storm Drainage system.	9/18/18	NOT REQUIRED. WILL BE REMOVED FROM SPECIFICATION	10/1/2018	

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47	MCC36	4	Increment 2	Civil	C1.00, C1.0-D, C2.0		Bldg Demo, Increment 1 and Increment #2 - Drawings C2.0, The Limit-of-Work in the lower left corner by the area near the existing Decorative Pavers & the Utility Vault does not match the same area as shown on the Bldg Demolition Set, there appears to be some additional demolition & clearing and relocation of the temporary fencing at that lower-left area of the site. Note that the Increment 1 st appears to match the Increment 2 set at this are. Please confirm which demo drawing is to be followed. Please also note this conflicts wit the sketches provided in Addendum #1 (Bid Alternates A & B). Please update the sketches accordingly if needed.	9/18/18	BUILDING DEMOLITION SET TO BE REVISED AND TO MATCH INC 1 & 2	10/1/2018	
48	MCC37	4	Increment 2	Civil	C2.1		Increment #2 - Sheet C2.1, Demo Keynotes 17 - Please confirm that the bidders are to include removal of the Emergency Call Box even though this note indicated "by others".	9/18/18	THE CONTRACTOR IS TO REMOVE THE EMERGENCY CALL BOX AND DELIIVER TO THE DISTRICT.	10/1/2018	District
49	MCC38	4	Increment 2	Civil	C3.0, C3.1		Increment #2 - Sheets C3.0 & C3.1, Pavement note 5 - Please confirm that the bidders are to include two sets of striping (one temporary & one final). Also, confirm that 2-coats of seal are to be including noting that Section 321200 AC Paving does not specify any Seal Coat product, so if required to be included provide a basis-of-bid for the seal coat system.	9/18/18	CONFIRMED, BIDDERS TO INCLUDE TWO SETS OF STRIPING (TEMPORARY AND FINAL). CONFIRMED, 2-COATS OF SEAL ARE TO BE INCLUDED. CALTRANS SPECIFICATIONS SECTION 37-2 ADDED TO SPECS, PLEASE SEE 2.01-G	10/1/2018	
50	MCC39	4	Increment 2	Civil	C3.0, C3.1		Increment #2 - Sheets C3.0 & C3.1, Horizonal Control keynote 18 Rolled Curb was not located on these sheets. If required, provide the callout & locations for this keynote, or list this note as "not used" on this sheet.	9/18/18	KEYNOTE 18 REVISED TO "NOT USED"	10/1/2018	
51	MCC40	4	Increment 2	Civil	C5.2		Increment #2 - Sheet C5.2 (lower left), The callout for the SDMH (RIM 100.58) does not appear on the Utility Legend nor does it have a detail referenced. Please confirm that this Storm Drain Manhole is to be included & provide a detail for this structure, or confirm that this existing and to be protected in place.	9/18/18	CONFIRMED STORM DRAIN MANHOLE TO BE INCLUDED. DETAIL B PROVIDED ON SHEET C5.2	10/1/2018	
52	MCC41	4	Increment 2	Civil	C5.4		Increment #2 - Sheet C5.4, The new SD pipe is beyond the Limit-of-Work line, please confirm that the bidders are to include cutting & patching of the existing hardscape. Please provide detailed information for this hardscape - thickness, finish, rebar size & spacing, as well as minimum dimensions for the	9/18/18	CONFIRMED, BIDDERS ARE TO INCLUDE CUTTING & PATCHING OF THE EXISTING HARSCAPE. PLEASE UTILIZE THE SAME HARDSCAPE INFORMATION AS THE PROPOSED SIDEWALK FOR THIS PROJECT, AS SHOWN AS THE FIRST ITEM ON THE PAVEMENT LEGEND ON SHEET C3.0.	10/1/2018	
53	MCC106	4	Increment 2	Low Voltage/District	LV1.11, A2.11		Increment #2 - Note 1/LV1.11 calls for the ATM machine to be OFOI while detail 2/A5.11 calls for the ATM machine to be OFCI. Please clarify if the ATM machine is to be OFOI or OFCI. If it is OFCI then please provide mounting/attachment details. Sheet A2.11 at gridlines M/6.3 there are vending machines called out as OFOCI (Thp.) however 2/A4.01 shows these vending machines as OFCI. please clarify if these vending machines are OFOI or OFCI. if they are OFCI then please provide mounting/attachment details.	9/25/18	VENDING MACHINES AND ATM MACHINES ARE OFOI. REVISE REFERENCE AT 1/A5.11 TO READ "ATM MACHINE O.F.O.I". REFERENCE ON SHEET A2.11 IS CORRECT, REVISE REFERENCE AT 2/A4.01 TO READ "ATM MACHINE O.F.O.I.".	10/1/2018	
54	MCC89	4	Increment 2	Architectural	102226		Increment #2 - Section 102226 par. 2.1-W-1 requires the operable panel partition to meet an NRC rating of not less than 0.65. Please confirm that neighter the cost of field nor the cost of laboratory testing is not to be included by the bidders to meet this minimum rating.	9/24/18	CONFIRMED. THE TESTING NOTED IN SPECIFICATION SECTION 102226 PAR 2.4-W.1 STATES IT IS TO BE A SYSTEM THAT IS IN COMPLIANCE WITH ASTM C423 WITH THE RATING OF NRC 0.65. GC TO PROVIDE A SHOP/SUBMITTAL WITH REQUIREMENTS NOTED.	10/1/2018	
55	MCC105	4	Increment 2	Electrical	E1.11		Increment #2 - Sheet E1.11 South of the Student Center - the feeder connecting OS#8 and MH#8 is shown as MV225.2 while the single-line on sheet E5.01 shows the feeder as MV225.1 Please advise which is the correct feeder designation.	9/25/18	Feeder from OS#8 to MH#8 shall be MV225.1. Provide per single line diagram.	10/1/2018	
56	MCC26	4	Increment 2	Landscape	320523		Increment #2 - Specification Section 320523 par., 2.11-A refers to Section 321300 Rigid Paving, however this section was not provided. Please remove this reference or provide the missing specification section.	9/18/18	Referenced section in par. 2.11-A, 321300 replaced with section 321313	10/1/2018	
57	MCC30	4	Increment 2	Civil	033010, 321313	4/L5.50	Increment #2 - Specification Section 033010 par., 2.10-D calls for 3000 psi and Section 321313 par., 2.8-B-1 calls for 3000 psi, however details 1,2/C3.0 Notes 1 calls for 4200 psi, Pavement Legend Notes 4 and L5.50 Hardscape Notes V also call our 4200 psi. Please confirm the site concrete paving compressive strength that the bidders are to base the bid upon.	9/18/18	Please use 4200 psi for concrete paving.	10/1/2018	
58	MCC24	4	Increment 2	Civil	312300, 033010, 321313		Increment #2 - Specification Section 312300 par., 1.1-A, includes a reference to Soil Sterilant. Please confirm if this is required. If required, provide the specific location and product for the bidders to include. Note that Specification Section 033010 par., 2.13-A calls for Surflan under Concrete for Landscape, and Section 321313 par., 2.4-A calls for Surflan at Site Concrete Paving, thus please confirm Surflan is required below site concrete paving.	9/18/18	SOIL STERILANT REMOVED FROM SPECIFICATION 312300. THE USE OF SURFLAN BELOW SITE CONCRETE PAVING PER DSA APPROVED SPECIFICATION SECTION 033010 AND 321313 IS REQUIRED.	10/1/2018	
59	MCC47	4	Increment 2	Landscape	L5.50		Increment #2 - Sheet L5.50, Hardscape Note B, Please confirm the "Unit Cost for Import Soil." noted in Note B is the same unit cost you are requesting in Specific Allowance #4 of the RFP.	9/18/18	Note B has been removed from the drawings. The specific request allowance #4 of the RFP is still required.	10/1/2018	
60	MCC32	4	Increment 2	Arch/Landscape	323118, 323118, 323119	L5.20, L5.40	Increment #2 - Specification Sections 323118 & 323119, please confirm which specification section the bidders are to base Sheet L5.20 thru L5.40 upon for the Metal Fences & Gates. Note that Section 323118 par., 2.1-A lists 4 manufacturers & an "or equal". Please confirm which of these manufacturers are pre-approved.	9/18/18	REMOVE SPECIFICATION SECTION 323119 IN ITS ENTIRETY	10/1/2018	
61	MCC33	4	Increment 2	Landscape	323119		Increment #2 - Specification Section 323119 par., 2.7-B references specification section 110513 Common Motor requirements for equipment, however this section was not provided. Please provide missing specification section or remove the incorrect reference.	9/18/18	SPECIFICATION SECTION 323119 HAS BEEN REMOVED IN ITS ENTIRETY. GATES/FENCES HAVE NO MOTOR(S)	10/1/2018	
62	MCC104	4	Increment 2	Electrical	E0.01		Increment #2- Sheet E0.01 the same junction box symbol is used for both the "surface mounted junction box" and the "floor/ceiling mounted junction box". Please advise which of these devices sis to use the original symbol and provide the correct symbol for the other device type	9/25/18	THE SURFACE MOUNT JUNCTION BOX IS NOT USED ON THIS PROJECT, REMOVE FROM THE LEGEND.	10/1/2018	
63	MCC22	4	Increment 2	Civil	311000		Increment #2 - Specification Section 311000 par., 1.1-A-4 & 3.6 refers to Topsoil stripping, Please confirm if Topsoil Stripping is required for this project.	9/18/18	TOPSOIL STRIPPING WILL NOT BE A PART OF THIS PROJECT. REMOVE REFERENCES IN SPECIFICATION 311000 PAR. 1.1-A.4 AND PAR 3. 3.6.	10/1/2018	

MASTER PBC Log

PROJECT: Rancho Santiago Community College District
Santa Ana College - Johnson Student Center Building Demolition, Increment 1 and 2
DSA #04-116810-1
DSA #04-116810-2

PBC #	GC	Addendum	Package(s)	TRADE/CATEGORY	SHEET / SECTION	DETAIL / PAGE	QUESTION / COMMENT	ISSUED TO DESIGN TEAM	RESPONSE TO COMMENT	Addendum Date	Consultant
64	MCC23	4	Increment 2	Landscape	311000		Increment #2 - Specification Section 311000 par., 3.3-A, references section 015639 Temporary Tree and Plant Protection, however this specification section was not provided. Specification section 329113 par., 3.7-A also references section 015639. Please provide the missing specification or remove the references in Specs 311000 & 329113.	9/18/18	REMOVE REFERENCES TO SPEC SECTION 015639 TEMPORARY TREE AND PLANT PROTECTION FROM SPECIFICATIONS 311000 AND 329113	10/1/2018	
65	MCC28	4	Increment 2	Civil	033010, 321313		Increment #2 - Please confirm the difference between Sections 033010 & 321313. Please indicate which section supersedes the other regarding any conflicts.	9/18/18	SECTION 033010 IS FOR NON-STRUCTURAL LANDSCAPE WALLS (LOW WALLS). SECTION 321313 IS FOR NON-STRUCTURAL LANDSCAPE CONCRETE PAVING (ARCHITECTURAL CONCRETE PAVING).	10/1/2018	
66	MCC45	4	Increment 2	Landscape	L4.40	D	Increment #2 - Sheet L5.50, Detail D, Legend Note 1 calls for "continuous painted 1.5-inch round standard stainless steel pip...." Please confirm if the Base Bid Galvanized pipe railing is to be painted or not. If not, delete that call out for paint. Note that Details A, C, D do not refer to "paint" at the rails.	9/18/18	LEGEND NOTES 1, 2, 3/D-L5.50 TO READ "HOT DIPPED GALVANZIED 1.5"..." NO PAINT. DETAILS A, B, C/L5.50 TO READ "HOT DIPPED GALVANIZED 1.5"..." IN LIEU OF STAINLESS STEEL.	10/1/2018	
67	MCC30	4	Increment 2	Civil	033010, 321313	4/L5.50	Increment #2 - Specification Section 033010 par., 2.10-D calls for 3000 psi and Section 321313 par., 2.8-B-1 calls for 3000 psi, however details 1,2/C3.0 Notes 1 calls for 4200 psi, Pavement Legend Notes 4 and L5.50 Hardscape Notes V also call our 4200 psi. Please confirm the site concrete paving compressive strength that the bidders are to base the bid upon.	9/18/18	FOR LOW LANDSCAPE WALLS (NON-STRUCTURAL) 3000 PSI IS ACCEPTABLE PER SPEC SECTION 033010. EXTERIOR CONCRETE PAVING TO BE 4200 PSI.	10/1/2018	
68	MCC31	4	Increment 2	Landscape	321400		Increment #2 - Specification Section 321400, Please provide the location of Unit Pavers - Mortar Set on this project as none can be found on the drawings. If none are to be provided please remove this specification section.	9/18/18	Spec Section 321400 for Unit Pavers is no longer applicable for this project and should be removed.	10/1/2018	
69	MCC42	4	Increment 2	Landscape	L2.20		Increment #2 - Sheet L2.20, Lighting Legend, The Sculpture Uplight is listed as Lumiis SQ600, however E0.3 Exterior Fixtures S9 calls for Vista Lighting #1057 (or an option by Ligman UOD-5001). Confirm that the E0.3 fixtures supersede the L2.20 when they conflict, or are there 3 options to choose from.	9/18/18	CONFIRMED. ELECTRICAL SHEET E0.3 WILL SUPERSEDE SHEET L2.20 FOR FIXTURE MAKE, MODEL AND QUANTITY	10/1/2018	
70	MCC43	4	Increment 2	Landscape	L2.30	4	Increment #2 - Sheet L2.30, detail 4 - At the lower-right is a callout for keynote 19-F2 which is described as Tube Steel Guardrail at Loading Dock, however this is no a loading dock and appears to be similar to L1.20 which has three locations calling for Keynote 26-F2. Please confirm this keynote on L2.30 should be keynote 26 instead of keynote 19. Also keynote 26 refers to details A-D/L5.50 all of which call out this guardrail as "1.5-inch round Stainless Steel standard pipe.", but type F2 in the finish schedule describe the same guardrail as Hot Dipped Galvanized as the Base bid & Stainless Steel as an Alternate bid. Please confirm that the base bid is to be Hot Dipped Galvanized guardrails. Also please confirm if an alternate is to be provided for Stainless Steel, as this alternate is not listed in Specification Section 012300 or the requested Alternates Summary in the RFP.	9/18/18	Part One: The walk and curb at this location are existing to remain. The design intent is to install a new guardrail on top of the existing curb similar to details A-D on sheet L5.50. The keynote on sheet L2.30 has been revised. Part Two: Guardrails to be hot dipped galvanized. Details has been revised to remove reference to stainless steel.	10/1/2018	
71	MCC44	4	Increment 2	Civil	L5.10	D	Increment #2 - Sheet L5.10, Detail H - The width of the Concrete Maintenance Band is listed as "per plan", however the site plans on L1.20 & L2.20 do not list a dimension for the keynote 12-P2 callout. Note this maintenance band scale to 2'-8" wide. Please provide with of the Concrete Maintenance Band.	9/18/18	REFER TO SHEET L3.10 - L3.30 FOR HARDSCAPE LAYOUT DIMENSIONS	10/1/2018	
72	MCC49	4	Increment 2	Landscape	L11.10		Increment #2 - Sheet L11.10, Site Furnishings Legend, S1 - The quantity is called out as 45, however there are 43 shown on the Site Details. Please confirm which quantity the bidders are to base this 4-seat table upon. Sheet L11.10 - Site Furnishings Legend, S3 - The quantity is called out as 42, however there are 43 shown on the Site Details. Please confirm which quantity the bidder are to base this 2-seat table upon.	9/18/18	PART ONE: THE COUNT OF FURNITURE TYPE S1 TO BE REVISED TO 43. PART TWO: THE COUNT OF FURNITURE TYPE S3 IS SHOWN CORRECTLY AT 42.	10/1/2018	
73	MCC48	4	Increment 2	Landscape	L9.10		Increment #2 - Sheet L9.10, Tree Plant Palette, The Maverick Hybrid Honey Mesquite is called as 9 each, however there are 10 shown on the Site Plan (left side of the building). Please confirm the quantity should be 10 each.	9/18/18	CONFIRMED. THE QUANTITY OF MESQUITE TREES IS 10.	10/1/2018	
74	MCC50	4	Increment 2	Landscape	L11.10		Increment #2 - Sheet L11.10, Site Furnishing Legend S6 - The round tree grate is called out as 6-foot round, however the details on Sheet L11.10 & Detail 4/L2.30 scale the round tree grate as 5-foot. Please confirm if the round tree grate is to be 6-foot or 5-foot round. (Note the 6-foot square tree grate scales as 6-foot)	9/18/18	ROUND TREE GRATES TO BE 6' DIAMETER PER SITE FURNISHING SCHEDULE.	10/1/2018	
75	MCC92	4	Increment 2	Landscape	L2.10		Increment #3 - Detail 2/L2.10 shows the sloped loading dock area with gradually rising walls along north and south sides of the loading dock. Please review and advise if these walls should receive anti-graffiti coating? See markup for exact location.	9/24/18	CONFIRMED. EXPOSED PORTIONS OF LOADING DOCK WALL TO RECEIVE ANTI-GRAFITTI COATING.	10/1/2018	
76	MCC95	4	Increment 2	Landscape	L2.20		Increment #2 - Note C at the bottom of sheet L2.20 states that at the end of construction walls will receive an anti-graffiti coating on all visible portions. It is clear that this applies to W2 (CMU walls), however please confirm that low wall, Type W1, are also required to receive the anti-graffiti coating.	9/24/18	LOW WALLS (WALL TYPE W1) ARE NOT TO RECEIVE ANTI-GRAFITTI COATING. LOW WALLS TO RECEIVE CLEAR LIQUID SURFACE SEALER (HLQ-125) BY SINAK CORPORATION OR APPROVED EQUAL PER SPEC. SECTION 033010.	10/1/2018	
77	MCC54	4	Increment 2	Civil, Landscape, Low Voltage	C5.4, E1.11, LV0.05	A/C5.4	Increment #2 - Sheet C5.4, Utility Keynote 8 - This keynote calls for concrete conduit per A/C5.4 which shows three 4-inch conduits (telephone-data-electric), however 1/E1.11 Keynote 12 calls for a 1.5 inch conduit for new Panel 1PB and is shown in a different location. Please confirm if this is an additional conduit to be included with the 3-4" conduits. Furthermore LV0.05 Specific plan Note 7 calls for a 2-inch conduit, and Note 8 calls for a 3x2 hand hole that is not shown on C5.4, Note 14 calls for a 1-inch conduit as well. Please coordinate these three drawings and correct as necessary	9/18/18	SHEET C5.4, DETAIL A REVISED TO SHOW ONE CONDUIT IN CONCRETE. SHEET C5.4 SHOWS LOW VOLTAGE LINE AS A REFERENCE, PLEASE USE LOW VOLTAGE AND SECURITY PLANS FOR LAYOUT, SIZES AND DETAILS.	10/1/2018	
78	MCC102	4	Increment 2	Food Service	114000		Increment #2 - Reference Spec Section 114000-1.4.F.3 and 114000-3.5, drawings FS-201 and 202. Spec section 11 40 00-1.4.F.3 indicates that should there be a conflict between the drawings and the specifications, the specifications shall govern. Below are equipment items that are conflicting between the specifications section 11 40 00-3.5 and the drawings with regards to electrical requirements. The specs call for NEMA 5-20P for item #5-01 Cabniet, enclsoed, Bun/Food Pan (NIC). the equipemment schedule calsl for NEMA 5-15P for item #5-01. Please confirm that the specificaitons govern and NEMA 5-20P is required.	9/25/18	Per drawings dated 8/13/15 DSA Final Submittal, Equipment schedule for Item 5-01calls for a NEMA 5-20P 20AMP Service Required.	10/1/2018	

MASTER PBC Log

PROJECT: Rancho Santiago Community College District
Santa Ana College - Johnson Student Center Building Demolition, Increment 1 and 2
DSA #04-116810-1
DSA #04-116810-2

PBC #	GC	Addendum	Package(s)	TRADE/CATEGORY	SHEET / SECTION	DETAIL / PAGE	QUESTION / COMMENT	ISSUED TO DESIGN TEAM	RESPONSE TO COMMENT	Addendum Date	Consultant
79	MCC103	4	Increment 2	Food Service	114000		Increment #2 - Reference Spec Section 11 40 00-1.4.F.3 and 11 40 00-3.5 drawings FS-101, 102, 201 and 202. Spec Section 11 40 00-1.4.F.3 indicated that should there be a conflict between the drawaings and the specification, the specifications shall govern. REFER TO RFC for additional comments	9/25/18	1. Item 4-10 should be 2 corner guards. Item 4-13 on the plans show the location and the specs call out a lot with a leaner dimension. 2. Item 1-01 should be model 242-1UA-TS per the drawings. 3. Item 1-37 model should be 36S-6BN per the drawings.	10/1/2018	
80	MCC90	5	Increment 2	Architectural	FINISH SPECS		The following sectiosn and paragraphs call out for Extra Materials which in totality will take up a lot of storage space. Please confirm that the bidders are to include providing all of these as listed OR if some of these could be excluded: (SEE RFC for list)	9/24/18	REFER TO ATTACHED REVISED EXTRA STOCK/MATERIAL QUANTITIES.	10/8/2018	
81	MCC101	5	Increment 2	Architectural	A4.02		Increment #2 - Please clarify the finish on Stair 1 wall along gridline 8.6. Detail 1/A4.02 indicates MP-1, which is Trespa 074200. However there is also a noate for the same wall on 1/A4.02 indicating 074213.A1, which is Dri-Design 074213. Please clarify finish product at this location	9/25/18	THE FINISH IS MP-1 (DRI-DESIGN 074213.A1) PER KEYNOTES ON SHEET A4.02, A6.10 AND SHEET A8.21 UNDER WALL FINISHES / WALL PANELS.	10/8/2018	
82	MCC100	5	Increment 2	Architectural	A4.02		Increment #3 - Please clarify the finish of the Stair 1 center divider. Elevation 2 on A4.02 calls out WP-2 which is Trespa High Pressure Laminate 074200. Stair 1 blow up elevations 5 & 10/A6.10 call out Metal wall panel Dri-Design 074213. Detail 10/A9.72 calls for High Pressure Laminate system (Trespa 074200) and corner detail 1/A9.41 indicates metal panel system (Dri Design 074213). Please clarify finish product at this location.	9/25/18	CENTER DIVIDER AT STAIR 1 IS 074200.A1 (TRESPA WP-2). REVISE KEYNOTES AT 5 & 10/A6.10 TO READ 074200.A1. DETAIL 10/A9.72 IS CORRECT CORNER DETAIL. ENLARGED CORNER DETAIL REFERENCE ON 10/A9.72 TO READ 6/A9.40.	10/8/2018	
83	MCC62	5	Increment 2	Architectural			Increment #2 - From all of the documents it can be determined that the North, South nd East walls of Elevator 2 are tiled full height, however is is unclear if the western wall is tiled as well. What about within the drinking fountain alcove, is this tile too? See green highlighted areas. Please confirm these are tile and provide which type/s.	9/20/18	PER CONTRACT DOCS. ELEV NO 2 TO RECEIVE 09300.A4 (WT-1). ALL EXTERIOR WALLS ON THE ELEVATOR TOWER ARE TILED INCLUDING THE DRINKING FOUNTAIN ALCOVE.	10/8/2018	
84	MCC65	5	Increment 2	Architectural	A5.13	3	Increment #2 - Detail 3/A5.13 calls out 053123.A2 above the storefront, however this call out is for the metal panel at the west plaza shade structure. Please review and confirm should this be changed to Metal Panel 074231.A1. also please provide detail for how the metal panel roof transition to plaster.	9/20/2018	THE METAL PANEL ABOVE THE STOREFONT IS METAL PANEL MP-2 AND THE KEYNOTE IS 074213.A1 PER THE EXTERIOR ELEVATION SHEET A4.01. KEYNOTE ON 3/A5.13 TO READ 074213.A1. TRANSITION DETAIL FROM METAL PANEL ROOF TO PLASTER WALL WOULD BE SIMILAR TO THE SOUTH METAL CANOPY IN THE SERVICE YARD, REFERENCE DETAIL 9/A9.42.	10/8/2018	
85	MCC68	5	Increment 2	Architectural	A6.02		Increment #2 - Sheet A6.02, at stair #3 the framed areas along gridline N have metal panel called out along the North, South and East elevations. Please confirm that the metal wall panel wraps all the way around and is also on the west side (highlighted in pink) of these walls (no elevations or details can be found to confirm).	9/20/18	YES. THE METAL PANEL WRAPS ALL AROUND AS SHOWN ON 7/A6.03. ARROW IS SHOWN CORRECTLY.	10/8/2018	
86	MCC61	5	Increment 2	Architectural	A3.10, A3.11		Increment #2 - Sheets A3.10 & A3.11 near gridlines A.1 & 7 and A.1 & 6.3 please clarify the ceiling finish south of Stair #1 at the West Lobby Entrance and at the intermediate landing. Details 1, 5 & 10/A6.10 seem to show soffit ceiling, but no material is called out and details 20 & 15/A9.72 which should show the ceiling at the stairs do not show a ceiling. Please clarify	9/20/18	THE LOBBY ENTRANCE CEILING(S) SHOULD BE METAL PANEL MP-1 TO MATCH THE WALLS. THERE IS NO "FINISH" UNDER THE RUN(S) AND LOWER LANDING(S) OF THE STAIRS. THEY ARE EXPOSED STRUCTURE, PAINTED WITH AESS PAINT/FINISH. COLOR TBD.	10/8/2018	
87	MCC9	5	Increment 2	Arch/District/Civil	C1.0D, A0.00D	McCarthy\9-PBC.PDF.pdf	Increment #1 - Sheet C1.0D, Demolition Keynote 5 - The Pile Caps are each listed with a Demo Keynote 5 and a depth "D", however when comparing with Detail 1/A0.00D there are 18 pile caps that do not match, please coordinate and confirm which supersedes the other. see attached marked up sketch.	9/13/18	REFER TO ADDENDUM NO 4, REVISED INCREMENT NO 1, SHEET C1.00-D FOR COORDINATED PILE DEMO DEPTHS WITH ARCHITECTURAL.	10/8/2018	
88	MCC59	5	Increment 2	Architectural	57300, A9.70, A9.71		Increment #2 - Specification Section 057300-2.3D calls out the in-fill woven wire mesh as stainless steel, square 2" pattern, by McNichols or equal. Detail 24/A9.70 calls for stainless steel woven wire infill panel and frame, by Wagner "Versatile Spine". Details 12, 17 & 27/A9.70 calls for woven metal mesh infill per spec (with calls for stainless steel). Details 14 & 19/A9.70 call for woven mesh screen, galvanized and then painted. Details 2, 22, 24 & 30/A9.71 calls for 2"x1" rectangular pattern trimmed steel wire mesh, then painted. Detail 26/A9.71 calls for galvanized wire infill and then painted. Please clarify what it to be provided at the woven wire mesh panels. 1) 2" square patter or 2"x1" rectangular pattern? 2) Is the wire mesh to be by McNichols or Wagner? 3) Is the wire mesh supposed to be Stainless Steel, galvanized or Carbon Steel?	9/19/18	REVISE SPEC 057300-2.3, D LANGUAGE TO READ "....RECTANGULAR PATTERN, 2"X1" WOVEN WIRE MESH WITH U-EDGING. REVISE SPEC 057300-2.3, D ADD PRODUCT 2. WAGNER "VERSATILE SPINE" OR EQUAL. DETAILS 12, 14, 17, 19, 24 & 27/A9.70 REVISE LANGUAGE TO READ "RECTANGULAR WOVEN-WIRE MESH INFILL, PAINTED PER SPEC". DETAILS 2, 22, 24, 26 & 30/A9.71 REVISE LANGUAGE TO READ "RECTANGULAR WOVEN-WIRE MESH INFILL, PAINTED PER SPEC". 1) PATTERN IS 2"X1" 2) WELDED WIRE MESH IS EITHER, BOTH ARE AN APPROVED EQUAL 3) HIGH-PERFORMANCE COATINGS/PAINTED STEEL.	10/8/2018	
89	MCC125	5	Increment 2	Electrical	E0.10		Increment #2 - Panelboard "4M" on drawing E0.10 is missing required amperage, main breaker or main lug size and missing required quanitty and sizes of branch circuit breakers. Please advise what will be required.	9/27/18	Panelboard 4M was shown with a distribution board schedule. Refer to Addendum #5 for revised schedule including all information.	10/8/2018	
90	MCC112	5	Increment 2	Electrical	E601		Increment #2 - Sheet E601 detail #3 shows an 8" concrete slab for the (N) 750KA XFMR. Often times with this pad configuration, 200A loadbreak elbow if required, are ineffective as a disconnecting means due to the restrictions of conduits with respect to the short distance between the HV bushing wells and finish surface of the pad. these restrictictions prevent someone from disconnecting the cables while energized. and utilizing the parking bushings as inteneded. please confirm that the detail #3 is the correct choice for the pad mounted XFMR as opposed to detail #1.	9/26/18	Detail 3/E601 is the correct detail for the 750kVA transformer. Wire size is #4/0 per single line diagram. Contractor shall provide enough slack to allow for the bends.	10/8/2018	
91	MCC124	5	Increment 2	Electrical	E5.01		Increment #3 - General note #1 on Sheet E5.01 calls for enclosure skirts to floor for surface mounted panelboards but specification section 262416-2.1B.4 calls for ceiling and floor skirts for surface mounted panelboards. Please clairfy wich is correct.	9/27/18	PROVIDE PER NOTE ON E5.01	10/8/2018	
92	MCC123	5	Increment 2	Landscape	L2.30		Increment #3 - Sheet L2.30, in Alternate #1, there is a tube steel guardrail called for as part of the alternate pricing. Within this scope there is also request for alternate pricing on the guardrail (hot dipped galvanized or stainless steel). Please advise which should be included with the alteranate #1 pricing - Galvanized or Stainless Steel?	9/27/18	REMOVE NOTE FOR ALTERNATE #1. BASE BID IS FOR HOT-DIPPED GALVANIZED TUBE STEEL GUARDRAIL	10/8/2018	

MASTER PBC Log

PROJECT: Rancho Santiago Community College District
Santa Ana College - Johnson Student Center Building Demolition, Increment 1 and 2
DSA #04-116810-1
DSA #04-116810-2

PBC #	GC	Addendum	Package(s)	TRADE/CATEGORY	SHEET / SECTION	DETAIL / PAGE	QUESTION / COMMENT	ISSUED TO DESIGN TEAM	RESPONSE TO COMMENT	Addendum Date	Consultant
93	MCC109	**5**	Increment 2	Electrical	ED1.01		Increment #2 - Reference drawings ED1.01 Note #4, E5.01 single line E1.11 site. To bypass the switch and keep the campus loop operational per note #4 on DWG ED1.01, a current single line is needed. DWG E5.01 reflects new construction only from MH #22. is there a current single line of the backbone showing MV circulits from MH #22 to PB #7 and beyond?	9/26/18	See attached single lines from Linik Corporation; on site CM. For Reference	10/8/2018	
94	MCC64	5	Increment 2	Architectural	A5.13	2	Increment #2 - Detail 2/A5.13 please clarify if the interior side of the parapet is 22 ga sheet metal flashing as it is marked 076200.A1 or modified bituminous membrane roofing as shown on 17/A9.30. same thing is shown in detail 3/A5.13, please confirm this should be modified bituminous membrane roofing as well.	9/20/18	REVISE THE KEYNOTE AT 2/A5.13 TO 075500.A1, INTERIOR OF PARAPET WILL BE VERICALLY APPLIED MODIFIED BITUMINOUS MEMBRANE FLASHING. THE DETAIL REFERENCE 17/A9.30 IS CORRECT.	10/8/2018	
95	MCC78	**5**	Increment 2	Architectural	A7.51		Increment #2 - Sheet A7.51, keynote 101116.A2, this frosted glass Markerboard is not specified in Section 101116, nor is Egan Visual listed as an approved manufacture. Provide a specification section for this markerboard, or confirm that the bidders are to provide & install this system per Manufacturers information.	9/20/18	PROVIDE 1/4" THICK FRAMELESS TEMPERED GLASS, DRY ERASE, FROSTED ON THE BACKSIDE. BASIS OF DESIGN: EGAN-GLASSWRITE MARKERBOARD PER MANUFACTURERS INSTALLATION REQUIREMENTS OR A PRODUCT OF EQUAL VALUE.	10/8/2018	
96	MCC84	5	Increment 2	Architectural	A8.31		Increment #2 - On sheet A8.31 door J208A is mared as a "pair", but is called ouas a Type D2 which is a single door. On sheets A2.22 & A7.23 this door is drawn as a single door. Please confirm Door J208A is a single door and the mark indicating this is a apir should be removed from sheet A8.31.	9/24/18	CONFIRMED DOOR J208A IS A SING DOOR. REMOVE THE "X" FROM THE DOOR SCHEDULE AT DOOR J208A.	10/8/2018	