LOS RIOS COMMUNITY COLLEGE DISTRICT

1919 Spanos Court, Sacramento, CA 95825 Phone (916) 568-3071 FAX (916) 568-3145 Purchasing Department

Sacramento City College American River College Cosumnes River College Folsom Lake College

ADDENDUM NO. 1

ISSUE DATE: May 2, 2018

American River College Liberal Arts Building Modernization STEM

LRCCD BID NO. 18027

Issued By:

LOS RIOS COMMUNITY COLLEGE DISTRICT 1919 Spanos Court, Sacramento, CA 95825 Phone (916) 568-3071 Fax (916) 568-3145

This addendum forms a part to the Contract Documents. The addendum items supersede and supplement all portions of the bidding documents with which it conflicts. All workmanship, materials, appliances and equipment which may be included in the following addendum items shall be of the same relative quality as described for similar work set forth in the general or main specifications of which these addendum items shall be considered a part.

This Addendum has been acknowledged in the space provided on the Bid Form and is considered part of the bid documents.

This Addendum consists of 313 pages

- **1.** Job walk notes.
- 2. Remove Project Manual Bid form.
- 3. Replace Project Manual Bid form with revised Bid Form (attached).
- **4.** Add DSA 103 to specifications.
- 5. Add Asbestos And Lead Based Paint Survey Report to specifications.
- **6.** Add Geotechnical Engineering Study For American River College STEM Building to specifications.

7. Substitution Request Received.

RESPONSE: Los Rios Community College District does not pre-approve or prequalify. It is the responsibility of the contractor to make certain their product meets or exceeds all the requirements of the specifications

8. RFI#1: does this project have asbestos abatement in the project scope? RESPONSE #1: See attached Asbestos and Lead Based Paint Survey Report.

ADDENDUM NO. 1

LRCCD Bid #18027 American River College Liberal Arts Modernization STEM Building DSA Application No.: 02-116042 Date: 30 April 2018 8 pages plus attachments

NOTICE TO ALL BIDDERS

The following described changes, corrections, clarifications, deletions, additions, and approvals for the Contract Bid and Contract Documents dated 19 March 2018, which comprise Addendum No. 1, are hereby made a part of the Contract Bid and Contract Documents and shall govern in the performance of the Work. Bidder shall acknowledge receipt of this Addendum on the Bid Form.

CLARIFICATION

- Item 1: Alternate 5. Different fire resistive ratings requirements for the project are being considered. The DSA Permit drawings show a Construction Type IIA 1HR fire resistive protection on all structural columns and beams throughout the building. This is now being considered as an add alternate (ADD ALT 5) and the rating plan has been shown on a new sheet G040.1. The Base Bid fire resistive rating plans (G040) has been updated to show spray applied fire proofing at shaft locations only and the Construction Type of IIB.
- Item 2: SMUD Commitment letter and drawing include FOR REFERENCE ONLY.

SPECIFICATIONS

Section: <u>01 0110 – "TABLE OF CONTENTS"</u>

Corrected order of alternates and allowance and addition of 25 1523 Graphic User Interface For BCS.

Section: 01 2300 - "ALTERNATES"

Part 3, Section 3.01.A. Update to Alternate No. 1. Part 3, Section 3.01.D. Added Alternate No. 4. Part 3, Section 3.01.E. Added Alternate No. 5.

Section: 03 3300 - "CAST-IN-PLACE CONCRETE"

Part 1, Section 1.2.B. Related Requirements. Added section to read, "4. Section 09 6123 "Concrete Vapor Emission Treatment" for building application of vapor emission on concrete.

Section: <u>05 7000 – "DECORATIVE METAL"</u>

Part 1, Section 1.2.A. add MB-1 after stained steel interior wall base.

Section: <u>09 6123 – "CONCRETE VAPOR EMISSION TREATMENT"</u>

Part 1, Section 1.1 Related Documents. Added section to read, "1.1.B Related Requirements: Section 03 3300 "Cast-in-Place Concrete".

Section: <u>09 2900 – "GYPSUM BOARD"</u>

Part 1, Section 1.3.D. GB-1 designate has been added to suspension framing and framed ceilings with a designation of GB-2 has been added.

Section: <u>10 1100 – "VISUAL DISPLAY UNITS"</u>

Part 1, Section 1.2.B. change (ADD ALTERNATE) to BASE BID. Part 2, Section 2.4.A. removed. Part 2, Section 2.4.B. change (ADD ALTERNATE) to BASE BID.

- Section: <u>23 7300 "INDOOR AIR HANDLING UNITS"</u> Removed (3) manufacturer's from section 237300-2.1.A.
- Section: <u>23 80 00 "HEATING, VENTILATING AND AIR CONDITIONING"</u> Added text to the end of section 238000-2.14.A and added section 238000-2.14.B.1.

Section: <u>25 1523 – "GRAPHIC USER INTERFACE FOR BCS"</u> New section added

<u>GENERAL</u>

<u>Drawings</u>

Item G-1:	(Refer to G001 DRAWINGS INDEX) General sheet G040.1 and Architectural sheet A417.1 added to the sheet index. Update to the structural sheet name.
ltem G-2:	(Refer to G001 ADDITIVE ALTERNATES) Add Alternate No. 1, sliding white boards, replaced with operable partitions in Math Learning Spaces #3, 4, 6, 7, and 8. Add Alternate 4, power in concrete benches and Add Alternate 5, fire rated structural elements, have been added.
ltem G-3:	(Refer to G010 FIRE RESISTIVE RATINGS) Fire resistive ratings chart corresponds with Add Alternate 5 requirements. For Base Bid fire resistive rating requirements, refer to G040.
ltem G-4:	(Refer to G031 CONSTRUCTION FENCE & TEMPORARY ACCESS PLAN) Clarifying notes added regarding the temporary accessible path. Details 2, 3, and 4 added to support the temporary accessible path of travel.
ltem G-5:	(Refer to G040 FIRE RATINGS PLAN) Fire ratings plan to reflect the requirements for the base bid, fire rating only at vertical exit and shaft enclosures.
ltem G-6:	(Refer to G040.1 FIRE RATINGS PLAN – ALTERNATE #5) New sheet added. Fire ratings plan to reflect the requirements for Add Alternate 5, fire resistive protection on all structural elements throughout the building

Item G-7: (Refer to G111 EDGE OF SLAB – LEVEL 01) Edge of slab plan has adjusted curb opening dimensions. Also, slab depression locations have been added with corresponding details referenced.

<u>CIVIL</u>

<u>Drawings</u>	
Item C-1:	(Refer to UTILITY PLAN C501)
	Added SD POC at the sliding door, east elevation.
	Added SS POC and 4" SS on the south elevation, and update to the SS line
	running east to SSMH-1 at the southeast corner.

Item C-2: (Refer to UTILITY PLAN C502) Update to the Sanitary Sewer Structure Schedule and to the Storm Drain Structure Schedule.

ARCHITECTURAL

<u>Drawings</u>

- Item A-1: (Refer to FLOOR PLAN 1/A101) Exterior window types in the P&E Stockroom and Engineering Shop updated with correct tags.
- Item A-2: (Refer to FLOOR PLAN 1,2/A102) Add Alternate 1, operable partitions, shown on plan. Base Bid option, hard walls, shown in 2/A102. Also, exterior window type in Stair 2 updated with correct tag.
- Item A-3: (Refer to FLOOR PLAN 1,2/A103) Add Alternate 1, operable partitions, shown on plan. Base Bid option, hard walls, shown in 2/A103.
- Item A-4: (Refer to REFLECTED CEILING PLAN 1/A131) Electrical and Fire Riser Rooms to have a GB-2 ceiling. Ceiling outside of Physics Lab #1 changed to GB-1. Central Corridor ceiling tile clarified as APC-1. Detail reference provided at light cove in restrooms.
- Item A-5: (Refer to REFLECTED CEILING PLAN 1, 2/A132) Add Alternate 1, operable partitions, shown on plan. Base Bid option, hard walls, shown in 2/A132. Ceiling outside of Stem Testing Computer Room changed to GB-1. Detail reference provided at light cove in restrooms.

Item A-6: (Refer to REFLECTED CEILING PLAN 1, 2/A133) Add Alternate 1, operable partitions, shown on plan. Base Bid option, hard walls, shown in 2/A132. Ceiling outside of BCS Computer Room #3 changed to GB-1. Detail reference provided at light cove in restrooms.

Item A-7: (Refer to ROOF PLAN 1/A151)

Roof walkway pads added on roof level and as number 11 in the keyed notes. A general note has been added to indicate high and low point dimensions are from top of structural deck. Detail add to the north of the roof.

Item A-8: (Refer to EXTERIOR ELEVATIONS 2, 3/A201) Gas meter has been shown on 3/A201. Wall hydrant has been shown on 1/A201. Exterior signage has been clarified on 2/A201 and information added to sheet. A general note referencing all exterior penetration flashing to 14/A535 has been added.

- Item A-9: (Refer to EXTERIOR ELEVATIONS 2, 3/A202) Exterior signage has been clarified on 3/A202 and information added to sheet. A general note referencing all exterior penetration flashing to 14/A535 has been added. Wall hydrant has been shown on 1/A202.
- Item A-10: (Refer to INTERIOR ELEVATIONS 3/A241) Incorrect finish tag has been removed from 3/A241.
- Item A-11: (Refer to INTERIOR ELEVATIONS 1/A245) Sliding marker boards have been incorporated into the base bid. Reference 1/A245.
- Item A-12: (Refer to INTERIOR ELEVATIONS 1/A245.1) Sliding marker boards have been incorporated into the base bid, alternate note has been removed. Reference 1/A245.1.
- Item A-13: (Refer to ENLARGED INTERIOR ELEVATIONS AND PLANS 1-3/A246) Detail added at the interior extruded glass fiber concrete panel at the ceiling transition. Reference 1-3/A246 and 16/A563.
- Item A-14: (Refer to ENLARGED PLAN AND ELEVATIONS 6, 7, 8, 9/A401) Drawings 6, 7, 8 have updated titles to reflect the room name. Drawing 9 has added wall tags around the furred out column.
- Item A-15: (Refer to ENLARGED PLAN AND ELEVATIONS 9/A404) Future acoustic panels keyed correctly (was note 12 now note 11) in 9/A404.
- Item A-16: (Refer to ENLARGED PLAN AND ELEVATIONS 7/A413) Future acoustic panels keyed correctly (was note 12 now note 11) in 7/A413.
- Item A-17: (Refer to ENLARGED PLAN AND ELEVATIONS 10, 11/A417) Base bid option shown for Math Learning Spaces 3, 4, 6,7, and 8.
- Item A-18: (Refer to ENLARGED PLAN AND ELEVATIONS A417.1) New sheet added. Add Alternate 1 shown for Math Learning Spaces 3, 4, 6,7, and 8.

Item A-19:	(Refer to ENLARGED PLAN AND ELEVATIONS 4, 5/A454) Added a note regarding waterproofing at elevator pit walls. Reference 4, 5/ A454
Item A-20:	(Refer to DOOR SCHEDULE A512) Doors 238 and 333 have an added remark for a 180 degree hinge to accommodate the magnetic hold open. Addendum number is shown in door schedule revision column, but text note below schedule is clouded to keep schedule clean of clouds and deltas.
Item A-21:	(Refer to EXTERIOR GLAZING DETAILS 16/A525) Note for cold formed metal framing spec section updated to 05 4000 to reflect the correct section.
Item A-22:	(Refer to EXTERIOR SECTION DETAILS – EWA-2 5/A534) Dimension removed from detail to avoid conflict with structural drawings.
Item A-23:	(Refer to EXTERIOR SECTION DETAILS – EWA-2 13/A535) and 14/A535) Added details for exterior penetrations and plan detail for window wall at slab on grade.
Item A-24:	(Refer to ROOF DETAILS 4, 11/A541) Roof Vent detail 4/A541 has been coordinated with mechanical detail. 11/A541 has been updated with notes regarding sealants and attachment.
Item A-25:	(Refer to INTERIOR PARTITION DETAILS 3/A561) Backing plate schedule has been updated with attachment locations for acoustical panels and marker boards. Added OFCI mailbox.
Item A-26:	(Refer to INTERIOR PARTITION DETAILS 15/A563) Added detail of the fiber cement panels at interior ceiling.
Item A-27:	(Refer to INTERIOR DETAILS 3/A581) Detail 3/A581 title has changed to reflect the sliding marker boards as base bid.
Item A-28:	(Refer to FINISH SCHEDULE A902) Finish schedule has been updated with cement panels for walls and GB-2 ceilings at specific locations. Addendum number is shown in finish schedule revision column, but text note below schedule is clouded to keep schedule clean of clouds and deltas.
Item A-29:	(Refer to FINISH PLAN – LEVEL 2 1/A912) Annotation has been added to clarify Add Alternate 1, operable partitions, on the plan.
Item A-30:	(Refer to FINISH PLAN – LEVEL 3 1/A913) Annotation has been added to clarify Add Alternate 1, operable partitions, on the plan.

- Item A-31:
 (Refer to SIGNAGE PLAN LEVEL 2 1/A1002)

 Annotation has been added to clarify Add Alternate 1, operable partitions, on the plan.

 Item A-32:
 (Refer to SIGNAGE PLAN LEVEL 3 1/A1003)

 Annotation has been added to clarify Add Alternate 1, operable partitions, on the plan.

 MECHANICAL

 Drawings

 Item M-1:
 (Refer to MECHANICAL SCHEDULES M002)

 Added "casing radiated" sound power level requirements for the AHU's.
- Item M-2: (Refer to MECHANICAL SCHEDULES M003) Revised the Split System AC Unit Schedule to show "Daikin" as the manufacturer, and revised schedule information as applicable.
- Item M-3: (Refer to MECHANICAL PIPING FLOOR PLAN LEVEL 1 M301) Added General Notes 3 & 4.
- Item M-4: (Refer to MECHANICAL PIPING FLOOR PLAN LEVEL 2 M302) Added General Notes 3 & 4.
- Item M-5: (Refer to MECHANICAL PIPING FLOOR PLAN LEVEL 3 M303) Added General Notes 3 & 4.
- Item M-6: (Refer to MECHANICAL PIPING DIAGRAMS M304) Added General Piping Note 8.
- Item M-7: (Refer to MECHANICAL PIPING DIAGRAMS M305) Added General Piping Note 8.
- Item M-8: (Refer to MECHANICAL PIPING DIAGRAMS M306) Added General Piping Note 8.

PLUMBING

<u>Drawings</u>	
Item P-1:	(Refer to PLUMBING FIXTURE SCHEDULE P002)
	Revised manufacturer/model information for fixtures <u>WC-1</u> , <u>UR-1</u> , <u>L-1</u> and <u>SS-1</u> .

- Item P-2: (Refer to LEVEL 1 PLUMBING FLOOR PLAN P201) Added callout for water meter within Mechanical Room 112.
- Item P-3: (Refer to LEVEL 1 PLUMBING FLOOR PLAN P201) Revised routing and POC location for the 4" waste line at Fire Riser Room 110A.

Item P-4:	(Refer to LEVEL 1 – PLUMBING FLOOR PLAN P201) Added callout for gas meter near regulator adjacent to Electrical 121.
Item P-5:	(Refer to LEVEL 1 – PLUMBING FLOOR PLAN P201) Added two-way cleanout and revised waste line size to 3" near grid lines 12/F.
Item P-6:	(Refer to LEVEL 1 – PLUMBING FLOOR PLAN P201) Added ½" storm drain connections and piping at exterior doors near grid lines 6/J.
Item P-7:	(Refer to ENLARGED PLUMBING PLANS 1/P401) Revised floor drain size to 3" and added wall cleanouts near <u>DF-1</u> and within Women's Restroom 119.
Item P-8:	(Refer to ENLARGED PLUMBING PLANS 2/P401) Revised floor drain size to 3" and added wall cleanouts near <u>DF-1</u> and within Women's Restroom 222.
Item P-9:	(Refer to ENLARGED PLUMBING PLANS 3/P401) Revised floor drain size to 3" and added wall cleanouts near <u>DF-1</u> and within Women's Restroom 318.
ELECTRICAL	
<u>Drawings</u> Item E-1:	(Refer to ELECTRICAL SITE PLAN A/E101) Additional conduit and numbered sheet note 20.
Item E-2:	(Refer to LIGHTING SITE PLAN A/E102) ADD ALTERNATE 4, power in concrete benches in the STEM Courtyard, in concrete benches at the East Elevation and in the concrete bench at the southeast corner. Added numbered sheet not 6.
Item E-3:	(Refer to POWER & TELECOMMUNICATIONS PLAN - LEVEL 03 A/E303) BASE BID and ADD ALTERNATE 1 are represented in the same plan. Base bid hard walls shown dashed and floor boxes in Math Learning Space #7 is called out to be a part of the ADD ALTERNATE 1, Base Bid is similar to E302 were power is at the teaching wall.
Item E-4:	(Refer to SIGNAL PLAN – LEVEL 02 A/E402) BASE BID and ADD ALTERNATE 1 are represented in the same plan. ADD ALTERNATE 1 should include the ALS in Math Learning Spaces #4 and #3.
Item E-5:	(Refer to SIGNAL PLAN – LEVEL 03 A/E403) BASE BID and ADD ALTERNATE 1 are represented in the same plan. ADD ALTERNATE 1 should include the ALS in Math Learning Spaces #6, #7 and #8. Floor boxes in Math Learning Space #7 is called out to be a part of the ADD ALTERNATE 1, Base Bid is similar to E402, the (2) IPs are at the teaching wall.

Item E-6: (Refer to LIGHTING SITE PLAN A/E502) Added hold open to second door leaf in Stair 2 on Level 02.

END OF ADDENDUM NO. 1

BID # 18027 May 2, 2018 10:00 AM

Job Walk Notes

Attendees: Paula Gordon – Purchasing, Los Rios CCD Kim Carrillo – Purchasing, Los Rios CCD Joe Meyer – Facilities Management, Los Rios CCD Courtney Howard – Gould Evans Paul Matys – Gould Evans

Additional attendees per sign in sheet

Location: American River College

Project review: Briefly discussed the project including but not limited to the following items:

- 1. Submittals, bid deadline, required bid documents, Board approval date, addendum postings, attached agenda items.
- 2. Attendees advised to refer to project manual for details.
- 3. It is not mandatory that the plans are purchased from ARC Document Solutions; however, ARC is the official reprographics, and all addenda are issued from ARC.
- 4. Procedures for handling questions and requests for information, and deadline to submit RFI's.
- 5. Request for information will be accepted until 12:00 PM, Friday, May 11, 2018.

Items discussed:

- Project Abate and Demo existing building approx. 32K sf including covered walk and underground utilities. Construction of new 57K sf 3 story Type 2A bldg. including site improvements and site infrastructure. Bldg. contains physics labs, general classrooms, computer rooms, faculty offices and engineering classrooms and shop. Site improvements include courtyard and walkway at building and new Campus hydronics, gas line, waterline and electrical. 20 Month Schedule. Tie existing building in to new hydronics – Depending on time of year, may not be able to cut off access to both hot and chilled water.
- 2. Addendum #1 to be issued this afternoon with notes from Bid walk will include info on abatement, soils report and SMUD Commitment drawings as well as revisions to alternates.
- 3. Phasing plan G031 shows total area of work including building and Campus infrastructure. Indicates that infrastructure MUST be done in phases in order to keep campus functioning and operational. Shows area for parking and staging. Temp Striping and temp walkway.
- 4. Erosion Control plan Contractors responsibility to produce and keep updated.
- 5. Is this a mandatory walk? No.
- 6. Contact Project Manager Joe Meyer at <u>MeyerJ@losrios.edu</u> if access to the site is needed before bid open date.

- 7. Walked site & identified:
 - a. Hot & chilled water tie in point at Central Plant.
 - b. Building to be demolished.
 - c. Electrical tie in general location.
 - d. Water line.
 - e. Contractor staging and parking area.
 - f. Location of new building.
 - g. Hydronics route and building tie in.
 - h. Existing hydronics underneath walkway.
 - i. Manholes near Student Services.
 - j. Hydronic Point of connection at North side of campus between Student Services and Culinary Arts.
 - k. Location of 3" gas line that is not currently live.
 - 1. It may be challenging with opening up trenches while maintaining path of travel as much as possible. To be coordinated with Project Manager Joe Meyer and awarded contractor
- 8. Truck route to be coordinated with Project Manager Joe Meyer and awarded contractor.
- 9. Existing pipes may be Transite.
- 10. Are fire lines hooked in? Combined potable and fire water system.
- 11. Will all trees remain? Yes, to the extent possible. Would prefer to keep the oak trees. To be coordinated with Project Manager Joe Meyer and awarded contractor
- 12. Is the irrigation is shown on the drawings? Refer to Plans and Specifications. Identification can be coordinated with Project Manager Joe Meyer and Los Rios CCD maintenance personnel and awarded contractor.

Meeting ended at approximately 10:40 A.M.

Note: These meeting minutes represents the District's best effort to record the issues addressed during the pre-bid meeting. If no corrections or clarification are provided by the attendees within five (5) days of receipt of these minutes, these meeting minutes will be considered accurate, final and part of the project record.

Page 1

Liberal Arts Modernization ARC Bid 18027

BID FORM

FOR: ARC Liberal Arts Modernization Bid # 18027

SUBMIT BII	D TO:	
If US	S Mail	If Hand-Delivered
TO:	LRCCD Board of Trustees	TO: LRCCD Board of Trustees
Attn:	Purchasing Dept.	Attn: Purchasing Dept.
3753	Bradview Drive	3753 Bradview Drive
Sacra	amento, CA 95827	Sacramento, CA 95827
LOCATION	OF BID OPENING:	
Los I	Rios Community College District Fa	acilities Management
Purcl	hasing Department	-
3753	Bradview Drive	
Sacra	amento, CA 95827	
PROJECT'S	CONTACT:	
	(Name)	(Email Address)
BID FROM:		
	(Name of firm submitting Bid Pro	posal)
	(Address)	
	(City, State, Zip Code)	
	(Telephone)	(Fax)

DATE BID SUBMITTED:

NOTE:

1) All portions of the bid form must be completed before the bid is submitted. Failure to do so may result in the bid being rejected as non-responsive. Attached to and submitted with this bid form, bidder must provide the completed Contractor Qualifications, Non-Collusion Declaration signed by bidder, Statement of Compliance, Designation of Subcontractors-Bid Form, the appropriate bid security and any other documents required by the Contract Documents. Failure to submit all required documents may result in the bid being rejected as non-responsive.

2) The bidder agrees that each addendum received and acknowledged herein shall become a part of and included in this bid proposal. The bidder agrees the bid proposal includes the following addenda (SEPARATELY LIST EACH ADDENDUM RECEIVED):

Addendum No.	Dated	Addendum No	Dated
Addendum No.	Dated	Addendum No	_Dated
Addendum No.	Dated	Addendum No	_Dated
	Bid Form Pa	ige 1	

The bidder agrees to perform the **Base Bid** work for the lump sum of:

	Dollars	\$
(Specify total dollar amount in words printed or typed)		(In figures)
ALTERNATE NO. 1: Provide hardware and track system Space #3 and #4 (Level 02) and Math Leaning Spaces #6, # construction. Refer to sheets A102, A103, A132, A133, A41	for operable pa 7, and #8 (Level 7 and A417.1 fo	rtitions in Math Learning 03) in lieu of typical wall r more information. (AD1)
(Specify total dollar amount in words printed or typed)	Dollars	\$ (In figures)
ALTERNATE NO. 2: Provide custom wall graphics in the Stair 1 and Stair 2. Refer to sheets A245, A245.1 and A453	Community Ga for more inforn	thering Space (all levels), nation.
(Specify total dollar amount in words printed or typed)	Dollars	\$ (In figures)
ALTERNATE NO. 3: Provide custom film graphics in the A404-A406 for more information.	faculty offices (a	all levels). Refer to sheets
(Specify total dollar amount in words printed or typed)	Dollars	\$ (In figures)
ALTERNATE NO. 4: Provide power in the concrete bench benches at the east elevation and in the concrete bench at t for more information. (AD1)	ies in the STEM he southeast cor	Courtyard, in the concrete ner. Refer to sheet E102
(Specify total dollar amount in words printed or typed)	Dollars	\$(In figures)
ALTERNATE NO. 5: Provide 1-hour fire resistive protect throughout the building. Refer to sheets G010 and G040.1	ion on all prima for more inform	ry structural elements nation. (AD1)
(Specify total dollar amount in words printed or typed)	Dollars	\$(In figures)

TOTAL BID_____Dollars \$_____ Total bid amount shall include the base bid amounts and the sum of all alternates

The lowest responsive bid shall be determined based on the sum of the base bids, all additive and all deductive alternates.

3) There is herewith enclosed cash, a bid bond for the benefit of, or a certified check or cashier's check for ten percent (10%) of the amount of the bid submitted, made payable to Los Rios Community College District in the amount of:

_Dollars

(Specify total dollar amount in words printed or typed)

\$_____ (In figures) Liberal Arts Modernization ARC Bid 18027

4) The bidder, having the appropriate active license required by the State of California; and having carefully read and examined the plans, specifications, and all related bidding documents as prepared by the Los Rios Community College District for the project described as: ARC Liberal Arts Modernization - BID # 18027 having performed a full and complete examination of the site of the proposed work and all information available to bidder, and being familiar with all the conditions related to the proposed work, including the availability of materials, equipment, and labor, hereby offers to furnish all labor, materials, tools, transportation, services, equipment and taxes necessary to complete the work of the described project in accordance with the Contract Documents, and to complete all requirements of the Contract Documents for the sums quoted in this Bid Form. The bidder agrees that it will not withdraw its bid within ninety (90) days after the bid deadline. If the bidder is selected as the apparent lowest responsive responsible bidder, the bidder agrees, within ten (10) days after receipt of notice of selection, to sign and deliver the Contract, and to furnish the Performance Bond, the Payment Bond, Certificates of Insurance, and other required items.

5) The bidder agrees that if the bidder is selected as the apparent lowest responsive responsible bidder, and the bidder fails to sign the Contract and furnish the Performance Bond, the Payment Bond, Certificates of Insurance, or any other required items in proper form and in proper amounts within the time limit specified in the Contract Documents, the Los Rios Community College District may award the work to another bidder or call for new bids. In such event, the bidder shall be liable to the Los Rios Community College District for the difference between the amount of the disqualified bid and the larger amount for which the District procures the work plus all of the District's costs, damages, expenses and liabilities arising from bidder's failure to sign the Contract and/or furnish the required documents.

6) The bidder, if awarded the Contract, agrees to complete all work required by these Contract Documents, in strict compliance with these Contract Documents, within the prescribed calendar days from the start date specified in the Notice to Proceed.

BIDDER'S FIRM:

Bidder is a: (circle one) Corporation Part

Individual

Joint Venture

Other:

(Specify)

Names and Titles of Key Members of Firm:

Partnership

(Name of person signing the bid on behalf of the bidder and all general partners, if a partnership, must be included.)

Bid Form Page 4

Name of President if a Corporation:

(Print or Type Name)

Name of Secretary if a Corporation:	
(Print or Type Name)	

Corporation is organized under the laws of the State of:

DIR Number:

California Contractors License(s):

Name of License(s):

Classification(s)

Number

Expiration Date

(For Joint Ventures, list Joint Venture's license or licenses for all Joint Venture partners.)

By submission of this bid, bidder certifies:

I am aware of the provisions of section 3700 of the Labor Code which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the award of this Contract.

Corporate Seal:

Bid Form Page 5

Liberal Arts Modernization ARC Bid 18027

Nam	e of Bidder's Firm:	
Addı	ress:	
By:		
	(Signature)	
	(Print Name)	
	(Title)	
Bv:		
5	(Signature)	
	(Print Name)	
	(Title)	

(If signature is by other than the sole proprietor, general partner, or corporate officers, attach an original Power of Attorney.)

The Los Rios Community College District and its Board of Trustees reserves the right to reject any or all bids received and/or waive any minor irregularity of a bid as the public good may require.

Bid Form Page 6

		Pag	ſĠ	
	A DSA-103 Issued 12002 Instant of Required PARTMENT OF GENERAL SERVICES Special Inspecti	atructural Te ions - 2016 C	ests & BC	INCREMENT # DSA File No.: 34-C3 Application No.: 02-116042 Date Submitted: 3/19/2018 Revised:
Schot Nam	American River College STEM Building		District	Los Rios Community College District
IMP insp note Lab nus strut strut strut 2013	ORTANT: This form is only a summary list of structural tests and bections required for the project. Generally, the structural tests and ed on this form are those that will be performed by the Geotechnics ioratory of Record. or Special Inspector. The actual complete test a st be performed as detailed on the DSA approved documents. The his form identifies work NOT subject to DSA requirements for spec citural testing. The project inspector is responsible for providing ins struction, including but not limited to, special inspections not listed cutral wood framing. high-load wood diaphragms, cold-formed stee -structural components, etc., per Title 24, Part 2, Chapter 17A. TE: This form is also available for projects submitted for review un 3 CBC.	some of the special 1 special inspections al Engineer of Record, and inspection program 2 appendix at the bottom 2 in inspection or 2 in this form such as 9 on this form such as 1 on this form such as 1 on the 2007, 2010, and 1 der the 2007, 2010, and	INSTRL and spe dependid indicatin indicate Click on informa	CTIONS: Click a plus sign (+) before any category or subcategory to reveal additional tests cial inspections. A shaded box indicates a test or special inspection that may be required, ng on the scope of the construction and other issues. A shaded box can be clicked g your selection of that test. Note: A minus (-) on a category or subcategory heading is that it can be collapsed. However, any stelections you may have made will be cleared. The "COMPILE" button to show only the tests and inspections finally selected. For more tion on use of this form, see DSA-103.INSTR.
	Note: References are t	to the 2016 edition of the Ca	alifornia Bui	ding Code (CBC) unless otherwise noted.
	TEST OR SPECIAL INSPECTION	- 3344-1	SI HARO STRATE	CODE REFERENCE AND NOTES
	- Soils			
	- 1. GENERAL:	Table 1705A.6		
×.	 a. Verify that: a. Verify that: site has been prepared properly prior to placement of controlle fill and/or excavations for foundations. foundation excavations are extended to proper depth and have reached proper material, and materials below footings are adequate to achieve the design bearing capacity. 	e G	êE	By geotechnical engineer or his or her qualified representative. (See Appendix for exemptions.)
Ľ	COMPACTED FILLS:	Table 1705A.6		
	K a. Perform classification and testing of fill materials.	Test	LOR*	. Under the supervision of the geotechnical engineer.
×	b. Verify use of proper materials, densities and inspect lift thicknesses, placement, and compaction during placement of	fill. Continuous	GE*	By geotechnical engineer or his or her qualified representative.
	K c. Test compaction of fill	Test	LOR*	. Under the supervision of the geotechnical engineer.
	- CONCRETE	Table 1705A.3, /	ACI 318-14 S	ections 26,12 & 26,13
'	- 7. CAST IN PLACE CONCRETE			
	Material Verification and Testing:			
×	👔 a. Verify use of required design mix.	Periodic	SI*	able 1705A.3 item 5, 1910A.1 (1909.2.3 ⁺). ⁻ To be performed by qualified batch-plant inspector and concrete sampling technician
×	Lo. Identify, sample, and test reinforcing steel.	Test	LOR	[910A.2 (1909.2.4"); ACI 318-14 Section 26.6.1.2. DSA IR 17-10
1				

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+ In the CODE REFERENCE AND NOTES column indicates DSA-SS/CC sections that may be used by community colleges, per 2013% CBC Sec. 1,9,2.2.

-	DSA-103 Issued 12202016 DSA-103 Issued 12202016 List of Required Stru MENT OF GENERAL SERVICES Special Inspections	ictural To - 2016 (ests 8 CBC	Date Submitted: 3/19/2018 Revised:
	 During concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete. 	Test	ROJ	Table 1705A.3 item 6; ACI 318-14 Sections 26.5 & 26.12
	d. Test concrete (P _c).	Test	LOR	1905A.1.16 (1909.3.7 ⁺); ACI 318-14 Section 26.12.
	Inspection:			
T	11. POST-INSTALLED ANCHORS:			
	a. Inspect installation of post-installed anchors	See Notes	si*	Table 1705A.3 Item 4a (Continuous) & 4b (Periodic) (see Appendix for exemptions). ACI : Sections 17.8 & 26.13 • May be performed by the project inspector when specifically approv DSA.
	b. Test post-installed anchors.	Test	LOR	1910A.5 (1909.2.7 [*]). (See Appendix for exemptions.)
	MASONRY	TMS 402-13/AC	:1 530-13/AS	CE 5-13 Table 3.1.3 & TMS 602-13/ACI 530.1-13/ASCE 6-13 Table 5
	STEEL, ALUMINUM	Table 1705A.2.	1, AISC 303	-10, AISC 360-10, AISC 341-10, AISC 358-10, AISI \$100-07/S2-10
	17. STRUCTURAL STEEL, COLD-FORMED STEE	EL. AND ALI	MINUM	USED FOR STRUCTURAL PURPOSES
1	Material Verification:			
	 verify identification of all materials and Mill certificates indicate material properties that comply with requirements 	Periodic		2203A.1 (2203.1 [*]), Table 1705A.2.1 Item 3a-3c; AISI S100-07/S2-10 Section A2.1 & A2.2, A S200-12 Section A3, AISI S220-11 Section A4.* By special inspector or gualified technician
Ť	Material sizes, types and grades comply with requirements. T T T T T T T	Task	0	performed off-site.
Ť	 Contraction of USC shares 	1091 Designation		2203A.1 (2203.1).
	C. Examine seam weres of noo suapes Inspection:	Leriodic	ñ	1004 IX 1/-3.
	e. Verify and document steel fabrication per DSA approved	Periodic	7	Not annitratile to cold formad staal light-frame construction, evend for trueses (170EA 3-4)
	Construction documents.		;	
-	18. HIGH STKENGTH BOLIS: Material Voimation of Urb. Second Balls Nick	<u>RCSC 2009</u>		
F	material vertification of High-Strength Bolts, Nuts, and Washer	::		
	 Verify identification markings and manufacturer's certificates of compliance conform to ASTM standards specified in the DSA approved documents. 	Periodic	S	Table 1705A.2.1 Item 1, 2203A.1; RCSC 2009 Section 2.1. DSA IR 17-9
	b. Test high-strength bolts, nuts and washers.	Test	LOR	2213A.1 (2212.6.1 [*]). RCSC 2009 Section 7.2 DSA IR 17-8
	Inspection of High-Strength Bolt Installation:			
	c. Bearing-type ("snug tight") connections.	Periodic	S	Table 1705A.2.1 Item 2a; RCSC 2009 Section 9.1. DSA IR 17-9
	d. Slip-critical connections.	•	ß	Table 1705A.2.1 Item 2b & 2c. RCSC 2009 Section 9.2 & 9.3. * Continuous" or "Periodic" de on the tightening method used DSA IR 17-9 and 1705A 2-1
<u> </u>	19. WELDING:			1705A.2.5, Table 1705A.2.1 Items 4.8.5; DSA IR 17-3, AWS D1.1 and AWS D1.8 for struct steel, AWS D1.2 for Aluminum, AWS D1.3 for cold-formed steel, AWS D1.4 for reinforcing st (See Anordriv for eventions).
1	Verification of Materials, Equipment, Welders, etc:			
	 Verify weld filler material identification markings per AWS designation listed on the DSA approved documents and the WPS. 	Periodic	5	DSA IR 17-3.
İ	 Verify weld filler material manufacturer's certificate of compliance. 	Periodic	S	DSA IR 17-3.
	c. Verify WPS, welder qualifications and equipment.	Periodic	ŝ	DSA IR 17-3.
	19.1 SHOP WELDING:			

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DEPAR		DSA-103 Issued 12302016 List of Required Struc Special Inspections -	tural T∈ 2016 C	ests 8 BC	INCREMENT # DSA File No.: 34-C3 Application No.: 02-116042 Date Submitted: 3/19/2018 Revised:
Х	 a. Inspect groove welds, multi welds > 5/16", plug and slo 	I-pass fillet welds, single pass fillet st welds	Continuous	ß	Table 1705A.2.1 Item 5a1-4. Per AISC 360-10 (and AISC 341-10 as applicable). DSA IR 17-3.
X	b. Inspect single-pass fillet we	elds < 5/16", floor and roof deck welds	Periodic	S	1705A.2.2, Table 1705A.2.1 Item 5a.5 & 5a.6, Per AISC 360-10 (and AISC 341-10 as applicable). DSA IR 17-3.
X	c. Inspect welding of stairs an	nd railing systems.	Periodic	S	1705A.2.1. Per AISC 360-10 (and AISC 341-10 as applicable). AWS D1.1 & D1.3. DSA IR 17-3.
•	19.2 FIELD WEL	DING:			
Х	 Inspect groove welds, multi welds > 5/16", plug and sto 	i-pass fillet welds, single pass fillet Medds	Continuous	8	Table 1705A.2.1 Item 5a1-4. Per AISC 360-10 (and AISC 341-10 as applicable). DSA IR 17-3.
 X	b. Inspect single-pass fillet we	elds ≤ 5/16"	Periodic	SI	Table 1705A.2.1 Item 5a.5. Per AISC 360-10 (and AISC 341-10 as applicable). DSA IR 17-3.
Х	 Inspect end-welded studs (bend test) 	ASTM A-108) installation (including	Periodic	<i>w</i>	2213A.2 (2212.6.2 [*]); per AISC 360-10 (and AISC 341-10 as applicable), AWS D1.1. DSA IR 17-3.
X	d. Inspect floor and roof deck	welds	Periodic	5	1705A.2.2, Table 1705A.2.1 Item 5a.6; per AISC 360 (and AISC 341 as applicable) & AWS D1.3. DSA IR 17-3.
×	e. Inspect welding of structura	al cold-formed steel	Periodic	د .	1705A.2.5; AWS D1.3. * May be performed by the project inspector when specifically approved by DSA. DSA IR 17-3.
X	f. Inspect welding of stairs an	nd railing systems	Periodic	.	1705A.2.1; Per AISC 360-10 (and AISC 341-10 as applicable). AWS D1.1 & D1.3. D80 IR 17-3. • May be performed by the project inspector when specifically approved by DSA.
	20. NONDESTRU	CTIVE TESTING:			
X	a. Ultrasonic		Test	LOR	רו נטאיגיו פיון נסאניביסי אוסט פסט-וטואטטי אוסט סאו-וט אַוּאָן מיסיבי אַזאַס טווין, טוויס, אַואַטאַאַראיי רפי אַפַּר פֿוּד דָר זַיַר אַר אַראַ אַר אַי
•	22. SPRAY APPL	IED FIRE-PROOFING:			
×	a. Examine structural steel su take samples, measure thic aspects of application with	urface conditions, inspect application, ckness, and verify compliance of all DSA approved documents.	Periodic	~	1705A.14
 ×	b. Test bond strength		Test	LOR	1705A.14.6
×	c. Test density.		Test	LOR	1705A.14.5
•	23. ANCHOR BOI	LTS, ANCHOR RODS, & OTHER (TEEL:		
 ×	a. Anchor Bolts and Anchor F	Rods	Test	LOR	IR 17-11 Sample and test anchor bolts and anchor rods not readily identifiable.
×	b. Threaded rod not used for f	foundation anchorage.	Test	LOR	Sample and test threaded rods not readily identifiable per procedures noted in IR 17-11
+	WOOD				
+	OTHER				

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Image: Contract of the product of t		DSA-103 Issued T2302016 List of Required Structural Test Special Inspections - 2016 CB	LS & DSA File No C Date Submitted: 3/19/2018	: 34-C3 02-116042 Revised: Revised:
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	Signature of Architect or Structural Engineer	date	DATE	
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DSA-103 (Issued 12-30-16)

+ In the CODE REFERENCE AND NOTES column indicates DSA-SS/CC sections that may be used by community colleges, per 20136 CBC Sec. 1.9.2.2.

	INCREMENT # DSA File No.: 34-C3 StS & Application No.: 02-116042 BC Date Submitted: 3/19/2018 Revised:	Testing	ms identified below with an "X" by the design professional are NOT subject ta all verify all construction complies with the approved construction documents	JOID TO	Welding:	1. Solid-clad and open-mesh gates with maximum leaf span or rolling section fx and apex height less than 8-0" above lowest adjacent grade. When located aby occupied space below, these gates are not located within 1.5x gate/fence heigh edge of floor or roof.	 Handralls, guardrails, and modular or relocatable ramps associated with walk than 30° above adjacent grade (excluding post base connections per the 'Excep X Section 1705A 2.13° fillet welds cannot be recurred flush 	3. Non-structural interior cold-formed steel framing spanning less than 15-0°, si partitions, interior soffts, etc. supporting only self weight and light-weight finish masonry, stone, or terra cotta veneer no more than 5/8° thickness and apex less and not over an exit way. Maximum tributary load to a member shall not exceed occurring from a 10'x10' opening in a 15' tall wall for a header or king stud.	 Manufactured support frames and curbs using hot rolled or cold-formed steel 4. Manufactured support frames and curbs using hot rolled or cold-formed steel mechanical, electrical, or plumbing equipment weighing less than 2000# (equip (connections of such frames to superstructure elements using welding will requi as noted in selected item(s) for section 19, 19.1 and/or 19.2 of listing above). X 	 Manufactured components (e.g., Tolco, B-Line, Afcon, etc.) for mechanical e hanger support and bracing (connections of such components to superstructure welding will require special inspection as noted in selected item(s) for section 1: listing above). 	 6. TV Brackets, projector mounts with a valid listing (see DSA IR A-5) and recre (e.g., playground structures, basketball backstops, etc.) (connections of such el superstructure elements using welding will require special inspection as noted in section 19, 19, 1 and/or 19,2 of listing above).
191	uired Structural Te pections - 2016 C	Special Inspection or Structural	ing DSA amendments) and those iter tions noted. The project inspector sh			ng designed based on sble 1806A.2 and having no uctures: free standing sign. alkway or shade structure with structures of which the apex is	m #1 criteria specified in 2016			mpt non-structural ng equipment) given in ASCE on 1616A,1.18) or 2) interior d in exempt item 3 for	for items given in CBC and limitations in that section. we the top of foundation not ing non-shear walls up to 6'-

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DSA-103 (Issued 12-30-16)

+ In the CODE REFERENCE AND NOTES column indicates DSA-SS/CC sections that may be used by community colleges, per 20136 CBC Sec. 1.9.2.2.

DSA-103 DUC BUCK

DEPARTMENT OF GENERAL SERVICES

List of Required Structural Tests & Special Inspections - 2016 CBC Issued 12/30/2016

Pag, 6

02-116042 34-C3 **Revised:** Revised: DSA File No.: Application No.: Date Submitted: 3/19/2018 **INCREMENT#**

> supporting a surcharge and free standing nonbearing non-shear masonry walls up to 6.0" above adjacent grade do not require mortar or masonry core testing or DSA special inspection. 3. Masonry retaining walls less than 4'-0" above the top of foundation not ×

(Optional) List details for applicable exempt items: 4. Epoxy shear dowels in site flatwork. ×

<400# and resulting composite center of mass (including component's center of mass) <= 4' above supporting floor/roof, 2) when hung from a wall or roof/floor, <20# for discrete units or <5 plf for</p> 7. Any support for exempt non-structural components given in ASCE 7-10, Section 13.1.4 (and modified by CBC Section 1616A.1.18) meeting the following: 1) when supported on a floor/roof (Optional) List details for applicable exempt items; distributed systems.

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(Issued 12-30-16) DSA-103



Asbestos and Lead Based Paint Survey Report

For

American River College Liberal Arts Demolition 4700 College Oak Drive, Sacramento, CA 95841

Prepared For:

Los Rios Community College District 3753 Bradview Drive Sacramento, CA 95827

Prepared By:

Environmental Construction Services, Inc. P.O. Box 5277 Bay Point, CA 94565

Ryan Govan DOSH CAC #92-0375 CDPH Inspector / Assessor # I -20975

March 7, 2017

Revised February 19, 2018

P.O. Box 5277 . Bay Point, California 94565 . Tel (925) 370-2222 . Fax (925) 370-2282

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- 2. Site Description
- 3. Summary of ACM
- 4. Summary of Lead Based Paints
- 5. Asbestos Sample Results
- 6. Lead Paint Sample Results
- 7. Recommendations
- 8. Disclosure
- 9. Inspection Limitations

Site Drawings

Sacramento Metropolitan Air Quality Management District Asbestos Survey Form

CDPH Lead Hazard Evaluation Report

Inspectors Certifications

Laboratory Reports

March 7, 2017 Revised February 19, 2018

Asbestos and Lead Based Paint Survey Report For American River College Liberal Arts Demolition 4700 College Oak Drive, Sacramento, CA 95841

1. Introduction:

A site survey was conducted at American River College Liberal Arts Building. The purpose of the survey was to determine the presence of Asbestos Containing Materials (ACMs) and Lead Based Paint (LBPs). The survey was performed for compliance with the Environmental Protection Agency (EPA) National Emission Standards for Hazardous Air Pollutants (NESHAP), Sacramento Metropolitan Air Quality Management District (SMAQMD) Rule 902, California Department of Public Health (CDPH), and Cal/OSHA prior to demolition of the buildings.

Mr. Ryan Govan of Environmental Construction Services, Inc., a California Division of Occupational Health and Safety (DOSH) Certified Asbestos Consultant (CAC) and California Department of Public Health (CDPH) Lead Inspector conducted the survey.

2. Site Description:

The site consists of five buildings totaling 31,340 sq.ft. constructed in 1957. The buildings are formed concrete and brick and mortar construction. Interior walls are drywall. Ceilings are drywall and suspended ceiling tiles. Flooring is vinyl tiles and carpet on concrete slab over various mastics. Restroom floors are ceramic tiles. Windows are metal framed with glazing compounds.

The HVAC system consists of air handlers on the roof with hot water and chilled water supplied from a central plant. There is also an abandoned hot water system with insulated pipes remaining in trenches under the concrete floor. Roofs are single ply over built up roofing.

3. Summary of ACM:

ACM located in this survey are shown in the following table. The table indicates the asbestos content, friable (yes or no) EPA Category (RACM, Category 1 or Category 2 Non Friable), and OSHA work classifications (1-4 or unclassified).

Summary of ACM					
Location	Description	Asbestos Present	<u>Friable</u>	Estimated	
			EPA Category	<u>Quantity</u>	
			OSHA Wk Class		
Roofs	Built up roofing, gray/silver paint	Built up – 12% Chrysotile.	No	49,600 sq.ft.	
	and sealers throughout roofs.	Sealers – 10% Chrysotile.	<u>Cat II</u>		
		Paint - 4% Chrysotile.	Class II		

Summary	of ACM			
Location	Description	Asbestos Present	Friable EPA Category OSHA Wk Class	<u>Estimated</u> Quantity
Pipe Trenches	Pipe insulation on hot water pipes in trench below floor to abandoned radiators throughout buildings.	2% Amosite. 5% Chrysotile.	<u>Yes</u> <u>RACM</u> <u>Class I</u>	3,750 l.f.
Bldg. 1	Mastic under carpets throughout building 1.	5% Chrysotile.	<u>No</u> <u>Cat I</u> <u>Class II</u>	6,500 sq.ft.
Bldg. 1	Pipe insulation on hot water pipes above ceilings in building 1.	2% Amosite. 5% Chrysotile.	<u>Yes</u> <u>RACM</u> <u>Class I</u>	160 l.f.
Bldg. 1	Joint compound on drywall walls and ceilings throughout building 1.	<0.25% Chrysotile. (Composite)	<u>N/A</u> <u>N/A</u> Class II	26,500 sq.ft.
Bldg. 1	Window glazing compounds.	2% Chrysotile.	<u>No</u> <u>Cat II</u> Class II	294 sq.ft (Total Window Area)
Bldg. 2	Mastic under floor tile throughout building 2.	5% Chrysotile.	<u>No</u> <u>Cat I</u> <u>Class II</u>	6,000 sq.ft.
Bldg. 2	Joint compound on drywall walls and ceilings throughout building 2.	<0.25% Chrysotile. (Composite)	<u>N/A</u> <u>N/A</u> <u>Class II</u>	12,000 sq.ft.
Bldg. 2	Window glazing compounds.	2% Chrysotile.	<u>No</u> <u>Cat II</u> <u>Class II</u>	672 sq.ft (Total Window Area)
Bldg. 3	Mastic under carpets throughout building 3.	5% Chrysotile.	<u>No</u> <u>Cat I</u> <u>Class II</u>	4.260 sq.ft.
Bldg. 3	Joint compound on drywall walls and ceilings throughout building 3.	<0.25% Chrysotile. (Composite)	<u>N/A</u> <u>N/A</u> <u>Class II</u>	6,400 sq.ft.
Bldg. 3	Window glazing compounds.	2% Chrysotile.	<u>No</u> <u>Cat II</u> <u>Class II</u>	462 sq.ft (Total Window Area)
Bldg. 4	Mastic under carpets throughout building 4.	5% Chrysotile.	<u>No</u> <u>Cat I</u> <u>Class II</u>	4,250 sq.ft.
Bldg. 4	Joint compound on drywall walls and ceilings throughout building 4.	<0.25% Chrysotile. (Composite)	<u>N/A</u> <u>N/A</u> <u>Class II</u>	6,600 sq.ft.
Bldg. 4	Window glazing compounds.	2% Chrysotile.	<u>No</u> <u>Cat II</u> <u>Class II</u>	462 sq.ft (Total Window Area)
Bldg. 5	Mastic under carpets in room 120A.	5% Chrysotile.	<u>No</u> <u>Cat I</u> <u>Class II</u>	120 sq.ft.
Bldg. 5	Mastic under floor tile throughout building 5.	5% Chrysotile.	<u>No</u> <u>Cat I</u> <u>Class II</u>	970 sq.ft.

Summary of ACM					
Location	Description	Asbestos Present	<u>Friable</u>	Estimated	
			EPA Category	<u>Quantity</u>	
			OSHA Wk Class		
Bldg. 5	Joint compound on drywall walls	<0.25% Chrysotile.	<u>N/A</u>	3,240 sq.ft.	
	and ceilings throughout building 5.	(Composite)	<u>N/A</u>		
			<u>Class II</u>		
Bldg. 5	Window glazing compounds.	2% Chrysotile.	No	350 sq.ft	
			<u>Cat II</u>	(Total Window	
			<u>Class II</u>	Area)	
Bldg. 6	Mastic under carpets throughout	5% Chrysotile.	No	3,132 sq.ft.	
	building 6.		<u>Cat I</u>		
			<u>Class II</u>		
Bldg. 6	Mastic under floor tile in rooms 154	5% Chrysotile.	No	2,132 sq.ft.	
	and 157.		<u>Cat I</u>		
			<u>Class II</u>		
Bldg. 6	Joint compound on drywall walls	<0.25% Chrysotile.	<u>N/A</u>	11,000 sq.ft.	
	and ceilings throughout building 6.	(Composite)	<u>N/A</u>		
			Class II		
Bldg. 6	Window glazing compounds.	2% Chrysotile.	No	168 sq.ft	
			<u>Cat II</u>	(Total Window	
			Class II	Area)	

*Cat I and Cat II non friable materials that will be subject to mechanical forces during removal or demolition will be designated as RACM. N/A = Not Applicable

4. Summary of Lead-Based Paints:

Lead testing performed with an X-Ray Fluorescence Spectrum Analyzer (XRF) and laboratory results indicated lead based paint or lead containing paint used on the following interior and exterior building components. The results of the testing are presented in the XRF Field Data Report Table and Paint Chip Sample Results Table.

Lead Based Paint >5000 mg/kg:

- Exterior metal columns.
- Heating ducts in mechanical rooms.
- Exterior wood doors.
- Metal panels next to doors.
- Metal white boards in classrooms.
- Cork board wall panels in classrooms.
- Drywall in buildings 5 and 6.
- Silver paint on metal roof components.

Lead Containing Paint:

- Wood doors.
- Metal door frames.
- Metal window components.
- Interior concrete walls

5. Asbestos Sample Results

The following samples of materials suspected to contain asbestos were collected and delivered to EMSL Analytical in San Leandro, California for asbestos analysis. The samples were analyzed by Polarized Light Microscopy (PLM) method EPA 600/R-93/116 to determine their asbestos type and content. Quantification using PLM 400 Point Count Procedure was performed on samples reported to contain low levels of asbestos by standard PLM. EMSL is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP). The results of the analysis are as follows:

Asbestos	Asbestos PLM Point Count Sample Results			
Sample	Description	Results		
No.				
A-04	Room 166 -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-14	Mech. room next to room 166 -Drywall and joint	<0.25% Chrysotile.		
	compound.			
A-21	Room 165 -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-23	Room 164 -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-27	Room 165 -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-32	Room 169 -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-35	Room 167 -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-38	Room 129 -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-43	Room 128 -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-46	Room 126 -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-49	Room 125 -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-56	Room 122 -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-57	Room 124 -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-61	Room 133 P -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-62	Room 133 -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-64	Room 133 V -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-69	Hallway at 133 Q -Drywall and joint compound above	<0.25% Chrysotile (composite).		
	ceiling.			
A-70	Room 133 D -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-61	Room 133 P -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-103	Room 152 -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-105	Room 152C -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-123	Room 154 -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-126	Room 157 -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-130	Room 120D -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-131	Room 120A -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-132	Room 120C -Drywall and joint compound.	<0.25% Chrysotile (composite).		
A-136	Mech. Room -Drywall and joint compound.	<0.25% Chrysotile (composite).		

Asbestos Standard PLM Sample Results			
Sample	Description/Location	Results	
No.			
A-01	Blue 12' floor tile, white mastic, room 166.	Tile – None Detected.	
		Mastic – None Detected.	
A-02	Black mastic residues under blue tile, room 166.	5% Chrysotile.	
A-03	Gray, brown on blue vinyl floor base, room 166.	Base – None Detected.	
		Mastic – None Detected.	
		Compound – None Detected.	

Asbestos Standard PLM Sample Results			
Sample No.	Description/Location	Results	
A-04	Drywall and joint compound, room 166.	Skim Coat – None Detected.	
		Compound – 2% Chrysotile.	
		Drywall – None Detected.	
A-05	2'x4' fissured ceiling tile, room 166.	None Detected.	
A-06	12" perforated tile, brown mastic on soffit above ceiling,	Tile – None Detected.	
	room 166.	Mastic – None Detected.	
A-07	Drywall and joint compound, behind tiles on soffit, room	Compound – 2% Chrysotile.	
	166.	Drywall – None Detected.	
A-08	Window glazing compound at room 166.	<1% Chrysotile.	
A-09	Window glazing compound at room 164.	<1% Chrysotile.	
A-10	Window glazing compound at room 163.	<1% Chrysotile.	
A-11	Window glazing compound at room 169.	<1% Chrysotile.	
A-12	Window glazing compound at room 167.	<1% Chrysotile.	
A-13	White sealer on duct above ceiling, room 166.	None Detected.	
A-14	Drywall and joint compound in mechanical room next to	Compound – 2% Chrysotile.	
	room 166.	Drywall – None Detected.	
A-15	Concrete floor in mechanical room next to room 166.	None Detected.	
A-16	Black mastic residues under 12" floor tile, room 165.	2% Chrysotile.	
A-17	Blue 12" floor tile, yellow mastic, room 165.	Tile – None Detected.	
		Mastic – None Detected.	
A-18	Gray, brown mastic on blue vinyl floor base, room 165.	Base – None Detected.	
		Mastic – None Detected.	
A-19	12" perforated tile, brown mastic above ceiling, room	Tile – None Detected.	
	165.	Mastic – None Detected.	
A-20	2'x4' fissured ceiling tile, room 165.	None Detected.	
A-21	Drywall and joint compound behind 12" tile above	Compound – 2% Chrysotile.	
	ceiling, room 165.	Drywall – None Detected.	
A-22	White joint tape on duct inside soffit.	None Detected.	
A-23	Drywall and joint compound, room 164.	Compound – 2% Chrysotile.	
		Drywall – None Detected.	
A-24	Blue 12" floor tile, yellow mastic, gray filler, room 164.	Tile – None Detected.	
		Mastic – None Detected.	
		Filler – None Detected.	
A-25	2'x4' fissured ceiling tile, room 170.	None Detected.	
A-26	2'x4' fissured ceiling tile (replacement tile), room 170.	None Detected.	
A-27	Drywall and joint compound, room 170.	Drywall – None Detected.	
		Compound 1 – 2% Chrysotile.	
		Compound 2 – 2% Chrysotile.	
		Compound 3 – None Detected.	
A-28	Blue 12" floor tile, orange mastic, gray filler, room 170.	Tile – None Detected.	
		Mastic 1 – None Detected.	
		Mastic 2 – 5% Chrysotile.	
		Filler – None Detected.	
		Compound – 2% Chrysotile.	
A-29	White, orange mastic on blue vinyl floor base, room 170.	Base – None Detected.	
		Mastic – None Detected.	
		Compound – 2% Chrysotile.	
A-30	Black, gray filler at edge of floor tile, room 170.	None Detected.	
A-31	Black mastic residues under blue floor tile, room 169.	None Detected.	

Asbestos S	tandard PLM Sample Results	
Sample No.	Description/Location	Results
A-32	Drywall and joint compound, room 169.	Compound – 2% Chrysotile.
		Drywall – None Detected.
A-33	Tan, brown mastic on blue vinyl floor base, room 167.	Base – None Detected.
		Mastic 1 – None Detected.
		Mastic 2 – None Detected.
A-34	Black, orange mastic under blue floor tile, room 167.	Mastic 1 – 5% Chrysotile.
		Mastic 2 – None Detected.
A-35	Drywall and joint compound, room 167.	Compound – 2% Chrysotile.
		Drywall – None Detected.
A-36	Green, black mastic under carpet, room 129.	None Detected.
A-37	Brown, white mastic on brown vinyl floor base, room 129.	Mastic 1 – None Detected.
		Mastic 2 – None Detected.
A-38	Drywall and joint compound, Room 129.	Drywall – None Detected.
		Compound 1 – None Detected.
		Compound 2 – 2% Chrysotile.
A-39	2'x4' fissured ceiling tile, room 129.	None Detected.
A-40	12" perforated tile on wall, room 129.	None Detected.
A-41	Green, black mastic under carpet, room 128.	None Detected.
A-42	Brown, white mastic on brown vinyl floor base, room 128.	Base – None Detected.
		Mastic – None Detected.
A-43	Drywall and joint compound, room 128.	Compound – 2% Chrysotile.
		Drywall – None Detected.
A-44	Green, black mastic under carpet, room 126.	None Detected.
A-45	Brown, white mastic on brown vinyl floor base, room 126.	Mastic 1 – None Detected.
		Mastic 2 – None Detected.
A-46	Drywall and joint compound, room 126.	Drywall – None Detected.
		Compound 1 – 2% Chrysotile.
		Compound 2 – 2% Chrysotile.
A-47	Green, black mastic under carpet, room 125.	None Detected.
A-48	Brown mastic on brown vinyl floor base, room 125.	Base – None Detected.
		Mastic – None Detected.
		Mastic 2 – None Detected.
A-49	Drywall and joint compound, room 125.	Drywall – None Detected.
		Compound 1 – 2% Chrysotile.
		Compound 2 – 2% Chrysotile.
A-50	2'x4' fissured ceiling tile, room 125.	None Detected.
A-51	12" perforated tile on wall, room 125.	None Detected.
A-52	2'x4' fissured ceiling tile, room 122.	None Detected.
A-53	2'x4' fissured ceiling tile (replacement), room 122.	None Detected.
A-54	Green, black mastic under carpet, room 122.	Mastic – None Detected.
		Mastic 2 – 5% Chrysotile.
A-55	Tan, brown mastic on black vinyl floor base, room 122.	Mastic – None Detected.
		Mastic 2 – None Detected.
A-56	Drywall and joint compound, room 122.	Drywall – None Detected.
		Compound 1 – 2% Chrysotile.
		Compound 2 – None Detected.
		Compound 3 – 2% Chrysotile.
A-57	Drywall and joint compound, room 124.	Drywall – None Detected.
		Compound – 2% Chrysotile.

Asbestos S	tandard PLM Sample Results	
Sample	Description/Location	Results
No.		
A-58	White, brown mastic on brown vinyl floor base, room	Base – None Detected.
	121.	Mastic – None Detected.
		Mastic 2 – None Detected.
A-59	Green, black mastic under carpet, room 121.	Mastic – None Detected.
		Mastic 2 – 5% Chrysotile.
A-60	Drywall and joint compound, room 121.	Drywall – None Detected.
		Compound 1 – 2% Chrysotile.
		Compound 2 – 2% Chrysotile.
A-61	Drywall and joint compound, room 133P.	Drywall – None Detected.
		Compound 1 – 2% Chrysotile.
		Compound 2 – None Detected.
A-62	Drywall and joint compound, server room.	Drywall – None Detected.
		Compound – 2% Chrysotile.
A-63	Drywall and joint compound, room 133D.	Drywall – None Detected.
		Compound – None Detected.
A-64	Drywall and joint compound, room 133V.	Drywall – None Detected.
		Compound 1 – 2% Chrysotile.
		Compound 2 – 2% Chrysotile.
A-65	Drywall and joint compound, room 133Y.	Drywall – None Detected.
		Compound – None Detected.
A-66	Drywall and joint compound, room 135.	Drywall – None Detected.
		Compound – None Detected.
A-67	Drywall and joint compound, room 131.	Drywall – None Detected.
		Compound – None Detected.
A-68	Brown mastic from old tiles above suspended ceiling,	Tile – None Detected.
	hallway at room 133.	Mastic – None Detected.
A-69	Drywall and joint compound above ceiling, hallway at	Drywall – None Detected.
	133Q.	Compound – 2% Chrysotile.
A-70	Drywall and joint compound above ceiling, room 133D.	Drywall – None Detected.
		Compound 1 – 2% Chrysotile.
		Compound 2 – 2% Chrysotile.
A-71	Brown mastic on old ceiling tile above ceiling, room 133D.	Tile – None Detected.
		Mastic – None Detected.
A-72	Pipe elbow insulation above ceiling, room 135.	2% Amosite.
		5% Chrysotile.
A-73	Joint tape on duct above ceiling, room 135.	None Detected
A-74	Joint tape on duct above ceiling, room 135.	None Detected
A-75	Pipe elbow insulation above ceiling, room 135.	Insulation - 2% Amosite.
		Insulation - 4% Chrysotile.
		Tape - None Detected.
A-76	2'x4' fissured ceiling tile (common), room 135.	None Detected
A-77	2'x4' fissured ceiling tile (replacement), room 135.	None Detected
A-78	2'x4' fissured ceiling tile (common), room 135.	None Detected
A-79	Brown mastic on 12" ceiling tile above suspended ceiling,	Tile – None Detected.
	room 131.	Mastic – None Detected.
A-80	2'x4' fissured ceiling tile (replacement), room 131.	None Detected
A-81	2'x4' fissured ceiling tile (common), room 131.	None Detected
A-82	2'x4' fissured ceiling tile (common), hallway at 133Q.	None Detected
A-83	2'x4' fissured ceiling tile (replacement), hallway at 133Q	None Detected
A-84	Green mastic under carpet, room 133P.	None Detected

Asbestos Standard PLM Sample Results				
Sample	Description/Location	Results		
NO.				
A-85	Brown and white mastic on brown vinyl floor base, room	Mastic – None Detected.		
A 96	133P.	Mastic 2 – None Detected.		
A-86	Green mastic under carpet, room 1331.	None Detected		
A-87	Brown mastic on brown vinyl floor base, room 133T.	None Detected		
A-88	Green, black mastic under carpet, room 133G.	Mastic – None Detected.		
		Mastic 2 – 4% Chrysotile.		
A-89	Green mastic under carpet, room 133D.	None Detected		
A-90	Green mastic, white compound under carpet, room 133U.	Mastic – None Detected.		
		Compound – None Detected.		
A-91	Brown mastic on brown vinyl floor base, room 133U.	Mastic – None Detected.		
		Mastic 2 – None Detected.		
A-92	Green, black mastic under carpet, room 133X.	Mastic – None Detected.		
		Mastic 2 – 3% Chrysotile.		
A-93	Green, black mastic under carpet, room 132.	Mastic – 4% Chrysotile.		
		Mastic 2 – None Detected.		
A-94	Green, black mastic under carpet, room 135.	Mastic – None Detected.		
		Mastic 2 – 2% Chrysotile.		
A-95	Green, black mastic under carpet, room 135B.	Mastic – None Detected.		
		Mastic 2 – None Detected.		
A-96	Grout and mortar on 4" ceramic wall tile, men's	Tile – None Detected.		
	restroom.	Grout – None Detected.		
		Mortar – None Detected.		
		Mastic – None Detected.		
A-97	Grout and mortar on 2" ceramic floor tile, men's	Tile – None Detected.		
	restroom.	Grout – None Detected.		
		Mortar – None Detected		
		Tile 2– None Detected		
		Mastic – None Detected		
Δ-98	Drywall and joint compound men's restroom	Drywall – None Detected		
71.50		Compound – None Detected		
		Compound 2 – None Detected		
۵-99	Drywall and joint compound women's restroom	Drywall – None Detected		
A 33	brywan and joint compound, women's restroom.	Compound - None Detected		
A_100	Grout and mortar on 2" ceramic floor tile women's	Tile – None Detected		
A-100	rotroom	Grout – None Detected.		
		Mortar – None Detected		
		Mortal – None Detected.		
A 101	loint tano on duct in woman's rostroom	Nana Dotostad		
A-101	Crout and mortar on 4" coramic wall tiles, women's	Tile None Detected		
A-102	Grout and mortal on 4 ceranic wait tiles, women's	The - None Detected.		
	restroom.	Grout – None Detected.		
		Mastic – None Detected.		
		Compound 1 – None Detected.		
A 102	Durwell and isint service debaus spilling upon 152	Compound 2 – None Detected.		
A-103	Drywall and joint compound above ceiling, room 152.	Drywall – None Detected.		
		compouna – 2% chrysotile.		
A-104	12° ceiling tile and brown mastic above suspended	IIIe – None Detected.		
	ceiling, room 152.	IVIASTIC – NONE DETECTED.		
A-105	Drywall and joint compound, room 156.	Drywall – None Detected.		
		Compound 1 – 2% Chrysotile.		
		Compound 2 – 2% Chrysotile.		

Asbestos Standard PLM Sample Results		
Sample	Description/Location	Results
NO.		
A-106	Drywall and joint compound, room 152.	Drywall – None Detected.
. 107	Descellendiciet concerned as an 452	Compound – None Detected.
A-107	Drywall and joint compound, room 152.	Drywall – None Detected.
		Compound – None Detected.
A-108	Drywall and joint compound, room 152C.	Drywall – None Detected.
		Compound 1 – 2% Chrysotile.
		Compound 2 – 2% Chrysotile.
A-109	2'x4' fissured ceiling tile (common), room 152.	None Detected.
A-110	2'x4' fissured ceiling tile (replacement), room 152.	None Detected.
A-111	2'x4' fissured ceiling tile (common), room 152.	None Detected.
A-112	2'x4' fissured ceiling tile (replacement), room 152.	None Detected.
A-113	White 12" floor tile, orange, black mastic, room 156.	Tile – None Detected.
		Mastic – None Detected.
		Mastic 2 – 2% Chrysotile.
A-114	Orange, black mastic under carpet, room 152.	Mastic – None Detected.
		Mastic 2 – 2% Chrysotile.
A-115	White mastic on black vinyl floor base, room 152C.	None Detected.
A-116	Black vinyl floor base, white, brown mastic, room 152.	Base – None Detected.
		Mastic – None Detected.
A-117	Orange, black mastic under carpet, room 152.	Mastic – None Detected.
		Mastic 2 – 3% Chrysotile.
A-118	Brown door core, room 156.	None Detected.
A-119	12" fissured wall tile, brown mastic, room 152B.	Tile – None Detected.
		Mastic – None Detected.
A-120	2'x4' fissured ceiling tile (replacement), room 154.	None Detected.
A-121	2'x4' fissured ceiling tile (common), room 154.	None Detected.
A-122	Blue 12" floor tile, black mastic, room 154.	Tile – None Detected.
		Mastic – None Detected.
A-123	Drywall and joint compound, room 154.	Drywall – None Detected.
		Compound 1 – 2% Chrysotile.
		Compound 2 – 2% Chrysotile.
A-124	White sealer on duct above ceiling, room 154.	None Detected.
A-125	Blue 12" floor tile, orange, black mastic, room 157.	Tile – None Detected.
		Mastic – 2% Chrysotile.
		Mastic 2 – None Detected.
		Mastic 3 – None Detected.
A-126	Drywall and joint compound, room 157.	Drywall – None Detected.
		Compound 1 – 2% Chrysotile.
		Compound 2 – 2% Chrysotile.
		Compound 3 – None Detected.
A-127	White, brown mastic on blue vinyl floor base, room 157.	Mastic – None Detected.
		Mastic 2 – None Detected.
A-128	White 12" floor tile, orange, black mastic, room 120C.	Tile – None Detected.
		Mastic – None Detected.
		Mastic 2 – 3% Chrysotile.
A-129	White 12" floor tile, black mastic. room 120B.	Tile – None Detected.
		Mastic – None Detected.
A-130	Drywall and joint compound, room 120D.	Drywall – None Detected.
	,	Compound 1 – 2% Chrvsotile.
		Compound 2 – 2% Chrysotile.

Asbestos Standard PLM Sample Results									
Sample	Description/Location	Results							
No.									
A-131	Drywall and joint compound, room 120A.	Drywall – None Detected.							
		Compound 1 – 2% Chrysotile.							
		Compound 2 – 2% Chrysotile.							
A-132	Drywall and joint compound, room 120C.	Drywall – None Detected.							
		Compound 1 – 2% Chrysotile.							
		Compound 2 – <1% Chrysotile.							
		Compound 3 – 2% Chrysotile.							
A-133	Drywall and joint compound, room 120C.	None Detected.							
A-134	12" ceiling tile, brown mastic above suspended ceiling,	Tile – None Detected.							
	room 120C.	Mastic – None Detected.							
A-135	Tan, brown mastic on black vinyl floor base, room 120C.	Mastic – None Detected.							
		Mastic 2 – None Detected.							
A-136	Drywall and joint compound, mechanical room.	Drywall – None Detected.							
		Compound 1 – 2% Chrysotile.							
		Compound 2 – 2% Chrysotile.							
A-137	Joint tape on duct, mechanical room.	None Detected.							
A-138	Joint tape on duct, mechanical room.	None Detected.							
A-139	White sealer on inside of duct, mechanical room.	3% Chrysotile.							
A-140	Pipe insulation on hot water pipe under PVC jacket,	None Detected.							
	mechanical room.								
A-141	Pipe insulation on hot water pipe under PVC jacket,	None Detected.							
	mechanical room.								
A-142	Pipe insulation on hot water pipe under PVC jacket,	None Detected.							
	mechanical room.								
A-143	Canvas over fiberglass insulation on hot water pipes,	None Detected.							
	mechanical room.								
A-144	Canvas over fiberglass insulation on hot water pipes,	Insulation – None Detected.							
	mechanical room.	Wrap – None Detected.							
A-145	Canvas over fiberglass insulation on hot water pipes,	Insulation – None Detected.							
	mechanical room.	Wrap – None Detected.							
A-146	Canvas over fiberglass insulation on hot water pipes in	Insulation – None Detected.							
	trench, mechanical room.	Wrap – None Detected.							
A-147	Canvas over fiberglass insulation on not water pipes in	Insulation – None Detected.							
A 440	trench, mechanical room.	Wrap – None Detected.							
A-148	Built up rooting, silver paint, building 2.	Built up – 12% Chrysotlie.							
		Paint – 3% Chrysotile.							
A 140	Duilt up roofing silver point building 1	Ruilture None Detected.							
A-149	Built up rooming, silver paint, building 1.	Built up – None Detected.							
		Paint – None Detected.							
		Tar – None Detected							
		Felt – None Detected.							
		Felt Paper- None Detected							
		Insulation – None Detected							
Δ-150	Built up roofing silver paint building 6	Built up – None Detected							
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		Paint – None Detected							
		Built up 2 – None Detected							
		Built up 3 – None Detected							
		Felt – None Detected							
		Insulation – None Detected.							
Asbestos Standard PLM Sample Results									
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Sample No.	Description/Location	Results							
A-151	Built up roofing, silver paint, building 5.	Built up – None Detected.							
		Paint – 4% Chrysotile.							
		Built up 2 – None Detected.							
		Tar – None Detected.							
		Felt – None Detected.							
A-152	Built up roofing, silver paint, building 3.	Built up – None Detected.							
		Paint – None Detected.							
		Built up 2 – None Detected.							
		Tar – None Detected.							
		Felt – None Detected.							
		Insulation – None Detected.							
A-153	Silver paint/sealer on conduit on roof, building 3.	Paint – None Detected.							
		Sealer – 8% Chrysotile.							
A-154	White sealer on duct on roof, building 5.	None Detected.							
A-155	White sealer on duct on roof, building 5.	None Detected.							
A-156	Tan caulking on roof HVAC unit, building 2.	None Detected.							
A-157	Black wrap on pipes at HVAC unit, building 2.	None Detected.							
A-158	Yellow fiberglass pipe insulation, white sealer on roof,	Insulation – None Detected							
	building 2.	Sealer – None Detected.							
A-159	Gray sealer on metal cap on roof pipe support, building 2.	10% Chrysotile.							
A-160	Yellow fiberglass pipe insulation, white sealer on roof,	Insulation – None Detected							
	building 2.	Sealer – None Detected.							
A-161	White wool pipe insulation on roof, building 2.	None Detected.							
A-162	Silver paint/sealer on metal cap at roof exhaust fan,	Paint – None Detected.							
	building 1.	Sealer – 8% Chrysotile.							
A-163	Yellow fiberglass, white wool pipe insulation on roof,	Insulation – None Detected							
	building 1.	Insulation 2 – None Detected.							
A-164	Brown foam pipe insulation on roof, building 1.	None Detected.							
A-165	Silver paint/sealer on pipe support on roof, building 1.	Paint – None Detected.							
		Sealer – 8% Chrysotile.							
A-166	Brown foam pipe insulation on roof, building 3.	None Detected.							
A-167	Yellow pipe insulation, white canvas on roof, building 3.	Insulation – None Detected							
		Canvas – None Detected.							
A-168	Silver paint/sealer on metal cap on pipe support,	Paint – None Detected.							
	building 3.	Sealer – 4% Chrysotile.							
A-169	Silver paint/sealer on metal pipe cover on roof, building	Paint – None Detected.							
	6.	Sealer None Detected.							
A-170	Brown pressed wood between blue metal exterior panels	None Detected.							
	on soffit at room 166.								
A-171	Exterior stucco on walkway ceiling at room 166.	None Detected.							
A-172	Exterior stucco on walkway ceiling at room 125.	None Detected.							
A-173	Exterior stucco on walkway ceiling at room 120.	None Detected.							
A-174	Exterior stucco on walkway ceiling at room 154.	None Detected.							
A-175	Exterior stucco on walkway ceiling at mechanical room.	None Detected.							
A-176	Exterior stucco on walkway ceiling at room 133H.	Stucco – None Detected.							
		Skim Coat - None Detected.							
A-177	Exterior stucco on walkway ceiling at room 133R.	None Detected.							
A-178	Exterior stucco on wall at door to hallway at room 133Q.	None Detected.							

Asbestos S	Asbestos Standard PLM Sample Results									
Sample	Description/Location	Results								
No.										
A-179	Exterior stucco window infill at room 135.	None Detected.								
A-180	Exterior stucco window infill at room 152.	None Detected.								
A-181	Exterior stucco window infill at room 152.	None Detected.								
A-182	Brick and mortar wall at room 166.	Brick – None Detected.								
		Mortar- None Detected.								
A-183	Brick and mortar wall at room 125.	Brick – None Detected.								
		Mortar- None Detected.								
A-184	Brick and mortar wall at room 120C.	Brick – None Detected.								
		Mortar- None Detected.								
A-185	Brick and mortar wall at room 157.	Brick – None Detected.								
		Mortar- None Detected.								
A-186	Brick and mortar wall at mechanical room.	Brick – None Detected.								
		Mortar- None Detected.								
A-187	Window glazing compound at room 157.	None Detected.								
A-188	Window glazing compound at room 134.	None Detected.								
A-189	Window glazing compound at room 120C.	None Detected.								
A-190	Window glazing compound at room 120A.	None Detected.								
A-191	Window glazing compound at room 121.	2% Chrysotile.								
A-192	Window glazing compound at room 129.	None Detected.								

6. Lead Paint Sample Results:

The lead paint survey was conducted using an Innov-X Model I-3000 X-Ray Fluorescence (XRF) Spectrum Analyzer (Serial No.5854). The survey included 437 XRF tests including calibrations performed at the site and 24 paint chip samples collected for laboratory analysis.

This lead paint survey was conducted for the purpose of identifying lead-based paint on major building components. Federal EPA/HUD guidelines and Title 17, California Code of Regulations define a Lead Paint Inspection as an inspection that tests all painted surfaces in every room or area of the site. This survey did not comply with comprehensive HUD Lead Paint Inspection methods or protocol. Where LBP's are found in the areas tested, this survey will identify the individual architectural components and their respective concentration of lead in such a manner that this report could be used as a basis for subsequent demolition activities.

XRF results are presented in the XRF Field Data Report table and sample locations are indicated on the floor plans. Similar components on the same side are numbered from left to right.

XRF Field	XRF Field Data Report								
LBP - EPA	LBP - EPA HUD/ CCR Title 17 level for lead-based paint - \geq 1.0 mg/cm ² .								
LCP - Tes	t Results below	v 1 mg/cm	n ² but above 0.	1 mg/cm ² are	considered	d to contai	in detec	table amou	nts of lead.
Neg – Le	vels below 0.1	mg/cm ² c	annot be verifi	ied as absent	for lead in J	paint with	out labo	ratory conf	irmation.
Sample	Location	Side	Component/N	No Substrate	Color	PB	Pb +/-	Pos/Neg	Paint
-									
No.			•			mg/cm ²		. 0	Condition
No.	Standard					mg/cm ²	-	Pass	Condition
No. 1 2	Standard Calibration					mg/cm ²	0.05	Pass Accept	Condition
No. 1 2 3	Standard Calibration Calibration					mg/cm ² > 1.09 > 1.09	0.05	Pass Accept Accept	Condition

XRF Field Data Report										
LBP - EPA HUD/ CCR Title 17 level for lead-based paint - \geq 1.0 mg/cm ² .										
LCP - Test Results below 1 mg/cm ² but above 0.1 mg/cm ² are considered to contain detectable amounts of lead.										
Neg – Lev	vels below 0.1	mg/cm ² c	annot be verif	fied	as absent fo	or lead in p	paint with	out labo	ratory conf	irmation.
Sample	Location	Side	Component/	No	Substrate	Color	PB	Pb +/-	Pos/Neg	Paint
No.							mg/cm ²			Condition
5	Calibration						0	0	Accept	
6	Calibration						0	0	Accept	
7	Calibration						0	0	Accept	
08	Room 121	North	Wall		Concrete	White	0.15	0.06	LCP	Intact
09	Room 121	West	Wall		Drywall	White	0	0	Neg	Intact
10	Room 121	East	Wall		Drvwall	White	0.06	0.03	Neg	Intact
11	Room 121	South	Wall		Concrete	White	0.11	0.14	LCP	Intact
12	Room 121	South	Window		Metal	White	0.11	0.04	LCP	Intact
			Mullion				•			
13	Room 121	South	Window		Metal	White	0.17	0.05	LCP	Intact
			Sill				••=-			
14	Room 121	South	Window		Metal	White	0.12	0.04	LCP	Intact
			Frame				•			
15	Room 121	South	Door		Metal	White	0.15	0.07	LCP	Intact
			Frame				0.20			
16	Room 121	South	Door		Wood	Red	0.37	0.08	ICP	Intact
17	Room 121	South	Door		Wood	Red	0.35	0.09		Intact
18	Room 122	South	Door		Metal	White	0.05	0.05	ICP	Intact
10	10011122	Journ	Frame		Wietai	white	0.10	0.05	LCI	mace
19	Room 122	Fast	Wall		Drywall	White	0	0	Neg	Intact
20	Room 122	North	Wall		Concrete	White	0	0.01	Neg	Intact
20	Room 122	South	Wall		Concrete	White	0.05	0.01	Neg	Intact
21	Room 123	South	Door		Metal	White	0.03	0.02		Intact
	10011125	Journ	Frame		Wietai	white	0.1	0.04	LCI	mace
23	Room 123	South	Door		Wood	Red	0.27	0.08	ICP	Intact
23	Room 123	West	Wall		Drywall	White	0.27	0.00	Νοσ	Intact
24	Room 123	North	Wall		Concrete	White	0.02	0.04	Neg	Intact
25	Room 123	West	Door		Wood	White	0.02	0.04		Intact
20	K0011123	WESL	Erame		woou	vviiite	0.80	0.12	LCF	maci
27	Room 172	West	Door	-+	Wood	White	0.5	0.07		Intact
27	Room 12/	South	Door		Metal	White	0.3	0.07		Intact
20	100111124	Journ	Frame		WELDI	white	0.13	0.05	LCF	matt
20	Room 12/	South	Door		Wood	Pod	0.28	0.06		Intact
20	Room 124	South	Window		Concrete	White	0.20	0.00		Intact
30	K0011124	Journ	Sill		concrete	vviiite	0.15	0.04	LCF	mact
21	Poom 124	South	Window		Motal	W/hito	0.12	0.04		Intact
51	124	Journ	Frame		WELDI	wille	0.12	0.04	LCP	IIIdu
20	Room 134	South	Window	\rightarrow	Motal	\M/hita	0.00	0.02	Nog	Intact
52	10011124	South	Mullion		WELDI	white	0.09	0.05	INGR	IIIdLL
22	Poom 134	North	Deer	-+	Mood	\ \ /hita	0.11	0.04		Intact
55	KUUIII 124	NORTH	Eramo		wood	white	0.11	0.04	LCP	intact
24	Poom 134	North	Door		Mood	White	0.26	0.05		Intact
34 25	Room 1244	South		-+	Drawall	white	0.26	0.05	Nor	Intact
35	Room 124A	South				white	0 17	0.01	Neg	Intact
30	K00III 124	East	Banal		wergi	white	0.17	0.05	LCP	intact
1			Failei	1			1	1		

XRF Field Data Report									
LBP - EPA HUD/ CCR Title 17 level for lead-based paint - \geq 1.0 mg/cm ² .									
LCP - Tes	t Results belov	v 1 mg/cm	² but above 0.1	mg/cm ² are	considered	d to conta	in detec	table amou	nts of lead.
Neg – Lev	vels below 0.1	mg/cm ² c	annot be verifie	d as absent f	or lead in p	paint with	out labo	ratory conf	irmation.
Sample	Location	Side	Component/N	Substrate	Color	PB	Pb +/-	Pos/Neg	Paint
No.						mg/cm ²			Condition
37	Room 125	East	Door	Wood	White	0.21	0.05	LCP	Intact
			Frame						
38	Room 125	East	Door	Wood	White	0.43	0.08	LCP	Intact
39	Room 125	North	Wall	Concrete	White	0.05	0.03	Neg	Intact
40	Room 125	South	Door	Metal	White	0.09	0.03	Neg	Intact
			Frame					_	
41	Room 125	South	Door	Wood	Red	0.25	0.04	LCP	Intact
42	Room 125	South	Wall	Concrete	White	0.06	0.03	Neg	Intact
43	Room 125	West	Wall	Drywall	White	0.3	0.05	LCP	Intact
44	Room 125	North	Wall	Concrete	White	0.08	0.03	Neg	Intact
45	Exterior	South	Column	Metal	Gray	> 5.00	0.92	LBP	Intact
46	Exterior	South	Wall	Concrete	White	0.01	0.05	Neg	Intact
47	Exterior	South	Window	Metal	White	0.04	0.02	Neg	Intact
			Frame						
48	Exterior	North	Cover	Metal	White	0.02	0.03	Neg	Intact
			over						
			Pipes						
49	Exterior	North	Column	Metal	Grav	> 5.00	1	LBP	Intact
50	Exterior	North	Wall	Concrete	White	0	0	Neg	Intact
51	Exterior	North	Wall	Concrete	White	0	0	Neg	Intact
52	Exterior	North	Column	Metal	Tan	> 5.00	1.41	LBP	Intact
53	Exterior	South	Window	Metal	White	0.01	0.01	Neg	Intact
55	Exterior	South	Frame	inclui		0.01	0.01	1108	maor
54	Exterior	South	Door	Wood	Red	0.38	0.08	LCP	Intact
55	Exterior	South	Panel	Metal	Grav	2.59	0.33	LBP	Intact
			next to		,		0.00		
			Door						
56	Exterior	South	Door	Metal	Grav	0.05	0.03	Neg	Intact
			Frame						
57	Exterior	South	Door	Wood	Red	0.44	0.07	LCP	Intact
58	Exterior	South	Panel	Metal	Grav	2.4	0.35	LBP	Intact
			next to						
			Door						
59	Exterior	South	Door	Wood	Red	0.3	0.05	LCP	Intact
60	Exterior	North	Wall	Concrete	White	0	0.01	Neg	Intact
61	Exterior	North	Panel	Metal	Gray	4.11	0.26	LBP	Intact
			next to		,				
			Door						
62	Exterior	North	Door	Wood	Red	0.4	0.07	LCP	Intact
63	Exterior	North	Column	Metal	Gray	> 5.00	0.78	LBP	Intact
64	Exterior	North	Louver	Metal	, White	0.1	0.04	LCP	Intact
65	Exterior	North	Panel	Metal	Grav	4.53	0.44	LBP	Intact
-	-	-	next to		,				
			Door						
66	Exterior	North	Door	Metal	Gray	0.31	0.06	LCP	Intact
67	Exterior	North	Wall	Concrete	White	0	0	Neg	Intact

XRF Field Data Report									
LBP - EPA	HUD/ CCR Tit	le 17 leve	l for lead-based	paint - ≥ 1.0	mg/cm ² .				
LCP - Tes	t Results below	v 1 mg/cn	n ² but above 0.1	mg/cm ² are	considere	d to conta	in detec	table amou	nts of lead.
Neg – Lev	vels below 0.1	mg/cm ² c	annot be verified	d as absent f	or lead in	paint with	out labo	ratory conf	irmation.
Sample	Location	Side	Component/No	Substrate	Color	PB	Pb +/-	Pos/Neg	Paint
No.						mg/cm ²			Condition
68	Exterior	North	Door	Wood	Red	0.39	0.08	LCP	Intact
69	Exterior	North	Window	Metal	White	0.03	0.02	Neg	Intact
			Mullion					_	
70	Exterior	South	Wall	Concrete	White	0.01	0.02	Neg	Intact
71	Exterior	South	Column	Metal	Gray	> 5.00	0.51	LBP	Intact
72	Exterior	South	Wall	Concrete	White	0	0	Neg	Intact
73	Exterior	East	Vendor	Metal	Red	0.01	0.01	Neg	Intact
			Door						
			Frame						
74	Exterior	East	Vendor	Metal	Red	0.1	0.07	LCP	Intact
			Door						
			Cover						
75	Room 126	East	Wall	Drywall	White	0	0	Neg	Intact
76	Room 126	South	Wall	Concrete	White	0.09	0.05	Neg	Intact
77	Room 126	East	Wall	Drywall	White	0.05	0.03	Neg	Intact
78	Room 126	East	Door	Wood	White	0.77	0.14	LCP	Intact
			Frame						
79	Room 126	East	Door	Wood	White	0.26	0.06	LCP	Intact
80	Room 126	North	Door	Metal	White	0.33	0.09	LCP	Intact
			Frame						
81	Room 126	North	Door	Wood	Red	0.2	0.08	LCP	Intact
82	Room 128	North	Door	Metal	White	0.28	0.08	LCP	Intact
02	Boom 139	North	Frame	Wood	Pod	0.12	0.04		Intact
03	Room 120	Fact		Drawall	Keu White	0.13	0.04		Intact
04 85	Room 128	South	Wall	Concrete	White	0.21	0.04	Nog	Intact
86	Room 128	West	Wall	Drywall	White	0 11	0.04	Neg	Intact
87	Room 128	West	Door	Wood	White	0.11	0.04		Intact
07	120	west	Trim	wood	white	0.72	0.14	Ler	mact
88	Room 128	West	Door	Wood	White	0.21	0.06	LCP	Intact
89	Room 128	South	Peg	Cork	Blue	0.94	0.07	LCP	Intact
			Board						
90	Room 128	East	White	Metal	White	0.06	0.03	Neg	Intact
			Board					_	
91	Room 128	North	Perforat	Wood	White	0.13	0.04	LCP	Intact
			ed Panel						
			next to						
			Door						
92	Room 129	North	Wall	Concrete	White	0.04	0.03	Neg	Intact
93	Room 129	North	Door	Metal	White	0.21	0.05	LCP	Intact
			Frame						
94	Room 129	North	Perforat	Wood	White	0.22	0.05	LCP	Intact
			ed Panel						
			next to						
			Door						
95	Room 129	West	Wall	Drywall	White	0.03	0.03	Neg	Intact

XRF Field Data Report										
LBP - EPA HUD/ CCR Title 17 level for lead-based paint - \geq 1.0 mg/cm ² .										
LCP - Tes	LCP - Test Results below 1 mg/cm ² but above 0.1 mg/cm ² are considered to contain detectable amounts of lead.									
Neg – Lev	vels below 0.1	mg/cm ² c	annot be verifi	ied a	as absent fo	or lead in p	paint with	out labo	ratory conf	irmation.
Sample	Location	Side	Component/N	No S	Substrate	Color	PB	Pb +/-	Pos/Neg	Paint
No.							mg/cm ²	-		Condition
96	Room 129	South	Wall		Concrete	White	0.03	0.03	Neg	Intact
97	Room 129	East	Wall		Drywall	White	0.02	0.02	Neg	Intact
98	Room 129	North	Window		Metal	White	0.19	0.05	LCP	Intact
			Frame							
99	Room 129	North	Window		Metal	White	0.27	0.08	LCP	Intact
			Mullion							
100	Room 129	South	White		Metal	White	0	0	Neg	Intact
			Board							
101	Room 163	East	Wall		Drywall	White	0.04	0.09	Neg	Intact
102	Room 163	South	Wall		Drywall	White	0.08	0.04	Neg	Intact
103	Room 163	West	Wall		Drywall	White	0.03	0.03	Neg	Intact
104	Room 163	North	Wall		Concrete	White	0.01	0.02	Neg	Intact
105	Room 163	North	Door		Wood	Red	0	0	Neg	Intact
106	Room 163	North	Door		Metal	White	0.06	0.05	Neg	Intact
			Frame							
107	Room 163	East	Cork		Cork	Brown	1.11	0.11	LBP	Intact
			Board							
108	Room 163	East	White		Metal	White	4.54	0.37	LBP	Intact
			Board							
109	Room 163	East	White		Metal	White	4.43	0.36	LBP	Intact
			Board							
110	Room 163	East	White		Wood	Brown	0.01	0.01	Neg	Intact
			Board							
			Cork							
111	Room 164	North	Wall		Concrete	White	0.06	0.04	Neg	Intact
112	Room 164	East	Wall		Drywall	White	0.08	0.04	Neg	Intact
113	Room 164	East	White		Metal	White	0	0	Neg	Intact
			Board							
114	Room 164	South	White		Metal	White	0	0	Neg	Intact
			Board							
115	Room 164	South	Wall		Drywall	White	0.01	0.01	Neg	Intact
116	Room 164	West	Wall		Drywall	White	0.05	0.04	Neg	Intact
117	Room 164	West	Cork		Cork	Brown	0.93	0.08	LCP	Intact
			Board							
118	Room 164	North	Door		Metal	White	0.41	0.09	LCP	Intact
			Frame							
119	Room 164	North	Door		Wood	Red	0.07	0.04	Neg	Intact
120	Room 164	North	Perforate		Wood	White	0.03	0.03	Neg	Intact
			d Panel							
			next to							
			Door							
121	Room 165	North	Wall		Concrete	White	0.02	0.04	Neg	Intact
122	Room 165	East	Wall		Drywall	White	0.04	0.04	Neg	Intact
123	Room 165	East	White		Metal	White	0	0	Neg	Intact
			Board							

XRF Field Data Report									
LBP - EPA HUD/ CCR Title 17 level for lead-based paint - \geq 1.0 mg/cm ² .									
LCP - Tes	t Results below	v 1 mg/cn	n ² but above 0.	1 mg/cm ² are	considered	d to conta	in detec	table amou	nts of lead.
Neg – Lev	vels below 0.1	mg/cm ² c	annot be verifi	ed as absent	for lead in j	paint with	out labo	ratory conf	irmation.
Sample	Location	Side	Component/N	No Substrate	Color	PB	Pb +/-	Pos/Neg	Paint
No.						mg/cm ²			Condition
124	Room 165	South	White	Metal	White	0	0	Neg	Intact
			Board						
125	Room 165	South	Wall	Drywall	White	0.07	0.06	Neg	Intact
126	Room 165	West	Wall	Drywall	White	0.06	0.04	Neg	Intact
127	Room 165	West	Cork	Cork	Brown	0.02	0.02	Neg	Intact
			Board						
128	Room 165	West	Cork	Cork	Brown	0.03	0.03	Neg	Intact
			Board						
129	Room 165	South	12"	Wood	White	0	0	Neg	Intact
			Perforate						
			d Wall						
			Tile						
130	Room 166	North	Wall	Concrete	White	0.03	0.05	Neg	Intact
131	Room 166	East	Wall	Drywall	White	0.01	0.04	Neg	Intact
132	Room 166	East	Green	Metal	Green	0.01	0.01	Neg	Intact
			Board						
133	Room 166	South	Wall	Drywall	White	0	0.01	Neg	Intact
134	Room 166	West	Wall	Drywall	White	0.02	0.02	Neg	Intact
135	Room 166	West	Green	Metal	Green	0.12	0.04	LCP	Intact
			Board						
136	Room 166	West	Cork	Cork	Brown	0.86	0.09	LCP	Intact
			Board		-				
137	Room 166	West	Cork	Cork	Brown	0.95	0.07	LCP	Intact
120	D 466	N. 11	Board						
138	Room 166	North	Door	Wood	Red	0	0	Neg	Intact
139	Mech.	West	Wall	Drywall	White	0.04	0.02	Neg	Intact
1.10	Room	- ·				0.05	0.00		
140	iviech.	East	waii	Drywall	white	0.05	0.02	Neg	Intact
1.4.1	Room	Courth		Drawall	\A/b:to	0.04	0.02	Neg	lutest
141	Niech.	South	Wall	Drywall	white	0.04	0.03	neg	mact
142	Mach	North	Deer	Matal	Brown	0.2	0.05		Intest
142	Niech.	North	Door	wietai	Brown	0.2	0.05	LCP	intact
1/12	Mech	North	Door	Motal	\//bito	0.25	0.06		Intact
145	Room	NOTUI	Eramo	Weta	white	0.55	0.00	LCF	mact
1//	Room 167	South	Wall	Concrete	White	0	0	Νρσ	Intact
145	Room 167	West	Wall	Drywall	White	0	0	Neg	Intact
146	Room 167	West	Green	Metal	Green	0.01	0.01	Neg	Intact
140	10011107	West	Board	Wietai	Green	0.01	0.01	Neg	mace
147	Room 167	North	Wall	Drywall	Green	0.02	0.02	Neg	Intact
148	Room 167	East	Green	Metal	Green	0.09	0.03	Neg	Intact
1.0			Board			0.05	5.00		
149	Room 167	East	Wall	Drywall	White	0.02	0.03	Neg	Intact
150	Room 167	East	Cork	Cork	Brown	0.83	0.11	LCP	Intact
			Board						
151	Room 167	South	Door	Wood	Red	0.05	0.03	Neg	Intact

XRF Field Data Report									
LBP - EPA HUD/ CCR Title 17 level for lead-based paint - \geq 1.0 mg/cm ² .									
LCP - Tes	t Results belov	w 1 mg/cn	n² but above 0.1	mg/cm ² are	considered	d to conta	in detec	table amou	nts of lead.
Neg – Lev	vels below 0.1	mg/cm ² c	annot be verifie	d as absent f	or lead in j	paint with	out labo	ratory conf	irmation.
Sample	Location	Side	Component/No	Substrate	Color	PB	Pb +/-	Pos/Neg	Paint
No.						mg/cm ²			Condition
152	Room 167	South	Door	Metal	White	0.33	0.1	LCP	Intact
			Frame						
153	Room 168	South	Door	Wood	Red	0.11	0.04	LCP	Intact
154	Room 168	South	Door	Metal	White	0.2	0.08	LCP	Intact
			Frame						
155	Room 168	South	Wall	Concrete	White	0.01	0.02	Neg	Intact
156	Room 168	West	Wall	Drywall	White	0.07	0.04	Neg	Intact
157	Room 168	West	White	Metal	White	0	0	Neg	Intact
_			Board			_	_	-0	
158	Room 168	North	Wall	Drywall	White	0.05	0.04	Neg	Intact
159	Room 168	East	Wall	Drywall	White	0.06	0.05	Neg	Intact
160	Room 168	Fast	Cork	Cork	Brown	0.04	0.04	Neg	Intact
100	100111 200	2450	Board	CON	Diomi	0.01	0.01	1100	intact
161	Room 168	South	Wall	Drywall	White	0.05	0.05	Νρσ	Intact
162	Room 169	South	Wall	Concrete	White	0.05	0.05	Νοσ	Intact
162	Room 169	West	Wall	Drawall	White	0.02	0.02	Neg	Intact
164	Room 169	West	White	Motal	White	0.02	0.02	IRD	Intact
104	K0011109	west	Board	Weta	white	4.5	0.55	LDP	maci
165	Boom 160	North	M/bito	Matal	W/hita	4.01	0.20		Intact
105	K0011109	NOTUI	Poord	Weta	white	4.01	0.39	LDP	maci
166	Poom 160	North	Wall	Dravall	W/bito	0.01	0.02	Nog	Intact
100	Room 169	North	Wall	Drywall	White	0.01	0.03	Neg	Intact
107	Room 169	North	Wall	Drywall	white	0.03	0.02	Neg	Intact
168	Room 169	East	wali	Drywali	white	0.01	0.02	Neg	Intact
169	ROOM 169	East	Cork	Cork	Brown	0.93	0.09	LBP	Intact
170	D 160	Et	Board) A (= = =	\A/l=:+=	0	0	Nee	lute et
170	ROOM 169	East	Irim	wood	white	0	0	Neg	Intact
			under						
			Wall						
474	D 460	6 11	Tiles					1.00	
1/1	Room 169	South	Door	Wood	Red	0.1	0.04	LCP	Intact
172	Room 169	South	Door	Metal	White	0.3	0.11	LCP	Intact
			Frame						
173	Exterior	South	Column	Metal	Gray	> 5.00	2.37	LBP	Intact
174	Exterior	South	Wall	Concrete	White	0	0.01	Neg	Intact
175	Exterior	South	Door	Wood	Red	1.14	0.12	LBP	Intact
176	Exterior	South	Door	Metal	Gray	0.6	0.09	LCP	Intact
			Frame		-				
177	Exterior	South	Panel	Metal	Gray	0.62	0.11	LCP	Intact
			next to						
			Door						
178	Exterior	South	Door	Wood	Red	1.36	0.16	LBP	Intact
179	Exterior	South	Panel	Metal	Gray	0.72	0.1	LCP	Intact
			next to						
			Door						
180	Exterior	North	Door	Metal	Gray	0.21	0.09	LCP	Intact
181	Exterior	North	Column	Metal	Gray	> 5.00	1.19	LBP	Intact

XRF Field Data Report									
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LCP - Tes	t Results below	v 1 mg/cn	n² but above 0.1	. mg/cm ² are	considere	d to conta	in detec	table amou	nts of lead.
Neg – Lev	vels below 0.1	mg/cm ² c	annot be verifie	d as absent f	or lead in	paint with	out labo	ratory conf	irmation.
Sample	Location	Side	Component/N	o Substrate	Color	PB	Pb +/-	Pos/Neg	Paint
No.						mg/cm ²			Condition
182	Exterior	North	Panel	Metal	Gray	0.78	0.12	LCP	Intact
			next to						
			Door						
183	Exterior	North	Door	Wood	Red	0	0	Neg	Intact
184	Exterior	North	Door	Wood	Red	1.18	0.12	LBP	Intact
185	Exterior	North	Door	Wood	Red	1.11	0.14	LBP	Intact
186	Room 164	North	Door	Wood	Red	0.07	0.05	Neg	Intact
187	Exterior	North	Column	Metal	Gray	> 5.00	1.33	LBP	Intact
188	Exterior	North	Wall	Concrete	White	> 1.00	0.02	LBP	Intact
189	Standard							Pass	
190	Standard							Pass	
191	Room 121	East	White	Metal	White	> 5.00	0.3	LBP	Intact
			Board						
192	Room 121	North	Wall	Concrete	White	0.02	0.03	Neg	Intact
193	Room 121	North	Wall	Concrete	White	0.07	0.05	Neg	Intact
194	Room 121	East	White	Metal	White	> 5.00	0.4	LBP	Intact
			Board						
195	Exterior	South	Column	Metal	Gray	> 5.00	0.54	LBP	Intact
196	Exterior	South	Wall	Concrete	Tan	0.01	0.06	Neg	Intact
197	Exterior	South	Wall	Concrete	Tan	0.01	0.02	Neg	Intact
198	Exterior	East	Door	Wood		0.56	0.1	LBP	Intact
199	Exterior	East	Window	Metal	Tan	0.02	0.02	Neg	Intact
			Frame					_	
200	Exterior	East	Door	Metal	Tan	0.02	0.03	Neg	Intact
			Frame						
201	Exterior	East	Wall	Concrete	Tan	0	0.02	Neg	Intact
202	Exterior	North	Column	Metal	Gray	> 5.00	1.41	LBP	Intact
203	Exterior	North	Wall	Concrete	Tan	0	0	Neg	Intact
204	Exterior	North	Window	Metal	Gray	0.02	0.02	Neg	Intact
			Mullion						
205	Exterior	North	Door	Wood	Red	0.4	0.09	Neg	Intact
206	Exterior	North	Door	Metal	Gray	0.01	0.02	Neg	Intact
			Frame						
207	Exterior	North	Column	Metal	Gray	> 5.00	0.6	LBP	Intact
208	Exterior	North	Wall	Concrete	Tan	0	0	Neg	Intact
209	Exterior	North	Door	Wood	Red	0.38	0.08	LCP	Intact
210	Exterior	North	Panel	Metal	Gray	3.04	0.2	LBP	Intact
			Next to						
			Door						
211	Exterior	North	Door	Metal	Gray	0.04	0.02	Neg	Intact
			Frame						
212	Exterior	North	Louvers	Metal	Gray	0.09	0.05	Neg	Intact
213	Exterior	South	Column	Metal	Gray	> 5.00	0.79	LBP	Intact
214	Exterior	South	Door	Wood	Red	0.86	0.08	LCP	Intact

XRF Field Data Report									
LBP - EPA HUD/ CCR Title 17 level for lead-based paint - \geq 1.0 mg/cm ² .									
LCP - Test Results below 1 mg/cm ² but above 0.1 mg/cm ² are considered to contain detectable amounts of lead.									
Neg – Le	vels below 0.1	mg/cm ² c	annot be verifie	d as absent f	or lead in	paint with	out labo	ratory conf	irmation.
Sample	Location	Side	Component/No	Substrate	Color	PB	Pb +/-	Pos/Neg	Paint
No.						mg/cm ²			Condition
215	Exterior	South	Panel	Metal	Gray	> 5.00	0.35	LBP	Intact
			Next to						
			Door						
216	Exterior	South	Door	Metal	Gray	0.02	0.03	Neg	Intact
			Frame						
217	Exterior	South	Wall	Concrete	Tan	0	0	Neg	Intact
218	Exterior	South	Door	Wood	Red	0.9	0.09	LCP	Intact
219	Exterior	South	Door	Metal	Gray	0.02	0.02	Neg	Intact
			Frame						
220	Exterior	South	Column	Metal	Gray	> 5.00	1.36	LBP	Intact
221	Exterior	North	Column	Metal	Gray	> 5.00	0.89	LBP	Intact
222	Exterior	North	Wall	Concrete	Tan	0	0.02	Neg	Intact
223	Exterior	North	Door	Wood	Red	0.58	0.11	LCP	Intact
224	Exterior	North	Door	Metal	Gray	0.06	0.03	Neg	Intact
			Frame						
225	Exterior	North	Door	Wood	Red	0.46	0.12	LCP	Intact
226	Exterior	North	Door	Metal	Gray	0.04	0.03	Neg	Intact
			Frame		_				
227	Exterior	North	Wall	S	Tan _	0	0	Neg	Intact
228	Exterior	North	Wall	Concrete	Tan	0.01	0.03	Neg	Intact
229	Exterior	North	Wall	Concrete	Tan	0	0.02	Neg	Intact
230	Exterior	North	sill	wood	Gray	0	0	Neg	Intact
231	Exterior	North	Wall	s	Tan	0	0	Neg	Intact
232	Exterior	North	Wall	Concrete	Tan	0	0.02	Neg	Intact
233	Exterior	West	Door	Wood	Red	0.41	0.14	LCP	Intact
234	Exterior	West	Door	Wood	Red	0.58	0.13	LCP	Intact
235	Exterior	South	Column	Metal	Grav	> 5.00	1.13	LBP	Intact
236	Exterior	South	Wall	Concrete	Tan	0.06	0.01	Neg	Intact
237	Exterior	South	Wall	Concrete	Tan	0.01	0.03	Neg	Intact
238	Exterior	South	Wall	Concrete	Tan	0	0.02	Neg	Intact
239	Exterior	South	Door	Wood	Red	0.41	0.08	LCP	Intact
240	Exterior	South	Door	Metal	Grav	0.04	0.03	Neg	Intact
			Frame		/			-0	
241	Exterior	South	Door	Wood	Red	0.67	0.15	LCP	Intact
242	Exterior	South	Door	Metal	Gray	0.07	0.04	Neg	Intact
			Frame					0	
243	Exterior	South	Wall	Concrete	Tan	0	0.01	Neg	Intact
244	Standard						I	Pass	
245	Calibration					> 1.07	0.03	Accept	
246	Calibration					> 1.05	0.03	Accept	
247	Calibration					> 1.06	0.01	Accept	
248	Room 133X	South	Wall	Drywall	Beige	0	0	Neg	Intact
249	Room 133X	West	Wall	Drywall	Beige	0	0	Neg	Intact
250	Room 133X	North	Wall	Concrete	Beige	0.01	0.02	Neg	Intact
251	Room 133X	East	Wall	Drywall	Beige	0	0	Neg	Intact

XRF Field Data Report										
LBP - EPA HUD/ CCR Title 17 level for lead-based paint - \geq 1.0 mg/cm ² .										
LCP - Tes	t Results belov	v 1 mg/cn	n ² but above 0.	.1 r	mg/cm ² are o	considered	d to contai	in detec	table amou	nts of lead.
Neg – Lev	vels below 0.1	mg/cm ² c	annot be verif	ied	as absent fo	or lead in p	paint with	out labo	ratory conf	irmation.
Sample	Location	Side	Component/I	No	Substrate	Color	PB	Pb +/-	Pos/Neg	Paint
No.							mg/cm ²			Condition
252	Room 133X	East	Door		Wood	Beige	0	0	Neg	Intact
253	Room 133X	East	Door		Wood	Beige	0	0	Neg	Intact
			Frame			_			_	
254	Room 132	West	Wall		Drywall	Beige	0	0	Neg	Intact
255	Room 132	North	Wall		Concrete	Beige	0	0	Neg	Intact
256	Room 132	North	Door		Metal	Red	0.57	0.08	LCP	Intact
257	Room 132	North	Door		Metal	Beige	0.07	0.04	Neg	Intact
			Frame							
258	Room 132	East	Wall		Drywall	Beige	0	0	Neg	Intact
259	Room 132	South	Wall		Drywall	Beige	0	0	Neg	Intact
260	Room 132	South	Door		Wood	White	0	0	Neg	Intact
			Frame							
261	Room 132	South	Door		Wood	White	0	0	Neg	Intact
262	Room 132	East	Door		Wood	White	0	0	Neg	Intact
			Frame							
263	Room 131	South	Door		Wood	White	0	0	Neg	Intact
264	Room 131	South	Door		Wood	White	0	0	Neg	Intact
			Frame							
265	Room 131	West	Wall		Drywall	White	0	0	Neg	Intact
266	Room 131	North	Wall		Concrete	White	0	0	Neg	Intact
267	Room 131	North	Door Frame		Metal	White	0.07	0.03	Neg	Intact
268	Room 131	North	Door		Metal	Red	0.28	0.07	LCP	Intact
269	Room 131	East	Wall		Drywall	White	0	0	Neg	Intact
270	Room 131A	North	Door		Wood	White	0	0	Neg	Intact
			Frame						Ū	
271	Room 131A	North	Door		Wood	White	0	0	Neg	Intact
272	Room 131A	South	Wall		Drywall	White	0	0	Neg	Intact
273	Room 135	South	Wall		Concrete	White	0	0	Neg	Intact
274	Room 135	West	Wall		Drywall	White	0	0	Neg	Intact
275	Room 135	North	Wall		Drywall	White	0	0	Neg	Intact
276	Room 135	South	Door		Wood	White	0	0	Neg	Intact
277	Room 135	South	Door		Drywall	White	0	0	Neg	Intact
			Frame						_	
278	Room 135A	South	Wall		Concrete	White	0	0	Neg	Intact
279	Room 135A	East	Wall		Drywall	White	0	0	Neg	Intact
280	Room	South	Door		Metal	Red	0.27	0.08	LCP	Intact
	135A									
281	Room 135A	South	Door		Metal	White	0.03	0.02	Neg	Intact
			Frame							
282	Room 135A	North	Window		Wood	White	0	0	Neg	Intact
			Frame							
283	Room 133Y	East	Wall		Drywall	Gray	0	0	Neg	Intact
284	Room 133Y	North	Wall		Concrete	Gray	0.02	0.09	Neg	Intact
285	Room 133Y	West	Wall		Drywall	Gray	0	0	Neg	Intact

XRF Field Data Report										
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LCP - Tes	t Results belov	v 1 mg/cn	n² but above 0.1	. mg/cm ² are	considere	d to conta	in detec	table amou	nts of lead.	
Neg – Lev	vels below 0.1	mg/cm ² c	annot be verifie	d as absent f	or lead in	paint with	out labo	ratory conf	irmation.	
Sample	Location	Side	Component/N	o Substrate	Color	PB	Pb +/-	Pos/Neg	Paint	
No.						mg/cm ²			Condition	
286	Room 133Y	South	Door	Wood	Gray	0	0	Neg	Intact	
			Frame							
287	Room 133Y	South	Door	Wood	Gray	0	0	Neg	Intact	
288	Hallway	South	Door	Wood	Beige	0	0	Neg	Intact	
			Frame							
289	Hallway	South	Door	Wood	Beige	0	0	Neg	Intact	
290	Hallway	North	Wall	Drywall	Beige	0	0	Neg	Intact	
291	Hallway	North	Door	Wood	Beige	0	0	Neg	Intact	
			Frame							
292	Hallway	North	Door	Wood	Beige	0	0	Neg	Intact	
293	Hallway	North	Door	Wood	Beige	0	0	Neg	Intact	
			Frame							
294	Hallway	North	Door	Wood	Stain	0	0.01	Neg	Intact	
295	Hallway	North	Door	Wood	Beige	0	0	Neg	Intact	
			Frame							
296	Hallway	North	Door	Wood	Stain	0	0.01	Neg	Intact	
297	Room 133S	North	Wall	Concrete	Gray	0.01	0.01	Neg	Intact	
298	Room 133S	East	Wall	Drywall	Gray	1	0.02	Neg	Intact	
299	Room 1335	West	Wall	Drywall	Gray	0	0	Neg	Intact	
300	ROOM	west	wali	Drywall	Beige	0	0	Neg	Intact	
201	1330 Room	North		Dravall	Poigo	0	0	Nog	Intact	
501	1220	NOTUI	vvali	Drywall	Deige	0	0	neg	maci	
302	Room	South	Door	Wood	White	0	0	Νρσ	Intact	
502	1330	South	Frame	weed	white	Ŭ	Ŭ	1108	mace	
303	Room	South	Door	Wood	Stain	0	0	Neg	Intact	
	1330					_	_	-0		
304	Room 133A	North	Wall	Drywall	Gray	0	0	Neg	Intact	
305	Room 133A	East	Wall	Drywall	Gray	0.02	0.07	Neg	Intact	
306	Room 133A	South	Wall	Drywall	Gray	0	0	Neg	Intact	
			Mullion							
307	Room 133R	North	Wall	Wood	Gray	0	0	Neg	Intact	
308	Room 133R	North	Window	Metal	Gray	0.04	0.04	Neg	Intact	
			Frame							
309	Room 133D	South	Wall	Concrete	Beige	0.09	0.19	Neg	Intact	
310	Room 133D	South	Wall	Concrete	Beige	0.03	0.08	Neg	Intact	
311	Room 133D	North	Wall	Drywall	Beige	0	0	Neg	Intact	
312	Room 133D	South	Window	Metal	Beige	0.02	0.03	Neg	Intact	
			Frame							
313	Room 133D	South	Window	Metal	Beige	0.09	0.05	Neg	Intact	
			Mullion							
314	Room	East	Wall	Drywall	Gray	0	0	Neg	Intact	
245	1336	Cault) A / - II		Gra		0.05		lat 1	
315	коот 1220	South	vvali	Concrete	Gray	0.01	0.05	ineg	Intact	
216		North	Mall	Downell	Poigo			Nez	Intest	
210	ndiiwdy	NOT	vvdii	Diywali	Deige	U	U	ineg	IIIIdCl	

XRF Field	XRF Field Data Report										
LBP - EPA	HUD/ CCR Tit	le 17 leve	l for lead-base	ed p	aint - ≥ 1.0 ı	mg/cm².					
LCP - Tes	t Results below	v 1 mg/cm	n² but above 0).1 r	mg/cm ² are	considere	d to contai	n detec	table amou	nts of lead.	
Neg – Lev	vels below 0.1	mg/cm ² c	annot be verif	fied	as absent fo	or lead in	paint with	out labo	ratory conf	irmation.	
Sample	Location	Side	Component/	'No	Substrate	Color	PB	Pb +/-	Pos/Neg	Paint	
No.							mg/cm ²			Condition	
317	Hallway	North	Wall		Drywall	Beige	0	0	Neg	Intact	
318	Men's	East	Wall		Drywall	White	0	0	Neg	Intact	
	Restroom										
319	Men's	North	Wall		Drywall	White	0	0	Neg	Intact	
	Restroom										
320	Men's	South	Wall		Drywall	White	0	0	Neg	Intact	
	Restroom										
321	Men's	West	4" Wall		Ceramic	Blue	0	0.02	Neg	Intact	
	Restroom		Tile								
322	Men's	West	4" Wall		Ceramic	White	0.01	0.02	Neg	Intact	
	Restroom		Tile								
323	Men's	Floor	2" Floor		Ceramic	White	0	0	Neg	Intact	
	Restroom		Tile								
324	Men's	Floor	2" Floor		Ceramic	Blue	0	0.01	Neg	Intact	
	Restroom		Tile								
325	Men's	Center	Toilet		Metal	Blue	0	0.01	Neg	Intact	
	Restroom		Partition								
326	Women's	East	Wall		Drywall	White	0	0	Neg	Intact	
	Restroom										
327	Women's	North	Wall		Drywall	White	0	0	Neg	Intact	
	Restroom										
328	Women's	East	4" Wall		Ceramic	Blue	0	0.01	Neg	Intact	
	Restroom		Tile								
329	Women's	East	4" Wall		Ceramic	White	0.01	0.02	Neg	Intact	
	Restroom		Tile								
330	Women's	Floor	2" Floor		Ceramic	White	0	0	Neg	Intact	
	Restroom		Tile								
331	Women's	Floor	2" Floor		Ceramic	Blue	0.01	0.02	Neg	Intact	
	Restroom		Tile								
332	Women's	Center	Toilet		Plaster	Blue	0	0.01	Neg	Intact	
	Restroom		Partition								
333	Women's	North	Door		Wood	Blue	0.49	0.09	LCP	Intact	
	Restroom										
334	Women's	North	Door		Metal	White	0.46	0.04	LCP	Intact	
	Restroom		Frame								
335	Standard								Pass		
336	Room 156	North	Door		Wood	White	0.09	0.03	Neg	Intact	
337	Room 156	North	Door		Metal	White	0.67	0.12	LCP	Intact	
			Frame								
338	Room 156	North	Wall		Concrete	White	0.07	0.03	Neg	Intact	
339	Room 156	East	Wall		Drywall	White	0	0	Neg	Intact	
340	Room 156	East	Door		Metal	White	0	0	Neg	Intact	
			Frame								
341	Room 156	East	Door		Wood	White	0	0	Neg	Intact	
342	Room 156	West	Cabinet		Wood	Stain	0	0	Neg	Intact	

XRF Field Data Report										
LBP - EPA HUD/ CCR Title 17 level for lead-based paint - \geq 1.0 mg/cm ² .										
LCP - Tes	t Results belov	v 1 mg/cn	n² but above 0.	1 mg/cm ² are	considered	d to conta	in detec	table amou	nts of lead.	
Neg – Lev	vels below 0.1	mg/cm ² c	annot be verifi	ed as absent fo	or lead in J	paint with	out labo	ratory conf	irmation.	
Sample	Location	Side	Component/N	lo Substrate	Color	PB	Pb +/-	Pos/Neg	Paint	
No.						mg/cm ²			Condition	
343	Room 156	South	Door	Metal	White	0	0	Neg	Intact	
			Frame							
344	Room 156	South	Door	Wood	White	0	0	Neg	Intact	
345	Room 156B	East	Wall	Drywall	White	0	0	Neg	Intact	
346	Room 156B	West	Wall	Drywall	White	0	0	Neg	Intact	
347	Room 156B	South	Door	Metal	White	0	0	Neg	Intact	
			Frame							
348	Room 156B	South	Door	Wood	White	0	0	Neg	Intact	
349	Room 156A	North	Wall	Drywall	White	0	0	Neg	Intact	
350	Room	West	Wall	Drywall	White	0.44	0.08	LCP	Intact	
	156A									
351	Room 152A	South	Door	Wood	White	0	0	Neg	Intact	
			Frame							
352	Room 152A	South	Door	Wood	White	0	0	Neg	Intact	
353	Room 152A	East	Wall	Drywall	White	0	0	Neg	Intact	
354	Room 152	North	Wall	Concrete	White	0	0.02	Neg	Intact	
355	Room 152	North	Door	Metal	White	0.74	0.18	LCP	Intact	
			Frame							
356	Room 152	North	Door	Wood	White	0.1	0.04	LCP	Intact	
357	Room 152	East	Door	Wood	White	0	0	Neg	Intact	
			Frame							
358	Room 152	East	Door	Wood	White	0	0	Neg	Intact	
359	Room 152C	North	Wall	Concrete	White	0.1	0.04	LCP	Intact	
360	Room 152C	East	Wall	Drywall	White	0.08	0.03	Neg	Intact	
361	Room 152D	South	Wall	Concrete	White	0.06	0.03	Neg	Intact	
362	Room 152D	West	Door	Metal	White	0	0	Neg	Intact	
			Frame						-	
363	Room 152D	West	Door	Wood	White	0	0	Neg	Intact	
364	Room 152	South	Door	Drywall	White	0	0	Neg	Intact	
		a	Infill							
365	коот 152	South	Door	ivietal	white	0.72	0.12	LCP	Intact	
200	D 452	Cauth	Frame		\A/ -!+-	0.44	0.00	1.00	lists at	
366	коот 152	South	Door	wood	white	0.14	0.06		Intact	
30/	Room 152	South	waii	Dagual	white	0.01	0.02	Neg	Intact	
368	коот 152	vvest	wall	Drywall	vvnite		0.01	iveg		
309	KOOM 1ECA	west	wall	Drywall	white	0.74	0.14	LCP	intact	
270	150A Boom 154	North	Deer	Matal	\A/bito	0.14	0.00		Intest	
370	K00m 154	North	Door	weta	white	0.14	0.06	LCP	intact	
271	Room 1E4	North	Door	Wood	Rod	0.1	0.04		Intact	
272	Room 154	North	Wall	Concrete	White	0.1	0.04		Intact	
372	Room 154	Fast	Wall	Drywall	White	0.1	0.05		Intact	
373	Room 154	South	Wall	Drywall	White	0.1	0.03	Neg	Intact	
275	Room 154	West	Wall	Drywall	White	0.07	0.03	ILD	Intact	
375	Room 154	North	Window	Motal	White	0.12	0.00		Intact	
570	10011134	North	Mullion	WELD	white	0.14	0.05	LCF	maci	

XRF Field Data Report										
LBP - EPA	HUD/ CCR Tit	le 17 leve	for lead-based	paint - ≥ 1.0 i	mg/cm².					
LCP - Tes	t Results belov	v 1 mg/cm	² but above 0.1	mg/cm ² are	considered	d to conta	in detec	table amou	nts of lead.	
Neg – Lev	vels below 0.1	mg/cm ² c	annot be verified	d as absent fo	or lead in p	paint with	out labo	ratory conf	irmation.	
Sample	Location	Side	Component/No	Substrate	Color	PB	Pb +/-	Pos/Neg	Paint	
No.						mg/cm ²			Condition	
377	Room 154	North	Window Frame	Metal	White	0.14	0.05	LCP	Intact	
378	Room 154	East	White Board	Metal	White	0	0	Neg	Intact	
379	Room 157	South	Door Frame	Metal	White	0.17	0.06	LCP	Intact	
380	Room 157	South	Door	Wood	Red	0.28	0.06	LCP	Intact	
381	Room 157	West	Wall	Drywall	White	0	0	Neg	Intact	
382	Room 157	North	Wall	Drywall	White	0.09	0.05	Neg	Intact	
383	Room 157	East	Wall	Drywall	White	0.11	0.04	LCP	Intact	
384	Room 157	East	White	Metal	White	4.65	0.38	LBP	Intact	
			Board							
385	Room 157	South	Wall	Concrete	White	0.1	0.06	LCP	Intact	
386	Room 157	South	Window Mullion	Metal	White	0.15	0.07	LCP	Intact	
387	Room 157	South	Window Frame	Metal	White	0.1	0.03	LCP	Intact	
388	Room 120	West	Door Frame	Metal	White	0.04	0.03	Neg	Intact	
389	Room 120	West	Door	Wood	White	0.2	0.04	Neg	Intact	
390	Room 120	North	Window Mullion	Metal	White	0.19	0.08	LCP	Intact	
391	Room 120	North	Window Frame	Metal	White	0.15	0.07	LCP	Intact	
392	Room 120	North	Wall	Concrete	White	0.1	0.07	LCP	Intact	
393	Room 120	East	Wall	Drywall	White	0.2	0.07	LCP	Intact	
394	Room 120A	South	Door Frame	Metal	White	0.08	0.05	Neg	Intact	
395	Room	South	Door	Wood	White	0.26	0.1	LCP	Intact	
396	Room	North	Wall	Concrete	White	0.15	0.09	LCP	Intact	
397	Room	East	Wall	Drywall	White	0.1	0.04	LCP	Intact	
398	Room	South	Wall	Drywall	White	0.12	0.06	LCP	Intact	
399	Room 120B	East	Door Frame	Metal	White	0.23	0.06	LCP	Intact	
400	Room 120B	East	Door	Wood	White	0.27	0.07	LCP	Intact	
401	Room 1200	North	Door	Metal	White	0	0.07	Neg	Intact	
-01			Frame				-			
402	Room 120C	North	Door	Wood	White	0	0	Neg	Intact	
403	Room 120C	North	Wall	Drywall	White	0.01	0.01	Neg	Intact	
404	Room 120C	East	Wall	Drywall	White	0.13	0.04	LCP	Intact	
405	коот 120С	South	wall	Concrete	white	0.05	0.09	Neg	Intact	

XRF Field Data Report										
LBP - EPA HUD/ CCR Title 17 level for lead-based paint - \geq 1.0 mg/cm ² .										
LCP - Tes	t Results belov	v 1 mg/cm	² but above 0.3	1 mg/cm ² are	considere	d to conta	in detec	table amou	nts of lead.	
Neg – Lev	vels below 0.1	mg/cm ² c	annot be verifi	ed as absent fo	or lead in I	paint with	out labo	ratory conf	irmation.	
Sample	Location	Side	Component/N	lo Substrate	Color	PB	Pb +/-	Pos/Neg	Paint	
No.						mg/cm ²			Condition	
406	Room 120F	East	Door	Metal	White	0	0	Neg	Intact	
			Frame							
407	Room 120F	East	Door	Wood	White	0	0	Neg	Intact	
408	Room 120F	West	Wall	Drywall	White	> 1.00	0.02	LBP	Intact	
409	Room 120F	West	Wall	Drywall	White	> 1.00	0.02	LBP	Intact	
410	Room 120E	East	Door	Wood	White	0	0	Neg	Intact	
			Frame							
411	Room 120E	East	Door	Wood	White	0	0.01	Neg	Intact	
412	Room 120E	West	Wall	Drywall	White	> 1.00	0.06	LBP	Intact	
413	Room	East	Door	Wood	White	0.11	0.03	LCP	Intact	
	120D		Frame							
414	Room	East	Door	Wood	White	0.24	0.06	LCP	Intact	
	120D									
415	Room 120D	West	Wall	Drywall	White	0	0	Neg	Intact	
416	Room 120C	East	Wall	Drywall	White	0	0	Neg	Intact	
417	Mech.	East	Door	Metal	Gray	0.01	0.01	Neg	Intact	
	Room 1	- .	Frame							
418	Mech.	East	Door	Wood	Red	0	0	Neg	Intact	
440	Room 1	Cantan	Durt		\A/ -!+-	. 1 00	0.00	100	lute et	
419	Iviecn.	Center	Duct	Ivietai	white	> 1.00	0.09	LBP	Intact	
420	Noch	South	Mall	Concrete	W/bito	0.04	0.02	Nog	Intact	
420	Room 1	South	vvali	Concrete	white	0.04	0.05	Neg	maci	
421	Mech	Fast	Duct	Metal	White	0.03	0.02	Νρσ	Intact	
721	Room 1	Lust	Duct	Wietai	white	0.05	0.02	NCB	mace	
422	Mech.	Center	Duct	Metal	White	0.21	0.06	ICP	Intact	
	Room 1									
423	Mech.	South	Door	Metal	Grav	0.11	0.04	LCP	Intact	
	Room 2		Frame							
424	Standard							Pass		
425	Mech.	South	Door	Wood	Blue	0.25	0.04	LCP	Intact	
	Room 2.									
426	Mech.	South	Rail	Metal	White	0.48	0.07	LCP	Intact	
	Room									
427	Mech.	South	Wall	Concrete	White	0	0.01	Neg	Intact	
	Room									
428	Mech.	East	Pole	Metal	White	0.04	0.02	Neg	Intact	
	Room									
429	Mech.	Center	Duct	Metal	White	0.02	0.03	Neg	Intact	
	Room									
430	Mech.	West	Wall	Drywall	White	0	0.01	Neg	Intact	
	Room			_						
431	Mech.	Center	Duct	Metal	White	0.05	0.05	Neg	Intact	
	Room									
432	Standard					> 1.01	0.01	Accept		
433	Calibration					> 1.03	0.01	Accept		

XRF Field Data Report

LBP - EPA HUD/ CCR Title 17 level for lead-based paint - \geq 1.0 mg/cm².

LCP - Test Results below 1 mg/cm² but above 0.1 mg/cm² are considered to contain detectable amounts of lead. Neg – Levels below 0.1 mg/cm² cannot be verified as absent for lead in paint without laboratory confirmation.

Sample	Location	Side	Component/	'No	Substrate	Color	PB	Pb +/-	Pos/Neg	Paint
No.							mg/cm ²			Condition
434	Calibration						> 1.07	0.05	Accept	
435	Calibration						0	0	Accept	
436	Calibration						0	0	Accept	
437	Calibration						0	0	Accept	

Paint Chip Sample Results										
LBP - EPA HUD/ CCR Title 17 level for lead-based ≥5000 mg/kg.										
LCP- Cal/OSHA Lead in Construction standards apply if any detectable level of lead is present.										
Neg – Meets Cal/OSHA requirements for a negative initial determination for lead.										
Sample	Description/Location	Lab Result	Pos/Neg	Paint						
No.		(mg/kg)		Condition						
L-01	White paint on drywall, room 131A.	<100	Neg	Intact						
L-02	White paint on wood door, room 131A.	<100	Neg	Intact						
L-03	White paint on wood door frame, room 131A.	<100	Neg	Intact						
L-04	Beige paint on concrete wall, room 133D.	470	LCP	Intact						
L-05	Beige paint on metal window frame, room 133D.	220	LCP	Intact						
L-06	Beige paint on drywall, room 133D.	<100	Neg	Intact						
L-07	Red paint on interior door, room 132.	290	LCP	Intact						
L-08	White paint on metal door frame, room 132.	260	LCP	Intact						
L-09	White paint over red on metal door frame, room 156.	9,100	LBP	Intact						
L-10	White paint over tan on wood door, room 156.	690	LCP	Intact						
L-11	White paint on drywall, room 156A.	5,900	LBP	Intact						
L-12	White paint on concrete wall, room 152C.	1,100	LCP	Intact						
L-13	White paint on metal window frame, room 154.	2,200	LCP	Intact						
L-14	White paint on drywall, room 157.	<100	Neg	Intact						
L-15	Red paint on wood door, room 157.	570	LCP	Intact						
L-16	White paint on drywall, room 120F.	480	LCP	Intact						
L-17	White paint over green on wood door, room 120D.	4,700	LCP	Intact						
L-18	Red paint on wood door, room 120.	880	LCP	Intact						
L-19	White paint on metal duct in mechanical room.	12,000	LBP	Intact						
L-20	Green paint on roof HVAC unit on building 2.	130	LCP	Intact						
L-21	Gray paint on roof HVAC unit on building 3.	<100	Neg	Intact						
L-22	Gray paint over red on roof HVAC unit on building 6.	<100	Neg	Intact						
L-23	Silver paint on metal pipe cover on roof, building 6.	<100	Neg	Intact						
L-24	Silver paint on metal vent cap on roof, building 3.	6,100	LBP	Intact						

7. Recommendations:

Asbestos:

The Environmental Protection Agency (EPA) National Emission Standards for Hazardous Air Pollutants (NESHAP) and Sacramento Metropolitan Air Quality Management District (SMAQMD) categorize asbestos containing materials in to three groups.

Regulated Asbestos Containing Materials (RACM) is defined as materials containing greater than one percent (>1%) asbestos that are friable (ACM that can be crumbled, pulverized, or reduced to powder, when dry, by hand pressure) or will be subjected to fire, or will be subjected to mechanical forces during removal or demolition.

Category I Non Friable ACM is defined as Asbestos containing packing's, gaskets, resilient floor coverings, and asphalt roofing products.

Category II Non Friable ACM is defined as Asbestos containing material, excluding Category I nonfriable asbestos containing material that, when dry, and in its present form, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Registration with the Division of Occupational Safety and Health (DOSH) for asbestos-related work and asbestos certification on the Contractor's license is required for removal of greater than one hundred square foot (>100 sq.ft.) of ACM containing greater than one tenth of one percent (>0.1%). Removal of any amount of asbestos containing any level of asbestos is subject to Cal/OSHA standards.

Any removal or demolition activities that may impact asbestos containing materials should be performed in compliance with EPA and Cal/OSHA standards.

Lead Paint:

At present there is no state or federal regulation requiring mandatory lead removal or abatement prior to disturbance, demolition, or renovation of structures with identified lead materials. However, Cal/OSHA worker protection requirements and Cal/EPA waste disposal requirements do apply.

The HUD action level for lead-based paint is $\geq 1.0 \text{ mg/cm}^2$ by XRF or $\geq 5000 \text{ mg/kg}$ by laboratory analysis. While HUD has developed procedures for lead paint inspections, the definition for lead-based paint may be irrelevant if the purpose of the survey is for establishing worker safety and construction debris disposal requirements.

XRF results above 0.1 mg/cm² in this survey should be considered to contain detectable amounts of lead for compliance with Cal/OSHA standards. Because XRF has a limit of quantification, the results cannot be used to determine that no lead is present for Cal OSHA worker protection purposes. Levels below 0.1 mg/cm² by XRF cannot be verified as absent for lead paint without laboratory confirmation.

California OSHA, Title 8 establishes work practice standards by comparing the level of lead in the material being handled and airborne lead levels. Therefore, any detectable level of lead requires there to be a worker protection program, however, it is based on the worker activity.

California Code of Regulations (CCR), Title 22 establishes hazardous waste disposal requirements. Any loose or easily separable lead paint greater than 1000 mg/kg total lead must be handled as a hazardous waste. Additional waste characterization by STLC and TCLP methods is required for components containing lead based paint or for paint chips reported at <1000 mg/kg. An XRF measures in weight of lead per surface area of material, while hazardous waste values are in weight of lead per weight of material. Therefore, XRF results cannot be correlated to hazardous waste criteria.

ECS recommends the following throughout demolition activities:

- A. Comply with OSHA training, worker protection, and monitoring requirements when disturbing these surfaces. At a minimum, the Contractor and subcontractors must meet the lead training requirements as specified by 8 CCR 1532.1. This will include training all employees who drill, cut, scrape, abrade, remove, clean up debris, or in any other way are exposed to lead from painted surfaces covered by this project. Workers and supervisors must be CDPH Certified Lead-Related Construction Workers or Supervisors if they will conduct trigger tasks or other work reasonably expected to exceed the Cal/OHSA Permissible Exposure Limit (PEL).
- B. Comply with California Code of Regulations (CCR), Title 22 waste characterization and disposal requirements.

8. Disclosure:

If for any reason the planned demolition of the building does not occur, a copy of this report or a summary must be provided to new lessees (tenants) and purchasers of this property under Federal law (Title 24 Code of Federal Regulations part 35 and Title 40 Code of Federal Regulations part 745) before they become obligated under a lease or sales contract. Landlords (lessors) and sellers are also required to distribute an educational pamphlet and include warning language in their leases or sales contracts to ensure that parents have the information they need to protect their children from lead-based paint hazards.

9. Inspection Limitations:

Construction materials that are considered non-suspect for asbestos under OSHA include solid metal, wood, glass and PVC plastic. In addition EPA lists concrete as a non-suspect material under the Asbestos Hazard Emergency Response Act (AHERA) for school inspections. Therefore, solid metal, wood, glass and concrete materials should typically not be considered suspect as asbestos-containing.

ECS does not warrant or guarantee that all materials which may contain asbestos concealed inside walls, ceilings, sub floors, etc. can be located.

No absolute conclusions on all building components can be drawn from lead testing performed in this survey. There are some specific types of components, locations, or paint history that can use the information from this report for field verification, such as paint color or construction period, regarding the presence or absence of lead based paints.

Topics not explicitly discussed within this document should not be assumed to have been investigated.

Personnel certifications, laboratory analysis reports, and drawings showing sample locations are attached. Copies of and equipment licenses are maintained in the office and are available for your review upon request.

Please call me with any questions you may have.

Sincerely,

Ryan Moran

Ryan Govan DOSH CAC #92-0375 CDPH #I -20975





















Sacramento, CA 95841

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	NORTH	scole: drawing title: 1/16"=1'-0" Liberal Arts 1/16"=1'-0" Lead Paint Survey dete: drawing no.: March 7, 2017 11
$\frac{20^{4} \times 20^{2} \times 20^{3}}{2^{3} \times 39^{2}} \left(\begin{array}{c} x^{-394} \times x^{-20} \\ x^{-338} \times x^{-395} & x^{-394} \\ x^{-398} \times x^{-395} & x^{-394} \\ x^{-398} \times x^{-399} & x^{-399} \\ x^{-401} & x^{-399} & x^{-399} \\ x^{-402} & x^{-403} & x^{-399} \\ x^{-403} & x^{-403} & x^{-403} \\ x^{-403} & x^{-403} & x^$		American River College 4700 College Oak Drive Sacramento, CA 95841
$\begin{array}{c} x_{390} \\ x_{-391} \\ x_{-10} $		
		武店马 Environmental Construction Services, Inc. P.O. Box 5277 Bay Point, CA 94565 (925) 370-2222 Fax (925) 370-2282







777 12th Street, 3rd Floor Sacramento, CA 95814 Office (916) 874-4800

ASBESTOS SURVEY

(See Instructions)

1. Building	/Area Desc	criptio	on								
American Rive	American River College Liberal Arts Building										
Address 4700 College ()ak Drive					City Sacram	ento			#	of Structures
2. Owner li	nformation					ouorum					
Name											
Los Rios Comr	munity College	e Distri	ict								
AddressCity/StateZip3753 Bradview DriveSacramento, CA95827									Zip 95827		
Contact Josef Meyer			P 91	hone 6-856-34	400			(Fax 916) 856-3	3456	
3. Consulta	ant Informa	ation		Surve 8/19/16,	y Date(s , 11/25/16	s): , 12/27/	/16				
Company Name Environmental Construction Services, Inc.											
Name DOSH # Ryan Govan CAC 92-0375											
AddressCity/StateZipP.O. Box 5277Bay Point, CA94565							5				
Phone 925-370-2222	Fax 925-370-2282 Signature Ryan Moran							Moran			
4. Client Information (If different than owner)											
Name					🔲 Pro	operty	Manager		her		
Hamo											
Address						City/State Zip)		
Contact			Phone		Fax						
5. Have all	of the sus	pect	materials t	hat wil	ll be dis	turbec	d been sam	pled?	,	× Yes	No
lf no, explai	in why:										
6. Summar	y of Total	Asbe	stos Conta	ining	Material		I) Findings				
Regulated (Includes matering fire damaged materials)	Asbestos ials subject to k aterials)	Cont nown m	t aining Mat nechanical remo	erial val and		Cate	egory II		C	atego	ry I
Square Ft.	Linear F	t.	Cubic F	⁻ t.	Squa	re Ft.	Linear F	₹t.	Square	Ft.	Linear Ft.
0	3910		0		52,0	800	0		27,36	4	0
То	receive futur	e SMA	AQMD Rule u	pdates	and chan	iges aff	ecting your ir	ndustr	y (check o	ne box):
Please send e-mail notices to I will sign up myself at www.airquality.org/listserve/ to receive e-mailed notices.											
X I am already s	subscribed.	🗌 I wa	nt the District to	mail notice	es to the add	ress on th	nis application:	Owr	ier 🗙 C	onsultan	t

LEAD HAZARD EVALUATION REPORT

Section 1 — Date of Lead Hazard Evaluation										
Section 2 — Type of Lead Hazard Evaluation (Check one box only)										
Lead Inspection	Risk assessment 🗌 Clea	arance Inspection Ot	ner (specify)							
Section 3 – Structure Where Lead Hazard Evaluation Was Conducted										
Address [number, street, apartme	ent (if applicable)]	City	County	Zip Code						
Construction date (year) of structure	Type of structure Multi-unit building Single family dwelling	School or daycare Other	Children living in structure?							
Section 4 — Owner of Strue	cture (if business/agency, lis	st contact person)								
Name		Te	Telephone number							
Address [number, street, apartme	ent (if applicable)]	City	State	Zip Code						
Section 5 – Results of Lea	d Hazard Evaluation (check	all that apply)								
No lead-based paint detect	ted Intact lead-ba	ased paint detected	Deteriorated lead-base	ed paint detected						
Section 6 — Individual Con	ducting Lead Hazard Evaluation	ation								
Name		Т	elephone number							
Address [number, street, apartment (if applicable)] City State Zip Code										
CDPH certification number	Sign	lature Rycon M	oran	Date						
Name and CDPH certification nu	mber of any other individuals con	nducting sampling or testing (if	applicable)	1						

Section 7 – Attachments

A. A foundation diagram or sketch of the structure indicating the specifc locations of each lead hazard or presence of lead-based paint;

B. Each testing method, device, and sampling procedure used;

C. All data collected, including quality control data, laboratory results, including laboratory name, address, and phone number.

First copy and attachments retained by inspector

Second copy and attachments retained by owner

Third copy only (no attachments) mailed or faxed to:

California Department of Public Health Childhood Lead Poisoning Prevention Branch Reports 850 Marina Bay Parkway, Building P, Third Floor Richmond, CA 94804-6403 Fax: (510) 620-5656 Appendix A Laboratory Reports


EMSL Analytical, Inc. 464 McCormick Street San Leandro, CA 94577

Phone/Fax: (510) 895-3675 / (510) 895-3680 http://www.EMSL.com / sanleandrolab@emsl.com EMSL Order: 091616515 Customer ID: ECSI85 Customer PO: Project ID:

Attention:	Ryan Govan	Phone:	(925) 370-2222
	Environmental Construction Services, Inc.	Fax:	(925) 370-2282
	PO Box 5277	Received:	08/25/2016 12:00 PM
	Bay Point, CA 94565	Analysis Date:	09/27/2016
		Collected:	08/19/2016
Project:	American River College Liberal Arts Building 4700 College Oak Drive	Sacramento CA 95841	

Test Report: Asbestos Analysis of Bulk Materials by PLM via EPA 600/R-93/116 Method using Polaried Light Microscopy. Quantitation using 400 Point Count Procedure

			Non-Asbestos	<u>b</u>	<u>Asbestos</u>
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре
A-04-Drywall/Compo und 091616515-0004A	Room 166 - Drywall & joint compound	Tan/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<0.25% Chrysotile
A-14-Drywall/Compo und 091616515-0014	Room 166 - Drywall & joint compound in mech room	Tan/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<0.25% Chrysotile
A-21-Drywall/Compo und 091616515-0021	Room 165 - Drywall & Joint compound Behind 12 Tile above ceiling	Tan/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<0.25% Chrysotile
A-23-Drywall/Compo und 091616515-0023	Room 164 - Drywall and joint comp	Tan/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<0.25% Chrysotile
A-27-Drywall/Compo und 091616515-0027	Room 170	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<0.25% Chrysotile
A-32-Drywall/Compo und 091616515-0032A	Room 169	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<0.25% Chrysotile
A-35-Drywall/Compo und 091616515-0035	Room 167	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<0.25% Chrysotile
A-38-Drywall/Compo und 091616515-0038A	Room 129 - Drywall & joint compound	Tan/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<0.25% Chrysotile
A-43-Drywall/Compo und 091616515-0043	Room 128 - Drywall & joint compound	Tan/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<0.25% Chrysotile
A-46-Drywall/Compo und 091616515-0046	Room 126 - Drywall & joint compound	Tan/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<0.25% Chrysotile

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Samples analyzed by EMSL Analytical, Inc San Leandro, CA NVLAP Lab Code 101048-3, WA C884

Initial report from: 09/27/2016 22:58:40

ASB_PLMPC_0006_0001 Printed 9/27/2016 10:58:40PM



EMSL Analytical, Inc. 464 McCormick Street San Leandro, CA 94577

Phone/Fax: (510) 895-3675 / (510) 895-3680 http://www.EMSL.com / sanleandrolab@emsl.com EMSL Order: 091616515 Customer ID: ECSI85 Customer PO: Project ID:

Attention:	Ryan Govan	Phone:	(925) 370-2222
	Environmental Construction Services, Inc.	Fax:	(925) 370-2282
	PO Box 5277	Received:	08/25/2016 12:00 PM
	Bay Point, CA 94565	Analysis Date:	09/27/2016
		Collected:	08/19/2016
Project:	American River College Liberal Arts Building 4700 College Oak Drive Sa	cramento CA 95841	

Test Report: Asbestos Analysis of Bulk Materials by PLM via EPA 600/R-93/116 Method using Polaried Light Microscopy. Quantitation using 400 Point Count Procedure

			<u>Non-Asbestos</u>		Asbestos
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре
A-49-Drywall/Compo und 091616515-0049	Room 125 - Drywall & joint compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<0.25% Chrysotile
A-56-Drywall/Compo und 091616515-0056	Room 122 - Drywall and joint compound	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<0.25% Chrysotile
A-57-Drywall/Compo und 091616515-0057	Room 124 - Drywall and joint compound	Tan/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<0.25% Chrysotile
A-60-Drywall/Compo und 091616515-0060	Room 121 - Drywall & joint compound	White/Various Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<0.25% Chrysotile

Analyst(s)

Adam C. Fink (14)

ciplicher

Chris Dojlidko, Laboratory Manager or other approved signatory

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Samples analyzed by EMSL Analytical, Inc San Leandro, CA NVLAP Lab Code 101048-3, WA C884

Initial report from: 09/27/2016 22:58:40

ASB_PLMPC_0006_0001 Printed 9/27/2016 10:58:40PM



464 McCormick Street San Leandro, CA 94577 Phone/Fax: (510) 895-3675 / (510) 895-3680 http://www.EMSL.com / sanleandrolab@emsl.com

Attention: Ryan Govan	Phone:	(925) 370-2222
Environmental Construction Services, Inc.	Fax:	(925) 370-2282
PO Box 5277	Received:	11/15/2016 9:30 AM
Bay Point, CA 94565	Analysis Date:	12/16/2016
	Collected:	11/14/2016
Project: American River College Liberal Arts Building 4700 College C	ak Drive, Sacramento CA 95841	

Test Report: Asbestos Analysis of Bulk Materials by PLM via EPA 600/R-93/116 Method using Polarized Light Microscopy. Quantitation using 400 Point Count Procedure

			Non-A	<u>sbestos</u>	<u>Asbestos</u>
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре
A-61-Joint Compound 091622028-0001A	Room 133 p - Drywall and Joint compound	Tan/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<0.25% Chrysotile
A-62-Joint Compound 091622028-0002A	Room 133 - Drywall and Joint compound	Tan/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<0.25% Chrysotile
A-64-Joint Compound 091622028-0004A	Room 133 v Drywall and Joint compound	Gray/Tan/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<0.25% Chrysotile
A-69-Joint Compound 091622028-0009A	Hallway at 133 - Drywall and Joint compound above ceiling	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<0.25% Chrysotile
A-70-Joint Compound 091622028-0010A	Room 133 d - Brown mastic on old ceiling	Tan/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	<0.25% Chrysotile

Analyst(s)

Jared Martin (5)

Aciplicher

Chris Dojlidko, Laboratory Manager or other approved signatory

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Samples analyzed by EMSL Analytical, Inc San Leandro, CA NVLAP Lab Code 101048-3, WA C884

Initial report from: 12/16/2016 14:53:51



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A - I- - - 4 - --

Attention:	Ryan Govan	Phone:	(925) 370-2222
	Environmental Construction Services, Inc.	Fax:	(925) 370-2282
	PO Box 5277	Received:	11/30/2016 9:30 AM
	Bay Point, CA 94565	Analysis Date:	12/21/2016
		Collected:	11/25/2016
Project:	ect: American River College - Liberal Arts Building - 4700 College Oak Drive, Sacramento, Ca 95841		

Test Report: Asbestos Analysis of Bulk Materials by PLM via EPA 600/R-93/116 Method using Polarized Light Microscopy. Quantitation using 400 Point Count Procedure

			NOII-ASDESIOS		Aspestos
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре
A-103-Joint Compound 091622877-0001A	Drywall and joint compound above ceiling, Room 152	Tan Fibrous Homogeneous	2% Glass	98% Non-fibrous (Other)	<0.25% Chrysotile
A-105-Joint Compound 091622877-0003A	Drywall & joint compound, Room 156	Gray/White Non-Fibrous Homogeneous	3% Glass	97% Non-fibrous (Other)	<0.25% Chrysotile
A-123-Joint Compound 091622877-0021A	Drywall and joint compound, Room 154	Gray/White Non-Fibrous Homogeneous	3% Cellulose	97% Non-fibrous (Other)	<0.25% Chrysotile
A-126-Joint Compound 091622877-0024A	Drywall and joint compound, Room 157	Gray/White Non-Fibrous Homogeneous	3% Cellulose	97% Non-fibrous (Other)	<0.25%Chrysotile
A-130-Joint Compound 091622877-0028A	Drywall and joint compound, Room 120D	Gray/White Non-Fibrous Homogeneous	3% Cellulose	97% Non-fibrous (Other)	<0.25% Chrysotile
A-131-Joint Compound 091622877-0029A	Drywall and joint compound, Room 120A	Gray/White Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	<0.25%Chrysotile
A-132-Joint Compound 091622877-0030A	Drywall and joint compound, Room 120C	Tan Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	<0.25% Chrysotile
A-136-Joint Compound 091622877-0034A	Drywall and joint compound, Mech Room	Gray/White Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	<0.25% Chrysotile

Analyst(s)

Raphael Feliciano (8)

ciplicher

Chris Dojlidko, Laboratory Manager or other approved signatory

Disclaimer:Some samples may contain asbestos fibers present in dimensions below PLM resolution limits. The limit of detection as stated in the method is 0.25%. EMSL Analytical Inc suggests that samples reported as <0.25% or none detected undergo additional analysis via TEM. The above test report relates only to the items tested. This report may not be reproduced, except in full, without written approval of EMSL Analytical Inc. This test report must not be used by the client to claim product endorsement by NVLAP or any agency of the United States Government . EMSL Analytical Inc., bears no responsibility for sample collection activities, analytical method limitations, or the accuracy of results when requested to separate layered samples. EMSL Analytical Inc., liability is limited to the cost of sample analysis. The test results contained within this report meet the requirements of NELAC unless otherwise noted. Samples received in good condition unless otherwise noted. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample.

Samples analyzed by EMSL Analytical, Inc San Leandro, CA NVLAP Lab Code 101048-3, WA C884

Initial report from: 12/21/2016 12:37:32

ASB_PLMPC_0006_0001 Printed 12/21/2016 12:37:42PM

EMSL	EMSL Analytical, Inc. 464 McCormick Street San Leandro, CA 94577 Tel/Fax: (510) 895-3675 / (510) 895-3680 http://www.EMSL.com / sanleandrolab@emsl.com	EMSL Order: Customer ID: Customer PO: Project ID:	091616515 ECSI85
Attention:	Ryan Govan	Phone:	(925) 370-2222
	Environmental Construction Services, Inc.	Fax:	(925) 370-2282
	PO Box 5277	Received Date:	08/25/2016 12:00 PM
	Bay Point, CA 94565	Analysis Date:	08/31/2016 - 09/01/2016
		Collected Date:	08/19/2016
Project:	American River College Liberal Arts Building 4700 College Oak Dr	ive Sacramento CA 95841	

			Asbestos		
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре
A-01-Floor Tile	Room 166 - Blue 12 Floor tile , White	Blue Non-Fibrous		80% Ca Carbonate 20% Non-fibrous (Other)	None Detected
A-01-Mastic	Room 166 - Blue 12	Yellow/Clear		80% Matrix 20% Non-fibrous (Other)	None Detected
091616515-0001A	mastic	Homogeneous			
A-02	Room 166 - Black mastic residues under	Black Non-Fibrous		70% Matrix 25% Non-fibrous (Other)	5% Chrysotile
097878575-0002	Diue liie	Runo		20% Co Corbonato	None Detected
091616515-0003	Brown on blue Vinyl Floor base	Non-Fibrous Homogeneous		40% Matrix 30% Non-fibrous (Other)	None Delected
A-03-Mastic	Room 166 - Gray, Brown on blue Vinyl Floor base	White/Yellow Non-Fibrous Homogeneous		80% Matrix 20% Non-fibrous (Other)	None Detected
A-03-Compound	Room 166 - Gray, Brown on blue Vinyl Floor base	Gray Non-Fibrous Homogeneous	8% Synthetic	60% Ca Carbonate 32% Non-fibrous (Other)	None Detected
A-04-Skim Coat	Room 166 - Drywall & joint compound	Tan Non-Fibrous Homogeneous		80% Ca Carbonate 20% Non-fibrous (Other)	None Detected
A-04-Compound	Room 166 - Drywall & joint compound	Tan Non-Fibrous Homogeneous		80% Ca Carbonate 18% Non-fibrous (Other)	2% Chrysotile
A-04-Drywall	Room 166 - Drywall & joint compound	White Fibrous Homogeneous	2% Cellulose 2% Glass	70% Gypsum 26% Non-fibrous (Other)	None Detected
A-05	Room 166 - 2x4 Fissured ceiling tile	Brown Fibrous Homogeneous	40% Cellulose 30% Min. Wool	30% Non-fibrous (Other)	None Detected
A-06-Ceiling Tile	Room 166 - 12 Perforated tile, Brown mastic on soffit above	Brown Fibrous Homogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected
	ceiling	g			
A-06-Mastic	Room 166 - 12 Perforated tile, Brown mastic on soffit above ceiling	Brown Non-Fibrous Homogeneous		80% Matrix 20% Non-fibrous (Other)	None Detected
A-07-Compound	Room 166 - Drywall & joint compound behind tile on soffiles	Tan Non-Fibrous Homogeneous		70% Ca Carbonate 28% Non-fibrous (Other)	2% Chrysotile
A-07-Drywall	Room 166 - Drowell &	White	2% Glass	70% Gynsum	None Detected
091616515-0007A	joint compound behind tile on soffiles	Fibrous Homogeneous	270 01033	28% Non-fibrous (Other)	None Deletieu
A-08	Room 166 - Window glazing compound	Gray Non-Fibrous		70% Ca Carbonate 30% Non-fibrous (Other)	<1% Chrysotile
		nomoyeneous			



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		Non-Asbestos			Asbestos	
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре	
A-09	Room 164 - Window glazing compound	Gray Non-Fibrous		70% Ca Carbonate 30% Non-fibrous (Other)	<1% Chrysotile	
091616515-0009		Homogeneous				
A-10	Room 163 - Window glazing compound	Gray Non-Fibrous		70% Ca Carbonate 30% Non-fibrous (Other)	<1% Chrysotile	
091616515-0010		Homogeneous				
A-11	Room 169 - Window glazing compound	Gray Non-Fibrous		70% Ca Carbonate 30% Non-fibrous (Other)	<1% Chrysotile	
091616515-0011		Homogeneous				
A-12	Room 167 - Window glazing compound	Gray Non-Fibrous		70% Ca Carbonate 30% Non-fibrous (Other)	<1% Chrysotile	
091616515-0012		Homogeneous				
A-13	Room 166 - White seater on duct above	White Fibrous	5% Synthetic	80% Matrix 15% Non-fibrous (Other)	None Detected	
091616515-0013	ceiling	Homogeneous				
A-14-Compound	Room 166 - Drywall & joint compound in mech room	Tan Non-Fibrous Homogeneous		70% Ca Carbonate 28% Non-fibrous (Other)	2% Chrysotile	
	Poom 166 Dravall &	W/bite	2% Glass		None Detected	
091616515-0014A	joint compound in mech room	Fibrous Homogeneous	270 Glass	28% Non-fibrous (Other)	None Delected	
٨_15	Room 166 - concrete	Brown		10% Quartz	None Detected	
091616515-0015	floor in mech room	Non-Fibrous Homogeneous		60% Ca Carbonate 10% Gypsum	None Deletieu	
				20% Non-fibrous (Other)		
A-16	Room 165 - Black mastic residues under	Black/Yellow Non-Fibrous	8% Cellulose	60% Matrix 30% Non-fibrous (Other)	2% Chrysotile	
091616515-0016	12 floor tile	Homogeneous				
A-17-Floor Tile	Room 165 - Blue 12 Floor tile, yellow	Blue Non-Fibrous Homogeneous		70% Ca Carbonate 30% Non-fibrous (Other)	None Detected	
091010515-0017		Tiomogeneous		700/ 14 / 1		
A-17-Mastic	Room 165 - Blue 12 Floor tile, yellow mastic	Yellow Non-Fibrous Homogeneous		70% Matrix 30% Non-fibrous (Other)	None Detected	
	Poom 165 Grav	Blue		40% Ca Carbonate	None Detected	
091616515-0018	Brown mastic on blue vinyl	Non-Fibrous Homogeneous		30% Matrix 30% Non-fibrous (Other)	None Delected	
A-18-Mastic	Room 165 - Grav	White		70% Matrix	None Detected	
091616515-0018A	Brown mastic on blue vinyl	Non-Fibrous Homogeneous		30% Non-fibrous (Other)		
A-18-Compound	Room 165 - Gray,	White		70% Ca Carbonate	2% Chrysotile	
091616515-0018B	Brown mastic on blue vinyl	Non-Fibrous Homogeneous		28% Non-fibrous (Other)	·	
A-19-Ceiling Tile	Room 165 - 12 Perforated tile, Brown	Brown Fibrous	90% Cellulose	10% Non-fibrous (Other)	None Detected	
091616515-0019	mastic above	Homogeneous				
A-19-Mastic	Room 165 - 12 Perforated tile, Brown	Brown Non-Fibrous		80% Matrix 20% Non-fibrous (Other)	None Detected	
091616515-0019A	mastic above	Homogeneous				
A-20	Room 165 - 2x4 Fissurd ceilling tile	Gray Fibrous	40% Cellulose 30% Min. Wool	30% Non-fibrous (Other)	None Detected	
U91616515-0020		Homogeneous				
A-21-Compound	Room 165 - Drywall &	Tan Non-Fibrous		70% Ca Carbonate	2% Chrysotile	
091616515-0021	Behind 12 Tile above ceiling	Homogeneous				



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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbes	stos	Asbestos
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре
A-21-Drywall	Room 165 - Drywall &	White	5% Glass	70% Gypsum	None Detected
091616515-0021A	Joint compound Behind 12 Tile above ceiling	Homogeneous		25% Non-fibrous (Other)	
A-22	White Joint tape on duct inside soffit	White Fibrous	40% Cellulose	20% Ca Carbonate 10% Matrix	None Detected
091616515-0022		Homogeneous		30% Non-fibrous (Other)	
A-23-Compound	Room 164 - Drywall and joint comp	Tan Non-Fibrous		70% Ca Carbonate 28% Non-fibrous (Other)	2% Chrysotile
091616515-0023		Homogeneous			
A-23-Drywall	Room 164 - Drywall and joint comp	White Non-Fibrous	2% Glass	70% Gypsum 28% Non-fibrous (Other)	None Detected
091616515-0023A		Homogeneous			
A-24-Floor Tile	Room 164 - Blue 12 floor tile , Yellow	Blue Non-Fibrous		70% Ca Carbonate 30% Non-fibrous (Other)	None Detected
091616515-0024		Homogeneous		000/ 14 / 1	
A-24-Mastic	Room 164 - Blue 12 floor tile , Yellow mastic	Yellow Non-Fibrous Homogeneous		80% Matrix 20% Non-fibrous (Other)	None Detected
	Poom 164 Blue 12	Grav	15% Cellulose	2% Quartz	None Detected
091616515-0024B	floor tile , Yellow mastic	Non-Fibrous Homogeneous	5% Glass	45% Ca Carbonate 15% Matrix 18% Non-fibrous (Other)	None Delected
A-25	Room 170 - 2x4	Gray	45% Cellulose	10% Perlite	None Detected
091616515-0025	Fissured ceiling	Fibrous Homogeneous	25% Min. Wool	20% Non-fibrous (Other)	
A-26	Room 170 - 2x4	Grav	45% Cellulose	10% Perlite	None Detected
091616515-0026	Fissured ceiling	Non-Fibrous Homogeneous	25% Min. Wool	20% Non-fibrous (Other)	
A-27-Drywall	Room 170	White Non-Fibrous	4% Cellulose	80% Gypsum 16% Non-fibrous (Other)	None Detected
091616515-0027		Homogeneous			
A-27-Compound 1	Room 170	Tan Non-Fibrous		70% Ca Carbonate 28% Non-fibrous (Other)	2% Chrysotile
091616515-0027A	(naner)	Homogeneous			
		T		75% 0- 0	00/ Observe (ille
A-27-Compound 2	Room 170	Ian Non-Fibrous Homogeneous		75% Ca Carbonate 23% Non-fibrous (Other)	2% Chrysotile
Joint compound under tape ((mesh)	Homogeneous			
A-27-Compound 3	Room 170	White Non-Fibrous		80% Ca Carbonate 20% Non-fibrous (Other)	None Detected
091616515-0027C		Homogeneous			
Compound under paint					
A-28-Floor Tile	Room 170	Blue Non-Fibrous		70% Ca Carbonate 30% Non-fibrous (Other)	None Detected
091616515-0028		Homogeneous			
A-28-Mastic 1	Room 170	Clear/Orange Non-Fibrous		80% Matrix 20% Non-fibrous (Other)	None Detected
091616515-0028A		Homogeneous			
A-28-Mastic 2	Room 170	Black Non-Fibrous Homogeneous		2% Quartz 10% Ca Carbonate 70% Matrix	5% Chrysotile
				13% Non-fibrous (Other)	
Result includes a small amou	unt of inseparable attached mat	erial			
A-28-Filler	Room 170	Gray Non-Fibrous	45% Cellulose	55% Non-fibrous (Other)	None Detected
091616515-0028C		Homogeneous			

Initial report from: 09/01/2016 11:34:52



		Non-Asbestos			Asbestos
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре
A-28-Compound	Room 170	White Non-Fibrous		80% Ca Carbonate 2% Mica	2% Chrysotile
091616515-0028D		Homogeneous		16% Non-fibrous (Other)	
A-29-Vinyl Floor Base	Room 170	Blue Non-Fibrous		80% Matrix 20% Non-fibrous (Other)	None Detected
091616515-0029		Homogeneous			
A-29-Mastic	Room 170	Yellow Non-Fibrous		25% Ca Carbonate 60% Matrix	None Detected
091616515-0029A		Homogeneous		15% Non-fibrous (Other)	
A-29-Compound	Room 170	White Non-Fibrous		80% Ca Carbonate 2% Mica 16% Non fibrous (Othor)	2% Chrysotile
091616515-0029B		Homogeneous		10% Non-librous (Other)	
A-30	Room 170 - Black, gray,	Gray/Black Non-Fibrous	6% Cellulose	10% Ca Carbonate 6% Gypsum 70% Matrix	None Detected
091616515-0030		Homogeneous		8% Non-fibrous (Other)	
A-31	Room 170	Brown/Black	5% Cellulose	5% Quartz 15% Ca Carbonate	None Detected
091616515-0031		Homogeneous		60% Matrix 15% Non-fibrous (Other)	
Result includes a small amou	int of inseparable attached m	aterial		· · ·	
A-32-Drywall	Room 169	White Non-Fibrous	4% Cellulose	80% Gypsum 16% Non-fibrous (Other)	None Detected
091616515-0032		Homogeneous			
A-32-Compound	Room 169	White Non-Fibrous		75% Ca Carbonate 2% Mica	2% Chrysotile
091616515-0032A		Homogeneous		21% Non-fibrous (Other)	
A-33-Vinyl Floor Tile	Room 167	Blue Non-Fibrous		80% Matrix 20% Non-fibrous (Other)	None Detected
091616515-0033		Homogeneous			
A-33-Mastic 1	Room 167	Tan Non-Fibrous Homogeneous		25% Ca Carbonate 60% Matrix 15% Non-fibrous (Other)	None Detected
	Doom 167	Brown	20/ Fibraua (Othar)	80% Motrix	Nana Datastad
091616515-0033B		Non-Fibrous Homogeneous	2% Fibrous (Other)	18% Non-fibrous (Other)	None Delected
A-34-Mastic 1	Room 167	Black		10% Ca Carbonate	5% Chrysotile
091616515-0034		Non-Fibrous Homogeneous		70% Matrix 15% Non-fibrous (Other)	
A-34-Mastic 2	Room 167	Orange Non-Fibrous		10% Ca Carbonate 80% Matrix	None Detected
091616515-0034A		Homogeneous		10% Non-fibrous (Other)	
A-35-Compound	Room 167	White Non-Fibrous		70% Ca Carbonate 28% Non-fibrous (Other)	2% Chrysotile
091616515-0035		Homogeneous			
A-35-Drywall	Room 167	White Non-Fibrous	4% Cellulose	80% Gypsum 16% Non-fibrous (Other)	None Detected
091616515-0035A		Homogeneous			
A-36	Room 129	Black Non-Fibrous		60% Matrix 40% Non-fibrous (Other)	None Detected
091010515-0036		Homogeneous		2224 2 2 2 2	
A-37-Mastic	Room 129 - Brown, white mastic	White Non-Fibrous Homogeneous		60% Ca Carbonate 40% Non-fibrous (Other)	None Detected
A 07 Martha 0	Doom 100 Dawn	Broust		60% Mathin	None Detected
A-37-Mastic 2	white mastic	Brown Non-Fibrous Homogeneous		40% Non-fibrous (Other)	None Detected



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		Non-Asbestos			Asbestos
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре
A-38-Compound 1	Room 129 - Drywall & joint compound	White Non-Fibrous		80% Ca Carbonate 20% Non-fibrous (Other)	None Detected
091616515-0038		Homogeneous			
A-38-Compound 2	Room 129 - Drywall & joint compound	Tan Non-Fibrous Homogeneous		80% Ca Carbonate 18% Non-fibrous (Other)	2% Chrysotile
	Doom 120 Dravell 8	White		80% Current	Nono Detected
091616515-0038B	joint compound	Non-Fibrous Homogeneous	5% Cellulose	15% Non-fibrous (Other)	None Detected
Δ_30	Room 129 - 2x4	White	100% Cellulose		None Detected
001616515 0020	Fissured ceiling tile	Non-Fibrous			
A 40	Door 100 10	Desure			Nana Datastad
A-40	Perfortuated tile on	Brown Fibrous	100% Cellulose		None Detected
091616515-0040	waii	Homogeneous			
A-41	Room 128 - Green black mastic under carpet	Brown Non-Fibrous Homogeneous		60% Matrix 40% Non-fibrous (Other)	None Detected
	Poom 128 Brown	Brown/White		60% Ca Carbonate	None Detected
A-42-Mastic	white mastic	Non-Fibrous		40% Non-fibrous (Other)	None Delected
Mastics were inseperable fi	rom each other	Homogeneous			
A-42-Cove Base	Room 128 - Brown,	Gray		60% Matrix	None Detected
091616515-0042A	white mastic	Homogeneous		40% NOT-TIDIOUS (Other)	
Mastics were inseperable fi	rom each other	g			
A-43-Compound	Room 128 - Drywall &	Tan		80% Ca Carbonate	2% Chrysotile
091616515-0043	joint compound	Non-Fibrous Homogeneous		18% Non-fibrous (Other)	
A-43-Drywall	Room 128 - Drywall & joint compound	White Non-Fibrous	4% Cellulose	80% Gypsum 16% Non-fibrous (Other)	None Detected
A 44	Poom 126 Green	Brown/Green		60% Matrix	None Detected
091616515-0044	black mastic under carpet	Non-Fibrous Homogeneous		40% Non-fibrous (Other)	None Delected
A-45-Mastic	Room 126 - Brown.	White		60% Ca Carbonate	None Detected
	white mastic	Non-Fibrous		40% Non-fibrous (Other)	
091616515-0045		Homogeneous			
A-45-Mastic 2	Room 126 - Brown, white mastic	Brown Non-Fibrous		60% Matrix 40% Non-fibrous (Other)	None Detected
091616515-0045A		Homogeneous			
A-46-Compound 1	Room 126 - Drywall & joint compound	Tan Non-Fibrous		80% Ca Carbonate 18% Non-fibrous (Other)	2% Chrysotile
091616515-0046		Homogeneous			
A-46-Compound 2	Room 126 - Drywall & joint compound	Ian Non-Fibrous		80% Ca Carbonate 18% Non-fibrous (Other)	2% Chrysotile
091010515-0040A	D	Homogeneous	5 0/ O - II. I	000/ 0	News Detected
A-46-Drywall	joint compound	Non-Fibrous	5% Cellulose	80% Gypsum 15% Non-fibrous (Other)	None Detected
A 47	Doom 105 Orean	Ricek/Oracia		25% Quert-	Nono Dotastad
A-4/	black mastic under	Non-Fibrous		35% Quartz 60% Matrix 5% Non-fibrous (Other)	None Detected
A 40 Ele D		Brown			None Detected
A-48-FIOOF Base	Room 125 - Brown mastic on brown vinyl floor base	Brown Non-Fibrous Homogeneous		20% Non-fibrous (Other)	None Detected



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			Asbestos		
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре
A-48-Mastic	Room 125 - Brown mastic on brown vinyl	Brown Non-Fibrous	2% Fibrous (Other)	80% Matrix 18% Non-fibrous (Other)	None Detected
091616515-0048A	floor base	Homogeneous			
A-48-Mastic 2	Room 125 - Brown mastic on brown vinyl floor base	White Non-Fibrous		50% Ca Carbonate 50% Non-fibrous (Other)	None Detected
091616515-0046B		Homogeneous		700/ 02 02 11 22 24	00/ 01
A-49-Compound	joint compound	vvnite Non-Fibrous Homogeneous		28% Non-fibrous (Other)	2% Chrysotile
A 40 O a range a ura d 0	Deere 405 Dravell 9	Milita		700/ Ca Carbanata	20/ Charactile
A-49-Compound 2	joint compound	vvnite Non-Fibrous Homogeneous		28% Non-fibrous (Other)	2% Chrysotlie
A 40 Drawall	Deere 405 Dravell 9	Milita		000/ 0	Nega Data ata d
A-49-Drywall	joint compound	vvnite Fibrous Homogeneous	2% Cellulose	80% Gypsum 18% Non-fibrous (Other)	None Detected
031010313-0043D	D	Tomogeneous	700/ 0 - 10 - 10		New Peterted
A-5U	Fissured ceiling tile	Tan Fibrous Homogeneous	70% Cellulose	30% Non-librous (Other)	None Detected
A E1	Boom 125 12	Ton			None Detected
A-D I 091616515-0051	perfutated tile on ewall	Fibrous Homogeneous			None Delected
۵-52	Room 122 - 2x4	Tan	30% Cellulose	30% Non-fibrous (Other)	None Detected
091616515-0052	Fissured ceiling tile	Fibrous Homogeneous	40% Min. Wool		
A 53	Room 122 - 2x4	Grav	30% Cellulose	30% Non-fibrous (Other)	None Detected
091616515-0053	Fissured ceiling tile	Fibrous Homogeneous	40% Min. Wool		
A 54 Mastic	Room 122 - Green	Green		75% Matrix	None Detected
091616515-0054	black mastic under carpet	Non-Fibrous Homogeneous		25% Non-fibrous (Other)	None Deteoled
A-54-Mastic 2	Room 122 - Green	Black		80% Matrix	5% Chrysotile
091616515-0054A	black mastic under carpet	Non-Fibrous Homogeneous		15% Non-fibrous (Other)	
A-55-Mastic	Room 122 - Tan	Tan		50% Ca Carbonate	None Detected
091616515-0055	Brown mastic on black vinyl	Non-Fibrous Homogeneous		50% Non-fibrous (Other)	
A-55-Mastic 2	Room 122 - Tan	Brown	2% Fibrous (Other)	80% Matrix	None Detected
091616515-0055A	Brown mastic on black vinyl	Non-Fibrous Homogeneous		18% Non-fibrous (Other)	
A-56-Compound	Room 122 - Drywall	White		70% Ca Carbonate	2% Chrysotile
091616515-0056	and joint compound	Non-Fibrous Homogeneous		28% Non-fibrous (Other)	
A-56-Compound 2	Room 122 - Drywall	White		80% Ca Carbonate	None Detected
091616515-0056A	and joint compound	Non-Fibrous Homogeneous		20% Non-fibrous (Other)	
A-56-Compound 3	Room 122 - Drywall and joint compound	Tan Non-Fibrous		70% Ca Carbonate 28% Non-fibrous (Other)	2% Chrysotile
091616515-0056B		Homogeneous			
A-56-Drywall	Room 122 - Drywall and joint compound	White Fibrous	2% Cellulose	80% Gypsum 18% Non-fibrous (Other)	None Detected
091616515-0056C		Homogeneous			
A-57-Compound	Room 124 - Drywall and joint compound	Tan Non-Fibrous		75% Ca Carbonate 23% Non-fibrous (Other)	2% Chrysotile
091616515-0057		Homogeneous			
A-57-Drywall	Room 124 - Drywall and joint compound	White Fibrous	2% Cellulose	80% Gypsum 18% Non-fibrous (Other)	None Detected
091616515-0057A		Homogeneous			



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Project ID:

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbesto	<u>s</u>	Asbestos
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре
A-58-Floor Base	Room 121 - White brown mastic on brown vinyl floor base	Brown Non-Fibrous Homogeneous		80% Matrix 20% Non-fibrous (Other)	None Detected
A-58-Mastic 091616515-0058A	Room 121 - White brown mastic on brown vinyl floor base	White Non-Fibrous Homogeneous		50% Ca Carbonate 50% Non-fibrous (Other)	None Detected
A-58-Mastic 2	Room 121 - White brown mastic on brown vinyl floor base	Brown Non-Fibrous Homogeneous	2% Fibrous (Other)	80% Matrix 18% Non-fibrous (Other)	None Detected
A-59-Mastic	Room 121 - Green, Black mastic under carpet	Green Non-Fibrous Homogeneous		75% Matrix 25% Non-fibrous (Other)	None Detected
A-59-Mastic 2 091616515-0059A Result includes a small amo	Room 121 - Green, Black mastic under carpet punt of inseparable attached mat	Black Non-Fibrous Homogeneous erial		70% Matrix 25% Non-fibrous (Other)	5% Chrysotile
A-60-Compound	Room 121 - Drywall & joint compound	Various Non-Fibrous Homogeneous		75% Ca Carbonate 23% Non-fibrous (Other)	2% Chrysotile
A-60-Compound 2	Room 121 - Drywall & joint compound	Tan Non-Fibrous Homogeneous		75% Ca Carbonate 23% Non-fibrous (Other)	2% Chrysotile
A-60-Drywall	Room 121 - Drywall & joint compound	White Fibrous Homogeneous	2% Cellulose	80% Gypsum 18% Non-fibrous (Other)	None Detected

Analyst(s)

Christie Villanueva (28) Cecilia Yu (31) Jared Martin (22) Shane Heisser (32)

Lightle

Chris Dojlidko, Laboratory Manager or Other Approved Signatory

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Samples analyzed by EMSL Analytical, Inc San Leandro, CA NVLAP Lab Code 101048-3, WA C884

Initial report from: 09/01/2016 11:34:52

EMSL	EMSL Analytical, Inc. 464 McCormick Street San Leandro, CA 94577 Tel/Fax: (510) 895-3675 / (510) 895-3680 http://www.EMSL.com / sanleandrolab@emsl.com	EMSL Order: Customer ID: Customer PO: Project ID:	091622028 ECSI85
Attention:	Ryan Govan	Phone:	(925) 370-2222
	Environmental Construction Services, Inc.	Fax:	(925) 370-2282
	PO Box 5277	Received Date:	11/15/2016 9:30 AM
	Bay Point, CA 94565	Analysis Date:	11/28/2016
		Collected Date:	11/14/2016
Project:	American River College Liberal Arts Building 4700 College Oak Drive, Sac	ramento CA 95841	

			Asbestos		
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре
A-61-Drywall	Room 133 p - Drywall	White	3% Cellulose	70% Gypsum	None Detected
091622028-0001	and Joint compound	Fibrous Homogeneous		27% Non-fibrous (Other)	
A-61-Joint Compound	Room 133 p - Drywall	Tan Fibrous		80% Ca Carbonate	2% Chrysotile
091622028-0001A	and some compound	Homogeneous			
A-61-Joint Compound 2	Room 133 p - Drywall and Joint compound	White Non-Fibrous Homogeneous		80% Ca Carbonate 20% Non-fibrous (Other)	None Detected
A-62-Drvwall	Room 133 - Drywall	White	4% Cellulose	70% Gypsum	None Detected
091622028-0002	and Joint compound	Fibrous		26% Non-fibrous (Other)	
A-62- Joint Compound	Room 133 - Drywall	Tan		80% Ca Carbonate	2% Chrysotile
091622028-0002A	and Joint compound	Fibrous Homogeneous		18% Non-fibrous (Other)	270 0111 900110
A-63-Drywall	Room 133 d Drywall	White	3% Cellulose	70% Gypsum	None Detected
091622028-0003	and Joint compound	Fibrous Homogeneous		27% Non-fibrous (Other)	
A-63-Joint Compound	Room 133 d Drywall	White Non-Fibrous		80% Ca Carbonate	None Detected
091622028-0003A	and boint compound	Homogeneous			
A-64-Drywall	Room 133 v Drywall	White	3% Cellulose	70% Gypsum 27% Non-fibrous (Other)	None Detected
091622028-0004	and boint compound	Homogeneous			
A-64-Joint Compound	Room 133 v Drywall and Joint compound	Gray/White Fibrous		80% Ca Carbonate 18% Non-fibrous (Other)	2% Chrysotile
091622028-0004A		Homogeneous		· · ·	
A-64-Joint Compound 2	Room 133 v Drywall and Joint compound	Tan Fibrous		80% Ca Carbonate 18% Non-fibrous (Other)	2% Chrysotile
091622028-0004B		Homogeneous			
A-65-Drywall	Room 133 y Drywall and Joint compound	Brown/White Fibrous	8% Cellulose <1% Glass	80% Gypsum 12% Non-fibrous (Other)	None Detected
091622028-0005		Homogeneous			
A-65-Joint Compound	Room 133 y Drywall and Joint compound	White Non-Fibrous		80% Ca Carbonate 20% Non-fibrous (Other)	None Detected
A-66-Drywall	Room 135 - Drywall	White	3% Cellulose	70% Gypsum	None Detected
091622028-0006	and Joint compound	Fibrous Homogeneous		27% Non-fibrous (Other)	
A-66-Joint Compound	Room 135 - Drywall and Joint compound	Tan/White Non-Fibrous		80% Ca Carbonate 20% Non-fibrous (Other)	None Detected
091622028-0006A		Homogeneous			
A-67-Drywall	Room 131 - Drywall and Joint compound	White Fibrous	3% Cellulose	70% Gypsum 27% Non-fibrous (Other)	None Detected
091622028-0007		Homogeneous			
A-67-Joint Compound	Room 131 - Drywall and Joint compound	Tan/White Non-Fibrous		80% Ca Carbonate 20% Non-fibrous (Other)	None Detected
091622028-0007A		Homogeneous			



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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample A-68-Mastic	Description Room 133 - Drywall	Appearance	% Fibrous	% Non-Fibrous	% Type
A-68-Mastic	Room 133 - Drywall				
	and Joint compound	Brown Non-Fibrous		70% Matrix 30% Non-fibrous (Other)	None Detected
091622028-0008	above ceiling	Homogeneous			
A-68-Ceiling Tile	Room 133 - Drywall and Joint compound above ceiling	Orange Fibrous Homogeneous	85% Cellulose	15% Non-fibrous (Other)	None Detected
097622028-0008A		Homogeneous	10/ Callulana	700/ Онгонит	Nega Datastad
A-69-Drywall	Drywall and Joint	Fibrous	4% Cellulose	26% Non-fibrous (Other)	None Detected
	ceiling	Tiomogeneous			
A-69-Joint Compound	Hallway at 133 - Drywall and Joint	Tan Fibrous		80% Ca Carbonate 18% Non-fibrous (Other)	2% Chrysotile
091622028-0009A	compound above ceiling	Homogeneous			
A-70-Drywall	Room 133 d - Brown	Brown/White	8% Cellulose	80% Gypsum	None Detected
091622028-0010	mastic on old celling	Homogeneous	<1% Glass	12% Non-librous (Other)	
A-70-Joint Compound	Room 133 d - Brown mastic on old ceiling	Tan/White Non-Fibrous		80% Ca Carbonate 18% Non-fibrous (Other)	2% Chrysotile
091622028-0010A	5	Homogeneous			
A-70-Joint Compound 2	Room 133 d - Brown mastic on old ceiling	Tan Non-Fibrous		80% Ca Carbonate 18% Non-fibrous (Other)	2% Chrysotile
091622028-0010B		Homogeneous			
A-71-Mastic	Room 133 d - Pipe elbow insulation	Brown Non-Fibrous		70% Matrix 30% Non-fibrous (Other)	None Detected
091622028-0011	above ceiling	Homogeneous			
A-71-Ceiling Tile	Room 133 d - Pipe elbow insulation	Orange Fibrous	80% Cellulose	20% Non-fibrous (Other)	None Detected
091622028-0011A	above ceiling	Homogeneous			
A-72-Pipe Insulation	Room 135 - Joint tape on duct above	White Fibrous	12% Glass	50% Ca Carbonate 31% Non-fibrous (Other)	2% Amosite 5% Chrysotile
A 72 Tana	Boom 125 Joint	White	75% Colluloso	20% Matrix	None Detected
091622028-0012A	tape on duct above	Fibrous Homogeneous	75% Cellulose	5% Non-fibrous (Other)	None Delected
A-73	Room 135 - Joint	Tan	75% Cellulose	10% Ca Carbonate	None Detected
091622028-0013	ceiling	Homogeneous		13% Non-librous (Other)	
A-74	Room 135 - Pipe	Tan Fibrous	80% Cellulose	10% Ca Carbonate 10% Non-fibrous (Other)	None Detected
091622028-0014	above ceiling	Homogeneous			
A-75-Pipe Insulation	Room 135 - 2x4 Fissured ceiling tile (Tan Fibrous	12% Glass	50% Ca Carbonate 32% Non-fibrous (Other)	2% Amosite 4% Chrysotile
091622028-0015	Common)	Homogeneous			
A-75-Tape	Room 135 - 2x4 Fissured ceiling tile (White Fibrous	75% Cellulose	25% Non-fibrous (Other)	None Detected
091622028-0015A	Common)	Homogeneous			
A-76	Room 135 - 2x4 Fissured ceiling tile (Ian Fibrous	65% Cellulose 20% Min. Wool	10% Perlite 5% Non-fibrous (Other)	None Detected
A_77	Room 135 2v4	Gray/White		15% Non-fibrous (Other)	None Detected
A-77	Fissured ceiling tile (Fibrous Homogeneous	15% Min. Wool	15% Non-librous (Other)	None Detected
A-78	Room 131 - Brown	Tan	70% Cellulose	5% Non-fibrous (Other)	None Detected
091622028-0018	mastic on 12 ceiling tile above the suspended ceilign room 131	Fibrous Homogeneous	25% Min. Wool		None Delected

Initial report from: 11/28/2016 13:42:03



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		Non-Asbestos			Asbestos
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре
A-79-Mastic	Room 131 - Brown mastic on 12 ceiling tile above the suspended ceilion	Brown Non-Fibrous Homogeneous		70% Matrix 30% Non-fibrous (Other)	None Detected
	room 131				
A-79-Ceiling Tile	Room 131 - Brown mastic on 12 ceiling	White Fibrous	95% Min. Wool	5% Non-fibrous (Other)	None Detected
091622028-0019A	tile above the suspended ceilign room 131	Homogeneous			
A-80	Room 131 - 2x4 Fissured ceiling tile (White Fibrous	75% Cellulose 15% Min, Wool	10% Non-fibrous (Other)	None Detected
091622028-0020	replacement) room 131	Homogeneous			
A-81	Room 131 - 2x4 Fissured ceiling tile (Gray/White Fibrous	75% Cellulose 15% Min. Wool	10% Non-fibrous (Other)	None Detected
091622028-0021	Common)	Homogeneous			
A-82	Hallway at 1339 - 2x4 Fissured ceiling tile (Tan Fibrous	65% Cellulose 30% Min. Wool	5% Perlite	None Detected
091622028-0022	Common)	Homogeneous	000/ 0 - 11, 1		New Detected
A-83	Hallway at 1339	Gray/white Fibrous Homogeneous	20% Min. Wool	10% Perlite 10% Non-fibrous (Other)	None Detected
A-84	Room 133 n	Brown/Tan/Green	5% Cellulose	60% Matrix	None Detected
7104		Fibrous		35% Non-fibrous (Other)	
091622028-0024		Homogeneous			
		Breuve		700/ Matrix	Name Detected
091622028-0025	K0011 135 p	Non-Fibrous Homogeneous		30% Non-fibrous (Other)	None Delected
A-85-Mastic 2	Room 133 p	Tan/White		70% Matrix	None Detected
091622028-0025A		Non-Fibrous Homogeneous		30% Non-fibrous (Other)	
A-86	Room 133 t	Green Non-Fibrous		70% Matrix 30% Non-fibrous (Other)	None Detected
091622028-0026		Homogeneous			
A-87	Room 133 t	Brown Non-Fibrous		70% Matrix 30% Non-fibrous (Other)	None Detected
091622028-0027		Homogeneous			
A-88-Mastic	Room 133 t	Green Non-Fibrous Homogeneous		60% Matrix 40% Non-fibrous (Other)	None Detected
A-88-Mastic 2	Room 133 t	Black		70% Matrix	4% Chrysotile
091622028-0028A		Fibrous Homogeneous		26% Non-fibrous (Other)	
A-89	Room 133 d	Green		60% Matrix	None Detected
091622028-0029		Non-Fibrous Homogeneous		40% Non-fibrous (Other)	
A-90-Mastic	Room 133 v	Green Non-Fibrous		60% Matrix 40% Non-fibrous (Other)	None Detected
091622028-0030		Homogeneous			
A-90-Compound	Room 133 v	White Non-Fibrous		70% Ca Carbonate 30% Non-fibrous (Other)	None Detected
091622028-0030A		Homogeneous		700/ 14 1	
A-91-Mastic	Room 133 v	Brown Non-Fibrous		70% Matrix 30% Non-fibrous (Other)	None Detected
001022020-0031		nomoyeneous			



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Project ID:

	Non-Asbestos			Asbestos	
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре
A-91-Mastic 2	Room 133 v	Tan/White Non-Fibrous		70% Matrix 30% Non-fibrous (Other)	None Detected
091622028-0031A		Homogeneous			
A-92-Mastic	Room 133x - Green, black mastic under	Green Non-Fibrous		70% Matrix 30% Non-fibrous (Other)	None Detected
091622028-0032	carpet	Homogeneous			
A-92-Mastic 2	Room 133x - Green, black mastic under	Black Fibrous		60% Matrix 37% Non-fibrous (Other)	3% Chrysotile
091622028-0032A	carpet	Homogeneous			
Result includes a small amo	unt of inseparable attached ma	terial			
A-93-Mastic	Room 132 - Green,	Black		80% Matrix	4% Chrysotile
	black mastic under	Non-Fibrous		16% Non-fibrous (Other)	
091622028-0033	carpet	Homogeneous			
A-93-Mastic 2	Room 132 - Green,	Tan/Green		80% Matrix	None Detected
	black mastic under	Non-Fibrous		20% Non-fibrous (Other)	
091622028-0033A	carpet	Homogeneous			
A-94-Mastic	Room 135 - Green,	Green		60% Matrix	None Detected
001622028 0024	black mastic under	Non-Fibrous		40% Non-fibrous (Other)	
091622028-0034				000/ 14 / 1	201 01 11
A-94-Mastic 2	Room 135 - Green, black mastic under	Tan/Black		60% Matrix 38% Non fibrous (Other)	2% Chrysotile
091622028-0034A	carpet	Homogeneous			
Result includes a small amo	ount of inseparable attached ma	terial			
A-95-Mastic	Room 135 b - Green	Brown		70% Matrix	None Detected
	Brown mastic under	Non-Fibrous		30% Non-fibrous (Other)	
091622028-0035	carpet	Homogeneous			
A-95-Mastic 2	Room 135 b - Green ,	Green		70% Matrix	None Detected
	Brown mastic under	Non-Fibrous		30% Non-fibrous (Other)	
091622028-0035A	carpet	Homogeneous			
A-96-Ceramic Tile	Mens Restroom -	Blue		10% Quartz	None Detected
004000000 0000	Grout and mortar on	Non-Fibrous		90% Non-fibrous (Other)	
091622028-0036		Homogeneous			
A-96-Grout	Mens Restroom - Grout and mortar on	White Non Eibrous		15% Quartz 40% Ca Carbonate	None Detected
091622028-0036A	4" ceramic wall tile	Homogeneous		45% Non-fibrous (Other)	
	Mens Restroom	White		25% Quartz	None Detected
A-90-IVIOI lai	Grout and mortar on	Non-Fibrous		50% Ca Carbonate	None Delected
091622028-0036B	4" ceramic wall tile	Homogeneous		25% Non-fibrous (Other)	
A-96-Mastic	Mens Restroom -	White		60% Matrix	None Detected
	Grout and mortar on	Non-Fibrous		40% Non-fibrous (Other)	
091622028-0036C	4" ceramic wall tile	Homogeneous			
A-97-Ceramic Tile	Mens Restroom -	White		60% Quartz	None Detected
	Grout & Mortar on 2	Non-Fibrous		40% Non-fibrous (Other)	
091622028-0037	ceramic wall tiles	Homogeneous			
A-97-Mortar	Mens Restroom -	Gray/White		30% Quartz	None Detected
001622028-00374	Grout & Mortar on 2	Non-Fibrous		70% Non-fibrous (Other)	
A 07 Que 1	Maria Destroare	Crew/Blue		400/ Quests	Name Datastad
A-97-Grout	Grout & Mortar on 2	Non-Fibrous		40% Qualiz 60% Non-fibrous (Other)	None Delected
091622028-0037B	ceramic wall tiles	Homogeneous			
A-97-Ceramic Tile 2	Mens Restroom -	Blue		60% Quartz	None Detected
	Grout & Mortar on 2	Non-Fibrous		40% Non-fibrous (Other)	
091622028-0037C	ceramic wall tiles	Homogeneous			
A-97-Mastic	Mens Restroom -	White		20% Ca Carbonate	None Detected
	Grout & Mortar on 2	Non-Fibrous		70% Matrix	
091622028-0037D	ceramic wall tiles	Homogeneous		10% Non-fibrous (Other)	



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		Asbestos			
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре
A-98-Drywall	Mens Restroom - Drywall & joint	White Fibrous	3% Cellulose	70% Gypsum 27% Non-fibrous (Other)	None Detected
091622028-0038	compound compound	Homogeneous			
A-98-Joint Compound	Mens Restroom - Drywall & joint	White Non-Fibrous		80% Ca Carbonate 20% Non-fibrous (Other)	None Detected
091622028-0038A	compound compound	Homogeneous			
A-98-Joint Compound 2	Mens Restroom - Drywall & joint	White Non-Fibrous		80% Ca Carbonate 20% Non-fibrous (Other)	None Detected
091622028-0038B	compound compound	Homogeneous			
A-99-Drywall	Womens Restroom - Drywall & joint	White Fibrous	3% Cellulose	70% Gypsum 27% Non-fibrous (Other)	None Detected
091622028-0039	compound compound	Homogeneous			
A-99-Joint Compound	Womens Restroom - Drywall & joint compound compound	White Non-Fibrous Homogeneous		80% Ca Carbonate 20% Non-fibrous (Other)	None Detected
A-100-Ceramic Tile	Womens Restroom - Grout and Mortar on 2	Blue Non-Fibrous		20% Quartz 80% Non-fibrous (Other)	None Detected
091622028-0040	Ceramic floor this	Homogeneous			
A-100-Grout	Womens Restroom - Grout and Mortar on 2	Gray/Blue Non-Fibrous		35% Quartz 65% Non-fibrous (Other)	None Detected
091622028-0040A	Ceramic floor this	Homogeneous			
A-100-Mortar	Womens Restroom - Grout and Mortar on 2	Gray/White Non-Fibrous		35% Quartz 30% Ca Carbonate	None Detected
091622028-0040B	Ceramic floor this	Homogeneous		35% Non-fibrous (Other)	
A-100-Mastic	Womens Restroom - Grout and Mortar on 2	Tan Non-Fibrous		60% Matrix 40% Non-fibrous (Other)	None Detected
091622028-0040C	Ceramic floor this	Homogeneous			
A-101	Womens Restroom - Joint tape on duct	Tan/White Fibrous	85% Cellulose	15% Non-fibrous (Other)	None Detected
091622028-0041		Homogeneous			
A-102-Ceramic Tile	Womens Restroom - Grout & Mortar on 4'	White/Blue Non-Fibrous		50% Quartz 50% Non-fibrous (Other)	None Detected
091622028-0042	ceramic wall tiles	Homogeneous			
A-102-Grout	Womens Restroom - Grout & Mortar on 4'	White Non-Fibrous		50% Ca Carbonate 50% Non-fibrous (Other)	None Detected
091622028-0042A	ceramic wall tiles	Homogeneous			
A-102-Mastic	Womens Restroom - Grout & Mortar on 4'	White Non-Fibrous		30% Ca Carbonate 60% Matrix 10% Non fibrous (Other)	None Detected
091622028-00428		Homogeneous			
A-102-Joint Compound	Womens Restroom - Grout & Mortar on 4' ceramic wall tiles	White Non-Fibrous Homogeneous		80% Ca Carbonate 20% Non-fibrous (Other)	None Detected
A_102_loint Compound	Womens Restroom	W/hite		80% Ca Carbonata	None Detected
2	Grout & Mortar on 4' ceramic wall tiles	Non-Fibrous Homogeneous		20% Non-fibrous (Other)	
091622028-0042D		0			



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Analyst(s)

Beheshta Ahadi (65) Matthew Batongbacal (19)

Finlicher

Chris Dojlidko, Laboratory Manager or Other Approved Signatory

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Samples analyzed by EMSL Analytical, Inc San Leandro, CA NVLAP Lab Code 101048-3, WA C884

Initial report from: 11/28/2016 13:42:03

EMSL	EMSL Analytical, Inc. 464 McCormick Street San Leandro, CA 94577 Tel/Fax: (510) 895-3675 / (510) 895-3680 http://www.EMSL.com / sanleandrolab@emsl.com	EMSL Order: Customer ID: Customer PO: Project ID:	091622877 ECSI85
Attention:	Ryan Govan	Phone:	(925) 370-2222
	Environmental Construction Services, Inc.	Fax:	(925) 370-2282
	PO Box 5277	Received Date:	11/30/2016 9:30 AM
	Bay Point, CA 94565	Analysis Date:	12/01/2016 - 12/02/2016
		Collected Date:	11/25/2016
Project:	American River College - Liberal Arts Building - 4700 College Oak	Drive, Sacramento, Ca 958	341

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Asbestos		
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре
A-103-Drywall	Drywall and joint compound above	White Fibrous	3% Cellulose	70% Gypsum 27% Non-fibrous (Other)	None Detected
A-103-Joint Compound	Drywall and joint compound above	Tan Fibrous		80% Ca Carbonate 18% Non-fibrous (Other)	2% Chrysotile
091622877-0001A	ceiling, Room 152	Homogeneous			
A-104-Ceiling Tile	12" ceiling tile and brown mastic above suspended ceiling, Room 152	Orange Fibrous Homogeneous	85% Cellulose	15% Non-fibrous (Other)	None Detected
A-104-Mastic	12" ceiling tile and brown mastic above suspended ceiling, Room 152	Brown Non-Fibrous Homogeneous		70% Matrix 30% Non-fibrous (Other)	None Detected
A-105-Drywall	Drywall & joint compound, Room 156	White Fibrous Homogeneous	2% Cellulose <1% Glass	70% Gypsum 28% Non-fibrous (Other)	None Detected
A-105-Joint Compound 091622877-0003A	Drywall & joint compound, Room 156	Gray/White Fibrous Homogeneous		80% Ca Carbonate 18% Non-fibrous (Other)	2% Chrysotile
A-105-Joint Compound 2	Drywall & joint compound, Room 156	Yellow Fibrous Homogeneous		80% Ca Carbonate 18% Non-fibrous (Other)	2% Chrysotile
091622877-0003B					
A-106-Drywall	Drywall & joint compound, Room 152	White Fibrous Homogeneous	3% Cellulose	70% Gypsum 27% Non-fibrous (Other)	None Detected
A-106-Joint Compound	Drywall & joint compound, Room 152	White/Yellow Non-Fibrous Homogeneous		80% Ca Carbonate 20% Non-fibrous (Other)	None Detected
A-107-Drywall	Drywall & joint compound, Room 152	White Fibrous Homogeneous	4% Cellulose <1% Glass	70% Gypsum 26% Non-fibrous (Other)	None Detected
A-107-Joint Compound	Drywall & joint compound, Room 152	White/Yellow Non-Fibrous Homogeneous		80% Ca Carbonate 20% Non-fibrous (Other)	None Detected
A-108-Drywall	Drywall & joint compound, Room 152C	White Non-Fibrous Homogeneous	2% Cellulose	80% Gypsum 18% Non-fibrous (Other)	None Detected
A-108-Joint Compound	Drywall & joint compound, Room 152C	Tan Non-Fibrous Homogeneous		80% Ca Carbonate 18% Non-fibrous (Other)	2% Chrysotile
A-108-Joint Compound 2	Drywall & joint compound, Room 152C	Tan Non-Fibrous Homogeneous		80% Ca Carbonate 18% Non-fibrous (Other)	2% Chrysotile
A-109 091622877-0007	2'x4' fissured ceiling tile (common), Room 152	Gray Fibrous Homogeneous	65% Cellulose 15% Min. Wool	10% Perlite 10% Non-fibrous (Other)	None Detected

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

		Non-Asbestos			Asbestos	
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре	
A-110	2'x4' fissured ceiling tile (replacement),	Gray/White Fibrous	70% Cellulose 20% Min. Wool	10% Perlite	None Detected	
091622877-0008	Room 152	Homogeneous				
A-111	2'x4' fissured ceiling tile (common), Room	Gray Fibrous	65% Cellulose 20% Min. Wool	10% Perlite 5% Non-fibrous (Other)	None Detected	
091622877-0009	152	Homogeneous				
A-112	2'x4' fissured ceiling tile (replacement), Room 152	Gray Fibrous Homogeneous	60% Cellulose 20% Min. Wool	10% Perlite 10% Non-fibrous (Other)	None Detected	
		Maite		10% Co Cortegoto	Name Datastad	
A-113-Floor Tile	orange, black mastic, Room 156	Non-Fibrous		60% Non-fibrous (Other)	None Detected	
A 112 Mostia	White 12" floor tile	Orango		60% Motrix	None Detected	
A-113-Mastic	orange, black mastic, Room 156	Non-Fibrous		40% Non-fibrous (Other)	None Detected	
A_113_Mastic 2	White 12" floor tile	Black		60% Matrix	2% Chrysotile	
091622877-0011B	orange, black mastic, Room 156	Fibrous Homogeneous		38% Non-fibrous (Other)		
A-114-Mastic	Orange, black mastic	Yellow		60% Matrix	None Detected	
091622877-0012	under carpet, Room 152	Non-Fibrous Homogeneous		40% Non-fibrous (Other)		
A-114-Mastic 2	Orange, black mastic	Black		70% Matrix	3% Chrysotile	
091622877-0012A	under carpet, Room 152	Fibrous Homogeneous		27% Non-fibrous (Other)		
A-115	White mastic on black	White		60% Matrix	None Detected	
091622877-0013	vinyl floor base, Room 152C	Non-Fibrous Homogeneous		40% Non-fibrous (Other)		
A-116-Vinvl Floor Base	Black vinvl floor base.	Black		30% Ca Carbonate	None Detected	
	white, brown mastic,	Non-Fibrous		60% Matrix		
091622877-0014	Room 152	Homogeneous		10% Non-fibrous (Other)		
A-116-Mastic	Black vinyl floor base, white, brown mastic,	Brown Non-Fibrous		70% Matrix 30% Non-fibrous (Other)	None Detected	
091622877-0014A	Room 152	Homogeneous				
A-117-Mastic	Orange, black mastic under carpet, Room	Yellow Non-Fibrous		60% Matrix 40% Non-fibrous (Other)	None Detected	
	152	Romogeneous		700/ Мана		
A-117-Mastic 2	Urange, black mastic under carpet, Room 152	Black Fibrous Homogeneous		27% Non-fibrous (Other)	3% Chrysotile	
A-118	Brown door core,	Brown	65% Cellulose	35% Non-fibrous (Other)	None Detected	
091622877-0016		Homogeneous				
A-119-Wall Tile	12" fissured wall tile, brown mastic, Room	Gray/White Fibrous	65% Cellulose 15% Min. Wool	10% Perlite 10% Non-fibrous (Other)	None Detected	
091622877-0017	152B	Homogeneous		· · ·		
A-119-Mastic	12" fissured wall tile, brown mastic, Room	Brown Non-Fibrous		70% Matrix 30% Non-fibrous (Other)	None Detected	
091622877-0017A	152B	Homogeneous				
A-120	2'x4' fissured ceiling tile (replacement),	Tan/White Fibrous	70% Cellulose 20% Min. Wool	10% Perlite	None Detected	
091022011-0018			05% 0 " '		New Defect	
A-121	2'x4' fissured ceiling tile (common), Room 154	Gray/White Fibrous Homogeneous	65% Cellulose 15% Min. Wool	10% Perlite 10% Non-fibrous (Other)	None Detected	
A 100 Eleor Tile		Plue		50% Co Corbonata	Nono Dotostad	
	black mastic, Room	Non-Fibrous		50% Non-fibrous (Other)		
091622877-0020	154	Homogeneous		()		

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Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

		Non-Asbestos			Asbestos	
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре	
A-122-Mastic	Blue 12" floor tile, black mastic, Room	Gray/Tan Fibrous	15% Cellulose	60% Matrix 25% Non-fibrous (Other)	None Detected	
091622877-0020A Result includes a small amou	154 nt of inseparable attached mat	Homogeneous erial				
A-123-Drywall	Drywall and joint	White	2% Cellulose	70% Gypsum	None Detected	
091622877-0021	compound, Room 154	Fibrous Homogeneous	<1% Glass	28% Non-fibrous (Other)		
A-123-Joint Compound	Drywall and joint	Gray/White		80% Ca Carbonate	2% Chrysotile	
091622877-0021A	compound, Room 154	Fibrous Homogeneous		18% Non-fibrous (Other)	-	
A-123-Joint Compound 2	Drywall and joint compound, Room 154	Yellow Fibrous Homogeneous		80% Ca Carbonate 18% Non-fibrous (Other)	2% Chrysotile	
091622877-0021B		Homogeneous				
A-124	White sealer on duct above ceiling, Room	White Non-Fibrous		25% Ca Carbonate 60% Matrix	None Detected	
091622877-0022	154	Homogeneous		15% Non-fibrous (Other)		
A-125-Floor Tile	Blue 12" floor tile, orange, black mastic,	Blue Non-Fibrous		40% Ca Carbonate 60% Non-fibrous (Other)	None Detected	
A-125-Mastic	Blue 12" floor tile,	Brown/Black		60% Matrix	2% Chrysotile	
091622877-0023A	Room 157	Homogeneous				
A-125-Mastic 2	Blue 12" floor tile, orange, black mastic,	Yellow Non-Fibrous		60% Matrix 40% Non-fibrous (Other)	None Detected	
091622877-0023B	Room 157	Homogeneous				
A-125-Mastic 3	Blue 12" floor tile, orange, black mastic, Room 157	Gray Fibrous Homogeneous	12% Cellulose	60% Matrix 28% Non-fibrous (Other)	None Detected	
A-126-Drywall	Drywall and joint	White	2% Cellulose	70% Gypsum	None Detected	
091622877-0024	compound, Room 157	Homogeneous		28% Non-fibrous (Other)		
A-126-Joint Compound	Drywall and joint compound. Room 157	Gray/White Fibrous		80% Ca Carbonate 18% Non-fibrous (Other)	2% Chrysotile	
091622877-0024A	,,	Homogeneous				
A-126-Joint Compound 2	Drywall and joint compound, Room 157	Yellow Fibrous		80% Ca Carbonate 18% Non-fibrous (Other)	2% Chrysotile	
091622877-0024B		Homogeneous				
A-126-Joint Compound 3	Drywall and joint compound, Room 157	White Non-Fibrous		80% Ca Carbonate 20% Non-fibrous (Other)	None Detected	
091622877-0024C		Homogeneous				
A-127-Mastic	White, brown mastic on blue vinyl floor	White/Yellow Non-Fibrous		70% Matrix 30% Non-fibrous (Other)	None Detected	
091622877-0025	base, Room 157	Homogeneous				
A-127-Mastic 2	White, brown mastic on blue vinyl floor	Brown Non-Fibrous		60% Matrix 40% Non-fibrous (Other)	None Detected	
4 100 Floor Tile	White 12" floor tile	Molifogeneous		EQ9/ Co Corbonata	None Detected	
A-128-FIOOF THE	orange, black mastic, Room 120C	Non-Fibrous Homogeneous		50% Ca Carbonate 50% Non-fibrous (Other)	None Detected	
A-128-Mastic	White 12" floor tile,	Yellow		60% Matrix	None Detected	
091622877-0026A	orange, black mastic, Room 120C	Non-Fibrous Homogeneous		40% Non-fibrous (Other)		
A-128-Mastic 2	White 12" floor tile, orange, black mastic,	Black Fibrous		60% Matrix 37% Non-fibrous (Other)	3% Chrysotile	
091622877-0026B	Room 120C	Homogeneous				
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Project ID:

		Non-Asbestos			<u>Asbestos</u>	
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Type	
A-129-Floor Tile	White 12" floor tile, black mastic, Room	White/Beige Non-Fibrous		50% Ca Carbonate 50% Non-fibrous (Other)	None Detected	
091622877-0027	120B	Homogeneous				
A-129-Mastic	White 12" floor tile, black mastic, Room				Not Submitted	
091622877-0027A	120B					
A-130-Drywall	Drywall and joint compound, Room	White Fibrous	3% Cellulose	70% Gypsum 27% Non-fibrous (Other)	None Detected	
091622877-0028	120D	Homogeneous				
A-130-Joint Compound	Drywall and joint compound, Room	Gray/White Fibrous		80% Ca Carbonate 18% Non-fibrous (Other)	2% Chrysotile	
091622877-0028A	120D	Homogeneous				
A-130-Joint Compound 2	Drywall and joint compound, Room 120D	Yellow Fibrous Homogeneous		80% Ca Carbonate 18% Non-fibrous (Other)	2% Chrysotile	
091622877-0028B		J.				
A-131-Drywall	Drywall and joint compound, Room	White Fibrous	3% Cellulose	70% Gypsum 27% Non-fibrous (Other)	None Detected	
091622877-0029	120A	Homogeneous				
A-131-Joint Compound	Drywall and joint compound, Room	Gray/White Fibrous Homogeneous		80% Ca Carbonate 18% Non-fibrous (Other)	2% Chrysotile	
A 121 Joint Compound		Vollow		80% Co Corbonato	2% Chrysotile	
2	compound, Room	Fibrous		18% Non-fibrous (Other)	2% Chrysotile	
	120A	Homogeneous				
091622877-0029B						
A-132-Drywall	Drywall and joint compound, Room	White Non-Fibrous	2% Cellulose	80% Gypsum 18% Non-fibrous (Other)	None Detected	
	T20C	Tor		20% Co Corbonata		
A-132-Joint Compound	compound, Room	Non-Fibrous Homogeneous		18% Non-fibrous (Other)	2% Chrysotile	
A-132-Joint Compound	Drywall and joint	Tan		80% Ca Carbonate	<1% Chrysotile	
2	compound, Room	Non-Fibrous		20% Non-fibrous (Other)		
	120C	Homogeneous				
091622877-0030B						
A-132-Joint Compound 3	Drywall and joint compound, Room 120C	Tan Non-Fibrous Homogeneous		98% Non-fibrous (Other)	2% Chrysotile	
091622877-0030C	1200	Homogoneouo				
A-133	2'x4' fissured ceiling tile, Room 120C	Tan/White Fibrous	75% Cellulose 5% Min. Wool	10% Perlite 10% Non-fibrous (Other)	None Detected	
091622877-0031		Homogeneous				
A-134-Ceiling Tile	12" ceiling tile, brown mastic above	Orange Fibrous	85% Cellulose	15% Non-fibrous (Other)	None Detected	
091622877-0032	suspended ceiling, Room 120C	Homogeneous				
A-134-Mastic	12" ceiling tile, brown mastic above	Brown Non-Fibrous		70% Matrix 30% Non-fibrous (Other)	None Detected	
091622877-0032A	suspended ceiling, Room 120C	Homogeneous				
A-135-Mastic	Tan, brown mastic on black vinyl floor base,	Brown Non-Fibrous		70% Matrix 30% Non-fibrous (Other)	None Detected	
091622877-0033	Room 120C	Homogeneous				
A-135-Mastic 2	Tan, brown mastic on black vinyl floor base,	Tan Non-Fibrous		60% Matrix 40% Non-fibrous (Other)	None Detected	
091622877-0033A	R00m 120C	Homogeneous				



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Sample Description Appearance % Fibrous % Non-Fibrous % Non-Fibrous % Non-Fibrous Ar38-Drywall Drywall and joint Write 3% Colutose 27% Non-Fibrous 27% Non-Fibrous 27% Colutose 27% Non-Fibrous 27% Colutose 27% Non-Fibrous 27% Colutose 27% Non-fibrous (Other) None Detected 47.137 Joint tape on duct Ter 65% Colutose 30% Metrix None Detected 27% Non-fibrous (Other) None Detected 47.138 Mort Room Fibros 65% Colutose 30% Metrix None Detected 37% Colutose			Non-Asbestos			Asbestos	
A-136-Drywall and SAT-36-Drywall and SAT-36-Drywall and SAT-36-Drywall and SAT-36-Drywall and joint omyound, Mech Roam While Homogeneous 3% Celuiose 27% Non-Hinous (Other) Nume Detected A-136-Joint Compound SAT-36-Drywall and joint omyound, Mech Roam Grywall and joint Compound, Mech Roam Grywall and joint Compound, Mech Roam Grywall and joint Compound, Mech Roam Grywall and joint Compound, Mech Roam Status Roam 80% Ca Carbonate 10% Non-Hinous (Other) 2% Chrysofile A-136-Joint Compound Satus Roam Joint Tage on duct Roam Tan Roam 60% Celuiose 80% Calcus Mech Room 30% Metrix Fibrous None Detected A-137 Jaint Tage on duct Mech Room Tan Fibrous 60% Celuiose 80% Metrix Homogeneous 30% Metrix 7% Non-Hinous (Other) None Detected A-139 Jaint Tage on duct Mech Room Tan Fibrous 65% Celuiose 7% Non-Hinous (Other) None Detected A-139 White seator on india of duct, Mech Room Fibrous 7% Celuiose 10% Kinse 7% Calcubonate 10% Kinse 7% Calcubonate 10% Kinse None Detected A-140 Pipe insulation on hot water under PVC india water under PVC Timogeneous 10% Celuiose 10% Kinse 7% Celuiose 10% Kinse None Detected A-142 Roams aver introngeneous Timogeneous 10% Kinse None Detected A-142 Roams aver introngeneous Timogeneous 5% Non-Hinous (Other) None Det	Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Type	
answer/add Foldingenious Foldingenious B0% Cal Carbonate 2% Chrysolite Ar136-Joint Compound 2 Drywall and Joint Eibrous Termous 0% Cal Carbonate 2% Chrysolite Ar136-Joint Compound 2 Drywall and Joint Eibrous Yellow 0% Cal Carbonate 2% Chrysolite Ar136-Joint Compound 2 Drywall and Joint Eibrous Yellow 0% Cal Carbonate 2% Chrysolite Ar136-Joint Compound 2 Drywall and Joint Homogenous 10% Non-Horous (Other) None Detected Ar137 Joint lage on duct, Ar138 Termos 60% Cellulose 30% Matix None Detected Ar138 Joint lage on duct, Ar138 Termos 65% Cellulose 30% Matix None Detected Ar138 Joint lage on duct, Ar138 Termos 7% Cellulose 7% Cellulose 7% Cellulose 3% Matix Ar140 Pipe Insulation on tot Water under PVC Write 7% Cellulose 7% Cellulose 1% Non-Horous (Other) None Detected Ar141 Pipe Insulation on tot Water under PVC Write 7% Cellulose 7% Cellulose 1% Non-Horous (Other) None Detected </td <td>A-136-Drywall</td> <td>Drywall and joint compound, Mech</td> <td>White Fibrous</td> <td>3% Cellulose</td> <td>70% Gypsum 27% Non-fibrous (Other)</td> <td>None Detected</td>	A-136-Drywall	Drywall and joint compound, Mech	White Fibrous	3% Cellulose	70% Gypsum 27% Non-fibrous (Other)	None Detected	
A-138-Joint Compound Dywall and joint pracestrations And Compound Cherry Provide an accestration of the provide provide and provide an accestration of the provide and the provide provide and provide and provide and provide provide and provide and provide provide and provide and provide provide and provide and provide and provide and provide provide and provide and provide	091622877-0034	Room	Homogeneous				
A 136 Joint Compound 2 A 137 Joint Compound 2 A 136 Joint Compound 4 Fibrous 6 Fibrous 7 Fibrous	A-136-Joint Compound	Drywall and joint compound, Mech	Gray/White Fibrous		80% Ca Carbonate 18% Non-fibrous (Other)	2% Chrysotile	
Ar 196 Joint Compound 2 Drywall and jent 2 Roma Ar 197 Joint Compound 2 Joint Lape on duct, Ar 197 Joint Lape on duct, Ar 197 Joint Lape on duct, Ar 197 Joint Lape on duct, Ar 198 Joint Lape on duct, Ar 199 Insulation on hot Water under PVC Florous 12% Glass 12% Glass 13% Non-florous (Other) Ar 142 Water under PVC Florous 10% Glass 13% Non-florous (Other) Ar 143 Caurvas over JoiceL Mech Room Homogeneous Ar 143 Caurvas over Joint Lape None Detected Water under PVC Florous 10% Glass 13% Non-florous (Other) Ar 143 Caurvas over Joint Lape None Detected Water under PVC Florous Ar 144 Pipe Insulation on hot Water Under PVC Florous Ar 144 Pipe Insulation on hot Water Under PVC Florous Ar 145 Caurvas over Joint Lape None Detected Homogeneous Ar 144 - Insulation Ar 144	091622877-0034A	Room	Homogeneous				
Ar.137 Joint tape on duct, Meth Room Tan Forous Homogeneous 60% Cellulose 30% Matrix 10% Mon-florous (Other) None Detected 4.738 Joint tape on duct, Meth Room Tan Forous 65% Cellulose 30% Matrix 5% Mon-florous (Other) None Detected 4.738 Joint tape on duct, Forous Tan Forous 65% Cellulose 30% Matrix 5% Mon-florous (Other) None Detected 4.739 White sealer on inaide water under PVC Forous 27% Mon-florous (Other) None Detected 4.740 Pipe insulation on hot water under PVC Forous 12% Cellulose 70% Ca Carbonate 10% Celluse None Detected 4.741 Pipe insulation on hot water under PVC Forous 12% Cellulose 70% Ca Carbonate 10% Celluse None Detected 4.742 Pipe insulation on hot water under PVC Forous 10% Cellulose 70% Ca Carbonate 10% Celluse None Detected 6000000000000000000000000000000000000	A-136-Joint Compound 2	Drywall and joint compound, Mech	Yellow Fibrous		80% Ca Carbonate 18% Non-fibrous (Other)	2% Chrysotile	
A-137 Joint tape on duct, A-137 Joint tape on duct, A-138 Joint tape on duct, A-138 Joint tape on duct, Mech Room R-Fibrous A-139 White sealer on inside Grav A-139 Office sealer on inside Grav A-139 Office sealer on inside Grav A-139 Office sealer on inside Grav A-139 Office sealer on inside Grav A-140 Pipe insulation on hot A-141 Pipe insulation on hot A-141 Pipe insulation on hot A-142 Pipe insulation on hot A-142 Pipe insulation on hot A-142 Pipe insulation on hot A-143 Grava over Graves over A-144 Insulation on hot A-143 Grava over A-144 Carrwas over A-144 Carrwas over A-144 Carrwas over A-144 Carrwas over A-144 Pipe insulation on hot A-145 Graves over A-146 Pipe insulation on hot A-142 Pipe insulation on hot A-143 Gravas over A-144 Pipe insulation on hot A-144 Pipe insulation on hot A-143 Gravas over A-144 Carrwas over A-144 Pipe insulation on hot A-145 Graves over A-144 Pipe insulation on hot A-145 Graves over A-146 Carrbonate A-146 Carrbonate A-147 Pipe insulation on hot A-148 Carrbonate A-148 Carrbonate A-149 Pipe insulation on hot A-149 Pipe insulation on hot A-144 Carrbonate A-144 Carrbonate A-144 Carrbonate A-145 Carrbonate A-145 Carrbonate A-146 Carrbonate A-146 Carrbonate A-147 Pipe insulation on hot A-148 Carrbonate A-148 Carrbonate A-144 Pipe insulation on hot A-144 Carrbonate A-144 Pipe insulation on hot A-144 Carrbonate A-144 Carrbonate A-144 Carrbonate A-144 Pipe insulation A-144 Pipe insulation A-145 Pipe insulation A-145 Pipe i	001622877-0034B	Room	Homogeneous				
Ari 13' John Lage Of ULU, Planta Dis Sentudes John Lage Of ULU, Planta Dis Sentudes John Lage Of ULU, Planta Note Debudge 9452877-0023 Mech Room Fibrous 10% Kent-Rorous (Other) None Detected Ari 33 Joint tape on ULU, Fibrous Fibrous 5% Kon-Abrous (Other) None Detected Ari 34 Mech Room Fibrous 5% Kon-Abrous (Other) None Detected Ari 35 White sealer on Inside Graze Gray 70% Ca Carbonate 10% Caludose 70% Ca Carbonate 10% Kon-Abrous (Other) None Detected Ari 40 Pipe insulation on hot water under FVC Fibrous 12% Glass 10% Kolutose 10% Glass 70% Ca Carbonate 10% Kon-Abrous (Other) None Detected Ari 41 Pipe insulation on hot water under FVC Fibrous 10% Caludose 10% Glass 70% Ca Carbonate 10% Glass None Detected Ari 42 Pipe insulation on hot water under FVC Fibrous 10% Glass 10% Kon-Abrous (Other) None Detected Ari 43 Garwas over not Naver, Mech Room Homogeneous 5% Nin. Wool 5% Non-Abrous (Other) None Detected Ari 44-Hraging Garwas over Room Fibrous 6% Nin. Wool 5% Non-Abrous (Other) <t< td=""><td>A 107</td><td>loint tono on duct</td><td>Ton</td><td>60% Colluloso</td><td>20% Matrix</td><td>None Detected</td></t<>	A 107	loint tono on duct	Ton	60% Colluloso	20% Matrix	None Detected	
A-138 Joint tape on duct, Mech Room Tan Fibrous B5% Cellulose S% Non-fibrous (Other) None Detected A-138 Mech Room Fibrous 70% Cabronate 27% Non-fibrous (Other) 3% Chrysotlie A-139 White sealer on inside of ucut, Mech Room Gray Homogeneous 70% Cabronate 27% Non-fibrous (Other) 3% Chrysotlie A-140 Pipe insulation on hot water under PVC isclear under Under isclear U	A-137	Mech Room	Fibrous		10% Non-fibrous (Other)	None Delected	
A-139 Joint Lippe th Out, Joint Call and Solve Calludes Joint Cal	A 400	laint tana an duat	Ton	65% Collulado	20% Motrix	Nana Datastad	
Artase Ministructure 70% Cal Carbonate 3% Chrysolile artase Gray 27% Non-florous (Other) 3% Chrysolile artase Pipe insulation on hot, with White 7% Cellulose 70% Ca Carbonate 3% Chrysolile artase Pipe insulation on hot, with White 7% Cellulose 70% Ca Carbonate None Detected artase water under PVC Fibrous 10% Galass 10% Non-fibrous (Other) None Detected artase rougeneous 10% Galass 10% Non-fibrous (Other) None Detected artase ruder PVC Fibrous 10% Galass 13% Non-fibrous (Other) None Detected artase ruder PVC Fibrous 10% Galass 13% Non-fibrous (Other) None Detected artase ruder under PVC Fibrous 95% Min. Wool 5% Non-fibrous (Other) None Detected artase ruder water, Mech Fibrous 95% Min. Wool 5% Non-fibrous (Other) None Detected artase ruder water, Mech Fibrous 95% Min. Wool 5% Non-fibrous (Other) None De	A-138	Mech Room	Fibrous	65% Cellulose	5% Non-fibrous (Other)	None Delected	
A-109 virite search on Inside of duct, Mech Room Gray 70% Cellulose 27% Non-florous (Other) 0 in 622877-0037 A-140 Pipe Insulation on Not water under PVC Fibrous 12% Cellulose 70% Ca Carbonate None Detected A-141 Pipe Insulation on Not water under PVC Fibrous 10% Cellulose 70% Ca Carbonate None Detected A-141 Pipe Insulation on Not water under PVC Fibrous 10% Cellulose 70% Ca Carbonate None Detected A-142 Pipe Insulation on Not water under PVC Fibrous 10% Cellulose 70% Ca Carbonate None Detected 0#1622877-0039 jacket, Mech Room Homogeneous 10% Glass 13% Non-fibrous (Other) None Detected 0#1622877-004 jacket, Mech Room Orange 95% Min. Wool 5% Non-fibrous (Other) None Detected 0#162877-004 gacket, Mech Room Fibrous Fibrous 5% Non-fibrous (Other) None Detected 0#162877-004 gacket, Mech Room Fibrous 95% Min. Wool 5% Non-fibrous (Other) None Detected 0#162877-004 None Vater, Mech Room Fibrous 95% Min. Wool 5% Non-fibrous (Other) None Detected 0#162877-0042 On hot Water, Mech Room Fibrous 90% Min. Wool 10% Non-fibrous (Other) <t< td=""><td>A 420</td><td></td><td>Creat</td><td></td><td>70% On Carbonata</td><td>20/ Obrigatile</td></t<>	A 420		Creat		70% On Carbonata	20/ Obrigatile	
ArtAdo Pipe insulation on hot water, Mech Room None Detected A-140 Pipe insulation on hot water under PVC Fibrous 12% Glass 11% Non-fibrous (Other) None Detected A-141 Pipe insulation on hot water under PVC Fibrous 10% Cellulose 70% Ca Carbonate None Detected A-142 Pipe insulation on hot water under PVC White 7% Cellulose 70% Ca Carbonate None Detected A-142 Pipe insulation on hot water under PVC Fibrous 10% Glass 13% Non-fibrous (Other) None Detected Ør#22877-0040 jacket, Mech Room Homogeneous 10% Glass 13% Non-fibrous (Other) None Detected Ør#22877-0040 on hot water, Mech Room Homogeneous 10% Glass 13% Non-fibrous (Other) None Detected Ør#22877-0042 on hot water, Mech Room Fibrous 95% Min. Wool 5% Non-fibrous (Other) None Detected Ør#22877-0042 on hot water, Mech Room Fibrous 65% Cellulose 30% Matrix None Detected Ør#22877-0042 on hot water, Mech Room Fibrous 65% Cellulose 30% Matrix N	A-139	of duct, Mech Room	Gray Fibrous Homogeneous		27% Non-fibrous (Other)	3% Chrysotile	
A-140 Pipe insulation on Not Write 7% Cellulose 7% Ca Carbonate None Detected Pibrous (Other) acket, Mech Room None Detected PVC Fibrous 12% Glass 10% Non-fibrous (Other) Anne Detected 978277-2043 Pibrous PVC Fibrous 10% Glass 10% Non-fibrous (Other) PVC Fibrous 12% Glass 10% Non-fibrous (Other) PVC Fibrous 10% Glass 10% Non-fibrous (Other) None Detected 978277-2040 PVC Fibrous PVC Fibrous 10% Glass 10% Non-fibrous (Other) None Detected 978277-2040 PVC Fibrous Pibrous		Die e in eel etien een heet	Multi	70/ 0 - 11 - 1	70% 0- 0	News Detected	
ArtAI Picket, Rech None Detected ArtAI Pipe insulation on hot water under PVC Fibrous 10% Cellulose 70% Ca Carbonate None Detected ArtAI Pipe insulation on hot water under PVC Fibrous 10% Glass 10% Non-fibrous (Other) None Detected ArtAI Pipe insulation on hot water under PVC White 7% Cellulose 70% Ca Carbonate None Detected ArtAI Garvas over Jacket, Mech Room Homogeneous 10% Glass 13% Non-fibrous (Other) None Detected ArtAI Garvas over Orange 95% Min. Wool 5% Non-fibrous (Other) None Detected 69/622877-0047 On hot water, Mech Room Homogeneous 95% Min. Wool 5% Non-fibrous (Other) None Detected Art44-Wrap Carvas over Tan 65% Cellulose 30% Matrix None Detected Room Fibrous Fibrous 90% Min. Wool 10% Non-fibrous (Other) None Detected Art44-Wrap Carvas over Tan 65% Cellulose 30% Matrix None Detected Room Fibrous	A-14U	Pipe insulation on not water under PVC	Fibrous	12% Glass	11% Non-fibrous (Other)	None Detected	
A-141 Pipe insulation on not water under PVC White Fibrous 10% Glass 10% Glass 10% KA Carbonate 10% KANn-fibrous (Other) None Detected A-142 Pipe insulation on hot water under PVC Fibrous 10% Glass 10% Glass 10% KANn-fibrous (Other) None Detected 09/62277-0404 jacket, Mech Room Homogeneous 10% Glass 13% Non-fibrous (Other) None Detected A-143 Carvas over fiberglass insulation erezerr-044 Oranyas over fiberglass insulation fiberglass insulation fiberous Yellow fiberglass insulation fiber	091022077-0030		Tiomogeneous	(0)(0			
03722370339 jacket, Mech Room Holingerieus A-142 Pipe insulation on bl White 7% Cellulose 70% Ca Carbonate None Detected 09162277.0040 jacket, Mech Room Homogeneous 10% Glass 13% Non-fibrous (Other) None Detected A-143 Carvas over Orange 95% Min. Wool 5% Non-fibrous (Other) None Detected A-143 Carvas over Orange 95% Min. Wool 5% Non-fibrous (Other) None Detected 091622877.0042 on hot water, Mech Homogeneous 95% Min. Wool 5% Non-fibrous (Other) None Detected 091622877.0042 on hot water, Mech Homogeneous 95% Min. Wool 5% Non-fibrous (Other) None Detected 091622877.0042 on hot water, Mech Homogeneous 80% Matrix None Detected 091622877.0042 on hot water, Mech Homogeneous 5% Non-fibrous (Other) None Detected 091622877.0042 on hot water, Mech Homogeneous 5% Non-fibrous (Other) None Detected 091622877.0042 on hot water, Mech Homogeneous 60% Cellulose 30% Matrix None Detected 091622877.	A-141	Pipe insulation on hot water under PVC	White Fibrous	10% Cellulose 10% Glass	10% Ca Carbonate	None Detected	
A-142 Pipe insulation on hot wite 7% Cellulose 70% Ca Carbonate None Detected water under PVC Fibrous 10% Glass 13% Non-fibrous (Other) A-143 Teberglass insulation Fibrous Fibrous on hot water, Mech Homogeneous Room A-144-Insulation Carvas over Yellow Pibrous Room A-144-Insulation Fibrous on hot water, Mech Homogeneous Room A-144-Wrap Carvas over Yellow Pibrous Room A-144-Wrap Carvas over Yellow Fibrous Room A-144-Insulation fiberglass insulation Fibrous Room A-144-Insulation Carvas over Yellow Pibrous A-144-Wrap Carvas over Yellow Pibrous Room A-144-Insulation Fibrous on hot water, Mech Homogeneous Room A-144-Wrap Carvas over Yellow Pibrous A-144-Wrap Carvas over Yellow Pibrous A-145-Insulation Fibrous A-146-Insulation fiberglass insulation Fibrous A-146-Insulation fiberglass insulation Fibrous A-145-Insulation fiberglass insulation Fibrous A-146-Insulation fiberglass insulation Fibrous A-146-Insulation fiberglass insulation Fibrous A-146-Insulation A-146-Insulation A-146-Insulation fiberglass insulation Fibrous A-146-Insulat	091622677-0039		Homogeneous				
A-143 Canvas over Orange 95% Min. Wool 5% Non-fibrous (Other) None Detected fiberglass insulation Fibrous Room A-144-Insulation Canvas over Yellow 95% Min. Wool 5% Non-fibrous (Other) None Detected Fiberglass insulation Fibrous Homogeneous Room A-144-Wrap Canvas over Tan 65% Cellulose 30% Matrix 5% Non-fibrous (Other) None Detected fiberglass insulation Fibrous Room A-145-Insulation Canvas over Yellow 90% Min. Wool 10% Non-fibrous (Other) None Detected 5% Non-fibrous (Other) None Detect	A-142	Pipe insulation on hot water under PVC	White Fibrous	7% Cellulose 10% Glass	70% Ca Carbonate 13% Non-fibrous (Other)	None Detected	
A-143 Carvas over fiberglass insulation Room Orange Ibrous 95% Min. Wool 5% Non-fibrous (Other) None Detected 4.142-Insulation Carvas over fiberglass insulation fiberglass insubation fiberglass insubation fiberglass insubation fiberglass ins	091622877-0040		Homogeneous				
A-144-InsulationCanvas over fiberglass insulation RoomYellow Fibrous Homogeneous95% Min. Wool5% Non-fibrous (Other)None Detected001622877-0042on hot water, Mech fiberglass insulation on hot water, Mech RoomTan Homogeneous65% Cellulose S% Non-fibrous (Other)30% Matrix S% Non-fibrous (Other)None Detected001622877-0042ACanvas over fiberglass insulation RoomTan Homogeneous65% Cellulose S% Non-fibrous (Other)30% Matrix S% Non-fibrous (Other)None Detected001622877-0042Aon hot water, Mech fiberglass insulation fiberglass insulation RoomYellow Fibrous90% Min. Wool10% Non-fibrous (Other)None Detected001622877-0043Canvas over fiberglass insulation RoomYellow Fibrous90% Min. Wool10% Non-fibrous (Other)None Detected001622877-0043On hot water, Mech HomogeneousHomogeneous30% Matrix 10% Non-fibrous (Other)None Detected001622877-0043Canvas over fiberglass insulation RoomTan Fibrous60% Cellulose 95% Min. Wool30% Matrix 10% Non-fibrous (Other)None Detected01622877-0044Canvas over fiberglass insulation fibrousYellow Fibrous2% Cellulose 95% Min. Wool3% Non-fibrous (Other)None Detected01622877-0044Canvas over fiberglass insulation fibrousFibrous Fibrous2% Cellulose 95% Min. Wool3% Non-fibrous (Other)None Detected01622877-0044On hot water pipes in fibrous trench, Mech RoomTan Fibrous75%	A-143 091622877-0041	Canvas over fiberglass insulation on hot water, Mech	Orange Fibrous Homogeneous	95% Min. Wool	5% Non-fibrous (Other)	None Detected	
Ar144-Insulation Gaines over fiberglass insulation Room Fibrous Fibrous Fibrous Homogeneous 53.6 km/r Horking (Childrift) None Detected A-144-Wrap Carvas over fiberglass insulation Room Tan 65% Cellulose 30% Matrix None Detected A-144-Wrap Carvas over fiberglass insulation Room Fibrous 65% Cellulose 30% Matrix None Detected A-145-Insulation Carvas over fiberglass insulation fiberglass insulation fiberglass insulation fiberglass insulation article 2877-0043 Yellow 90% Min. Wool 10% Non-fibrous (Other) None Detected A-145-Urap Carvas over fiberglass insulation fiberglass insulation fiberglas	A 144 Inculation		Vellow	95% Min Wool	5% Non-fibrous (Other)	None Detected	
RoomA-144-WrapCanvas over fiberglass insulation on hot water, Mech RoomTan fibrous65% Cellulose show30% Matrix 5% Non-fibrous (Other)None Detected 5% Non-fibrous (Other)001622877-0042ACanvas over fiberglass insulation on hot water, Mech RoomYellow Homogeneous90% Min. Wool10% Non-fibrous (Other)None DetectedA-145-InsulationCanvas over fiberglass insulation on hot water, Mech RoomYellow Homogeneous90% Min. Wool10% Non-fibrous (Other)None DetectedA-145-WrapCanvas over fiberglass insulation riberglass insulation on hot water, Mech RoomTan Homogeneous60% Cellulose Pribrous30% Matrix 10% Non-fibrous (Other)None DetectedA-145-WrapCanvas over fiberglass insulation on hot water, Mech RoomYellow Homogeneous2% Cellulose Pribrous30% Matrix 10% Non-fibrous (Other)None DetectedA-146-InsulationCanvas over fiberglass insulation rench, Mech RoomYellow Homogeneous2% Cellulose Pribrous3% Non-fibrous (Other)None Detected001622877-0044Canvas over fiberglass insulation rench, Mech RoomTan Homogeneous75% Cellulose3% Non-fibrous (Other)None Detected001622877-0044Canvas over fiberglass insulation rench, Mech RoomTan Homogeneous75% Cellulose25% Non-fibrous (Other)None Detected001622877-0044on hot water pipes in trench, Mech RoomTan Homogeneous75% Cellulose25% Non-fibrous (Other)None Detected </td <td>091622877-0042</td> <td>fiberglass insulation on hot water, Mech</td> <td>Fibrous Homogeneous</td> <td>93 % Will. WOOI</td> <td></td> <td>None Delected</td>	091622877-0042	fiberglass insulation on hot water, Mech	Fibrous Homogeneous	93 % Will. WOOI		None Delected	
A-144-Wrap Carvas over fiberglass insulation on hot water, Mech Room Tan 65% Cellulose fiberglass 30% Matrix 5% Non-fibrous (Other) None Detected A-145-Insulation Carvas over fiberglass insulation on hot water, Mech Room Yellow 90% Min. Wool 10% Non-fibrous (Other) None Detected A-145-Insulation Carvas over fiberglass insulation Room Yellow 90% Min. Wool 10% Non-fibrous (Other) None Detected A-145-Wrap Carvas over fiberglass insulation Room Tan 60% Cellulose 30% Matrix science None Detected A-145-Wrap Carvas over fiberglass insulation root water, Mech Room Tan 60% Cellulose 30% Matrix science None Detected A-146-Insulation Carvas over fiberglass insulation root water, Mech Room Fibrous 95% Min. Wool 3% Non-fibrous (Other) None Detected 091622877-0044 On hot water pipes in trench, Mech Room Yellow 2% Cellulose 3% Non-fibrous (Other) None Detected 091622877-0044 On hot water pipes in trench, Mech Room Fibrous 95% Min. Wool 3% Non-fibrous (Other) None Detected 091622877-0044 On hot water pipes in trench, Mech Room		Room					
op1622877-0042A on hot water, Mech Room Homogeneous A-145-Insulation Canvas over fiberglass insulation on hot water, Mech Room Yellow 90% Min. Wool 10% Non-fibrous (Other) None Detected 091622877-0043 on hot water, Mech Room Homogeneous 60% Cellulose 30% Matrix 10% Non-fibrous (Other) None Detected A-145-Wrap Canvas over fiberglass insulation Room Tan 60% Cellulose 30% Matrix 10% Non-fibrous (Other) None Detected A-145-Insulation Fibrous Fibrous 2% Cellulose 3% Non-fibrous (Other) None Detected A-146-Insulation Ganvas over fiberglass insulation 95% Min. Wool 95% Min. Wool 3% Non-fibrous (Other) None Detected A-146-Insulation Canvas over fiberglass insulation 95% Min. Wool 75% Cellulose 3% Non-fibrous (Other) None Detected A-146-Wrap Canvas over fiberglass insulation 95% Nin. Wool Tan 75% Cellulose 25% Non-fibrous (Other) None Detected 091622877-0044 on hot water pipes in trench, Mech Room Homogeneous Homogeneous Eibrous 25% Non-fibrous (Other) None Detected	A-144-Wrap	Canvas over fiberglass insulation	Tan Fibrous	65% Cellulose	30% Matrix 5% Non-fibrous (Other)	None Detected	
A-145-Insulation Canvas over fiberglass insulation Yellow 90% Min. Wool 10% Non-fibrous (Other) None Detected 091622877-0043 on hot water, Mech Room Homogeneous 60% Cellulose 30% Matrix None Detected A-145-Wrap Canvas over fiberglass insulation Tan 60% Cellulose 30% Matrix None Detected 091622877-0043A on hot water, Mech Room Homogeneous 60% Cellulose 30% Matrix None Detected 091622877-0043A on hot water, Mech Room Homogeneous 2% Cellulose 3% Non-fibrous (Other) None Detected 091622877-0043A Canvas over fiberglass insulation Yellow 2% Cellulose 3% Non-fibrous (Other) None Detected 091622877-0044 Canvas over fiberglass insulation Fibrous 95% Min. Wool 3% Non-fibrous (Other) None Detected 091622877-0044 on hot water pipes in trench, Mech Room Homogeneous 75% Cellulose 25% Non-fibrous (Other) None Detected 091622877-0044A on hot water pipes in trench, Mech Room Homogeneous 25% Non-fibrous (Other) None Detected	091622877-0042A	on hot water, Mech Room	Homogeneous				
091622877-0043 on hot water, Mech Room Homogeneous A-145-Wrap Canvas over fiberglass insulation Room Tan 60% Cellulose 30% Matrix 10% Non-fibrous (Other) None Detected 091622877-0043A on hot water, Mech Room Homogeneous 10% Non-fibrous (Other) None Detected 091622877-0043A on hot water, Mech Room Homogeneous 2% Cellulose 3% Non-fibrous (Other) None Detected A-146-Insulation Canvas over fiberglass insulation on hot water pipes in trench, Mech Room Yellow 2% Cellulose 3% Non-fibrous (Other) None Detected A-146-Wrap Canvas over fiberglass insulation g01622877-0044 Tan 75% Cellulose 25% Non-fibrous (Other) None Detected 091622877-0044A on hot water pipes in trench, Mech Room Homogeneous 75% Cellulose 25% Non-fibrous (Other) None Detected	A-145-Insulation	Canvas over fiberglass insulation	Yellow Fibrous	90% Min. Wool	10% Non-fibrous (Other)	None Detected	
A-145-WrapCanvas over fiberglass insulation on hot water, Mech RoomTan60% Cellulose30% Matrix 10% Non-fibrous (Other)None Detected091622877-0043A Op1622877-0043Aon hot water, Mech RoomHomogeneous2% Cellulose 95% Min. Wool3% Non-fibrous (Other)None DetectedA-146-Insulation 091622877-0044Canvas over fiberglass insulation on hot water pipes in trench, Mech RoomYellow Homogeneous2% Cellulose 95% Min. Wool3% Non-fibrous (Other)None DetectedA-146-Wrap 091622877-0044ACanvas over fiberglass insulation on hot water pipes in trench, Mech RoomTan Fibrous Fibrous75% Cellulose P5% Cellulose25% Non-fibrous (Other)None DetectedA-146-Wrap 091622877-0044ACanvas over fiberglass insulation on hot water pipes in trench, Mech RoomTan Homogeneous75% Cellulose25% Non-fibrous (Other)None Detected	091622877-0043	on hot water, Mech Room	Homogeneous				
iberglass insulation on hot water, Mech RoomFibrous Homogeneous10% Non-fibrous (Other)A-146-InsulationCanvas over fiberglass insulation on hot water pipes in trench, Mech RoomYellow2% Cellulose 95% Min. Wool3% Non-fibrous (Other)None Detected091622877-0044On hot water pipes in trench, Mech RoomHomogeneous95% Min. Wool3% Non-fibrous (Other)None DetectedA-146-WrapCanvas over fiberglass insulation trench, Mech RoomTan75% Cellulose Fibrous25% Non-fibrous (Other)None Detected091622877-0044Aon hot water pipes in fiberglass insulation trench, Mech RoomTan75% Cellulose Fibrous25% Non-fibrous (Other)None Detected	A-145-Wrap	Canvas over	Tan	60% Cellulose	30% Matrix	None Detected	
A-146-Insulation Canvas over fiberglass insulation Yellow 2% Cellulose 3% Non-fibrous (Other) None Detected 091622877-0044 on hot water pipes in trench, Mech Room Homogeneous 95% Min. Wool 95% Non-fibrous (Other) None Detected A-146-Wrap Canvas over fiberglass insulation Tan 75% Cellulose 25% Non-fibrous (Other) None Detected 091622877-0044A on hot water pipes in trench, Mech Room Homogeneous 1 1 1	091622877-0043A	fiberglass insulation on hot water, Mech Room	Fibrous Homogeneous		10% Non-fibrous (Other)		
11berglass insulation Fibrous 95% Min. Wool 091622877-0044 on hot water pipes in trench, Mech Room Homogeneous A-146-Wrap Canvas over Tan 75% Cellulose 25% Non-fibrous (Other) None Detected 091622877-0044A on hot water pipes in fiberglass insulation Fibrous 1 1 1 091622877-0044A on hot water pipes in trench, Mech Room Homogeneous 1 1 1	A-146-Insulation	Canvas over	Yellow	2% Cellulose	3% Non-fibrous (Other)	None Detected	
A-146-Wrap Canvas over Tan 75% Cellulose 25% Non-fibrous (Other) None Detected fiberglass insulation Fibrous 091622877-0044A on hot water pipes in Homogeneous trench, Mech Room	091622877-0044	Tiberglass insulation on hot water pipes in trench. Mech Room	⊢ibrous Homogeneous	95% Min. Wool			
091622877-0044A on hot water pipes in Homogeneous trench, Mech Room Homogeneous	A-146-Wrap	Canvas over	Tan	75% Cellulose	25% Non-fibrous (Other)	None Detected	
	091622877-0044A	tiberglass insulation on hot water pipes in trench, Mech Room	Fibrous Homogeneous				



Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbes	itos	Asbestos	
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре	
A-147-Insulation	Canvas over fiberglass insulation	Yellow Fibrous	95% Min. Wool	5% Non-fibrous (Other)	None Detected	
091622877-0045	on hot water pipes in trench, Mech Room	Homogeneous				
A-147-Wrap	Canvas over fiberglass insulation	Tan/Black Fibrous	70% Cellulose	30% Non-fibrous (Other)	None Detected	
091622877-0045A	on hot water pipes in trench, Mech Room	Homogeneous				

Analyst(s)

Beheshta Ahadi (77) Jared Martin (9)

Acipliche

Chris Dojlidko, Laboratory Manager or Other Approved Signatory

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Samples analyzed by EMSL Analytical, Inc San Leandro, CA NVLAP Lab Code 101048-3, WA C884

Initial report from: 12/02/2016 15:12:09

EMSL Analytical, Inc. Customer ID: ECSI85 464 McCormick Street San Leandro, CA 94577 MSI **Customer PO:** Tel/Fax: (510) 895-3675 / (510) 895-3680 Project ID: http://www.EMSL.com / sanleandrolab@emsl.com Attention: Ryan Govan **Phone:** (925) 370-2222 Environmental Construction Services, Inc. Fax: (925) 370-2282 PO Box 5277 Received Date: 12/28/2016 11:30 AM Bay Point, CA 94565 Analysis Date: 01/12/2017 - 01/13/2017 Collected Date: 12/27/2016

Project: American River College - Liberal Arts Building

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

EMSL Order: 091700137

			Asbestos		
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре
A-148-Built Up Roofing	Built up roofing, silver paint, building 2	Black Fibrous	20% Cellulose	60% Matrix 8% Non-fibrous (Other)	12% Chrysotile
091700137-0001		Homogeneous			
A-148-Silver Paint	Built up roofing, silver paint, building 2	Black/Silver Fibrous		60% Matrix 37% Non-fibrous (Other)	3% Chrysotile
091700137-0001A		Homogeneous			
A-148-Insulation	Built up roofing, silver paint, building 2	Brown Fibrous	85% Cellulose	15% Non-fibrous (Other)	None Detected
091700137-0001B		Homogeneous			
A-149-Built Up Roofing	Built up roofing, silver paint, building 1	Black Fibrous	10% Cellulose	60% Matrix 30% Non-fibrous (Other)	None Detected
	D. III	Oilean			New Datastad
A-149-Silver Paint	paint, building 1	Silver Non-Fibrous Homogeneous		30% Non-fibrous (Other)	None Detected
A-149-Built Up Roofing	Built up roofing, silver paint, building 1	Black Fibrous	10% Cellulose 7% Glass	60% Matrix 23% Non-fibrous (Other)	None Detected
091700137-0002B		Homogeneous			
A-149-Tar	Built up roofing, silver paint, building 1	Black Non-Fibrous		70% Matrix 30% Non-fibrous (Other)	None Detected
091700137-0002C		Homogeneous			
A-149-Felt	Built up roofing, silver paint, building 1	Black Fibrous	30% Cellulose	60% Matrix 10% Non-fibrous (Other)	None Detected
	D. III	Romogeneous	450/ O - H. J		New Detected
A-149-Feit Paper	paint, building 1	Fibrous Homogeneous	45% Cellulose	55% Non-fibrous (Other)	None Detected
	Built un roofing silver	Brown	80% Cellulose	20% Non-fibrous (Other)	None Detected
091700137-0002F	paint, building 1	Fibrous Homogeneous			None Detected
A-150-Built Up Roofing	Built up roofing, silver paint, building 6	Black Fibrous	20% Cellulose	60% Matrix 20% Non-fibrous (Other)	None Detected
091700137-0003		Homogeneous			
A-150-Silver Paint	Built up roofing, silver paint, building 6	Silver Non-Fibrous		60% Matrix 40% Non-fibrous (Other)	None Detected
091700137-0003A		Homogeneous			
A-150-Built Up Roofing 2	Built up roofing, silver paint, building 6	Black Fibrous Homogeneous	15% Cellulose 5% Glass	60% Matrix 20% Non-fibrous (Other)	None Detected
091700137-0003B		-			
A-150-Built Up Roofing 3	Built up roofing, silver paint, building 6	Black Fibrous Homogeneous	15% Cellulose	60% Matrix 25% Non-fibrous (Other)	None Detected
091700137-0003C		-			
A-150-Felt	Built up roofing, silver paint, building 6	Black Fibrous	10% Glass	60% Matrix 30% Non-fibrous (Other)	None Detected
091700137-0003D		Homogeneous			



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		Non-Asbestos			Asbestos	
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре	
A-150 Insulation	Built up roofing, silver paint, building 6	Brown Fibrous	90% Cellulose	10% Non-fibrous (Other)	None Detected	
091700137-0003E		Homogeneous				
A-151-Built Up Roofing	Built up roofing, silver paint, building 5	Black Fibrous	20% Cellulose	60% Matrix 20% Non-fibrous (Other)	None Detected	
091700137-0004		Homogeneous				
A-151-Silver Paint	Built up roofing, silver paint, building 5	Silver Fibrous Homogeneous		70% Matrix 26% Non-fibrous (Other)	4% Chrysotile	
A 151 Puilt I In Poofing	Built up roofing silver	Brown/Black	25% Callulasa	60% Matrix	None Detected	
091700137-0004B	paint, building 5	Fibrous	5% Glass	10% Non-fibrous (Other)	None Delected	
A_151_Tar	Built up roofing silver	Black		60% Matrix	None Detected	
091700137-0004C	paint, building 5	Non-Fibrous Homogeneous		40% Non-fibrous (Other)	None Delected	
A_151_Eolt	Built up roofing silver	Black	15% Glass	60% Matrix	None Detected	
091700137-0004D	paint, building 5	Fibrous Homogeneous	1370 Glass	25% Non-fibrous (Other)	None Delected	
A-152-Built Lin Roofing	Built un roofing silver	Black	10% Cellulose	60% Matrix	None Detected	
091700137-0005	paint, building 3	Fibrous Homogeneous		30% Non-fibrous (Other)	None Detected	
A-152-Silver Paint	Built up roofing, silver	Silver		60% Matrix	None Detected	
091700137-0005A	paint, building 3	Non-Fibrous Homogeneous		40% Non-fibrous (Other)		
A-152-Built Up Roofing	Built up roofing, silver	Black	10% Cellulose	60% Matrix	None Detected	
091700137-0005В	paint, building 3	Fibrous Homogeneous		30% Non-fibrous (Other)		
A-152-Tar	Built up roofing, silver	Black		60% Matrix	None Detected	
001700137-00050	paint, building 3	Non-Fibrous		40% Non-fibrous (Other)		
4.450 Falt	Built up reafing ailvor	Black		60% Matrix	None Detected	
A-152-Feit	paint, building 3	Fibrous Homogeneous	10% Glass	18% Non-fibrous (Other)	None Detected	
A-152-Insulation	Built up roofing silver	Brown	70% Cellulose	30% Non-fibrous (Other)	None Detected	
091700137-0005E	paint, building 3	Fibrous Homogeneous			None Delected	
A-153-Silver Paint	Silver paint / sealer	Silver		100% Non-fibrous (Other)	None Detected	
	on conduit on roof,	Non-Fibrous				
091700137-0006	building 3	Homogeneous				
A-153-Sealant	Silver paint / sealer on conduit on roof,	Black Fibrous		92% Non-fibrous (Other)	8% Chrysotile	
091700137-0006A	building 3	Homogeneous				
A-154	White sealer on duct roof, building 5	Gray/White Fibrous	4% Cellulose	60% Ca Carbonate 36% Non-fibrous (Other)	None Detected	
091700137-0007		Homogeneous				
A-155	White sealer on duct roof, building 5	White Non-Fibrous		50% Ca Carbonate 50% Non-fibrous (Other)	None Detected	
091700137-0008		Tomogeneous				
A-156	Tan caulking on roof HVAC unit, building 2	Ian/Silver Non-Fibrous		100% Non-fibrous (Other)	None Detected	
091700137-0009	Disclosure and inco	Romogeneous			New Datastad	
A-157	Black wrap on pipes at HVAC unit, building	Black Non-Fibrous		100% Non-fibrous (Other)	None Detected	
A 150 loculation	L Vollow fiberalese also	Vollow		E0/ Non Sharaya (Other)	Nono Dotastad	
A-150-IIISUIATION	insulation, white sealer on roof,	Fibrous Homogeneous	9 ວ % №IIN. ₩00I	5% INOTI-TIDITOUS (UTITER)	NUTE DETECTED	
	2017 07:20:25					
initial report from: 01/13/	2017 07:29:25					



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Project ID:

			Non-Asbes	stos	Asbestos
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре
A-158-Sealer 091700137-0011A	Yellow fiberglass pipe insulation, white sealer on roof, building 2	White Non-Fibrous Homogeneous		60% Ca Carbonate 40% Non-fibrous (Other)	None Detected
A-159	Gray sealer on metal cap on roof pipe	Gray/Black Fibrous		90% Non-fibrous (Other)	10% Chrysotile
091700137-0012	support, building 2	Homogeneous			
A-160-Insulation	Yellow fiberglass pipe insulation, white sealer on roof, building 2	Yellow Fibrous Homogeneous	95% Min. Wool	5% Non-fibrous (Other)	None Detected
A-160-Sealer 091700137-0013A	Yellow fiberglass pipe insulation, white sealer on roof, building 2	White Non-Fibrous Homogeneous		50% Ca Carbonate 50% Non-fibrous (Other)	None Detected
A-161	White wool pipe insulation on roof, building 2	White Fibrous Homogeneous	95% Min. Wool	5% Non-fibrous (Other)	None Detected
A-162-Silver Paint	Silver paint / sealer on metal cap at roof, building 1	Silver Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A-162-Sealer	Silver paint / sealer on metal cap at roof,	Black Fibrous		92% Non-fibrous (Other)	8% Chrysotile
A-163-Insulation	Yellow fiberglass, white wool pipe	Yellow Non-Fibrous	95% Min. Wool	5% Non-fibrous (Other)	None Detected
091700137-0016	insulation on roof, building 1	Homogeneous			
A-163-Insulation 2	Yellow fiberglass, white wool pipe insulation on roof, building 1	White Fibrous Homogeneous	95% Min. Wool	5% Non-fibrous (Other)	None Detected
A-164	Brown foam pipe insulation on roof, building 1	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A-165-Silver Paint	Silver paint / sealer on pipe support on roof, building 1	Silver Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A-165-Sealer	Silver paint / sealer on pipe support on roof building 1	Black Fibrous Homogeneous		92% Non-fibrous (Other)	8% Chrysotile
A-166	Brown foam pipe insulation on roof,	Brown Non-Fibrous		100% Non-fibrous (Other)	None Detected
091700137-0019	building 3	Homogeneous			New Peterted
A-167-Insulation	Yellow pipe insulation, white canvas on roof, building 3	Yellow Fibrous Homogeneous	95% Min. Wool	5% Non-fibrous (Other)	None Detected
A-167-Canvas	Yellow pipe insulation, white canvas on roof, building 3	White Fibrous Homogeneous	25% Cellulose 20% Glass	55% Non-fibrous (Other)	None Detected
A-168-Silver Paint	Silver paint/sealer on metal cap on pipe support building 3	Silver Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
A-168-Sealer	Silver paint/sealer on metal cap on pipe	Black Fibrous		96% Non-fibrous (Other)	4% Chrysotile
091700137-0021A	support, building 3	Homogeneous			



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		Non-Asbestos			Asbestos	
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре	
A-169-Silver Paint	Silver paint / sealer on metal pipe cover	Silver Non-Fibrous		100% Non-fibrous (Other)	None Detected	
091700137-0022	on roof, building 6	Homogeneous				
A-169-Sealer	Silver paint / sealer on metal pipe cover on roof, building 6	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected	
A-170	Brown pressed wood	Brown Fibrous	95% Cellulose	5% Non-fibrous (Other)	None Detected	
091700137-0023	exterior panels on soffit at Room 166	Homogeneous				
A-171	Exterior stucco on walkway ceiling at	Gray Non-Fibrous		40% Quartz 15% Ca Carbonate	None Detected	
091700137-0024	room 166	Homogeneous		25% Gypsum 20% Non-fibrous (Other)		
A-172	Exterior stucco on	Gray		40% Quartz	None Detected	
091700137-0025	walkway ceiling at room 125	Non-Fibrous Homogeneous		15% Ca Carbonate 25% Gypsum 20% Non-fibrous (Other)		
A-173	Exterior stucco on walkway ceiling at	Gray Non-Fibrous		40% Quartz 15% Ca Carbonate	None Detected	
091700137-0026	room 120	Homogeneous		25% Gypsum 20% Non-fibrous (Other)		
A-174	Exterior stucco on	Gray Non-Fibrous		40% Quartz 15% Ca Carbonate	None Detected	
091700137-0027	room 154	Homogeneous		25% Gypsum 20% Non-fibrous (Other)		
A-175	Exterior stucco on walkway ceiling at	Gray Non-Fibrous		40% Quartz 15% Ca Carbonate	None Detected	
091700137-0028	mech. Room	Homogeneous		25% Gypsum 20% Non-fibrous (Other)		
A-176-Stucco	Exterior stucco on	Gray		40% Quartz	None Detected	
091700137-0029	room 133 H	Homogeneous		25% Gypsum 20% Non-fibrous (Other)		
A-176-Skim Coat	Exterior stucco on	Yellow		40% Quartz	None Detected	
091700137-0029A	room 133 H	Homogeneous		20% Ca Carbonate 20% Gypsum 20% Non-fibrous (Other)		
A-177	Exterior stucco on walkway ceiling at	Gray Non-Fibrous		40% Quartz 15% Ca Carbonate	None Detected	
091700137-0030	room 133 R	Homogeneous		25% Gypsum 20% Non-fibrous (Other)		
A-178	Exterior stucco on	Gray		40% Quartz	None Detected	
091700137-0031	at room 133 Q	Homogeneous		25% Gypsum 20% Non-fibrous (Other)		
A-179	Exterior stucco	Gray		40% Quartz	None Detected	
091700137-0032	135	Homogeneous		25% Gypsum 20% Non-fibrous (Other)		
A-180	Exterior stucco	Gray		40% Quartz	None Detected	
091700137-0033	152	Homogeneous		25% Gypsum 20% Non-fibrous (Other)		
A-181	Exterior stucco	Gray		40% Quartz	None Detected	
091700137-0034	window in fill at room 152	Non-Fibrous Homogeneous		15% Ga Carbonate 25% Gypsum 20% Non-fibrous (Other)		



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		Non-Asbestos			Asbestos
Sample	Description	Appearance	% Fibrous	% Non-Fibrous	% Туре
A-182-Brick	Brick and mortar wall at room 166	Red Non-Fibrous Homogeneous		50% Quartz 50% Non-fibrous (Other)	None Detected
A-182-Mortar	Brick and mortar wall at room 166	Gray Non-Fibrous Homogeneous		45% Quartz 20% Ca Carbonate 20% Gypsum 15% Non-fibrous (Other)	None Detected
A-183-Brick	Brick and mortar wall at room 125	Red Non-Fibrous Homogeneous		50% Quartz 50% Non-fibrous (Other)	None Detected
A-183-Mortar 091700137-0036A	Brick and mortar wall at room 125	Gray Non-Fibrous Homogeneous		40% Quartz 20% Ca Carbonate 20% Gypsum 20% Non-fibrous (Other)	None Detected
A-184-Brick	Brick and mortar wall at room 120 C	Red Non-Fibrous Homogeneous		50% Quartz 50% Non-fibrous (Other)	None Detected
A-184-Mortar 091700137-0037A	Brick and mortar wall at room 120 C	Gray Non-Fibrous Homogeneous		40% Quartz 20% Ca Carbonate 20% Gypsum 20% Non-fibrous (Other)	None Detected
A-185-Brick	Brick and mortar wall at room 157	Red Non-Fibrous Homogeneous		50% Quartz 50% Non-fibrous (Other)	None Detected
A-185-Mortar 091700137-0038A	Brick and mortar wall at room 157	Gray Non-Fibrous Homogeneous		40% Quartz 20% Ca Carbonate 20% Gypsum 20% Non-fibrous (Other)	None Detected
A-186-Brick	Brick and mortar wall at Mech Room	Red Non-Fibrous Homogeneous		50% Quartz 50% Non-fibrous (Other)	None Detected
A-186-Mortar 091700137-0039A	Brick and mortar wall at Mech Room	Gray Non-Fibrous Homogeneous		40% Quartz 20% Ca Carbonate 20% Gypsum 20% Non-fibrous (Other)	None Detected
A-187	Window glazing compound at room 157	Gray Non-Fibrous Homogeneous		70% Ca Carbonate 30% Non-fibrous (Other)	None Detected
A-188	Window glazing compound at room	White Non-Fibrous		70% Ca Carbonate 30% Non-fibrous (Other)	None Detected
A-189	Window glazing compound at room	Gray Non-Fibrous		70% Ca Carbonate 30% Non-fibrous (Other)	None Detected
A-190	Window glazing compound at room	Gray/Tan Non-Fibrous		70% Ca Carbonate 30% Non-fibrous (Other)	None Detected
A-191	Window glazing compound at room	Tan Non-Fibrous		70% Ca Carbonate 28% Non-fibrous (Other)	2% Chrysotile
A-192	Window glazing compound at room 129	Gray Non-Fibrous		70% Ca Carbonate 30% Non-fibrous (Other)	None Detected
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Analyst(s)

Beheshta Ahadi (28) Matthew Batongbacal (28) Raphael Feliciano (26)

auter

Matthew Batongbacal or Other Approved Signatory

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Samples analyzed by EMSL Analytical, Inc San Leandro, CA NVLAP Lab Code 101048-3, WA C884

Initial report from: 01/13/2017 07:29:25

Date: 8/19	ENVIRONMENTAL CONSTRUCTION SERVICES, INC. Page of BULK SAMPLE ANALYSIS FORM
Laboratory: EM	SL PLM Bulk Analysis
Results Requested	By: Rush 24Hr 48Hr 72Hr Other Deek ITEM Bulk Analysis
Job Name: Ameri	can River College - Liberal Arts Building Job Number:
Location: 4700	College Oak Drive, Sacramento, CA 95841 Collected By: Ryan Govan
Sample No.	Location/Description
A-01	Blue 12' floor tike, white mustice, room 166
A-02	Black mastic Fesides under bin tile, scon 166.
A-03	Gray, brown on blue viny 1 floor base, room 166
A-04	DryWall and Joint compound, Fach 166
A-25	2'X4' Fissurd ceiling tile, room 166
A-06	12" Perforated tile, brown muster on soffit above centing, from 166
A-07	Dryman and Jant compared, behind tills on soffite, (com 166.
A-08	Window Slazing compand at room 166.
A-29	Window glazing compand at from 164.
A-10	Window glazing company at room 163
A-11	Unlow glazing compand at fam 169
AIR	Window glazing compand at room 167
A-13	White scaler on duct above ceiling, Can 166.
A-14	Dryhall and joint compared in mech. room novet to 166
A-15	Concrete floor in much room next to room 166.
A-16	Black master resdes under 12" floor tite room 165
AIT	Blue 12" floor tile, yellaw mastic, (com 165
A-18	Gray, brown master on blue vinit flar base, race 165.
A-19	12" Perforated tile, blown master about Ceiling, from 165
A-20	2'x4' fissund ceiling tim, form 165
Date: Tim	e: Relinquished By: Company Received By: Company: Date: Time:
8/25/16	Reputton ECS
P.0 Box 52	277 Bay Point, CA 94565 (925) 370-2222 Fax (925) 370-2282

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Date: 8	:/19/1	EN [.] L	VIRONMENTA BULK	L CONSTRU SAMPLE A	UCTION SERVI NALYSIS FORM	CES, INC. [Azalysis Req	Page_2	<u>of</u>
Pace		<u> </u>				A PLM Bulk A	nalysis	
Laboratory		L		\sim) last	DEM Point (Count 400 - 1 nalysis	.000
Results Re	quested F	ly: Rush	24Hr 48Hr	72Hr [ther]_	1 week	- FAA Lead P	aint Analysis	
Job Name:	Americ	an River	College - Liberal Arts	Building	Job Number:			_
Location:	4700 C	ollege O	ak Drive, Sacramento	o, CA 95841	Collected By: Ryan Gov	/an		-
Sample No.			Location/Descrip	tion				
A-2	۱	Dry	wall and In	out compou	nd behind 12't	in abouce	ciling, fac	<u>~165</u>
A-2	2	<u></u>	te Joint ta	pe on det	inside soffit			
<u>A.2</u>	3	DN	Lall and Do	int company	2, room 164	<u>+</u>		
A.?	9	131-2	- 12" fleer til	r, Yellow	mistu, gray 1	2:11-1, 100-	n 164.	
A-2	5	zx	4 Fissural C	eiling they	(ccm 170_			
A.Z	L	2 X	y fissurel (eiling tile	(replacement to	he), (com	01	
<u>A~2</u>	77	Dryu	-all and 30.	nt compon	-2, 100m 170	>		
A. 78	5	Bin	12" floor til.	L) Orange V	nister, grang	filler Tou	n170	
Air		Wh	the orange	mastron	blue May Flee	- basy score	n 170	
A-34	>	Blac	kigay Filler	at edse a	st floer tile;	<u>(com'170</u>	•	
<u>A.3</u>	}	Black	ite mastic Ce.	siding unde	r blue fleer to	ile, room	169.	
A-37	ζ	Dry	wall and is	sint Compo	nd, rocm 16	<u> </u>		
A-3	3	Tan	brown my	stre on b	Ine viny floor	basy Fact	167	
A-3	۶	Blac	h orange m	uste unde	- blue floor +	illy (Ocm	167	
<u>A.3</u>	5	Dry	wall and 5	iant com	port, room 1	67		
A.3	6	Gree	m, black mas	itic under a	carpit, rcom	129_		
<u>A-3</u>	ר	Bra	-n, white 1	mistion b	soun Viny fle	or base (c.	<u>en 129.</u>	
A-3	8	ירית	mail and joi	it conform	1 (con 129			
A-3	٩	2'Yu	1 fissional cer	Ingtim ro	cm 129	<u> </u>		
A.1	10	12" F	Perfornted fil	e on Lal	1, room 129			
Date:	Time:	Re	linquished By:	Company	Received By:	Company:	Date:	Time:
8/25/16			Ryn Thom	ECS	RIOIÓN			
			•					
2.0 Bo	x 52'	77 Ba	ay Point, CA	A 94565 (925) 370-222	22 Fax (92	25) 370	-2282

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	ENVIRONMENTAL CONSTRUCTION SERVICES, INC. Page 3 of 3							
Date: 8/19/16 BULK SAMPLE ANALYSIS FORM								
Laboratory: EMSL EMSL								
Results Requested By: Rush 24Hr 48Hr 72Hr ther I Week Grant Analysis								
Job Name: America	an River College - Liberal Arts Building Job Number:							
Location: 4700 C	ollege Oak Drive, Sacramento, CA 95841 Collected By:Ryan Govan							
Sample No.	Location/Description							
A-41	Gran, black mustic under carpet, From 128.							
A-42	Bran, White mester on brown vinvi flar basy from 128.							
A-43	Dry wall and Tomt compand, ram 128.							
A-44	Green, black mast under carpet, room 126.							
A-43	Brown white mastic on brown Vinyi Acor base, Form 126							
A-46	Drywall and Joint compand, room 126							
A-47	Gran, black mastic under carpet, (com 125							
A-48	Brown mester on brown Vingi floor base, 10cm 125							
A-49	Drywall and Soint company, (com 125,							
A-50	2'x4' f. swed ceily tile, room 125.							
A-51	12" Perfixed tile on Wall, 600m 125							
A-52	2'x4' fissurd ceiling tile, soom 122.							
A.53	2'XY' F.SSU-d (eiling tile (replacement), (com 122							
A.SY	Grown, black might under carpet, rown 122							
A-35	Tan, brown masticon black ving flar base, room 122.							
A-56	Dryhall and joint compand, (com 122							
A-57	Divinal and Junt conport, 1000 124							
A-58	White blown mastic on hown vinit flour base, from 121							
A-59	Green, black mastic under carpet, room 121.							
A-60 Divian and joint compare, room 121.								
Date: Time:	Relinquished By: Company Received By: Company: Date: Time:							
8/25/16	Run Tun ECS ROOD 8.25.16 20M							
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P.0 Box 52'	77 Bay Point, CA 94565 (925) 370-2222 Fax (925) 370-2282							

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A-77 2'X4' Pinhola Ceiling time (replacement), rom 1351									
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A-82	Sheld fissual calles has (common) Halling at 1230.							
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A-84	Green master Under Carpert, 600m 133 P.							
A-85	Brown and white mestr on bown viny / fleer base, from 133R							
A-86	Columnashe under Carpet, room 133. 5.							
A-87	Brown mashe on brown Vingl Flour base, from 133+.							
A-88	Green, Hard martic under cappet (com 1339.							
A-89	Gleen mastric under Carpet, (com 133d.							
A-90	Green mastic, white compare under carpet, room 133 4							
A-91	Brown mestic on brown Viny/ floor bish, Foom 133.U.							
A-92	Green, black mustic under coopert, from 133 X.							
A-93	Green, black master under carpet, rcom 132							
A-94	Green, Black mastic under carpet, rem. 135.							
A-95	Gran, brown mester under carpel, from, 1356							
A-96	6 Greet and notic on 4" ceramic way tile. Mens restram.							
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A-11	6	Black	Kinyl	flar !	baser wh	ite, brann	masti	ic, room	152	
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A. 148	Built up roofing, silver paint, building 2.
A-149	Built up roofing, Silver Paint, building 1.
A-150	Built up roofing, Silver Paint, building 6.
A-151	Built up roofing, silver Pant, building 5.
A-152	Built up rooting, Silver Paint, building 3.
A-153	Silver Pant/Seater on conduit on root, building 3.
A-154	white sealed on duct on roof, building 5.
A-155	white sealer on duct on root, building 5.
A-156	The calking on roof HVAC unit, building 2.
A-157	Black wrap on pipes at HVAc unit, building 2.
A-158	Holber fibreglass pipe insulation, white seater on roof, building 2.
A-159	Gray Sealer on metal cap on roof Pipe support, building 2.
A-160	Yellow Fiberglass Insulation, white sealer on root, building 2.
A-161	white wool pipe insulation on root, building 2.
A-162	Silver Paint/Seater on metal cap at roof exhaust fan, building 1.
A-163	Yellow fiberglass, white wool pipe insulation on root, building 1.
A-164	Brown form pipe insulation on root, building 1.
A-165	S. Wer Pant/Seater on P. Re support on root, building 1.
A-166	Brain from pipe insulation on root, building 3.
A-167	Yellow Pipe insulation, white canvas on root, building 3.
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A-176	E	sterior studio	on walku	my ceiling at fo	om 1331	+.	
A-177	E	etenur Stucco	on walku	ry Ceiling at	Fccm 133	R.	
A-178	E	tence Stucco a	on wall a	t does to hall	very at loor	n 133 à	
A-179	E	phener Stucco 1	vindow in-	fill at foom 1:	35,	1294	1.1.14
A-180	Ex	tencr Stucco i	virtow in	fill at room 1	52.		
A-181	E	sterior Stucio 1	window in	fill at 600m	152.		59
A-182	B	rick and mos	tar wall a	at 600m 166.			
A-183	B	rick and mo	star wall a	at room 125.			
A. 184	B	rick and mo	star Wall	at 500m 120 (L.		
A- 185	B	rick and mo	star wall	at (com 157.			S. M. L
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GEOTECHNICAL ENGINEERING STUDY FOR AMERICAN RIVER COLLEGE STEM BUILDING 4700 College Oak Drive Sacramento, California

> Project No. E04314.008P September 2016



Building Innovative Solutions



- Building Innovative Solutions ------

1234 Glenhaven Court, El Dorado Hills, CA 95762 4300 Anthony Court, Unit D, Rocklin, CA 95677 ph 916.933.0633 fx 916.933.6482

------ www.youngdahl.net



Los Rios Community College District – Facilities Management 3753 Bradview Drive Sacramento, California 95827 Project No. E04314.008P 13 September 2016

Attention: Ms. Margaret Lednicky

Subject: AMERICAN RIVER COLLEGE STEM BUILDING 4700 College Oak Drive, Sacramento, California GEOTECHNICAL ENGINEERING STUDY

References:

- 1. Concept Design for New STEM Building at American River College Campus, prepared by Gouldevans, dated 13 May 2016.
- 2. Proposal for LRCCD ARC STEM, prepared by Youngdahl Consulting Group, Inc., dated 8 June 2016 (Proposal No. P16-222).
- 3. Geologic Hazards Update for American River College STEM Building, prepared by Youngdahl Consulting Group, Inc., dated 13 September 2016 (Project No. E04314.008P).

Dear Ms. Lednicky:

In accordance with your authorization, Youngdahl Consulting Group, Inc. has performed a Geotechnical Engineering Study for the proposed Science, Technology, Engineering, and Mathematics (STEM) building located within the American River College campus in Sacramento, California. The purpose of this study was to perform a subsurface exploration and evaluate the surface and subsurface soil conditions at the project area and provide geotechnical information and design criteria for the proposed project. Our scope was limited to a subsurface investigation, laboratory testing, a geologic hazards evaluation update, and preparation of this report per the Reference 2 proposal. The geologic hazards evaluation update (Reference 3) for the project will be provided under a separate cover.

Based upon our site reconnaissance and subsurface exploration program, it is our opinion that the primary geotechnical issues to be addressed consist of the overexcavation of undocumented fill soils and recompaction as engineered fills, the presence of potentially expansive materials, and drainage related to the shallow cemented soil horizon. Due to the non-uniform nature of soils, other geotechnical issues may become more apparent during grading operations which are not listed above. The descriptions, findings, conclusions, and recommendations provided in this report are formulated as a whole; specific conclusions or recommendations should not be derived or used out of context. Please review the limitations and uniformity of conditions section of this report.

This report has been prepared for the exclusive use of Los Rios Community College District and their consultants, for specific application to this project, in accordance with generally accepted geotechnical engineering practice. Should you have any questions or require additional information, please contact our office at your convenience.

Very truly yours, Youngdahl Consulting Group, Inc.

Edgar A. Santos Staff Engineer

Distribution: (1) PDF to Client

ROFESSIONA Reviewed b No. GE 02712 Exp. 06-30-17 OTECHN! Brandoh K. Šhimizu, E OF CALIF Senior Engineer

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GEOTECHNICAL ENGINEERING STUDY FOR AMERICAN RIVER COLLEGE STEM BUILDING

1.0 INTRODUCTION

This report presents the results of our Geotechnical Engineering Study performed for the proposed Science, Technology, Engineering, and Mathematics (STEM) building planned to be constructed at the American River College (ARC) campus in Sacramento, California. An annotated vicinity map is provided on Figure A-1 to identify the approximate project location.

Purpose and Scope

The purpose of this study was to explore and evaluate the surface and subsurface conditions at the site, to provide geotechnical information and design criteria, and to develop geotechnical recommendations for the proposed project. The scope of this study includes the following:

- A review of geotechnical and geologic data available to us at the time of our study;
- A field study consisting of a site reconnaissance, followed by an exploratory boring program to observe and characterize the subsurface conditions;
- A laboratory testing program performed on representative samples collected during our field study;
- Engineering analysis of the data and information obtained from our field study, laboratory testing, and literature review;
- Development of geotechnical recommendations regarding earthwork construction including, site preparation and grading, excavation characteristics, soil moisture conditions, compaction equipment, engineered fill criteria, underground improvements, and drainage;
- Development of geotechnical design criteria for seismic conditions, shallow foundations, differential support conditions, retaining walls, slabs on grade, and pavements;
- Preparation of this report summarizing our findings, conclusions, and recommendations regarding the above described information.

Project Understanding

We understand that American River College will be replacing the existing liberal arts building located within the campus on College Oak Drive in Sacramento, California. The new building will be a STEM facility to house new classrooms, labs, and learning, office and community spaces. It is anticipated the new building will be a three story steel frame structure with a total square footage of 57,000 square feet. Development plans had not yet been finalized at the time that this report was prepared; however, since the site is essentially level, earthwork cuts and fills are anticipated to be on the order of five feet or less to create level a building pad and promote positive site drainage.

Background

Our firm has conducted numerous geotechnical engineering and geologic hazards studies within the ARC campus for the construction of the Faculty Office (Howard Hall) building, the Learning Resource Center, the Cafeteria (Student Services) building, the Physical Education (Gym/Kinesiology) building expansion and renovation, the Fine Arts building modernization, and the Culinary Arts modernization and expansion projects. The studies have shown that the ARC campus is primarily underlain by soils consisting of SAND and SILT in a dense to very dense and stiff to very stiff condition.



If studies or plans pertaining to the site exist and are not cited as a reference in this report, we should be afforded the opportunity to review and modify our conclusions and recommendations as necessary.

2.0 FINDINGS

The following section describes our findings regarding the site conditions that we observed during our site reconnaissance and subsequent subsurface exploration. In addition, this section also provides the results of our laboratory testing, geologic review, and engineering assessment related to the project site.

Surface Observations

The project site is centrally located within the American River College campus. It is bordered by the Learning Resource Center to the southwest, Davies Hall to the southwest, staff parking Lot E to the west, Raef Hall to the northwest, the Rose Marks Quad to the north, and the Instructional Technology Center to the northeast. The existing Liberal Arts building is a one-story structure which appears to be of concrete, brick, and steel construction. Steel awnings were observed throughout the building with some supported on brick columns/pilasters. Concrete flatwork also surrounds the existing Liberal Arts building. At the southwest corner of the building, a rest area with concrete benches was observed. This rest area was observed to be lower in elevation than surrounding grades by approximately 2 to 3 feet. Mature trees and bushes are present throughout the existing building.

Subsurface Conditions

Our field study included a site reconnaissance by a representative of our firm followed by a subsurface exploration program conducted on 5 August 2016. The exploration program included the advancement of 4 exploratory borings under the direction of our representative at the approximate locations shown on Figure A-2, Appendix A. A description of the field exploration program is provided in Appendix A.

Subsurface soil conditions varied slightly at the boring locations and primarily included silty SANDS with occasional sandy SILT layers as well as undocumented FILL and CLAY near the surface at some of the boring locations. At boring B-1, sandy CLAY in a medium stiff condition was encountered from 10 inches (bottom of concrete flatwork) to a depth of approximately 4½ feet. At boring locations B-2, B-3, and B-4, FILL consisting of silty/clayey SAND in a medium dense condition was observed beneath the flatwork to a depth of 3 feet at boring B-2 and 1 foot at borings B-3 and B-4. Beneath the fills and clays at all boring locations, silty SAND in a medium dense to very dense condition with a varying degree of cementation was observed to the maximum depth explored of 31½ feet. Interbedded layers of sandy SILT in a stiff condition with a varying degree of cementation were also observed in borings B-2 and B-4 from 3 to 6 feet and 10 to 15 feet, respectively. In boring B-3, poorly graded SAND in a dense and weakly cemented condition was observed from 20 to 21½ feet.

A more detailed description of the subsurface conditions encountered during our subsurface exploration is presented graphically on the "Exploratory Boring Logs", Figures A-3 through A-6, Appendix A. These logs show a graphic interpretation of the subsurface profile, and the location and depths at which samples were collected.

Groundwater Conditions

Groundwater conditions were not observed at the boring locations advanced for this study. Generally, subsurface water conditions vary in the valley regions because of many factors such as, the proximity to a cemented and less permeable soil horizon, topographic elevations, and



proximity to surface water. A review of the California Department of Water Resources (DWR) well data (<u>http://www.water.ca.gov/waterdatalibrary/</u>) suggests that the average recorded groundwater levels within the vicinity of the project are deeper than 100 feet below the site grades.

Although the permanent groundwater table is not anticipated to be a concern for this project, it has been our experience that at varying times of the year water may be perched on the cemented and less permeable soil horizon generally encountered at a depth ranging from 1 to 3 feet beneath the project area.

Geologic Conditions

The geologic portion of this report included a review of geologic data pertinent to the site and an interpretation of our observations in our exploratory borings advanced during the field study.

The site is located in the eastern portion of Sacramento Valley adjacent to the western edge of the Sierra Nevada foothills. According to the Geologic Map of the Sacramento Quadrangle (Wagner, D.L., et al. 1981), the project site is underlain by sedimentary deposits of the Turlock Lake Formation of Quaternary age. In addition, levee and channel deposits of Quaternary age are mapped immediately south of the project site.

Seismicity

According to the Fault Activity Map of California and Adjacent Areas (Jennings, 2010) and the Peak Acceleration from Maximum Credible Earthquakes in California (CDMG, 2007), no active faults or Earthquake Fault Zones (Special Studies Zones) are located on the project site. Additionally, no evidence of recent or active faulting was observed during our field study. The nearest mapped potentially active and active faults pertinent to the site are summarized in the following table.

Activity	Fault Name	Distance, Direction
Active	Dunnigan Hills	46 km NW-W
Historic	Cleveland Hill	85 km N
Active	West Tahoe Fault	115 km NE
Active	North Tahoe Fault	124 km NE
Potentially Active	Bear Mountains Fault Zone - West	25 km E
Potentially Active	Bear Mountains Fault Zone - East	38 km_E
Potentially Active	Maidu Fault	32 km NE
Potentially Active	Melones - West	43 km E
Potentially Active	Melones - East	46 km E

Table 1: Local Active and Potentially Active Faults

Based on estimations of the V_s30 velocity of the site conditions from topographic conditions (<u>http://earthquake.usgs.gov/hazards/apps/vs30/custom.php</u>) and subsurface interpretations, we recommend that the project site be classified as Site Class D in accordance with Section 1613A.3.2 of the 2013 CBC and Table 20.3-1 of ASCE 7-10.

Earthquake Induced Liquefaction, Surface Rupture Potential, and Settlement

Liquefaction is the sudden loss of soil shear strength and sudden increase in porewater pressure caused by shear strains, as could result from an earthquake. Research has shown that saturated,



loose to medium-dense sands with a silt content less than about 25 percent and located within the top 40 feet are most susceptible to liquefaction and surface rupture/lateral spreading.

Due to the absence of permanently elevated groundwater table, the relatively low seismicity of the area, and the cemented and dense to very dense nature of the site soils, the potential for seismically induced damage due to liquefaction, surface ruptures, and settlement is considered negligible. For the above-mentioned reasons mitigation for these potential hazards is not required for the development of this project.

Static and Earthquake Induced Slope Instability

No significant slopes were observed during our site reconnaissance. Furthermore, the site is not anticipated to support slopes following development. Additionally, due to the absence of permanently elevated groundwater table, the relatively low seismicity of the area, and the relatively shallow depth to cemented soils, the potential for seismically induced slope instability is considered negligible.

Laboratory Testing

Laboratory testing of the collected samples was directed towards determining the physical and engineering properties of the soil underlying the site. A description of the tests performed for this project and the associated test results are presented in Appendix B. In summary, the following tests were performed for the preparation of this report:

Laboratory Test	Test Standard	Summary of Results		
Direct Shear	ASTM D3080	Bulks 1 & 2 (B-1 & B-3):	Φ _{90%} = 26.3°, c _{90%} = 403 psf	
Maximum Dry Density	ASTM D1557	Bulks 1 & 2:	DD = 112.5 pcf, MC = 14.3 %	
R-Value	Caltrans 301	Bulks 1 & 2:	13	
Material Finer Than No. 200 Sieve	ASTM D1140	B-1 @ 4 – 4.5 ft:	58.2 % < No. 200	
Atterberg Limits	ASTM D4318	B-1 @ 4 – 4.5 ft:	LL = 39, PI = 26 (CL)	
Corrosivity Suite	CA DOT Tests 417, 422 and 643	See S	Soil Corrosivity Section	

Table 2: Laboratory Tests

Soil Expansion Potential

A pocket of plastic materials (clay soils) was encountered in boring B-1 at a depth of 10 inches to 4½ feet below the ground surface; however, the materials encountered in our explorations were generally non-plastic (sand, and non-plastic silt). The non-plastic materials are generally considered to be non-expansive. Due to the limited presence of plastic materials observed, we do not anticipate that special design considerations for expansive soils will be required for the design or construction of the proposed improvements provided the plastic materials are adequately blended with the non-plastic site soils prior to use as engineered fill during the site grading procedures. Depending on the proposed grading plans and cuts or fills in the areas where clay was encountered, some focused excavations of the clay may be required. If necessary, recommendations can be made based on our observations at the time of construction should greater quantities of expansive soils be encountered at the project site which were not encountered during our study.



Soil Corrosivity

A corrosivity testing suite consisting of soil pH, resistivity, sulfate, and chloride content tests were performed on selected soil samples collected during our site exploration. We are not corrosion specialists and recommend that the results be evaluated by a qualified corrosion expert. The laboratory test results (provided by Sunland Analytical, Inc.) are provided in Appendix B and are summarized in Table 3, below.

Т	able	3:	Corr	rosivity	Sumn	nary

Location	Depth (ft)	Soil pH	Minimum Resistivity ohm-cm (x1000)	Chloride (ppm)	Sulfate (ppm)	Caltrans Environment	ACI Environment
Bulks 1 & 2 Combined	1-8	7.25	2.01	33.4	31.7	Non Corrosive	S0 (Not a Concern)

According to Caltrans Corrosion Guidelines Version 2.1, January 2015, the test results appear to indicate a non-corrosive environment. According to the 2013 California Building Code Section 1904A.1 and ACI 318-14 Table 19.3.1.1, the test results indicate the onsite soils have a negligible potential for sulfide attack of concrete. Accordingly, Type I/II Portland cement is appropriate for use in concrete construction. A certified corrosion engineer should be consulted to review the above tests and site conditions in order to develop specific mitigation recommendations if metallic pipes or structural elements are designed to be in contact with or buried in soil.

3.0 DISCUSSION AND CONCLUSIONS

General

Based upon the results of our field explorations, findings, and analysis described above, it is our opinion that construction of the proposed improvements is feasible from a geotechnical standpoint, provided the recommendations contained in this report are incorporated into the design plans and implemented during construction.

Approach to Development

The undocumented fills and clay soils are not considered suitable for support of the proposed improvements in their current condition. Following demolition of the existing structure, we anticipate that grading operations will consist of the overexcavation of the undocumented fills and clay soils encountered followed by the blending and recompaction of the soils as engineered fill. The native soils and fills, once overexcavated and recompacted as recommended below may be considered "engineered" and suitable for support of the planned improvements. Recommendations are presented below for the overexcavation and recompaction of the existing fill and unsuitable clay materials on the site.

Foundations

In our opinion, conventional shallow foundations such as isolated pad footings or continuous footings will provide adequate support for the proposed buildings if the site grades are properly prepared as described in the Site Grading and Improvement section. Recommendations regarding foundation design parameters, including allowable bearing capacity, lateral resistance, and foundation configuration are provided in Section 5.0 of this report.

Drainage

Proper application of drainage practices are considered to be of paramount concern for effective development of the project site. We recommend the use of proper surface drainage and careful

installation of the back of wall drains detailed in this report to provide long term stability of the structural improvements as well as mitigate nuisance seepage.

It has also been our experience that potential sources of groundwater may not be present or observed during the site grading procedures, but can appear later as more persistent seepage as water becomes perched on the shallow cemented soil horizon. These conditions generally become more prevalent following the addition of moisture sources (i.e. landscape irrigation, run-off, etc.). Where this condition arises, drainage measures may be necessary to mitigate seepage conditions that were not initially observed during the site grading activities and/or development.

4.0 SITE GRADING AND EARTHWORK IMPROVEMENTS Site Preparation

Preparation of the project site should involve demolition, site drainage controls, dust control, clearing and stripping, overexcavation and recompaction of existing fills/loose native soils, and exposed grade compaction considerations. The following paragraphs state our geotechnical comments and recommendations concerning site preparation.

<u>Demolition</u>: As part of the demolition operation, any unwanted foundation, structural improvement, or site improvement elements (including underground utilities) should be exhumed and removed from the site. In addition, any underground storage tanks, abandoned wells or other utilities not intended for reuse should be removed or backfilled in accordance with the appropriate regulations.

Concrete and asphalt separated from the other debris, and adequately broken down in particle size, may be mixed thoroughly with soil and placed as engineered fill as described below. If this option is exercised, a representative from our firm should be contacted to observe the adequacy of grading operations associated with the breaking and mixing of these elements.

<u>Site Drainage Controls</u>: We recommend that initial site preparation involve intercepting and diverting any potential sources of surface or near-surface water within the construction zones. Because the selection of an appropriate drainage system will depend on the water quantity, season, weather conditions, construction sequence, and methods used by the contractor, final decisions regarding drainage systems are best made in the field at the time of construction. All drainage and/or water diversion performed for the site should be in accordance with the Clean Water Act and applicable Storm Water Pollution Prevention Plan.

<u>Dust Control</u>: Dust control provisions should be provided for as required by the local jurisdiction's grading ordinance (i.e. water truck or other adequate water supply during grading).

<u>Clearing and Stripping</u>: Clearing and stripping operations should include the removal of all organic laden materials including trees, bushes, root balls, root systems, and any soft or loose soil generated by the removal operations. Surface grass stripping operations may be necessary based upon the conditions at the time of grading. Short or mowed dry grasses may be pulverized and lost within fill materials provided no concentrated pockets of organics result. It is the responsibility of the grading contractor to remove excess organics from the fill materials. No more than 2 percent of organic material, by weight, should be allowed within the fill materials at any given location.

General site clearing should also include removal of any loose or saturated materials within the proposed structural improvement and pavement areas. A representative of our firm should be present during site clearing operations to identify the location and depth of potential fills not



disclosed by this report, to observe removal of deleterious materials, and to identify any existing site conditions which may require mitigation or further recommendations prior to site development. Preserved trees may require tree root protection which should be addressed on an individual basis by a qualified arborist.

<u>Addressing Existing Fills</u>: Existing fill was encountered within our exploratory borings and should be anticipated to be present at various locations throughout the project area. Following general site clearing, all existing fills should be overexcavated down to firm native materials. Reference should be made to the exploratory boring logs for anticipated fill locations. Any depressions extending below final grade resulting from the removal of fill materials or other deleterious materials should be properly prepared as discussed below and backfilled with engineered fill.

Expansive Clay Mitigation: Expansive clays should be mixed thoroughly with less expansive on site materials (silts and sands) and should not be present in concentration within 5 feet of the building envelope, either vertically or laterally. Proper disposition of clays on site should be documented by a representative of Youngdahl Consulting Group, Inc. We should be afforded the opportunity to review the project grading plans to make a preliminary determination where expansive soil mitigation measures may be warranted. Any final determination of mitigation measures should be based on the conditions observed during grading.

Exposed Grade Compaction: Exposed soil grades following initial site preparation activities and overexcavation operations should be scarified to a minimum depth of 8 inches and compacted to the requirements for engineered fill. Prior to placing fill, the exposed subgrades should be in a firm and unyielding state. Any localized zones of soft or pumping soils observed within a subgrade should either be scarified and recompacted or be overexcavated and replaced with engineered fill as detailed in the engineered fill section below.

Soil Moisture Considerations

The near-surface soils may become partially or completely saturated during the rainy season. Grading operations during this time period may be difficult since compaction efforts may be hampered by saturated materials. Therefore, we suggest that consideration be given to the seasonal limitations and costs of winter grading operations on the site. Special attention should be given regarding the drainage of the project site.

If the project is expected to work through the wet season, the contractor should install appropriate temporary drainage systems at the construction site and should minimize traffic over exposed subgrades due to the moisture-sensitive nature of the on-site soils. During wet weather operations, the soil should be graded to drain and should be sealed by rubber tire rolling to minimize water infiltration.

Compaction Equipment

In areas to receive structural soil fill, we anticipate that a large vibratory padded drum compactor or approved equivalent will be capable of achieving the compaction requirements for engineered fill provided the soil is placed and compacted within 0 to 3 percent of the optimum moisture content as determined by the ASTM D1557 test method and in lifts not greater than 12 inches in uncompacted thickness. The use of handheld equipment such as jumping jack or plate vibration compactors may require thinner lifts of 6 inches or less to achieve the desired relative compaction parameters.



Engineered Fill Criteria

All materials placed as fills on the site should be placed as "Engineered Fill" which is observed, tested, and compacted as described in the following paragraphs.

Suitability of Onsite Materials: We expect that soil generated from excavations on the site, excluding deleterious material, may be used as engineered fill provided the material does not exceed 12 inches in maximum dimension. Oversized material should be disposed of to an offsite location or mechanically reduced to less than 12 inches.

Import Materials: If imported fill material is needed for this project, import material should be approved by our firm prior to transporting it to the project. It is preferable that import material meet the following requirements:

- 1. Plasticity index not to exceed 12;
- 2. "R"-value of equal to or greater than 20;
- 3. An angle of friction equal to or greater than 26 degrees;
- 4. Should not contain rocks larger than 6 inches in diameter;
- 5. Not more than 15 percent passing through the No. 200 sieve.

If these requirements are not met, additional testing and evaluation may be necessary to determine the appropriate design parameters for foundations, pavement, and other improvements.

Fill Placement and Compaction: All areas proposed to receive fill should be scarified to a minimum depth of 8 inches, moisture conditioned as necessary, and compacted to at least 90 percent of the maximum dry density based on the ASTM D1557 test method. The fill should be placed in thin horizontal lifts not to exceed 12 inches in uncompacted thickness. The fill should be moisture conditioned as necessary and compacted to a relative compaction of not less than 90 percent based on the ASTM D1557 test method. The upper 8 inches of fills placed under proposed pavement areas should be compacted to a relative compaction of not less than 95 percent based on the ASTM D1557 test method. Expansive clays, should be mixed thoroughly with less expansive on site materials (silts, sands, and gravels) and should not be present in concentration within 5 feet of the building envelope, either vertically or laterally. Proper disposition of clays on site should be documented by a representative of Youngdahl Consulting Group, Inc.

Fill soil compaction should be evaluated by means of in-place density tests performed during fill placement so that adequacy of soil compaction efforts may be determined as earthwork progresses.

Slope Configuration and Grading

The project site is relatively flat with no existing slopes that would be of concern in regards to instability. If required for construction, cuts and fills with a maximum slope orientation of 2H:1V (Horizontal:Vertical) are considered appropriate for the project site. Generally a cut slope orientation of 2H:1V is considered stable with the material types encountered on the site. A fill slope constructed at the same orientation is considered stable if compacted to the engineered fill recommendations as stated in the recommendations section of this report. All slopes should have appropriate drainage and vegetation measures to minimize erosion of slope soils.

Slope Face Compaction: All slope fills should be laterally overbuilt and cut back such that the required compaction is achieved at the proposed finish slope face. As a less preferable



alternative, the slope face could be track walked or compacted with a wheel. If this second alternative is used, additional slope maintenance may be necessary.

<u>Slope Drainage</u>: Surface drainage should not be allowed to flow uncontrolled over any slope face. Adequate surface drainage control should be designed by the project civil engineer in accordance with the latest applicable edition of the CBC. All slopes should have appropriate drainage and vegetation measures to minimize erosion of slope soils.

Underground Improvements

<u>Trench Excavation</u>: Trenches or excavations in soil should be shored or sloped back in accordance with current OSHA regulations prior to persons entering them. The potential use of a shield to protect workers cannot be precluded.

<u>Backfill Materials</u>: Backfill materials for utilities should conform to the requirements of the local jurisdiction. It should be realized that permeable backfill materials will likely carry water at some time in the future.

When backfilling within structural footprints, compacted low permeability materials are recommended to be used a minimum of 5 feet beyond the structural footprint to minimize moisture intrusion. If a permeable material is used as backfill within this zone, subdrainage mitigation may be required.

<u>Backfill Compaction</u>: Backfill compaction should conform to the requirements of the local jurisdiction. Where backfill compaction is not specified by the local jurisdiction, the backfill should be compacted to a minimum of 90 percent relative compaction per the ASTM D1557 test method. Compaction should be accomplished using lifts which do not exceed 12 inches when compacting with a backhoe or larger equipment equipped with a compaction wheel. However, thickness of the lifts should be determined by the contractor. If the contractor can achieve the required compaction using thicker lifts, the method may be judged acceptable based on field verification by a representative of our firm using standard density testing procedures. Lightweight compaction equipment may require thinner lifts to achieve the required densities.

<u>Drainage Considerations</u>: In areas with the potential for a perched groundwater condition (i.e. shallow cemented soil horizons), underground utilities can become collection points for subsurface water. When these conditions are present, we recommend permanent subdrainage mitigation measures be installed. Such measures may include plug and drains within the utility trenches to collect and convey water to the storm drain system or other approved outlet. Temporary dewatering measures may be necessary and could include the installation of submersible pumps and/or point wells.

5.0 DESIGN RECOMMENDATIONS

Seismic Criteria

Based on the 2013 California Building Code, Chapter 16A, and our site investigation findings, the following seismic parameters are recommended from a geotechnical perspective for structural design. The final choice of design parameters, however, remains the purview of the project structural engineer.

2013 CBC	ASCE 7-10	Seismic Parameter	Recommended Value
	Table 20.3-1	Site Class	D
Figure 1613A.3.1(1)		Short-Period MCE at 0.2s, Ss	0.556g
Figure 1613A.3.1(2)		1.0s Period MCE, S ₁	0.264g
Table 1613A.3.3(1)		Site Coefficient, Fa	1.355
Table 1613A.3.3(2)		Site Coefficient, Fv	1.872
Equation 16A-37		Adjusted MCE Spectral Response Parameters, S _{MS} = F₂S₅	0.753g
Equation 16A-38		Adjusted MCE Spectral Response Parameters, S _{M1} = F _v S₁	0.494g
Equation 16A-39		Design Spectral Acceleration Parameters, S _{DS} = ⅔S _{MS}	0.502g
Equation 16A-40		Design Spectral Acceleration Parameters, S _{D1} = ⅔S _{M1}	0.329g
Table 1613A.3.5(1)		Seismic Design Category (Short Period), Occupancy I to IV	D
Table 1613A.3.5(2)		Seismic Design Category (1-Second Period), Occupancy I to IV	D
	Figure 22-7	Maximum Considered Earthquake Geometric Mean (MCEc) PGA	0.184g
	Table 11.8-1	Site Coefficient FPGA	1.432
	Equation 11.8-1	PGA _M = F _{PGA} PGA	0.263g

Table 4: Seismic Design Parameters

*Based on the online calculator available at <u>http://earthquake.usgs.gov/designmaps/us/application.php</u>

Shallow Conventional Foundations

We offer the following comments and recommendations for purposes of design and construction of shallow continuous and/or isolated pad foundations. The provided minimums do not constitute a structural design of foundations which should be performed by the structural engineer. Our firm should be afforded the opportunity to review the project grading and foundation plans to confirm the applicability of the recommendations provided below. Modifications to these recommendations may be made at the time of our review. In addition to the provided recommendations, foundation design and construction should conform to applicable sections of the 2013 California Building Code.

<u>Foundation Bearing Capacities</u>: An allowable dead plus live load bearing pressure of 2,000 psf may be used for design of conventional shallow foundations with a minimum width of 18 inches and a minimum embedment of 24 inches into firm native soils or engineered fills. Ancillary structures may be designed with an allowable dead plus live load bearing pressure of 1,500 psf for design of conventional shallow foundations with a minimum width of 12 inches and a minimum embedment of 18 inches into firm native soils or engineered fills. The allowable pressures are for support of dead plus live loads and may be increased by 1/3 for short-term wind and seismic loads. The bearing capacities were derived from the bearing capacity methods developed by Meyerhof (1963) and include a factor of safety of 3 into the values provided.

<u>Foundation Lateral Pressures</u>: Lateral forces on structures may be resisted by passive pressure acting against the sides of shallow footings and/or friction between the soil and the bottom of the footing. For resistance to lateral loads, a friction factor of 0.30 may be utilized for sliding resistance at the base of conventional shallow foundations in firm native materials or engineered

fill. A passive resistance of 250 pcf equivalent fluid weight may be used against the side of conventional shallow footings in firm native soil or engineered fill. If friction and passive pressures are combined, the lesser value should be reduced by 50 percent.

<u>Foundation Settlement</u>: A total settlement of less than 1 inch is anticipated; a differential settlement of ½ of the total is anticipated where foundations are bearing on like materials. This settlement is based upon the assumption that foundation will be sized and loaded in accordance with the recommendations in this report.

<u>Foundation Configuration</u>: Conventional shallow foundations should be a minimum of 18 inches wide and founded a minimum of 24 inches below the lowest adjacent soil grade for three-story structures. Foundations for ancillary structures including one and two-story buildings should be a minimum of 12 inches wide and founded a minimum of 18 inches below the lowest adjacent soil grade. Isolated pad foundations should be a minimum of 24 inches in diameter.

All footings should be founded below an imaginary 2H:1V plane projected up from the bottoms of adjacent footings and/or parallel utility trenches, or to a depth that achieves a minimum horizontal clearance of 6 feet from the outside toe of the footings to the slope face, whichever requires a deeper excavation.

<u>Foundation Reinforcement</u>: Foundation reinforcement should be provided by the structural engineer. The reinforcement schedule should account for typical construction issues such as load consideration, concrete cracking, and the presence of isolated irregularities. At a minimum, we recommend that continuous footing foundations be reinforced with four No. 4 reinforcing bars, two located near the bottom of the footing and two near the top of the stem wall.

<u>Subgrade Conditions</u>: Footings should never be cast atop soft, loose, organic, slough, debris, nor atop subgrades covered by ice or standing water. A representative of our firm should be retained to observe all subgrades during footing excavations and prior to concrete placement so that a determination as to the adequacy of subgrade preparation can be made.

<u>Shallow Footing / Stemwall Backfill</u>: All footing/stemwall backfill soil should be compacted to at least 90 percent of the maximum dry density (based on ASTM D1557).

Retaining Walls

Our design recommendations and comments regarding retaining walls for the project site are discussed below.

<u>Foundation Design Parameters</u>: An allowable dead plus live load bearing pressure of 1,500 psf may be used for design of conventional shallow foundations based a minimum of 18 inches into firm native soils or engineered fills with a minimum width of 12 inches. The allowable pressures are for support of dead plus live loads and may be increased by 1/3 for short-term seismic loads.

<u>Foundation Lateral Pressures</u>: Lateral forces on structures may be resisted by passive pressure acting against the sides of shallow footings and/or friction between the soil and the bottom of the footing. For resistance to lateral loads, a friction factor of 0.30 may be utilized for sliding resistance at the base of conventional shallow foundations in firm native materials or engineered fill. A passive resistance of 250 pcf equivalent fluid weight may be used against the side of conventional shallow footings in firm native soil or engineered fill. If friction and passive pressures are combined, the lesser value should be reduced by 50 percent.



<u>Retaining Wall Lateral Pressures</u>: Based on our observations and testing, the retaining wall should be designed to resist lateral pressure exerted from a soil media having an equivalent fluid weight provided in Table 5, below. In accordance with Section 1803A.5.12.1 of the 2013 California Building Code, application of the seismic design values for earthquake loading are required for retaining walls supporting more than 6 feet of backfill.

Wall Type	Wall Slope Configuration	Equivalent Fluid Weight (pcf)	Surcharge Load (psf)*	Lateral Pressure Coefficient	Earthquake Loading (plf)***		
Free Cantilever	Flat	50	per structural	0.39	7H ²	Applied 0.6H	
Restrained**	Flat	70	per structural	0.56	24H ²	of the wall	

Table 5: Retaining Wall Pressures

The surcharge loads should be applied as uniform loads over the full height of the walls as follows: Surcharge Load (psf) = (q) (K), where q = surcharge in psf, and K = coefficient of lateral pressure. Final design is the purview of the project structural engineer.

** Restrained conditions shall be defined as walls which are structurally connected to prevent flexible yielding, or rigid wall configurations (i.e. walls with numerous turning points) which prevent the yielding necessary to reduce the driving pressures from an at-rest state to an active state.

*** Section 1803A.5.12 of the 2013 California Building Code states that a determination of lateral pressures on basement and retaining walls due to earthquake loading shall be provided for structures to be designed in Seismic Design Categories D, E or F (Load value derived from Wood (1973) and modified by Whitman (1991)).

<u>Site Wall Drainage</u>: The above criteria are based on fully drained conditions as detailed in the attached Figure C-1, Appendix C. For these conditions, we recommend that a blanket of filter material be placed behind all proposed walls. The blanket of filter material should be a minimum of 12 inches thick and should extend from the bottom of the wall to within 12 inches of the ground surface. The filter material should conform to Class One, Type B permeable material as specified in Section 68 of the California Department of Transportation Standard Specifications, current edition. A clean ³/₄ inch crushed rock is also acceptable, provided filter fabric is used to separate the open graded gravel/rock from the surrounding soils. The top 12 inches of wall backfill should consist of a compacted soil cap. A filter fabric should be placed on top of the gravel filter material to separate it from the soil cap. A 4 inch diameter drain pipe should be installed near the bottom of the filter blanket with perforations facing down. The drainpipe should be underlain by at least 4 inches of filter-type material. An adequate gradient should be provided along the top of the foundation to discharge water that collects behind the retaining wall to a controlled discharge system.

The configuration of a long retaining wall generally does not allow for a positive drainage gradient within the perforated drain pipe behind the wall since the wall footing is generally flat with no gradient for drainage. Where this condition is present, to maintain a positive drainage behind the walls, we recommend that the wall drains be provided with a discharge to an appropriate nonerosive outlet a maximum of 50 feet on center.

Slab-on-Grade Construction

It is our opinion that soil-supported slab-on-grade floors could be used for the main floors of the residential structures, contingent on proper subgrade preparation. Often the geotechnical issues regarding the use of slab-on-grade floors include proper soil support and subgrade preparation, proper transfer of loads through the slab underlayment materials to the subgrade soils, and the anticipated presence or absence of moisture at or above the subgrade level. We offer the following comments and recommendations concerning support of slab-on-grade floors. The slab



design (concrete mix, reinforcement, joint spacing, moisture protection, and underlayment materials) is the purview of the project Structural Engineer.

<u>Slab Subgrade Preparation</u>: All subgrades proposed to support slab-on-grade floors should be prepared and compacted to the requirements of engineered fill as discussed in the Site Grading and Improvements section of this report.

<u>Slab Underlayment</u>: As a minimum for slab support conditions, the slab should be underlain by a minimum 4 inch crushed rock layer and covered by a minimum 10-mil thick moisture retarding plastic membrane. An optional 1 inch blotter sand layer above the plastic membrane is sometimes used to aid in curing of the concrete. The blotter layer can become a reservoir for excessive moisture if inclement weather occurs prior to pouring the slab, excessive water collects in it from the concrete pour, or an external source of water enters above or bypasses the membrane. The membrane may only be functional when it is above the vapor sources. The bottom of the crushed rock layer should be above the exterior grade to act as a capillary break and not a reservoir, unless it is provided with an underdrain system. The slab design and underlayment should be in accordance with ASTM E1643 and E1745.

If the blotter sand layer is omitted (as may be required if slab design and construction is to be performed according to the 2013 Green Building Code), special wet curing procedures will be necessary. In all cases, development of appropriate slab mix design and curing procedures remains the purview of the project structural engineer.

<u>Slab Moisture Protection</u>: Due to the potential for landscape to be present directly adjacent to the slab edge/foundation or for drainage to be altered following our involvement with the project, varying levels of moisture below, at, or above the pad subgrade level should be anticipated. The slab designer should include the potential for moisture vapor transmission when designing the slab. Our experience has shown that vapor transmission through concrete is controlled through slab thickness as well as proper concrete mix design.

It should be noted that placement of the recommended plastic membrane, proper mix design, and proper slab underlayment and detailing per ASTM E1643 and E1745 will not provide a waterproof condition. If a waterproof condition is desired, we recommend that a waterproofing expert be consulted for slab design.

<u>Slab Thickness and Reinforcement</u>: Geotechnical reports have historically provided minimums for slab thickness and reinforcement for general crack control. The concrete mix design and construction practices can additionally have a large impact on concrete crack control. All concrete should be anticipated to crack. As such, these minimums should not be considered to be stand alone items to address crack control, but are suggested to be considered in the slab design methodology.

In order to help control the growth of cracks in interior concrete from becoming significant, we suggest the following minimums. Interior concrete slabs-on-grade not subject to heavy loads should be a minimum of 4 inches thick. A 4 inch thick slab should be reinforced. A minimum of No. 3 deformed reinforcing bars placed at 24 inches on center both ways, at the center of the structural section is suggested. Joint spacing should be provided by the structural engineer. Troweled joints recovered with paste during finishing or "wet sawn" joints should be considered every 10 feet on center. Expansion joint felt should be provided to separate floating slabs from foundations and at least at every third joint. Cracks will tend to occur at recurrent corners, curved

or triangular areas and at points of fixity. Trim bars can be utilized at right angle to the predicted crack extending 40 bar diameters past the predicted crack on each side.

Vertical Deflections: Soil-supported slab-on-grade floors can deflect downward when vertical loads are applied, due to elastic compression of the subgrade. For design of concrete floors, a modulus of subgrade reaction of k = 100 psi per inch would be applicable for native soils and engineered fills.

Exterior Flatwork: Exterior concrete flatwork is recommended to have a 4 inch rock cushion. This could consist of vibroplate compacted crushed rock or compacted ³/₄ inch aggregate baserock.

If exterior flatwork concrete is against the floor slab edge without a moisture separator it may transfer moisture to the floor slab. Expansion joint felt should be provided to separate exterior flatwork from foundations and at least at every third joint. Contraction / groove joints should be provided to a depth of at least 1/4 of the slab thickness and at a spacing of less than 30 times the slab thickness for unreinforced flatwork, dividing the slab into nearly square sections. Cracks will tend to occur at recurrent corners, curved or triangular areas and at points of fixity. Trim bars can be utilized at right angle to the predicted crack extending 40 bar diameters past the predicted crack on each side.

Drainage Adjacent to Slabs: All grades should provide rapid removal of surface water runoff; ponding water should not be allowed on building pads or adjacent to foundations or other structural improvements (during and following construction). All soils placed against foundations during finish grading should be compacted to minimize water infiltration. Finish and landscape grading should include positive drainage away from all foundations. Section 1808A.7.4 of the 2013 California Building Code (CBC) states that for graded soil sites, the top of any exterior foundation shall extend above the elevation of the street gutter at the point of discharge or the inlet of an approved drainage device a minimum of 12 inches plus 2 percent. If overland flow is not achieved adjacent to buildings, the drainage device should be designed to accept flows from a 100 year event. Grades directly adjacent to foundations should be no closer than 8 inches from the top of the slab (CBC 2304.11.2.2), and weep screeds are to be placed a minimum of 4 inches clear of soil grades and 2 inches clear of concrete or other hard surfacing (CBC 2512.1.2). From this point, surface grades should slope a minimum of 2 percent away from all foundations for at least 10 feet, and then 2 percent along a drainage swale to the outlet (CBC 1804A.3). Downspouts should be tight piped via an area drain network and discharged to an appropriate non-erosive outlet away from all foundations.

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Typical 2013 California Building Code Drainage Requirements

The above referenced elements pertaining to drainage of the proposed structures is provided as general acknowledgement of the California Building Code requirements, restated and graphically illustrated for ease of understanding. Surface drainage design is the purview of the Project Architect/Civil Engineer. Review of drainage design and implementation adjacent to the building envelopes is recommended as performance of these improvements is crucial to the performance of the foundation and construction of rigid improvements.

It should be noted that due to the Americans with Disabilities Act (ADA) requirements, design and construction of alternative site drainage configurations may be necessary. In this case, design and construction of adequate drainage adjacent to foundations and slabs are essential to preserving foundation support and reducing the potential for wet slab related issues. A typical example of this condition occurs in developments where the landscape grades are situated at the same elevation as the parking areas so as to not create a drop off between the grades. This condition subsequently results in flat grades between the building, landscape area, and parking lot which do not meet building code requirements.

Asphalt Concrete Pavement Design

We understand that asphalt pavements will be used for the associated roadways. The following comments and recommendations are given for pavement design and construction purposes. All pavement construction and materials used should conform to applicable sections of the latest edition of the California Department of Transportation Standard Specifications.

<u>Subgrade Compaction</u>: After installation of any underground facilities, the upper 8 inches of subgrade soils under pavements sections should be compacted to a minimum relative compaction of 95 percent based on the ASTM D1557 test method at a moisture content near or above optimum. Aggregate bases should also be compacted to a minimum relative compaction of 95 percent based on the aforementioned test method.

<u>Subgrade Stability</u>: All subgrades and aggregate base should be proof-rolled with a full water truck or equivalent immediately before paving, in order to evaluate their condition. If unstable subgrade conditions are observed, these areas should be overexcavated down to firm materials and the resulting excavation backfilled with suitable materials for compaction (i.e. drier native soils or aggregate base). Areas displaying significant instability may require geotextile stabilization fabric within the overexcavated area, followed by placement of aggregate base. Final

determination of any required overexcavation depth and stabilization fabric should be based on the conditions observed during subgrade preparation.

<u>Design Criteria</u>: Critical features that govern the durability of a pavement section include the stability of the subgrade; the presence or absence of moisture, free water, and organics; the fines content of the subgrade soils; the traffic volume; and the frequency of use by heavy vehicles. Soil conditions can be defined by a soil resistance value, or "R-Value," and traffic conditions can be defined by a Traffic Index (TI).

<u>Design Values</u>: The following table provides recommended pavement sections based on the R-Value test (CTM 301) performed on a bulk sample representative of the materials expected to be exposed at subgrade, as well as our experience with similar materials in the area. An R-value of 13 was determined for the silty SANDS tested and used in our design.

Design values provided are based upon properly drained subgrade conditions. Although the R-Value design to some degree accounts for wet soil conditions, proper surface and landscape drainage design is integral in performance of adjacent street sections with respect to stability and degradation of the asphalt. If clay soils are encountered and cannot be sufficiently blended with non-expansive soils, we should review pavement subgrades to determine the appropriateness of the provided sections, and provide additional pavement design recommendations as field conditions dictate. Even minor clay constituents will greatly reduce the design R-Value.

The recommended design thicknesses presented in the following table were calculated in accordance with the methods presented in the Sixth Edition of the California Department of Transportation Highway Design Manual. A varying range of traffic indices are provided for use by the project Civil Engineer for roadway design.

Design Alternative Pavement Sections (Inches)										
Traffic Indices	Asphalt Concrete *	Aggregate Base **								
4.5	2.5	8.0								
4.5	3.0	7.0								
5.0	2.5	9.5								
5.0	3.0	8.5								
E	3.0	10.5								
5.5	3.5	9.5								
6.0	3.0	12.0								
0.0	3.5	11.0								
6.5	3.5	13.0								
0.5	4.0	12.0								
	4.0	13.5								
1.0	4.5	12.5								

Table 6: Asphalt Pavement Section Recommendations

* Asphalt Concrete: must meet specifications for Caltrans Hot Mix Asphalt Concrete

** Aggregate Base: must meet specifications for Caltrans Class II Aggregate Base (R-Value = minimum 78)

Portland Cement Concrete Pavement Design

We understand that Portland cement concrete pavements may be considered for various aspects of exterior paving for the site. The American Concrete Institute (ACI) Concrete Pavement Design method (ACI 330R-08) was used for design of the exterior concrete (rigid) pavements at the site. The pavement thicknesses were evaluated based on the soil design parameters provided in the following table.

Table 7: Soil Parameters								
Subgrade So Description	il k, Modulus of Subgrade Reaction*	Base Course						
Silty SAND	100 pci	6 inches						
* Based on an R-Va	lue of 13 as recommended above and correlated to	a k-Value recommended by ACI 330R						

Based on the subgrade soil parameters shown in the above table, the recommended concrete thicknesses for various traffic descriptions are presented in the table below. The recommended thicknesses provided below assume the use of plain (non-reinforced) concrete pavements.

We recommend that the rigid pavement be placed on at least 6 inches of aggregate base compacted to at least 95 percent of the maximum dry density per the ASTM D 1557 test method. From a geotechnical perspective, contraction joints should be placed in accordance with the American Concrete Institute (ACI) recommendations which include providing a joint spacing about 30 times the slab thickness up to a maximum of 10 feet. The joint patterns should also divide the slab into nearly square panels. If increased joint spacing is desired, reinforcing steel should be installed within the pavement in accordance with ACI recommendations. Final determination of steel reinforcement configurations (if used within the pavements) remains the purview of the Project Structural Engineer.

Cotocomu		Payament Troffia Description	Thickness (inches)			
Calegory	ADIT	Favement frame Description	3000 psi**	4000 psi**		
A	1	Car parking areas and access lanes	5.0	4.5		
A	10	Autos, pickups, and panel trucks only	5.5	5.0		
В	25	Shopping center entrance and service lanes	6.0	5.5		
В	300	Single-unit truck parking areas and interior lanes	7.0	6.0		
С	100		7.0	6.5		
С	300	Roadway Entrances and Exterior Lanes	7.5	6.5		
C	700		7.5	7.0		

Table 8: Concrete Pavement Section Recommendations

Average Daily Truck Traffic

28-day concrete compressive strength

Drainage

In order to maintain the engineering strength characteristics of the soil presented for use in this Geotechnical Engineering Study, maintenance of the building pad will need to be performed. This maintenance generally includes, but is not limited to, proper drainage and control of surface and subsurface water which could affect structural support and fill integrity. A difficulty exists in determining which areas are prone to the negative impacts resulting from high moisture conditions due to the diverse nature of potential sources of water; some of which are outlined in the paragraph below. We suggest that measures be installed to minimize exposure to the adverse effects of moisture, but this will not guarantee that excessive moisture conditions will not affect the structure.

Some of the diverse sources of moisture could include water from landscape irrigation, annual rainfall, offsite construction activities, runoff from impermeable surfaces, collected and channeled water, and water perched in the subsurface soils on the cemented soil horizon. Some of these sources can be controlled through drainage features installed either by the owner or contractor. Others may not become evident until they, or the effects of the presence of excessive moisture, are visually observed on the property.



Some measures that can be employed to minimize the buildup of moisture include, but are not limited to proper backfill materials and compaction of utility trenches within the footprint of the proposed structure; grout plugs at foundation penetrations; collection and channeling of drained water from impermeable surfaces (i.e. roofs, concrete or asphalt paved areas); installation of subdrain/cut-off drain provisions; utilization of low flow irrigation systems; proper design and maintenance of landscaping and drainage facilities that you or your landscaper installs.

As noted in the previous discussions, the moisture conditions may not manifest until after the site is developed. As such, any recommendations for the subdrain orientation and location to mitigate the moisture conditions can be provided on an as requested basis as the conditions arise.

Post Construction: All drainage related issues may not become known until after construction and landscaping are complete. Therefore, some mitigation measures may be necessary following site development. Landscape watering is typically the largest source of water infiltration into the subgrade. Given the soil conditions on site, excessive or even normal landscape watering may contribute to groundwater levels rising, which could contribute to moisture related problems and/or cause distress to foundations and slabs, pavements, and underground utilities, as well as creating a nuisance where seepage occurs. In order to mitigate these conditions, additional subdrainage measures may be necessary.

6.0 **DESIGN REVIEW AND CONSTRUCTION MONITORING**

The design plans and specifications should be reviewed and accepted by Youngdahl Consulting Group, Inc. prior to contract bidding. A review should be performed to determine whether the recommendations contained within this report are still applicable and/or are properly reflected and incorporated into the project plans and specifications.

Construction Monitoring

Construction monitoring is a continuation of the findings and recommendations provided in this report. It is essential that our representative be involved with all grading activities in order for us to provide supplemental recommendations as field conditions dictate. Youngdahl Consulting Group, Inc. should be notified at least two working days before site clearing or grading operations commence, and should observe the stripping of deleterious material, overexcavation of existing fills or loose/soft soils and provide consultation to the Grading Contractor in the field.

Low Impact Development Standards

Low Impact Development or LID standards have become a consideration for many projects in the region. LID standards are intended to address and mitigate urban storm water quality concerns. These methods include the use of Source Controls, Run-off Reduction and Treatment Controls. For the purpose of this report use of Run-off Reduction measures and some Treatment Controls may impact geotechnical recommendations for the project.

Youngdahl Consulting Group, Inc. did not perform any percolation or infiltration testing for the site as part of the Geotechnical Investigation. A review of soil survey and the soil conditions encountered in our borings indicate that the soils within the project area are Hydrologic Soil Group D (low permeability). Based on this condition, use of infiltration type LID methods (infiltration trenches, dry wells, infiltration basins, permeable pavements, etc.) should not be considered without addressing applicable geotechnical considerations/implications. As such, use of any LID measure that would require infiltration of discharge water to surfaces adjacent to structures/pavement or include infiltration type measures should be reviewed by Youngdahl Consulting Group, Inc. during the design process.



Post Construction Monitoring

As described in Post Construction section of this report, all drainage related issues may not become known until after construction and landscaping are complete. Youngdahl Consulting Group, Inc. can provide consultation services upon request that relate to proper design and installation of drainage features during and following site development. In addition, if the development includes use of LID measures maintenance of those features in conformance with the standard of practice and documentation from the designer will be necessary. The impact from infiltration or run-off reduction measures to engineered structures and foundations may not become apparent until after construction. We recommend that all LID measures be inspected and maintained as documented by the designer and if adverse impacts are noted related to the structure or site that Youngdahl Consulting Group, Inc. be retained to review the LID measure and provide additional consulting and options.

7.0 LIMITATIONS AND UNIFORMITY OF CONDITIONS

- 1. This report has been prepared for the exclusive use of Los Rios Community College District and their consultants for specific application to the American River College STEM Building project. Youngdahl Consulting Group, Inc. has endeavored to comply with generally accepted geotechnical engineering practice common to the local area. Youngdahl Consulting Group, Inc. makes no other warranty, expressed or implied.
- 2. As of the present date, the findings of this report are valid for the property studied. With the passage of time, changes in the conditions of a property can occur whether they be due to natural processes or to the works of man on this or adjacent properties. Legislation or the broadening of knowledge may result in changes in applicable standards. Changes outside of our control may cause this report to be invalid, wholly or partially. Therefore, this report should not be relied upon after a period of three years without our review nor should it be used or is it applicable for any properties other than those studied.
- 3. Section [A] 107.3.4 of the 2013 California Building Code states that, in regard to the design professional in responsible charge, the building official shall be notified in writing by the owner if the registered design professional in responsible charge is changed or is unable to continue to perform the duties.

WARNING: Do not apply any of this report's conclusions or recommendations if the nature, design, or location of the facilities is changed. If changes are contemplated, Youngdahl Consulting Group, Inc. must review them to assess their impact on this report's applicability. Also note that Youngdahl Consulting Group, Inc. is not responsible for any claims, damages, or liability associated with any other party's interpretation of this report's subsurface data or reuse of this report's subsurface data or engineering analyses without the express written authorization of Youngdahl Consulting Group, Inc.

4. The analyses and recommendations contained in this report are based on limited windows into the subsurface conditions and data obtained from subsurface exploration. The methods used indicate subsurface conditions only at the specific locations where samples were obtained, only at the time they were obtained, and only to the depths penetrated. Samples cannot be relied on to accurately reflect the strata variations that usually exist between sampling locations. Should any variations or undesirable conditions be encountered during the development of the site, Youngdahl Consulting Group, Inc. will provide supplemental recommendations as dictated by the field conditions.



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- 5. The recommendations included in this report have been based in part on assumptions about strata variations that may be tested only during earthwork. Accordingly, these recommendations should not be applied in the field unless Youngdahl Consulting Group, Inc. is retained to perform construction observation and thereby provide a complete professional geotechnical engineering service through the observational method. Youngdahl Consulting Group, Inc. cannot assume responsibility or liability for the adequacy of its recommendations when they are used in the field without Youngdahl Consulting Group, Inc. being retained to observe construction. Unforeseen subsurface conditions containing soft native soils, loose or previously placed non-engineered fills should be a consideration while preparing for the grading of the property. It should be noted that it is the responsibility of the owner or his/her representative to notify Youngdahl Consulting Group, Inc., in writing, a minimum of 48 hours before any excavations commence at the site.
- 6. Our experience has shown that vapor transmission through concrete is controlled through proper concrete mix design. As such, proper control of moisture vapor transmission should be considered in the design of the slab as provided by the project architect, structural or civil engineer. It should be noted that placement of the recommended plastic membrane, proper mix design, and proper slab underlayment and detailing per ASTM E1643 and E1745 will not provide a waterproof condition. If a waterproof condition is desired, we recommend that a waterproofing expert be consulted for slab design.
- 7. Following site development, additional water sources (i.e. landscape watering, downspouts) are generally present. The presence of low permeability materials can prohibit rapid dispersion of surface and subsurface water drainage. Utility trenches typically provide a conduit for water distribution. Provisions may be necessary to mitigate adverse effects of perched water conditions. Mitigation measures may include the construction of cut-off systems and/or plug and drain systems. Close coordination between the design professionals regarding drainage and subdrainage conditions may be warranted.

	Item Description	Recommended	Not Anticipated
1	Provide foundation design parameters	Included	
2	Review grading plans and specifications	~	
3	Review foundation plans and specifications	1	
4	Observe and provide recommendations regarding demolition	√	
5	Observe and provide recommendations regarding site stripping	1	
6	Observe and provide recommendations on moisture conditioning, removal, and/or recompaction of unsuitable existing soils	√	
7	Observe and provide recommendations on the installation of subdrain facilities	- -	√ [−]
8	Observe and provide testing services on fill areas and/or imported fill materials	√	
9	Review as-graded plans and provide additional foundation recommendations, if necessary	1	
10	Observe and provide compaction tests on storm drains, water lines and utility trenches	1	
11	Observe foundation excavations and provide supplemental recommendations, if necessary, prior to placing concrete	1	
12	Observe and provide moisture conditioning recommendations for foundation areas and slab- on-grade areas prior to placing concrete		√
13	Provide design parameters for retaining walls	Included	
14	Provide finish grading and drainage recommendations	Included	
15	Provide geologic observations and recommendations for keyway excavations and cut slopes during grading		1

Table 9: Checklist of Recommended Services

APPENDIX A Field Study

Vicinity Map Site Plan Logs of Exploratory Borings Soil Classification Chart and Log Exploration



Introduction

The contents of this appendix shall be integrated with the Geotechnical Engineering Study of which it is a part. They shall not be used in whole or in part as a sole source for information or recommendations regarding the subject site.

Our field study included a site reconnaissance by a Youngdahl Consulting Group, Inc. representative followed by a subsurface exploration program conducted on 5 August 2016, which included the advancement of 4 borings under his direction at the approximate locations shown on Figure A-2, this Appendix. Drilling of the exploratory borings was accomplished with a CME C-55 track mounted drill rig.

Throughout the drilling operation, soil samples were obtained at 5-foot depth intervals by means of a Modified California Sampler. This testing and sampling procedure consists of driving the steel sampler 18 inches into the soil with a 140-pound hammer free-falling 30 inches. The number of blows required to drive the sampler through each 6-inch interval is counted, and the total number of blows struck during the final 12 inches is recorded. If a total of 50 blows are struck within any 6-inch interval, the driving is stopped and the blow count is recorded as 50 blows for the actual penetration distance.

The soils encountered were logged during drilling and provide the basis for the "Boring Logs," Figures A-3 through A-6, this Appendix. The enclosed Boring Logs describe the vertical sequence of soils and materials encountered in each boring, based primarily on our field classifications and supported by our subsequent laboratory examination and testing. Where a soil contact was observed to be gradational, our logs indicate the average contact depth. Where a soil type changed between sample intervals, we inferred the contact depth. Our logs also graphically indicate the blow count, sample type, sample number, and approximate depth of each soil sample obtained from the borings, as well as any laboratory tests performed on these soil samples.





Logged By: EAS Date: 5 August 2016 Elevation							vation: ~					
Equipment:	CME	55 Track Mo	unted Crawle	er Drill Rig							B-1	
Depth (Feet) Graphic Log	Ground Water		Geotechnica & Unified Soil	l Description Classification		Sample	Blow Count	Recovery	Pocket Pen (tsf)	Tests &	Comments	
$ \begin{array}{c} 2 \\ 2 \\ - \\ 4 \\ - \\ 4 \\ - \\ - \\ - \\ $		10" PCC Brown sand Yellow brow weakly cem Grades fine cemented, of Grades olive Grades olive Grades olive Grades brow Boring term No groundw	y CLAY (CL) , n silty fine gra ented, dense, to medium gra f, medium den grained, with lense, with wh e grey, unceme ferately ceme staining wn, fine to med inated at 31.5 vater encounte	medium stiff, mois ined SAND (SM) , slightly moist ained, with clay, ase, moist no clay, weakly nite staining ented, medium de nted, very dense, m dium grained, unco	st		42 29 55 24 50/5.5 93		4.5+	LL = 39 58.2%	, PI = 26 < No.200	
Note: The boring log indicates subsurface conditions only at the specific location and time noted. Subsurface conditions, including groundwater levels, at other locations of the subject site may differ significantly from conditions which, in the opinion of Youngdahl Consulting Group, Inc., exist												
Ievels, at other locations of the subject site may differ significantly from conditions which, in the opinion of Youngdahl Consulting Group, Inc., exist at the sampling locations. Note, too, that the passage of time may affect conditions at the sampling locations. Image: Consulting Group, Inc., exist at the sampling locations. Note, too, that the passage of time may affect conditions at the sampling locations. Image: Consulting Group, Inc., exist at the sampling locations. Image: Consulting Group, Inc., exist at the sampling locations. Image: Consulting Group, Inc., exist at the sampling locations. Image: Consulting Group, Inc., exist at the sampling locations. Image: Consulting Group, Inc., exist at the sampling locations. Image: Consulting Group, Inc., exist at the sampling locations. Image: Consulting Group, Inc., exist at the sampling locations. Image: Consulting Group, Inc., exist at the sampling locations. Image: Consulting Group, Inc., exist at the sampling locations. Image: Consulting Group, Inc., exist at the sampling locations. Image: Consulting Group, Inc., exist at the sampling locations. Image: Consulting Group, Inc., exist at the sampling locations. Image: Consulting Group, Inc., exist at the sampling locations. Image: Consulting Group, Inc., exist at the sampling locations. Image: Consulting Group, Inc., exist at the sampling locations. Image: Consulting Group, Inc., exist at the sampling locating t											FIGURE A-3	

x.	Logged By	EAS		Date: 5 August 2016 Elevation: ~					Boring No.				
	Equipment	: CME	55 Track Mo	ounted Crawle	rawler Drill Rig								
	Depth (Feet) Graphic Log	Ground Water		Geotechnica & Unified Soil	al Description Classification		Sample	Blow Count	Recovery	Pocket Pen (tsf)	Tests &	Comments	
			7" PCC / 2" A Yellow brown (FILL?) Pink sandy S (NATIVE) <i>Grades unce</i> Yellow brown dense, moist	B silty SAND (SM ILT (ML), weak mented silty fine graine	//) , medium dense, m y cemented, stiff, mo ed SAND (SM) , medi	oist		18	77	2.0	Hand Au Bu @ DD = 80 MC= 27.	ger to 4' I k 1 1' - 3' .8 pcf 3%	
	9 – 10 – 11 – 12 – 13 – 13 – 14 – 15 – 16 – 17 – 18 – 18 – 19 –	والمتعالم فالمعالم والمتعالم والمعالم	Grades weak	dy cemented, ve	ery dense, with white	staining		38	77 77				
	20 - 21 - 22 - 23 - 23 - 24 - 25 - 26 - 27 - 27 - 27 - 27 - 27 - 27 - 27		Grades olive Boring termi No groundw	grey and olive y nated at 21.5' ater encountere	vellow, medium dens	e		29	77			•	
	Note: The bor subject site may may affect cond GEOTECHNIC	ng log ind y differ si itions at th ONSU AL • ENV	icates subsurface of gnificantly from con- e sampling locations INGRD JLTING GR TRONMENTAL • MA	A HILLS TESTING	Project No.: E04314.008P	noted. Subsur Ilting Group, Ir EXI Amer	face con nc., exist PLOI rican [ditions, ind at the sar RATO River (Bacrame	RY BC College ento, Cal	DRING STEM	vels, at other too, that the LOG Building	FIGURE	
Logged By: EAS Date: 5 August 2016 Ele			Elevatio	n: ~				~	Boring No.				
--	--	--------------	---	--	---	---	-----------------------	-------------	-------------	---------------------	-------------------------------	--	
Equipr	ment:	СМЕ	55 Track Mo	ounted Crawle	er Drill Rig							B-3	
Depth (Feet)	Graphic Log	Ground Water		Geotechnica & Unified Soil	I Description Classification		Sample	Blow Count	Recovery	Pocket Pen (tsf)	Tests &	Comments	
			3.25" PCC Brown silty S Brown silty S with staining Grades with c	AND_(SC)_med AND (SM), wea (NATIVE) clay, uncemente	i <u>um dense_moist_(i</u> kly cemented, dens d, medium dense	ElLL) se, moist, 	-	30	44		Bu @ DD = 11 MC= 7.1	lk 2 1' - 8' 8.1 pcf %	
4 5 6 7 8 8			Grades yellov very dense, n	w brown and oliv noist	ve, moderately cem	- nented, - - - - - -		81	44	2.0			
9 10 11 12			Grades yellov	v brown, uncem	nented, medium der	- 		24	777		Bu @	lk 3 10' - 15'	
13 14 15 16 17 18			Grades brown	n, weakly cemei	nted			31	77				
19 - 20 - 21 - 22 -			Yellow brown	SAND (SP), we	eakly cemented, de	nse, moist _ 	- - - - -	56	77				
- 23 - 24 - 25 -			Boring termin No groundwa	nated at 21.5' ater encountere	d								
26	e horing		icates subsurface o	onditions only at the	specific location and time	a noted Subeur		ditions inc	luding grou	Indwater le	vels at other	locations of the	
subject s may affec	subject site may differ significantly from conditions which, in the opinion of Youngdahl Consulting Group, Inc., exist at the sampling locations. Note, too, that the passage of time may affect conditions at the sampling locations.												
GEOTEG	Project No.: EXPLORATORY BORING LOG GEOTECHNICAL · ENVIRONMENTAL · MATERIALS TESTING Project No.: EXPLORATORY BORING LOG Figure September 2016 September 2016 Sacramento, California Figure A-5												

Logge	d By:	EAS		Date: 5 Aug	ust 2016	Elevatio	n: ~				-	Boring No.
Equip	nent:	CME	55 Track Mo	unted Crawle	er Drill Rig							B-4
Depth (Feet)	Graphic Log	Ground Water		Geotechnica & Unified Soil	l Description Classification		Sample	Blow Count	Recovery	Pocket Pen (tsf)	Tests &	Comments
1 - 2 - 3 - 4 -			3" PCC Brown silty S , Brown and ol weakly ceme Grades brown	AND (SM), med ive yellow silty S nted, moist (NA n, uncemented	<u>lium dense, moist (F</u> SAND (SM), medium TIVE)	<u>II-L)</u> 1 dense, - - - -	-	28	44			
5			Grades olive	and olive yellow	/	- - - - - - - - - - - - - - - - - - -	-	31	77			
9 – 10 – 11 – 12 – 13 – 14 –			Pink sandy S	ILT (ML), stiff, n				12	77	2.5 3.25	DD = 75 MC= 31.	.4 pcf 9%
15 16 17 18			Brown silty S dense, moist	AND (SM), wea	kly cemented, medit	- um - - - - - -		24	77			
19 – 20 – 21 – 22 –			Grades dark	brown				21	77	1	DD = 84 MC= 33.	.8 pcf 1%
23 – 24 – 25 –			Boring termin No groundwa	nated at 21.5' ater encountere	d		- - - - -					
26 – 27 – Note: Th subject s may affed	ne boring ite may	g log ind differ sig ons at the	icates subsurface contraction of the subsurface	onditions only at the litions which, in the c	specific location and time opinion of Youngdahl Const	noted. Subsur liting Group, Ir	face cor	nditions, inc at the sam	luding grou npling locat	undwater le ions. Note,	vels, at other too, that the	locations of the passage of time
GEOTEC			NGD	OUP, INC. TERIALS TESTING	Project No.: E04314.008P September 2016	EXI Amer	PLO rican	RATO River C Sacrame	RY BC college ento, Cal	ORINO STEM ifornia	G LOG Building	FIGURE A-6

	UNI	FIED SOII	_ CL	ASS	IFICATION SYSTEMS		
1	MAJOR	DIVISION	SYMBOLS		TYPICAL NAMES		
	eve	Clean GRAVELS	GW	0°°	Well graded GRAVELS, GRAVEL-SAND mixtures		
S.	VELS > #4 si	Or No Fines	GP		Poorly graded GRAVELS, GRAVEL-SAND mixtures		
) SOII sieve	GRA) r 50%	GRAVELS With	GM		Silty GRAVELS, poorly graded GRAVEL-SAND- SILT mixtures		
AINEC #200	Ove	Over 12% Fines	GC		Clayey GRAVELS, poorly graded GRAVEL-SAND- CLAY mixtures		
E GR/ 50% >	eve	Clean SANDS	SW		Well graded SANDS, gravelly SANDS		
DVer {	SANDS r 50% < #4 sie	Or No Fines	SP		Poorly graded SANDS, gravelly SANDS		
8-		SANDS With Over 12% Fines	SM		Silty SANDS, poorly graded SAND-SILT mixtures		
	Ove		SC		Clayey SANDS, poorly graded SAND-CLAY mixtures		
			ML		Inorganic SILTS, silty or clayey fine SANDS, or clayey SILTS with plasticity		
solLS sieve	SI Lic	LTS & CLAYS Juid Limit < 50	CL		Inorganic CLAYS of low to medium plasticity, gravelly, sandy, or silty CLAYS, lean CLAYS		
NED S #200			OL		Organic CLAYS and organic silty CLAYS of low plasticity		
GRAII 50% <			ΜН		Inorganic SILTS, micaceous or diamacious fine sandy or silty soils, elastic SILTS		
FINE	SI Lic	LTS & CLAYS Juid Limit > 50	СН		Inorganic CLAYS of high plasticity, fat CLAYS		
			он		Organic CLAYS of medium to high plasticity, organic SILTS		
HIG	HLY OR	GANIC CLAYS	PT		PEAT & other highly organic soils		



SAN	IPLE DRIVING RECORD
BLOWS P FOOT	ER DESCRIPTION
25	25 Blows drove sampler 12 inches, after initial 6 inches of seating
50/7"	50 Blows drove sampler 7 inches, after initial 6 inches of seating
50/3"	50 Blows drove sampler 3 inches during or after initial 6 inches of seating
Note: To an to 50 blows	void damage to sampling tools, driving is limited s per 6 inches during or after seating interval.

SOIL GRAIN SIZE

U.S. STAND	ARD SIEVE	6"		:	3" 3/	1	4	. 10)	40	20	00	
					GRA	VEL			SAND			SILT.	
0.011	BOOLDER		COBBLE		COARSE	FINE		COARSE	MEDIUM		FINE	SILI	CLAI
GRAIN SIZE	E IN MILLIMETERS	150		7	5 19	Э	4.7	75 2.	0	.425	0.0)75	0.002

KEY TO PIT & BORING SYMBOLS

KEY TO PIT & BORING SYMBOLS

Ν	Standard Penetration test		Joint
\square	2.5" O.D. Modified California Sampler	a	Foliation Water Seepage
Ш	3" O.D. Modified California Sampler	NFWE FWE	No Free Water Encountered Free Water Encountered
	Shelby Tube Sampler	REF	Sampling Refusal
0	2.5" Hand Driven Liner	DD MC	Dry Density (pcf) Moisture Content (%)
8	Bulk Sample	LL Pl	Liquid Limit Plasticity Index
Ā	Water Level At Time Of Drilling	PP UCC	Pocket Penetrometer Unconfined Compression (ASTM D2166)
	Water Level After Time Of Drilling	TVS	Pocket Torvane Shear
₽ Ţ	Perched Water	El Su	Expansion Index (ASTM D4829) Undrained Shear Strength

ZOUNGDAHL	Project No.: E04314.008P	SOIL CLASSIFICATION CHART AND LOG EXPLANATION	FIGURE
GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING	September 2016	American River College STEM Building Sacramento, California	A-/

APPENDIX B

Laboratory Testing

Direct Shear Test Atterberg Limit Test R-Value Test Modified Proctor Test Corrosivity Tests



Introduction

Our laboratory testing program for this evaluation included numerous visual classifications, direct shear, Atterberg limit, resistance value, modified Proctor, and corrosivity tests. The following paragraphs describe our procedures associated with each type of test. Graphical results of certain laboratory tests are enclosed in this appendix. The contents of this appendix shall be integrated with the Geotechnical Engineering Study of which it is a part. They shall not be used in whole or in part as a sole source for information or recommendations regarding the subject site.

Laboratory Testing Procedures

<u>Visual Classification</u>: Visual soil classifications were conducted on all samples in the field and on selected samples in our laboratory. All soils were classified in general accordance with the Unified Soil Classification System, which includes color, relative moisture content, primary soil type (based on grain size), and any accessory soil types. The resulting soil classifications are presented on the exploration logs in Appendix A.

<u>Soil Strength Determination</u>: The strength parameters of the foundation soils were based on direct shear tests (ASTM D3080) performed on a representative remolded sample of the near-surface soils. The results of these tests are presented on Figure B-1, this Appendix.

<u>Atterberg Limit Determination</u>: Atterberg limits are used primarily for classifying and indexing cohesive soils. The liquid and plastic limits, which are defined as the moisture contents of a cohesive soil at arbitrarily established limits for liquid and plastic behavior, respectively, were determined for a selected sample in general accordance with ASTM D-4318. The results of this test are presented on the enclosed Atterberg limit graphs Figures B-2, this Appendix.

<u>Resistance Value Determination</u>: An R-Value test (California Test Method 301) was performed to obtain asphalt concrete and Portland cement concrete pavement design parameters. The results of this test are presented on Figure B-3, this Appendix.

<u>Maximum Dry Density Determination</u>: A modified Proctor test (ASTM D1557) was conducted to provide the optimum moisture and maximum dry density on the near surface material. The results of this test are presented on Figure B-4, this Appendix.

<u>Corrosivity Tests</u>: A corrosivity test typically comprises individual measurements of pH, electrical resistivity, sulfate content, and chloride content, which together indicate the corrosiveness of a soil. Corrosivity tests were performed on selected samples by an independent analytical laboratory working under subcontract to Youngdahl Consulting Group, Inc. The results of these tests are presented on the enclosed analytical certificates, this Appendix.





Resistance "R" Value of Soil and Soil-Aggregate Mixtures, CTM 301 **R-Value Chart** 90 80 70 60 **R- Value** 50 40 30 20 10 0 700 600 500 400 300 200 800 100 0 **Exudation Pressure, psi** Test Specimen No.: 2 3 1 Moisture Content at Test, % 27.2 23.5 25.9 Dry Density at Test, pcf 101.5 97.9 99.1 Expansion Pressure, psf 260 104 43 Exudation Pressure, psi 147 452 251 Resistance "R" Value 12 16 10 "R" Value at 300 psi Exudation Pressure 13 Material Description: **Brown Silty SAND with Clay** Source: Notes: Plasticity % Greater than % Less than Sample No./Depth, ft: Bulk 1 & 2 Combined USCS Class. Liquid Limit No. 200 No. 4 Index Date Test Date 8/5/2016 8/11/2016 1 Sampled: Started: American River College STEM Project: Building UP. INC. **Building Innovative Solutions** E04314.008P Project No.: Figure 1234 Glenhaven Court, El Dorado Hills, CA 95762 Reviewed By: JLC Date: 8/29/2016 B-3 ph 916.933.0633 • fx 916.933.6482 • www.youngdahl.net





Sunland Analytical



11419 Sunrise Gold Circle, #10 Rancho Cordova, CA 95742 (916) 852-8557

> Date Reported 08/12/2016 Date Submitted 08/09/2016

To: Jeffry Cannon Youngdahl Consulting Group 1234 Glenhaven Ct. El Dorado Hills, CA 95630

From: Gene Oliphant, Ph.D. \ Randy Horney General Manager \ Lab Manager

The reported analysis was requested for the following location: Location : E04314.008P Site ID : BULKS 1&2. Thank you for your business.

* For future reference to this analysis please use SUN # 72543-151501.

EVALUATION FOR SOIL CORROSION

Soil pH 7.25

Minimum Resistivity	2.01 ohm-cm	(x1000)	
Chloride	33.4 ppm	00.00334	8
Sulfate	31.7 ppm	00.00317	00

METHODS

pH and Min.Resistivity CA DOT Test #643 Sulfate CA DOT Test #417, Chloride CA DOT Test #422

APPENDIX C Details

Site Wall Drainage



Powering forward. Together.



April 17, 2017

LOS RIOS COMMUNITY COLLEGE DISTRICT 1919 SPANOS CT SACRAMENTO CA 95825

Notification # 31642125

SMUD COMMITMENT LETTER

Thank you for submitting your plans for **AMERICAN RIVER COLLEGE STEM BUILDING** for an electric service commitment. Your cooperation enables us to give you the best service possible, as well as provide for your future requirements.

We are returning one copy of your plans indicating the service location and other requirements checked below. Our commitment is subject to changing conditions and, as a result, may not be valid after twelve months.

Please contact the Designer if additional information is desired.

Designer: ED OWEN			Т	elepho	one (916) 73	32-7344
Service will be:	Overhead	[]	Undergro	ound	[X]		
Volts: 277/480	Phase: THR	EE	Wire:	4	Т	Туре:	WYE
(Street light service vo	ltage will be the	same a	is above.)				
Transformer pad requi	red:	Yes	[X]	N	0	[]	SMUD Dwg. UVD 2.2 & 2.2A
Conduit required:		Yes	[X]	N	0	[]	(see sketch)
Right-of-way required:		Yes	[]	N	0	[X]	
Transformer protection	required:	Yes	[X]	N	0	[]	see sketch and SMUD Dwg. UVD 2.5
Primary pull box requir	ed:	Yes	[X]	N	0	[]	SMUD Dwg. UVC 1.2 & 1.2.2
Secondary J – Box Re	quired:	Yes	[]	N	0	[X]	SMUD Dwg. N/A
Service box required:		Yes	[]	N	0	[X]	SMUD Dwg. N/A
Switchgear pad require	ed:	Yes	[]	N	0	[X]	SMUD Dwg. N/A
Other requirements:	See enclosed	Bo	oklet [X]	Print	ts [X]	

*A maximum fault current of 34,100 amps, symmetrical, is based on the largest transformer that could be needed to serve the Single [X] Combined [] main sizes of 1600 amps under the following assumptions:

- 1. The largest transformer that could be needed is 1500 kVA with 5.3 % impedance
- 2. A primary system impedance of zero ohms
- 3. No motor contributions to the fault, and
- 4. Zero ohms fault impedance

The meter(s) shall be located on the exterior of the building. When it is absolutely necessary to locate meters in locked rooms, cabinets, or fenced enclosures, consult SMUD's Field Metering at (916) 732-5167.

*If future load growth necessitates increasing the main switch size, the available fault current should be recalculated.

NOTE: This commitment letter may be required by local inspection authority as part of its plan check requirements.



April 17, 2017

LOS RIOS COMMUNITY COLLEGE DISTRICT 1919 SPANOS CT SACRAMENTO CA 95825

SUBJECT: ELECTRIC SERVICE REQUIREMENTS

Project Location: AMERICAN RIVER COLLEGE STEM BUILDING

Notification # 31642125

In order to schedule construction activity to provide timely permanent electric service to your development, the Sacramento Municipal Utility District (SMUD) requires the following:

- A. Property owner will sign and return the enclosed Conveyance of Electric Distribution Facilities. <u>Please Note</u>: SMUD construction cannot be scheduled until signed documents are returned.
- B. Developer's compliance with SMUD Rules and Electric Service Requirements. Copies are available upon request.
- C. Due to the time needed for construction scheduling, SMUD fees need to be paid as soon as possible after receipt of the billing contract.
- D. Costs for relocating or modifying SMUD facilities, whether in a street or private right-of-way, as a result of a commercial, industrial, or apartment development, shall be reimbursed by the developer prior to any work being done by SMUD.
- E. The project coordinator should notify SMUD's Designer of any changes in the project's estimated start date to avoid unnecessary delays of SMUD construction.
- F. SMUD may need to secure an easement from you and possibly other private parties and/or permits from various public agencies to provide electric service to your development. If an easement is required, SMUD's Real Estate Services will contact you, typically within 2-3 weeks to properly execute a Grant of Easement, please see attached example. If you have questions or concerns regarding these items, please contact your assigned SMUD Designer as SMUD construction cannot start until these requirements are satisfied.
- G. Party responsible for electric bills should make application for service with SMUD Customer Services Department at 1-888-742-7683 as soon as possible. Connection of electric service can be scheduled upon receipt of the electrical inspection by the city/county.
- H. All metering and switchgear design and placement must be submitted and approved by SMUD's Field Metering prior to installation. Please submit metering and switchgear designs to SMUD at <u>metershopsubmittals@smud.org</u> or mail to: SMUD, Attention: Field Metering, Mail Stop EB 102, 4401 Bradshaw Road, Sacramento, CA 95827-3834 or contact them at (916) 732-5167.
- I. Multi-unit buildings must be addressed in compliance with the enclosed <u>addressing guidelines</u> prior to connection of electric service. A copy of the site plan showing building addresses, unit numbers, and electric service locations should be received by SMUD's Designer at least ten (10) working days prior to obtaining City/County inspection approval in order to avoid service delays. Meters cannot be set until specific building addresses and unit numbers are known and clearly identified on buildings and electric service equipment.

J. The project coordinator will conduct a pre-construction meeting prior to the start of trenching for the electric system. At the time of your pre-construction meeting you will need to supply SMUD's inspector with a copy of your building permit and a valid electrical service need date. <u>Inspection of SMUD's required civil</u> <u>improvements cannot begin without these items nor until the meeting has been held</u>. To schedule the meeting, please call the SMUD Inspector checked below two full working days prior to scheduled meeting.

[] Jack Chapman, 496-1274 [X] Adam Escamilla, 719-0869

[] Jeff Coale, 296-5641 [] Greg Fish, 803-3202 [] Kenny Kehrer, 869-1107 [] Stanton Speare, 291-0230

Please retain these requirements for your information.

Sincerely, ED OWEN

Engineering Designer Design and Construction Services Grid Assets (916) 732-7344

Powering forward. Together.



April 17, 2017

LOS RIOS COMMUNITY COLLEGE DISTRICT 1919 SPANOS CT SACRAMENTO CA 95825

Notification # 31642125

SUBJECT: CONVEYANCE OF ELECTRIC DISTRIBUTION FACILITIES

In response to your request for service at **AMERICAN RIVER COLLEGE STEM BUILDING**, the Sacramento Municipal Utility District (SMUD) proposes to install electrical facilities (cable, transformers, switchgear) within or upon certain underground electric distribution facilities (conduits, boxes, pads) to be installed by the property owner as shown on the attached drawing.

SMUD required facilities are to be installed in accordance with its rules and regulations. Conveyance of the owner provided electric distribution facilities will be made to SMUD upon inspection approval.

Standard District Procedure is to obtain this conveyance after SMUD inspectors have approved the owner's installation of the facilities which can sometimes result in delays in providing service. In order to avoid delays SMUD will accept conveyance of these facilities prior to the owner's installation and SMUD inspection approval, provided the legal property owner(s) agree:

- A. To install SMUD required electric distribution facilities, with above ground appurtenances as described below and in the attached drawing. Such installation will be in accordance with SMUD Rules, Regulations, and Electric Service Requirements.
- B. To grant title to the installed facilities to SMUD.
- C. To insure integrity and accuracy of facilities (conduits, boxes, pads, etc.) for one year upon system being completed and energized.

Those electric distribution facilities conveyed to SMUD consist of:*

- _____ Ft. 2" Conduit
- _____ Ft. 3" Conduit
- <u>1140</u> Ft. 4" Conduit
- _____ Ft. 5" Conduit
- _____ Ft. 6" Conduit
- _____1 Each Transformer Pad(s)
- _____1 Each Primary Pull Box(es)
- Each Secondary J Box(es)
- Each Service Box(es)
 - _____ Each Switchgear Pad(s)

*Conduit footages are approximate.

Please indicate your acceptance by signing in the space provided and returning this letter to SMUD Distribution Line Design, Grid Assets, 4401 Bradshaw Rd., MS EA105, Sacramento, CA 95827-3834.

I, ______, owner and grantor agree to the terms and conditions stated above and hereby grant, bargain, and convey to SACRAMENTO MUNICIPAL UTILITY DISTRICT, a municipal utility district, Grantee, its successors and assigns, free and clear of all liens and encumbrances, those certain underground electric distribution facilities, with any above ground appurtenances described above and in the attached drawing, now installed or to be installed on or adjacent to grantor's premises in the County of Sacramento, State of California.

	Owner Name Signature		Owner Name Print
Address: _		_	
_		_	
– Phone:		_	
		Date:	
		Designer Name:	ED OWEN
		Notification #:	31642125

ADDRESSING GUIDELINES FOR MULTI-UNIT BUILDINGS

An efficient method of addressing new buildings in the Sacramento area has been mutually agreed on by Fire, Police, Postal Service, Public Works, and utility companies. The advent of automated mail processing and computer controlled emergency services (911 System) has made it critical that proper addressing be emphasized. This is a guide for developers, managers and owners to use when addressing a new project.

Multiple buildings in same complex:

• One street address for entire complex

Each unit has a separate unique numeric address – no duplicates.

Example: 1000 Main St Units 1 – 96

Note: This is the method preferred by the Sacramento County Sheriff's Department.

or

• A separate street address for each building in complex

Each unit has a separate unique numeric address - no duplicates within the complex.

Example:	1000 Main St	Units 1 – 16
	1002 Main St	Units 17 – 32
	1004 Main St	Units 33 - 48, etc.

(Note: Unit numbers increase as street numbers increase.)

or

Unit numbering repeats, but is not duplicated within each street address. (Least Preferred)

Example:	1000 Main St	Units 1 – 16
	1002 Main St	Units 1 – 16
	1004 Main St	Units 1 – 16, etc.

For two-story buildings, use odd numbers downstairs, and even numbers upstairs.

For multi-story buildings, use sequential numbering for each floor.

Example:	1st floor	100 – 199
	2nd floor	200 – 299
	3rd floor	300 - 399, etc.

Do not do this:

- One street address for entire complex with
 - Buildings numbered or lettered
 - Unit numbers or letters duplicated

Example: 1000 Main St Bldg A or 1 Units 1 – 16 Bldg B or 2 Units 1 – 16 Bldg C or 3 Units 1 – 16 (1000 Main St #A1 – A16) 1000 Main St Bldg 1 or A Units A – H Bldg 2 or B Units A – H Bldg 3 or C Units A – H

• A separate street address for each building in complex

- Units lettered rather than numbered

Example: 1000 Main St A – H 1002 Main St A – H 1004 Main St A – H

Alpha's are not acceptable (i.e.: A, B, C, D, etc).

Hyphens are not acceptable (i.e.: 1-3, 1-A).

Alpha-numeric combinations are not acceptable.

Do not duplicate.

Your cooperation in adopting the preferred addressing is appreciated.

Prior to final internal addressing, all builders or their architects should contact:

Address Management Systems United States Postal Service 3775 Industrial Blvd West Sacramento CA 95799-0043

Phone: 916-373-8055



SMUD NOTES

- DEVELOPER IS RESPONSIBLE FOR THE FOLLOWING:
- 1. Call U. S. A. prior to digging. 1-800-227-2600
- 2. All metering and switchgear design and placement must be submitted and approved by SMUD's Field Metering prior to installation. Please submit metering and switchgear designs to SMUD at metershopsubmittals@smud.org, mail to: Sacramento Municipal Utility District, Attention: Field Metering, Mail Stop EB 102, 4401 Bradshaw Road, Sacramento, Ca 95827-3834 or contact them at (916) 732-5167.
- 3. All metering equipment shall be located on the outside of the building. The metering equipment is NOT ALLOWED to be located inside the building. Metering equipment shall include: metering sections, current and potential transformer sections, pull sections, and the main disconnect. Any questions regarding deviation of this requirement, the locations of meters or for remote metering consideration please contact Field Metering @ (916) 732-5167.
- 4. All SMUD transformers must be accessible to a 26,000-pound SMUD service vehicle in all weather. For transformer pad openings and specifications see SMUD Electric Service Requirements Booklet, Distribution Underground Structure Engineering Specification T007, Drawings UVD 2.2, UVD 2.2A, UVD 2.3A and UVD 2.3A1. Precast transformer pads are preferred construction. See Appendix B for manufacturers.
- 5. No obstructions are permitted and level terrain is required within three (3) feet of sides / back and eight (8) feet in front of all operable SMUD equipment doors (Transformers, Cubicles, T-Taps, etc.). No planting of trees within eight (8) feet of all sides of any operable SMUD equipment.
- 6. Barricades are required if edge of pad is less than 5' from vehicular traffic (SMUD Electric Service Requirements Booklet, Distribution Underground Structure Engineering Specification T007, Drawings UVD 2.4 and UVD 2.5.
- 7. Any building overhang of transformer must be approved by SMUD Designer.
- 8. Joint trench to be maximum 59" deep and remain minimum of 5 feet from footings of any building or structure. All conduit(s) to be inspected by SMUD inspector prior to backfilling and pouring concrete. Conduit(s) to be PVC-DB 120 grade or better. SMUD approved pull tape required. All elbows to be schedule 40 or better. Concrete encasement may be required. See Electric Service Requirements booklet, Distribution Underground Structure Engineering Specification T007 and SMUD commitment sketch.
- 9. Maximum number of utility conduits allowed to rise on a pole is three. Please review utility conduit risers with SMUD Inspector prior to placement of conduits on poles.
- 10. An on-site pre-construction meeting with SMUD inspector is mandatory 48 hours in advance of construction. Copies of the local agency building permit will be required prior to scheduling pre-construction meetings with SMUD inspectors for non-residential developments. Call: [] Joe Alejandrez: (916) 869-7666, [x] Adam Escamilla: (916) 719-0869
- 11. All SMUD concrete box lids, existing & proposed, are to be changed out to spring assist lids per SMUD Inspector directions.
- 12. Only those electrical conduits intended for electric service shall be placed under a SMUD transformer pad. The placement of other conduits or structures foreign to the electric service must be approved by a SMUD Designer or SMUD inspector.
- 13. If the number of service conductors being terminated exceed those allowed, a "J" Box enclosure adjacent to the transformer may be required. See SMUD Electric Service Requirements booklet, Distribution Underground Structure Engineering Specification T007, drawings UVC 1.7, UAD 1.6 and U1S3D1. Conductor tails to be 10' above box. Verify with SMUD Designer the maximum number of SMUD and customer cables that can be connected in the J-box.
- 14. Customer service runs are per local agency codes and inspected and approved by the local inspection agency. Customer is responsible for and will be required to provide SMUD approved connectors and compression tooling for any non-standard SMUD secondary conductors. Please contact SMUD's Designer when necessary.
- 15. A grant of right-of-way to SMUD may be required for conduit runs, vaults, transformer pads, etc. prior to any SMUD construction.
- 16. Any street light required by the City or County must be coordinated with SMUD.
- 17. Service voltage will be 277/480 volts, THREE phase, 4 wire, WYE. Street light service voltage will be the same.
- 18. Any deviation from this commitment must be approved by SMUD Designer or Inspector prior to installation of underground facilities.
- 19. Call SMUD Customer Services to apply for service at 1-877-742-7683.
- 20. PLEASE NOTE: It is the responsibility of the developer to install all infrastructure as shown per SMUD commitment drawing as SMUD does not review or approve developer composite drawings.
- 21. PLEASE NOTE: SMUD reserves the right to revise commitments after twelve (12) months. A new SMUD commitment will normally be required after one (1) year unless a customer has requested and received written approval for a longer period of time from a SMUD Designer.

ORDER # 30136569 / SN31642125

SMUD DESIGNER: ED OWEN

TELEPHONE: (916) 732-7344

DATE: 4/17/17

COMMITMENT FOR

AMERICAN RIVER COLLEGE STEM BUILDING

4700 COLLEGE OAK DR, SACRAMENTO 95841

SO#/SN#: 30136569 / 31642125 TB MAP # 279A1

VICINITY MAP







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SECTION 10 1400	SIGNAGE
SECTION 10 2113	TOILET COMPARTMENTS
SECTION 10 2226	OPERABLE PARTITIONS
SECTION 10 2813	COMMERCIAL TOILET ACCESSORIES
SECTION 10 4400	FIRE PROTECTION SPECIALTIES

DIVISION 11 – EQUIPMENT

SECTION 11 3100	RESIDENTIAL APPLIANCES
SECTION 11 5213	PROJECTION SCREENS

DIVISION 12 – FURNISHINGS

SECTION 12 2413	ROLLER WINDOW SHADES
SECTION 12 3640	COUNTERTOPS
SECTION 12 4816	ENTRANCE FLOOR GRILLES

DIVISION 13 – SPECIAL CONSTRUCTION – NOT USED

DIVISION 14 – CONVEYING EQUIPMENT

SECTION 14 2100 ELECTRIC-TRACTION ELEVATORS

VOLUME 3 FACILITY SERVICES SUBGROUP:

DIVISION 21 – FIRE SUPPRESSION

SECTION 21 0050	BASIC FIRE SPRINKLER MATERIALS & METHODS
SECIONT 21 1000	FIRE SPRINKLER SYSTEM

DIVISION 22 – PLUMBING

SECTION 22 0050	BASIC PLUMBING MATERIALS & METHODS
SECIONT 22 0548	VIBRATION AND SEISMIC CONTROLS FOR PLUMBING PIPING AND
	EQUIPMENT
SECTION 22 1000	PLUMBING PIPING SYSTEMS
SECTION 22 4000	PLUMBING FIXTURES
SECTION 22 5000	PLUMBING EQUIPMENT

DIVISION 23 – HEATING VENTILATING AND AIR CONDITIONING

SECTION 23 0050	BASIC HVAC MATERIALS & METHODS
SECTION 23 0548	VIBRATION AND SEISMIC CONTROLS FOR HVAC
SECTION 23 0593	TESTING, ADJUSTING, AND BALANCING FOR HVAC
SECTION 23 0800	MECHANICAL AND ATC SYSTEM COMMISSIONING
SECTION 23 0900	AUTOMATIC TEMPERATURE CONTROLS, BUILDING MANAGEMENT
	CONTROL SYSTEM
SECTION 23 7300	INDOOR AIR HANDLING UNITS
SECTION 23 8000	HEATING, VENTILATING AND AIR CONDITIONING
SECTION 23 9100	PRE-INSULATED UNDERGROUND HOT AND CHILLED WATER PIPING
	SYSTEM
SECTION 23 9500	VARIABLE FREQUENCY DRIVES

DIVISION 25 – INTEGRATED AUTOMATION

SECTION 25 1523 GRAPHIC USER INTERFACE FOR BCS (AD1)

DIVISION 26 – ELECTRICAL

SECTION 26 0010	BASIC ELECTRICAL REQUIREMENTS
SECTION 26 0060	POWER SYSTEM STUDY
SECTION 26 0519	BUILDING WIRE AND CABLE
SECTION 26 0526	GROUNDING AND BONDING
SECTION 26 0529	ELECTRICAL HANGERS AND SUPPORTS
SECTION 26 0531	CONDUIT
SECTION 26 0533	BOXES
SECTION 26 0543	UNDERGROUND DUCTS AND STRUCTURES
SECTION 26 0546	SIGNAL SYSTEMS RACEWAY
SECTION 26 0553	ELECTRICAL IDENTIFICATION

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SECTION 26 0800	ELECTRICAL COMMISSIONING
SECTION 26 0926	NETWORK LIGHTING CONTROL
SECTION 26 2213	DRY TYPE TRANSFORMERS
SECTION 26 2413	SWITCHBOARDS
SECTION 26 2416	PANELBOARDS
SECTION 26 2716	CABINETS AND ENCLOSURES
SECTION 26 2726	WIRING DEVICES
SECTION 26 2816	OVERCURRENT PROTECTIVE DEVICES
SECTION 26 2819	DISCONNECT SWITCHES
SECTION 26 2900	MOTOR CONTROLS
SECTION 26 4313	SURGE PROTECTIVE DEVICES (SPD)
SECTION 26 5100	LIGHTING
SECTION 26 5600	EXTERIOR LIGHTING

DIVISION 27 – COMMUNICATIONS

SECTION 27 0010	BASIC COMMUNICATIONS REQUIREMENTS
SECTION 27 0526	COMMUNICATIONS GROUNDING AND BONDING
SECTION 27 0536	COMMUNICATIONS CABLE TRAYS
SECTION 27 0800	COMMUNICATIONS COMMISSIONING
SECTION 27 1100	COMMUNICAITONS EQUIPMENT ROOMS
SECTION 27 1313	COMMUNICATIONS COPPER BACKBONE CABLING
SECTION 27 1323	COMMUNICATIONS OPTICAL FIBER BACKBONE CABLING
SECTION 27 1500	COMMUNICATIONS HORIZONTAL CABLING
SECTION 27 3226	EMERGENCY TELEPHONES
SECTION 27 4100	AUDIO VISUAL SYSTEM
SECTION 27 5126	ASSISTIVE LISTENGIN SYSTEM (ALS)
SECTION 27 5313	WIRELESS CLOCKS

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

SECTION 28 2300	SURVEILLANCE CAMERAS
SECTION 28 6113	FIRE ALARM SYSTEM
SECTION 28 6516	INTRUSION/ACCESS ALARM SYSTEMS

SITE AND INFRASTRUCTURE SUBGROUP:

DIVISION 31 – EARTHWORK

SECTION 31 2000 EARTHWORK

DIVISION 32 – EXTERIOR IMPROVEMENTS

SECTION 32 0100	LANDSCAPE MAINTENANCE PERIOD
SECTION 32 0523	CEMENT AND CONCRETE FOR EXTERIOR IMPROVEMENTS
SECTION 32 1316	SITE CONCRETE
SECTION 32 1373	SITE SEALANTS
SECTION 32 3000	SITE FURNISHINGS
SECTION 32 8400	IRRIGATION
SECTION 32 9113	SOIL PREPARATION AND SOIL MIXES
SECTION 32 9119	PLANTING AREA FINISH GRADING
SECTION 32 9200	GRASSES
SECTION 32 9300	PLANT MATERIAL

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DIVISION 33 – UTILITIES

SECTION 33 0516	UTILITIES STRUCTURES
SECTION 33 1000	WATER UTILITIES
SECTION 33 3000	SANITARY SEWERAGE UTILITIES
SECTION 33 4000	STORM DRAINAGE UTILITIES
SECTION 33 4101	LANDSCAPE DRAINAGE

PROCESS EQUIPMENT SUBGROUP: NOT USED

END OF DOCUMENT 00 0110

SECTION 01 2300

ALTERNATES

PART 1 GENERAL

- 1.1 RELATED DOCUMENTS:
 - A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specifications Sections, apply to this Section.
- 1.2 SUMMARY:
 - A. This Section includes administrative and procedural requirements governing Alternates.

1.3 DEFINITIONS

- A. Definition: An alternate is an amount proposed by bidders and stated on the Bid Form, for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the District decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. The cost for each Alternate is the net change to the Contract Sum to incorporate the Alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Modify or adjust affected adjacent Work as necessary to completely and fully integrate that Work into the Project.
 - 1. Include as part of each Alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not mentioned as part of the Alternate.
- B. Notification: Immediately following the award of the Contract, notify each party involved, in writing, of the status of each Alternate. Indicate whether Alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to Alternates.
- C. Execute accepted Alternates under the same conditions as other Work of this Contract.

- D. Schedule: A "Schedule of Alternatives" is included at the end of this Section. Specifications Sections referenced in the Schedule contain requirements for materials necessary to achieve the Work described under each Alternate.
- PART 2 PRODUCTS (Not Applicable)

PART 3 - EXECUTION

- 3.01 SCHEDULE OF ALTERNATES
 - A. <u>ALTERNATE NO. 1:</u> Provide hardware and track system for sliding white boards in the Community Gathering Space (All Levels) in lieu of fixed white boards. Refer to sheets A245 and A245.1 for more information. Provide hardware and track system for operable partitions in Math Learning Space #3 and #4 (Level 02) and Math Leaning Spaces #6, #7, and #8 (Level 03) in lieu of typical wall construction. Refer to sheets A102, A103, A132, A133, A417 and A417.1 for more information. (AD1)
 - B. <u>ALTERNATE NO. 2:</u> Provide custom wall graphics in the Community Gathering Space (all levels), Stair 1 and Stair 2. Refer to sheets A245, A245.1 and A453 for more information
 - C. <u>ALTERNATE NO. 3:</u> Provide custom film graphics in the faculty offices (all levels). Refer to sheets A404-A406 for more information.
 - D. <u>ALTERNATE NO. 4:</u> Provide power in the concrete benches in the STEM Courtyard, in the concrete benches at the east elevation and in the concrete bench at the southeast corner. Refer to sheet E102 for more information. (AD1)
 - E. <u>ALTERNATE NO. 5:</u> Provide 1-hour fire resistive protection on all primary structural elements throughout the building. Refer to sheets G010 and G040.1 for more information. (AD1)

END OF SECTION 01 2300

SECTION 05 7000 – DECORATIVE METAL

PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS
 - A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- 1.2 SECTION INCLUDES
 - A. Stained steel interior wall base **MB-1 (AD1).**
 - B. Aluminum break metal angle trims at interior.
 - C. Stainless steel inside corners at extruded glass fiber concrete panels.
 - D. Exterior stainless steel flashing at grade.
 - E. Perforated metal at Reception Desk.
- 1.3 RELATED SECTIONS
 - A. Section 05 5000 Metal Fabrications: Non-decorative metal fabrications.
- 1.4 SUSTAINABILITY REQUIREMENTS
 - A. Refer to Section 01 8113 for sustainability requirements related to this Section.
- 1.5 COORDINATION
 - A. Coordinate installation of anchorages for decorative metal items. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- 1.6 ACTION SUBMITTALS
 - A. Product Data: For each type of product indicated, including finishing materials.
 - B. Shop Drawings: For decorative metal. Include plans, elevations, component details, and attachments to other work. Indicate materials and profiles of each decorative metal member, fittings, joinery, finishes, fasteners, anchorages, and accessory items.
 - 1. Provide templates for anchors and bolts specified for installation under other Sections.
 - C. Samples for Verification: For each type of exposed finish required.
 - 1. Sections of linear shapes.
 - 2. Full-size Samples of castings and forgings.
 - D. Sustainability Submittals: See Section 01 8113 for additional requirements; provide the following:

- 1. Product data for products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content.
 - a. Include statement indicating costs for each product having recycled content.
- 2. Product data for field-applied touch up primers, paints, clear coatings, and galvanizing agents, include printed statement of VOC content and chemical components.
- E. Mill Certificates: Signed by manufacturers of stainless-steel products certifying that products furnished comply with requirements.
- F. Welding certificates.
- G. Qualification Data: For Installer and Fabricator.
- 1.7 QUALITY ASSURANCE
 - A. Installer Qualifications: Arrange for installation of decorative metal specified in this Section by the same firm that fabricated it.
 - B. Fabricator Qualifications: A firm experienced in producing decorative metal similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
 - C. Welding: Qualify procedures and personnel according to the following: 1. AWS D1.6, "Structural Welding Code--Stainless Steel."
- 1.8 DELIVERY, STORAGE, AND HANDLING
 - A. Store decorative metal inside a well-ventilated area, away from uncured concrete and masonry, and protected from weather, moisture, soiling, abrasion, extreme temperatures, and humidity.
 - B. Deliver and store cast-metal products in wooden crates surrounded by sufficient packing material to ensure that products will not be cracked or otherwise damaged.

1.9 SITE CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with decorative metal by field measurements before fabrication and indicate measurements on Shop Drawings.
 - 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating railings without field measurements. Coordinate wall and other contiguous construction to ensure that actual dimensions correspond to established dimensions.
 - 2. If practical, provide allowance for trimming and fitting at site.

PART 2 - PRODUCTS

2.1 METALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces, unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

2.2 ALUMINUM

- A. Aluminum for Break Shapes: ASTM B209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than strength and durability properties of Alloy 5005-H32.
- 2.3 STAINLESS STEEL
 - A. Sheet, Strip, Plate, and Flat Bar: ASTM A666, Type 304.
 - B. Bars and Shapes: ASTM A276, Type 304
- 2.4 STEEL AND IRON
 - A. Stained Steel for Wall Base and Metal Angles:
 - 1. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
 - 2. Finish: US11 7A, Nickel Plated, Blackened Relieved, Clear Coated.
 - 3. Height: As indicated on Drawings.

2.5 PERFORATED METAL

- A. Perforated-Metal Panels: Fabricate panels from perforated metal made from stainless steel.
 - 1. Holes: Round
 - 2. Metal: Type 304 stainless steel.
 - 3. Gauge: 1/4-inch.
 - 4. Holes: 1/2-inch diameter on 11/16-inch centers.
 - 5. Pattern: Staggered.
 - 6. Open Area: 48 percent.
 - 7. Orient perforated metal with pattern as indicated on Drawings.

2.6 FASTENERS

- A. Fastener Materials: Unless otherwise indicated, provide the following:
 - 1. Aluminum Items: Type 304 stainless-steel fasteners.
 - 2. Stainless-Steel Items: Type 304 stainless-steel fasteners.
 - 3. Uncoated Steel Items: Plated steel fasteners complying with ASTM B633, Class Fe/Zn 25 for electrodeposited zinc coating where concealed, Type 304 stainless-steel fasteners where exposed.
 - 4. Galvanized Steel Items: Plated steel fasteners complying with ASTM B633, Class Fe/Zn 25 for electrodeposited zinc coating.
 - 5. Dissimilar Metals: Type 304 stainless-steel fasteners.
- B. Fasteners for Anchoring to Other Construction: Unless otherwise indicated, select fasteners of type, grade, and class required to produce connections suitable for anchoring indicated items to other types of construction indicated.
- C. Provide concealed fasteners for interconnecting components and for attaching decorative metal items to other work.
 - 1. Provide Phillips tamper-resistant flat-head machine screws for exposed fasteners, unless otherwise indicated.

2.7 FABRICATION, GENERAL

- A. Assemble items in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- B. Form decorative metal to required shapes and sizes, true to line and level with true curves and accurate angles and surfaces. Finish exposed surfaces to smooth, sharp, well-defined lines and arris.
- C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- D. Form simple and compound curves in bars and extruded shapes by bending members in jigs to produce uniform curvature for each configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces.
- E. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm), unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- F. Mill joints to a tight, hairline fit. Cope or miter corner joints. Fabricate connections that will be exposed to weather in a manner to exclude water.
- G. Provide necessary rebates, lugs, and brackets to assemble units and to attach to other work. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items, unless otherwise indicated.
- H. Comply with AWS for recommended practices in shop welding. Weld behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded joints of flux, and dress exposed and contact surfaces.
 - 1. Where welding cannot be concealed behind finished surfaces, finish joints to comply with NOMMA's "Voluntary Joint Finish Standards" for Type 1 Welds: no evidence of a welded joint.
- I. Welded Connections: Use fully welded joints for permanently connecting components by welding. Cope or butt components to provide 100 percent contact or use manufacturer's standard fittings designed for this purpose.
- J. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- K. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- L. Provide wall returns, closed ends, brackets, flanges, fittings, and sleeves as required for type of installation indicated.
- 2.8 CUSTOM BREAK SHAPE FABRICATION
 - A. Fabricate to profile indicated on Drawings.1. Aluminum Sheet: 0.063 inch (1.60 mm) minimum.

- B. Miscellaneous Break Shapes: Provide headers, closures, anchors and supports as indicated and required.
- C. Form metal to profiles indicated, in maximum lengths to minimize joints. Produce flat, flush surfaces without cracking or grain separation at bends. Fold back exposed edges of unsupported sheet metal to form a 1/2-inch- (12-mm-) wide hem on the concealed side, or ease edges to a radius of approximately 1/32 inch (1 mm) and support with concealed stiffeners.
- D. Coordinate dimensions and attachment methods of break metal items with those of adjoining construction to produce integrated assemblies with closely fitting joints and with edges and surfaces aligned unless otherwise indicated.
- E. Increase metal thickness or reinforce with concealed stiffeners, backing materials, or both, as needed to provide surface flatness equivalent to stretcher-leveled standard of flatness and sufficient strength for indicated use.
 - 1. Support joints with concealed stiffeners as needed to hold exposed faces of adjoining sheets in flush alignment.
- F. Build in straps, plates, and brackets as needed to support and anchor fabricated items to adjoining construction. Reinforce decorative formed metal items as needed to attach and support other construction.
- G. Provide support framing, mounting and attachment clips, splice sleeves, fasteners, and accessories needed to install break metal items.
- H. Conceal fasteners where possible; otherwise, locate where they are as inconspicuous as possible. Size fasteners to support closures and trim, with fasteners spaced to prevent buckling or waviness in finished surfaces.
- I. Drill and tap holes needed for securing break shapes and trim to other surfaces.
- J. Incorporate gaskets where indicated or needed for concealed, continuous seal at abutting surfaces.
- K. Miter or cope trim members at corners and reinforce with bent metal splice plates to form tight joints.
- 2.9 FINISHES, GENERAL
 - A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
 - B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- 2.10 ALUMINUM FINISHES
 - A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
 - B. Class I, Clear Anodic Finish: AA-M12C22A41 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.

2.11 STAINLESS-STEEL FINISHES

- A. Remove tool and die marks and stretch lines or blend into finish.
- B. Unless otherwise indicated, grind and polish surfaces to produce uniform finish indicated, free of cross scratches.
 - 1. Run grain of directionally textured finishes with long dimension of each piece.
- C. Directional Satin Finish: No. 4 finish.
- D. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of decorative metal.
 1. Proceed with installation only after unsatisfactory conditions have been corrected.
- 3.2 INSTALLATION, GENERAL
 - A. Provide anchorage devices and fasteners where needed to secure decorative metal to inplace construction.
 - B. Perform cutting, drilling, and fitting required to install decorative metal. Set products accurately in location, alignment, and elevation; measured from established lines and levels. Provide temporary bracing or anchors in formwork for items to be built into concrete, masonry, or similar construction.
 - C. Fit exposed connections accurately together to form tight, hairline joints or, where indicated, with uniform reveals and spaces for sealants and joint fillers. Where cutting, welding, and grinding are required for proper shop fitting and jointing of decorative metal, restore finishes to eliminate evidence of such corrective work.
 - D. Do not cut or abrade finishes that cannot be completely restored in the field. Return items with such finishes to the shop for required alterations, followed by complete refinishing, or provide new units as required.
 - E. Install concealed gaskets, joint fillers, insulation, and flashings as work progresses.
 - F. Restore protective coverings that have been damaged during shipment or installation. Remove protective coverings only when there is no possibility of damage from other work yet to be performed at same location.
 - 1. Retain protective coverings intact; remove coverings simultaneously from similarly finished items to preclude non-uniform oxidation and discoloration.
 - G. Field Welding: Comply with applicable AWS specification for procedures of manual shielded metal arc welding, for appearance and quality of welds, and for methods used in correcting welding work. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Grind exposed welded joints smooth and restore finish to match finish of adjacent surfaces.

3.3 CLEANING

- A. Construction Waste Management: Manage construction waste in accordance with provisions of Section 01 7419 Construction Waste Management and Disposal. Submit documentation for Credit MR 2 to satisfy the requirements of that Section.
- B. Unless otherwise indicated, clean metals by washing thoroughly with clean water and soap, rinsing with clean water, and drying with soft cloths.
- C. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material.
- D. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

3.4 PROTECTION

- A. Protect finishes of decorative metal from damage during construction period with temporary protective coverings approved by decorative metal fabricator. Remove protective covering at time of Substantial Completion.
- B. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION 05 7000

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SECTION 09 2900 – GYPSUM BOARD

PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS
 - A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- 1.2 SECTION INCLUDES
 - A. Gypsum wallboard, rated and non-rated at walls and ceilings.
 - B. Ceramic tile backing wallboard.
 - C. Gypsum board trims and accessories.

1.3 RELATED SECTIONS

- A. Section 06 1600 Sheathing: Exterior gypsum sheathing.
- B. Section 0 78400 Firestopping.
- C. Section 07 9200 Joint Sealants: Acoustical sealant.
- D. Section 09 2216 Non-Structural Metal Framing: Wall framing; gypsum board ceiling suspension framing (GB-1) and framed ceiling (GB-2). (AD1)
- E. Section 09 2219 Cavity Shaft-Wall Assemblies: Non-load-bearing metal shaft-wall framing, gypsum panels, and other components of shaft-wall assemblies.
- 1.4 SUSTAINABILITY REQUIREMENTS
 - A. Refer to Section 01 8113 for sustainability requirements related to this Section.

1.5 DEFINITIONS

- A. Gypsum Board Construction Terminology: Refer to ASTM C11 and GA-505 for definitions of terms related to gypsum board assemblies not defined in this Section or in other referenced standards.
- 1.6 ACTION SUBMITTALS
 - A. Product Data: For each type of product specified.
 - B. Sustainability Submittals: See Section 01 8113 for additional requirements; provide the following:
 - 1. Product data for products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content.
 - a. Include statement indicating costs for each product having recycled content.
 - b. Provide total weight of products provided.

- 2. Product data for installation adhesives and sealants, including printed statement of VOC content and chemical composition of each product used.
- 1.7 INFORMATIONAL SUBMITTALS
 - A. Product Certificates: Signed by manufacturers of gypsum board certifying that their products comply with specified requirements.
- 1.8 QUALITY ASSURANCE
 - A. Fire-Test-Response Characteristics: For gypsum board with fire-resistance ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.
 - B. Sound Transmission Characteristics: For gypsum board with STC ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E90 and classified according to ASTM E413 by a qualified independent testing agency.
 1. Minimum STC Rating: 42.
- 1.9 DELIVERY, STORAGE, AND HANDLING
 - A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.
 - B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Neatly stack gypsum panels flat to prevent sagging.
 - C. Handle gypsum board to prevent damage to edges, ends, and surfaces. Do not bend or otherwise damage metal corner beads and trim.
- 1.10 SITE CONDITIONS
 - A. Environmental Conditions, General: Establish and maintain environmental conditions for applying and finishing gypsum board to comply with ASTM C840 and with gypsum board manufacturer's recommendations.
 - B. Room Temperatures: For nonadhesive attachment of gypsum board to framing, maintain not less than 40 deg F (4 deg C). For adhesive attachment and finishing of gypsum board, maintain not less than 50 deg F (10 deg C) for 48 hours prior to application and continuously after until dry. Do not exceed 95 deg F (35 deg C) when using temporary heat sources.
 - C. Ventilation: Ventilate building spaces, as required, for drying joint treatment materials. Avoid drafts during hot dry weather to prevent finishing materials from drying too rapidly.

PART 2 - PRODUCTS

- 2.1 GYPSUM BOARD PRODUCTS
 - A. Acceptable Manufacturers: Provide gypsum board materials manufactured by one of the following:
 - 1. CGC Inc.
 - 2. United States Gypsum Co.

- B. General: Provide gypsum board of types indicated in maximum lengths available to minimize end-to-end butt joints.
- C. Thickness: Provide gypsum board in thicknesses indicated or, if not otherwise indicated, in 5/8 inch thickness to comply with ASTM C840 for application system and support spacing indicated.
- D. Gypsum Wallboard: ASTM C1396/C1396M except where noted otherwise:
 - 1. Gypsum Board: ASTM C1396/C1396M; Type X where required for fire-resistive-rated assemblies.
 - 2. Gypsum Ceiling Board: ASTM C1396/C1396M; High-strength, sag-resistant type for ceiling surfaces.
 - 3. Long Edges: Tapered.
 - 4. Thickness: 5/8-inch throughout unless indicated otherwise on Drawings.
- 2.2 CERAMIC TILE BACKING PANELS
 - A. Panel Size: Provide in maximum lengths and widths available that will minimize joints in each area and correspond with support system indicated.
 - B. Water-Resistant Gypsum Backing Board: ASTM C1178/C1178M.
 - 1. Manufacturer: Georgia Pacific; DensShield Tile Backer.
 - 2. Core: 5/8 inch (15.9 mm), Type X.
 - 3. Mold Resistance: ASTM D3273, score of 10.
 - C. Cementitious Backer Units: Complying with ANSI A118.9 in maximum lengths available to minimize end-to-end butt joints.
 - 1. Thickness: 5/8-inch.
 - 2. Width: Manufacturer's standard width, but not less than 32 inches.
 - 3. Manufacturer: Durock, Cement Board; include interior tape, reinforcing mesh, trim and bead.

2.3 TRIM ACCESSORIES

- A. Accessories for Interior Installation: Corner beads, edge trim, and control joints complying with ASTM C1047.
 - 1. Material: Formed metal or metal combined with paper, with metal sheet steel zinccoated by hot-dip or electrolytic processes, or with aluminum or rolled zinc.
- B. Square Corner Bead Reinforcement: One of the following or accepted equivalent:
 - 1. Dur-A-Bead as manufactured by USG or accepted equivalent.
 - 2. Wallboard corner bead with 1 1/4-inch flanges as manufactured Gold Bond Building Products Div., National Gypsum Co. or accepted equivalent.
- C. Metal Casing Bead: One of the following or accepted equivalent:
 - 1. No. 200A Metal Trim manufactured by USG or accepted equivalent.
 - 2. No. 100 wall board casing manufactured by Gold Bond National Gypsum Company.
- D. Control Joints: One of the following or accepted equivalent:
 - 1. No. 093; as manufactured by USG or accepted equivalent.
 - 2. E-Z expansion joint 0.093 zinc control joint, manufactured by Gold Bond National Gypsum Company.
- E. Moldings:
 - 1. J-Molding: Fry Reglet, J Molding or accepted equivalent.

- 2. F-Molding: Fry Reglet, F Reveal or accepted equivalent.
- 3. V-Molding: Fry Reglet, V Reveal or accepted equivalent.

2.4 JOINT TREATMENT MATERIALS

- A. General: Provide joint treatment materials complying with ASTM C475 and the recommendations of both the manufacturers of sheet products and of joint treatment materials for each application indicated.
- B. Joint Tape for Gypsum Board: ASTM C475 and as follows:
 - 1. Interior Gypsum Board: Paper reinforcing tape, one grade for bedding tapes and filling depressions, and one for topping and sanding, unless otherwise indicated.
 - 2. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.
- C. Setting-Type Joint Compounds for Gypsum Board:
 - 1. Factory-packaged, job-mixed, chemical-hardening powder products formulated for uses indicated.
 - 2. Where setting-type joint compounds are indicated as a taping compound only or for taping and filling only, use formulation that is compatible with other joint compounds applied over it.
- D. For filling joints and treating fasteners of water-resistant gypsum backing board behind base for ceramic tile, use formulation recommended by the gypsum board manufacturer for this purpose.
- E. For topping compound, use sandable formulation.
- F. Drying-Type Joint Compounds for Interior Gypsum Board: Factory-packaged vinyl-based products complying with the following requirements for formulation and intended use.
 - 1. Ready-Mixed Formulation: Factory-mixed product.
 - 2. All-purpose compound formulated for both taping and topping compounds.

2.5 AUXILIARY MATERIALS

- A. Spot Grout: ASTM C475, setting-type joint compound recommended for spot grouting hollow metal door frames.
- B. Steel Drill Screws: ASTM C1002, unless otherwise indicated.
 - 1. Use screws complying with ASTM C954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.
 - a. Gold Bond, Type-S, 1-inch drywall screws.
 - b. U.S. Gypsum Type-S, panhead, 1-inch.
 - 2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.
- C. Other Fasteners: As required and recommended by gypsum wallboard manufacturer and in accordance with the specified Standards. Space fasteners in accordance with CBC Table 47 G and 47 H.
- D. Acoustical Accessories:
 - 1. Acoustic Insulation: See Section 07 2100.
 - 2. Acoustical Sealant: See Section 07 9200.
 - 3. Rated Acoustical Sealant: See Section 07 9200.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates to which gypsum board assemblies attach or abut, installed hollow metal frames, cast-in-anchors, and structural framing with Installer present for compliance with requirements for installation tolerances and other conditions affecting performance of assemblies specified in this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.
- 3.2 APPLYING AND FINISHING GYPSUM BOARD, GENERAL
 - A. Gypsum Board Application and Finishing Standards: Install and finish gypsum panels to comply with ASTM C840 and GA-216.
 - B. When cutting gypsum drywall is required, work from the face side. When cutting by scoring, cut through the face paper and then snap the panel back away from the cut face. Then break the back paper by snapping the gypsum board in the reverse direction or by cutting the back paper.
 - 1. Smooth all cut ends and edges of panels where necessary to obtain a smooth joint.
 - C. Install wall/partition board panels to minimize the number of abutting end joints or avoid them entirely. Stagger abutting end joints not less than one framing member in alternate courses of board. At high walls, install panels horizontally with end abutting joints over studs and staggered.
 - D. Install control joints at locations indicated on Drawings, or if not indicated, install according to ASTM C840 in specific locations as directed by Architect.
 - E. Install gypsum panels with face side out. Do not install imperfect, damaged, or damp panels. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
 - F. Locate both edge or end joints over supports. Position adjoining panels so that tapered edges abut tapered edges, and field-cut edges abut field-cut edges and ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions. Avoid joints at corners of framed openings where possible.
 - G. Attach gypsum panels to studs so that the leading edge or end of each panel is attached to nailing members except where joints are at right angles to framing members.
 - H. For cut-outs in panels for pipes, fixtures, or other small openings, make holes and cut-outs by sawing or by such other method that will not fracture the core or tear the covering and with such accuracy that plates, escutcheons, trim, etc., will cover all edges.
 - 1. Attach gypsum panels to framing provided at openings and cutouts.
 - 2. Use of "score and knock out" method will not be permitted.
 - I. Where partitions intersect open roof trusses and other structural members projecting below underside of roof structure, cut gypsum panels to fit profile formed by coffers, joists, and other structural members; allow 1/4-to-1/2-inch-wide joints to install sealant.
 - J. Apply wall board first to ceilings and then to walls, using maximum practical lengths to minimize end joints.

- K. Isolate perimeter of non-load-bearing gypsum board partitions at structural abutments, except floors, as detailed. Provide 1/4-inch-to-1/2-inch-wide spaces at these locations and trim edges with U-bead edge trim where edges of gypsum panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- L. Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's recommendations.
- M. Treat cut edges and holes in moisture resistant gypsum board with sealant.
- N. Place control joints to be consistent with lines of building spaces.
 - 1. Provide where system abuts structural elements.
 - 2. Provide at dissimilar materials.
 - 3. Provide where lengths in partitions exceed 30'-0".
- O. At recesses for equipment and accessories in fire rated walls, line recess with fire rated gypsum board to maintain specified fire rating of wall.
- P. For partitions, apply full height sheets with long dimension parallel to framing members with abutting edges over supports. Where ceiling heights exceed 10'-0" and where required by fire resistive ratings, apply sheets with long dimension perpendicular to framing members. For ceilings, apply sheets with long dimension either perpendicular or parallel to framing members to result in fewest joints. For fire-rated assemblies, apply gypsum board in accordance with CBC Tables 720.1(2) and 720.1(3) as applicable.
- 3.3 INSTALLATION OF FASTENERS
 - A. Start screws at the center of the gypsum board sheet.
 - B. Do not locate fasteners less than 3/8-inch from edges or ends of sheets. Do not locate fasteners less than one-inch from edges or ends in horizontal applications.
 - C. Fire-Rated Partitions: Install fasteners in accordance with the more restrictive of either CBC Table 720.1(2) or the Underwriters' Laboratories assemblies as denoted on partition schedule.
 - D. Non-Fire-Rated Partitions: Install fasteners in accordance with GA-216 and ASTM C840.
 - E. Fire-Rated Ceilings: Install fasteners in accordance with CBC Table 720.1(3).
 - F. Non-Fire-Rated Ceilings: Install fasteners spaced not more than 12-inches on center.
 - G. Install screws using powered screw guns with adjustable screw-depth control head. Drive shank perpendicular to gypsum board surface. Do not hammer screws.
 - H. Set fastener heads slightly below surface of gypsum board, but do not break or strip paper face around fastener.
 - I. Stagger fasteners opposite each other on adjacent ends and edges.
 - J. Omit fasteners at edges where metal edge trim will be installed.

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3.4 ACOUSTICAL INSTALLATION REQUIREMENTS

- A. Sound-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C919 and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.
- B. Install batt insulation before installing gypsum panels, unless blankets are readily installed after panels have been installed on one side.
- C. Double Layer Application:
 - 1. Joints: Stagger 24-inches between layers.
 - 2. Sound-Rated Construction: Tape face layer.
 - 3. Allow 3/16-inch (4.7 mm) gap at panel joints, and 3/8-inch (9.5 mm) space at floors, ceilings and inside corners.
 - 4. Use metal drywall screws; attach 12-inches oc along panel edges and 24-inches oc along all intermediate framing. Screws must be of sufficient length to penetrate 3/4-inch (19 mm) into framing.
 - 5. Apply 3/8-inch beads of adhesive to gypsum wall board in single vertical serpentine beads that are in between the studs. Stagger gypsum drywall so edges do not fall onto studs.
 - 6. Using #10 x 1-1/2-inch bugle head screws, secure the gypsum drywall directly to the sound barrier panels every 8-inches oc around the panel edges and 12-inches oc on intermediate sections of the panel, missing the studs.
- D. Sound-Rated Edge Condition: Stagger (i.e. shiplap) gypsum board layers at vertical intersections. Provide a 1/4-inch nominal gap around the gypsum board face layer at floor and ceiling intersections. Fill the 1/4-inch gap with acoustical sealant to form an airtight seal.
- E. Penetrations:
 - 1. Make cut-outs regular without fracturing core or tearing covering of gypsum board.
 - 2. Minimize penetrations of insulated wall and ceiling constructions. Penetrate only where necessary and fully seal airtight at the perimeter using acoustical sealant.
 - 3. Where ducts and piping greater than 3-inch diameter penetrate insulated wall or ceiling construction, provide a clearance of 1-inch \pm 1/4-inch at the perimeter of the penetration.
 - 4. Where conduit piping 3-inch diameter and less (including mechanical, hydraulic, plumbing, etc.) pass through insulated wall or ceiling construction, provide a clearance of 1/4-inch <u>+</u> 1/8-inch between the conduit or piping and the structure, unless otherwise indicated.
 - 5. After ductwork, conduit or piping has been installed, repair the gypsum board perimeter clearance to the specified tolerance as required. Where the clearance exceeds 3/4-inch, provide a sheet metal sleeve within the partition packed with safing insulation batts and caulk both sides airtight with an acoustical sealant. Where the perimeter clearance exceeds 3/8-inch, use a flexible backing rod to caulk against.
 - 6. Where penetration clearance are 3/8-inch or less, caulk airtight with acoustical sealant at gypsum board.
 - 7. Cut and fit neatly around outlets and switches. Back-to-back wall penetrations shall be at least two stud spaces apart for acoustic isolation.
 - 8. All gypsum board penetrations (including those resulting from wiring, cables, and electrical junction boxes) are to be sealed airtight with acoustical sealant.

- 9. The back and sides of junction boxes in sound-rated construction must be sealed airtight with sheet caulking. Caulk perimeter face at gypsum board with acoustical sealant.
- 10. Recessed panel boards, equipment, boxes, etc. with penetration area greater than 25 sq. in. at sound-rated partitions are to be fully enclosed and sealed with 5/8-inch thick gypsum board or 2 psf sheet lead.
- 11. Seal multiple conduit penetrations airtight with expanding fire foam sealant.
- 12. Seal other sound-rated conditions with spray-applied (40 pcf) cementitious sealant equal to Monokote Z-146.
- F. Application on Resilient Channel:
 - 1. Use the appropriate length gypsum board attaching screws as recommended by the manufacturer. Screws shall not contact studs or framing.
 - 2. Resilient channel only to bear load of gypsum board, unless indicated otherwise.
 - 3. Surface-mount all fixtures and attach using molly-type fasteners. The fasteners shall not contact resilient channels or structure.
 - 4. Adhere trim and baseboards to avoid "short-circuiting."

3.5 INSTALLING TRIM ACCESSORIES

- A. General: For trim accessories with back flanges, fasten to framing with the same fasteners used to fasten gypsum board. Otherwise, fasten trim accessories according to accessory manufacturer's directions for type, length, and spacing of fasteners.
- B. Install corner beads at external corners.
- C. Install edge trim where edge of gypsum panels would otherwise be exposed or semiexposed. Provide edge trim type with face flange formed to receive joint compound except where other types are indicated.
- D. Control Joints:
 - 1. Ceilings: Maximum area for ceilings with perimeter relief shall be 2,500-sq. ft.; maximum area for ceilings without perimeter relief shall be 900-sq. ft. Do not exceed 50-feet between control joints in ceilings with perimeter relief; 30-feet between control joints in ceilings without perimeter relief.
 - 2. Walls and Partitions: Maximum spacing between control joints shall not exceed 30-feet.
 - 3. Control joint locations shall occur only where indicated on reviewed layout drawings.
- E. Install L-bead where edge trims can only be installed after gypsum panels are installed.

3.6 FINISHING GYPSUM BOARD ASSEMBLIES

- A. General: Apply joint treatment at gypsum board joints (both directions); flanges of corner bead, edge trim, and control joints; penetrations; fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration and levels of gypsum board finish indicated.
- B. Carefully inspect the Drawings and verify the desired location of metal trim. Install all metal trim in strict accordance with the approved submittal of the manufacturer's recommendations, paying particular attention to make all trim installations plumb, level and true to line with firm attachment to supporting members.
- C. Prefill open joints, rounded or beveled edges, and damaged areas using setting-type joint compound.

- D. Apply joint tape over gypsum board joints and to trim accessories with concealed face flanges as recommended by trim accessory manufacturer and as required to prevent cracks from developing in joint compound at flange edges.
 - 1. Taping is not required under wainscot surfaces, except at moisture-resistant type and fire-rated type walls.
- E. Fold reinforcing tape along its centerline and apply to all interior angles, following the same procedure for all joints.
- F. Lightly sand and dry compound with fine sandpaper between coats to remove all irregularities.
- G. Apply a second coat of compound to all joints, feathering approximately 3 inches beyond edges of the tape. Also apply a second coat to all nail recesses, leaving flush with the adjacent surface. When compound is dry, sand again.
- H. Apply final skim coat, feathering out approximately 2 inches beyond the second coat. Third coat nail recesses and metal trims. Skim coat interior angles. After drying, lightly sandpaper surfaces, using caution not to excessively damage the face paper of the gypsum drywall.
- I. Examine surfaces to ensure against defects. Touch up as required for uniformity. Provide smooth, un-textured sanded finish suitable to receive specified paint system.
- J. Finish panels to levels indicated below, according to ASTM C840:
 - 1. Level 0: In areas of temporary construction, no taping or accessories are required.
 - 2. Level 1: Ceiling plenum areas and concealed areas. Provide higher level of finish as required to comply with fire-resistance ratings and acoustical ratings.
 - 3. Level 2: Gypsum board substrate at tile, except remove tool marks and ridges.
 - 4. Level 3: Gypsum board surfaces, where textured finishes will be used.
 - 5. Level 4: Gypsum board surfaces, except where another finish level is specified.
 - 6. Level 5: Gypsum board surfaces at large scale wall graphics.
- K. Interior Gypsum Board Finishing:
 - 1. Corners: Square.
 - 2. Taping (Level 1):
 - a. Use taping or all-purpose compound.
 - b. Butter taping compound into inside corners and joints.
 - c. Center tape over joints and press down into fresh compound.
 - d. Remove excess compound. Tape joints of gypsum board above suspended ceilings.
 - 3. First Coat (Level 2):
 - a. Use taping or all-purpose drying-type compound or setting-type joint compound.
 - b. Immediately after bedding tape, apply skim coat of compound over body of tape and allow to dry completely in accordance with manufacturer's instructions.
 - c. Apply first coat of compound over flanges of trim and accessories, and over exposed fastener heads and finish level with board surface.
 - 4. Second Coat (Level 3):
 - a. Use all purpose or topping drying type joint compound.
 - b. After first coat treatments is dried, apply second coat of compound over tape and trim, feathering compound 2-inches beyond edge of first coat.
 - 5. Third Coat (Level 4):
 - a. Use all purpose or topping drying type joint compound.

- b. After second coat has dried, sand surface lightly and apply thin finish coat to joints, fasteners and trim, feathering compound 2-inches beyond edge of second coat.
- c. Allow third coat to dry. Apply additional compound, and touch-up and sand, to provide surface free of visual defects, tool marks, and ridges, ready for application of finish.
- d. Finish Texture: Smooth.
- 6. Skim Coat (Level 5):
 - a. Apply skim coat of all-purpose drying-type compound over exposed surfaces of gypsum board.
 - b. After skim coat has dried, touch-up and sand to provide surface free of visual defects, tool marks, and ridges, and ready for application of finish.
 - c. Finish Texture: Smooth.

3.7 CLEANING

A. Construction Waste Management: Manage construction waste in accordance with provisions of Section 01 7419 Construction Waste Management and Disposal. Submit documentation for Credit MR 2 to satisfy the requirements of that Section.

3.8 PROTECTION

- A. Take all means necessary to prevent spilling and splashing compound. Promptly remove any residual joint compound from adjacent surfaces.
- B. Do not allow the accumulation of scrap and debris resulting from the gypsum drywall installation and finishing operations.
- C. Provide final protection and maintain conditions, in a manner suitable to Installer that ensures gypsum board assemblies remain without damage or deterioration at time of Substantial Completion.

END OF SECTION 09 2900

SECTION 10 1100 – VISUAL DISPLAY UNITS

PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS
 - A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- 1.2 SECTION INCLUDES
 - A. Markerboards.
 - B. Sliding markerboards (ADD ALTERNATE). BASE BID (AD1)
- 1.3 SUSTAINABILITY REQUIREMENTS
 - A. Refer to Section 01 8113 for sustainability requirements related to this Section.
- 1.4 ACTION SUBMITTALS
 - A. Product Data: For each type of product indicated.
 - B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
 1. Show location of tack assembly seams and joints.
 - 2. Include sections of typical trim members.
 - C. Samples for Verification: For each type of visual display surface indicated and as follows:
 - 1. Visual Display Surface: Not less than 8-1/2 by 11 inches (215 by 280 mm), mounted on substrate indicated for final Work. Include one panel for each type, color, and texture required.
 - D. Sustainability Submittals: See Section 01 8113 for additional requirements; provide the following:
 - 1. Product data for composite wood products, documentation indicating that the product contains no urea formaldehyde.
 - 2. Product data for adhesives, including printed statement of VOC content and chemical components.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For visual display units to include in maintenance manuals.
- 1.6 QUALITY ASSURANCE
 - A. Source Limitations: Obtain each type of visual display surface through one source from a single manufacturer.
 - B. Product Options: Drawings indicate size, profiles, and dimensional requirements of visual display units and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."

C. Fire-Test-Response Characteristics: Provide fabrics with the surface-burning characteristics indicated, as determined by testing identical products per ASTM E84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver factory-built visual display boards completely assembled in one piece without joints, where possible. If dimensions exceed maximum manufactured panel size, provide two or more pieces of equal length as acceptable to Architect. When overall dimensions require delivery in separate units, prefit components at the factory, disassemble for delivery, and make final joints at the site.
- B. Store visual display units vertically with packing materials between each unit.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Provide anchorage of display cases capable of withstanding the effects of earthquake motions determined according to ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 9, "Earthquake Loads."

2.2 MATERIALS, GENERAL

- A. Porcelain-Enamel Face Sheet: Porcelain-enamel-clad, ASTM A463/A463M, Type 1, stretcher-leveled aluminized steel, with 0.0236-inch (0.60-mm) uncoated thickness; with porcelain-enamel coating fused to steel at approximately 1000 deg F (538 deg C).
 - 1. Gloss Finish: Low gloss; dry-erase markers wipe clean with dry cloth or standard eraser. Suitable for use as projection screen.
 - a. Product: Claridge Products & Equipment, Inc.; LCS Markerboard.
- B. Hardboard: AHA A135.4, tempered.
- C. Extruded-Aluminum Bars and Shapes: ASTM B221, Alloy 6063.
- D. Aluminum Tubing: ASTM B429/B429M, Alloy 6063.
- E. Fasteners: Provide screws, bolts, and other fastening devices made from same material as items being fastened, except provide hot-dip galvanized, stainless-steel, or aluminum fasteners for exterior applications. Provide types, sizes, and lengths to suit installation conditions. Use security fasteners where exposed to view.

2.3 MARKERBOARD ASSEMBLIES

- A. Porcelain-Enamel Markerboard Assembly: Balanced, high-pressure, factory-laminated markerboard assembly of 3-ply construction consisting of backing sheet, core material, and porcelain-enamel face sheet with low-gloss finish.
 - 1. Manufacturer: Claridge Products & Equipment, Inc. District standard, no substitutions.
 - 2. Manufacturer's Standard Core: Minimum 1/4 inch (6 mm) thick, with manufacturer's standard moisture-barrier backing.
 - 3. Laminating Adhesive: Manufacturer's standard moisture-resistant thermoplastic type.

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- B. Markerboard Sheet Assembly: Fabricated from 0.0209-inch- (0.55-mm-) thick, porcelainenamel face sheets for direct application to wall surface.
 - Acceptable Products:
 - a. Evolve Sliding System
 - b. LCS Deluxe
 - c. Trakit System

2.4 SLIDING MARKERBOARD ASSEMBLY

- A. Markerboard Assembly (BASE BID): Large format, custom-constructed, fixed whiteboards for Community Space.
- B. Markerboard Assembly (ADD ALTERNATE) (BASE BID) (AD1): Large format, customconstructed, whiteboards mounted on sliding hardware.
- C. Sliding Hardware: Hafele / HAWA
 - 1. Bottom Guide Channel: 941.00.960 HAWA # 14414
 - 2. Guide: 943.04.030, HAWA #13325
 - 3. Suspension System, panels weighing up to 550 lbs: HAWA Junior 250/A
 - 4. Suspension System, panels weighing 550 to 1100 lbs: HAWA Super 500
- D. Markerboard Material: Formica whiteboard laminate on hardboard substrate with aluminum Edgeband.
- 2.5 MARKERBOARD ACCESSORIES
 - A. Aluminum Frames and Trim: Fabricated from not less than 0.062-inch- (1.57-mm-) thick, extruded aluminum; of size and shape indicated.
 - 1. Factory-Applied Trim: Manufacturer's standard.
 - B. Chalktray: Manufacturer's standard, continuous.
 - 1. Box Type: Extruded aluminum with slanted front, grooved tray, and cast-aluminum end closures.
 - C. Marking Implements: Provide two new boxes of approved markers and one new eraser for each markerboard.

2.6 FABRICATION

- A. Porcelain-Enamel Visual Display Assemblies: Laminate porcelain-enamel face sheet and backing sheet to core material under heat and pressure with manufacturer's standard flexible, waterproof adhesive.
- B. Visual Display Boards: Factory-assemble visual display boards, unless otherwise indicated.
 - 1. Where factory-applied trim is indicated, trim shall be assembled and attached to visual display boards at manufacturer's factory before shipment.
- C. Factory-Assembled Visual Display Units: Coordinate factory-assembled units with trim and accessories indicated. Join parts with a neat, precision fit.
 - 1. Make joints only where total length exceeds maximum manufactured length. Fabricate with minimum number of joints, as indicated on approved Shop Drawings.
 - 2. Provide manufacturer's standard vertical-joint spline system between abutting sections of markerboards.

- D. Use metals and shapes of thickness and reinforcing to produce flat surfaces, free of oil canning, and to impart strength for size, design, and application indicated.
- E. Aluminum Frames and Trim: Fabricate units straight and of single lengths, keeping joints to a minimum. Miter corners to neat, hairline closure.

2.7 ALUMINUM FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- E. Class II, Clear Anodic Finish: AA-M12C22A31 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.010 mm or thicker) complying with AAMA 611.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, surface conditions of wall, and other conditions affecting performance.
- B. Examine roughing-in for electrical power systems to verify actual locations of connections before installation of motor-operated, sliding visual display units.
- C. Examine walls and partitions for proper backing for visual display units.
- D. Examine walls and partitions for suitable framing depth where sliding visual display and recessed units will be installed.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove dirt, scaling paint, projections, and depressions that will affect smooth, finished surfaces of visual display boards.
- B. Prepare surfaces to achieve a smooth, dry, clean surface free of flaking, unsound coatings, cracks, defects, and substances that will impair bond between visual display boards and surfaces.

- 1. Seal wall surfaces indicated to receive visual display fabric.
- C. Prepare recesses for sliding visual display units as required by type and size of unit.

3.3 INSTALLATION, GENERAL

- A. General: Install visual display units in locations and at mounting heights indicated on Drawings, or if not indicated, at heights indicated below. Keep perimeter lines straight, level, and plumb. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation.
 - 1. Mounting Height: As indicated on Drawings.
- B. Field-Assembled Visual Display Units: Coordinate field-assembled units with grounds, trim, and accessories indicated. Join parts with a neat, precision fit.
 - 1. Make joints only where total length exceeds maximum manufactured length. Fabricate with minimum number of joints as indicated on approved Shop Drawings.
 - 2. Provide manufacturer's standard vertical-joint spline system between abutting sections of chalkboards and markerboards.
 - 3. Where size of visual display boards or other conditions require support in addition to normal trim, provide structural supports or modify trim as indicated or as selected by Architect from manufacturer's standard structural support accessories to suit conditions indicated.

3.4 INSTALLATION OF FACTORY-FABRICATED VISUAL DISPLAY UNITS

- A. Visual Display Boards: Attach visual display boards to wall surfaces with egg-size adhesive gobs at 16 inches (400 mm) oc horizontally and vertically.
 - a. Attach chalktrays to boards with fasteners at not more than 12 inches (300 mm) oc.

3.5 ADJUSTING

- A. Adjust doors to operate smoothly without warp or bind and contact points meet accurately. Lubricate operating hardware as recommended by manufacturer.
- B. Touch up factory-applied finishes to restore damaged or soiled areas.

3.6 CLEANING

- A. Clean visual display units according to manufacturer's written instructions. Attach one cleaning label to visual display surface in each room.
- B. Construction Waste Management: Manage construction waste in accordance with provisions of Section 01 7419 Construction Waste Management and Disposal. Submit documentation for Credit MR 2 to satisfy the requirements of that Section.

3.7 PROTECTION

A. Cover and protect visual display units after installation and cleaning.

END OF SECTION 10 1100

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SECTION 23 7300

INDOOR AIR HANDLING UNITS

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Indoor air handling units in accordance with Drawing equipment schedules and specifications.

1.2 **REFERENCES**

- A. AFBMA 9 Load Ratings and Fatigue Life for Ball Bearings.
- B. AFBMA 11 Load Ratings and Fatigue Life for Roller Bearings.
- C. AMCA 99 Standards Handbook.
- D. AMCA 210 Laboratory Methods of Testing Fans for Rating Purposes.
- E. AMCA 300 Test Code for Sound Rating Air Moving Devices.
- F. AMCA 301 Method of Publishing Sound Ratings for Air Moving Devices.
- G. AMCA 500 Test Methods for Louver, Dampers, and Shutters.
- H. ARI 410 Forced-Circulation Air-Cooling and Air-Heating Coils.
- I. ARI 435 Application of Central-Station Air-Handling Units.
- J. NEMA MG1 Motors and Generators.
- K. NFPA 70 National Electrical Code.
- L. SMACNA HVAC Duct Construction Standards Metal and Flexible.
- M. UL 900 Test Performance of Air Filter Units.

1.3 SUBMITTALS

- A. Submit shop drawings and product data as applicable.
 - 1. Shop Drawings: Indicate assembly, unit dimensions, weight loading, required clearances, construction details, field connection details, and electrical characteristics and connection requirements.
 - 2. Product Data
 - a. Provide literature that indicates dimensions, capacities, ratings, performances, gauges and finishes of materials, and electrical characteristics and connection requirements.
 - b. Provide data of filter media, performance, framing and assembly.
 - c. Provide fan curves with specified operating point clearly plotted.
 - d. Provide coil selection with performance data

- e. Provide pressure drop calculation report indication the internal pressure loss and available external loss
- f. Submit sound power level data for fan outlet, fan inlet and casing radiation at rated capacity.
- g. Submit electrical requirements for power supply wiring including wiring diagrams for interlock and control wiring, clearly indicating factory-installed and field-installed wiring.
- h. Submit performance, noise and vibration test results of the air handling unit as required by specifications. Provide test results for review prior to any air handling unit shipment to the job site.

1.4 OPERATION AND MAINTENANCE DATA

- A. Submit installation, startup, operation and maintenance data.
 - 1. Maintenance Data: Include instructions for lubrication, filter replacement, motor and drive replacement, spare parts lists, and wiring diagrams.
 - 2. Include manufacturer's installation instructions.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of General Conditions and Division 1 as applicable.
- B. Accept products on site in factory-fabricated protective containers, with factory-installed shipping skids and lifting lugs. Inspect for damage.
- C. Store in clean dry place and protect from weather and construction traffic. Handle carefully to avoid damage to components, enclosures, and finish.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Do not operate units for any purpose, temporary or permanent, until ductwork is clean, filters are in place and fan has been test run under observation.

1.7 QUALITY ASSURANCE

- A. Conform to space and access requirements; units which do not conform to space and access requirements will not be accepted.
- B. Direct expansion coils shall be designed and tested in accordance with ANSI/ASHRAE 15 Safety Code for Mechanical Refrigeration.
- C. Insulation and insulation adhesive shall comply with NFPA 90A requirements for flame spread and smoke generation.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the requirements of this Section and the requirements on the Drawings, available manufacturers offering products that may be incorporated into the work include the following:

- 1. Alliance Air Products
- 2. Trane Performance Climate Changer (AD1)
- 3. Scott Springfield (AD1)
- 4. ClimateCraft (AD1)
- 5. Energy Labs
- 6. Huntair Model CSU
- 7. Prior Approved Equal, approved by Los Rios CCD. In order to be considered, proposed Equals shall be submitted to Architect a minimum of two weeks prior to Bid Date. Request for approval shall include full details of the proposed Equal, including compliance with all requirements in this Section and on the Drawings.

2.2 FABRICATION

- A. Unit Base: Perimeter of unit base shall be constructed from ASTM A36 structural steel 'C' channel. Internal supports shall consist of structural rectangular tubing on minimum 24" centers. All fans and coils shall be supported on minimum 1/4" thick structural tubular steel. The unit base shall be fully welded. Height and section of structural members shall take into account internal loading, unit height, length and width, and split sections so as to limit base deflection to 1/200 of span. Curb mounted units shall be provided with curb angle welded on inside of structural base.
 - 1. Prior to welding, all structural 'C' channels shall be sandblasted to remove rust and mill scale. Wire brushing or chemical treatment is not acceptable.
 - 2. Heavy removable lifting lugs shall be added to the perimeter channel along the longest length of the unit. Removable type lifting lugs shall be provided with welded attachments. Provide a minimum of 4 lugs per section to ensure proper rigging.
 - 3. Unit floor shall be covered with 16 gauge bright galvanized sheets as standard. The floor shall be supported by stringers and structural members on maximum 24" centers. All seams shall be supported underneath by structural supports. Floor shall be attached to base structure by welding from underneath on maximum 6" centers. Floor seams shall consist of minimum 1" standing seams, caulked and covered with cleats to ensure water and air tightness. Penetrations through unit floor are not acceptable.
 - 4. Isolator supports shall be attached to base structural members with minimum 3/8" Grade 5 bolts. Welding to the floor skin is not acceptable.
 - 5. Coil drain pans shall be supported by structural steel members under the floor.
- B. Unit Housing: The unit housing side and roof panels shall be constructed of 16 gauge galvanized steel, and shall utilize a standing seam modular panel type construction. The panels shall be attached to each other, to the roof, and to the floor using bolts so that all panels are removable. All seams shall be sealed with a high strength polyurethane sealant prior to assembling the panels. After assembly, exterior panel seams shall be filled with acrylic latex caulk for appearance. Bolting shall be zinc plated 1/4-20 on maximum 8" centers. Sheet metal or 'Tek' fasteners are not acceptable for sealing pressure containing panels.
 - 1. Fan sections shall include 20 gauge perforated galvanized interior sheet metal liners in fan blast area.

- 2. Cooling coil sections shall include 20 gauge 304 stainless steel liner.
- 3. Insulation in sections lined with perforated sheets shall be faced with neoprene.
- 4. Access doors shall be provided full height (72") where unit height permits, and shall be 24" wide where section length permits, otherwise minimum of 18" shall be used. Doors shall be 2" thick, double wall and insulated type. Exterior door panels shall be constructed from painted A60 galvanized steel; interior panels are bright galvanized G60 steel. Door insulation shall be injected urethane foam with a minimum R value of 13-Ft²-°F/BTU. Door frames shall be heavy aluminum extrusion with one-piece, closed cell, replaceable santoprene gasket seal.
- 5. Door hinges shall be die-cast zinc with provision for adjustment without the use of shims or special tools. Door latches and handles are to be bolted to the unit and made with corrosion resistant materials. Bolts, nuts and shafts for door latches, handles and hinges shall be made of zinc plated steel. Door latch and pawl assembly shall be industrial quality and corrosion resistant with a handle on both the inside and outside of door. Latching mechanism shall be of conical roller design. Latch and pawl assembly shall be bolted together without the use of set screws allowed.
- 6. All doors to fan sections shall be provided with latches which require a tool to open.
- 7. Viewing windows shall be provided in access doors that serve the supply fan and return fans sections. Windows shall have double thermal pane wire reinforced safety glass.
- C. Insulation: Wall and ceiling panels shall be insulated with 2" foam insulation that has a minimum R value of 13.1. Insulation under solid lining shall be unfaced; otherwise, insulation shall be faced with an acrylic or neoprene coating. Insulation shall be tested and rated per ASTM C 423 and NFPA-90a rated.
- D. Insulation under floor shall be sprayed urethane foam with a minimum thickness of 2" and a minimum aged R value of 11.5 Hr-Ft²-°F/BTU.
- E. Paint Finish: Exterior wall and roof panels shall be coated with air dry acrylic polyurethane to a minimum dry thickness of 3 mils. Finish shall have no blistering or rusting on unscribed areas after 2,000 hours in accordance with ASTM B-117 salt fog test. Entire structural steel base shall be primer painted with industrial grade epoxy primer for total thickness of 4 mils minimum.
- F. Fans:
 - 1. Housed Fan Assembly: Fan housing shall be heavy gauge galvanized steel construction. Fan scroll shall be bolted to fan frame. Bearings shall be cast iron pillow block mounted self-aligning ball type. Bearings shall be rated for a minimum average life of 200,000 hours at the maximum horsepower and speed ratings for the fan class. Fan wheel and sheaves shall be keyed to the fan shaft. Each fan assembly, including sheaves and belts, shall be trim balanced at the factory in accordance with ANSI 204-96 to Balance Quality Grade G6.3. Fans shall be rated in accordance with AMCA standard 210 for air performance and AMCA 300 for sound. All fans shall carry the AMCA certification label.
 - 2. Plenum Fan Assembly: Fan shall be SWSI arrangement 3 (Direct drive arrangement 4 is acceptable) as indicated on the schedule. Shaft shall be sized not to exceed 75% of the first critical speed at the maximum speed for the fan class. Fan frame and base shall be constructed of welded structural steel angle, and painted with 3 mils of industrial grade water-based air dry enamel. Bearings shall be cast iron pillow block mounted self-aligning ball or roller type. Bearings shall be rated for a minimum average life of 200,000 hours at

the maximum horsepower and speed ratings for the fan class. Fan wheel and sheaves shall be keyed to the fan shaft. Each fan assembly, including sheaves and belts, shall be trim balanced at the factory in accordance with ANSI 204-96 to Balance Quality Grade G6.3. Fans shall be rated in accordance with AMCA Standard 210 for air performance and AMCA 300 for sound. All fans shall carry the AMCA certification label.

- 3. Fan Assembly Isolation Base: Fan and motor shall be mounted on an integral fully welded structural steel base. Base shall be free floating at all four corners on spring type isolators with earthquake restraints rated for Seismic Zone 4 requirements. Isolator spring deflection shall be 2" minimum or as indicated on specifications.
- 4. Motors and Drive: Furnish premium-efficiency Totally Enclosed Fan Cooled (TEFC), NEMA frame, ball bearing type motors. Motor horsepower shall be in accordance with the schedule and are minimum allowable. Minimum service factor shall be 1.15 and motors shall not be selected to operate in the service factor. The fan motors shall be factory wired to an external junction box with flexible conduit of adequate length so that it will not have any effect on the vibration isolation (if applicable).
- 5. Provide shaft-grounding ring when motor is controlled by VFD.
- G. Coil Sections:
 - 1. Chilled water coils shall be of the plate fin extended surface type. Tubes shall be seamless copper with a 0.020" minimum wall thickness. Tubes shall be mechanically expanded into the fin collars to provide a permanent mechanical bond. Coil return bends shall be minimum one material thickness thicker than the tubes. Return bends shall be brazed. Hairpin return bends shall not be acceptable.
 - 2. Cooling coils shall be minimum 6-row with maximum 10 fins per inch.
 - 3. Heating coils shall be minimum 2-row with maximum 10 fins per inch.
 - 4. The secondary surface shall be die formed of aluminum (copper fins are optional) with thickness as specified on the equipment schedule. Fin spacing shall not exceed 12 fins per inch. Headers shall be non-ferrous material, outside the airstream and provided with brazed male pipe connections. Drain and vent fittings shall be provided for complete coil drainage. All coil connections shall be extended to the exterior of the air handling unit.
 - 5. All coils shall have counterflow construction with connections left or right hand as shown on the drawings. The use of internal restrictive devices to obtain turbulent flow will not be accepted.
 - 6. Cooling coil casings shall be of minimum 16 gauge 304 stainless steel. All other coil casing shall be of 16 gauge galvanized steel. Tube sheets shall have extruded tube holes. All coil assemblies shall be tested under water at 300 psi and rated for 150 psi working pressure.
 - 7. Main drain pans are recessed 16 gauge 304 stainless steel with a double sloped IAQ design to ensure complete condensate drainage. Drain pans are insulated with 2" of urethane foam with an R value of at least 11.5. The insulation is protected by a 20 gauge galvanized steel liner. Coils are to be installed above drain pan. Coils installed with coil casings in the main condensate drain pans are not acceptable.
 - 8. Intermediate condensate pans are to be furnished on multiple coil units and single coils greater than 48" high. The pans shall be 16 gauge 304 stainless steel. Intermediate pans

shall extend at least 6" in the direction of airflow and drain to the main drain pan through copper downspouts.

- 9. All water coils shall be rated in accordance with ARI Standard 410.
- H. Filter Sections: Provide 2" MERV 8 pre-filters and 12" MERV 14 front-loading type cartridge filters with clips upstream of the airside coils. Filter sections shall be factory fabricated as part of the air handling unit. Filters shall be arranged for upstream, downstream or side loading into galvanized filter frames. Provide filter holding frames to accommodate scheduled filters. Filter rack shall be thoroughly caulked and sealed for minimal filter bypass.
- I. Damper Sections: Dampers shall be TAMCO 1000 or Ruskin CD-60 low leakage type with airfoil blade design. All dampers shall carry the AMCA Standard 500 certification label. Air leakage through a 48" x 48" damper shall not exceed 10 CFM/ft². Separate dampers shall be provided for return air, mixed air and outside air.
 - 1. Blade gasket shall be extruded EPDM elastomer secured in an integral slot within the aluminum extrusion. Frame seals shall be extruded TPE thermoplastic. Overlapping blade design shall compress seals to ensure tight seal on closure.
 - 2. Damper frame shall be extruded aluminum with a thickness of not less than .080" and a depth of 4". Pivot rods shall be 7/16" hexagon extruded aluminum interlocking into blade section.
 - 3. Bearings shall be double seal with an inner bearing fixed to the rod within a polycarbonate outer bearing inserted into the frame so that the outer bearing cannot rotate. Bearings shall be designed so that there is no metal to metal contact.
 - 4. Linkage hardware shall be installed outside of the frame and constructed of corrosion resistant aluminum and zinc plated steel.
- J. Fan Air Flow Measuring Stations: The flow measuring station shall consist of total pressure taps (piezometers) located in the inlet cone of each fan, with static pressure tap located near fan inlet panel. Any flow measuring device which creates an obstruction in the fan inlet is not acceptable.
 - 1. Provide a Dwyer magnehelic pressure gauge with CFM scale which indicates the fan volume. Flow gauges shall be calibrated to match the flow coefficient of the fan inlet cone provided.
 - 2. Air flow transmitters shall be provided and installed by the temperature controls contractor.
- K. Access Sections: Access sections shall be installed where indicated on the drawings and shall be as specified on the equipment schedule.
 - 1. Access sections shall have double-walled hinged doors.
- L. Electrical:
 - 1. Wiring and Pathways:
 - a. Line voltage and control voltage wiring shall not be contained in the same raceway/conduit. The line voltage raceway/conduit shall extend to the lights, receptacles, temperature control panel and motors. Provide all required power wiring downstream of the power distribution block. Provide adequate power wire bundled to accommodate connection of section splits such that no additional wire is required in the field when joining sections.

- b. Provide low voltage pathway to accommodate all control devices in the AHU. Low voltage conduit shall be separate from line voltage conduit. Low voltage conduit shall be 1½" EMT conduit with J-box at each shipping split to allow the electrical contractor to make final connections in the field. Wiring shall be clearly labeled to facilitate field connection.
- 2. Provide vapor tight LED marine lights factory wired to a single weatherproof switch located on exterior of cabinet. A timer shall be provided to automatically turn off lights after a period of 1 hour.
- 3. Marine lights shall be wired to an independent 120V / 60Hz / 1Ph circuit. Power and disconnect shall be provided by others.
- 4. A weatherproof, 15 Amp GFCI receptacle shall be provided near the supply fan section wired to an independent 120V / 60Hz / 1Ph circuit that is separate from the lighting circuit. Power and disconnect shall be provided by others.
- 5. Provide single-point-power connection for 3-phase power to unit. Provide factory installed disconnect for 3-phase power connection.
- 6. All wiring shall meet N.E.C requirements.
- 7. Provide factory installed variable frequency drive with bypass for each fan motor housed in NEMA 1 enclosure. Provide each VFD with circuit breaker disconnect and LONMark compliant communication interface. VFD's shall comply with Section 239500.
- 8. Motor starter panels shall carry the U.L. 508 listing.
- 9. Controls enclosures:
 - a. Provide two (2) factory installed controls enclosures per AHU. Controls enclosures shall be minimum 24"W x 30"H x 12"D. All controls will be field provided and field installed by the temperature controls contractor.
- M. Testing:
 - 1. Factory Leak Test: Air Handling Unit manufacturer shall perform a factory leakage test at 1.5 times design static pressure up to a maximum of 12" w.g. Leakage rate at test pressure shall not exceed 1% of design air volume. Unit shall be tested with all openings sealed. A pressure blower with a variable frequency drive shall be used to set the test pressure. CFM shall be determined using a calibrated orifice. Test pressures shall be positive on positively pressurized sections and negative on negatively pressurized sections of the air handler. A report of all test results shall be written and submitted to Owner's representative for approval.
 - 2. Factory Cabinet Deflection Test: Air handling unit manufacturer shall perform a factory Panel Deflection Test at the unit design static pressure. Panel deflection shall not exceed L/200 of longest plane being measured the test pressure. The casing deflection shall be measured at mid point of panel and at panel seam. A report of all test results shall be written and submitted to Owner's representative for approval.
 - 3. Factory Sound Test: Air handling unit manufacturer shall factory sound test AHU's in accordance to AMCA 320 for sound and AMCA 210 for airflow performance. Noise measurements shall be measured at the Inlet, Outlet and Casing Radiated positions.

N. Warranty: The manufacturer shall provide a one (1) year parts warranty from the date of startup or 18 months after shipment, whichever comes first.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in conformance with ARI 435.
- C. Install the units as shown on the Drawings.
- D. Chilled water pipe connection for cooling coils and heating hot water pipe connection to heating coils shall be offset from the coil and shall not interfere with coil pull space or access doors into the air handling unit. Contractor shall coordinate exact location with air handling unit manufacturer.
- E. Air handling units shall not be operated unless the following requirements (if applicable) are met:
 - 1. Ductwork is clean and filters are in place
 - 2. Bearings are lubricated.
 - 3. Bearing setscrews to be torqued in accordance with the installation instructions.
 - 4. Shipping braces removed.
 - 5. Condensates properly trapped.
 - 6. Piping connections verified and leak tested.

END OF SECTION 23 7300

SECTION 23 8000

HEATING, VENTILATING AND AIR CONDITIONING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Split system heat pump units.
- B. Split system air conditioning units.
- C. Air cooled condensing units.
- D. Cooling coils.
- E. Refrigeration piping and fittings.
- F. Fans.
- G. Louvers.
- H. Air inlets and outlets.
- I. Terminal Units.
- J. Filters.
- K. Dampers.
- L. Ductwork.
- M. Hydronic Piping.
- N. Hydronic pumps.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Section 23 0050, Basic HVAC Materials and Methods.
- C. 23 05 93, Testing, Adjusting, and Balancing for HVAC.
- D. Section 25 0000, Automatic Temperature Controls.

1.3 ADDITIONAL REQUIREMENTS

A. Furnish and install any incidental work not shown or specified which is necessary to provide a complete and workable system.

B. Coordinate all of work in this Section with all of the Trades covered in other Sections of the Specifications to provide a complete, operable and sanitary installation of the highest quality workmanship.

1.4 DESCRIPTION OF WORK

A. Work of this section includes, but is not necessarily limited to Heating, Ventilating and Air Conditioning work indicated on the drawings and described herein.

1.5 QUALITY ASSURANCE

- A. Design Criteria:
 - 1. All equipment and accessories to be the product of a manufacturer regularly engaged in its manufacture. All gas-fired equipment shall be UL, ETL or CSA listed.
 - 2. Supply all equipment and accessories in accordance with requirements of applicable national, state and local codes.
 - 3. All items of a given type shall be products of the same manufacturer.
 - 4. Scheduled equipment performance is minimum capacity required.
 - 5. Scheduled electrical capacity shall be considered as maximum available.
 - 6. Scheduled gas BTU input shall be considered as maximum available.

1.6 SUBMITTALS

- A. Product Data: Submit manufacturer's technical product data, including rated capacities of selected model clearly indicated, dimensions, weight, corner or mounting point weights, furnished specialties and accessories; and installation and start-up instructions. Product data shall include applicable product listings and standards. Refer to Section 23 0050, Basic HVAC Material and Methods for additional requirements.
 - 1. Upon approval of submittal, provide manufacturer's installation and operating instructions to the Project inspector for the following:
 - a. Fire dampers, smoke dampers, and combination smoke-fire dampers.
 - b. Type 1 kitchen exhaust field applied grease duct enclosures.
- B. Roof Curb Data: For roof mounted equipment where combined weight of equipment unit and roof curb or rail exceeds 400 pounds, submit calculations from manufacturer for roof curbs proving compliance with the seismic requirements of the California Building Code, and ASCE 7-10. Manufacturer shall certify that roof curbs are suitable for use indicated on Drawings and in Specifications for the seismic design category indicated in structural Contract Documents. Calculations shall be stamped and signed by a State of California registered structural engineer.
- C. Economizer Fault Detection and Diagnostics (FDD) System Data: For all air-cooled unitary directexpansion units equipped with an economizer, provide data for third-party supplied California Energy Commission certified FDD controller, documenting compliance with the requirements of California 2013 Building Energy Efficiency Standards. Provide evidence of certification.
- D. Engineering Data: Submit fan curves and sound power level data for each fan unit. Data shall be at the scheduled capacity. Data shall include the name of the rating agency or independent laboratory.

- E. Maintenance Data: Submit maintenance data and parts list for each piece of equipment, control, and accessory; including "trouble-shooting guide," in Operation and Maintenance Manual.
- F. Record Drawings: At project close-out, submit Record Drawings of installed ductwork, duct accessories, and outlets and inlets in accordance with requirements of Division 01.
- G. Product Data for California Green Building Standards Code Compliance: For adhesives and sealants, including primers, documentation of compliance including printed statement of VOC content and chemical components.
- H. LEED Submittals:
 - 1. Product Data for Credit EQ 4.1: For adhesives and sealants, documentation of compliance including printed statement of VOC content and chemical components.
 - 2. Laboratory Test Reports for Credit EQ 4: For adhesives and sealants, documentation indicating that product complies with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

1.7 COORDINATED LAYOUT

- A. Coordinated layouts are required to amplify, expand and coordinate the information contained in the Contract Documents.
- B. Provide minimum 1/4 inch equals one foot scaled coordination drawings showing plan and pertinent section or elevation views of all piping, ductwork and electrical systems. Drawings shall be on vellum or sepia mylar, reproducible and the work represented shall be fully coordinated with the structure, other disciplines, and with all finishes. Drawings shall all be presented on a single size sheet. Contractor may use either size D (24 inch x 36 inch) or E (36 inch x 42 inch). Drawings graphics shall fully comply with A.I.A. Architectural Graphic Standards and ANSI Y14. Drawings may be hand drawn or computer generated using AutoCad or "Quick Pen". All drawings shall have title block, key plan, north arrow and sufficient grid lines to provide cross-reference to the design drawings.
 - 1. Provide a stamp or title block on each drawing with locations for signatures from all contractors involved, including but not limited to the General, HVAC, Plumbing, Fire Protection, and Electrical contractors. Include statement for signature that the contractor has reviewed the coordination drawings in detail and has coordinated the work of his trade.
 - 2. Show on drawings the intended elevation of all ductwork in accordance with the following example.
 - a. B.O.D. = 9'-0"
 - b. OFFSET UP 6"
 - c. B.O.D. = 9'-6"
 - 3. Highlight, encircle or otherwise indicate deviations from the Contract Documents on the coordinated layouts. Architect will not be responsible for "finding" changes or deviations to the original Contract Documents.
- C. Since scale of contract drawings is small and all offsets and fittings are not shown, contractor shall make allowances in bid for additional coordination time, detailing, fittings, offsets, hangers and the like to achieve a fully coordinated installation. If changes in duct size are required, equivalent area shall be maintained and the aspect ratio shall not be in excess of 2 to 1 unless approved by the engineer. Drawings shall be submitted for review prior to fabrication and

installation. Drawings may be submitted in packages representing at least one quarter of the building ductwork.

- D. Check routing on all ductwork before fabricating. Report any discrepancies to Architect. No extra cost will be allowed for failure to conform to above.
- E. It shall be responsibility of the General Contractor to ensure that the Heating, Ventilating and Air Conditioning Contractor coordinates all of his work with all other trades, including mechanical and electrical trades, so that complete job is neat and in conformity with plans and specifications.

1.8 REFERENCES

- A. AABC Associated Air Balance Council
- B. AFBMA Anti Friction Bearing Manufacturer's Association
- C. CSA Canadian Standards Association International
- D. AMCA Air Moving and Control Association Inc.
 - 1. Standard 210 Laboratory Methods of Testing Fans
- E. ANSI American National Standards Institute
- F. ARI Air-Conditioning and Refrigeration Institute
- G. ASHRAE American Society of Heating, Refrigerating and Air Conditioning Engineers
- H. ASME American Society of Mechanical Engineers
- I. ASTM American Society of Testing and Materials
- J. CCR California Code of Regulations
- K. CSFM California State Fire Marshal
- L. NIST National Institute of Standards and Technology
- M. NEMA National Electrical Manufacturer's Association
- N. NFPA National Fire Protection Association
- O. OSHA Occupational Safety and Health Act
- P. SMACNA Duct Manuals
- Q. CBC California Building Code
- R. UL Underwriters' Laboratories, Inc.
- S. CMC California Mechanical Code
- T. CPC California Plumbing Code
- U. CEC California Electrical Code

2.1 MATERIALS

A. Insulation products, including insulation, insulation facings, jackets, adhesives, sealants and coatings shall not contain polybrominated diphenyl ethers (PBDEs) in penta, octa, or deca formulations in amounts greater than 0.1 percent (by mass).

2.2 GAS FIRED EQUIPMENT

- A. All gas-fired equipment shall be listed for use as a gas appliance.
- B. All units shall comply with the emissions requirements of the Air Quality Management District (AQMD) in which they are to be installed.

2.3 SPLIT SYSTEM HEAT PUMPS

- A. General: Furnish and install split system air-to-air heat pump system, with R410A refrigerant, and complete with automatic controls. Equipment shall be shipped factory assembled, wired, tested, and ready for field connections.
- B. Quality Assurance:
 - 1. Unit shall be ETL or UL listed and labeled.
 - 2. Unit shall be manufactured in a facility registered to ISO 9001:2000.
 - 3. Unit shall be rated in accordance with ARI standard 210.
- C. Delivery, Storage and Handling: Follow manufacturer's recommendations.
- D. Heating/Cooling System: The total certified heating/cooling capacity shall not be less than scheduled. The compressor power input shall not exceed that of the unit specified.
- E. Indoor Section: Wall mounted, ceiling surface mounted, or ceiling recessed mounted, as indicated on Drawings.
 - 1. Cabinet:
 - a. Wall mounted: Molded white high strength plastic.
 - 1) Provide wall mounted unit with factory mounting plate.
 - b. Ceiling surface mounted: Molded white high strength plastic with provision for outside air duct connection.
 - c. Ceiling recessed mounted: galvanized steel with provision for outside air duct connection.
 - 2. Fans: Double inlet, forward curved, statically and dynamically balanced.
 - 3. Fan Motor: Direct drive, permanently lubricated, with two or 4 speed operation for unit size scheduled on Drawings.
 - a. For single-phase fan motors sized larger than 1/12 hp and smaller than 1 hp, refer to Article, Electric Motors, in Section 23 0050, Basic HVAC Materials and Methods.
 - 4. Air Outlet: With motorized horizontal and vertical vanes.

- a. Wall and ceiling surface mounted units: Horizontal vane shall close air outlet upon unit shut-down.
- 5. Evaporator Coil: Aluminum fins mechanically bonded to copper tubes. Coils shall be pressure leak tested.
- 6. Insulation: Interior surfaces exposed to the airstream shall be fully insulated.
- F. Outdoor Section:
 - 1. Casing: Galvanized steel plate, powder coated with acrylic or polyester.
 - 2. Condenser Fan Grille: ABS plastic.
 - 3. Fan and fan motor: Direct drive, totally enclosed, propeller type, permanently lubricated, horizontal discharge.
 - Compressor: Variable speed rotary type, with crankcase heater and accumulator. Compressor shall be capable of operating at 0 degrees F. Compressor mounted on vibration isolator pads.
 - 5. Coil: Aluminum fins mechanically bonded to copper tubes. Coils shall be pressure leak tested. Provide coil with integral metal guard.
- G. Controls: Hard wired, microprocessor based, wall mounted controller with LCD display shall provide the following functions, as a minimum:
 - 1. 7-day programmable timer.
 - 2. Test and check functions.
 - 3. Diagnostic functions.
 - 4. Vane position control.
 - 5. Fan speed adjustment.
 - 6. Temperature adjustment.
 - 7. Automatic restart.
 - Mode selection, including heat/auto/cool/dry/fan.
 a. Provide lockable enclosure for wall mounted controller.
- H. Safeties: Shall include the following, as a minimum:
 - 1. Five minute compressor anti-recycle timer.
 - 2. High pressure protection.
 - 3. Current and temperature sensing motor overload protection.
- I. Filters: Provide manufacturers washable filters for indoor unit. Provide sufficient filters for four complete changes for each unit.

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- J. Service Access: All components, wiring, and inspection areas shall be completely accessible through removable panels.
- K. Refrigerant Piping:
 - 1. Provide factory pre-charged and sealed line set piping, length to suit the location of equipment. Tubing sizes shall be in accordance with manufacturers written instructions.
 - 2. Provide refrigeration piping in accordance with Article, Refrigerant Piping, in this Section.
- L. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:
 - 1. Mitsubishi Electric Corporation.
 - 2. Carrier Corporation
 - 3. Sanyo Electric Co., Ltd.
- M. Owner Training: Manufacturer shall provide one on-site 2-hour training session for Owners' maintenance personnel.

2.4 SPLIT SYSTEM AC UNIT

- A. General: Furnish and install split system air conditioner, with R410A refrigerant, and complete with automatic controls. Equipment shall be shipped factory assembled, wired, tested, and ready for field connections.
- B. Quality Assurance:
 - 1. Unit shall be ETL or UL listed and labeled.
 - 2. Unit shall be manufactured in a facility registered to ISO 9001:2000.
 - 3. Unit shall be rated in accordance with ARI standard 210.
- C. Delivery, Storage and Handling: Follow manufacturer's recommendations.
- D. Cooling System: The total certified cooling capacity shall not be less than scheduled. The compressor power input shall not exceed that of the unit specified.
- E. Indoor Section: Wall mounted, ceiling surface mounted, or ceiling recessed mounted, as indicated on Drawings.
 - 1. Cabinet:
 - a. Wall mounted: Molded white high strength plastic.
 - 1) Provide wall mounted unit with factory mounting plate.
 - b. Ceiling surface mounted: Molded white high strength plastic with provision for outside air duct connection.
 - c. Ceiling recessed mounted: galvanized steel with provision for outside air duct connection.
 - 2. Fans: Double inlet, forward curved, statically and dynamically balanced.

- 3. Fan Motor: Direct drive, permanently lubricated, with two or 4 speed operation for unit size scheduled on Drawings.
 - a. For single-phase fan motors sized larger than 1/12 hp and smaller than 1 hp, refer to Article, Electric Motors, in Section 23 0050, Basic HVAC Materials and Methods.
- 4. Air Outlet: With motorized horizontal and vertical vanes.
 - a. Wall and ceiling surface mounted units: Horizontal vane shall close air outlet upon unit shut-down.
- 5. Evaporator Coil: Aluminum fins mechanically bonded to copper tubes. Coils shall be pressure leak tested.
- 6. Insulation: Interior surfaces exposed to the airstream shall be fully insulated.
- F. Outdoor Section:
 - 1. Casing: Galvanized steel plate, powder coated with acrylic or polyester.
 - 2. Condenser Fan Grille: ABS plastic.
 - 3. Fan and fan motor: Direct drive, totally enclosed, propeller type, permanently lubricated, horizontal discharge.
 - Compressor: Variable speed rotary type, with crankcase heater and accumulator. Compressor shall be capable of operating at 0 degrees F. Compressor mounted on vibration isolator pads.
 - 5. Coil: Aluminum fins mechanically bonded to copper tubes. Coils shall be pressure leak tested. Provide coil with integral metal guard.
- G. Controls: Hard wired, microprocessor based, wall mounted controller with LCD display shall provide the following functions, as a minimum:
 - 1. 7-day programmable timer.
 - 2. Test and check functions.
 - 3. Diagnostic functions.
 - 4. Vane position control.
 - 5. Fan speed adjustment.
 - 6. Temperature adjustment.
 - 7. Automatic restart.
 - 8. Mode selection, including cool/dry/fan.a. Provide lockable enclosure for wall mounted controller.
- H. Safeties: Shall include the following, as a minimum:
 - 1. Five minute compressor anti-recycle timer.
 - 2. High pressure protection.

- 3. Current and temperature sensing motor overload protection.
- I. Filters: Provide 1 inch thick fiberglass throwaway filters with cardboard holding frames for indoor unit. Provide sufficient filters for four complete changes for each unit.
- J. Service Access: All components, wiring, and inspection areas shall be completely accessible through removable panels.
- K. Refrigerant Piping:
 - 1. Provide factory pre-charged and sealed line set piping, length to suit the location of equipment. Tubing sizes shall be in accordance with manufacturers written instructions.
 - 2. Provide refrigeration piping in accordance with Article, Refrigerant Piping, in this Section.
- L. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:
 - 1. Mitsubishi Electric Corporation.
 - 2. Carrier Corporation
 - 3. Sanyo Electric Co., Ltd.
- M. Owner Training: Manufacturer shall provide one on-site 2-hour training session for Owners' maintenance personnel.

2.5 **REFRIGERATION PIPE AND FITTINGS**

- A. Refrigeration gas and liquid piping shall be type ACR hard drawn copper tubing, cleaned and capped in accordance with ASTM B280, with wrought copper fittings. All joints shall be brazed with Sil-fos under nitrogen purge. Relief valve discharge piping shall be full size of relief discharge port.
 - 1. Manufactured, pre-charged and pre-insulated refrigerant line-set refrigerant piping may be utilized at Contractor's discretion.
- B. Refrigeration Piping Specialties: Furnish and install Superior, Sporlan, Alco, Henry, or equal, stop valves, solenoid valves, adjustable thermal expansion valves, sight glass, flexible connection, charging valve, and drier with valve bypass in the liquid lines and Superior DFN shell and cartridge suction line filter sized 2-1/2 times tonnage.
 - 1. Install only those refrigeration piping specialties recommended by manufacturer of specific installed equipment.

2.6 REFRIGERANT ACCESS VALVE LOCKING CAPS

- A. Each refrigerant circuit access valve located outside buildings, including valves located on roofs, shall be provided with a locking cap. Caps shall be of metal construction, with threaded brass inserts. Caps shall be color-coded according to ASHRAE standards for R22 and R410A refrigerant gasses, universal color for other refrigerant gasses. Caps shall be removable only with cap manufacturer's handheld tool.
 - 1. Provide minimum of two (2) cap removal tools for every ten (10) air conditioning units or other systems containing refrigerant installed under this Project.

- A. All fans shall be Air Moving and Control Association Inc. (AMCA) labeled.
- B. Provide self-aligning, enclosed ball bearings, accessible for lubrication unless specified otherwise.
- C. Provide variable speed switch for all direct drive fans.
- D. Roof Mounted:
 - 1. Direct or V-belt Drive: Provide one-piece heavy-duty ventilator housings, one piece heavy gauge spun aluminum construction, with weatherproof assembly and integral weather shield. Mount ventilators on curbs furnished by the fan manufacturer. Install with fan assembly level.
 - 2. Fan wheels shall be centrifugal design, statically and dynamically balanced. Tip speed, rpm and motor horsepower shall not exceed listing in manufacturer's catalog for unit specified.
 - 3. Fans shall have integral factory formed base and one piece spinning without welding. Housings shall be provided with wiring channel and are to be of the direct discharge design. Motor and fan assembly shall be on vibration isolating mounts. Fans shall have capacity, speeds and motor sizes as shown.
 - 4. Provide the following accessories:
 - a. Gravity backdraft dampers.
 - b. Aluminum bird screen with a minimum of 85 percent free area.
 - c. Adjustable motor pulley.
 - d. Laboratory fume hood exhaust fans shall be Keysite coated.
- E. Fan Drives:
 - 1. Drive Design: The design horsepower rating of each drive shall be at least 1.5 times, single belt drives 2 times, the nameplate rating of the motor with proper allowances for sheave diameters, speed ratio, arcs of contact and belt length.
 - 2. Provide variable speed drives, Dayco, Browning, Woods, or equal. Allow for replacement of fan and motor drives and belts as required to suit the balance requirements of the project.
 - 3. Select variable speed drives to allow an increase or decrease of minimum of ten percent of design fan speed.
- F. Motors:
 - 1. Motors of 25 HP and less shall have adjustable pitch sheaves; sheaves on motors above 25 HP may be non-adjustable. Change, at no extra cost to Owner, the non-adjustable sheaves to obtain desired air quantities.
 - 2. For single-phase fan motors sized larger than 1/12 hp and smaller than 1 hp, refer to Article, Electric Motors, in Section 23 0050, Basic HVAC Materials and Methods.
- G. Sheaves: Sheaves shall be cast or fabricated, bored to size or bushed with fully split tapered bushings to fit properly on the shafts. All sheaves shall be secured with keys and set screws.

- H. Belts:
 - 1. All belts shall be furnished in matched sets.
 - 2. Provide a minimum of two belts for all drives with motors 5 horsepower motors and larger.
 - 3. Belts shall be within 1 degree 30 minutes of true alignment in all cases.
- I. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:
 - a. Greenheck Fan Corporation
 - b. Loren Cook Company
 - c. PennBarry
 - d. American Coolair Corporation
- J. Owner Training: Manufacturer shall provide one on-site 1-hour training session for Owners' maintenance personnel.

2.8 LOUVERS

A. Louvers shall be minimum 16 gauge steel with Bonderite and Epon gray primer and 1/2 inch square mesh, 16 gauge galvanized steel screen on the inside. Louvers shall be Airolite #609, Arrow United Industries, or equal, with 4 inch louver depth.

2.9 AIR INLETS AND OUTLETS

- A. Except as otherwise indicated, provide manufacturer's standard outlets and inlets where shown; of size, shape, capacity and type indicated; constructed of materials and components as indicated, and as required for complete installation.
- B. Ceiling, wall or floor Compatibility: Provide outlets with border styles that are compatible with adjacent ceiling, wall or floor systems, and that are specifically manufactured to fit into ceiling, wall or floor module with accurate fit and adequate support. Refer to general construction drawings and specifications for types of ceiling systems that will contain each type of air outlet and inlet.
- C. Refer to Schedule on Mechanical Drawings for details of inlets and outlets to be used.

2.10 AIR TERMINAL UNITS

- A. Shutoff, Single-Duct Air Terminal Units:
 - 1. Configuration: Volume-damper assembly inside unit casing with control components inside a protective metal shroud.
 - 2. Casing: 0.034-inch-thick galvanized steel, single wall
 - a. Casing liner: Fiberglass free closed cell elastomeric foam liner as specified in this section for acoustic duct liner. Fiberglass acoustic duct liner is not acceptable for this project.
 - 1) Minimum Thickness: 1/2 inch.
 - 2) Surface-Burning Characteristics: Maximum flame-spread index of 25 and maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.
 - 3) Antimicrobial Erosion-Resistant Coating: Apply to the surface of the liner that will form the interior surface of the duct to act as a moisture repellent and

erosion-resistant coating. Antimicrobial compound shall be tested for efficacy by an NRTL and registered by the EPA for use in HVAC systems.

- 4) Water-Based Liner Adhesive: Comply with NFPA 90A or NFPA 90B and with ASTM C 916. Adhesive VOC Content: 80 g/L or less.
- b. Inlets and Outlets: Air inlet shall be round or rectangular stub connection or S-slip and drive connections for duct attachment. Air outlet shall be S-slip and drive connections, size matching inlet size.
- c. Access: Removable panels for access to parts requiring service, adjustment, or maintenance; with airtight gasket.
- d. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.
- 3. Volume Damper: Galvanized steel with peripheral gasket and self-lubricating bearings.
 - a. Maximum Damper Leakage: AHRI 880 rated, 2 percent of nominal airflow at 3-inch wg 6-inch wg inlet static pressure.
- 4. Hydronic Heating Coils: Copper tube, with mechanically bonded aluminum fins spaced no closer than 0.1 inch, and rated for a minimum working pressure of 200 psig and a maximum entering-water temperature of 220 deg F. Include manual air vent and drain valve.
- 5. Controls:
 - a. Air terminal units shall be furnished with damper and multipoint velocity sensor. Damper actuator, pressure-independent, variable-air-volume (VAV) or constant-airvolume (CAV) controller with electronic airflow transducer, and room sensor are specified in Section 23 0923 "Direct Digital Control (DDC) System for HVAC.
 - b. Control devices shall be compatible with temperature controls system
 - 1) Electronic Damper Actuator: 24 V, powered open, .
- 6. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:
 - a. Price Limited.
 - b. Titus.
 - c. Johnson Controls, Inc.

2.11 AIR FILTERS

- A. Provide MERV 8 disposable pleated media type. Refer to specific equipment Articles for filter depth and for exceptions to this specification. Filters shall conform to the following:
 - 1. Standards:
 - a. ASHRAE Standard 52.2-2007.
 - b. Underwriters Laboratories: U.L. 900, Class 2.
 - 2. Construction:
 - a. Media: Synthetic or cotton-synthetic blend with radial pleats.
 - b. Media Frame: High wet-strength beverage board.
 - c. Media Support: Welded wire or expanded metal grid bonded to air leaving side of the media.
 - 3. Performance: 2" deep filter shall have a maximum initial air resistance of 0.31 inches w.g.
- B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:
 - 1. Camfil Farr, Inc., model 30/30.
- 2. Flanders Corporation, model 40 LPD.
- C. Temporary (Construction Period) Filters:
 - 1. Install new temporary filters in all units that have filter systems installed. Temporary filters shall match the permanent filters that are specified for the units. Replace filters as needed, in accordance with manufacturer's directions, in order to provide protection for the unit prior to occupancy by the Owner.
 - 2. If air handling units are operated during construction of the project, install temporary filters directly over each return air inlet. Filters shall match the permanent filters that are specified for the units. Select size of filter to completely cover the frame of the return air inlet, and tape filters firmly in place to eliminate any construction debris from entering the duct system or unit. Remove the temporary filters upon completion of the work, and repair all damaged paintwork.
- D. Spare Filters:
 - 1. Furnish two new, complete sets of filter cartridges for each filter bank on completion and acceptance of the work. Install one set of filters in units (prior to final air balance) and leave the remaining filters in location designated by the Owner. Provide units designed to accommodate washable, permanent filters with one washable, permanent filter.

2.12 DAMPERS

- A. Backdraft Dampers: Ruskin CBD2, counterbalanced, Nailer Industries, or equal.
- B. Manual Air and Balance Dampers: Provide dampers of single blade type or multi-blade type constructed in accordance with SMACNA, "HVAC Duct Construction Standards," except as noted herein.
 - 1. Rectangular Ductwork:
 - a. Single damper blades may be used in ducts up to 10 inches in height. Dampers shall be 16 gauge minimum. Provide self-locking regulators, equal to Ventlok 641. Provide end bearings equal to Ventlok 607 at each damper. Provide continuous solid 3/8 inch square shafts.
 - b. Multiple blade dampers shall be equal to Ruskin CD35 Standard Control Damper. Maximum width for multiple damper blades for use in rectangular duct shall not exceed 6 inches.
 - c. Where duct velocity may be expected to exceed 1500 fpm, provide Ruskin CD-50, or equal, low leakage dampers with airfoil blades.
 - 2. Round Ductwork:
 - a. Single damper blades may be used in ducts up to 12 inches in diameter. Provide multiple blade opposed blade dampers, with connected linkage, for ductwork larger than 12 inches in diameter.
 - b. Damper blades for round ductwork shall be 20 gauge steel for ducts up to 12 inches diameter and 16 gauge steel for dampers larger than 12 inches damper. Provide self-locking regulators, equal to Ventlok 641, Durodyne, or equal for operation of dampers. Provide end bearings equal to Ventlok 607 and provide continuous solid 3/8 inch square shafts.
 - 3. Where ductwork is externally insulated, provide self-locking regulators equal to Ventlok 644, Durodyne, or equal for rectangular ductwork, and Ventlok 637, Durodyne, or equal for round ducts.

- C. Fire Dampers and Combination Fire/Smoke Dampers:
 - 1. Fire dampers and combination fire/smoke dampers shall be listed and approved by the California State Fire Marshal. Installation shall conform to the manufacturer's UL approved installation instructions.
 - a. Fire dampers shall be UL 555 classified and labeled as dynamic fire dampers approved for wall and floor installation. They shall ship from the manufacturer as an assembly with a minimum 20-gauge factory installed sleeve. Sleeve length shall suit the requirements of the wall construction. Each dynamic fire damper/sleeve assembly shall ship complete with factory "roll formed" one-piece angles with prepunched holes for easy installation. Dynamic fire dampers for vertical installation must consist of a single section on sizes up to 33" x 36" and a single section on sizes up to 24" x 24" for horizontal installation. 1-1/2 hour dynamic fire dampers shall be Ruskin DIBD20, Pottorff. 3 hour dynamic fire dampers shall b Ruskin DIBD230, Pottorff.
 - b. Fire dampers for high pressure/velocity systems where velocities exceed 2000 fpm and/or 4" w.g. pressure fire damper shall be Ruskin FD60 or equal by Pottorff.
 - c. Fire dampers for ceiling installation shall be UL 555C classified and labeled as ceiling dampers. They shall be provided with a thermal insulating blanket to fit the inlet or outlet condition if required by the application. Ceiling dampers shall be Ruskin CFD 2, 3, 4 or 5. Ceiling dampers for ceilings constructed of wood shall have UL tested in design L501 and shall be Ruskin CFD7, equal by Pottorff.
 - d. Combination fire/smoke dampers. Dampers shall be UL classified and labeled as Leakage Class I Smoke Dampers in accordance with the latest version of UL 555S. Dampers shall be warranted to be free from defects in material and workmanship for a period of 5 years after date of shipment. Damper/actuator assembly shall be tested to full open and full close at minimum 2000 fpm 250° F heated air and 4" w.g. with airflow in both directions. (Specified select: 250° / 350°, 2000 fpm/3000 fpm). Each damper shall be equipped with EZ reset "controlled closure" quick detect heat actuated release device to prevent duct and HVAC component damage resulting from instantaneous damper closure. Release device shall be EFL type and shall allow easy reset from outside the sleeve after moderate temperature exposure. (Replacement type fusible links not acceptable.)
 - e. Two position combination fire smoke dampers shall be equipped with one or more factory installed, direct coupled, 120 volt, single phase, electric actuator for energize open fail close operation. Dampers with multiple actuators shall be factory wired with single point connection at the EFL heat release devise for connection to poser. Damper actuator shall include minimum one-year energized hold open (no cycles) and spring return (fail) close reliability. Damper/actuator shall include minimum 20,000 full open-full close cycle performances.
 - f. Modulating combination fire smoke dampers shall be equipped with one or more factory installed contact for modulating signal connection. Damper/actuator shall include minimum 100,000 full open-full close cycle performances with spring return (fail) close on loss of power.
 - g. Round combination fire smoke dampers up to 24" diameter shall be true round type with minimum 2- gauge minimum galvanized designed for lowest pressure drop and noise performance. Bearings shall be stainless steel sleeve turning in an extruded hole in the frame. Blade seals shall be silicone edge designed to withstand 450° F and galvanized steel mechanically locked in to the blade edge (adhesive type seals are not acceptable). Each damper shall be equipped with a factory-installed sleeve of 17" minimum length and factory "roll formed" one-piece angles with pre-punched holes for easy installation. Dampers shall be Ruskin FSDR25 or equal by Pottorff.
 - h. Round (larger than 24" diameter) or rectangular combination fire smoke dampers shall include roll-formed structural hat channel frame, reinforced at the corners, formed from a single piece of minimum 16 gauge equivalent thickness formed from single piece galvanized steel. Bearings shall be stainless steel turning in an

extruded hole in the frame. Blade edge seals shall be silicone rubber designed to withstand 450° F and galvanized steel mechanically locked in to the blade edge (adhesive type seals are not acceptable). Each damper shall be equipped with a factory-installed sleeve of 17" minimum length and factory "roll formed" one-piece angles with pre-punched holes for easy installation. Dampers shall be Ruskin FSD60 or equal by Pottorff.

- i. 3-hour rated combination fire smoke dampers shall be Ruskin model FSD60-3 or equal by Pottorff.
- j. All FSD60 type dampers shall be AMCA licensed and shall bear the AMCA Seal for Air Performance. AMCA certified testing shall verify pressure drop does not exceed .03" w.g. at a face velocity of 1,000 fpm on a 24" x 24" damper.
- k. Wall type fire/smoke damper:
 - Combination fire/smoke dampers for use in the wall of exit corridors shall be classified and labeled as Leakage Class II Smoke Dampers in accordance with the latest version of UL 555S. Dampers shall meet the requirements for combination fire/smoke dampers in paragraph 3 above except AMCA certified testing shall verify pressure drop does not exceed .07" w.g. at a face velocity of 1,000 fpm on a 24" x 24" damper and blades shall be single skin galvanized steel 10 gauge minimum with 3 longitudinal grooves for reinforcement. Dampers shall be Ruskin FSD36 or equal by Pottorff.
 - 2) Front access combination fire/smoke dampers shall meet all the requirements for combination fire/smoke dampers in paragraph 3 above except pressure drop requirement. In addition the dampers shall be constructed so that actuators and all accessories are accessible from the grille side. Actuators and accessories shall be housed within an integral cabinet on the side of the damper frame and shall not be installed in the air stream in front of the damper. The damper sleeve shall be covered with fire resistant material. Dampers shall be Ruskin FSD60FA or equal by Pottorff.
- I. Ceiling type fire/smoke damper for tunnel type corridor construction: Combination fire/smoke dampers for use in the corridor ceiling of tunnel type corridor construction shall be UL classified and labeled as Corridor Damper. Dampers shall meet the requirements of paragraph 4a above except pressure drop testing does not require AMCA certification. Dampers shall be Ruskin FSD36C or equal by Pottorff.
- m. Fusible links shall have temperature rating approximately 50° F above normal maximum operating temperature of the heat producing appliance.
 - If project requires re-openable fire/smoke dampers, provide Ruskin 165 ° F / 350° F TS150, NCA or equal. The TS150 firestat replaces the EFL and allows the damper to be re-opened from remote location up to 350 ° F. TS150 shall include full open and full closed damper position contacts for interface with remote position indication panel.
 - 2) Each fire/smoke damper shall be equipped with "controlled closure" quick detect heat actuated release device to prevent duct and HVAC component damage. Release device shall allow easy reset after moderate temperature rise outside the sleeve. Heat release device shall be the Ruskin EFL, NCA or equal.
 - 3) Unless the system is using a validation control system, each fire/smoke damper shall be equipped with a control panel including blade position indicator lights and a key operated switch. The panel cover shall be oversized for flush mount into the wall or ceiling and shall have a brushed look. Control panel shall be Ruskin MCP2, or equal by Pottorff.
- 2. All actuators used for smoke dampers or combination fire/smoke dampers shall have a cycle time requirement of not more than every twelve months and shall be rated for continuous "0n" duty and shall be provided with internal spring return. Actuators shall be equipped with pilot light, remote key test switch, end switch and circuitry to activate pilot

light on remote key (test) switch located in corridor ceiling adjacent to damper. Electric motors shall be Invensys MA-250, MA-253, Honeywell H2000, or equal.

D. Where required to suit the size of damper required, provide manufacturers standard UL Classified mullions, arranged to support multiple dampers. Assembly shall be of minimum 16 gauge galvanized steel, complete with all accessory caps and framing members required for installation.

2.13 DUCTWORK

- A. Construct and install sheet metal ductwork in accordance with the California Mechanical Code for 4 inches static pressure upstream of terminal units and 2 inches minimum downstream of terminal units for supply air, and 2 inches minimum for return and exhaust air unless otherwise noted on Drawings.
 - 1. Where not in conflict with the California Mechanical Code, construct and install all sheet metal ductwork in accordance with SMACNA HVAC Duct Construction Standards (Metal and Flexible). Where applicable for HVAC work, construct and install sheet metal work in accordance with SMACNA Architectural Sheet Metal Manual.
 - 2. Provide variations in duct size, and additional duct fittings as required to clear obstructions and maintain clearances as approved by the Architect at no extra cost to the Owner.
 - 3. Gauges, joints and bracing shall be in accordance with the California Mechanical Code.
 - 4. Provide beading or cross breaking for all ductwork inside building. Provide cross breaking for ductwork exposed to weather.
 - 5. At the contractor's option, ductwork may be fabricated using the Ductmate, Nexus, Quickduct, Transverse Duct Connection (TDC), Pyramid-Loc duct connection systems, or equal. Fabricate in strict conformance with manufacturer's written installation instructions and in accordance with California Mechanical Code.
 - a. Seal flanged ends with pressure sensitive high density, closed cell neoprene or polyethylene tape gasket, Thermo 440, or equal.
 - b. Provide metal clips for duct connections, except at breakaway connections for fire dampers and fire smoke dampers. Provide corner clips at each corner of duct, through bolted, at all locations except at breakaway connections for fire dampers and fire smoke dampers. Where used on locations exposed to weather, provide continuous metal clip at top and sides of duct, with 1 inch overhang for top side.
- B. Design and installation standards:
 - 1. SMACNA Compliance: Comply with applicable portions of Sheet Metal and Air Conditioning Contractor's National Association (SMACNA) for all work in this section.
 - 2. NFPA Compliance: Comply with ANSI/NFPA 90A, "Standard for the Installation of Air Conditioning and Ventilating Systems," and ANSI/NFPA 90B, "Standard for the Installation of Warm Air Heating and Air Conditioning Systems."
 - 3. California Mechanical Code.
- C. Fabricate all ductwork with sheet metal. Fiberglass ductwork will not be accepted for use on this project.
- D. Duct sizes indicated are external sizes.

- E. Galvanized Sheet Steel: Lock-forming quality, ASTM A924 and ASTM A653, Coating Designation G 90. Provide mill phosphatized finish for exposed surfaces of ducts exposed to view.
 - 1. Provide mill certification for galvanized material at request of the Project Inspector.
- F. Duct Sealing:
 - 1. Sealant shall have a VOC content of 250 g/L or less.
 - 2. Sealant shall comply with testing and product requirements of South Coast Air Quality Management District, Rule 1168.
 - 3. Seal airtight all joints and seams, including standing seams and manufactured joints and seams, of all supply, return and exhaust ducts except those exposed in conditioned space. Provide one part, non-sag, synthetic latex sealant, formulated with a minimum of 68 percent solids. Sealant shall comply with ASTM E84, Surface Burning Characteristics.
 - a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:
 - 1) Design Polymerics, model DP1010
 - 2) Polymer Adhesive Sealant Systems Inc, model Airseal #11
 - 3) McGill Airseal, LLC
 - 4. Seal airtight and watertight joints and seams of ductwork exposed to weather with 6 ounce canvas bonded to ductwork with Foster 30-36 adhesive; cover canvas with heavy coat of Foster 56-10 coating, no dilution. Provide basis of design product or equal by Mon-Eco Industries, Inc., or McGill Airseal, LLC.
 - a. Pressure-sensitive tapes or single part sealant not acceptable.
 - b. Where seams are exposed to weather, paint seams with aluminum paint. Provide cross broken ductwork, and ensure that the ductwork will shed water. Beading of duct work exposed to weather will not be considered acceptable.
- G. Provide sheet metal angle frame at all duct penetrations to wall, floor, roof, or ceiling.
- H. Duct Support Materials: Except as otherwise indicated, provide hot-dipped galvanized steel fasteners, anchors, straps, trim, and angles for support of ductwork.
- I. Rectangular Duct Fabrication:
 - 1. Shop fabricate ductwork of gauges and reinforcement complying with the more stringent of the following standards, except as noted herein.
 - a. SMACNA HVAC Duct Construction Standards
 - b. California Mechanical Code
 - 2. Fabricate ducts for 2 inch pressure class with minimum duct gauges and reinforcement as follows, except as otherwise noted:

Duct Dimension	<u>Minimum Gauge</u>	Joint Reinforcement Per CMC
Through 12"	26	Not Required
13" through 18"	24	Not Required
19" through 30"	24	C/4

31" through 42"	22	E/4
43" through 54"	22	F/2
55" through 60"	20	G/4
61" through 84"	20	I/2
85" through 96"	20	J/2
Over 96"	18	K/2

- 3. Fabricate duct fittings to match adjoining ducts and to comply with duct requirements as applicable to fittings. Except as otherwise indicated, fabricate elbows with center-line radius equal to 1.5 times associated duct width. Fabricate to include single thickness turning vane in elbows where space does not permit the above radius or where square elbows are shown. Limit angular tapers to 30 degrees for contracting tapers and 20 degrees for expanding tapers. Turning vanes shall be E-Z Rail II, Durodyne, or equal.
- 4. Fabricate round supply connections at rectangular, plenum type fittings using spin-in type fittings, complete with extractor and volume control damper. Refer to Paragraph "DAMPERS" for damper requirements.
- 5. Provide drive slip or equivalent flat seams for ducts exposed in the conditioned space or where necessary due to space limitations. On ducts with flat seams, provide standard reinforcing on inside of duct. Duct connection to outlet on exposed duct shall be full size of outer perimeter of outlet flange.
- 6. Ducts exposed in the conditioned space shall be free of dents and blemishes and be mounted tight against adjacent surface with flat hangers. Remove all fabrication labels from ductwork.
- 7. Provide 20 gauge minimum for ductwork exposed within occupied spaces.
- J. Rectangular Internally Insulated Duct Fabrication:
 - 1. Provide internal duct lining where indicated on the Drawings, with a minimum of 10'-0" length in each direction from the fan, fan casing, or unit casing. Line all transfer ducts. NOTE: Fiberglas acoustic duct liner will not be acceptable for use on this project. Duct liner shall be closed cell flexible elastomeric foam insulation as specified below.
 - a. Where ductwork is exposed to weather or outside the building insulation envelope, provide 2 inch thick internal lining with an R-Value of 8.0 minimum.
 - b. Where ductwork is within the building insulation envelope, lining shall be 1" thick with an R-value of 4.2 minimum.
 - c. Ducts exposed in the conditioned space shall be free of dents and blemishes and be mounted tight against adjacent surface with flat hangers. Remove all fabrication labels from ductwork.
 - d. Where installed exposed in the conditioned space, duct shall be minimum 20 gauge with 1 inch insulation layer (minimum R-value R-4.2).
 - e. Cement duct liner in place with nonflammable, non-hardening duct adhesive. Seal all raw edges of insulation inside ductwork with adhesive, including longitudinal liner edges.
 - f. Provide metal nosing at all locations where liner is preceded by unlined metal.
 - g. Provide sheet metal weld pins and washers or clinch pins and washers on all ductwork on 12 inch intervals with the first row within 3 inches of the leading edge

of each piece of insulation and within 4 inches of corners. No use of adhesive mounted pins will be considered.

- 1) Install clinched pin fasteners with properly adjusted automatic fastening equipment. Manual installation will not be considered.
- Install weld pins with properly adjusted automatic fastening equipment. Installation shall not damage the galvanized coating on the outside of the duct.
- h. All ductwork, adhesives, lining, sealant, flex duct and the like shall have a flame spread of 25 or less and developed smoke rating of 50 or less when tested in accordance with one of the following test methods: NFPA 255, ASTM E84, or UL 723.
- i. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:
 - 1) K-FLEX, USA (K-FLEX Duct Liner Gray)
 - Armacell, LLC (AP Armaflex Duct Liner)
 - 3) Fosters Adhesive (85-62)
 - 4) Swifts Adhesive (7336)
- K. Round and Oval Ductwork Fabrication:

2)

- 1. Round and oval duct and fittings shall be spiral lockseam or longitudinal seam as indicated in table below. Provide couplings to join each length of duct.
 - a. At contractors' option, round or oval ductwork may be utilized in place of rectangular ductwork shown on Drawings, provided available space allows installation of round or oval ductwork without compromising space required for installation of products and systems of other trades.
 - 1) Round or oval ductwork utilized in place of rectangular ductwork shown on Drawings shall be sized to have a static pressure loss equivalent to rectangular duct shown on Drawings.
 - 2) Unlined round or oval duct shall not be utilized in place of rectangular internally lined ductwork shown on Drawings.
- 2. Fabricate duct fittings to match adjoining ducts and to comply with duct requirements as applicable to fittings. Except as otherwise indicated, fabricate elbows with center-line radius equal to 1.5 times associated duct width. Provide two-piece, die-stamped, 45-degree to 90-degree elbows for sizes up to 12 inches; five-piece, 90-degree elbows for sizes 12 inches and above; conical tees; and conical laterals. All reducers shall be placed after a tap has been made on the duct main. Reducers shall be long-taper style.
- 3. Round Ductwork: Construct of galvanized sheet steel complying with ANSI/ASTM A 653 by the following methods and in minimum gauges listed.

<u>Diameter</u>	Minimum Gauge	Method of Manufacture
Up to 14"	26	Spiral Lockseam
15" to 23"	24	Spiral Lockseam
24" to 36"	22	Spiral Lockseam
37" to 50"	20	Spiral Lockseam
51" to 60"	18	Spiral Lockseam
Over 60"	14	Longitudinal Seam

- 4. Provide locked seams for spiral duct; fusion welded butt seam for longitudinal seam duct.
- 5. Fittings and Couplings: Construct of minimum gauges listed. Provide continuous welds along seams at exposed ducts. Provide spot weld bonded seams at concealed ducts.

<u>Diameter</u>	Minimum Gauge
3" to 36"	20
38" to 50"	18
Over 50"	16

- 6. Ducts exposed in the conditioned space shall be free of dents and blemishes and be mounted tight against adjacent surface with flat hangers. Remove all fabrication labels from ductwork.
- 7. Provide 20 gauge minimum for ductwork exposed within occupied spaces.
- L. Round Internally Insulated Duct and Fittings: Where ductwork is exposed to weather or outside the building insulation envelope, construct with outer pressure shell, 2 inch thick (Minimum R-value = R-8) insulation layer, and perforated inner liner. Where ductwork is within the building insulation envelope, construct with outer pressure shell, 1 inch thick (minimum R-value = R4.2) insulation layer, and perforated inner liner. Construct shell and liner of galvanized sheet steel complying with ANSI/ASTM A 653, of spiral lockseam construction (use longitudinal seam for over 59 inches), in minimum gauges listed in table below. Where installed exposed in the conditioned space: duct and fitting outer pressure shell shall be minimum 20 gauge with 1 inch insulation layer (minimum R-value = R-4.2), and perforated inner liner.

Nominal Duct Diameter	Outer Shell	Inner Liner
3" TO 12"	26 gauge	24 gauge
13" TO 24"	24 gauge	24 gauge
25" to 34"	22 gauge	24 gauge
35" to 48"	20 gauge	24 gauge
49" to 58"	18 gauge	24 gauge
Over 59"	16 gauge	20 gauge

1. Fittings and Couplings: Construct of minimum gauges listed. Provide continuous weld along seams of outer shell at exposed ducts. Provide spot weld bonded seams at concealed ducts.

Nominal Duct Diameter	Outer Shell	Inner Liner
3" to 34"	20 gauge	24 gauge
36" to 48"	18 gauge	24 gauge
Over 48"	16 gauge	24 gauge

2. Inner Liner: Perforate with 3/32 inch holes for 22 percent open area. Provide metal spacers welded in position to maintain spacing and concentricity.

- 3. Ducts exposed in the conditioned space shall be free of dents and blemishes and be mounted tight against adjacent surface with flat hangers. Remove all fabrication labels from ductwork.
- 4. Where installed exposed in the conditioned space, duct shall be minimum 20 gauge with 1 inch insulation layer (minimum R-value R-4.2).
- 5. All ductwork, adhesives, lining, sealant, flex duct and the like shall have a flame spread of 25 or less and developed smoke rating of 50 or less when tested in accordance with one of the following test methods: NFPA 255, ASTM E84, or UL 723.
- 6. All duct liner insulation shall be closed cell elastomeric foam insulation as specified in this section for rectangular internally insulated duct fabrication. Fiberglass acoustic duct liner is not acceptable.
- 7. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:
 - a. Sheet Metal Div., McGill AirFlow, LLC., Acousti-k27
 - b. Semco Duct and Acoustical Products, Inc.
 - c. Air Systems Manufacturing, Inc. Las Vegas
- M. Duct Access Doors:
 - 1. Duct Access: Provide hinged access door in rectangular ducts for access to fire dampers, control equipment, etc. Access door size shall be duct diameter wide by duct diameter high for all ducts under 24 inches. Ducts over 24 inches in diameter shall have 24-inch by 18-inch access doors. Minimum size access doors shall be 6 inches by 6 inches.
 - Provide hinged style access doors for round ductwork, NCA Manufacturing, Inc., Model AD-RD-87, Pottorff Series 60, or equal. Access doors shall be 16 gauge galvanized steel with continuous piano hinge. Locks shall be plated steel strike and catch. Provide 1" x 3/8" Polyethylene "Perma Stik" gasket all around door.
- N. Flexible Air Ducts:
 - 1. Flexible air duct shall be acoustical flexible air duct, with exterior reinforced laminated vapor barrier, fiberglass insulation, encapsulated spring steel wire Helix, and Spunbonded Nylon interior liner with porous surface for maximum sound absorption. Individual lengths of flexible ducts shall contain factory fabricated steel connection collars.
 - a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following, or equal:
 - 1) Flexmaster USA, Type 6B Acoustical Insulated Flex Duct
 - 2) Casco Silent-Flex II Acoustical Insulated Flex Duct
 - 2. Factory made air ducts shall be approved for the use intended and shall conform to the requirements of UL 181 and NFPA 90A. Each portion of a factory-made air duct system shall be identified by the manufacturer with a label or other suitable identification indicating compliance with UL 181, Class 1. Ducts shall be UL listed Class 1, maximum 25/50 smoke and flame spread and shall be installed in accordance with the terms of their listing and the requirements of SMACNA HVAC Duct Construction Standards (Metal and Flexible). Factory-made air ducts shall have the following minimum R-values: R-6.0 for ductwork installed within the building insulation envelope, R-8.0 for ductwork installed outside the building insulation envelope.

- 3. Flexible ductwork shall be maximum of 5 feet long, and shall be extended to the fullest possible length, in order to minimize pressure drop in the duct.
- 4. Flexible ducts shall be selected for minimum of 6 inch positive static pressure and minimum of 1 inch negative static pressure.
- 5. Duct Access Panels:
 - a. Provide duct access panel assembly of the same material and gauge used for the duct. Duct access panels shall conform to the following:
 - 1) Fasteners: Black steel or stainless steel to match material used for the duct. Panel fasteners shall not penetrate duct wall.
 - 2) Gasket: Comply with NFPA 96, grease-tight, high temperature ceramic fiber, rated for minimum 1500 °F.
- O. Fume hood exhaust ductwork: Provide 316 Stainless steel, all welded joints for fittings, 22 gauge minimum, except 20 gauge minimum where exposed to weather. Prefabricated United McGill Corp. Low Pressure Spiral stainless steel duct and fittings, Semco Manufacturing, or equal, may be used. Assemble with acid-resistant duct sealant and stainless steel screws.
- P. Shower exhaust ducts: Provide ducts and supports from stainless steel for a length of 20 feet from exhaust grille or register.
- Q. Provide Ventlon, or equal, flexible connections on inlet and outlet of AC Unit, air handler and exhaust fans. Provide galvanized weather hood over flexible connections exposed to the weather.

2.14 HYDRONIC PIPING

- A. Provide piping materials and factory-fabricated piping products of sizes, types, pressure ratings, temperature ratings, and capacities as indicated. Provide materials and products complying with California Mechanical Code. Where more than one type of material or product is indicated, selection from materials or products specified is Contractor's option and shall be coordinated with LRCCD representative. (AD1)
- B. Heating Hot Water Piping, Chilled Water Piping:
 - 1. Polypropylene Pipe and Fittings Aboveground:
 - a. Pipe shall be manufactured from a PP-R resin meeting the short-term properties and long-term strength requirements of ASTM F 2389 or CSA B137.11. The pipe shall contain no rework or recycled materials except that generated in the manufacturer's own plant from resin of the same specification from the same raw material. All pipe shall be made in an extrusion process. Hydronic hot water and heating piping shall contain a fiber layer (faser) to restrict thermal expansion. All pipe shall comply with the rated pressure requirements of ASTM F 2389 or CSA B137.11. All pipe shall be certified by NSF International as complying with NSF 14, and ASTM F 2389 or CSA B137.11. (AD1)
 - b. Fittings shall be manufactured from a PP-R resin meeting the short-term properties and long-term strength requirements of ASTM F 2389. The fittings shall contain no rework or recycled materials except that generated in the manufacturer's own plant from resin of the same specification from the same raw material. All fittings shall be certified by NSF International as complying with NSF 14, and ASTM F 2389 or CSA B137.11. (AD1)
 - c. Pipe and fittings shall be Aquatherm® Blue Pipe® MF®, available from Aquatherm, NA. (AD1)

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- 2. Copper Tube and Fittings Aboveground:
 - a. Copper Tube and Fittings Aboveground: ASTM B88, Type L, drawn-temper, 150 psig minimum working pressure at 200 deg. F. Provide wrought-copper fittings and unions, ASTM B16.22, with full solder cup. Capped outlets shall be Schedule 40 screwed brass. Contractor's option: For piping 2-1/2 inches and larger, grooved-end copper fittings, ASTM B 75 or ASTM B 584, and grooved-end tube couplings, rigid pattern, with steel bolts and nuts and pre-lubricated EPDM gasket rated for minimum 230 deg. F. Fittings and coupling shall be rated minimum 200 psig working pressure at 250 deg. F.
- 3. Steel Pipe and Fittings Aboveground:
 - a. 2 inches and smaller: ASTM A 53/A 53M, Schedule 40 black steel with plain ends, 150 psig minimum working pressure at 200 deg. F. Provide malleable-iron threaded fittings, ASTM B16.3, Class 150, and unions, ASTM B16.39, Class 150, and castiron flanges and flange fittings, and threaded joints.
 - b. 2-1/2 inches and larger: ASTM A 53/A 53M, Schedule 40 black steel with plain ends, 150 psig minimum working pressure at 200 deg. F. Provide wrought-steel fittings, ASTM A 234/A 234M, and wrought-cast or forged-steel flanges and flange fittings, ASME B16.5, material group 1.1, with butt welding end connections and raised face.
 - 1) Contractors option: Grooved-end system as follows:
 - 2) Joint Fittings: ASTM A 536, Grade 65-45-12 ductile iron; ASTM A 47/A 47M, Grade 32510 malleable iron; ASTM A 53/A 53M, Type F, E, or S, Grade B fabricated steel; or ASTM A 106, Grade B steel fittings with grooves or shoulders constructed to accept grooved-end couplings; with nuts, bolts, locking pin, locking toggle, or lugs to secure grooved pipe and fittings.
 - 3) Couplings: Ductile- or malleable-iron housing and synthetic rubber gasket of central cavity pressure-responsive design; with nuts, bolts, locking pin, locking toggle, or lugs to secure grooved pipe and fittings.
 - 4) Refer to Grooved-End Fittings and Couplings Schedule in PART 3 of this Section for application of grooved-end fittings and couplings.
- C. Pre-Insulated Underground Heating Hot Water Piping and Chilled Water Piping: Refer to Section 23 9100.

2.15 HYDRONIC PUMPS

- A. Close-Coupled, End Suction Centrifugal Pumps
 - 1. Description: Factory-assembled and -tested, centrifugal, overhung-impeller, closecoupled, cast iron, bronze-fitted, end-suction pump as defined in HI 1.1-1.2 and HI 1.3; designed for installation with pump and motor shafts mounted horizontally.
 - 2. Pump Construction:
 - a. Casing: Radially split, cast iron, drain plug at bottom and air vent at top of volute, threaded gage tappings at inlet and outlet, and flanged connections.
 - b. Impeller: ASTM B 584, cast bronze or cast brass; statically and dynamically balanced, keyed to shaft, and secured with a locking cap screw. For constant-speed pumps, trim impeller to match specified performance.
 - c. Pump Shaft: Steel, with copper-alloy shaft sleeve.
 - d. Mechanical Seal: Carbon rotating ring against a ceramic seat held by a stainlesssteel spring, and Buna-N bellows and gasket. Include water slinger on shaft between motor and seal.
 - e. Pump Bearings: Permanently lubricated or grease lubricated ball bearings as normally furnished for pump size scheduled on Drawings.
 - 3. Motor: Single speed and rigidly mounted to pump casing with integral pump support.

- a. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
 - 1) Enclosure: Open, dripproof Totally enclosed, fan cooled Explosion proof.
 - 2) Enclosure Materials: Rolled steel.
 - 3) Motor Bearings: Permanently lubricated or grease-lubricated ball bearings as normally furnished for pump size scheduled on Drawings.
 - 4) Efficiency: Premium efficient.
- 4. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. ITT Corporation; Bell & Gossett.
 - b. Armstrong Pumps Inc.
 - c. PACO Pumps.
 - d. TACO Incorporated.
- B. Separately Coupled, Base-Mounted, End-Suction Centrifugal Pumps
 - 1. Description: Factory-assembled and -tested, centrifugal, overhung-impeller, separately coupled, cast iron, bronze-fitted, end-suction pump as defined in HI 1.1-1.2 and HI 1.3; designed for base mounting, with pump and motor shafts horizontal.
 - 2. Pump Construction:
 - a. Casing: Radially split, cast iron, drain plug at bottom and air vent at top of volute, threaded gage tappings at inlet and outlet, and flanged connections.
 - b. Impeller: ASTM B 584, cast bronze or cast brass; statically and dynamically balanced, keyed to shaft, and secured with a locking cap screw. For constant-speed pumps, trim impeller to match specified performance.
 - c. Pump Shaft: Steel, with copper-alloy shaft sleeve.
 - d. Mechanical Seal: Carbon rotating ring against a ceramic seat held by a stainlesssteel spring, and Buna-N bellows and gasket. Include water slinger on shaft between motor and seal.
 - e. Pump Bearings: Permanently lubricated or grease lubricated ball bearings as normally furnished for pump size scheduled on Drawings.
 - 3. Shaft Coupling: Replaceable molded-rubber insert and interlocking spider capable of absorbing vibration. Provide EPDM coupling sleeve for variable-speed applications.
 - 4. Coupling Guard: Dual rated; ANSI B15.1, Section 8; OSHA 1910.219 approved; steel; removable; attached to mounting frame.
 - 5. Mounting Frame: Welded-steel frame and cross members, factory fabricated from ASTM A 36/A 36M channels and angles. Fabricate to mount pump casing, coupling guard, and motor.
 - 6. Motor: Single speed and secured to mounting frame, with adjustable alignment.
 - a. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
 - 1) Enclosure: Open, dripproof Totally enclosed, fan cooled explosion proof.
 - 2) Enclosure Materials: Rolled steel.
 - 3) Motor Bearings: Permanently lubricated or grease-lubricated ball bearings as normally furnished for pump size scheduled on Drawings.
 - 4) Efficiency: Premium efficient.

- 7. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- 8. ITT Corporation; Bell & Gossett.
- 9. Armstrong Pumps Inc.
- 10. PACO Pumps.
- 11. TACO Incorporated.

2.16 TEMPERATURE CONTROL SYSTEM

A. Refer to Section 25 0000, Automatic Tempreature Controls

PART 3 - EXECUTION

3.1 ROOF MOUNTED EQUIPMENT

- A. Mount and anchor equipment in strict compliance with drawings details. Alternate anchorage methods will not be considered for roof mounted equipment.
- B. Examine rough-in for roof mounted equipment to verify actual locations of piping and duct connections prior to final equipment installation.
- C. Verify that piping to be installed adjacent to roof mounted equipment allows service and maintenance.
- D. Verify that gas piping will be installed with sufficient clearance for burner removal and service.
- E. Install ducts to termination at top of roof curb and install heavy duty rubber gaskets on supply and return openings and on full perimeter of curb, or as required for an airtight installation, prior to setting unit on curb.
- F. Cover roof inside each roof mounted air conditioning unit, heat pump unit, and heating and ventilating unit roof curb with 2 inch thick, 3 pound density fiberglass insulation board.
- G. Connect supply and return air ducts to horizontal discharge roof mounted equipment with flexible duct connectors specified elsewhere in these Specifications.
- H. Remove roof decking only as required for passage of ducts. Do not cut out decking under entire roof curb.

3.2 INSTALLATION OF SPLIT SYSTEM AC AND SPLIT SYSTEM HEAT PUMP SYSTEMS

- A. General:
 - 1. Install units level and plumb.
 - 2. Install evaporator-fan components as detailed on Drawings.
 - 3. Install ground or roof- mounted condensing units as detailed on Drawings.

- 4. Install seismic restraints as required by applicable codes. Refer to Article, Submittals, in Section 23 0050, Basic HVAC Materials and Methods, for delegated design requirements for seismic restraints.
- 5. Install and connect refrigerant piping as detailed in unit manufacturers' literature. Install piping to allow access to unit.
- 6. Install cooling coil condensate primary drain pan piping, and overflow, if provided, and run to nearest code-compliant receptacle, or as indicated on Drawings. Install secondary drain pan for units installed over permanent and suspended-tile ceilings. Install secondary drain pan piping and terminate 1/2 inch below ceiling, with escutcheon, in a readily visible location or as shown on Drawings.
- 7. Install air filters at each indoor unit. Install washable, permanent filters at indoor units designed to accept washable, permanent filters. Refer to Drawings schedule, and Article, Air Filters, in this Section, for filter requirements for ducted, above-ceiling units incorporating mixing boxes.
- 8. Duct Connections: Duct installation requirements are specified in Article, Ductwork, in this Section. Drawings indicate the general arrangement of ducts. Connect supply and return ducts to split-system air-conditioning units with flexible duct connectors. Flexible duct connectors are specified in Article, Ductwork, in this Section.

3.3 REFRIGERANT PIPING INSTALLATION

- A. General:
 - 1. Install refrigerant piping according to ASHRAE 15. Install and connect refrigerant piping as detailed in unit manufacturers' literature. Install piping to allow access to unit.
 - 2. Install piping straight and free of kinks, restrictions or traps.
 - 3. Install piping as short and direct as possible, with a minimum number of joints, elbows, and fittings.
 - 4. Slope horizontal suction piping 1 inch/10 feet towards compressor.
 - 5. Install fittings for changes in direction and branch connections.
 - 6. Piping under raised floors shall be kept 6 inches minimum above ground; excavate as necessary.
 - 7. Install locking caps on refrigerant access valves located outside building, including valves located on roofs.
 - 8. Insulate refrigerant piping, including liquid and hot gas pipes when required by system manufacturer, and including headers, branches, and other components as detailed in unit manufacturers' literature. Refer to Article, Insulation Work, in Section 23 0050, Basic HVAC Materials and Methods.
- B. Factory Pre-charged and sealed line set piping:
 - 1. Keep the entire system clean and dry during installation.

- 2. All tubing shall be evacuated and sealed at the factory. The seal must not be broken until ready for assembly.
- 3. If there is any evidence of dust, moisture, or corrosion, the tubing must be cleaned out by drawing a swab soaked with methyl alcohol through the tubing as many times as necessary to thoroughly clean the tubing.
- 4. Where line set piping is used, enclose in iron or steel piping and fittings or in EMT conduit.
- C. Field Assembled Refrigerant Piping:
 - 1. Select system components with pressure rating equal to or greater than system operating pressure.
 - 2. Where subject to mechanical injury, enclose refrigerant piping in EMT conduit.
 - 3. When brazing, remove solenoid valve coils and sight glasses, also remove valve stems, seats, and packing, and accessible internal parts of refrigerant specialties. Do not apply heat near expansion-valve bulb.

3.4 INSTALLATION OF FANS

- A. Provide access doors for fans or motors mounted in ductwork.
- B. Mount all fans as detailed on Drawings and in compliance with CBC standards.
- C. Fan motors mounted in air-stream to be totally enclosed.
- D. Completely line supply, return or exhaust fan cabinets with 1 inch thick, 3/4 pound density acoustic insulation securely cemented in place.
- E. Roof fans shall be mounted level.
- F. Provide heavy-duty rubber gasket between exhaust fan mounting flange and roof curb, or as required for an airtight installation.
- G. Label fume hood fans with sign "CAUTION HAZARDOUS EXHAUST."

3.5 AIR INLETS AND OUTLETS

- A. Provide all air inlets and outlets with gaskets and install so that there will be no streaking of the walls or ceilings due to leakage. Duct connection to outlet on exposed duct shall be full size of outer perimeter of outlet flange.
- B. Unless otherwise indicated on Drawings, provide rectangular plenum on top of each diffuser and ceiling return for connection to ductwork. Line plenum with internal insulation as indicated for lined ductwork. Size plenum to allow full opening into air terminal.
- C. Ceiling-mounted air terminals or services installed in T-Bar type ceiling systems shall be positively attached to the ceiling suspension main runners or to cross runners with the same carrying capacity as the main runners.
 - 1. Terminals or services weighing not more than 56 pounds shall have two No. 12 gauge hangers connected from the terminal or service to the structure above. These wires may be slack.

- 2. Support terminals or services weighing more than 56 pounds directly from the structure above by approved hangers. Provide 4 taut 12 gauge wires each, attached to the fixture and to the structure above. The 4 taut 12 gauge wires, including their attachment to the structure above must be capable of supporting 4 times the weight of the unit.
- 3. Secure air inlets and outlets to main runners of ceiling suspension system with two #8 sheet metal screws at opposing corners.
- D. Furnish all air inlets and outlets with a baked prime coat unless otherwise noted. Provide off-white baked enamel finish on ceiling-mounted air inlets and outlets. Paint exposed mounting screws to match the material being secured.
- E. Air inlets and outlets shall match all qualities of these specified including appearance, throw, noise level, adjustability, etc.

3.6 AIR TERMINAL UNIT INSTALLATION

- A. Install air terminal units according to NFPA 90A, "Standard for the Installation of Air Conditioning and Ventilating Systems."
- B. Install air terminal units level and plumb. Maintain sufficient clearance for normal service and maintenance.
- C. Where installing piping adjacent to air terminal unit, allow space for service and maintenance.
- D. Connect heating coils to supply with shutoff valve, strainer, control valve, and union or flange; and to return with balancing valve and union or flange, or as detailed on Drawings.

3.7 FILTERS

- A. Mount filters in airtight frames furnished by the filter manufacturer, and install in accordance with manufacturer's recommendations.
- B. Air filters shall be accessible for cleaning or replacement.
- C. Identify each filter access door with 1/2 inch high minimum stenciled letters.
- D. Provide temporary filters for all fans that are operated during construction; after all construction dirt has been removed from the building install new filters at no additional cost to the Owner. In addition to temporary filters at filter location, provide temporary filters on all duct openings which will operate under a negative pressure.
 - 1. Filters used for temporary operation shall be the same as permanent filters for the application. Filters used for duct openings may be 1 inch thick pleated media disposable type.

3.8 DAMPERS

- A. All dampers automatically controlled by damper motors are specified under "Temperature Control System" except those specified with items of equipment.
- B. Provide opposed blade manual air dampers at each branch duct connection and at locations indicated on the drawings and where necessary to control air flow for balancing system. Provide an opposed blade balancing damper in each zone supply duct. Provide an access panel or Ventlok flush type damper regulator on ceiling or wall for each concealed damper.

- C. Install fusible link fire dampers full size of duct at points where shown or required.
- D. Provide 18 inch x 12 inch minimum hinged access doors in ductwork and furring for easy access to each fire damper; insulated access doors in insulated ducts. Label access doors with 1/2 inch high red letters.
 - 1. Provide Ventlok Series 100, Durodyne, or equal access doors with hardware for convenient access to all automatic dampers and other components of the system, insulated type in insulated ducts. Provide Ventlok #202 for light duty up to 2 inch thick doors, #260 heavy-duty up to 2 inch thick doors and #310 heavy-duty for greater than 2 inch thick doors. Provide #260 hinges on all hinged and personnel access doors; include gasketing.

3.9 INSTALLATION OF DUCTWORK

- A. Assemble and install ductwork in accordance with recognized industry practices which will achieve air tight and noiseless (no objectionable noise) systems capable of performing each indicated service. Install each run with minimum of joints. Align ductwork accurately at connections within 1/8 inch misalignment tolerance and with internal surfaces smooth. Support ducts rigidly with suitable ties, braces, hangers, and anchors of type which will hold ducts true to shape and to prevent buckling. Where possible, install ductwork to clear construction by 1/4 inch minimum, except at air inlets and outlets. Where ductwork will not clear construction, secure duct firmly to eliminate noise in the system.
- B. Duct Joints: Install duct sealers, pop rivets or sheet metal screws at each fitting and joint. Duct sealer shall be fire retardant. Sheet metal screw for joints shall be minimum #10 size galvanized.
- C. Applicable Leakage Classes:

Pressure Class	Leakage Class	
	Round Duct	Rectangular Duct
2"W.G. or less	12	12
4"W.G. or greater	3	6

D. Upper connection of support to wood structure shall be with wood screws or lag screws in shear fastened in the upper one half of the wood structural member. Fasteners shall conform to the following schedule:

For ducts with P/2=30"	#10 x 1-1/2" wood screw
For ducts with P/2=72"	1/4"x 1-1/2" lag screw
For ducts with P/2 over 73"	3/8"x 1-1/2" lag screw

E. Upper connection in tension to wood shall not be used unless absolutely necessary. Where deemed necessary the contractor shall submit calculations to show the size fastener and penetration required to support loads in tension from wood in accordance with the following schedule:

For ducts with P/2=30"	260 pounds per hanger
For ducts with P/2=72"	320 pounds per hanger
For ducts with P/2=96"	460 pounds per hanger

For duct with P/2 larger than 120"

NOT ALLOWED

- F. Install concrete inserts for support of ductwork in coordination with formwork as required to avoid delays in work.
- G. Where ducts pass through interior partitions and exterior walls, conceal space between construction opening and duct or duct plus insulation with sheet metal flanges of same gauge as duct. Overlap opening on four sides by at least 1-1/2 inches.
- H. Support ductwork in manner complying with SMACNA "HVAC Duct Construction Standards," hangers and supports sections. Where special hanging of ductwork is detailed or shown on Drawings, Drawings shall be followed. Angles shall be attached to overhead construction in a manner so as to allow a minimum of 2 inches of movement in all directions with no bending or sagging of the angle.
 - 1. Except where modified in individual paragraphs of this Section, provide hanger support with minimum 18 gauge straps, 1 inch wide. Fold duct strap over at bottom of duct.
 - 2. Install duct supports to rectangular ducts with sheet metal screws. Provide one screw at top of duct and one screw into strap at bottom of duct.
- I. Installation of Flexible Ductwork:
 - 1. Provide flexible ducts with supports at 30 inch centers with 2 inch wide, 26 gauge steel hanger collar attached to the structure with an approved duct hanger. Installation shall minimize sharp radius turns or offsets.
 - a. Supports shall be in accordance with SMACNA HVAC Duct Construction Standards (Metal and Flexible).
 - b. Make bends to maintain R/W-1.5.
 - 2. Make connections to rigid duct and units with Panduit style draw band at inner liner material, and a second draw band over the outer vapor barrier material.
 - 3. Make connection to duct with spin-in fittings, with air scoop and balance damper.
- J. Installation of Shower Exhaust Ducts:
 - 1. Slope duct a minimum of 1 percent to drain back to the exhaust grille.
- K. Paint inside of ducts, visible through grille, dull black.
- L. Where ductwork is installed in finished areas of buildings that do not have ceilings, paint ductwork, support hangers, and air inlets and outlets to match adjacent architectural surfaces, or as directed by Architect.

3.10 INSTALLATION OF PUMPS

- A. Install pumps as shown on Drawings.
- B. Install pumps to provide access for periodic maintenance including removing motors, impellers, couplings, and accessories. Manufacturer recommended clearances shall be maintained.
- C. Independently support pumps and piping so that weight of piping is not supported by pumps and weight of pumps is not supported by piping.

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3.11 DUCTWORK SEALING AND LEAK TESTING

- A. All ductwork shall receive a Class A seal.
- B. Seal airtight all joints and seams, including standing seams and manufactured joints and seams, of all supply, return and exhaust ducts except those exposed in conditioned space.
- C. Leakage Classes:

Pressure Class	Leakage Class	
	Round Duct	Rectangular Duct
2"W.G. or less	8	16
4"W.G. or greater	2	4

D. All duct systems (supply, return, outside air intake, and exhaust), except those identified on compliance forms on Drawings as requiring Acceptance Testing per the requirements of the California Energy Code, shall be tested in accordance with the requirements of SMACNA's "HVAC Air Duct Leakage Test Manual." Test pressure shall be equal to the pressure class of the duct.

3.12 EQUIPMENT START-UP

- A. Initial start-up of the systems and pumps shall be under the direct supervision of the Contractor.
- B. Equipment start-up shall not be performed until the piping systems have been flushed and treated and the initial water flow balance has been completed.
- C. It shall be the responsibility of the Contractor to assemble and supervise a start-up team consisting of controls contractor, start-up technician, and test and balance contractor; all to work in concert to assure that the systems are started, balanced, and operate in accordance with the design.
- D. After start-up is complete, instruct the Owner's personnel in the operation and maintenance of the systems. Obtain from the Owner's representative a signed memo certifying that instruction has been received.

3.13 TESTING AND BALANCING

A. For testing and balancing requirements, refer to Section 23 0593, Testing and Balancing for HVAC.

3.14 CLEANING AND PROTECTION

- A. As each duct section is installed, clean interior of ductwork of dust and debris. Clean external surfaces of foreign substances that might cause corrosive deterioration of metal or where ductwork is to be painted.
- B. Strip protective paper from stainless steel ductwork surfaces, and repair finish wherever it has been damaged.

- C. Temporary Closure: At ends of ducts that are not connected to equipment or air distribution devices at time of ductwork installation, provide temporary closure of polyethylene film or other covering that will prevent entrance of dust and debris until connections are to be completed.
- D. As each internally lined duct section is installed, check internal lining for small cuts, tears, or abrasions. Repair all damage with fire retardant adhesive.

3.15 ACCEPTANCE REQUIREMENTS

A. In addition to the testing and balancing requirements specified in Section 23 0593, the Contractor shall also be responsible to complete the Acceptance Requirements of the 2013 California Building Energy Efficiency Standards. Refer to Section 23 0050 for additional information on Acceptance Requirements.

3.16 EQUIPMENT MOUNTING

A. Mount and anchor equipment in strict compliance with Drawings details. Alternate anchorage methods will not be considered for roof mounted equipment.

3.17 GROOVED-END FITTINGS AND COUPLINGS SCHEDULE

- A. Optional grooved-end fittings and couplings may be utilized only as follows:
 - 1. Heating Hot Water Piping:
 - a. In Mechanical Rooms only, where accessible for service or replacement.
 - 2. Chilled Water Piping:
 - a. In Mechanical Rooms, where accessible for service or replacement.
 - b. Above lay-in type suspended ceilings, where accessible by ladder.
 - c. Outside building above grade.
 - 3. Grooved-end fittings and couplings shall not be installed in vertical building shafts.

END OF SECTION 23 8000

SECTION 25 1523

GRAPHIC USER INTERFACE FOR BCS

PART 1 - General

1.1 SUMMARY

- A. Section includes the general requirements for graphic generation.
- B. Related Sections:
 - 1. 23 0800 Mechanical and ATC System Commissioning
 - 2. 23 0900 Automatic Temperature Controls, Building Management Control System

1.2 SYSTEM DESCRIPTION

- A. Provide software and labor for graphical representation of all systems specified.
- B. Show all hardware points, setpoints, integrated points as shown in drawings and as needed to properly control and monitor systems.
- C. Los Rios CCD utilizes a production/development environment. Graphics are implemented on the development system (EBI-CON), and migrated to the production system(s) after Los Rios CCD commissioning agent review/approval. Migration shall occur within 30 days of commissioning agent approval.
- D. When the project is migrated to the production environment, Display Tables 1 through 7 shall be integrated into the production environment Display Tables, Critical Points (see DT-10) shall be added to EBI Main Menu graphic, and the project AHUs shall be added to the following automated reports:
 - 1. RPT-2.1 Run Condition Overrides
 - 2. RPT-3.1 OSA Damper Minimum Limit Parameters
 - 3. RPT-3.2 Extreme Weather Thresholds
 - 4. RPT-5.1 Runaway AHUs
 - 5. RPT-7.1 Rogue Zones
 - 6. RPT-9.1 Unoccupied Space Temperature Limits

1.3 SUBMITTALS

- A. Los Rios CCD has developed campus standards including detailed graphics templates. Contact Los Rios CCD for latest examples.
- B. Submit for Review:
 - 1. Each graphic page shall be submitted for review and requires approval by Los Rios CCD.

1.4 QUALITY ASSURANCE

A. Decimal precision. Unless indicated otherwise, point values shall use the following decimal precision. Temperatures and temperature setpoints: 1 decimal place. Airflow (CFM) and airflow setpoints: no decimal places. Water flow (GPM) and water flow setpoints: 1 decimal place. Duct static pressure (Inches Water Column) and duct static pressure setpoints: 2 decimal places. Building static pressure (Inches Water Column) and building static pressure setpoints: 3 decimal places. Humidity (%RH) and humidity setpoints: 1 decimal place.

- B. All valve and damper output positions should be denoted as %OPEN
- C. Provide consistency in measurement units.
- D. All graphics shall conform to the Los Rios CCD Design Guidelines.
- E. Vendor names, logos, hyperlinks to vendor site, or other vendor identification or promotion, are not permitted on graphics.
- F. Los Rios CCD shall furnish sample Standard Graphics to ensure consistency of look and feel.
 - 1. Screen captures of example Los Rios CCD Standard Graphics are depicted below.

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 - EXECUTION

- 3.1 GRAPHIC GENERATION
 - A. Each graphic shall include all control points, devices and user adjustable setpoints/parameters associated with the system. All points, as specified in point list table, shall be displayed and adjustable in graphics.
 - B. Graphic Pages Required.
 - 1. At a minimum, all the example graphics depicted below, shall be included as part of the project.
 - 2. Additional graphic pages may be required for a specific project.

3.2 COMMON FOR ALL GRAPHICS

A. Building Footer:

Footer buttons shall vary by building depending on what mechanical equipment, etc. is being controlled in the building. The following is a typical example:



- 1. Label: Main; Link: EBI Main Menu Display
- 2. Label: FLC; Link: Main Campus Menu Display
- 3. Label: First Floor; Link: First Floor Floorplan Display
- 4. Label: Second Floor; Link: Second Floor Floorplan Display
- 5. Label: Roof; Link: Roof Floorplan Display
- 6. Label: VAVs; Link: Building Menu Display
- 7. Label: AH01; Link: AH01 Schematic Display
- 8. Label: AH02; Link: AH02 Schematic Display

3.3 BUILDING HOME PAGE

- A. The primary purpose of the building home page is to provide an Operator one place to quickly see the status of major equipment in the building and other critical, real-time information. The contents of the home page will vary by building depending on critical systems and mechanical equipment in that building. Typical systems include air handlers; building chilled water; building hot water, etc.
- B. Home Page Example:



- 1. Text identifying Campus and Building
- 2. Summary of building space temperatures
- 3. Summary of AHU Discharge Temp, Discharge Temp Setpoint, and Supply Fan Command
- 4. Magenta background indicates point in Manual Mode
- 5. Link to building VAV information summary (DT-7)
- 6. Building Footer

3.4 AIR HANDLING UNIT

- A. It is not feasible to convey examples of every possible permutation of air handler configuration. Specific details shall be developed on a per-project or per-building basis.
- B. Typical Air Handler Graphic Page



- 1. Text identifying Campus and Building
- 2. Text Identifying AHU
- 3. Pushbutton opening this AHU Operating Notes text file (Notepad)
- 4. Summary of Return Fan Speed Control
- 5. Trend of AHU Discharge Air Setpoint
- 6. Banner indicating Automatic (weather/ADR) override status
- 7. Summary of AHU operating conditions
- 8. Operator Control Panel
- 9. Building Footer
- 10. Additional Points as required by project

3.5 VARIABLE AIR VOLUME BOX





- 2. Text identifying VAV box
- 3. VAV box schematic
- 4. Room setpoint information
- 5. Footer

3.6 FLOOR PLAN

A. Example Floorplan Graphic



- 1. Mechanical background created from contract drawing air side mechanical floorplans.
- 2. Text identifying campus
- 3. Text identifying building and floor
- 4. Current room temperature and link to VAV detail graphic
- 5. Footer.

3.7 CHILLED WATER GRAPIC

A. Example Chilled Water Graphic



- 1. Text identifying campus and building
- 2. Text identifying system type
- 3. Pushbutton opening this CHW system Operating Notes text file (Notepad)
- 4. Chilled water system schematic
- 5. Footer

3.8 HOT WATER GRAPIC

A. Example Hot Water Graphic



- 1. Text identifying campus and building
- 2. Text identifying system type
- 3. Pushbutton opening this HW system Operating Notes text file (Notepad)
- 4. Hot water system schematic
- 5. Footer

3.9 CAMPUS BUILDING DISPLAY TABLE (DT-1)

Campus: Keema Center Dutside Air Temp: 78.9*F No Automatic Override in Effect	KCDT-1.0 Cosplay Na Campus Building Display Table Scatter															Graphic Docume	e: KCDT-1.0 Link Table Display Link Intation Link			
Building				Tempe	rature				Vent	lation		-	Pressure	and Row		Va	lves	Energy Usage		
		CHW	HW	Min	Max	Max AH	Min AH	Max RA	Min RA	Max OSA	Min OSA	CHW	HW	CHW	HW	Max HW	Max CHW	Bectric	CHW	HW
Name	Number	Supply	Supply	Space	Space	Supply	Supply	CO2	CO2	Damper	Damper	DP	DP	Flow	Row	Valve	Valve	KW	BTUH	BTUH
Board Room	a constant of the	71	72	71	74	75	73	136	136	15	15	3	3	N/A	N/A	0	1	N/A	N/A	N/A
Business Bervices		71	72	71	75	80	60	N/A	N/A	15	15	N/A	N/A	N/A	N/A	20	100	28	N/A	N/A
Data Center		N/A	N/A	70	76	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	55	N/A	N/A
Executive Offices		71	72	70	77	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Personnel Offices		71	72	70	76	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NA
1	2	3	4	5	6	7	8	9	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	20	21

- 1. Building Name
- 2. Building Number
- 3. Building chilled water supply temperature
- 4. Building hot water supply temperature
- 5. Maximum space temperature in building
- 6. Minimum space temperature in building
- 7. Maximum AHU discharge temperature in building
- 8. Minimum AHU discharge temperature in building
- 9. Maximum AHU return air CO2 in building
- 10. Minimum AHU return air CO2 in building
- 11. Maximum AHU outside air damper position in building
- 12. Minimum AHU outside air damper position in building
- 13. Building chilled water differential pressure
- 14. Building hot water differential pressure
- 15. Building chilled water flow
- 16. Building hot water flow
- 17. Maximum hot water valve position in building
- 18. Maximum chilled water valve position in building
- 19. Building kw meter reading
- 20. Building chilled water BTU meter reading
- 21. Building hot water BTU meter reading

3.10 PACKAGE AHU DISPLAY TABLE (DT-2)

Campus: Natomas Center Outside Air Temp: 8 No Automatic Override in	89.9"F	NCDT-2.1 Display Nat Campus Package AHU Display Table Gradh														Name: NCDT-2.1 Link Table aphic Display Link cumentation Link		
Building	A	AHU Status Mode Temperatures Heating/Cooling Self-Serve Timer/Run Hrs Unoccupied ADR Exem-														ADR Exempt		
		H	SF	Intrusion	Occupancy	Thermal	AHU	Room	Room	Supply Air	Active	Active	Override Minutes	Run Hours	Run Hours Last	Unoccupied High	Unoccupied Low	- and a start of the
			Status	Status	Mode	Mode	Mode				Cooling	Heating	Remaining	Current Week	Week	Setpoint	Setpoint	INFO ONLY
								Reading	Set Pt	Reading				Readings		Set	Pts	
								*F	*F	٩F	Stages	Stages	Mins	Hours	Hours	*F	*F	Yes/No
01 - Natomas Center	AC	CU01	ON	Disarmed	Auto Sched	COOL	N/A	73	73	77	0	0	0	28	132	82	60	No
01 - Natomas Center	AC	:002	ON	Disarmed	Auto Sched	COOL	N/A	75	73	69	1	0	0	28	129	82	60	No
01 - Natomas Center	AC	:003	ON	Disarmed	Auto Sched	COOL	N/A	74	73	78	1	0	0	28	129	80	60	No
01 - Natomas Center	AC	:004	ON	Disarmed	Auto Sched	COOL	N/A	73	73	68	0	0	0	28	129	82	60	No
01 - Natomas Center	AC	005	ON	Disarmed	Auto Sched	COOL	N/A	73	73	67	0	0	0	28	129	82	60	No
01 - Natomas Center	AC	2006	ON	Disarmed	Auto Sched	COOL	N/A	74	73	73	1	0	0	28	129	82	60	No
01 - Natomas Center	AC	007	ON	Disarmed	Auto Sched	COOL	N/A	74	73	80	1	0	0	28	129	82	60	No
01 - Natomas Center	AC	2003	ON	Disarmed	Auto Sched	COOL	N/A	73	73	67	0	0	0	28	129	82	60	No
01 - Natomas Center	AC	2009	ON	Disarmed	Auto Sched	COOL	N/A	72	73	64	0	0	0	28	134	73	60	No
01 - Natomas Center	AC	CU10	ON	Disarmed	Auto Sched	COOL	N/A	73	73	66	0	0	0	29	132	82	60	No
01 - Natomas Center	AC	:011	ON	Disarmed	Auto Sched	COOL	N/A	74	73	56	1	0	0	28	129	82	60	No
01 - Natomas Center	AC	:U12	ON	Disarmed	Auto Sched	COOL	N/A	74	73	70	1	0	0	28	129	82	60	No
01 - Natomas Center	AC	:013	ON	Disarmed	Auto Sched	COOL	N/A	73	73	63	0	0	0	28	129	82	60	No
1	(2		3	4	5	6	7	8	9	10	(11)	(12)	13	(14)	15	16	(17)	18

- 1. Building name
- 2. AHU name
- 3. Supply fan status
- 4. Intrusion system status
- 5. Occupancy mode
- 6. Thermal node
- 7. AHU mode
- 8. Room temperature
- 9. Room temperature setpoint
- 10. AHU discharge temperature
- 11. Active cooling stages
- 12. Active heating stages
- 13. Override minutes remaining
- 14. Current week run hours
- 15. Previous week run hours
- 16. High unoccupied setpoint
- 17. Low unoccupied setpoint
- 18. Is AHU ADR exempt

3.11 CAMPUS CENTRAL STATION AHU OVERRIDE DISPLAY (DT-4)

لم الم	ampus: American River Colle; utside Air Temp: 80.8 No Automatic Override in Effe		DT-4.0A Dtsplay Name: ARDT_04A Campus Central Air Handler Override Display Ocambia Dostra Link Table Documentation Link																					
Г	Building	AHU	Sy	stem Overri	des		Supply Air	Temperate	ure Contro	1	Air	Row	Ventilation/Dampers				Va	lves	SAT Optimization			Unoccupied Settings		
						Cool Low Sp	ing Sp High Sp	Heating Sp Low So High Sp		Current Sp	Static Pressure	Fan Speed	Damper Position	Dam per Min	DCV Dmpr Max	CO2 Sp	HW VIv Position	CHW VIv Position	Request	t Count Thr	esholds	Space Low Limit	Temp High Limit	Night Purge
			Schedule	Decupancy	Heat/Cool	*F	4	۴F	۴	4	INW	%	%	56	56	PPM	%	5	Cooling	Heating	Htg/Clg	45	۴F	۴F
P1 01	1 - Administration	AH01			N/A	0	0	0	0	0	0.00	0	0	0	0	0	68	0	0	0	N/A	0	0	0
03 01	1 - Counseling	AH05				N/A	N/A	N/A	N/A	0	0.00	0	0	0	0	0	0	0	N/A	N/A	0	0	0	0
01 01	2 - 170	AH01	On	Occupied	Cooling	55	65	85	135	60	1.80	79	36	36	80	1000	0	54	3	6	5	45	80	63
P4 01	1 - Liberal Arts	AH01	On	Occupied	Cooling	60	65	80	130	60	N/A	80	30	30	80	1000	0	100	N/A	N/A	75	45	90	63
P4 01	I - Liberal Arts	AH11	On	On	COOL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20	20	80	800	0	66	N/A	N/A	N/A	61	82	N/A
01 01	1 - Liberal Arts	AH12	On	On	COOL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10	10	80	800	0	100	N/A	N/A	N/A	58	74	N/A
01 01	I - Liberal Arts	AH13	On	On	COOL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20	20	80	800	0	100	N/A	N/A	N/A	60	82	NA
P8 01	1 - Liberal Arts	AH14	On	On	COOL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20	20	80	800	0	88	N/A	N/A	N/A	61	82	N/A
P4 01	I - Liberal Arts	AH15	On	On	COOL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20	20	80	800	0	38	N/A	N/A	N/A	61	82	N/A
20	I - Liberal Arts	AH16	On	On	COOL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20	20	80	800	0	100	N/A	N/A	N/A	61	82	N/A
1 0	I - Liberal Arts	AH17	On	On	COOL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20	20	80	800	0	100	N/A	N/A	N/A	61	82	N/A
1.0	I - Liberal Arts	AH18	On	On	COOL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20	20	80	800	0	53	N/A	N/A	N/A	61	85	N/A
13 00	I - Liberal Arts	AH37	On	On	COOL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20	20	75	2000	0	100	N/A	N/A	N/A	50	90	N/A
20	I - Liberal Arts	AH38	On	On	COOL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20	20	75	2000	0	100	N/A	N/A	N/A	50	90	N/A
14 00	I - Liberal Arts	AH39	On	On	COOL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20	20	75	2000	0	100	N/A	N/A	N/A	50	90	N/A
14 01	1 - Liberal Arts	AH40	On	On	COOL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20	20	75	2000	0	100	N/A	N/A	N/A	50	90	N/A
12 04	4 - Raef Hall	AH01	Occupied	d Occupied	Cooling	N/A	N/A	N/A	N/A	N/A	N/A	N/A	31	30	35	1000	0	19	N/A	N/A	N/A	45	90	63
14 04	4 - Raef Hall	AH02	Occupied	d Occupied	Cooling	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	20	N/A	1000	0	98	N/A	N/A	N/A	45	90	63
18 04	4 - Reef Hall	AH03	Occupied	d Occupied	Cooling	N/A	N/A	N/A	N/A	N/A	N/A	N/A	30	30	35	1000	0	99	N/A	N/A	N/A	45	90	63
24 04	4 - Raef Hall	AH04	Occupied	d Occupied	Cooling	N/A	N/A	N/A	N/A	N/A	N/A	N/A	30	30	35	1000	0	100	N/A	N/A	N/A	45	90	63
(1	2	3	4	5	6	7	8	9	10	11	(12)	13	14	(15)	(16)	17	(18)	(19)	20	21	22	23	24

- 1. Building Name
- 2. AHU Name
- 3. Schedule status
- 4. Occupancy status
- 5. AHU Heating/Cooling mode
- 6. Discharge air low cooling setpoint
- 7. Discharge air high cooling setpoint
- 8. Discharge air low heating setpoint
- 9. Discharge air high heating setpoint
- 10. Active discharge air temperature setpoint
- 11. Duct static pressure
- 12. Supply fan speed
- 13. Outside air damper position
- 14. Minimum outside air damper position
- 15. Maximum Demand Controlled Ventilation outside air damper position
- 16. Return air CO2 setpoint
- 17. Heating valve position
- 18. Cooling valve position
- 19. Cooling request threshold
- 20. Heating request threshold
- 21. Heating/Cooling mode changeover heating request threshold
- 22. Unoccupied heating setpoint
- 23. Unoccupied cooling setpoint
- 24. Night Purge outside air enable setpoint

3.12 CAMPUS CENTRAL STATION AHU SAT OPTIMIZATION (DT-5)

Campus: American River College Display Name: ARDT_05A DT-5.0A Air Temp: 80,8*F stomatic Override in Effect Link Tab **Campus Central AHU SAT Optimization** Graphic Display Lin Building SAT Optimization Parameter Max Zone Temp SF Status AHU Mod Max Term Load Reading Min Zone Temp 541 im p Dor ump Dov Setpoint um p Ug alculatio Request Request Request Request ounceling AH05 180 COC Liberal Ar ON C00 N/ N N/ AH08 AH09 C001 Liberal Ar ON N/A N/A N/A N/A N/A ON Coolin AH01 On (1)(2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20)

- 1. Building name
- 2. AHU name
- 3. Supply fan status
- 4. AHU operating mode
- 5. AHU thermal mode
- 6. Maximum terminal load from connected VAV boxes
- 7. Discharge air temperature setpoint
- 8. Discharge air temperature
- 9. Maximum zone temperature from connected VAV boxes
- 10. Minimum zone temperature from connected VAV boxes
- 11. Cooling request threshold
- 12. Cooling request count from connected VAV boxes
- 13. Cooling bump down setpoint
- 14. Cooling bump up setpoint
- 15. Cooling sample time
- 16. Heating request threshold
- 17. Heating request count from connected VAV boxes
- 18. Heating bump down setpoint
- 19. Heating bump up setpoint
- 20. Heating sample time

3.13 VARIABLE SPEED DRIVES AND TRACKING (DT-6)

ampus: American Riv	er College							DT-6.0A Display Name: ARDT												e: ARDT_06			
No for temp.	80.1°F							Variah	le Sper	d Drive	s and T	Tracking							Graphic Display Li				
No Automatic Overra	te in Effect							· unius	ne oper	u Dinie	o una i	ruching							Graphic Display Line				
																			Docum	nentation Lir			
Building	AHU			System State	16				Return	Fan Tracking			Supply Stat	Pressure		Air Bow		Fan Sneed (C	ed (Constant Volume Systems)				
			Supply Fan Return Fan Occ Fan Unocc Fan Unocc Fan Unocc Fan Static Supply Air Return Air Outside Air Air														ADR Mode	RMode Cooling					
					Plant Contr	oller Cmds	Speed	Speed	Speed Mult	Speed Offset	Speed Mult	Speed Offset	Pressure	Pressure	Flow	Flow	Flow	Fan Speed	Mode SF	SF Speed			
			Drives		VAV	VAV HVAC	Reading	Reading	Setpoint	Setpoint	Setpoint	Setpoint	Reading	Setpoint	Reading	Reading	Reading	Setpoint	Speed	Setpoint			
		Auto/Hand	On/Off	VFD Alarm	Emergency	Mode													Setpoint				
					Mode		%	%	%	5	%	- %	INW	INW	CFM	CFM	CFM	%	55	56			
1 - Administration	AH01			N/A	N/A	N/A	0.0	N/A	N/A	N/A	N/A	N/A	N/A	0.0	N/A	N/A	N/A	N/A	N/A	N/A			
M - Counceling	AH05				N/A	N/A	0.00	0.00	N/A	N/A	N/A	N/A	0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
12 - ITC	AH01	N/A	On	N/A	Pressuriz	Auto	78.52	78.52	1.0	0.0	1.0	0.0	1.8	1.8	N/A	N/A	N/A	N/A	80	45			
00 - Liberal Arts	AH01	Auto	On	Normal	N/A	N/A	80.22	65.05	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	70	80	80			
10 - Liberal Arts	AH11	N/A	ON	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
10 - Liberal Arts	AH12	N/A	ON	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
03 - Liberal Arts	AH13	N/A	ON	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
10 - Liberal Arts	AH14	N/A	ON	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
10 - Liberal Arts	AH15	N/A	ON	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
10 - Liberal Arts	AH16	N/A	ON	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
05 - Liberal Arts	AH17	N/A	ON	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
10 - Liberal Arts	AH18	N/A	ON	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
10 - Liberal Arts	AH37	N/A	ON	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
10 - Liberal Arts	AH38	N/A	ON	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
03 - Liberal Arts	AH39	N/A	ON	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
10 - Liberal Arts	AH40	N/A	ON	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
14 - Raef Hall	AH01	N/A	On	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
14 - Reef Hall	AH02	N/A	On	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
14 - Raef Hall	AH03	N/A	On	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
M - Reef Hall	AH04	N/A	On	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
(1)	(2)	(3)	(4)	(5)	6	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)			

- 1. Building name
- 2. AHU name
- 3. Supply fan VFD Hand-Off-Auto input
- 4. Supply fan status
- 5. Supply fan VFD alarm
- 6. VAV Emergency mode point
- 7. VAV HVAC mode point
- 8. Supply fan VFD speed feedback
- 9. Return fan VFD speed feedback
- 10. Occupied mode return fan speed multiplier
- 11. Occupied mode return fan offset
- 12. Unoccupied mode return fan speed multiplier
- 13. Unoccupied mode return fan offset
- 14. Duct static pressure
- 15. Duct static pressure setpoint
- 16. Supply air flow
- 17. Return air flow
- 18. Outside air flow
- 19. ADR speed setpoint (Constant volume AHU only)
- 20. Cooling mode speed setpoint (Constant volume AHU only)
- 21. Heating mode speed setpoint (Constant volume AHU only)

3.14 VAV DISPLAY TABLE (DT-7)

	Building: ARBS (Child Development Center) Operator Notes DT-7.0 Datade Air Temps: 82 VAV Display Table 0 ANJ: copy Air Temps: 65 0 0 No Automatic Override in Effect 0 0															AR08DT7 / Display Graphic D Documen	Table Link Isplay Link tation Link			
Н	VAV Box	/AV Box Room Information Space Temp Discharge Discharge Air Row Valve/Damper/Term Load 1														SAT Opt	imization			
Н.	Number						Air Temp	_		Min Cig F	low Set Pt	Max Cig F	low Set Pt	Reheat R	ow Set Pt	Valve	Damper		1	
H.					Reading	Set Pt	Reading	Reading	Set Pt	SetPt	TAB Value	Set Pt	TAB Value	Set Pt	TAB Value	Position	Position	Terminal	Cooling	Heating
H		I Rm #	C Rm #	D Rm #	7	*	7	CHM	CHM	CHM	CHM	CHM	CHM	CHM	CHM	76	76	Load	Request	Request
H.	AR08VAV101				73.9	74.0	NA	197	199	199		400		199		0	39	0	Off	Off
H.	AR08VAV102			1939/1970/1978/18	71.6	74.0	NA	331	449	449		901		449		0	100	0	Off	Off
Ц.	AN08VAV103				71.6	74.0	NA	19/	239	239		481		239		0	100	0	Off	Off
H.	AR08VAV104	5000000000			69.3	70.0	NA	218	225	225	10000100100	445	1000000000	225	100001003007	72	84	-73	Off	Off
Ц.	AR08VAV105	0			70.9	74.0	NA	286	295	295		651	-	295		0	56	0	Off	Off
H.	AR08VAV106	0108100	1000	GIERS (LICES) (LICES)	71.1	74.0	NA	182	295	295	CONTRACTOR OF STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, S	589	00000000000	295	CHORES CALIFORNIA	0	100	0	Off	Off
Ц.	AR08VAV107	10000		1.11	71.2	74.0	NA	333	316	316		831	10000	415		0	28	0	Off	Off
H.	AR08VAV108	643603062	10001000	okee aleesaale	725	74.0	NA	78	81	81	203404539343	210	100100539003	106	CONTRACTO	0.0	41	0	Off	Off
Π.	AR08VAV109	100		11112	73.8	74,0	NA	297	301	301	1000	850	100000	301	10000000	0	37	0	Off	Off
H.	AR08VAV110	000000402	1000	19495-94072-34	71.4	74.0	NA	1108	1125	1125	0.0001000000	2250	110000000000000000000000000000000000000	1125	102801321805	0	70	0	Off	Off
H.	AR08VAV111	0		10000000000000000000000000000000000000	73.8	74.0	NA	239	250	250		500		250	1	0	42	0	Off	Off
		2	3	Cen 4 Ope	rat 5	6	7	8	9	10	(11)	(12)	13	(14)	(15)	(16)	17	18	(19)	20

- 1. VAV name
- 2. Inventory room number (from construction documents entered by Honeywell)
- 3. Campus room number (entered by Los Rios CCD)
- 4. Door room number (entered by Los Rios CCD)
- 5. Space temperature
- 6. Space temperature setpoint
- 7. Discharge air temperature
- 8. Discharge air flow
- 9. Discharge air flow setpoint
- 10. Minimum cooling air flow setpoint
- 11. Minimum cooling air flow setpoint (from TAB report entered by Los Rios CCD)
- 12. Maximum cooling air flow setpoint
- 13. Maximum cooling air flow setpoint (from TAB report entered by Los Rios CCD)
- 14. Reheat air flow setpoint
- 15. Reheat air flow setpoint (from TAB report entered by Los Rios CCD)
- 16. Reheat valve position
- 17. Damper position
- 18. Terminal Load
- 19. Cooling Request status
- 20. Heating Request status

3.15 BUILDING THERMOSTAT DISPLAY TABLE (DT-8)

Campus: American River College Dutside Air Temp: 85,1*F No Automatic Override in Effect	Op Notes AH0		В			Display Name: AR080 Link Graphic Display Documentation									
Building	AHU	Zone Name		Room Information		System	Status	Space	Temp		Occupied :	Space Tem	p Settings		ADR
						AHU	Self-	1							Exempt?
			Inventory Room Number	Campus Room Number	Door Room Number		Serve			Occ Clg Occ Htg		Setpoint Adjustme		nts (+/-)	
						Mode	Fault	Reading	Setpoint	Setpoint	Setpoint	Value	+ Limit	- Limit	
08 Child Development	AH01	AR08VAV101	131	NUMBER OF CONTRACTORS	12/212/10/07/2020/01/07/2020	01	NO	73.9	74.0	74	70	N/A	N/A	N/A	No
08 Child Development	AH01	AR08VAV102	127			01	NO	71.5	74.0	74	70	N/A	N/A	N/A	No
08 Child Development	AH01	AR08VAV103	126		TO RECEIVE AND A DESCRIPTION OF A DESCRI	01	NO	71.6	74.0	74	70	N/A	N/A	N/A	No
08 Child Development	AH01	AR08VAV104	122			01	NO	69.3	70.0	74	70	N/A	N/A	N/A	No
08 Child Development	AH01	AR08VAV105	120			01	NO	70,9	74.0	74	70	N/A	N/A	N/A	No
08 Child Development	AH01	AR08VAV106	128			01	NO	71.1	74.0	74	70	N/A	N/A	N/A	No
08 Child Development	AH01	AR08VAV107	141			01	NO	71.2	74.0	74	70	N/A	N/A	N/A	No
08 Child Development	AH01	AR08VAV108	128			01	NO	72.5	74.0	74	70	N/A	N/A	N/A	No
08 Child Development	AH01	AR08VAV109	140			01	NO	73.8	74.0	74	70	N/A	N/A	N/A	No
08 Child Development	AH01	AR08VAV110	100			01	NO	71,4	74.0	74	70	N/A	N/A	N/A	No
08 Child Development	AH01	AR08VAV111	134			01	NO	73.8	74.0	74	70	N/A	N/A	N/A	No
1	Op Noter AHO	3	4	5	6	7	8	9	10	(11)	(12)	(13)	14	(15)	(16)

- 1. Building name
- 2. AHU name
- 3. Zone name
- 4. Inventory room number (from construction documents entered by Honeywell)
- 5. Campus room number (entered by Los Rios CCD)
- 6. Door room number (entered by Los Rios CCD)
- 7. AHU control mode
- 8. Zone sensor override button fault
- 9. Zone temperature
- 10. Zone temperature setpoint
- 11. Occupied cooling setpoint
- 12. Unoccupied heating setpoint
- 13. Zone sensor setpoint input
- 14. Zone sensor setpoint upper limit
- 15. Zone sensor setpoint lower limit
- 16. Is AHU ADR exempt

3.16 CAMPUS CENTRAL STATION AHU SAFETIES DISPLAY TABLES (DT-9)

Campus: Folson Lake College Dutside Air Temp: 80.3 No Automatic Override in Effect				Cam	pus Cent	DT-9 tral AHU Sa) afeties Dis	play Tabl	e				Display Gra Do	Name: FLDT_09 Link Table ophic Display Link cumentation Link
Building	AHU Supply Fan Return Fan													Mixed Air
		Auto/Hand	On/Off	VFD Alarm	Fan Failure	High Pressure	Smoke Alarm	Auto/Hand	On/Off	VFD Alarm	Fan Failure	Low Pressure	Smoke Alarm	Low Limit
	2	3	4	5	6	7	8	9	10	11	12	13	14	15
04 - Physical Education	AH01	Auto	On	Normal	Normal	Normal	Normal	Auto	On	Normal	Normal	Normal	N/A	Normal
09 - Aspen	AH01	N/A	On	N/A	Normal	N/A	N/A	N/A	On	N/A	Normal	N/A	N/A	N/A
08 - Aspen	AH02	N/A	Qn	N/A	Normal	N/A	N/A	N/A	Qn	N/A	Normal	N/A	N/A	N/A
08 - Aspen	AH03	N/A	On	N/A	Normal	N/A	N/A	N/A	On	N/A	Normal	N/A	N/A	N/A
09 - Aspen	AH04	N/A	On	N/A	Normal	N/A	N/A	N/A	On	N/A	Normal	N/A	N/A	N/A
08 - Aspen	AH05	N/A	On	N/A	Normal	N/A	N/A	N/A	On	N/A	Normal	N/A	N/A	N/A
09 - Aspen	AH06	N/A	On	N/A	Normal	N/A	N/A	N/A	On	N/A	Normal	N/A	N/A	N/A
09 - Aspen	AH07	N/A	On	N/A	Normal	N/A	N/A	N/A	On	N/A	Normal	N/A	N/A	N/A
09 - Aspen	AH08	Auto	On	Normal	Normal	Normal	Normal	Auto	On	Normal	Normal	Normal	N/A	Normal
08 - Aspen	AH6P	N/A	On	N/A		N/A	Normal	N/A	On	N/A	Normal	N/A	N/A	Normal
08 - Aspen	AH7P	Auto	On	Normal	Normal	Normal	Normal	Auto	On	Normal	Normal	Normal	N/A	Normal

- 1. Building Name
- 2. AHU Name
- 3. Supply Fan VFD Hand-Off-Auto input
- 4. Supply Fan VFD status
- 5. Supply Fan VFD alarm
- 6. Supply Fan failure alarm
- 7. Supply air high duct pressure alarm
- 8. Supply air smoke alarm
- 9. Return Fan VFD Hand-Off-Auto input
- 10. Return Fan VFD status
- 11. Return Fan VFD alarm
- 12. Return Fan failure alarm
- 13. Return air high duct pressure alarm
- 14. Return air smoke alarm
- 15. Mixed air low temperature alarm
3.17 CRITICAL POINTS DISPLAY TABLE (DT-10)

A. Example DT-10

All Campuses Dutside Air Temp: No Automatic Override	51.4°F in Effect	DT-10 Campus Critical Points		(Display Name: DT_10 Link Table Graphic Display Link Documentation Link
Campus	Building	Link to Critical Space or Equipment where Applicable	Critical Point	Engineering Unit	Indicator
FLC	Falcon's Roost (12)	Server Room	72.31	۴F	•
FLC	Aspen (09)	Main IT Server Room	73.49	۴	•
FLC	Aspen (09)	Main IT Server Room East	68.97	۴	
FLC	Central Plant (30)	Sec Chilled Water Supply	50.83	۴	•
FLC	Central Plant (30)	Sec Hot Water Supply	171.75	۴F	•
FLC	Cypress (10)	AH04 Mech Room Flood	No	rmal	•
FLC	Falcon's Roost (12)	Cafeteria Freezer	-4.20	۴	•
FLC	Falcon's Roost (12)	Cafeteria Reefer	37.42	۴F	•

- 1. Campus name
- 2. Building Name
- 3. Typical critical points coordinate with Los Rios CCD
- 4. Point value
- 5. Engineering unit
- 6. Alarm indicator red when in alarm

LRCCD Bid #18027 Addendum 1 April 30, 2018

3.18 AUTOMATED OVERRIDES DISPLAY TABLE (DT-12)

A. Example DT-12

	-	-			-									-						
Building	AHU		Dampers			Wea	ther			Demand Contr	olled Ventilati	on	Night Purge	Standar	d Ventilation 1	Systems		Standard Vent	ilation System	\$
		OSA Norma	OSA	Damper	Wthr1 High	Wthr1 Low	Wthr2 High	Wthr2 Low	Norm al CO2	ADR1 Wthr1	ADR2 Wthr2	Return Air	OSA Start	OSA Min Set	OSA Min	OSA Min	Clg Fan	Clg Fan	Clg Fan	Supply Fan
		Minimum	Custodial	Position	OSA Temp	OSA Temp	OSA Temp	OSA Temp	Set	CO2 Increase	CO2 Increase	CO2 Reading	Temp Set	Point	Decrease	Decrease	Speed	Speed Dec	Speed Dec	Speed
		Set Point	Minimum	Reading	Set	Set	Set	Set		Set Point	Set Point		Point		ADR1/Wthr1	ADR2Wthr2	Normal Set	ADR1/Wthr1	ADR2Wthr2	Reading
			Set Point												Set Point	Set Point	Point	Set Point	Set Point	
		46	46	46	*F	*E	*E	45	PPM	PPM	PPM	PPM	*6	46		44	46	44	46	44
	41004																			
08 - Physical Education	AH01	10	50	20	95	45	100	40	1000	150	300	568	68	N/A	N/A	N/A	N/A	N/A	N/A	76
09 - Aspen	AH01	10	50	57	95	45	100	40	1000	150	300	561	73	N/A	N/A	N/A	N/A	N/A	N/A	90
09 - Aspen	AH02	20	50	72	95	45	100	40	1000	150	300	522	73	N/A	N/A	N/A	N/A	N/A	N/A	67
09 - Aspen	AH03	20	50	65	N/A	N/A	N/A	N/A	1000	150	300	550	73	N/A	N/A	N/A	N/A	N/A	N/A	2
09 - Aspen	AH04	20	50	47	95	45	100	40	1000	150	300	592	73	N/A	N/A	N/A	N/A	N/A	N/A	93
09 - Aspen	AH05	20	50	96	N/A	N/A	N/A	N/A	1000	150	300	605	73	N/A	N/A	N/A	N/A	N/A	N/A	100
09 - Aspen	AH06	10	50	52	95	45	100	40	1000	150	300	462	73	N/A	N/A	N/A	N/A	N/A	N/A	63
09 - Aspen	AH07	10	50	15	95	45	100	40	1000	150	300	587	73	N/A	N/A	N/A	N/A	N/A	N/A	100
09 - Aspen	AH08	10	50	50	95	45	100	40	1000	150	300	535	73	N/A	N/A	N/A	N/A	N/A	N/A	80
			\sim		\sim	\sim														
(1)	(2)	(3)	(4)	(5)	(6)	-(7)-	(8)	(9)	(10)	-(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)-	(19)	(20)	(21)
	\sim					\sim														

- 1. Building name
- 2. AHU name
- 3. Current outside air damper minimum position
- 4. Custodian override outside air damper minimum position
- 5. Current outside air damper position
- 6. Extreme weather 1 high outside air temperature limit
- 7. Extreme weather 1 low outside air temperature limit
- 8. Extreme weather 2 high outside air temperature limit
- 9. Extreme weather 2 low outside air temperature limit
- 10. DCV Normal return air CO2 setpoint
- 11. DCV ADR1/Weather 1 return air CO2 increase setpoint
- 12. DCV ADR2/Weather 2 return air CO2 increase setpoint
- 13. DCV Return air CO2 reading
- 14. DCV Night Purge outside air temperature enable setpoint
- 15. Non DCV System Minimum outside air damper position
- 16. Non DCV System ADR1/Weather1 Minimum outside air damper position
- 17. Non DCV System ADR2/Weather2 Minimum outside air damper position
- 18. Normal cooling supply fan speed setpoint
- 19. ADR1/Weather1 cooling supply fan speed setpoint
- 20. ADR2/Weather2 cooling supply fan speed setpoint
- 21. Supply Fan VFD Speed feedback

3.19 OUTSIDE AIR TRACKING DISPLAY TABLE (DT-13)

A. Example DT-13



- 1. Building name
- 2. AHU name
- 3. AHU operating mode
- 4. Supply fan speed feedback
- 5. Return fan speed feedback
- 6. Outside air damper position
- 7. Operating minimum outside air damper position
- 8. Allowable minimum position limit
- 9. Active multiplier
- 10. Outside air flow
- 11. Return air flow
- 12. Supply air flow
- 13. Mixed air plenum static pressure
- 14. Relief air plenum static pressure
- 15. Absolute minimum outside air damper position
- 16. Normal occupancy multiplier
- 17. ADR1/Weather1 multiplier
- 18. ADR2/Weather2 multiplier
- 19. Relief damper constant setting
- 20. Operating outside air minimum air flow limit
- 21. Absolute minimum outside air flow
- 22. Allowable minimum position limit at full speed
- 23. Allowable minimum position limit at low speed

END OF SECTION 25 1523

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	18 17	16 15	5 14 13	8 12 11	10 9 8
			INDEX OF DRAWINGS		SITE LOCATION MAP
			VOLUME 1		PROJECT LOCATION:
		GENERAL: G000 COVER	ARCHITECTURAL: A001 GRAPHIC SYMBOLS, ABBREVIATIONS, & GENERAL	MECHANICAL: M001 MECHANICAL LEGENDS & GENERAL NOTES	Myrtle Ave Hemlock
	Р	G001DRAWING INDEX & GENERAL PROJECT NOTESG0023D RENDERINGS	INFORMATION A002 ACCESSIBILITY REQUIREMENTS & DETAILS	M002 MECHANICAL SCHEDULES M003 MECHANICAL SCHEDULES	Lot C 🗭
		G0033D RENDERINGSG010CODE REVIEW & OCCUPANCY LOAD ANALYSIS	A003 INTERIOR TYPICAL MOUNTING HEIGHTS & LOCATIONS A101 FLOOR PLAN - LEVEL 01	S M004 MECHANICAL SCHEDULES M005 TITLE 24 COMPLIANCE FORMS	American River James Kaneko Gallery College Theatre Parking Lot B O
		G011CALGREEN CHECKLISTG012CALGREEN CHECKLIST	A102 FLOOR PLAN - LEVEL 02 A103 FLOOR PLAN - LEVEL 03	M006TITLE 24 COMPLIANCE FORMSM007TITLE 24 COMPLIANCE FORMS	Arcade Creek Rature Area
		G013CALGREEN CHECKLIST AND SOLAR READYG030SITE ACCESS PATH OF TRAVEL PLAN	A111 INTERIOR PARTITION & DIMENSION PLAN- LEVEL 01 A112 INTERIOR PARTITION & DIMENSION PLAN- LEVEL 02 A112 INTERIOR PARTITION & DIMENSION PLAN- LEVEL 02	M100 MECHANICAL SITE PLAN M201 MECHANICAL FLOOR PLAN - LEVEL 1	American River College
		G031 CONSTRUCTION FENCE & TEMPORARY ACCESS PLAN G040 FIRE RATINGS PLAN	A113 INTERIOR PARTITION & DIMENSION PLAN- LEVEL 03 A131 REFLECTED CEILING PLAN - LEVEL 01	M202 MECHANICAL FLOOR PLAN - LEVEL 2 M203 MECHANICAL FLOOR PLAN - LEVEL 3	Stove Aver and Store Aver
	N 1	G040.1 FIRE RATINGS PLAN - ALTERNATE #5 G041 FIRE RATED ASSEMBLIES	A132 REFLECTED CEILING PLAN - LEVEL 02 A133 REFLECTED CEILING PLAN - LEVEL 03	M204 MECHANICAL ROOF PLAN M301 MECHANICAL PIPING FLOOR PLAN - LEVEL 1	Dak Dr
		G042 FIRE RATED ASSEMBLIES G043 TYPICAL FIRE RATED PENETRATION DETAILS	A151 ROOF PLAN A201 EXTERIOR ELEVATIONS	M302 MECHANICAL PIPING FLOOR PLAN - LEVEL 2 M303 MECHANICAL PIPING FLOOR PLAN - LEVEL 3	
		G044 TYPICAL FIRE RATED PENETRATION DETAILS G101 CODE COMPLIANCE PLAN - LEVEL 01	A202 EXTENION ELEVATIONS A211 ENLARGED EXTERIOR ELEVATIONS A212 ENLARGED EXTERIOR ELEVATIONS	M304 MECHANICAL PIPING DIAGRAMS M305 MECHANICAL PIPING DIAGRAMS	Cie Max
A Control of A control of A		G102 CODE COMPLIANCE PLAN - LEVEL 02 G103 CODE COMPLIANCE PLAN - LEVEL 03 G111 EDCE OF SLAP - LEVEL 01	A241 INTERIOR ELEVATIONS - CORRIDORS	M306 MECHANICAL PIPING DIAGRAMS M401 MECHANICAL ENLARGED FLOOR PLANS	ague G Cak C Mag
Image: Provide and the second of th		G111 EDGE OF SLAB - LEVEL 01 G112 EDGE OF SLAB - LEVEL 02 G113 EDGE OE SLAB - LEVEL 02	A243 INTERIOR ELEVATIONS - CORRIDORS A244 INTERIOR ELEVATIONS - CORRIDORS	M402 MECHANICAL SECTIONS M501 MECHANICAL DETAILS M502 MECHANICAL DETAILS	ARC Stadium
 A Display of a second se	<u>M</u>	G114 EDGE OF DECK - ROOF LEVEL	A245 ENLARGED INTERIOR ELEVATIONS - COMMUNITY WALL (BASE)	M502 MECHANICAL DETAILS M503 MECHANICAL DETAILS M601 MECHANICAL CONTROL DETAILS	Way K
Image: Source of the second		ARCHITECTURAL SITE AND DEMOLITION: AD101 DEMO ARCHITECTURAL SITE PLAN	A245.1 ENLARGED INTERIOR ELEVATIONS - COMMUNITY WALL GRAPHICS (ADD ALT)	M602 MECHANICAL CONTROL DETAILS M603 MECHANICAL CONTROL DETAILS	Windros Bellwo
Image: state		AD102 ENLARGED DEMO SITE PLAN & DETAILS AS100 ARCHITECTURAL SITE AND BUILDING SEPARATION	A246ENLARGED INTERIOR ELEVATIONS AND PLANSA301BUILDING SECTIONS	M604 MECHANICAL CONTROL DETAILS M605 MECHANICAL CONTROL DETAILS	more Ave
Image: Source of the standard s		PLAN	A302 BUILDING SECTIONS A311 WALL SECTIONS		e Creek Ne Mason (
	L	CIVIL: C100 GENERAL NOTES	A312 WALL SECTIONS A313 WALL SECTIONS	PLUMBING:	Windows S
Image: Source of So		C101 GRAPHIC INDEX C201 DEMOLITION PLAN	A314 WALL SECTIONS A315 WALL SECTIONS	P001PLUMBING LEGEND, SCHEDULE & NOTESP002PLUMBING FIXTURE SCHEDULE	500 ft 💷 🔤
A A A A A A A A A A A A A A A A A A A		C202 DEMOLITION PLAN C300 HYDRONIC TRENCH HORIZONTAL CONTROL PLAN	A401 MESA - ENLARGED PLAN & ELEVATIONS A402 MMLC - ENLARGED PLAN & ELEVATIONS	P100PLUMBING SITE PLANP201LEVEL 1 - PLUMBING FLOOR PLAN	
A A A A A A A A A A A A A A A A A		C301 LAYOUT PLAN C302 LAYOUT PLAN	A403 OPEN BCS COMPUTER ROOM - ENLARGED PLAN & ELEVATIONS	P202LEVEL 2 - PLUMBING FLOOR PLANP203LEVEL 3 - PLUMBING FLOOR PLAN	
 Image: Source of the source of		C401 GRADING PLAN C402 GRADING PLAN	A405 L2 FACULTY OFFICES - ENLARGED PLAN & ELEVATIONS A406 L3 FACULTY OFFICES - ENLARGED PLAN & ELEVATIONS	F P204 PLUMBING ROOF PLAN F P401 ENLARGED PLUMBING PLANS	
A A A A A A A A A A A A A A A A A	K	C502 UTILITY PLAN C502 UTILITY PLAN	A407 PHYSICS LAB 1 - ENLARGED PLAN & ELEVATIONS A408 PHYSICS LAB 2 - ENLARGED PLAN & ELEVATIONS	P501 PLUMBING DETAILS P502 PLUMBING DETAILS	CAMPUS MAP
Image: state in the s		C503 HYDRONIC TRENCH PROFILE C504 HYDRONIC TRENCH PROFILE	A408 PHYSICS LAB 2 - ENLARGED PLAN & ELEVATIONS A409 PHYSICS LAB 3 - ENLARGED PLAN & ELEVATIONS A410 ENGINEERING SHOP - ENLARGED PLAN & ELEVATIONS	P503 PLUMBING DETAILS	
Image: Solution of the soluti		C505 HYDRONIC TRENCH PROFILE C506 HYDRONIC TRENCH PROFILE	A410 ENGINEERING SHOP - ENLARGED FLAN & ELEVATIONS A411 ENGINEERING SHOP - ENLARGED ELEVATIONS A412 P&E STOCKBOOM - ENLARGED PLAN & ELEVATIONS	ELECTRICAL:	AMERICAN RIVER COLLEGE
All All All All All All All All All		C507 HYDRONIC TRENCH PROFILE C508 HYDRONIC TRENCH PROFILE	A412 P&E STOCKROOM - ENLARGED FLAN & ELEVATIONS A413 BCS LEARNING SPACES - ENLARGED PLAN & ELEVATIONS	E000 SYMBOLS LIST AND ABBREVIATIONS E001 PANEL SCHEDULES AND PROJECT NOTES	4700 College Oak Drive, Sacramento, CA 95841
Image: Section of the section of t		C510 HYDRONIC TRENCH PROFILE C511 HYDRONIC TRENCH PROFILE	A414 BUSINESS CENTER COMPUTER ROOM - ENLARGED PLAN & ELEVATIONS	E002 LIGHTING SCHEDULES E003A TITLE 24 E003B TITLE 24	SPRING 2016
a b	<u> </u>	C512 OVERALL FIRE ACCESS	A415 BCS COMPUTER ROOM - ENLARGED PLANS & ELEVATIONS	E101 ELECTRICAL SITE PLAN	Lot D
 		C601 EROSION CONTROL PLAN	A416 BCS, MATH & STATS COMPUTER ROOMS 3, 4 & 5 - ENLARGED PLAN & ELEVATIONS	E201 LIGHTING PLAN - LEVEL 01 F202 LIGHTING PLAN - LEVEL 02	Lot C I CAMPUS POLICE/Sh (916) 558-222
a with the second s		C701 DETAILS C702 DETAILS	A417 MATH LEARNING SPACES - ENLARGED PLANS AND ELEVATIONS	E203 LIGHTING PLAN - LEVEL 03 E301 POWER & TELECOMMUNICATIONS PLAN - LEVEL 01	APPLIDARTS 500% B ANTSSCIENCE
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	STATEMENT OF GENERAL CONFORMANCE	THE DIVISION OF THE STATE ARCHITECT (DSA) SUPPLEMENTARY CONDITIONS
· -	STATEMENT OF GENERAL CONFORMANCE	1. ALL WORK SHALL CONFORM TO THE 2016 EDITION TITLE 24, CALIFORNIA CODE OF REGULATIONS (C
E	(APPLICATION NO. <u>02-116042</u> FILE NO. <u>34-C3</u>) THE DRAWINGS OF SHEETS LISTED ON THE INDEX SHEET HAVE BEEN PREPARED BY OTHER	2. THE FOLLOWING INFORMATION FROM PART ONE, TITLE 24 CALIFORNIA CODE OF REGULATIONS SH. INCLUDED IN THE CONTRACT DOCUMENTS:
	DESIGN PROFESSIONALS OR CONSULTANTS WHO ARE LICENSED AND/OR AUTHORIZED TO PREPARE SUCH DRAWINGS IN THE STATE OF CALIFORNIA. THESE DOCUMENTS HAVE BEEN EXAMINED BY GOULD EVANS, INC. FOR DESIGN INTENT, AND APPEARS TO MEET THE	OR PROFESSIONAL ENGINEER AND APPROVED BY DSA.
	PROJECT SPECIFICATIONS PREPARED BY GOULD EVANS, INC.	CHANGE ORDERS) (SECTION 4-338(c), PART 1) MUST BE SIGNED BY ALL OF THE FOLLOWING, PRIOR COMMENCEMENT OF WORK CHANGES:
	LANDSCAPE FIRE ALARM STRUCTURAL FIRE PROTECTION MECHANICAL SECURITY	B. OWNER (CCD ONLY) C. STRUCTURAL ENGINEER (WHEN APPLICABLE) D. DELEGATED PROFESSIONAL ENGINEER (WHEN APPLICABLE) AND APPROVED BY DSA
	PLUMBING TELECOMMUNICATIONS THESE DOCUMENTS HAVE BEEN COORDINATED WITH MY PLANS AND SPECIFICATIONS AND ARE	 ALL SUBSTITUTIONS AFFECTING DSA REGULATED ITEMS SHALL BE CONSIDERED AS A CHANGE ORDE ADDENDA, AND SHALL BE APPROVED BY DSA PRIOR TO FABRICATION AND INSTALLATION (IR A-6)
	ACCEPTABLE FOR INCORPORATION INTO THE CONSTRUCTION OF THIS PROJECT FOR WHICH I AM THE ARCHITECT DESIGNATED TO BE IN GENERAL RESPONSIBLE CHARGE.	(SECTION 4-338(c), PART 1). SUBSTITUTIONS SHALL BE FOR ANY MATERIAL, SYSTEM OR PRODUCT THE WOULD OTHERWISE BE REGULATED BY DSA.
	19 MARCH 2018	 CONTRACTOR SHALL SUBMIT VERIFIED REPORT PER SECTION 4-336 AND 4-343(c) ADMINISTRATION CONSTRUCTION PER PART I, TITLE 24, CCR, A. DUTIES OF ARCHITECT, STRUCTURAL ENGINEER, OR PROFESSIONAL ENGINEER PER SECTION
	SIGNATURE OF ARCHITECT (DOUGLAS THORNLEY) DATE	4-333(a) AND 4-341 B. DUTIES OF CONTRACTOR PER SECTION 4-336 C. VERIFIED REPORTS PER SECTION 4-336
	LICENSE NUMBER EXPIRATION DATE	5. A COPY OF PART 1 THRU 5 OF TITLE 24 SHALL BE KEPT AND AVAILABLE IN THE FIELD DURING CONSTRUCTION. PROJECT SHALL COMPLY WITH PARTS 1 THRU 6 AND 9 OF TITLE 24.
		6. DSA SHALL BE NOTIFIED ON START OF CONSTRUCTION PER SECTION 4-331
	THE STEM BUILDING CONSISTS OF A NEW 57,096 SQUARE FOOT, 3-STORY, TYPE IIA,	8. DSA IS NOT SUBJECT TO ARBITRATION
	OCCUPANCY GROUP B & A-3 WITH NON-SEPARATED OCCUPANCIES. SCOPE OF WORK INCLUDES THE STEM CLASSROOM BUILDING, SITE IMPROVEMENTS AND SITE INFRASTRUTURE PROJECT. THE BUILDING CONTAINS PHYSICS LABS, GENERAL CLASSROOMS, COMPUTER ROOMS, FACULTY	 CHANGES TO THE APPROVED DRAWINGS AND SPECIFICATIONS SHALL BE MADE BY AGENDUM OR CONSTRUCTION CHANGE DOCUMENT, TO BE APPROVED BY DSA AS REQUIRED BY SECTION 4-338, PART 1, TITLE 24, CCR.
N	OFFICES AND ENGINEERING CLASSROOM AND SHOP. SITE IMPROVEMENTS INCLUDE NEW STEM COURTYARD, STEM WALK CONNECTING LOWER AND UPPER CAMPUS, AND AN OUTDOOR ENGINEERING YARD. AN AUTOMATIC FIRE SPRINKLER SYSTEM IS INSTALLED THROUGHOUT THE	10. A CLASS 1 PROJECT INSPECTOR, EMPLOYED BY THE DISTRICT (OWNER), AND APPROVED BY THE DIVISION-3 DSA, SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK, AS REQUIRED BY DSA. T
		DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4-342, PART 1, TITLE 24 CCR. 11. A DSA ACCEPTED TESTING LABORATORY DIRECTLY EMPLOYED BY THE DISTRICT (OWNER) SHALL
	1. BUILDING OFFICIAL - DIVISION OF STATE ARCHITECT (DSA)	12. GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES
	DSA SACRAMENTO REGIONAL OFFICE 1102 Q STREET, SUITE 5200 SACRAMENTO, CALIFORNIA 95811	
	2. FIRE PREVENTION OFFICIAL - METRO FIRE SACRAMENTO 10545 ARMSTRONG AVE #200	
	GOVERNING CODES STANDARDS AND ORDINANCES	DEFERRED SUBMITTAL GENERAL NOTES
	AHJ CODE, STANDARD, OR ORDINANCE	1. FABRICATION OF DEFERRED SUBMITTAL ITEMS SHALL NOT BE STARTED UNTIL CONTRACTOR'S
Wet.	 PART 1, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR). 2016 CALIFORNIA BUILDING CODE (CBC) 	HAVE BEEN ACCEPTED AND SIGNED BY THE ARCHITECT OR STRUCTURAL ENGINEER OF RECORD AND APPROVED BY DSA. (CBC, TITLE 24, PART 1, SECTION 4-317(g)).
	PART 2, TITLE 24, CCR (BASED ON THE 2015 INTERNATIONAL BUILDING CODE) 1 2016 CALIFORNIA ELECTRICAL CODE (CEC)	2. ALLOW 60 DAYS FOR APPROVAL.
	PART 3, TITLE 24, CCR (BASED ON THE 2014 NATIONAL ELECTRICAL CODE) 2016 CALIFORNIA MECHANICAL CODE (CMC)	DEFERRED SUBMITTAL CHART:
CE/Shuttle	PART 4, TITLE 24, CCR (BASED ON THE 2015 UNIFORM MECHANICAL CODE) 2016 CALIFORNIA PLUMBING CODE (CPC) PART 5, TITLE 24, CCR (BASED ON THE 2015 UNIFORM PLUMPING CODE)	DEFERRED SUBMITTAL SPECIFICATION SECTION ELEVATOR GUIDE RAILS AND 14 2100: ELECTRIC-TRACTION ELEVATORS SUPPORT BRACKET ANCHORAGE 14 2100: ELECTRIC-TRACTION ELEVATORS
g permit ones	1 2016 CALIFORNIA ENERGY CODE PART 6. TITLE 24, CCR	WINDOW WALL SYSTEMS WITH SPANS GREATER THAN 10'-0" 08 4113: ALUMINUM-FRAMED ENTRANCES AND STOR
elephones oms cal restrooms	1,2 2016 CALIFORNIA FIRE CODE (CFC) PART 9, TITLE 24, CCR (BASED ON THE 2015 INTERNATIONAL FIRE CODE)	(INCLUDE ALL SYSTEM DESIGN AND ANCHORAGE DESIGN FOR ATTACHMENT TO BUILDING STRUCTURE)
d/or locker	1 2016 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN) PART 11, TITLE 24, CCR	**ALL WINDOW WALL TO BE DEFERRED IF HORIZONTAL/ VERTICAL SPAN IS GREATER THAN 10'-0"
ging Station arking	1 2016 CALIFORNIA REFERENCED STANDARDS PART 12, TITLE 24, CCR	
BUILDING udent Services 	1 ACCESSIBILITY CODE CHAPTER 11B, 2016 CBC AND 2010 STANDARDS FOR ACCESSIBLE DESIGN	ADDITIVE AI TERNATES
udent Services ip & Student Center	1 LIFE SAFETY CODE 2015 NFPA 101 LIFE SAFETY CODE	ADD ALTERNATE NO. 1 PROVIDE ALL MATERIAL, LABOR AND OTHER ASSOCIATED COSTS TO PROVIDE
Administration udent Services Student Center	PARTIAL LIST OF APPLICABLE STANDARDS: NFPA 13 AUTOMATIC SPRINKLER SYSTEM (2016 EDITION)	SPACES #3 AND #4 (LEVEL) 02 AND MATH LEARNING SPACES #6, #7, AND #8 (LEVEL 03) IN LIEU OF TYPICAL WALL CONSTRUCTION. REFER TO SHEETS A102, A132, A133, A417, AND A417.1 FOR MORE INFOMATION.
udent Services udent Services administration	NFPA 14 STANDPIPE SYSTEM (2016 EDITION) NFPA 20 STATIONARY PUMPS (2016 EDITION) NFPA 22 WATER TANKS (2016 EDITION) NFPA 72 NATIONAL FIPE ALARM CODE (CA AMENDED) (2016 EDITION)	ADD ALTERNATE NO. 2 PROVIDE ALL MATERIAL, LABOR AND OTHER ASSOCIATED COSTS TO PROVIDE CUSTOM WALL GRAPHICS IN THE COMMUNITY GATHERING SPACE (ALL LEVEL
& Applied Arts of Davies Hall	NFPA 253 CALIFORNIA EDITION - INSPECTION, TESTING, AND MAINTENANCE OF WATER BASED FIRE PROTECTION SYSTEMS (2006 EDITION)	STAIR 1 AND STAIR 2. REFER TO SHEETS A245, A245.1 AND A453 FOR MORE INFORMATION.
/606/609-613 	REFERENCE CODE SECTION FOR NFPA STANDARDS - 2016-CBC (SFM) CHAPTER 35	ADD ALTERNATE NO. 3 PROVIDE ALL MATERIAL, LABOR AND OTHER ASSOCIATED COSTS TO PROVIDE CUSTOM FILM GRAPHICS IN THE FACULTY OFFICES (ALL LEVELS). REFER TO SH A404-A406 FOR MORE INFORMATION.
BUILDING Arts & Science Dev. Ctr. (west)	CODE ANALYSIS	ADD ALTERNATE NO. 4 PROVIDE ALL MATERIAL, LABOR AND OTHER ASSOCIATED COSTS TO PROVIDE IN CONCRETE BENCHES IN THE STEM COURTYARD, IN CONCRETE BENCHES AT EAST ELEVATION AND IN THE CONCRETE BENCH AT THE SOUTHEAST CORNER.
Dev. Ctr. (east) Davies Hall ntal Resources	REFER TO SHEET G010 FOR CODE ANALYSIS INFORMATION	TO SHEET E102 FOR MORE INFORMATION.
Howard Hall s (CS&IT, Bus) (CS&IT, Math) s (CS&IT, Bus)		FIRE RATING @ PRIMARY STRUCTURAL ELEMENTS. REFER TO SHEETS GOTO AN GO40.1 FOR MORE INFORMATION.
Raef Hall (Mathematics) Athletics (PE) Tech Ed		ALTERNATES FOR INFORMATION ON BID ALTERNATES. GENERAL NOTES
Science & Applied Arts ortable Village		1. THE INTENT OF THE CONTRACT DOCUMENTS IS TO INCLUDE ALL ITEMS NECESSARY FOR THE PROP EXECUTION AND COMPLETION OF THE WORK BY THE CONTRACTOR. THE CONTRACT DOCUMENTS
cation (north) cation (south)		ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ONE SHALL BE AS BINDING AS IF REQUIRED BY ALL; PERFORMANCE BY THE CONTRACTOR SHALL BE REQUIRED ONLY TO THE EXTENT CONSISTENT WITH THE CONTRACT DOCUMENTS AND REASONABLY INFERABLE FROM THEM AS BEING NECESSA
ES:		 ORGANIZATION OF THE SPECIFICATIONS INTO DIVISIONS, SECTIONS AND ARTICLES, AND ARRANGEMENT OF DRAWINGS SHALL NOT CONTROL THE CONTRACTOR IN DIVIDING THE WORK AMONG SUBCONTRACTORS OR IN ESTABLISHING THE EXTENT OF WORK TO BE PERFORMED BY AN
OJECT LOCATION		TRADE.3. DRAWINGS, SPECIFICATIONS, GENERAL AND SUPPLEMENTARY CONDITIONS ARE ESSENTIAL PARTS THE CONTRACT. IN THE EVENT OF ANY DISCREPANCY BETWEEN A DRAWING AND FIGURES WRITT
ATH OF TRAVEL CES	PROJECT DIRECTORY	THEREON, THE FIGURES, UNLESS OBVIOUSLY INCORRECT, ARE TO GOVERN OVER SCALED DIMENSIONS. IN THE CASE OF ANY DISCREPANCY BETWEEN THE DRAWINGS AND THE SPECIFICATIONS, THE SPECIFICATIONS ARE TO GOVERN. IF THERE IS A DISCREPANCY BETWEEN LAI
	OWNER: LOS RIOS COMMUNITY COLLEGE DISTRICT PHONE: (916) 856-3457 CONTACT: JOSEF MEYER CONTACT: JOSEF MEYER	AND SMALL SCALE DETAILS, THE LARGER SCALE DETAILS ARE TO GOVERN. SUPPLEMENTARY CONDITIONS SHALL GOVERN OVER SPECIFICATIONS, DRAWINGS AND GENERAL CONDITIONS. THE CONTRACTOR SHALL ADVISE THE ARCHITECT OF ANY DISCREPANCIES OR CONFLICTS BETWEEN
	ARCHITECT: GOULD EVANS PHONE: (415) 503-1411 CONTACT: COURTNEY HOWARD STRUCTURAL IDA STRUCTURAL ENGINEERS PHONE: (510) 834-1629	 4. NOTWITHSTANDING THE ABOVE, IN THE CASE OF INCONSISTENCY BETWEEN DRAWINGS AND SPECIFICATIONS, OR WITHIN EITHER DOCUMENT NOT CLARIFIED BY ADDENDUM OR BY ARCHITEC SUPPLEMENTAL INSTRUCTION. THE BETTER QUALITY OF GREATER QUANTITY SHALL BE PROVIDED
	CIVIL: BKF ENGINEERING PHONE: (916) 556-5851	 DRAWINGS SHALL NOT BE SCALED TO DETERMINE DIMENSIONS. IF DIMENSIONS APPEAR TO BE INSUFFICIENT OR INCORRECT, THE CONTRACTOR SHALL REQUEST CLARIFICATION FROM THE ARCHITECT.
	CONTACT: ALEX HEUER LANDSCAPE: MEYER + SILBERBERG PHONE: (510) 559-2973	6. WHENEVER CONTRACT DOCUMENTS REASONABLY IMPLY MATERIALS OR INSTALLATION AS NECESSARY TO PRODUCE THE INTENDED RESULTS, BUT DO NOT FULLY DETAIL OR SPECIFY SUCH MATERIALS, THE CONTRACTOR SHALL PROVIDE THE MATERIALS AND LABOR REQUIRED FOR
	MECHANICAL: CAPITAL ENGINEERING PHONE: (916) 851-3500	 INSTALLATION NONETHELESS. PROVIDE ALL WORK INDICATED UNLESS SPECIFICALLY INDICATED AS "NOT IN CONTRACT" (NIC), "FURNISHED BY OTHERS" (FBO) OR "EXISTING".
	PLUMBING: CAPITAL ENGINEERING PHONE: (916) 851-3500 CONTACT: MICHAEL PODGERS CONTACT: MICHAEL PODGERS	 CONTRACT DOCUMENTS ARE INTENDED TO CONVEY DESIGN INTENT ONLY. PROVIDE PRODUCTS COMPLETE WITH ACCESSORIES, TRIM, FINISH, FASTENERS, AND OTHER ITEMS NEEDED FOR A COMPLETE INSTALLATION AND INDICATED USE AND EFFECT. THESE NOTES ARE NOT INTENDED TO UNAUT THE RECOMPLETE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR.
	FIRE CAPITAL ENGINEERING PHONE: (209) 744-1200 PROTECTION: CONTACT: FRIC PENNEY	ELSEWHERE IN THE CONTRACT DOCUMENTS.
	ELECTRICAL: ENGINEERING ENTERPRISE PHONE: (530) 886-8556 CONTACT: DANNY McKEVITT	FIRE DEPARTMENT GENERAL NOTES
	TELECOM: ENGINEERING ENTERPRISE PHONE: (530) 886-8556 CONTACT: DERYLE ROWE CONTACT: DERYLE ROWE	1. REFER TO CIVIL SHEETS FOR SACRAMENTO METRO FIRE DEPARTMENT NOTES.
	FIRE ALARM: ENGINEERING ENTERPRISE PHONE: (530) 886-8556 CONTACT: DANNY McKEVITT	
	ACOUSTICAL: CHARLES M. SALTER ASSOCIATES PHONE: (415) 397-0442 CONTACT: ETHAN SALTER	
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				BUILDING INFORMATION	GENERAL NOTES: OCCUPANCY LOAD AN
USE OCCUPANT LOAD FACTOR (S ASSEMBLY (UNCONCENTRATED) 15	ECOCC) CBC TABLE 10	04.1.2		BUILDING IS FULLY SPRINKLERED	1. THE NET FLOOR AREA PERMITS EXCLUSION OF CERTAIN SPACES THAT WOULD BE INCLUDED IN THE GROSS FLOOR AREA. PER CBC 202, FLOOR AREA. NET. IS THE ACTUAL
BUSINESS100EDUCATIONAL100CLASSROOM AREA20SHOPS AND OTHER VOCATIONAL ROOM AREAS50	D GROSS NET NET			FOLLT AUTOWIATIC SPRINKLER SYSTEM COMPLYING WITH CBC 903.3.1 AND NFPA 13 AS AMENDED IN CHAPTER 35 FIRE ALARM SYSTEM: PROJECT WILL HAVE FIRE ALARM SYSTEM PER CBC SECTION 907 AND INSTALLED IN ACCORDANCE WITH NFPA 13 & NFPA 72	OCCUPIED AREA NOT INCLUDING UNOCCUPIED ACCESSORY AREAS SUCH AS CORRIDORS, STAIRWAYS, RAMPS, TOILET ROOMS, MECHANICAL ROOMS AND CLOSETS. 2. CBC SECTION 1004 EXCEPTION "WHERE APPROVED BY THE BUILDING OFFICIAL THE ACTUAL NUMBER OF OCCUPANTS
EGRESS WIDTHS:				EMERGENCY VOICE/ALARM COMMUNICATION SYSTEM: YES, DESIGNED IN ACCORDANCE WITH NFPA 72	FOR WHOM EACH OCCUPIED SPACE, FLOOR OR BUILDING IS DESIGNED, ALTHOUGH LESS THAN THE CALCULATION, SHALL BE PERMITTED TO BE LISED IN DETERMINATION OF THE
STAIRS: 0.2 OTHER EGRESS COMPONENTS: 0.1	5			STANDPIPE SYSTEM: PROJECT WILL HAVE A MANUAL WET CLASS 1 STANDPIPE SYSTEM PER CBC 905 AND NFPA 14	 3. A SIGN WILL BE PROVIDED IN ASSEMBLY OCCUPANCIES. THE SIGN SHALL BE POSTED IN A CONSPICUOUS PLACE. NEAF
PER CBCSECTION 1005.3.1 EXCEPTION 1 AND CBC SECTION 1005.3.2 EXCEPTION 1, EGRE 0.2 FOR STAIRS AND 0.15 FOR OTHER EGRESS COMPONENTS. THE USE OF THESE VALUES ACCORDANCE WITH SECTION 903.3.1.2 AND AN EMERGENCY VOICE/ ALARM COMMUNI	SS CAPACITY VALUES A S ARE BASED ON PROV CATION SYSTEMIN ACC	ARE CALCULATED BASED ON OCCU IDING AUTOMATIC SPRINKLER SYS CORDANCE WITH CBC SECTION 90	JPANT LOAD FACTORS OF STEM INSTALLED IN 07.5.2.2.	PORTABLE FIRE EXTINGUISHERS:REQUIRED TO BE PROVIDED IN LOCATIONS AS REQUIRED BY CBC SECTION 906, CFC SECTION 906 AND NFPA 10FIRE DEPARTMENT CONNECTIONS:REQUIRED TO BE INSTALLED IN ACCORDANCE WITH SECTION 912 AND	EXITS FROM THE SPACE, PER CBC 1004.3.
OCCUPANT LOAD DETERMINATION				NFPA 14 AND WHERE APPROVED BY SACRAMENTO METRO FIRE DEPARTMENT	
OCCUPANCY CLASSIFICATIONS AND LOAD FACTORS ARE IN ACCORDANCE WITH DSA INT 1.1 CLASSROOMS SHALL BE CLASSIFIED AS GROUP B OCCUPANCY, WITH AN OCC 1.2 CLASSROOMS WITH AN OCCUPANT LOAD OF 50 OR MORE SHALL BE CLASSIF 1.3 SCIENCE CLASSROOMS WHERE EXEMPT AMOUNTS OF HAZARDOUS MATERI, WITH AN OCCUPANT LOAD FACTOR OF 50 (net) 1.9 SHOPS FOR WOODWORKING, AUTO, METAL/WELDING SHALL BE INDIVIDUA	ERPRETATION OF REG CUPANT LOAD FACTOR FIED AS AN A-3 ALS ARE USED OR STO LLY ADDESSED BASED	ULATIONS (IR) IR A-26.cc OF 20 (net) RED SHALL BE CLASSIFIES AS GROU	UP B OCCUPANY, HOPS AND THE	FIRE DEPARTMENT KEY BOXES:KNOX BOXES TO BE PROVIDED IN ACCORDANCE WITH SACRAMENTO METRO FIRE DEPARTMENTELEVATOR LOBBIES:NOT REQUIRED (SECTION 3006.3 NOTE 5) SMOKE CONTAINMENT SYSTEM AT ELEVATOR DOORS ON LEVEL 02/ 03 (3006.2 EXCEPTION #2)AREA OF REFUGE:NOT REQUIRED (SECTION 1009.3 EXCEPTION #5)	
AMOUNTS OF HAZARDOUS MATERIALS USED AND STORED. THE OCCUPANT LOA FOR COMPUTER CLASSROOMS (VOCATIONAL ROOMS) THE OCCUPANT LOAD DETERMIN	AD FACTOR SHALL BE 5	50 (net). ACTUAL OCCUPANCY INSTEAD OF	THE LOWER	OCCUPANCY: OCCUPANCY CLASSIFICATION: B & A-3 (MIXED USE NON-SEPARATED, SECTION 508.3)	
OF THE COMPUTER CLASSROOMS.		ON 2016 CRC TABLE 1004 1 2		ACCESSORY OCCUPANCY: NONE CONSTRUCTION CLASSIFICATION:	GENERAL NOTES: CODE COMPLIANC 1. ALL WORK, MATERIALS, AND METHODS SHALL BE IN
OCCUPANCY LOAD S	SCHEDULE_ALL LI	EVELS		CONSTRUCTION TYPE: IIA	CONFORMANCE WITH THE CODES, ORDINANCES AND REGULATIONS OF ALL GOVERNMENTAL AGENCIES HAVING JURISDICTION AT THE PROJECT LOCATION.
GROUP FUNCTION OF SPACE A-3 ASSEMBLY w/ OUT FIXED SEATS_STANDING SPACE	AREA AREA	A TYPE OCCUPANT LOAD FACTOR	DESIGN OCCUPANCY LOAD	ROOF MATERIALS: ALL ROOF MATERIALS TO BE CLASS-A MAX. TRAVEL DISTANCES: EXIT ACCESS TRAVEL DISTANCES (TABLE 1017.2)	2. CONTRACTOR SHALL PROVIDE AND IS SOLELY RESPONSIBLE AND LIABLE FOR PUBLIC AND EMPLOYEE PROTECTION AS NECESSARY AND AS REQUIRED BY THE CODES, INCLUDING
A-3 ASSEMBLY w/ OUT FIXED SEATS_STANDING SPACE A-3 ASSEMBLY w/ OUT FIXED SEATS_UNCONCENTRATED (TABLES and CHAIRS) A-3 EDUCATIONAL_SHOPS and OTHER VOCATIONAL ROOM AREAS	4,399 SF N 3,293 SF N	IET 15 IET 50	295 121	ALLOWABLE MAX. = 250' (GROUP A-3), 300' (GROUP B) <u>COMMON PATH OF TRAVEL (TABLE 1006.2.1)</u> ALLOWABLE MAX. 75' (GROUP A-3), 100' (GROUP B)	EXTERIOR PEDESTRIAN AND TRAFFIC BARRIERS. ALL WORK SHALL CONFORM TO ORDINANCES AND REGULATIONS OF GOVERNMENTAL AGENCIES HAVING JURISDICTION AT THE
B BUSINESS AREAS	8,062 SF 5,699 SF GF	ROSS 100	469 59	DEAD ENDS (1020.4) "B" USE, FULLY SPRINKLERED, CBC 1020.4,	 PROJECT LOCATION. 3. THE SIZE, TYPE, QUANTITY, AND LOCATION OF ALL TEMPORARY FIRE EXTINGUISHERS SHALL BE DETERMINED BY THE AUTHORITY HAVING HUBBRICTION.
B: ACCESSORY ACCESSORY STORAGE AREAS, MECHANICAL EQUPIMENT ROOM	5,699 SF 3,620 SF GF	ROSS 300	59	EXCEPTION #2 ALLOWABLE MAXIMUM: 50' BUILDING AREA:	 4. COORDINATE LOCATION OF KNOX BOX WITH ARCHITECT, OWNER'S REPRESENTATIVE, AND THE AUTHORITY HAVING JURISDICTION IN THE FIFLD
B: EDUCATIONAL EDUCATIONAL_CLASSROOM AREA	3,620 SF 9,759 SF N	IET 20	20	OCCUPANCY ALLOWABLE AREA TOTAL CLASSIFICATION SPRINKLER/MULTI-STORY ALLOWABLE (GROUPS) (TABLE 506.2) (506.2.4)	 5. DSA IR A26.CC, SECTION 1.1 - CLASSROOMS SHALL BE CLASSIFIED AS GROUP "B" OCCUPANCY, WITH AN OCCUPANT LOAD FACTOR OF 20 (NET).
B: EDUCATIONAL EDUCATIONAL_LABORATORIES B: EDUCATIONAL EDUCATIONAL_SHOPS and OTHER VOCATIONAL ROOM AREAS	4,842 SF N 7,268 SF N 21,869 SF N	IET 50 IET 50	99 241 836	ASSEMBLY A-3 46,500 SF 46,500sf x 3 FLOORS = 139,500 SF	 b. DSA IR A26.CC, SECTION 1.2 - CLASSROOMS WITH AN OCCUPANCY LOAD OF 50 OR MORE SHALL BE CLASSIFIED AS AN "A-3" OCCUPANCY. 7. DSA IR A26 CC SECTION 1.3 - SCIENCE CLASSROOMS MULTER
TOTAL BUILDING OCCUPANCY 2LUMBING FIXTURE REQUIREMENTS: PER CPC, TITLE 24, PART 5 -	39,250 SF • (LEVELS 2 AND 5	3 CLASSROOMS AS A-3 S	1384 PACES)	BUSINESS B 112,500 SF - LEVEL GROUPS TOTAL	EXEMPT AMOUNTS OF HAZARDOUS MATERIALS ARE USED OR STORED SHALL BE CLASSIFIED AS GROUP "B" OCCUPANCY WITH AN OCCUPANT LOAD FACTOR OF 50 (NET)
DCCUPANCY GROUP A-3 B DCCUPANT LOAD AREA 7.012.55 8.212.55	E T	OTAL		LEVEL 01 ASSEMBLY A-3 0 SF	 FLOOR-CEILING ASSEMBLY SHALL BE UL D739 FOR BOTH 1- HOUR AND 2-HOUR FIRE RATINGS. PER CBC SECTION 1013.7, FLOOR LEVEL EXIT SIGNS ARE NOT
PLUMBING OCCUPANT LOAD FACTOR (TABLE A) 30 200 OCCUPANT LOAD 264 42	50 8	89		LEVEL 01 BUSINESS B 18,528 SF LEVEL 01 TOTAL: 18,528 SF	REQUIRED AT GROUP B OCCUPANCIES. PER CBC SECTION 1013.7, EXCEPTION 1, FLOOR LEVEL EXIT SIGNS ARE NOTE REQUIRED AT GROUP A OCCUPANCIES THAT ARE PROTECTED
Z04 42 MALE OCCUPANTS 132 21 FEMALE OCCUPANTS 132 21	191.5 6 191.5 3	44.5 REQUIRED PROV 44.5 FIXTURES FIXTU	'IDED JRES	LEVEL 02ASSEMBLY A-33,468 SFLEVEL 02BUSINESS B15,814 SF	 THROUGHOUT BY AN APPROVED, SUPERVISED FIRE SPRINKLER SYSTEM. 10. REFER TO REFLECTED CEILING PLANS FOR LOCATIONS OF ELEVATOR CALVER CONTROL SUPERVISE.
MALE 21 WATER CLOSETS MALE 2 1	4 7 7 4	7 5)	LEVEL 02 TOTAL: 19,282 SF	ELEVATOR SMORE CONTROL CURTAINS.
LAVATORIES HALE 2 1 1	, 1 5 7 5 2)	LEVEL 03ASSEIVIDET A-S4,187 SFLEVEL 03BUSINESS B15,099 SF	
FLIVIALE Z I JRINALS MALE 2 1 DRINKING FOUNTAINS 2 1	2 5 3 c	5 6		LEVEL 03 TOTAL: 19,286 SF GROUP TOTALS: ARFA	
SERVICE SINKS 1 1	1 3	0 6	,		
		3 3	3	ASSEMBLY A-3 7,383 SF BUSINESS B 49,713 SF TOTAL GROSS AREA 57,006 ST	
PLUMBING FIXTURE REQUIREMENTS: PER CPC, TITLE 24, PART 5 -	· (LEVELS 2 AND :	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	PACES)	ASSEMBLY A-3 7,383 SF BUSINESS B 49,713 SF TOTAL GROSS AREA 57,096 SF ALLOWABLE BUILDING HEIGHT:	EGRESS PATH OF TRAVEL
PLUMBING FIXTURE REQUIREMENTS: PER CPC, TITLE 24, PART 5 - OCCUPANCY GROUP A-3 B OCCUPANT LOAD AREA 3,556 SF 9.319 SF	• (LEVELS 2 AND 3 E T 26,001 SF 8	3 3 3 CLASSROOMS AS B:E SF OTAL .876 SF	PACES)	ASSEMBLY A-3 7,383 SF BUSINESS B 49,713 SF TOTAL GROSS AREA 57,096 SF ALLOWABLE BUILDING HEIGHT: 2016 CBC TABLE 504.4	EGRESS PATH OF TRAVEL EGRESS POINT
PLUMBING FIXTURE REQUIREMENTS: PER CPC, TITLE 24, PART 5 -occupancy groupA-3Boccupant load area3,556 SF9,319 SFPLUMBING OCCUPANT LOAD FACTOR (TABLE A)30200occupant load11947	E T 26,001 SF 8, 50 520 6	3 3 3 CLASSROOMS AS B:E SF OTAL ,876 SF 86	PACES)	ASSEMBLY A-3 7,383 SF <u>BUSINESS B 49,713 SF</u> TOTAL GROSS AREA 57,096 SF ALLOWABLE BUILDING HEIGHT: 2016 CBC TABLE 504.4 U	EGRESS PATH OF TRAVEL EGRESS PATH OF TRAVEL EGRESS POINT Maximum # of Occupants Maximum # of Occupants Maximum # of Occupants Maximum # of Occupants (by width)
PLUMBING FIXTURE REQUIREMENTS: PER CPC, TITLE 24, PART 5 -OCCUPANCY GROUPA-3BOCCUPANT LOAD AREA3,556 SF9,319 SFPLUMBING OCCUPANT LOAD FACTOR (TABLE A)30200OCCUPANT LOAD11947VALE OCCUPANTS59.523.5EMALE OCCUPANTS59.523.5	- (LEVELS 2 AND 3 E T 26,001 SF 8 50 520 6 260 3 260 3	3 3 3 CLASSROOMS AS B:E SF OTAL ,876 SF 86 43 43 43 43 FIXTURES FIXTU	PACES)	ASSEMBLY A-3 7,383 SF <u>BUSINESS B 49,713 SF</u> TOTAL GROSS AREA 57,096 SF ALLOWABLE BUILDING HEIGHT: 2016 CBC TABLE 504.4 NO LIG US TABLE 504.4 NO LIG US US US US US US US US US US US US US	CODE COMPLIANCE LEGEND EGRESS PATH OF TRAVEL TRAVEL DISTANCE 140' EGRESS POINT Maximum # of Occupants Maximum # of Occupants Maximum # of Occupants Maximum # of Occupants OCCUPANCY TAG AREA AREA AREA
PLUMBING FIXTURE REQUIREMENTS: PER CPC, TITLE 24, PART 5 -occupancy groupA-3Boccupant load area3,556 SF9,319 SFplumbing occupant load factor (table a)30200occupant load11947occupants59.523.5FEMALE occupants59.523.5water closetsMALE11FEMALE32	E T 26,001 SF 8 50 50 520 6 260 3 260 3 260 3 260 3 260 3 9 1	3 3 3 3 3 3 3 3 3 3 3 14	ACES) TIDED JRES 9 15	ASSEMBLY A-3 7,383 SF <u>BUSINESS B 49,713 SF</u> TOTAL GROSS AREA 57,096 SF ALLOWABLE BUILDING HEIGHT: 2016 CBC TABLE 504.4 VOI USUAL VOI USUAL V	CODE COMPLIANCE LEGEND EGRESS PATH OF TRAVEL TRAVEL DISTANCE 140' EGRESS POINT Maximum # of Occupants 64.0 Required # of Occupants (by width) 64.0 OCCUPANCY TAG AREA Area 150 Occupant Load 50 Occupant Load 48
PLUMBING FIXTURE REQUIREMENTS: PER CPC, TITLE 24, PART 5 -OCCUPANCY GROUPA-3BOCCUPANT LOAD AREA3,556 SF9,319 SFPLUMBING OCCUPANT LOAD FACTOR (TABLE A)30200OCCUPANT LOAD11947MALE OCCUPANTS59.523.5=EMALE OCCUPANTS59.523.5MALE OCCUPANTS59.523.5AVATORIESMALE1AVATORIESMALE111	E T 26,001 SF 8 50 6 260 3 260 3 260 3 260 3 7 9 7 9 7 9 7 9 7 9 7 9 7 9	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 14 9 9 9 9 9 9	PACES) PIDED JRES 9 15 9 9	ASSEMBLY A-3 <u>BUSINESS B</u> <u>49,713 SF</u> TOTAL GROSS AREA 57,096 SF ALLOWABLE BUILDING HEIGHT: 2016 CBC TABLE 504.4 UILIN VOLUDINUL HUILIN VOLUCI VIENTIAL VIENTI	CODE COMPLIANCE LEGEND EGRESS PATH OF TRAVEL TRAVEL DISTANCE 140' EGRESS POINT Maximum # of Occupants 64.0 Required # of Occupants 64.0 OCCUPANCY TAG Area 150 Occupant Load 50 S 50 S Occupant Load 50 S 50 S Occupant Load 75' Typ
PLUMBING FIXTURE REQUIREMENTS: PER CPC, TITLE 24, PART 5 -OCCUPANCY GROUPA-3BOCCUPANT LOAD AREA3,556 SF9,319 SFPLUMBING OCCUPANT LOAD FACTOR (TABLE A)30200OCCUPANT LOAD11947MALE OCCUPANTS59.523.5FEMALE OCCUPANTS59.523.5FEMALE OCCUPANTS59.523.5FEMALE OCCUPANTS59.523.5FEMALE OCCUPANTS59.523.5FEMALE OCCUPANTS59.523.5MALE11JRINALSMALE11JRINALSMALE11DRINKING FOUNTAINS11	E T 26,001 SF 8 50 6 260 3 260 3 260 3 6 8 9 1 7 9 7 9 3 5 1.74 2	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 0 3 8 3 4 14 9 3 9 3 9 3 5 6 .74 4	PACES) /IDED JRES 9 15 9 9 5 5	ASSEMBLY A-3 7,383 SF <u>BUSINESS B 49,713 SF</u> TOTAL GROSS AREA 57,096 SF ALLOWABLE BUILDING HEIGHT: 2016 CBC TABLE 504.4 NOLUGI US US US US US US US US US US US US US	CODE COMPLIANCE LEGEND EGRESS PATH OF TRAVEL TRAVEL DISTANCE 140' EGRESS POINT Maximum # of Occupants 64.0 Maximum # of Occupants 64.0 Required # of Occupants (by width) 64.0 OCCUPANCY TAG Area Area 150 Occupant Load 50 Occupant Load 75' Typ 10 4400 FIRE EXTINGUISHER 75' Typ 10 4400 FIRE EXTINGUISHER FEC
PLUMBING FIXTURE REQUIREMENTS: PER CPC, TITLE 24, PART 5 -OCCUPANCY GROUPA-3BOCCUPANT LOAD AREA3,556 SF9,319 SFPLUMBING OCCUPANT LOAD FACTOR (TABLE A)30200OCCUPANT LOAD11947MALE OCCUPANTS59.523.5FEMALE OCCUPANTS59.523.5FEMALE OCCUPANTS59.523.5MATER CLOSETSMALE1LAVATORIESFEMALE32URINALSMALE11URINALSMALE11DRINKING FOUNTAINS111SERVICE SINKS111	E T 26,001 SF 8 50 6 260 3 260 3 260 3 6 8 9 1 7 9 3 5 1.74 3 1 3	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	PACES)	ASSEMBLY A-3 BUSINESS B TOTAL GROSS AREA 49,713 SF TOTAL GROSS AREA 57,096 SF ALLOWABLE BUILDING HEIGHT: 2016 CBC TABLE 504.4 NOL U U U U U U U U U U U U U	CODE COMPLIANCE LEGEND EGRESS PATH OF TRAVEL TRAVEL DISTANCE 140' EGRESS POINT Maximum # of Occupants 64.C Maximum # of Occupants 64.C Required # of Occupants (by width) 64.C OCCUPANCY TAG Area 15C OCCUPANCY TAG AREA Area 15C Occupant Load 75' Typ 10 4400 FIRE EXTINGUISHER RADIUS 75' Typ 10 4400 FIRE EXTINGUISHER EEC SURFACE MOUNTED EC DEFIBRILLATOR CABINET EC
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PLUMBING FIXTURE REQUIREMENTS: PER CPC, TITLE 24, PART 5 - OCCUPANT GOOD A-3 B OCCUPANT GOAD AREA 3,556 SF 9,319 SF PLUMBING OCCUPANT LOAD FACTOR (TABLE A) 30 200 OCCUPANT GOAD 119 47 MALE OCCUPANTS 59.5 23.5 FEMALE OCCUPANTS 59.5 23.5 WATER CLOSETS MALE 1 1 FEMALE 1 1 1 ARTONICS MALE 1 1 1 INVATORIES MALE 1 1 INVATORIES INVATORIES INVATORIES INVATORIES IVVELO MEM	E T 26,001 SF 8 50 6 260 3 260 3 6 8 9 1 7 9 7 9 7 9 7 9 7 9 7 9 7 9 7 9 7 9 7 9 3 5 1.74 3 1 3 2 2 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 7 1 1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 3 7 </td <td>3 3 3 CLASSROOMS AS B:E SF 0TAL </td> <td>ACES)</td> <td>ASSEMBLY A3 7.38359 TOTAL GROSS AREA 57.0805 PF ALLOWABLE BUILDING HEIGHT: 2016 CBC TABLE 504.4 Image: Status and S</td> <td>CODE COMPLIANCE LEGEND</td>	3 3 3 CLASSROOMS AS B:E SF 0TAL	ACES)	ASSEMBLY A3 7.38359 TOTAL GROSS AREA 57.0805 PF ALLOWABLE BUILDING HEIGHT: 2016 CBC TABLE 504.4 Image: Status and S	CODE COMPLIANCE LEGEND
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PLUMBING FIXTURE REQUIREMENTS: PER CPC, TITLE 24, PART 5 - OCCUPANCY GROUP A-3 B OCCUPANT LOAD AREA 3,556 SF 9,319 SF PLUMBING OCCUPANT LOAD FACTOR (TABLE A) 30 200 OCCUPANT LOAD 119 47 MALE 1 1 PLUMBING OCCUPANTS 59.5 23.5 WATER CLOSETS MALE 1 1 INTALE MALE 1 1 INTALS MALE 1 1 <	• (LEVELS 2 AND : E T 26,001 SF 8 50 6 260 3 260 3 6 8 9 1 7 9 3 5 1.74 3 1 3 COUNT 3 1 3 COUNT 3 2 2 2 2 3 3 2 2 3 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 2 2 2 2 3 3 1 1 1 1 2 2	3 3 3 CLASSROOMS AS B:E SI 0TAL	ACES)	ANSWAYA 3 7,2885 1072,64553ARA 7,72655 ALLOWABLE BULDING HEIGHT: 2010 CBC TABLE 504.4 <u>0010 SBC 1001 TABLE 504.4</u> <u>1010 SBC 1001 SBC 1001 SBC 1001 SBC 10000 SBC 100</u>	CODE COMPLIANCE LEGEND
PLUMBING FIXTURE REQUIREMENTS: PER CPC, TITLE 24, PART 5 - OCCUPANCY GROUP OCCUPANT LOAD AREA 3,556 SF 9,319 SF PUMBING OCCUPANT LOAD FACTOR (TABLE A) 00 OCCUPANT LOAD A3 0 00 OCCUPANT LOAD A4 30 20 OCCUPANTS 59.5 23.5 WATER CLOSETS MALE 1 1 VALE V	Image: Count 1 2 2 2 260 3 260 3 7 9 7 9 1.74 3 1 2 2 3 1 2 3 5 3 2 2 3 5 3 2 2 3	3 3 3 CLASSROOMS AS B:E SI 0TAL	ACES)	ALGORIA A 2, 2,84 3, 2,96 5 1000/14 (1000 MICH) 5,96 5 ALLOWABLE BULDING HEIGHT: 2016 (AC TABLE SOL4 <u>99 99 00 00 00000000000000000000000000</u>	CODE COMPLIANCE LEGEND







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40	40	4.4	40	0		1
13	12		10	9	8	1
				•	-	









G	ENERAL EDGE OF S	SLAB/DECK PLAN NOTE
	EDGE OF SLAB/ DECK PLANS CONTRACTOR TO CORRDINA	INTENDED FOR LAYOUT PURPOSES. TE LAYOUT WITH ALL DRAWINGS AN
	ALL SUBCONTRACTORS." EXTERIOR AND INTERIOR WA LIMITED SITE CONDITIONS SI COORDINATION ONLY. REFE	LLS HAVE BEEN OMITTED FOR CLAR HOWN FOR REFERENCE AND R TO CIVIL, LANDSCAPE AND
	STRUCTURAL DRAWINGS FO HOUSEKEEPING PADS ARE SH	R DETAILS OF SITE PAVING. HOWN FOR REFERENCE ONLY.
	CONTRACTOR TO COORDINA WITH EQUIPMENT PROVIDER	TE EXACT PAD SIZE AND LOCATION RS. INDICATED COORDINATE WITH M
	DRAWINGS COORDINATE SPOT ELEVATIO	ON WITH STRUCTURAL/CIVIL.
	REFER TO ROOF PLANS FOR L	OCATION OF DRAINS, ETC. PRINKLER PIPING THROUGH SELECT
	REFER TO PLUMBING, ELECT PLANS FOR UNDERSLAB PIPII	REPROTECTION RICAL, AND TELECOMMUNICATIONS NG, FLOOR DRAINS, FLOOR BOXES, A
0.	CONDUIT. SLOPE FLOORS IN MECHANIC	CAL ROOMS TOWARD FLOOR DRAIN
1.	UNLESS NOTED OTHERWISE. REFER TO CIVIL FOR UNDERS REQUIREMENTS	LAB AND SLAB EDGE DRAINAGE
2.	REFER TO SECTION DETAILS F EXTENTS.	OR WATERPROOFING TYPE AND
3.	EMBED PLATES ARE SHOWN CONNECT TO SLAB. CONTRA PLATES ARE REQUIRED WITH	TO ACCOMMODATE WINDOW WAL CTOR TO COORDINATE IF EMBED SELECTED WINDOW WALL
4.	MANUFACTURER. ELEVATOR PIT SIZE SHOWN T BASIS OF DESIGN STANDARD CONTRACTOR TO COORDINA	O ACCOMMODATE MANUFACTURE EQUIPMENT PER SPECIFICATIONS. TE EXACT DIMENSIONS WITH SELEC
5.	ELEVATOR MANUFACTURER. CONTRACTOR RESPONSIBLE	FOR VERIFYING ALL DIMENSIONS.
		TES SLAB EDGE
	STEEL EMBED PLATE; SEE ST CONCRETE CURB; SEE STRUC	TES SLAB EDGE RUCT DETAIL 13/S903 CT DETAIL 10/S501 AND DETAIL 4/S70
	STEEL EMBED PLATE; SEE ST CONCRETE CURB; SEE STRUC CONCRETE HOUSE KEEPING DETAIL 4/S703	TES SLAB EDGE RUCT DETAIL 13/S903 ET DETAIL 10/S501 AND DETAIL 4/S70 PAD; SEE STRUCT DETAIL 10/S501 AI
	STEEL EMBED PLATE; SEE ST CONCRETE CURB; SEE STRUC CONCRETE HOUSE KEEPING DETAIL 4/S703 EDGE OF SLAB INTERIOR CONCRETE CURB; 4/S703	TES SLAB EDGE RUCT DETAIL 13/S903 T DETAIL 10/S501 AND DETAIL 4/S70 PAD; SEE STRUCT DETAIL 10/S501 AN SEE STRUCT DETAIL 10/S501 AND DE
	STEEL EMBED PLATE; SEE ST CONCRETE CURB; SEE STRUC CONCRETE HOUSE KEEPING DETAIL 4/S703 EDGE OF SLAB INTERIOR CONCRETE CURB; 4/S703 ELEVATOR EDGE OF SLAB FINISH TILE FLOOR SLOPE TO	TES SLAB EDGE RUCT DETAIL 13/S903 CT DETAIL 10/S501 AND DETAIL 4/S7 PAD; SEE STRUCT DETAIL 10/S501 AND SEE STRUCT DETAIL 10/S501 AND DE
	STEEL EMBED PLATE; SEE ST CONCRETE CURB; SEE STRUC CONCRETE HOUSE KEEPING DETAIL 4/S703 EDGE OF SLAB INTERIOR CONCRETE CURB; 4/S703 ELEVATOR EDGE OF SLAB FINISH TILE FLOOR SLOPE TO DRAIN LOCATIONS EDGE OF RECESSED SLAB; SE	TES SLAB EDGE RUCT DETAIL 13/S903 ET DETAIL 10/S501 AND DETAIL 4/S70 PAD; SEE STRUCT DETAIL 10/S501 AND DE SEE STRUCT DETAIL 10/S501 AND DE D DRAIN MIN 1/4" : 1'; SEE SHEET P40 E STRUCT FOR TOP OF STEEL ELEVAT
	STEEL EMBED PLATE; SEE ST CONCRETE CURB; SEE STRUC CONCRETE HOUSE KEEPING DETAIL 4/S703 EDGE OF SLAB INTERIOR CONCRETE CURB; 4/S703 ELEVATOR EDGE OF SLAB FINISH TILE FLOOR SLOPE TO DRAIN LOCATIONS EDGE OF RECESSED SLAB; SE AND DETAILS 15/S501, 8/S70	TES SLAB EDGE RUCT DETAIL 13/S903 T DETAIL 10/S501 AND DETAIL 4/S70 PAD; SEE STRUCT DETAIL 10/S501 AND SEE STRUCT DETAIL 10/S501 AND DE D DRAIN MIN 1/4" : 1'; SEE SHEET P40 E STRUCT FOR TOP OF STEEL ELEVAT 03, AND 12/S703
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	EDGE OF SLAB DEPRESSION FOR SLIDI DEPRESSION DEPTH AND EX EDGE OF SLAB	TES SLAB EDGE RUCT DETAIL 13/S903 T DETAIL 10/S501 AND DETAIL 4/S7 PAD; SEE STRUCT DETAIL 10/S501 AND DE SEE STRUCT DETAIL 10/S501 AND DE DRAIN MIN 1/4" : 1'; SEE SHEET P40 E STRUCT FOR TOP OF STEEL ELEVAT 33, AND 12/S703 NCRETE; 12 4816 ENTRANCE FLOOR RB, REFER TO ROOF PLAN NG DOOR TRACK. CONFIRM SLAB TENTS WITH DOOR MANUFACTUREI F SLAB LEGEND CONCRETE CURB/ HOUSEKEEPING
	EDGE OF SLAB DEPRESSION FOR SLIDI DEPRESSION DEPTH AND EX SLAB DEPRESSION FOR SLIDI DETAIL 4/S703 EDGE OF SLAB INTERIOR CONCRETE CURB; 4/S703 ELEVATOR EDGE OF SLAB FINISH TILE FLOOR SLOPE TO DRAIN LOCATIONS EDGE OF RECESSED SLAB; SE AND DETAILS 15/S501, 8/S700 RECESSED EXTERIOR SITE CO EDGE OF METAL DECK OUTSIDE EDGE OF ROOF CU SLAB DEPRESSION FOR SLIDI DEPRESSION DEPTH AND EX EDGE OF	TES SLAB EDGE RUCT DETAIL 13/S903 T DETAIL 10/S501 AND DETAIL 4/S7 PAD; SEE STRUCT DETAIL 10/S501 AND DE SEE STRUCT DETAIL 10/S501 AND DE D DRAIN MIN 1/4" : 1'; SEE SHEET P40 E STRUCT FOR TOP OF STEEL ELEVAT 3, AND 12/S703 NCRETE; 12 4816 ENTRANCE FLOOR RB, REFER TO ROOF PLAN NG DOOR TRACK. CONFIRM SLAB TENTS WITH DOOR MANUFACTURE F SLAB LEGEND CONCRETE CURB/ HOUSEKEEPING STEEL EMBED PLATE

2 |

RECESSED INTERIOR SLAB

RECESSED AT EXTERIOR ENTRANCE FLOOR GRILLE \bigvee SLAB DEPRESSION FOR SLIDING DOOR TRACK





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	_			
HEDULE		STORM D	RAIN STRUCTURE	SCHEDULE
ASTING		NAME	NORTHING	EASTING
47696.19		SDAD-24	1999151.28	6747618.8
47811.47		SDAD-25	1999152.30	6747631.3
47812.35	\mathbf{D}^{1}	SDAD-26	1999153.32	6747643.7
47751.99		SDAD-27	1999155.34	6747667.8
47641.37		SDAD-28	1999156.69	6747683.7
47624.14		SDAD-29	1999158.02	6747699.7
47702.25		SDAD-30	1999159.33	6747715.6
47711.71		SDAD-31	1999164.14	6747749.3
47688.54		SDAD-32	1999163.15	6747737.4
47680.54		SDAD-33	1999165.16	6747761.2
47615.00		SDAD-35	1999303.18	6747816.5
47589.49		SDAD-36	1999311.65	6747815.8
47625.04		SDAD-37	1999320.12	6747815.1
47647.16		SDAD-38	1999328.60	6747814.4
47640.90		SDAD-39	1999339.06	6747813.5
47706.18		SDAD-40	1999346.86	6747812.9
47697.83		SDAD-41	1999357.08	6747812.0
47696.21		SDAD-42	1999373.56	6747810.6
47688.60		SDAD-43	1999365.32	6747811.3
47697.58		SDAD-44	1999390.36	6747809.7
47705.35		SDAD-45	1999192.88	6747608.5
47674.59		SDAD-46	1999179.81	6747611.0 [°]
47821.67		SDAD-47	1999167.17	6747613.5
47822.49		SDAD-48	1999206.04	6747605.9
47823.27		SDC0-9	1999361.20	6747705.1
47824.06		SDCB-1	1999250.74	6747561.9
	-			

STORM D	RAIN STRUCTUR	E SCHEDULE
NAME	NORTHING	EASTING
SDCB-3	1999248.51	6747887.46
SDCB-5	1999409.04	6747867.32
SDCB-6	1999323.16	6747881.13
SDCB-7	1999251.72	6747923.44
SDCB-8	1999451.17	6747879.20
SDCB-9	1999237.86	6747628.94
SDCB-11	1999307.02	6747748.75
SDCB-12	1999366.07	6747743.71
SDCB-13	1999333.23	6747809.45
SDCB-14	1999259.34	6747815.11
SDCO-1	1999309.87	6747697.42
SDCO-2	1999295.19	6747732.76
SDCO-3	1999335.87	6747690.23
SDCO-4	1999339.70	6747736.07
SDCO-5	1999391.04	6747672.13
SDCO-6	1999357.96	6747666.31
SDCO-7	1999321.79	6747737.92
SDCO-8	1999317.11	6747681.76
SDCO-11	1999289.68	6747856.07
SDMH-1	1999178.31	6747850.41
SDTD-1	1999376.98	6747672.25
SDTD-2	1999158.04	6747661.06
SDTD-3	1999163.87	6747730.85
SDTD-4	1999269.52	6747866.39
SDTD-5	1999245.85	6747852.71
SDTD-6	1999319.17	6747846.71









3.	FROM STRUCTURAL UNLESS NOTED OTH INTERIOR FLOOR PL/	GRID, FAC ERWISE. AN DIMENS	E OF EXTERIOR S	ENCED FROM
4.	STRUCTURAL GRID, UNLESS NOTED OTH REFLECTED CEILING	FINISH FAC ERWISE. PLAN DIME	E OF PARTITIONS	OR R.O.,
5.	FROM FINISHED SUF CEILING HEIGHTS AF FINISHED CEILING H	RFACES, UN RE DIMENSI FIGHT	LESS NOTED OTH ONED FROM FLO	ierwise. Dor to
6.	CASEWORK, PLUMB OTHER FIXTURES AN	ING FIXTUR	ES, TOILET PARTI ENT ARE DIMENS	ITIONS, AND SIONED
7.	DIMENSIONS NOTEE	O AS "FIELD	VERIFY" SHALL B	E CHECKED ED WITH THE
8.	ARCHITECT BEFORE DIMENSIONS NOTEL COORDINATION BET	INCORPOR) AS "CLEAF WEEN DISC	ATING INTO THE ' ." REQUIRE SPECI :IPLINES AND/OR	WORK. IFIC
9. 10	MANUFACTURERS. DRAWINGS NOTED A	AT "N.T.S." . MING WRI	ARE NOT TO SCAI	LE. NS TAKE
10.	PRECEDENCE. IF CL DETERMINE THE INT	ARIFICATIC	N IS REQUIRED II	N ORDER TO CUMENTS,
11.	NOTES OR DIMENSIONS THAT A	ONS LABELE RE THE SAN	D "TYPICAL" SHA 1E OR SIMILAR.	ALL APPLY TO
	FLOOF	R PLAN	SHEET NO	TES
A. I	REFER TO SHEETS AO HEIGHTS AND LOCAT	02 & A003 TONS.	FOR ACCESSIBILI	TY AND MOUNTING
B. I	REFER TO SHEETS A1 OVERALL INTERIOR E	.11 - A113 F DIMENSION	OR INTERIOR PAI S. BIES A4005 FOR I	RTITION TAGS AND
D. I	REGARDING CASEW(ENLARGED PLANS M	ORK, MARK AY BE ROTA	ERBOARDS, ETC.	ED COORDINATE
E. I F. I	WITH MAIN FLOOR F REFER TO SHEET A51 REFER TO SHEET A52	PLAN. .1- A512 FO :1 - A522 FC	R DOOR SCHEDU DR EXTERIOR GLA	ILE AND DOOR TYP
G. I H. Y	REFER TO SHEET A52 WHERE DIMENSIONS	3 FOR INTE S ARE NOT I	RIOR WINDOW T PROVIDED ON TH	TYPES. IE FLOOR PLANS TO
l	DETERMINE THE LOC WHERE THE HIN	ATION OF	oor openings A door is sho	IG ROLES TO : WN ADJACENT TO .
	WALL, OR WALL DOOR OCCURS,	S, PERPENI	DICULAR TO THE E HINGE-SIDE FI	WALL IN WHICH TH NISHED EDGE OF THE CLOSEST
I. V	PERPENDICULA WHERE INTERIOR PA	R WALL OR	PARTITION ASSE	MBLY. CKNESS ABUT,
,	ALIGN EXPOSED FAC	ES, UNLESS	NOTED OTHERW	/ISE.
				D:
	FLC	DOR PL	AN LEGENI	
10 44 CABII	FLC 100 FIRE EXTINGUISH NET, SEMI-RECESSED	IER	AN LEGENL	FEC
10 44 CABII SURF DEFIE	FLC 100 FIRE EXTINGUISH NET, SEMI-RECESSED ACE MOUNTED BRILLATOR CABINET	IER	AN LEGENI	FEC DC
10 44 CABII SURF DEFIE 1-HO	FLC 100 FIRE EXTINGUISH NET, SEMI-RECESSED ACE MOUNTED BRILLATOR CABINET UR FIRE RATED ASSE	IER		
10 44 CABII SURF DEFIE 1-HO SMO	FLC 100 FIRE EXTINGUISH NET, SEMI-RECESSED ACE MOUNTED BRILLATOR CABINET UR FIRE RATED ASSE KE BARRIER			
10 44 CABII SURF DEFIE 1-HO SMO LATE STRU	FLC 100 FIRE EXTINGUISH NET, SEMI-RECESSED ACE MOUNTED BRILLATOR CABINET UR FIRE RATED ASSE KE BARRIER RAL FRAME, REF TO CTURE DWGS	IER		
10 44 CABII SURF DEFIE 1-HO SMO LATE STRU	FLC 100 FIRE EXTINGUISH NET, SEMI-RECESSED ACE MOUNTED BRILLATOR CABINET UR FIRE RATED ASSE KE BARRIER RAL FRAME, REF TO CTURE DWGS	IER		
10 44 CABII SURF DEFIE 1-HO SMO LATE STRU	FLC 100 FIRE EXTINGUISH NET, SEMI-RECESSED ACE MOUNTED BRILLATOR CABINET UR FIRE RATED ASSE KE BARRIER RAL FRAME, REF TO CTURE DWGS	IER		
10 44 CABII SURF DEFIE 1-HO SMO LATE STRU	FLC 100 FIRE EXTINGUISH NET, SEMI-RECESSED ACE MOUNTED BRILLATOR CABINET UR FIRE RATED ASSE KE BARRIER RAL FRAME, REF TO CTURE DWGS			
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10 44 CABII SURF DEFIE 1-HO SMO LATE STRU	FLC 100 FIRE EXTINGUISH NET, SEMI-RECESSED ACE MOUNTED BRILLATOR CABINET UR FIRE RATED ASSE KE BARRIER RAL FRAME, REF TO CTURE DWGS		OTES - PLAN	
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	REFLECTED CEII	LING PLAN SHEET NOTES:
1.	ALL CEILING AND SOFFIT FLOOR ELEVATION (EL. 0	HEIGHTS ARE GIVEN ABOVE FINISHED '-0'')
2. 3.	CEILING GRID TO BE CEN GENERALLY ONLY CEILIN THIS PLAN. COORDINAT	ITERED IN ROOM, U.N.O. IG MOUNTED FIXTURES ARE SHOWN ON E WITH MEP PLANS FOR ADDITIONAL
4.	INFORMATION. SOME OR ALL SPRINKLEF COORDINATE WITH MEF INFORMATION. SPRINKI	RS MAY NOT BE SHOWN ON THIS PLAN. P DRAWINGS FOR ADDITIONAL LER HEADS TO BE CENTERED ON CEILING
5.	TILE, TYP. VERIFY LOCATIONS OF A DRAWINGS. COORDINAT ARCHITECT PRIOR TO IN:	LL CEILING ACCESS PANELS WITH MEP TE LOCATIONS OF PANELS WITH STALLATION. ACCESS PANEL FIRE
6.	RATINGS MUST MATCH LIGHT FIXTURES TO BE C	CEILING ASSEMBLY FIRE RATINGS. ENTERED AND SPACED EQUALLY WITHIN
7.	LIGHT FIXTURES ARE SHO ONLY COORDINATE WITH DESIGNATIONS.	DWN FOR DIMENSIONAL PURPOSES H ELECTRICAL DRAWINGS FOR FIXTURE
8.	IF PROJECT INCLUDES FIL LOCATED IN RATED CELL OTHERWISE RATED TO N	RE RATED CEILINGS, LIGHT FIXTURES ING ASSEMBLIES ARE TO BE TENTED OR MATCH THE CEILING.
9. 10. 11.	SEE A/V DRAWINGS FOR CENTER SMOKE DETECT	AUDIO VISUAL EQUIPMENT. ORS AND SECURITY DEVICES IN ROOM
12.	AREA OR CEILING TILE, U ALL CONDUIT, PIPES, FIR MUST BE CONCEALED U	I.N.O. E SPRINKLER PIPES & OTHER UTILITIES N.O. CONDUIT & PIPES SHALL NOT
13.	PENETRATE STRUCTURA PROVIDE BLOCKING AS F	L BEAMS, U.N.O. REQUIRED FOR DUCTS, PIPES & LIGHT
14.	LIGHTING, MECHANICAL REFERENCE AND COORD ELECTRICAL AND MECHA	., A/V, AND SPRINKLERS SHOWN FOR NATION ONLY. SEE RESPECTIVE NICAL DRAWINGS FOR MORE
15.	INFORMATION. EXCEPT WHERE RIGID BF DEFLECTIONS, SPRINKLE SHALL HAVE A 2" OVERS THROUGH THE CEILING	RACES ARE USED TO LIMIT LATERAL R HEADS AND OTHER PENETRATIONS IZE RING SLEEVE, OR ADAPTER TILE TO ALLOW FOR FREE MOVEMENT
16.	OF AT LEAST 1" IN ALL D SEE REFLECTED CEILING	RECTIONS PER ASCE 7-13.5.6.2.2.E. PLAN LEGEND FOR WINDOW ROLLER
17.	WHERE ACCESS PANELS OCCUR, DO NOT USED G SYSTEMS. ALL ACCESS P	LARGER THAN 300 SQUARE INCHES YPSUM BOARD CEILING SUSPENSION ANELS SMALLER THAN 300 SQUARE
10	SYSTEMS SHALL HAVE PE LABELS COMPLYING WIT	ERMANENTLY ATTACHED WARNING
18. 19.	ALIGN BOTTOM OF FINIS SHADE HOUSING, WHER HARD LID CEILINGS TO F	E OCCURS. OLLOW TABLE BELOW. RATED CEILINGS
	STRUCTURAL DETAILS O	N S902.
	LIGHTING	FIXTURE LEGEND:
		2X4 RECESSED DIRECT/INDIRECT
		PENDANT LIGHTING, S.E.D.
	0 0	RECESSED LIGHTING, S.E.D.
7	SEE PLAN	LINEAR LED LIGHT WITH DROP LENS
		COVE LIGHT
		ROLLER SHADE, RECESSED
		ROLLER SHADE, IN WINDOW FRAME
		RECESSED PROJECTOR SCREEN
	DS M	CEILING MOUNTED LIGHTING CONTR SEE ELECT. DRWGS.
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		PROVIDE PROJECTOR POST AND MOUNT, SEE G/E802
	() ()	CEILING MOUNTED SMOKE DETECTO
	Q	CORD REEL RECEPTACLE HUNG FROM
	-	STRUCTURE ABOVE, SEE E/E802 ACCESS PANEL, SEE 6/A574
	SEE PLAN	MECHANICAL DIFFUSER, SEE MECH.
	o	DRWGS. FIRE SPRINKLER HEAD, SEE 3/A573 &
		EE SHEETS A574. GB-2 SEE S902 FOR 5/8 SYP BD CEILING ON STEEL JOIST 095113) - ACOUSTICAL PANEL CEILING, APC-1; SEE SHEETS A571, A572, A573

SEE SHEETS A574. GB-2 SEE S902 FO GYP BD CEILING ON STEEL JOIST
(095113) - ACOUSTICAL PANEL CEILII APC-1; SEE SHEETS A571, A572, A573
(095125) - PERFORATED ACOUSTICA PANEL CEILING , PAPC-1, SEE SHEET A577

EXPOSED TO STRUCTURE

REFLECTED CEILING PLAN SHEET NOTES: ALL CELING AND SOPHIT HEIGHTS ARE GIVEN AROUS FINISHED PLOOP EXACTION 121, 0721 E. CELING GED TO BE CONTRIBUTION NOTATION ADDITIONAL INFORMATION. S. Sole DA AL, SPRINKLEB, SAWAY NOTE SHORN ON THIS FLAN. COORDINATE WITH MEP PLANS FOR ADDITIONAL INFORMATION. S. SOLE DA AL, SPRINKLEB, SAWAY NOTES SHORN ON THIS FLAN. COORDINATE WITH MEP PLANS FOR ADDITIONAL INFORMATION. SPRINKLEB AND STORE SHORN ON THIS FLAN. COORDINATE WITH MEP PLANS FOR ADDITIONAL INFORMATION. SPRINKLEB AND STORE SHORN ON THIS FLAN. COORDINATE WITH MEP PLANS FOR ADDITIONAL INFORMATION. SPRINKLEB AND SPRINE SHORN TO BE SHORN TO		2
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BENDICT INCLUDES HILL RATE OF CHILLINGS, LICHT PRIVERS LICATED IN MATED CENTRA SSEMILIES ARE DO RETENTION SASEMABLES ARE TO BE TENTED OR OTHERWISE RATE DO MATCH THE CENTRA. LICATES MORE DETENTIONS AND SCUDENT POWERS IN NOOM AREA OR CENTRA TO DU AND, CHILLINGS, SCHILL TOT PURCHAEL SINCURAL BLANKS, U.N.O. SHALL HAR SINCURAL BLANKS, U.N.O. S	ROOM, U.N.O. 7. LIGHT FIXTURES ARE SH ONLY COORDINATE WIT DESIGNATIONS.	OWN FOR DIMENSIONAL PURPOSES TH ELECTRICAL DRAWINGS FOR FIXTURE
10. SEE AAY DEAXMINES FOR AUDIO VISUAL COURPORTS IN BOOM ANTLA OR CELLING THE UND. 11. CENTER SAMORE PETERODES AND SECURITY DEVICES IN BOOM ANTLA OR CELLING THE UND. 12. ALL COMDUTE PRES, FREE SPRINKLERS PRES & LOTHER UTTIMES PENETRATES TRUCTURAL BEAKS, UND. 13. PROVIDE BLOCKING AS ARGUNERD FOR DUCTS, PIETS & LIGHT HETURES. 14. LIGHTING, MECHANICAL, ANY, AND SEMINKLERS SHOWN FOR INFORMATION. 15. LICKING AND COMBINING AND CONTY. SLEE RESERVICE INFORMATION. 16. LICKING AND CONTRIBUTE DESTIGUTS INFORMATION. 17. LICHTING CONTRIBUTE DESTIGUTS INFORMATION. 18. LICKIP WHERE INFORMATION ONLY. SLEE RESERVICE INFORMATION. 19. LICKIP WHERE INFORMATION ONLY. SLEE RESERVICE INFORMATION. 19. LICKIP WHERE INFORMATION ONLY. SLEE INFORMATION. 10. LICKIP WHERE INFORMATION AND ALERA STRUCTURE CELLING THAN BOD SCULARL INCRESS OCCUR, DO NOT USED OFFSUM EDADOC UTIME DESTIGUTS STRUCTURE CELLING THAN BOD SCULARL INCRESS OCCUR, DO NOT USED OFFSUM EDADOC USE SUBJECTS STRUCTURE CELLING THAN BOD SCULARL INCRESS OCCUR, DO NOT USED OFFSUM EDADOC USE SUBJECTS STRUCTURE CELLING THAN BOD SCULARL INCRESS OCCUR, DO NOT USED OFFSUM EDADOC USES SUBJECTS STRUCTURE CELLING THAN BOD SCULARL INCRESS PARIEL SECON SOCIAL STRUCTURE ACCURS SHANDES CELLING STRUCTURE AND ARCENT ANT AT ACHED WARNING STRUCTURE AND ARCENT ANT ANT ACHED WARNING STRUCTURE AND ARCENT ANT AT ACHED WARNING STRUCTURE AND ARCENT ANT ANT A	 IF PROJECT INCLUDES F LOCATED IN RATED CEIL OTHERWISE RATED TO I ALL SOFFITS TO BE PAIN 	IRE RATED CEILINGS, LIGHT FIXTURES LING ASSEMBLIES ARE TO BE TENTED OR MATCH THE CEILING. ITED. U.N.O.
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HURRES. HURRES SHOWN FOR REFERENCE AND CORDINATION ONLY. SEE RESPECTIVE PERFERENCE AND MECHANICUS DRAWINES FOR MORE INFORMATION. DELECTIONS, SPRINKLER HADS AND OTHER RENETATIONS SHALL HAZ 2 COVERSIZE MICE SLEEVE, OR ADATER THROUGH THE CELLING THE TO ALLOW FOR FREE MOVEMENT OF AT LEAT. 2 TH ON LID REFERENCE AND SERVICES AND ADATER THROUGH THE CELLING MAN LEGEND FOR WINDOW ROLLER SHADE HAZ 2 COVERSIZE MORENT HAM 300 SQUARE INCHES WHERE ACCESS FANELS LARGENT HAM 300 SQUARE INCHES SHADE HAZ 2000 TO USD OFFICIAN BOARD CELLING SUSPENSION OCCUR, DO TO USD OFFICIAN BOARD CELLING SUSPENSION SYSTEMS JALL HAZY SERVICES PARLES SMALLER THAN 300 SQUARE INCHES WHERE OCCUR. IN SUSPENSION SYSTEMS SHALL HAZY PERMANENTLY ATTACHED WARNING SHADE HAZY SCHALLER CELLING WITH BOTTOM OF ROLLER SHADE HAZY SHADE HOUSD, WHERE OCCURS. 13. ALLAR BOTTOM OF HISHED CELLING WITH BOTTOM OF ROLLER SHADE HAZY SHADE HAZY SCHALL HAZY PERMANENTLY ATTACHED WARNING SHADE HAZY SHADE HAZY SCHALLER AND RESPECTIVE SHADE HAZY SCHALLER SHADE, RECESSED DIRCT/NDOINCET SEE FEAT. DRIVES STRUCTURAL DEFLUX SCHALLER SHADE, NOT SHADE NOT RESPECTIVE AND RESPECTIVE SEE FEAT. DRIVES SEE FEAT. DRIVES SCHALLER SEED SEE FEAT. DRIVES SEE FEAT. DRIVES SE	12. ALL CONDULT, PIPES, FI MUST BE CONCEALED L PENETRATE STRUCTURA 13. PROVIDE BLOCKING AS	LE SPRINKLER PIPES & OTHER UTILITES J.N.O. CONDUIT & PIPES SHALL NOT AL BEAMS, U.N.O. REQUIRED FOR DUCTS, PIPES & LIGHT
1. EXCEPT WHERE BIG BRACES ARE USD TO UNIT LATEADS SHALL HAVE A.2" OVERSUE RING SLEEVE, DR ADAPTER THROUGH TH CEUNCIN TO DRUSS AND OTER REMETANDON ROLLER STRUCTURE ALL DISENSE THAN 300 SQUARE INFORMATION OF DRUSS AND DELING SUSPENSION SSTRUCTURES SAMELES THAN 300 SQUARE INCESS WHERE DACUE IN GYSUM BOADD CEUNG SUSPENSION SSTRUCTURE LACGSS SYMPLIES THAN 300 SQUARE INCESS WHERE DACUE IN GYSUM BOADD CEUNG SUSPENSION SSTRUCTURE IN COLUMN OF THISE DECEMS. 18 AUG BOTTOM OF DISEID CEUNG WITH DOA IN JURGES THAN SHARE INCISING, WHERE DACUES WITH BOTTOM OF ROLLER SHARE INCISING, WHERE DACUES STRUCTURED OF THISE DECEMS. 19 HARD IN CEUNGS TO TO ILOW TAKE BRITOW, RATED CEUNS STRUCTURED OF THISE DECEMS. 19 HARD IN CEUNGS SOLON SHARE THAN 300 SQUARE INCESS SCHEMENT OF THISE DECEMS. 10 HAR JODS GUARE THAN 300 SQUARE INCESS SCHEMENT OF THISE DECEMS. 10 HAR JODS SGUARE THAN 300 SQUARE INCESS SCHEMENT OF THISE DECEMPS. 10 HAR JODS SGUARE THAN 300 SQUARE INCESS SCHEMENT OF THISE DECEMPS. 10 HAR JODS SGUARE THAN 300 SQUARE INCESS SCHEMENT OF THISE DECEMPS. 10 HAR JODS SGUARE THAN 300 SQUARE THAN 300 SQUARE INCESS SCHEMENT OF THISE DECEMPS. 10 HAR JODS SGUARE THAN 300 SQUARE	FIXTURES. 14. LIGHTING, MECHANICA REFERENCE AND COORI ELECTRICAL AND MECH INFORMATION.	L, A/V, AND SPRINKLERS SHOWN FOR DINATION ONLY. SEE RESPECTIVE ANICAL DRAWINGS FOR MORE
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LIGHTING FIXTURE LEGEND: 2X4 RECESSED DIRECT/INDIRECT DIRECT/INDIRECT SEE PLAN UNFAR LED LIGHT WITH DROP LINS COVE LIGHT DIRECT/RESED DUAL ROLLER SHADE, RECESSED DUAL ROLLER SHADE, NECESSED RECESSED PROJECTOR SCREEN RECESSED PROJECTOR SCREEN REM CELLING MOUNTED SPEAKER REM CELLING MOUNTED PROJECTOR, OFCI. PROVIDE PROJECTOR POST AND MOUNT, SEE G/AS02 REM CIG. MOUNTED PROJECTOR, OFCI. PROVIDE PROJECTOR MOUNTED SMOKE DETECTOR REM CIGN MOUNTED SMOKE DETECTOR REM CIGN MOUNTED SMOKE DETECTOR REM CORD REEL RECEPTACLE HUNG FROM STRUCTURE ABOVE, SEE E/ER02 REM CORD REEL RECEPTACLE HUNG FROM STRUCTURE ABOVE, SEE E/ER02 REM CORD REEL		
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○ □ RECESSED LIGHTING, S.E.D. ✓ SEE PLAN LINEAR LED LIGHT WITH DROP ✓ SEE PLAN COVE LIGHT ○ □ ROLLER SHADE, RECESSED ○ □ ROLLER SHADE, RECESSED ○ □ ROLLER SHADE, IN WINDOW FRAME ■ RECESSED PROJECTOR SCREEN ■ RECESSED PROJECTOR SCREEN ■ ■ ■ CEILING MOUNTED LIGHTING CONTROUSE ■ ■ ■ CEILING MOUNTED PROJECTOR SCREEN ■ ■ ■ ● ● ● ■ ■ ■ ■ ■ ■ ■ ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● <td< th=""><th></th><th>PENDANT LIGHTING, S.E.D.</th></td<>		PENDANT LIGHTING, S.E.D.
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ROLLER SHADE, RECESSED DUAL ROLLER SHADE, RECESSED ROLLER SHADE, IN WINDOW FRAME RECESSED PROJECTOR SCREEN Image: Second Street S		LINEAR LED LIGHT WITH DROP LENS COVE LIGHT
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RECESSED PROJECTOR SCREEN Image: Set Elect. DRWGS. Image:		DUAL ROLLER SHADE, RECESSED ROLLER SHADE, IN WINDOW FRAME
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Image: CLG. MOUNTED PROJECTOR, OFCI. PROVIDE PROJECTOR POST AND MOUNT, SEE G/E802 Image: Click of the second secon	s S	SEE ELECT. DRWGS.
Image: Solution of the system of	PR	CLG. MOUNTED PROJECTOR, OFCI. PROVIDE PROJECTOR POST AND MOUNT, SEE G/E802
Image: Cord reel receptacle hung from structure above, see e/e802 Image: Cord reel receptacle hung from structure above, see e/e802 Image: Cord reel receptacle hung from structure above, see e/e802 Image: Cord reel receptacle hung from structure above, see e/e802 Image: Cord reel receptacle hung from structure above, see e/e802 Image: Cord reel receptacle hung from structure above, see e/e802 Image: Cord reel receptacle hung from structure above, see e/e802 Image: Cord reel receptacle hung from structure above, see e/e802 Image: Cord reel receptacle hung from structure above, see e/e802 Image: Cord reel receptacle hung from structure above, see e/e802 Image: Cord reel receptacle hung from structure above, see e/e802 Image: Cord reel receptacle hung from structure above, see e/e802 Image: Cord reel receptacle hung from structure above, see e/e802 Image: Cord reel receptacle hung from structure above, see e/e802 Image: Cord reel receptacle hung from structure above, see e/e802 Image: Cord reel receptacle hung from structure above, see e/e802 Image: Cord receptacle hung from structure hung from s	⊗ ⊗ ⊗	EXIT SIGN, SEE ELECT. DRWGS. CEILING MOUNTED SMOKE DETECTOF
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		(092900) GYPSUM BOARD CEILING, GB-1; SEE SHEETS A574. GB-2 SEE S902 FOR 5/8' GYP BD CEILING ON STEEL JOIST (095113) - ACOUSTICAL PANEL CEILING,

PANEL CEILING , PAPC-1, SEE SHEET

EXPOSED TO STRUCTURE

A577

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REFLECTED CEI	LING PLAN SHEET NOTES:
ALL CEILING AND SOFFI FLOOR ELEVATION (EL. CEILING GRID TO BE CE CENERALLY ONLY CELL	T HEIGHTS ARE GIVEN ABOVE FINISHED 0'-0") NTERED IN ROOM, U.N.O.
 SERVERALLY ONEY CELLI THIS PLAN. COORDINA INFORMATION. SOME OR ALL SPRINKLE 	TE WITH MEP PLANS FOR ADDITIONAL
COORDINATE WITH ME INFORMATION. SPRINK TILE, TYP.	P DRAWINGS FOR ADDITIONAL (LER HEADS TO BE CENTERED ON CEILING
 VERIFY LOCATIONS OF A DRAWINGS. COORDINA ARCHITECT PRIOR TO IN RATINGS MUST MATCH LIGHT FIXTURES TO BE 	ALL CEILING ACCESS PANELS WITH MEP .TE LOCATIONS OF PANELS WITH ISTALLATION. ACCESS PANEL FIRE I CEILING ASSEMBLY FIRE RATINGS. CENTERED AND SPACED EQUALLY WITHIN
ROOM, U.N.O. 7. LIGHT FIXTURES ARE SH ONLY COORDINATE WI	IOWN FOR DIMENSIONAL PURPOSES FH ELECTRICAL DRAWINGS FOR FIXTURE
DESIGNATIONS. 8. IF PROJECT INCLUDES F LOCATED IN RATED CEII	IRE RATED CEILINGS, LIGHT FIXTURES LING ASSEMBLIES ARE TO BE TENTED OR MATCH THE CEILING
 ALL SOFFITS TO BE PAIN SEE A/V DRAWINGS FOI CENTER SMOKE DETECT 	ITED, U.N.O. R AUDIO VISUAL EQUIPMENT. FORS AND SECURITY DEVICES IN ROOM
AREA OR CEILING TILE, 12. ALL CONDUIT, PIPES, FI MUST BE CONCEALED U	U.N.O. RE SPRINKLER PIPES & OTHER UTILITIES J.N.O. CONDUIT & PIPES SHALL NOT
 PROVIDE BLOCKING AS FIXTURES. LIGHTING, MECHANICA 	REQUIRED FOR DUCTS, PIPES & LIGHT
REFERENCE AND COOR ELECTRICAL AND MECH INFORMATION. 15 EXCEPT WHERE RIGID R	DINATION ONLY. SEE RESPECTIVE ANICAL DRAWINGS FOR MORE
DEFLECTIONS, SPRINKLI SHALL HAVE A 2" OVER THROUGH THE CEILING OF AT LEAST 1" IN ALL I 16. SEE REFLECTED CEILING	TILE TO ALLOW FOR FREE MOVEMENT TILE TO ALLOW FOR FREE MOVEMENT DIRECTIONS PER ASCE 7-13.5.6.2.2.E.
SHADE TYPES. 17. WHERE ACCESS PANELS OCCUR, DO NOT USED SYSTEMS. ALL ACCESS INCHES WHERE OCCUR SYSTEMS SHALL HAVE F LABELS COMPLYING WI 18. ALIGN BOTTOM OF FIN SHADE HOUSING, WHE 19. HARD LID CEILINGS TO TO HAVE JOISTS. GB-2 T STRUCTURAL DETAILS C	G LARGER THAN 300 SQUARE INCHES GYPSUM BOARD CEILING SUSPENSION PANELS SMALLER THAN 300 SQUARE IN GYPSUM BOARD CEILING SUSPENSION PERMANENTLY ATTACHED WARNING TH DSA IR 25-3.4.3. ISHED CEILING WITH BOTTOM OF ROLLER RE OCCURS. FOLLOW TABLE BELOW. RATED CEILINGS TO FOLLOW CEILING JOIST SIZE PER DN S902.
	N 3302.
LIGHTING	G FIXTURE LEGEND:
	2X4 RECESSED DIRECT/INDIRECT
	PENDANT LIGHTING, S.E.D.
SEE PLAN	LINEAR LED LIGHT WITH DROP
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	ROLLER SHADE, RECESSED DUAL ROLLER SHADE, RECESSED
	ROLLER SHADE, IN WINDOW FRAME RECESSED PROJECTOR SCREEN
DS M	CEILING MOUNTED LIGHTING CONTRO SEE ELECT. DRWGS.
(S) (PR)	CEILING MOUNTED SPEAKER CLG. MOUNTED PROJECTOR, OFCI.
& ⊗ ⊗	EXIT SIGN, SEE ELECT. DRWGS.
•	CEILING MOUNTED SMOKE DETECTOR
	CORD REEL RECEPTACLE HUNG FROM STRUCTURE ABOVE, SEE E/E802
SEE PLAN	ACCESS PANEL, SEE 6/A574
	MECHANICAL DIFFUSER, SEE MECH. DRWGS.
Ø	FIRE SPRINKLER HEAD, SEE 3/A573 & FIRE PROTECTION DRWGS.
M.	ATERIAL LEGEND:
	(092900) GYPSUM BOARD CEILING, GB-1; SEE SHEETS A574. GB-2 SEE S902 FOR 5/8" GYP BD CEILING ON STEEL JOIST (095113) - ACOUSTICAL PANEL CEILING, APC-1; SEE SHEETS A571, A572, A573
	(095125) - PERFORATED ACOUSTICAL PANEL CEILING , PAPC-1, SEE SHEET A577
	EXPOSED TO STRUCTURE

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Image: Second second	13 12 11 10			 3 2 ENLARGED PLANS & ELEVATIONS SHEET N A. DIMENSIONS ARE MEASURED TO THE FINISH FACE, UNLESS NOTED OTHERWISE. B. REFER TO SHEETS A002 & A003 FOR ACCESSIBILITY AND MOUNTING HEIGHTS AND LOCATIONS. C. REFER TO SHEETS A111 - A113 FOR OVERALL INTERIOR DIMENSIONS. REFER TO SHEET A502 FOR PARTITION TYPES. REFER TO SHEET A512 FOR DOOR SCHEDULE AND DOOR TYPES. REFER TO SHEET A523 FOR INTERIOR WINDOW TYPES. REFER TO SHEET A523 FOR INTERIOR WINDOW TYPES. REFER TO SHEET SAPO1 & A902 FOR FINISH LEGEND AND SCHEDULE. DOOR AND WINDOW FRAMES TO BE PAINTED TO MATCH ADJACENT WALL COLOR. DOORS TO BE WD-1, UNLESS NOTED OTHERWISE. DOSNED FURNITURE AND EQUIPMENT SHOWN FOR REFERENCE ONLY, N.I.C. M. ELECTRICAL, FIRE ALARM, A/V DEVICES SHOWN FOR REFERENCE ONLY, REFER TO ALCATION. REFER TO SHEET SAGIS FOR INSTALLATION. REFER TO SHEET SAGIS FOR INSTALLATION. GLASS WITH DESIGNATION, "FULLY TEMPERED GLAZING", TO MEET SAFETY GLAZING", TO MEET SAFETY GLAZING REQUIREMENTS PER CBC 2406. OPERABLES JERCH SOLES AND A SMOKE DENSITY INDEX OF 450 OR LESS, PER CBC SECTION 803. KEYED NOTES - ENLARGED PLAN & ELEVATION TO MEET SAFETY GLAZING REQUIREMENTS PER CBC 2406. OPERABLE PARTITIONS TO BE RATED CLASS A, WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DENSITY INDEX OF 450 OR LESS, PER CBC SECTION 803. KEYED NOTES - ENLARGED PLAN & ELEVATION TO MEET SAFETY GLAZING", TO MEET SAFETY GLAZING REQUIREMENTS PER CBC 2406. OPERABLE PARTITIONS TO BE RATED CLASS A, WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DENSITY INDEX OF 450 OR LESS, PER CBC SECTION 803. KEYED NOTES - ENLARGED PLAN & ELEVATION TO MEET SAFETY GLAZING REQUIREMENTS PER CBC 2406. OPERABLE PARTITIONS TO BE RATED CLASS A, WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DENS
1/4 - 1 -0	DPLAN - BCS LEARNING SPACE NO 4	ENLARGED PLAN - BCS LEARNING SPACE NO 1, 2 & 3	<u> </u>	 FIXED MODULAR MARKERBOARD, 4'-0"H X 6'-0"W, CUSTOM H FIXED MODULAR MARKERBOARD, 4'-0"H X 5''-0"W, CUSTOM H FIXED MODULAR MARKERBOARD, 4'-0"H X 4'-0"W, CUSTOM H REMOVABLE MARKERBOARDS ON METAL TRACK, 2'-0"H X 1'-6 FUTURE MAKERBOARD, PROVIDE BACKING PER BACKING PLAT SCHEDULE FUTURE LOCATION OF ACOUSTIC WALL PANELS, PROVIDE BAC BUIT-IN CASEWORK, REF TO CASEWORK SHEETS CONTINUOUS BACKING AT CASEWORK, TYP. SEE CABINET ATTACHMENT DETAILS FOR LOCATION. LATERAL BRACING FRAME, 05 1213 AESS WITH HIGH PERFORI COATING. DECK-MOUNTED, S.S. EYEWASH EXHAUST HOOD WITH DUCT UP TO ROOF, REFER TO MECH. D EXTERIOR WALL HYDRANT, REFER TO PLUMBING DRAWINGS FURNITURE, N.I.C. OFCI. COMPUTER AND MONITOR INTERFACE ABOVE CASEWORK EQUIPMENT, OFOI. REF TO ELECTRICAL DWG FOR POWER REQUIREMENTS PRIVACY FILM, 50"H MANUAL ROLLER SHADE, IN WINDOW FRAME OPERABLE PANEL PARTITION WITH FABRIC ACOUSTIC PANELS CLASS "A" FLAME SPREAD INDEX OF 0-25 AND SMOKE DEVELO INDEX OF 0-125, UNDER ASTM E84. GUARDRAIL @ LATERAL BRACING FRAM ASSISTIVE LISTENING SIGNAGE, REFERENCE SHEET A1000 MOVEABLE WHITE BOARDS GLAZE D OPENING TO BE 45 MIN RATED PER THE WALL'S CONSTRUCTION RATING, REF CRC 707.6 & SECTION 716 SHAFT ENCLOSURE FOR EXHAUST DUCT UP TO ROOF. SHAFT ENCLOSURE TO MEET THE REQUIREMENTS OF CBC SECTION 7 FILING CABINETS, N.I.C. OFCI. PROVIDE BACKING PER BACKING PLA CONSTRUCTION RATING, REF CBC 707.6 & SECTION 716
	1/4" = 1'-0"	1/4" = 1'-0"		SCHEDULE PER DETAIL 3/A561

BCS LEARNING SPACE 4 - EAST WALL	7	TH WALL
1/4" = 1'-0"		1/4" = 1'-0"

TH WALL	3	BC	S LEARNING SPAC	CE 1, 2 & 3 - EAS	TWALL	2	BCS L	EARNING SPAC	E 1, 2 & 3 - M	AIN TEACHING	6 WALL	1
1/4" = 1'-0"					1/4" = 1'-0"						1/4" = 1'-0"	
13	12	2 11	10	9	8	7	6	5	4	3	2	

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7	6		5	4	3	2
	0				5 E A B C D E F. G H I. J. K L. M N 1 2	 DIMENSIONS ARE MEASURED TO THE FINISH FACE, UNLESS NOTED OTHERWISE. REFER TO SHEETS A002 & A003 FOR ACCESSIBILITY AND MOUNTING HEIGHTS AND LOCATIONS. REFER TO SHEETS A111 - A113 FOR OVERALL INTERIOR DIMENSIONS. REFER TO SHEET A502 FOR PARTITION TYPES. REFER TO SHEET A511 - A512 FOR DOOR SCHEDULE AND DOOR TYPES. REFER TO SHEET A523 FOR INTERIOR WINDOW TYPES. REFER TO SHEET SERIES A620 FOR CASEWORK STANDARDS AND DETAILS. REFER TO SHEET SAIO1 & A902 FOR FINISH LEGEND AND SCHEDULE. ALL WALLS ARE PT-1, UNLESS NOTED OTHERWISE. DOOR AND WINDOW FRAMES TO BE PAINTED TO MATCH ADJACENT WALL COLOR. DOORS TO BE WD-1, UNLESS NOTED OTHERWISE. DASHED FURNITURE AND EQUIPMENT SHOWN FOR REFERENCE ONLY, N.I.C. ELECTRICAL, FIRE ALARM, A/V DEVICES SHOWN FOR REFERENCE ONLY, REFER TO ELECTRICAL DRAWINGS AND MOUNTING HEIGHT SHEET FOR LOCATION. REFER TO ELECTRICAL DRAWINGS FOR RECESSED FLOOR CORE RECEPTABLES [FCR] SHOWN FOR LOCATIONS ONLY, COORDINATE FINAL LOCATION WITH ARCHITECT AND FURNITURE SUPPLIER BEFORE INSTALLATION. GLASS WITH DESIGNATION, "FULLY TEMPERED GLAZING", TO MEET SAFETY GLAZING REQUIREMENTS PER CBC 2406. OPERABLE PARTITIONS TO BE RATED CLASS A, WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DENSITY INDEX OF 450 OR LESS, PER CBC SECTION 803.
					2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	A ELECTRICAL DRAWINGS SWITCHES TO CONTROL RECESSED PROJECTION SCREEN, AND LIGHTING SCENES AT SINGLE ROUGH-IN LOCATION. BUILT-IN INSTRUCTOR DESK, REFER TO ENLARGED PLAN FIXED MODULAR MARKERBOARD, 4'-0"H X 8'-0"W, CUSTOM H FIXED MODULAR MARKERBOARD, 4'-0"H X 8'-0"W, CUSTOM H FIXED MODULAR MARKERBOARD, 4'-0"H X 4'-0"W, CUSTOM H FIXED MODULAR MARKERBOARD, 4'-0"H X 4'-0"W, CUSTOM H FUED MODULAR MARKERBOARD, 4'-0"H X 4'-0"W, CUSTOM H REMOVABLE MARKERBOARD, PROVIDE BACKING PER BACKING PLA' SCHEDULE FUTURE MAKERBOARD, PROVIDE BACKING PER BACKING PLA' SCHEDULE FUTURE LOCATION OF ACOUSTIC WALL PANELS, PROVIDE BAC BACKING PLATE SCHEDULE BUILT-IN CASEWORK, REF TO CASEWORK SHEETS CONTINUOUS BACKING AT CASEWORK, TYP. SEE CABINET ATTACHMENT DETAILS FOR LOCATION. LATERAL BRACING FRAME, 05 1213 AESS WITH HIGH PERFORI COATING. DECK-MOUNTED, S.S. EYEWASH EXHAUST HOOD WITH DUCT UP TO ROOF, REFER TO MECH. D EXTERIOR WALL HYDRANT, REFER TO PLUMBING DRAWINGS FURNITURE, N.I.C. OFCI. COPIER/ PRINTER, OFOI COMPUTER AND MONITOR INTERFACE ABOVE CASEWORK EQUIPMENT, OFOI. REF TO ELECTRICAL DWG FOR POWER REQUIREMENTS
					31	SCHEDULE PER DETAIL 3/A561 MAIL BOXES, N.I.C. OFCI. PROVIDE BACKING PER BACKING PLA SCHEDULE PER DETAIL 3/A561 RATED ASSEMBLY LEGEND 1-HOUR FIRE RATED ASSEMBLY SMOKE BARRIER
9 8	7	11 A561 TYF	> 	6		
		(10 2226) OPERABLE PARTITION SIDE)	I (LATCH			
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			1/4" = 1'-0	11		

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					LEAVES			DC	OR SCH	1EDUL	E - LE\ FRAMES	/EL 01					DOOR SCHEDULE REMARKS:
	MARK FUNCT		ТҮРЕ	DIMENSIONS WIDTH	HEIGHT	FINISH	TES FINISH 2 (GLASS) FRAM	ИЕ ТҮРЕ	DET	TAILS		FINISHES	FINISH 2	IARDWARE SET FIRE RATIN	G REMARKS REV	SION MARK	 CARD READER ADA PUSH BUTTON ON WALL ADA PUSH BUTTON ON BOLLARD
	100A Exterior	LEAVES LEA 2 L30 5 130	AF 1 LEAF 2 30AL L30AL 33AL 33	LEAF 1 LEAF 2 3' - 0" 3' - 0" 3' - 3 1/2" 3' - 0"	8' - 0" 9' - 10 1/2"	1 3/4" AL-1 1 3/4" AL-1	GL-1 GL-3	6/A525 2/A525	AD JA 10/A525 9/A525 5	MB 9/A53	SILL 4 AI 5 AI	L-1		MINUTES 01A 0 09A 0	1,3 5	100A 100R	 4. 08 1376 FOLDING METAL WALL 5. 08 3213 ALUMINUM-FRAMED SLIDING GLASS DOORS 6. NOMINAL SIZES LISTED IN SCHEDULE, VERIFY HEIGHT
Р	1000Extension101AInterior101BInterior	5 L37 1 L30	37AL 2 30AL 32AL 2	2' - 8 3/4" 3' - 0"	9' - 1 7/8" 8' - 0" 7' - 10 1/2"	1 3/4" AL-1 1 3/4" AL-1 1 3/4" AL-1	GL-3 GL-3 GL-3	3/A527 3/A526	1/A527, 5/ 5/A527, 8/	/A527 2/A52 /A526 2/A52	7 AI 6 AI 26	L-1 L-1		07 0 08 0	4 6	101A 101B	AND WIDTH IN SHOP DRAWINGS 7. SWING DOOR, REFER TO CASEWORK SHEETS 8. MEN'S RESTROOM, SEE SHEET A1000,
	103Interior104Interior105AInterior	2 L32 2 L32 1 L30	32AL 3 30AL 2001	3' - 2 5/8" 3' - 0"	7' - 10 5/8" 8' - 0"	1 3/4" AL-1 1 3/4" AL-1 1 3/4" AL-1	GL-3 GL-3 GL-2	15/A526 3/A526	10/A526 8/A526, 12	2/A526 2/A52	26 AI 6 AI	 L-1 L-1		09 0 08 0		103 104 105A	 DETAIL ST-B2, FOR CODE REQUIRED SIGNAGE 9. WOMEN'S RESTROOM, SEE SHEET A1000, DETAIL ST-C2 FOR CODE REQUIRED SIGNAGE 10. DOOD INTO SUSCEMENT AND AND AND AND AND AND AND AND AND AND
	105BInterior106AInterior106BInterior	2 L32 1 L21 1 L21	32AL 3 1WD 1 1WD 1	3' - 0" 3' - 0"	7' - 10 1/2" 7' - 0" 7' - 0"	1 3/4" AL-1 1 3/4" WD 1 3/4" WD	GL-3 GL-4 FC GL-4 FC	15/A526 00HM 2/A511 00HM 2/A511	11/A526 1/A511 1/A511	6/A51 6/A51	26 Al 1 Fi 1 Fi	L-1 nishes - Interior - PT-1 nishes - Interior - PT-1	 	09 0 10 0 10 0	6	105B 106A 106B	10. DOOR INTO ELECTRICAL CONTROL PANEL ROOMS TO HAVE EXTERIOR SIGNAGE. REFER TO SHEET A1000 AND A1001 FOR SIGNAGE INFORMATION. REFER TO SPEC
	107AInterior107BInterior108AInterior	1 L21 1 L21 1 L21	1WD 1WD 1WD 1WD	3' - 0" 3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" WD 1 3/4" WD 1 3/4" WD	GL-4 FC GL-4 FC GL-4 FC	OOHM 2/A511 OOHM 2/A511 OOHM 2/A511	1/A511 1/A511 1/A511	6/A51 6/A51 6/A51	1 Fi 1 Fi 1 Fi	nishes - Interior - PT-1 nishes - Interior - PT-1 nishes - Interior - PT-1		10 0 10 0 10 0		107A 107B 108A	 FIRE DOOR LABELING REQUIREMENTS SHALL CONFORM WITH CBC 716.5.7.1 REFER TO SPEC SECTION 08 1116 FOR PATED ERAMES
N	108BInterior109AInterior109BExterior	1 L21 2 L00	1WD	3' - 0" 3' - 0" 2' - 0" 2' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" WD 1 3/4" WD 1 2/4" AL 2	GL-4 FC FC	00HM 2/A511 00HM 2/A511 10/A524	1/A511 1/A511	6/A51 6/A51	1 Fi 1 Fi	nishes - Interior - PT-1 nishes - Interior - PT-1		10 0 11 60 02 0		108B 109A	12. REFER TO SPEC SECTION 08 1116 FOR RATED FRAINES AND SECTION 08 8100 FOR RATED GLAZING 13. MAGNEVIC HOLD OPEN 14. PROVIDE 180 DEGREE HINGE FOR MAGNETIC HOLD
	105BExterior110AExterior110BExterior	2 LSC 1 LOO 2 LOO	OHM LOOHM	3' - 0" 3' - 0" 3' - 0" 3' - 0"	7' - 10" 7' - 10"	1 3/4AL-21 3/4Finishes - Exterior - PT-71 3/4Finishes - Exterior - PT-7	Finishes - Exterior - PT-7 FC FC	10/A334 00HM 14/A534 00HM 14/A534 00HM 14/A534	1/A538 1/A538	13/A5 13/A5	34 Fi 34 Fi 34 Fi	2 nishes - Exterior - PT-7 nishes - Exterior - PT-7		02 0 30 0 31 0	1 1 1, 10 1	1109B 110A 110B	OPEN.
	111Exterior112AInterior112BExterior	2 L30 1 L00 2 L00	BOAL L30AL OHM OHM L00WD	3' - 3" 3' - 3" 3' - 0" 3' - 0" 3' - 0"	7' - 9" 7' - 0" 7' - 10"	1 3/4" AL-2 1 3/4" Finishes - Interior - PT-1 1 3/4" Finishes - Exterior - PT-7	GL-1 FC FC	14/A534 DOHM 2/A511 DOHM 14/A534	1/A538 1/A511 1/A538	13/A5 6/A51 13/A5	34 Al 1 Fi 34 Fi	L-2 nishes - Interior - PT-1 nishes - Exterior - PT-7	 	01 0 12 0 05 0	1, 2 1 1 1	111 112A 112B	_
	113AInterior113BInterior114AInterior	1 L21 1 L30	1WD	3' - 0" 3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" WD 1 3/4" AL-1 1 3/4" WD	GL-4 FC GL-6 FC GL-4 FC	DOHM 2/A511 DOHM 11/A527 DOHM 10/A511	1/A511 10, 13/A52 9/A511	6/A52 27 9/A52 6/A52	1 Fi 7 Fi 1 Fi	nishes - Interior - PT-1 nishes - Interior - PT-1 nishes - Interior - PT-1		10 0 13 45 10 45		113A 113B 114A	
	114AInterior114BExterior114CInterior114CInterior	2 L30 1 L21	IWD L30AL 1WD	3' - 0" 3' - 0" 3' - 0"	7' - 9" 7' - 0"	1 3/4" WD 1 3/4" WD 1 3/4" WD	GL-1 GL-1 GL-4 FC	10/A531 00HM 10/A511	2/A538 9/A511	9/A53 6/A53	4 Al 1 Fi	L-2 nishes - Interior - PT-1		10 45 03 0 13 45	2	114X 114B 114C	
<u>M</u>	115AInterior115BInterior115CExterior	1 L21 2 L21 2 L30	1WD L00WD 30AL L30AL	3' - 0" 3' - 0" 1' - 6" 3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 9"	1 3/4" WD 1 3/4" WD 1 3/4" AL-2	GL-4 FC GL-4 FC GL-1 FC	DOHM 10/A511 DOHM 2/A511 10/A534	9/A511 1/A511 2/A538	6/A52 6/A52 3/A53	1 Fi 1 Fi 5 Al	nishes - Interior - PT-1 nishes - Interior - PT-1 L-2	 	14 45 15 45 03 0	2	115A 115B 115C	AL-1 ANODIZED CLEAR ALUMINUM
	116Interior118Interior118AInterior	1 L00 1 L05 1 L00	0WD 5WD 0WD	3' - 0" 3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" WD 1 3/4" WD 1 3/4" WD	FC	OOHM 2/A511 OOHM 2/A511 OOHM 2/A511	1/A511 1/A511 1/A511	6/A51 6/A51	1 Fi 1 Fi Fi	nishes - Interior - PT-1 nishes - Interior - PT-1 nishes - Interior - PT-1		16 0 17 0 18 0	1 8 	116 118 118A	AL-2 DARK BRONZE ALUMINUM WD WOOD HM HOLLOW METAL
	119Interior120Interior12105 +	1 L05 1 L00	5WD 0HM	3' - 0" 3' - 0"	7' - 0" 7' - 0"	1 3/4" WD 1 3/4" Finishes - Interior - PT-3	F(DOHM 2/A511 DOHM 2/A511 DOHM 2/A511	1/A511 1/A511 1/A511	6/A51	1 Fi	nishes - Interior - PT-1 nishes - Interior - PT-3		17 0 16 0	9	119 120	NF NO FRAME (CASEWORK SWING DOOR) GL-1 INSULATING GLASS GL-2 INSULATING GLASS WITH FRIT
	121BExterior122Exterior123Interior	1 L00 2 L30 2 L32	0HM 30AL L30AL 32AL 3	3' - 0" 3' - 0" 3' - 0" '' - 2 5/8"	7' - 10" 7' - 9" 6' - 10 5/8"	1 3/4" Finishes - Exterior - P1-7 1 3/4" AL-2 1 3/4" AL-1	GL-3	OOHM 14/A534 10/A534 15/A526	9/A534 9/A526	13/A5 10/A5 15/A5	34 Fi 25 Al 26 Al	nishes - Exterior - PT-7 L-2 L-1	Finishes - Exterior - PT-7	06 60 01 0 09 0	1 1, 2 6	121B 122 123	GL-3 INTERIOR 3/8" LAMINATED GLASS GL-4 INTERIOR 1/4" HEAT TREATED GLASS GL-5 INTERIOR 3/8" HEAT TREATED GLASS
L	124Interior125Interior126Interior	2 L32 2 L32 2 L32 2 L32	32AL 3 32AL 3 32AL 3	3' - 2 5/8" '' - 2 5/8" '' - 2 5/8"	6' - 10 5/8" 6' - 10 5/8" 6' - 10 5/8"	1 3/4" AL-1 1 3/4" AL-1 1 3/4" AL-1	GL-3 GL-3 GL-3	15/A526 15/A526 15/A526	9/A526 9/A526 9/A526	15/A5 15/A5 15/A5	26 Al 26 Al 26 Δι	L-1		09 0 09 0 09 0 09 0	6 6 6	124 125 126	GL-6 INTERIOR 1-1/8" FIRE-RATED GLASS PT-1 INTERIOR PAINT, REFER TO FINISH LEGEND PT-3 INTERIOR PAINT, REFER TO FINISH LEGEND
	120Interior127Interior128Interior	2 L32 2 L32 2 L32	32AL 3 32AL 3	s' - 2 5/8" s' - 2 5/8"	6' - 10 5/8" 6' - 10 5/8"	1 3/4" AL-1 1 3/4" AL-1 1 3/4" AL-1	GL-3 GL-3	15/A526 15/A526	9/A526 9/A526	15/A5	26 Al 26 Al	L-1 L-1		09 0 09 0 09 0	6 6 6	127 128	PI-7 REFER TO FINISH LEGEND
	129Interior130Interior131Interior	2 L32 2 L32 2 L32 2 L32	32AL 3 32AL 3 32AL 3	2 - 2 5/8 2 - 2 5/8" 2 - 2 5/8"	o - 10 5/8" 6' - 10 5/8" 6' - 10 5/8"	1 3/4" AL-1 1 3/4" AL-1 1 3/4" AL-1	GL-3 GL-3	15/A526 15/A526 15/A526	9/A526 9/A526 9/A526	15/A5 15/A5 15/A5	26 Al 26 Al 26 Al	L-1 L-1		03 0 09 0 09 0	6 6 6	129 130 131	
	132Interior133Exterior134Interior	2 L32 2 L30 1 I21	32AL 3 0HM L30HM 1WD	3' - 2 5/8" 3' - 0" 3' - 0"	6' - 10 5/8" 8' - 0" 7' - 0"	1 3/4" AL-1 1 3/4" AL-1 1 3/4" WD	GL-3 GL-1 GL-4	15/A526 6/A525 00HM 2/A511	9/A526 10/A525 1/A511	15/A5 9/A53 6/A5	26 Al 4 Al 1 Fi	L-1 L-1 nishes - Interior - PT-1		09 0 01 0 19 0	6 1, 2	132 133 134	
к	135AInterior135BExterior	1 L00 2 L30	OWD BOAL L30AL	3' - 0" 3' - 0" 3' - 0" 3' - 0"	7' - 0" 8' - 0"	1 3/4" WD 1 3/4" AL-1	FC GL-1	00HM 2/A511 6/A525	1/A511 5/A539	6/A51 9/A53	1 Fi 4	nishes - Interior - PT-1		32 60 02 0	13	135A 135B	
	136AInterior136BExterior	2 L30	30AL L30AL	3' - 0" 3' - 0" 3' - 0"	7' - 0" 7' - 9"	1 3/4" WD 1 3/4" AL-2	GL-4 FC	2/A511 10/A534	1/A511 10/A525	9/A53	1 Fi 4 Al	nishes - Interior - PT-1 L-2		04 0	1	136A 136B	
								DC	OR SCH	HEDUL	E - LE\	/EL 02					
		NUMBER		DIMENSIONS	LEAVES	FINIS	IES		DET		FRAMES	FINISHES	S н	IARDWARF			_
<u> </u>	MARK FUNCT	ION OF LEAVES LEA	TYPE AF 1 LEAF 2	WIDTH	HEIGHT	THICKNESS FINISH 1	FINISH 2 (GLASS)	ИЕ ТҮРЕ НЕ	AD JA	MB	SILL	FINISH 1	FINISH 2	SET FIRE RATING MINUTES	REMARKS REV	ISION MARK	
	202AInterior202BInterior202CInterior	1 L21 1 L30 1 L21	1WD	3' - 0" 3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" WD 1 3/4" AL-1 1 3/4" WD	GL-4 FC GL-3 GL-4 FC	DOHM 2/A511 7/A526 DOHM 2/A511	1/A511 8/A526 1/A511	6/A51 2/A52 6/A51	1 Fii 6 Al 1 Fii	nishes - Interior - PT-1 1 nishes - Interior - PT-1		10 0 23 0 19 0		202A 202B 202C	-
	203Interior205Interior	1 L00 1 L00	OWD OWD	3' - 0" 3' - 0"	2' - 6" 7' - 0"	1 3/4" WD 1 3/4" WD	F2	NF 21HM 2/A511, 3	 3/A511 3/A511, 4/	/A511 5/A51	Fin Fin Fin Fin Fin Fin Fin Fin Fin Fin	nishes - Interior - PT-1 nishes - Interior - PT-1	 GL-4	22 0 24 0	7	203 205	
	206Interior207AInterior207BInterior	1 L21 1 L21 1 L21	1WD 1WD 1WD 1WD	3' - 0" 3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" WD 1 3/4" WD 1 3/4" WD	GL-4 FC GL-4 FC GL-4 FC	OOHM 2/A511 OOHM 2/A511 OOHM 2/A511 OOHM 2/A511	1/A511 1/A511 1/A511	6/A51 6/A51 6/A51	1 Fii 1 Fii 1 Fii	nishes - Interior - PT-1 nishes - Interior - PT-1 nishes - Interior - PT-1		19 0 10 0 10 0		206 207A 207B	
H	208Interior209Interior210Interior	1 L00 1 L00 1 L00	OWD OWD OHM	3' - 0" 3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" WD 1 3/4" WD 1 3/4" WD	F2 FC GL-4 FC	21HM 2/A511, 3 00HM 2/A511 00HM 2/A511	3/A511 3/A511, 4/ 1/A511 1/A511	/A511 5/A51 	1 Fii Fii Fii	nishes - Interior - PT-1 nishes - Interior - PT-1 nishes - Interior - PT-1	GL-4	21 0 25 0 25 0		208 209 210	_
	211Interior211AInterior211BInterior	1 L21 1 L21	1WD 1001/D	3' - 0" 3' - 0"	7' - 0" 7' - 0"	1 3/4" WD 1 3/4" WD	GL-4 FC GL-4 FC GL-4 FC	2//311 DOHM 2/A511 DOHM 2/A511 DOHM 2/A511	1/A511 1/A511 1/A511	6/A51 6/A51	1 Fii 1 Fii	nishes - Interior - PT-1 nishes - Interior - PT-1		10A 0 10 0		211A 211B	
	212Interior214Interior215Interior	2 L00 2 L00 1 L21	OWD LOOWD OWD LOOWD 1WD	3 - 0 3 - 0 3' - 0" 3' - 0" 3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4 WD 1 3/4" WD 1 3/4" WD	FC FC GL-4 FC	OOHM 2/A511 OOHM 2/A511 OOHM 2/A511 OOHM 2/A511	1/A511 1/A511 1/A511	6/A51 6/A51	1 Fii 1 Fii 1 Fii	nishes - Interior - PT-1 nishes - Interior - PT-1 nishes - Interior - PT-1		20 60 26 0 19 0	1 1	212 214 215	
	216Interior217Interior218Interior	1 L21 1 L21	1WD 1WD 1WD	3' - 0" 3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" WD 1 3/4" WD 1 3/4" WD	GL-4 FC GL-4 FC GL-4 FC	OOHM 2/A511 OOHM 2/A511 OOHM 2/A511	1/A511 1/A511 1/A511	6/A51 6/A51 6/A51	1 Fii 1 Fii 1 Fii	nishes - Interior - PT-1 nishes - Interior - PT-1 nishes - Interior - PT-1		19 0 19 0 19 0		216 217 218	_
G	219Interior221Interior222Interior	1 L00 1 L05	0WD 5WD	3' - 0" 3' - 0"	7' - 0" 7' - 0"	1 3/4" WD 1 3/4" WD 1 3/4" WD	FC	OOHM 2/A511 OOHM 2/A511 OOHM 2/A511	1/A511 1/A511	6/A51 6/A51	1 Fii 1 Fii	nishes - Interior - PT-1 nishes - Interior - PT-1		27 0 17 0	1 8 0	219 221 222	
	222Interior223Interior224Interior	1 L05 1 L00 1 L21	0HM	3 - 0" 3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4 WD 1 3/4" Finishes - Interior - PT-3 1 3/4" WD	FC FC GL-4 FC	OOHM 2/A511 OOHM 2/A511 OOHM 2/A511 OOHM 2/A511	1/A511 1/A511 1/A511	6/A51	1 Fii Fii 1 Fii	nishes - Interior - PT-1 nishes - Interior - PT-3 nishes - Interior - PT-1		17 0 16 0 28 0	9 	222 223 224	_
	225Interior226Interior227Interior	1 L00 2 L30 1 L30	0WD	3' - 0" 3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" WD 1 3/4" AL-2 1 3/4" AL-1	FC GL-3 GL-3	OOHM 2/A511 3/A526 3/A526	1/A511 2/A563, 6/ 8/A526	6/A51 /A563 1/A52	1 Fin Al 6, 2/A526 Al	nishes - Interior - PT-1 L-2 L-1		16 0 29 0 24 0	1 13	225 226 227	
	228Interior229Interior230Interior	2 L32 2 L32	32AL 3 32AL 3	3' - 2 5/8" 3' - 2 5/8" 3' - 0"	6' - 10 5/8" 6' - 10 5/8" 2' - 6"	1 3/4" AL-1 1 3/4" AL-1 1 3/4" WD	GL-3 GL-3	15/A526 15/A526 NE	9/A526 9/A526	15/A5 15/A5	26 Al 26 Al	L-1 L-1 nishes - Interior - PT-1		09 0 09 0 22 0	6 6 7	228 229 230	
F	230Interior231Interior232Interior	1 L30 2 L32	30AL 32AL 3	3' - 0" 3' - 2 5/8"	7' - 0" 6' - 10 5/8"	1 3/4" AL-1 1 3/4" AL-1	GL-3 GL-3	3/A526 15/A526	8/A526 9/A526	1/A52 15/A5	6, 2/A526 AL 26 AL	L-1		22 0 24 0 09 0	6 6	230 231 232	
	233Interior234Interior235Interior	2 L32 2 L32 2 L32	32AL 3 32AL 3 32AL 3	s' - 2 5/8" s' - 2 5/8" s' - 2 5/8"	6' - 10 5/8" 6' - 10 5/8" 6' - 10 5/8"	1 3/4" AL-1 1 3/4" AL-1 1 3/4" AL-1	GL-3 GL-3 GL-3	15/A526 15/A526 15/A526	9/A526 9/A526 9/A526	15/A5 15/A5 15/A5	26 Al 26 Al 26 Al	L-1 L-1 L-1		09 0 09 0 09 0	6 6 6	233 234 235	_
	237Interior238Interior230Interior	1 L21 2 L00	1WD 0WD L00WD	3' - 0" 3' - 0" 3' - 0"	7' - 0" 7' - 0"	1 3/4" WD 1 3/4" WD 1 3/4" WD	GL-4 FC	OOHM 2/A511 OOHM 2/A511 OOHM 2/A511	1/A511 1/A511	6/A51 6/A51	1 Fin 1 Fin	nishes - Interior - PT-1 nishes - Interior - PT-1 nishes - Interior - PT-1		19 0 20A 60 10 0	13, 14 1	237 238	
				5-0	/ -0	13/4 WD			1/7511	O/A33	<u> </u>						
E					LEAVES			DC	OR SCH	IEDUL	E – LE\ frames	/EL 03					
	MARK FUNCT	ION NUMBER OF	ТҮРЕ	DIMENSIONS WIDTH	HEIGHT	FINISH 1	HES FINISH 2 (GLASS) FRAM	ИЕ ТҮРЕ	DET	AILS		FINISHES	S H	IARDWARE SET FIRE RATING	REMARKS REV	ISION MARK	
	301A Interior	LEAVES LEA 1 L30 1 L30	AF 1 LEAF 2	LEAF 1 LEAF 2 3' - 0" 3' - 0"	7' - 0" 7' - 0"		GL-3	7/A526	AD JA 8/A526 8/A526	MB 2/A52	SILL 6 Al	-1		MINUTES 23 0 23 0		301A	_
	301BInterior302Interior303Interior	1 L30	1WD 0WD 0WE	3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" WD 1 3/4" WD	GL-4 FC	2/A511 21HM 2/A511, 3	3/A511 3/A511, 4/	/A511 5/A51	- Al 1 Fin 1 Fin	nishes - Interior - PT-1 nishes - Interior - PT-1	 GL-4	28 0 24 0		303 303	
D	304AInterior304BInterior305AInterior	1 L21 1 L21 1 L21	1WD	3' - 0" 3' - 0" <u>3'</u> - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" WD 1 3/4" WD 1 3/4" WD	GL-4 FC GL-4 FC GL-4 FC	OOHM 2/A511 OOHM 2/A511 OOHM 2/A511	1/A511 1/A511 1/A511	6/A51 6/A51 6/A51	1 Fin 1 Fin 1_ Fin	nishes - Interior - PT-1 nishes - Interior - PT-1 nishes - Interior - PT-1		10 0 10 0 10 0		304A 304B 305A	
	305B Interior 306A Interior	1 L21 1 L21	1WD 1WD 1WD	3' - 0" 3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" WD 1 3/4" WD 1 3/4" WD	GL-4 FC GL-4 FC GL-4 FC	2/A511 00HM 2/A511 00HM 2/A511 00HM 2/A511	1/A511 1/A511	6/A51	1 Fin 1 Fin 1	nishes - Interior - PT-1 nishes - Interior - PT-1 nishes - Interior - PT-1		10 0 10 0		305B 306A	
	306BInterior307Interior309Interior	1 L21 2 L00 2 L00	OWD L00WD OWD L00WD	3' - 0" 3' - 0" 3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" WD 1 3/4" WD 1 3/4" WD	FC	2/A511 00HM 2/A511 00HM 2/A511 00HM 2/A511	1/A511 1/A511 1/A511	6/A51 6/A51 6/A51	1 Fin 1 Fin 1 Fin	nishes - Interior - PT-1 nishes - Interior - PT-1		10 0 20 60 26 0		305B 307 309	
	310Interior311Interior312Interior	1 L21 1 L21 1 L21	1WD 1WD	3' - 0" 3' - 0" <u>3' - 0</u> "	7' - 0" 7' - 0" 7' - 0"	1 3/4" WD 1 3/4" WD 1 3/4" WD	GL-4 FC GL-4 FC GL-4 FC	DUHM 2/A511 DOHM 2/A511 DOHM 2/A511	1/A511 1/A511 1/A511	6/A51 6/A51 6/A51	1 Fin 1 Fin 1_ Fin	nıshes - Interior - PT-1 nishes - Interior - PT-1 nishes - Interior - PT-1		16 0 19 0 19 0		310 311 312	
с	313Interior314Interior	1 L21 1 L00	1WD 0WD 0WD	3' - 0" 3' - 0" 3' - 6"	7' - 0" 7' - 0" 7' - 0"	1 3/4" WD 1 3/4" WD 1 3/4" WD	GL-4 FC	DOHM 2/A511 DOHM 2/A511 DOHM 2/A511	1/A511 1/A511	6/A51 6/A51	1 Fin 1 Fin 1 Fin	nishes - Interior - PT-1 nishes - Interior - PT-1 nishes - Interior - PT-1		19 0 16 0 12 20		313 314 210	
	316Interior317Interior318Interior	1 L00 1 L05 1 L05	500 5WD 5WD 5WD 5WD 5WD 5WD 5WD 5WD 5WD 5WD	3' - 0" 3' - 0"	7' - 0" 7' - 0" 7' - 0"	1 3/4" WD 1 3/4" WD	FC	2/A511 00HM 2/A511 00HM 2/A511 00HM 2/A511	1/A511 1/A511 1/A511	6/A51 6/A51	- (FII 1 Fii 1 Fii	nishes - Interior - PT-1 nishes - Interior - PT-1		12 20 17 0 17 0	8 9	315 317 318	
	319Interior320Interior321Interior	1 L00 1 L00 2 L30	UHM 0WD 0000 0000 0000 0000 0000 0000 0000	3' - 0" 3' - 0" <u>3' - 0</u> " <u>3' - 0</u> "	7' - 0" 7' - 0" 7' - 0"	1 3/4" Finishes - Interior - PT-3 1 3/4" WD 1 3/4" AL-2	FC FC GL-3	инМ 2/А511 00НМ 2/А511 3/А526	1/A511 1/A511 2/A563, 6/	 6/A51 /A563	Fin 1 Fin Al	nıshes - Interior - PT-3 nishes - Interior - PT-1 2		16 0 16 0 29 0	1 13	319 320 321	
	322 Interior 323 Interior	2 L32 1 L30	32AL 3 30AL 3	- 2 5/8" 3' - 0"	6' - 10 5/8" 7' - 0"	1 3/4" AL-1 1 3/4" AL-1 1 3/4" AL-1	GL-3 GL-3	15/A526 3/A526	9/A526 8/A526	15/A5 1/A52	26 Al 6, 2/A526 Al 26	L-1 L-1		09 0 24 0	6 6	322 323	
В	324Interior325Interior326Interior	2 L32 2 L32 2 L32	32AL 3 32AL 3 32AL 3	2 5/8" 1 - 2 5/8"	6' - 9 3/4" 6' - 9 3/4"	1 3/4" AL-1 1 3/4" AL-1	GL-3 GL-3	15/A526 15/A526	9/A526 9/A526 9/A526	15/A5 15/A5	26 Al 26 Al	L-1 L-1		09 0 09 0 09 0	6 6	324 325 326	
-	327Interior328Interior329Interior	1 L30 2 L32 2 L32	32AL 3 32AL 3	3' - 0'' 3' - 2 5/8'' 3' - 2 5/8''	7' - 0" 6' - 10 5/8" 6' - 10 5/8"	1 3/4" AL-1 1 3/4" AL-1 1 3/4" AL-1	GL-3 GL-3 GL-3	3/A526 15/A526 15/A526	8/A526 9/A526 9/A526	1/A52 15/A5 15/A5	o, 2/A526 Al 26 Al 26 Al	L-1 L-1 L-1		24 0 09 0 09 0	6 6 6	<u>327</u> <u>328</u> <u>329</u>	
	330Interior332Interior	2 L32 1 L21	32AL 3 1WD 00WD 100WD	3' - 2' 5/8" 3' - 0" 3' - 0"	6' - 10 5/8" 7' - 0" 7' - 0"	1 3/4" AL-1 1 3/4" WD 1 3/4" WD	GL-3 GL-4 FC	15/A526 00HM 2/A511 00HM 2/A511	9/A526 1/A511	15/A5	26 Al 1 Fin 1	L-1 nishes - Interior - PT-1 nishes - Interior - PT-1		09 0 19 0 20A 60	6 13.14	330 332	_
	333interior334Interior	1 L21	1WD	3'-0"	7' - 0"	1 3/4" WD	GL-4 FC	00HM 2/A511	1/A511	6/A51	1 Fi	nishes - Interior - PT-1		19 0		333	
															REFER TO REVISION COL IN THE DOOR SCHEDULE	JMN FOR ANY CHANGES	
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EXTERIOR REFER TO 5/A535 FOR EXTERIOR DETAILING				
EWA-2 @ 5				
EWA-2@41				
9 8	10	11	12	13









ROOM				FINISH			
	ROOM NAME	FLOOR	BASE	WALL	CEILING	COMMENTS	RE
100	GATHERING SPACE	LVT-1, LVT-2***	MB-1	PT-1 (EXCEPT WEST WALL)*	PFT-1, PAPC-1	*WEST WALL OF COMMUNITY GATHERING SPACE PER BASE BID AND ALTERNATE NO. 2, REFER TO SHEETS A245 AND A245.1 FOR MORE INFORMATION. ***SEE ENLARGED LVT FLOOR PATTERN ON A901	
101	MESA- COLLABORATION ZONE	LVT-1, LVT-2	RB-1	PT-1	APC-1		
102	MESA RECEPTION	CPT-2	RB-1, RB-2	PT-1, PT-3	APC-1		
103	MESA OFFICE	CPT-2	RB-1, RB-2	PT-1, PT-3	APC-1		
104	MESA MEETING ROOM	CPT-2	RB-1	PT-1, PT-3	APC-1		
105	MESA-QUIET COMPUTER ROOM	CPT-2	RB-1	PT-1	APC-1		
106	PHYSICS LAB#1	LVT-2	RB-1, RB-2	PT-1, PT-2	APC-1		
107	PHYSICS LAB#2	LVT-2	RB-1, RB-2	PT-1, PT-2	APC-1		
108	PHYSICS LAB#3	LVT-2	RB-1, RB-2	PT-1, PT-2	APC-1		
109	STAIR 1	LVT-1	MB-1	PT-1 (EXCEPT EAST WALL)*	GB-1, PFT-1	*EAST WALL OF STAIR PER BASE BID AND ALTERNATE NO. 2, REFER TO SHEET A453 FOR MORE INFORMATION.	
110A	FIRE RISER RM.	CONC	RB-1	PT-1	GB-2, PFT-1		1
110B	ELECTRICAL RM.	CONC	RB-1	PT-1	GB-2, PFT-1		1
111	CENTRAL CORRIDOR	LVT-1	MB-1	PT-1, PT-3	APC-1, GB-1, PFT-1		
112	MECHANICAL ROOM	CONC	RB-1	PT-1	-		
113	ENGINEERING LEARNING SPACE	LVT-2	RB-1, RB-2	PT-1, PT-2	APC-1		
114	ENGINEERING SHOP	CONC	RB-1, RB-2	PT-1, PT-2	APC-1		
115	P&E STOCKROOM	LVT-2	RB-1, RB-2	PT-1, PT-2	APC-1		
116	IT	CONC	RB-1	PT-1	-		
117	ELEV.	LVT-2	MB-1	LAM-1	-		
118	MEN'S RESTROOM	FT-1	TB-1	WT-1, PT-1, PT-2	PFT-1		
118A	TRASH ROOM	CONC	RB-1	PT-1	-		
119 120	WOMEN'S RESTROOM JANITOR'S CLOSET	FT-1 CONC	TB-1 RB-1	WT-1, PT-1, PT-2 PT-1, FRP-1	PFT-1 -	FRP WALL PROTECTION TO 4'-0" A.F.F.	
101		0010					
121	CORRIDOR	LVT-1, LVT-2***	MB-1	PT-1 PT-1	- Gb-2, PFT-1	***SEE ENLARGED LVT FLOOR PATTERN ON A901	1
123	OFFICE	CPT-1	RB-1	PT-1. PT-3	APC-1		
124	OFFICE	CPT-1	RB-1	PT-1. PT-3	APC-1		
125	OFFICE	CPT-1	RB-1	PT-1. PT-3	APC-1		
126	OFFICE	CPT-1	RB-1	PT-1, PT-3	APC-1		
127	OFFICE	CPT-1	RB-1	PT-1. PT-3	APC-1		
128	OFFICE	CPT-1	RB-1	PT-1, PT-3	APC-1		
129	OFFICE	CPT-1	RB-1	PT-1, PT-3	APC-1		
130	OFFICE	CPT-1	RB-1	PT-1, PT-3	APC-1		
131	OFFICE	CPT-1	RB-1	PT-1, PT-3	APC-1		
132	OFFICE	CPT-1	RB-1	PT-1, PT-3	APC-1		
133	CENTRAL CORRIDOR	LVT-1	MB-1	CP-1, CP-2, PT-1	APC-1, PAPC-1, PFT-1		1
134	BCS LEARNING SPACE #1	LVT-1	RB-1	PT-1, PT-2	APC-1		
135	STAIR 2	LVT-1**	MB-1	PT-1 (EXCEPT WEST WALL)*	GB-1, PFT-1	*WEST WALL OF STAIR PER BASE BID AND ALTERNATE NO. 2, REFER TO SHEE A453 FOR MORE INFORMATION.	

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		1		FINISH SCHEDULE			FINISH NOTES:
ROOM NUMBER 136	ROOM NAME BUSINESS CENTER COMPUTER ROOM	FLOOR LVT-1	BASE RB-1	FINISH WALL PT-1, PT-2	CEILING APC-1	COMMENTS	 ALL FINISH MATERIALS MUST MEET THE FLAME SPREAD RATINGS PER THE BUILDING CODE. REFER TO INTERIOR ELEVATIONS FOR SPECIFIC MATERIAL LOCATIONS. PAINT ALL EXPOSED DUCTWORK, CONDUIT, ELECTRICAL FOURMENT, ETC TO MATCH ADJACENT SUBSACES
EVEL 02 200	CENTRAL CORRIDOR CIRCULATION	LVT-1, LVT-2***	MB-1	PT-1 (EXCEPT WEST WALL)*	PFT-1, PAPC-1	*WEST WALL OF COMMUNITY GATHERING SPACE PER BASE BID AND ALTERNATE NO. 2, REFER TO SHEETS A245 AND A245.1 FOR MORE INFORMATION. ***SEE ENLARGED LVT FLOOR PATTERN ON A901	 4. PAINT ALL NON-FACTORY FINISHED EXPOSED METAL. 5. REFER TO TYPICAL FLOORING TRANSITION DETAILS FOR ALL FLOORING MATERIALS. 6. FLOORING TRANSITIONS AT DOORS SHOULD BE LOCATED UNDER THE DOOR IN THE CLOSED POSITION, UNLESS NOTED OTHERWISE. 7. CONTRACTOR WILL BE RESPONSIBLE FOR PROTECTING FINISHED FLOORING SURFACES FROM DAMAGE DURING ALL CONSTRUCTION PHASES. 9. DEDIVIDE DURING STRANSITION AT TRANSITIONS FROM CEDAMIC
201	MMLC COMPUTER CLASS	CPT-1 CPT-2	RB-1 RB-1	PT-1 PT-1 PT3	APC-1 APC-1		WALL TILE TO OTHER MATERIAL, UNLESS NOTED OTHERWISE. 9. REFER TO REFLECTED CEILING PLANS FOR CEILING HEIGHTS.
202							10. ALL ELECTRICAL DEVICE COVERS ARE TO BE WHITE UNLESS NOTED OTHERWISE. 11. CARPET PATTERNS TO RUN PARALLEL TO CORRIDOR, UNLESS
203	MMLC GRADING	CPT-2 CPT-2	RB-1	PT-1, PT-3	APC-1 APC-1		NOTED OTHERWISE. 12. ALL HOLLOW METAL DOOR FRAMES TO BE PAINTED TO MATCH ADJACENT WALL COLOR
205 206	MMLC OFFICE STEM TESTING COMPUTER ROOM	CPT-2 CPT-1, CPT-2	RB-1 RB-1	PT-1, PT-3 PT-1	APC-1 APC-1		 13. ALL VERTICAL DRYWALL SURFACES TO BE PAINTED PT-1, UNLESS OTHERWISE SPECIFIED ON PLAN. 14. U.N.O. ALL FLOOR TRANSITIONS VERTICAL. 15. RB-2 TO BE USED AS A BASE AT ALL CASEWORK, UNLESS
207 208	BCS COMPUTER ROOM #1 BCS FACULTY CONF. RM	LVT-2 CPT-2	RB-1 RB-1	PT-1, PT-2 PT-1, PT-3	APC-1 APC-1		NOTED OTHERWISE.
209 210	BCS #1 STORAGE BCS #2 STORAGE	LVT-2	RB-1 RB-1	PT-1 PT-1	APC-1 APC-1		
211	BCS COMPUTER ROOM #2	LVT-2	RB-1	PT-1, PT-2	APC-1		
212	STAIR I			FT-T (EXCEPT EAST WALL)	GD-1, FF1-1	AND ALTERNATE NO. 2, REFER TO SHEET A453 FOR MORE INFORMATION.	
213 214	CENTRAL CORRIDOR MECHANICAL ROOM	LVT-1 CONC	MB-1 RB-1	PT-1, PT-3 PT-1	APC-1, GB-1, PFT-1		
215	MATH LEARNING SPACE #4	LVT-2	RB-1	PT-1, PT-2	APC-1		
217	MATH LEARNING SPACE #2	LVT-2	RB-1	PT-1, PT-2	APC-1		FINISH LEGEND(KEY):
218	IT	CONC	RB-1 RB-1	PT-1, PT-2 PT-1	APC-1		FLOOR TRANSITION
220 221	ELEV MEN'S RESTROOM	LVT-2 FT-1	MB-1 TB-1	LAM-1 WT-1, PT-2	PFT-1		DTL. NO./SHEET NO.
222	WOMEN'S RESTROOM	FT-1	TB-1	WT-1, PT-2	PFT-1		FINISH TAG
223						LENGTH SHOWN IN FINISH PLANS	WALL FINISH WXX-X CEILING FINISH C:XX-X FLOOR FINISH F:XX-X
224 225	ELECTRICAL	CPT-1 CONC	RB-1 RB-1	PT-1, PT-3 PT-1	APC-1		BASEBOARD FINISH BIXX-X
226 227	STEM LOUNGE OFFICE	CPT-1, CPT-2 CPT-1	RB-1 RB-1	PT-1 PT-1. PT-3	GB-2, PFT-1 APC-1	1	REFER TO A901 FOR SPECIFIC FINISHES IN THE FINISH LEGEND
228	OFFICE	CPT-1	RB-1	PT-1, PT-3	APC-1		
229	FACULTY OFFICE RECEPTION	CPT-1 CPT-1	RB-1 RB-1	PT-1, PT-3 PT-1, PT-3	APC-1 APC-1		
231 232	OFFICE	CPT-1 CPT-1	RB-1 RB-1	PT-1, PT-3 PT-1, PT-3	APC-1 APC-1		
233	OFFICE	CPT-1	RB-1	PT-1, PT-3	APC-1		
235	DEAN'S OFFICE	CPT-1	RB-1	PT-1, PT-3	APC-1		
236	CENTRAL CORRIDOR CIRCULATION	LVI-1	MB-1	CP-1, CP-2, P1-1	APC-1, PAPC-1, PFT-1	1	
237 238	BCS LEARNING SPACE #2 STAIR 2	LVT-1 LVT-1	RB-1 MB-1	PT-1, PT-2, WC-2 PT-1 (EXCEPT WEST WALL)*	APC-1 GB-1, PFT-1	*WEST WALL OF STAIR PER BASE BID AND ALTERNATE NO. 2, REFER TO	
239	PHYSIC AND ENGINEERING	LVT-1	RB-1,	PT-1, PT-2, WC-2	APC-1	SHEE A453 FOR MORE INFORMATION.	
EVEL 03	LEARNING SPACE #1		RB-2				
300	CENTRAL CORRIDOR CIRCULATION	LVT-1, LVT-2***	MB-1	PT-1 (EXCEPT WEST WALL)*	PFT-1, PAPC-1	*WEST WALL OF COMMUNITY GATHERING SPACE PER BASE BID AND ALTERNATE NO. 2, REFER TO SHEETS A245 AND A245.1 FOR MORE INFORMATION. ***SEE ENLARGED LVT FLOOR PATTERN ON A901	
301 302	OPEN BCS COMPUTER ROOM BCS WORKROOM	CPT-1 CPT-2	RB-1 RB-1	PT-1, PT-3 PT-1, PT-3	APC-1 APC-1		
303	BCS OFFICE	CPT-1	RB-1	PT-1	APC-1		
305 306	BCS COMPUTER ROOM #4 MATH & STATS COMPUTER	LVT-2 LVT-2 LVT-2	RB-1 RB-1 RB-1	PT-1, PT-2 PT-1, PT-2 PT-1, PT-2	APC-1 APC-1 APC-1		
307	STAIR 1	LVT-1	MB-1	PT-1 (EXCEPT EAST WALL)*	GB-1, PFT-1	*EAST WALL OF STAIR PER BASE BID AND ALTERNATE NO. 2, REFER TO SHEET A453 FOR MORE INFORMATION.	
308	CENTRAL CORRIDOR	LVT-1	MB-1	PT-1, PT3	APC-1, GB-1, PFT-1		
310	MATH LEARNING SPACE #8	LVT-2	RB-1	PT-1, PT-2	- APC-1		
311 312	MATH LEARNING SPACE #7 MATH LEARNING SPACE #6	LVT-2 LVT-2	RB-1 RB-1	PI-1, PT-2 PT-1, PT-2	APC-1 APC-1		
313 314	MATH LEARNING SPACE #5	LVT-2 CONC	RB-1 RB-1	PT-1, PT-2 PT-1	APC-1 -		
315 316	ELEV	LVT-2	MB-1	LAM-1 PT-1	-		
317	MEN'S RESTROOM	FT-1	TB-1	WT-1, PT-2	PFT-1		
318 319 	JANITOR'S RESTROOM	CONC	RB-1	WI-1, PI-2 PT-1, FRP-1	PF1-1 -	FRP WALL PROTECTION TO 4'-0" A.F.F. LENGTH SHOWN IN FINISH PLANS	
320	STEM LOUNGE	CPT-1	RB-1	PT-1	- GB-2, PFT-1	1	
322	BREAK ROOM	LVT-2	RB-1, RB-2	PT-1, PT-3	GB-1, PFT-1	1	
323 324	OFFICE	CPT-1 CPT-1	RB-1 RB-1	PT-1, PT-3 PT-1, PT-3	APC-1 APC-1		
325		CPT-1	RB-1	PT-1, PT-3	APC-1		
320	OFFICE	CPT-1	RB-1	PT-1, PT-3	APC-1 APC-1		
328 329	OFFICE	CPT-1 CPT-1	RB-1 RB-1	PT-1, PT-3 PT-1, PT-3	APC-1 APC-1		
330	SHARED OFFICE	CPT-2	RB-1	PT-1, PT-3	APC-1		
					PFT-1		
332	STAIR 2	LVI-1 LVT-1**	кв-1 MB-1	PT-1, PT-2 PT-1 (EXCEPT WEST WALL)*	GB-1, PFT-1	*WEST WALL OF STAIR PER BASE BID 1	
334	BCS LEARNING SPACE #4	LVT-1	RB-1	PT-1. PT-2	APC-1	AND ALTERNATE NO. 2, REFER TO SHEE A453 FOR MORE INFORMATION.	
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FINISH NOTES: ALL FINISH MATERIALS MUST MEET THE FLAME SPREAD RATINGS PER THE BUILDING CODE. REFER TO INTERIOR ELEVATIONS FOR SPECIFIC MATERIAL LOCATIONS. PAINT ALL EXPOSED DUCTWORK, CONDUIT, ELECTRICAL EQUIPMENT, ETC TO MATCH ADJACENT SURFACES. PAINT ALL NON-FACTORY FINISHED EXPOSED METAL. REFER TO TYPICAL FLOORING TRANSITION DETAILS FOR ALL FLOORING MATERIALS. FLOORING TRANSITIONS AT DOORS SHOULD BE LOCATED UNDER THE DOOR IN THE CLOSED POSITION, UNLESS NOTED OTHERWISE. CONTRACTOR WILL BE RESPONSIBLE FOR PROTECTING FINISHED FLOORING SURFACES FROM DAMAGE DURING ALL CONSTRUCTION PHASES. PROVIDE BULLNOSE TRIM AT TRANSITIONS FROM CERAMIC WALL TILE TO OTHER MATERIAL, UNLESS NOTED OTHERWISE. REFER TO REFLECTED CEILING PLANS FOR CEILING HEIGHTS. 0. ALL ELECTRICAL DEVICE COVERS ARE TO BE WHITE UNLESS NOTED OTHERWISE. L. CARPET PATTERNS TO RUN PARALLEL TO CORRIDOR, UNLESS NOTED OTHERWISE. 2. ALL HOLLOW METAL DOOR FRAMES TO BE PAINTED TO MATCH ADJACENT WALL COLOR. 3. ALL VERTICAL DRYWALL SURFACES TO BE PAINTED PT-1, UNLESS OTHERWISE SPECIFIED ON PLAN. 4. U.N.O. ALL FLOOR TRANSITIONS VERTICAL. 5. RB-2 TO BE USED AS A BASE AT ALL CASEWORK, UNLESS NOTED OTHERWISE. FINISH LEGEND(KEY): FLOOR TRANSITION $\overline{\mathbf{A}}$ DTL. NO./SHEET NO. FINISH TAG - W:XX-X WALL FINISH -CEILING FINISH C:XX-X FLOOR FINISH F:XX-X B:XX-X BASEBOARD FINISH REFER TO A901 FOR SPECIFIC FINISHES IN THE FINISH LEGEND FINISH MATERIAL LEGEND: LVT-1 LVT-2 \square CPT-1 CPT-2 FT-1 ∆⁷ - ∠ , CONC





	GENERAL NOTES:
1.	THE ENVIRONMETAL GRAPHICS PACAKGE CONSISTS OF THE FOLLOWING COMPONENTS: DETAIL DRAWINGS, SIGN LOCATION PLANS, SIGNAGE MESSAGE SCHEDULE, AND SPECIFICATION MANUAL.
2.	ALL SIGNS TO BE FABRICATED AND INSTALLED TO COMPLY WITH LOCAL BUILDING CODES, ADAAG, AND ANSI 117.1
3.	FABRICATOR TO REVIEW THE STRUCTURAL, MECHANICAL, AND ARCHITECTURAL DRAWINGS AND SITE CONDITIONS TO VERIFY SIZES AND LOCATION OF SIGNAGE RELATED ELEMENTS THAT EXIST. ANY DISCREPANCIES AND/OR CONFLICTS SHALL BE REPORTRED TO THE OWNER/ARCHITECT/GENERAL CONTRACTOR IN WRITING BEFORE PROCEEDING WITH FABRICATION OR ORDERING MATERIALS.
4.	FABRICATOR SHALL SUBMIT FULLY DETAILED WORKING (SHOP/FABRICATION) DRAWINGS TO ARCHITECT/GENERAL CONTRACTOR FOR ALL SIGNS AND GRAPHICS CONTAINED IN THIS PACKAGE. DRAWINGS SHALL BE REVIEWED AND HAVE SIGNED APPROVAL PRIOR TO FABRICATION OR ORDERING OF MATERIALS.
5.	ALL SIGNS ARE TO BE FABRICATED FROM MATERIALS SPECIFIED UNLESS OTHERWISE APPROVED IN WRITING BY THE OWNER/ARCHITECT. NO EXCEPTIONS.
6.	DRAWINGS CONTAINED IN THIS PACKAGE ARE FOR AESTHETIC AND FUNCTIONAL DESIGN INTENT ONLY. NO INSTRUCTIONS FOR STRUCTURAL APPROPRIATENESS HAVE BEEN MADE. IT IS THE RESPONSIBILITY OF THE SIGNAGE FABRICATOR TO ENSURE THAT ALL ELEMENTS ARE FABRICATED FOR A STABLE AND DURABLE INSTALLATION
7.	WHILE ADHERING TO THE AESTHETIC DETAILS INDICATED. FABRICATOR IS RESPONSIBLE FOR DETERMINING PROPER MOUNTING METHODS FOR SIGNS UNLESS OTHERWISE SPECIFIED. ALL MOUNTING MATERIALS/TECHNIQUES TO BE APPROVED IN WRITING AND HAVE SIGNED APPROVAL PRIOR TO INSTALLATION.
8.	ALL FASTENERS ARE TO BE CONCEALED UNLESS NOTED OTHERWISE.
9.	FABRICATOR TO COORDINATE THE INSTALLATION OF SITE SIGNAGE AND ASSOCIATED FOOTINGS WITH THE GENERAL CONTRACTOR'S INSTALLATION OF THE SURROUNDING HARDSCAPE.
10.	ALL TEXT SHOWN IN DETAIL DRAWINGS IS FOR REFERENCE ONLY. REFER TO SIGNAGE MESSAGE SCHEDULE FOR EXACT TEXT ON EACH SIGN.
11.	ALL ROOM IDENTIFICATIONS SIGNS ARE TO BE MOUNTED 9 INCHES FROM THE CENTER OF THE SIGN TO THE LATCH SIDE OF DOOR FRAME.
12.	REFER TO SHEETS A1001, A1002 & A1003 FOR ASSISTED LISTENING SIGNAGE (ALS) LOCATIONS.
13.	REFER TO SHEET A512 FOR SIGNAGE @ TOILET ROOM DOORS.
14.	REFER TO E400 SERIES FOR MORE INFORMATION ON PORTABLE AND FIXED ASSISTIVE LISTENING DEVICES.
15.	REFER TO SIGNAGE REQUIREMENTS FOR PARTITION IDENTIFICATION AND MARKINGS PER NOTE 16 ON SHEET A502.

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THE ENVIRONMETAL GRAPHICS PACAKGE CONSISTS OF THE FOLLOWING COMPONENTS: DETAIL DRAWINGS, SIGN LOCATION PLANS, SIGNAGE MESSAGE SCHEDULE, AND SPECIFICATION MANUAL. ALL SIGNS TO BE FABRICATED AND INSTALLED TO COMPLY WITH LOCAL BUILDING CODES, ADAAG, AND ANSI 117.1 FABRICATOR TO REVIEW THE STRUCTURAL, MECHANICAL, AND ARCHITECTURAL DRAWINGS AND SITE CONDITIONS TO VERIFY SIZES AND LOCATION OF SIGNAGE RELATED ELEMENTS THAT EXIST. ANY DISCREPANCIES AND/OR CONFLICTS SHALL BE REPORTRED TO THE OWNER/ARCHITECT/GENERAL CONTRACTOR IN WRITING BEFORE PROCEEDING WITH FABRICATION OR ORDERING MATERIALS. FABRICATOR SHALL SUBMIT FULLY DETAILED WORKING (SHOP/FABRICATION) DRAWINGS TO ARCHITECT/GENERAL

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GENERAL NOTES:

- CONTRACTOR FOR ALL SIGNS AND GRAPHICS CONTAINED IN THIS PACKAGE. DRAWINGS SHALL BE REVIEWED AND HAVE SIGNED APPROVAL PRIOR TO FABRICATION OR ORDERING OF MATERIALS. ALL SIGNS ARE TO BE FABRICATED FROM MATERIALS
- SPECIFIED UNLESS OTHERWISE APPROVED IN WRITING BY THE OWNER/ARCHITECT. NO EXCEPTIONS. DRAWINGS CONTAINED IN THIS PACKAGE ARE FOR AESTHETIC AND FUNCTIONAL DESIGN INTENT ONLY. NO INSTRUCTIONS FOR STRUCTURAL APPROPRIATENESS HAVE BEEN MADE. IT IS THE RESPONSIBILITY OF THE SIGNAGE FABRICATOR TO ENSURE THAT ALL ELEMENTS ARE FABRICATED FOR A STABLE AND DURABLE INSTALLATION
- WHILE ADHERING TO THE AESTHETIC DETAILS INDICATED. FABRICATOR IS RESPONSIBLE FOR DETERMINING PROPER MOUNTING METHODS FOR SIGNS UNLESS OTHERWISE SPECIFIED. ALL MOUNTING MATERIALS/TECHNIQUES TO BE APPROVED IN WRITING AND HAVE SIGNED APPROVAL PRIOR TO INSTALLATION. ALL FASTENERS ARE TO BE CONCEALED UNLESS NOTED OTHERWISE.
- FABRICATOR TO COORDINATE THE INSTALLATION OF SITE SIGNAGE AND ASSOCIATED FOOTINGS WITH THE GENERAL CONTRACTOR'S INSTALLATION OF THE SURROUNDING HARDSCAPE. D. ALL TEXT SHOWN IN DETAIL DRAWINGS IS FOR REFERENCE
- ONLY. REFER TO SIGNAGE MESSAGE SCHEDULE FOR EXACT TEXT ON EACH SIGN. . ALL ROOM IDENTIFICATIONS SIGNS ARE TO BE MOUNTED 9 INCHES FROM THE CENTER OF THE SIGN TO THE LATCH
- SIDE OF DOOR FRAME. . REFER TO SHEETS A1001, A1002 & A1003 FOR ASSISTED LISTENING SIGNAGE (ALS) LOCATIONS. 3. REFER TO SHEET A512 FOR SIGNAGE @ TOILET ROOM
- DOORS. . REFER TO E400 SERIES FOR MORE INFORMATION ON PORTABLE AND FIXED ASSISTIVE LISTENING DEVICES. REFER TO SIGNAGE REQUIREMENTS FOR PARTITION
- IDENTIFICATION AND MARKINGS PER NOTE 16 ON SHEET A502.





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DN D	"ALLIANCE" MODEL	SUPPLY CFM	RETURN CFM	MIN. OA (CFM)	SENS. COOLING CAP. (BTUH)	TOTAL COOLING CAP. (BTUH)	EDB F	EWB F	LDB F	LWB F	FACE VEL. FPM	APD (IN. WG)	DUTY	FLUID	FH	FL	QTY.	F
DR	CUSTOM	12,500	12,500	6,460	489,200	555,300	87.7	66.5	51.9	51.6	440	0.46	CHW	WATER	28.5	72	2	
DR	CUSTOM	15,500	15,500	8,385	623,500	690,700	88.9	66.8	52.1	52.0	485	0.63	CHW	WATER	57	81	2	

AIR HANDLING UNIT SCHEDULE (CONTINUED)

																						-		-						
				911				ELECT	RICAL				DI						_		FILTERS			UNI	[POWER	R	OPER. WT.	MOUNTING	CONTROL	NOTES
E(QTY. H	P FLA	CFM	ESP (IN. W.G.)	FAN N RPM F	IAX. M RPM F	IOTOR RPM	VFD QTY. HP	SIZE	QTY	/. HP	P FLA	CFM	ESP (IN. W.G.)	FAN N RPM F	IAX. M RPM	10tor RPM	VFD QTY. HP	TYPE	EFFICIENCY	MAX FACE VEL. FPM	SIZE (QTY.)	DEPTH	VOLT/PH.	MCA	MOP	(LBS.)	DETAIL	DIAGRAM	
5	4 5	7.6	3125	1.5	2550	3470 í	1800	1 20	165	4	2	3.4	3125 FA	1.0	1850 2	670 = A	1800	1 10	PRE-FILTERS	30% MERV 8	500	24x24 (6), 12x24 (3)	2	460V, 3PH.	52	70	10,520	1 	1	1, 2, 3, 4, 5
		·. LA	. LA.											_		_/ \.			FINAL-FILTERS	90% MERV 14	500	24x24 (6), 12x24 (3)	12							
_	, 5	7.6	3875	4.5	2850	3470 í	1800	1 00	100		2	3.4	3875	1.0	2190 2	670	1800	1 10	PRE-FILTERS	30% MERV 8	500	24x24 (6), 12x24 (5)	2		50	70	10 500		1	12345
5	4 E/	A. EA	. EA.	1.5	EA.	EA.	EA.	1 20	182	4	EA	. EA.	EA.	1.0	EA. I	EA.	EA.	1 10	FINAL-FILTERS	90% MERV 14	500	24x24 (6), 12x24 (5)	12	460V, 3PH.	52	70	10,000	M501	M602	1, 2, 0, 7, 0
2	4 5	7.6	4500	4 5	2100 2	2300 1	1800	1 20	100		3	3.4	4500	1.0	1530 2	300	1800	1 10	PRE-FILTERS	30% MERV 8	500	24x24 (9), 12x24 (3)	2	4601/ 2011	50	70	10.970	1	1	12345
2	4 E/	A. EA	. EA.	1.5	EA.	EA.	EA.	1 20	182	4	EA	. EA.	EA.	1.0	EA.	EA.	EA.	1 10	FINAL-FILTERS	90% MERV 14	500	24x24 (9), 12x24 (3)	12	460V, 3PH.	52	70	10,970	M501	M602	1, 2, 0, 7, 0
	·						·				·		,		1 1		·													

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4

2

NIT SCHEDULE

														HOT V	VATER H	EATING	G COIL						
				WPD	тс	CV	HEATING	FAT	ΙΑΤ												WPD	тс	×
PI	GPM	EWT	LWT	(FT HD)	TYPE	CV	CAP. (BTUH)	F DB	F DB	DUTY	FLUID	FH	FL	QTY.	ROWS	FPI	APD	GPM	EWT	LWT	(FT HD)	TYPE	CV
10	116	45°F	55°F	11.5	2-WAY	46	343,100	45.0	70.3	HW	WATER	28.5	72	2	1	4	0.04	36.1	180°F	160°F	1.9	2-WAY	14
12	155	45F	55°F	5.9	2-WAY	62	412,500	45.0	69.5	HW	WATER	57	81	2	1	4	0.04	43.4	180°F	160°F	2.1	2-WAY	17
10	170	45F	55°F	11.6	3-WAY	68	499,600	45.0	70.6	HW	WATER	66	81	2	1	4	0.04	52.3	180°F	160°F	7.4	3-WAY	21

5. FOR COIL PIPING DETAILS REFER TO 1/M502, 2/M502 & 8/M502.

5. FOR COIL PIPING DETAILS REFER TO 1/M502 & 2/M502.





18 17 16 15	14	13	12	11	10	9	8	7		6		5		4	3	2	:
						SPLIT	SYSTEM	AC UNIT	SCHED	DULE							
		LOCATIO	ON INDOOR UN	NIT CFM AMP- MOTOF ACITY FLA	R FAN MOTOR OUT- PUT	INDOOR IN- UNIT DOOR OUTDOOR WT. MTG. UNIT		OTAL OOL. MIN. FA OOL. AMP- MOT CAP. ACITY FL	N FAN MOTOR OR OUT- A PNT	COMPRESSOR	MOCP VO	DLT/		OUTDOOR UNIT R WT (LBS.)	OUT- DOOR MTG. DTL.		
		1ST FLO IT ROO	DOR FTXS36LVJU	AC 770 0.37	64 WATTS 24V	40 4 M501 RKS36LVJU	SCU 1.1 3	5,000 19.5 0.3	39 200 WATTS	18.9	20 208\	/, 1 PH. 3/8	3" 5/8" 17.9	9 180	3 M501 1, 2, 3, 4	, 5, 6	
		2ND FLO IT ROO	DOR FTXS36LVJU	AC 770 0.37	64 24V WATTS	40 4 RKS36LVJU	SCU 2.1 3	6,000 19.5 0.3	²⁰⁰ WATTS	18.9	20 208	/, 1 PH. 3/8	3" 5/8" 17.9	9 180	3 M501 1, 2, 3, 4	. 5, 6	
<u>J</u>		IT ROO	DOR FTXS36LVJU 3.	$\begin{array}{c c} AC \\ \hline 1 \end{array} 770 - 0.37 \\ \hline \end{array}$	64 24V WATTS 24V	40 4 RKS36LVJU		5,000 19.5 0.3	³⁹ 200 WATTS	18.9	20 208	/, 1 PH. 3/8	3" 5/8" 17.9	9 180	1, 2, 3, 4	. 5, 6	
		NOTES:	 PROVIDE ALL INDOOR COOLING CAPACITY RAINDOOR AIR AND 95 DE 	UNITS WITH THERMOSTAT, HAR ATED AT 80 DEGREES F DB / 67 I EGREES F DB / 75 DEGREES F W	RD WIRED, WALL MOUNTE DEGREES F WB /B OUTDOOR AIR.	ED. 4. PROVIDE V 16 WATTS SECURE I	WITH 'GOBI' CONDENSA 5, 120V, 1 PH., 60 HZ., A PUMP BACK PLATE TO	TE PUMP, 2 GPM @ 20 I LARM RELAY 5 AMPS, 3 BLOCKING IN WALL WIT	FT./HD WITH GRAV 0 VDC, 250 VAC BR TH (3) - 3/16" DIA. TE	YITY HORIZONTAL, REAK ON FAULT. EK SCREWS			6. THERMOST AS A BACK	TAT SHALL BE SET T KUP TO THE BUILDI	TO 80 DEG. F. SPLIT SYS ⁻ NG AHU SYSTEMS.	TEMS OPERATE	
			3. FOR CONTROL DIAGRA	AM SEE		5. PROVIDE PROVIDE	208V, 1 PH. TO THE MOU SEPARATE 120V TO IN	ITDOOR UNIT, FROM OL DOOR UNIT FOR COND	JTDOOR UNIT PRO ENSATE PUMP.	IVIDE 24V TO INDOC	OR UNIT,						
1	DIFF	USER REGI	STER & GR		UIF				БХНА				F				
	SYMBOL DESCRIPTI	ON KRUEGER	METALAIRE	NAILOR TITUS	TUTTLE & BAILEY	UNIT SERVED	"GREENHECK" MODEL	SP CFM (IN.		STYLE RPM		VOLT/PH	SONES WT.		CONTROL DIAGRAM NOTE	S	
	CD MODULAR CORE SU MOUNT CEILING DIF BEVEL FRAME 3/4	JRFACE 1240 "FUSER 1240 " DROP FRAME 21 - 1-1/4"	9000-2	7500-S MCD BORDER TYPE	SQD-SB	REF 1ST FLOOR 1.1	NO. S G-143-VG	W.G.)	E	RE 106	60 0.5 1	20V, 1 PH.	(LBS.) 8.4 50) DETAIL	1, 2		
	CDL MODULAR CORE L CEILING DIFFUSER	AY-IN R FOR 1240 24 FRAME 23	9000-6P	7500-L MCD BORDER TYPE	E 3 SQD-LT	REF 1.2 4 J.C. & J.C. & ST.FLOOR ELEC. ROOM	G-098-VG	250 0.50"	E	RE 112	20 0.25 1	20V, 1 PH.	5.3 35	2 M501	1 1, 3		
	CR & CE * CEILING RETURN	DR				REF ENGINEERIN 1.3 SHOP	G _{G-103-VG}	500 0.75"	E	RE 139	90 0.25 1	20V, 1 PH.	6.2 35	2 M501	1 1, 4		
	CRATE CORE SURFACE MOUNT	EGG EGC-5	CC5D	61 EC-S MODEL 50 F BORDER TYPE	E 1	REF 1.4 ENGINEERIN SHOP	G _{G-103-VG}	500 0.75"	E	RE 139	90 0.25 1	20V, 1 PH.	6.2 35	2 M501	1 M603 1, 4		
	CRL CEILING RETURN 1/2" EGG CRATE C IN 24x24 PANEL FC	VITH ORE EGC-5TB	CC5D-TBD	61 EC-L MODEL 50 F BORDER TYPE	CRE500-LT	REF2ND FLOOR RESTROOM & J.C.	S G-133-VG	1200 0.50"	E	RE 114	40 0.25 1	20V, 1 PH.	8.7 45	2 M501	1 M602 1, 2		
	S * DOUBLE DEFLECT	ION ITH				REF 2ND FLOOR 2.2 ELEC. ROOM	G-098-VG	250 0.50"	E	RE 112	20 0.25 1	20V, 1 PH.	5.3 35	2 M501	1 M603 1, 3		
	VERTICAL FRONT 3/4" SPACING	BARS,	V 4004 S	61 DV 300 RS	T54	REF 3.1 RESTROON & J.C.	G-143-VG	1350 0.50"	E	RE 103	30 0.5 1	20V, 1 PH.	7.8 45	2 M501	1 1, 2		
	R & E * RETURN OR EXHA WITH 35 DEGREE O DEGREE HORIZON	UST GRILLE DR 45 S 80 H TAL BARS.	SRH	7145 H 350 RL	T70D	3.2 3RD FLOOR ELEC. ROOM	G-095-VG	250 0.375"	E	RE 115	50 0.167 1	20V, 1 PH.	5.4 50	M501	1, 3 M603		
	NOTES: 1. ALL SYMBOLS NO REFER TO PLANS	TED MAY NOT BE USED. FOR SIZE AND QUANTITY.	4. COORDIN REFLECTI	IATE DIFFUSER TYPE WITH ED CEILING PLAN.		LEGEND DUTY: S-SUPPLY, R-RETUI STYLE: RE-ROOF EXHAUST,	RN, E-EXHAUST, C-CIR WE-WALL EXHAUST, CE	CULATION CEILING									
н	2. ALL SUPPLY AIR E UNLESS SHOWN (3. FURNISH ALL PRO	NFFUSERS ARE 4 WAY BLOW OTHERWISE. NDUCTS OF A SINGLE	5. OPPOSED REQUIREI GRILLES.	D BLADE DAMPERS ARE NOT D AT DIFFUSERS, REGISTERS OR		NOTES: 1. PROVIDE WITH BACKD 2. INTERLOCK W/ AHU SE	RAFT DAMPER & MFR'	S MIN. 14" TALL ROOF C	URB.								
	MANUFACTURER. ALUMIN * FOR SH DAMP A	UM REGISTERS OWERS AND REAS	6. PROVIDE BRANCH I REGISTEF	MANUAL AIR DAMPERS AT EACH DUCT TO A SINGLE DIFFUSER, R OR GRILLE.		3. CONTROL FAN W/ ROC 4. CONTROL W/ WALL SW	DM TEMPERATURE SEN	ISOR LOCATED WITH SI	PACE, ON AT 85 DE	GREES F (ADJUST)	ABLE).						
3				AIR SEI	PARATOR	SCHEDULE						PUI	MP SCH	HEDULE			
			UNIT	LOCATION "SPIROTHERI MODEL	M" VOLUME (GAL)	FLOW (GPM) WT. DETAIL	NOTES			"BELL & GOSSETT"	GPM	FT HD	нр	RPM VC	DLT / OPER. MC		ROL NOTES
			AS 1	MECH. RM. 112 VDN-500-FA	A 19.8	435 330 (7 M502)	1		1ST FLOOR	E-1510		70 57 110	10	PH		7 DIAGRA	
<u>-</u>				MECH. RM. 112 VDN-400-FA	A 6.6	225 240 7 M502	1		MECH. RM. 1ST FLOOR	2.5BB E-1510	290 GPM	70 FT.HD.	10	1750 460V,	3 PH. 390	M501 M605 7 1	j 1, 2
			NOTES:						MECH. RM.	2.5BB E-1510	90 GPM	90 FT.HD.	5	1750 460V,	3 PH. 230	M501 M605	5 1, 2 1, 3
			1. PROVIDE W	FLANGED PIPING CONNECTION	NS & MOUNTING BRACKET	ASSEMBLY.			1ST FLOOR	E-1510	90 GPM	90 FT.HD.	5	1750 460V,	3 PH. 230	M501 M605 7 2 M501 M605	⁵ 1, 3
								NOTES:		1.000							<u>//</u>
								1. PROVIDE 2. CHW DES BOTH PU	PUMPS WITH VFD. GIGN SYSTEM FLOV	V RATE = 435 GPM. ULL CAPACITY DUR	. PUMPS SELECTE RING 100% LOAD =	D AT 2/3 FULL F 217.5 GPM.	FLOW = 290 GPM.				
								3. HHW DES BOTH PU	GIGN SYSTEM FLOV JMPS SERVE 1/2 FU	V RATE = 135 GPM. ULL CAPACITY DUR	. PUMPS SELECTE RING 100% LOAD =	D AT 2/3 FULL F 67.5 GPM.	FLOW = 90 GPM.				
3																	

									SPLIT S	YSTE	M AC	CUN	IT S	CHE	DUL	.E									
LOCATION	"DAIKIN" INDOOR		MIN. AMP-	FAN MOTOF	FAN MOTOR OUT-	VOLT	INDOOR UNIT WT.	IN- DOOR MTG.	"DAIKIN" OUTDOOR	UNIT	TOTAL COOL. CAP.	MIN. AMP-	FAN MOTOR	FAN MOTOR OUT-	COMP	RESSOR	MOCP	VOLT/	PIP		SEER	OUTDOOR UNIT WT.	OUT- DOOR MTG.	NOTES	
			ACTY	FLA	PUT	\searrow	(BS.)	OTL.			PTOH	ACITY	-ELA	PNT			\frown	PHASE	RL	RS	\frown	(LBS.)	DTL.		
1ST FLOOR	FTXS36LVJU	SAC 770		0.37	64 WATTS	24V	40	4 M501	RKS36LVJU	SCU 1.1	36,000	19.5	0.39	200 WATTS	18.9		20	208V, 1 PH.	3/8"	5/8"	17.9	180	3 M501	1, 2, 3, 4, 5, 6	
2ND FLOOR	FTXS36LVJU	SAC 770		0.37	64 WATTS	24V	40	4 M501	RKS36LVJU	SCU 2.1	36,000	19.5	0.39	200 WATTS	18.9		20	208V, 1 PH.	3/8"	5/8"	17.9	180	3 M501	1, 2, 3, 4, 5, 6	
3RD FLOOR IT ROOM	FTXS36LVJU	SAC 770		0.37	64 WATTS	24V	40	4 M501	RKS36LVJU	SCU 3.1	36,000	19.5	0.39	200 WATTS	18.9		20	208V, 1 PH.	3/8"	5/8"	17.9	180	3 M501	1, 2, 3, 4, 5, 6	
				\checkmark	\mathcal{L}	\mathcal{L}	\sim	1		\sim	\sim	\mathcal{L}	\sim					\mathcal{A}	\sim		\sim		7		
NOTES: 1. PROVIDE ALL INDOOR UNITS WITH THERMOSTAT, HARD WIRED, WALL MOUNTED. 4. PROVIDE WITH 'GOBI' CONDENSATE PUMP, 2 GPM @ 20 FT./HD WITH GRAVITY HORIZONTAL, 6. THERMOSTAT SHALL BE SET TO 80 DEG. F. S											F. SPLIT SYSTEMS OPERATE														
2. COOLING CAPACITY RATED AT 80 DEGREES F DB / 67 DEGREES F WB 16 WATTS, 120V, 1 PH., 60 HZ., ALARM REL INDOOR AIR AND 95 DEGREES F DB / 75 DEGREES F WB OUTDOOR AIR. SECURE PUMP BACK PLATE TO BLOCKING AND PLACE PUMP ON THE MOUNTING POS											RELAY 5 AN (ING IN WAI POSTS	IPS, 30 VD _L WITH (3)	C, 250 VAC) - 3/16" DIA	BREAK ON	N FAULT. EWS				AS	A BACKUP	' TO THE BUIL	.DING AHU S`	/STEMS.		















13	12	11	10	9	



















		PLUMBING FIXTURE SPECIFICATION & CONNECTION ?									I			
	ADA	SYMBOL	FIXTURE	FIXTURE MANUFACTURER AND MODEL No.		TRIM MANUFACTURER AND MODEL No.	REMARKS	VENT	WAST	TE OUTLET	COLD W	ATER OUTLET	HOT W BRANCH	ATER OUTLE
	E.	WC-1	WATER CLOSET WALL MOUNTED FLUSH VALVE STANDARD/ADA COMPLIANT	"SLOAN" MODEL ST-2459-A, WALL HUNG WATER CLOSET, VITREOUS CHINA, ELONGATED, SIPHON JET ACTION, 1.28 GPF WITH 1-1/2" TOP SPUD.	"SLOAN" ROYAL OPTIMA SMO, MODEL 111-1.28-SMO LOW WATER CONSUMPTION, ADA COMPLIANT, 1.28 GPF, SIDE MOUNT BATTERY POWERED SENSOR OPERATED CHROME PLATED FLUSHOMETER.	SEAT: "CHURCH" MODEL 295SCT OR "BEMIS" MODEL 955SSCT. PROVIDE WITH SELF- SUSTAINING CONCEALED CHECK HINGES, ONE PIECE STAINLESS STEEL POST HINGES, WHITE COLOR. CARRIER: "JAY R. SMITH" 100 OR 200 SERIES OR 500# RATED "ZURN" Z1201 AND Z1202 SERIES ROVIDE REAR SUPPORT LUG & ANCHOR FOOT ASSEMBLY.	MOUNT AT HEIGHT INDICATED ON ARCHITECTURAL DRAWINGS. WHERE USED FOR ADA ACCESSIBLE WATER CLOSETS, THE FLUSH VALVE HANDLE SHALL BE MOUNTED ON THE WIDE SIDE OF THE WC ENCLOSURE.	2"	4"	4"	1-1/4"	1"	-	-
	F		URINAL WALL MOUNTED FLUSH VALVE ADACOMPLIANT	"SLOAN" SU-1009, WALL HUNG, VITREOUS CHINA, WASHOUT. 3/4" TOP SPUD, 2" THREADED OUTLET, .125 GPF	"SLOAN" ROYAL OPTIMA PLUS, MODEL 186-0.125 SFSM LOW WATER CONSUMPTION, ADA COMPLIANT, 0.125 GPF, SIDE MOUNT BATTERY POWERED SENSOR OPERATED CHROME PLATED FLUSHOMETER	CARRIER: "J.R. SMITH" 637 SERIES	COMBINATION URINAL & FLUSH VALVE, MATERIAL NUMBER 10001420.	1-1/2"	2"	2"	1"	3/4"	-	-
<u>N</u>	O E] <u>L-1</u>	LAVATORY UNDER COUNTER MOUNTED HOT AND COLD WATER ADA COMPLIANT	"CORIAN" MODEL MODEL 810P, ADA COMPLIANT, UNDER COUNTER MOUNTED LAVATORY WITH OVERFLOW, 4" CENTERS. 18 1/4" x 14 7/8" x 5 1/2" DEPTH OVERALL. REAR DRAIN LOCATION.	"CHICAGO FAUCET" MODEL EQ-A11A-11ABCP, ADA COMPLIANT, DECK MOUNTED SINGLE HOLE, TEMPERED WATER E-TRONIC 40, BATTERY OPERATED SINK FAUCET WITH DUAL BEAM INFRARED SENSOR. WITH E2805 VANDAL RESISTANT OUTLET FOR CALGREEN COMPLIANT .20 GALLONS PER CYCLE.	PROVIDE WITH ADA COMPLIANT. LAVATORY GRID DRAIN WITH 1-1/4" OFFSET TAILPIECE, INTEGRAL PERFORATED GRID, CHROME FINISH. MOUNT P-TRAP FLUSH TO WALL. GARRIER: "J R SMITH" 0700 OR EQUAL		1-1/2"	2"	1-1/2"	3/4"	1/2"	3/4"	1/2'
М	Ē	<u>S-1</u>	SINK COUNTER MOUNTED COLD WATER	"ELKAY" MODEL LRADQ2219-65-BP, 19" FRONT TO BACK, 22" WIDE x 6-1/2" DEPTH OVERALL. 18 GAUGE STAINLESS STEEL, LEDGE BACK WITH SELF- RIM. PROVIDE SINGLE FAUCET HOLE. PROVIDE REAR DRAIN LOCATION. PROVIDE FACTORY ADHERED VANDAL RESISTANT BACKING PLATE AT FAUCET, AND SLOT AT FAUCET FOR VANDAL RESISTANT PINS.	"CHICAGO" ECAST MODEL 350-GN8AE3ABCP GOOSENECK FAUCET, 1.5 GPM VANDAL RESISTANT LAMINAR FLOW AERATOR AND RIGID/SWING FAUCET.	"ELKAY" MODEL LKAD174LO, OFFSET STRAINER DRAIN AND P-TRAP. INSTALL P-TRAP FLUSH TO WALL.	NOTE: SINK AT THE OUTDOOR TEACHING AREA DOES NOT INCLUDE ANY HOLE PUNCHING NOR FAUCET.	1-1/2"	2"	1-1/2"	3/4"	1/2"	3/4"	1/2
	Ē	<u>S-2</u>	SINK COUNTER MOUNTED COLD WATER	"ELKAY" MODEL LRADQ3122-65-BP, 22" FRONT TO BACK, 31" WIDE x 6-1/2" DEPTH OVERALL. 18 GAUGE STAINLESS STEEL, LEDGE BACK WITH SELF- RIM. PROVIDE SINGLE FAUCET HOLE. PROVIDE REAR DRAIN LOCATION. PROVIDE FACTORY ADHERED VANDAL RESISTANT BACKING PLATE AT FAUCET, AND SLOT AT FAUCET FOR VANDAL RESISTANT	"CHICAGO" ECAST MODEL 350-GN8AE3ABCP GOOSENECK FAUCET, 1.5 GPM VANDAL RESISTANT LAMINAR FLOW AERATOR AND RIGID/SWING FAUCET.	"ELKAY" MODEL LKAD174LO, OFFSET STRAINER DRAIN AND P-TRAP. INSTALL P-TRAP FLUSH TO WALL.		1-1/2"	2"	1-1/2"	3/4"	1/2"	3/4"	1/2
	°	<u>SS-1</u>	SERVICE SINK FLOOR MOUNTED HOT AND COLD WATER JANITORS	"ACORN" TSH-24-SSC, TERRAZZO-WARE, 24"x24"x12" DEEP FLOOR MOUNTED, TERRAZZO, WITH STAINLESS STEEL CAP ON ALL FOUR TOP SURFACES. UNIT SHALL INCLUDE MODEL KH36 HOSE WITH WALL HANGER, KMH MOP HANGER WITH 3 SPRING LOADED GRIPS ON A STAINLESS STEEL BRACKET	"CHICAGO" MODEL 897-CRCF WALL MOUNTED POLISHED CHROME FAUCET WITH VACUUM BREAKER, ADJUSTABLE TOP BRACE AND 3/4" MALE THREADED HOSE OUTLET.		AS PART OF ROUGH-IN FOR FAUCET, PROVIDE SUITABLE BLOCKING FOR TOP BRACE. PROVIDE CAP WITH FLANGE ON SIDES ADJACENT TO WALLS.	2"	3"	3"	%%142"	%%142"	%%142"	%%1
κ			DRINKING FOUNTAIN w/ BOTTLE FILLING STATION WALL MOUNTED STD/ACCESSIBLE DUAL HEIGHT	"ELKAY", WALL MOUNTED, HI-LO, DRINKING FOUNTAIN, WITH EZH20 BOTTLE FILLING STATION MODEL EZWS-EDFPBM117K. WALL MOUNTED STAINLESS STEEL.	INTEGRAL	WITH P-TRAP	115V/60 Hz., 5.0 FLA, 370 WATTS. 8 GPH CHILLING CAPACITY. FOR POWER REFER TO DIVISION 26 PLANS & SPECIFICATIONS. UNIT SHALL BE PROVIDED WITH TOP & BOTTOM ACCESS PANELS.	1-1/2"	2"	1-1/2"	3/4"	1/2"		-
		HB	HOSE BIBB	"ACORN" MODEL 8126-LF - ROOF MOUNTED. "ACORN" MODEL 8121-LF - INTERIOR WALL MOUNTED.				-	_	-	3/4"	3/4"	-	-
J		<u>WH</u>	WALL HYDRANT	RECESSED WALL HYDRANT: MIFAB MODEL MHY-55 OR WOODFORD MODEL B24.	RECESSED WALL HOSE BOX WITH DOOR AND VACUUM BREAKER. BOX IS ONE PIECE CAST CONSTRUCTION WITH BUILT-IN LIP. WALL FLANGE IS CAST ALUMINUM WITH PRIME COAT FINISH SECURED WITH VANDAL RESISTANT SCREWS. DOOR AND FRAME ARE OF CAST ALUMINUM ALLOY WITH CYLINDER KEYED LOCK. VALVE SHALL BE CARTRIDGE TYPE WITH VANDAL RESISTANT LOCK SHIELD LOOSE KEY HANDLE AND SCREWDRIVER STOP.			-	-	-	3/4"	3/4"	-	-
		<u>GH</u>	GROUND HYDRANT	ANTI-SIPHON FREEZELESS YARD HYDRANT WOODFORD MODEL Y95	ANTI-SIPHON FREEZELESS YARD HYDRANT, BRASS CASTED BOX WITH HINGED LOCKABLE COVER, LOOSE KEY HANDLE AND SCREWDRIVER STOP. ANTI-SIPHON HOSE CONNECTION.			-	-	_	3/4"	3/4"	-	-
н	ere ere ere ere ere ere ere ere ere ere	EW	EYE WASH ACCESSIBLE	"HAWS" MODEL 7610, DECK MOUNTED PULL DOWN EYE WASH	INTEGRAL	INTEGRAL		-	-	-	3/4"	1/2"	-	-
		RIM	REFRIGERATOR ICE MAKER	"GUY GRAY" MODEL SSIB2AB LEAD FREE ICE MAKER HOOK-UP, WITH 1/2" FIP INLET AND 1/4" COMPRESSION OUTLET.	INTEGRAL	INTEGRAL	PROVIDE 20 GAUGE BOX AND 18 GAUGE STAINLESS STEEL FACE PLATE.	-	-	-	1/2"	1/4"	-	-
G		TP	TRAP PRIMER	"MIFAB" MODEL M-500 SERIES	PROVIDE BALL VALVE AT EACH TP LOCATION.	MOUNT TRAP PRIMER IN SHEET METAL BOX WITH "KARP" OR EQUAL ACCESS DOOR. REFER TO DETAIL - SHEET P5.1 PROVIDE UL APPROVED FIRE WRAP AROUND SHEET METAL BOX AND A FIRE RATED ACCESS DOOR WHEN INSTALLED IN A FIRE RATED ASSEMBLY. FOR CONTINUATION REFER TO SPECIFICATIONS SECTION 22 00 50.	INSTALL PER MANUFACTURER'S INSTRUCTIONS. PROVIDE DISTRIBUTION UNIT WITH FEEDER PIPING FOR A MAX. OF FOUR TRAPS WHEN NEEDED.	-	-	-	-	-	-	-
<u>F</u>		FD	FLOOR DRAIN	GENERAL SERVICE FD - ZURN MODEL Z-415, OR EQUAL, WITH TYPE "B" STRAINER FOR EXPOSED CONCRETE AND TYPE "S" STRAINER FOR TILE FLOOR. PROVIDE BRONZE TRIM.FD IN COMPOSITION TYPE FLOORS - ZURN MODEL Z-415, OR EQUAL, WITH TYPE SL STRAINER.FD IN RESINOUS/EPOXY TYPE FLOORS - ZURN MODEL Z-415BL, OR EQUAL, NICKEL BRONZE WITH ADJUSTABLE STRAINER.FD IN MECHANICAL SERVICE AREAS - ZURN MODEL Z-541, OR EQUAL, 12 INCH DIAMETER HEAVY DUTY DRAIN.OTHER APPROVED EQUAL MANUFACTURERS INCLUDE: 10X P. SMITH WATTS & MIEAP		TYPE "B" STRAINER FOR EXPOSED CONCRETE TYPE "S" STRAINER FOR TILE FLOOR TYPE "SL STRAINER FOR COMPOSITION FLOOR	PROVIDE FLASHING RING AND CLAMP AT FLOORS WITH WATER RESISTANT MEMBRANE. SET TOP OF DRAIN SLIGHTLY BELOW FLOOR TO INSURE DRAINAGE. INSTALL VENTED P-TRAP. WHERE TRAP PRIMERS ARE INDICATED PROVIDE PROPER CONNECTION TO P-TRAP.	2"	2"	2"	-	-	-	-
		<u>FS</u>	FLOOR SINK	MECHANICAL SPACES - ZURN MODEL ZN-1901-KC-2, OR EQUAL, 12 INCH x 12 INCH x 8 INCH DEEP, A.R.E. INTERIOR WITH NICKEL BRONZE RIM, HALF GRATE AND DOME STRAINER. FOR USE AT OUTDOOR SINK - JAY R SMITH, MODEL 2450Y OR EQUAL, 12 INCH x 12 INCH x 15 3/8 INCH DEEP, WITH 3/4 DUCTILE IRON GRATE, STAINLESS STEEL PORTED BUCKET WITH MESH SCREEN AND LIFT BAR. OTHER APPROVED EQUAL MANUFACTURERS INCLUDE: JAY R, SMITH, WATTS & MIEAB	PROVIDE SEEPAGE PAN AND CLAMPING COLLAR.			2"	2" 4"	2" 4"	-	-	-	-
		RD/OF	ROOF DRAIN OVERFLOW	COMBINATION ROOF DRAIN AND OVER FLOW 4" PIPE SIZE MAX JAY R. SMITH MODEL 148, ZURN MODEL Z165 OR EQUAL. 5" AND 6" - JAY R. SMITH MODEL SQ-1-3282, ZURN MODEL Z164 OR EQUAL.	SECURE DECK PLATE TO ROOF. PROVIDE 6" HIGH CAST IRON VANDAL PROOF DOME TYPE STRAINER INLET AND CLAMPING COLLARS FOR PRIMARY AND OVERFLOW.			-	3"	3"	-	-		
C		RD OFD	ROOF DRAIN OVERFLOW DRAIN	ROOF DRAIN & OVERFLOW DRAIN 4" PIPE SIZE MAX J.R. SMITH MODEL 1330-RDP, ZURN MODEL Z107 OR EQUAL.	SECURE DECK PLATE TO ROOF. PROVIDE 6" HIGH CAST IRON VANDAL PROOF DOME TYPE STRAINER INLET AND CLAMPING COLLAR. PROVIDE WITH EXTENSION AS REQUIRED TO SUIT JOB CONDITIONS.		OVERFLOW DRAIN IS SIMILAR. IT SHALL INCLUDE A 2" EXTERNAL DAM.	-	3"	3"	-	-	-	-
		<u>SI</u>	SOLIDS INTERCEPTOR	"JR SMITH" MODEL #8730				1-1/2"	2"	-	-	-	-	-
В	NOTE 1. <u>W</u> A. B. C.	<u>S:</u> <u>ATER SUPPLIES AN</u> PROVIDE 85 PERC EACH FIXTURE, E PROVIDE ALL WA LOOSE KEY. PROV PROVIDE 1/2 INCH	D STOPS (REFER TO SPEC CENT IPS RED BRASS PIP CXCEPT HOSE BIBBS, SHA TER SUPPLIES TO FIXTUR VIDE COMBINATION FIXTU HRISER TUBES WITH RED	CIFICATION SECTION OR 22 40 00) E, SECURELY ANCHORED TO BUILDING CONSTRUCTION, FOR EACH O LL HAVE A STOP VALVE INSTALLED ON WATER SUPPLY LINES TO PER RES WITH COMPRESSION SHUT-OFF STOPS WITH IPS INLETS WITH TO JRES WITH COMPRESSION STOP AND IPS INLET ON EACH WATER SU UCING COUPLING FOR ALL FIXTURES, UNLESS OTHERWISE NOTED.	CONNECTION TO FAUCETS, STOPS, HOSE BIBBS, ETC. RMIT REPAIRS WITHOUT SHUTTING OFF WATER MAINS. HREADED BRASS NIPPLES AT PIPE CONNECTION AND LOCK SHIELD IPPLY FITTING. PROVIDE LOOSE KEY HANDLE FOR EACH STOP.									
	2. PI PI C	PE, PLUMBING FITT ROVIDE PRODUCTS ODE SECTION 11687	INGS, FIXTURES, SOLDER LISTED AND LABELED AS 75. PROVIDE PRODUCT SL	AND FLUX SHALL COMPLY WITH LEAD FREE REQUIREMENTS OF TH COMPLYING WITH NSF 61, ANNEX G, OR PROVIDE OTHER EVIDENCE IBMITTAL INFORMATION PROVING COMPLIANCE WITH LEAD FREE RE	E CALIFORNIA HEALTH AND SAFETY CODE SECTION 116875. OF COMPLIANCE WITH THE CALIFORNIA HEALTH AND SAFETY QUIREMENTS.									







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(5) <u>WC-1</u> - 3" OFL & 3"

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∕—1 1/2" V

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SAC-3.1

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3/4" CW-

<u>WHA</u>

WOMEN'S RESTROOM 318







GENERAL SHEET NOTES

- A CALL U.S.A. PRIOR TO UNDERGROUND WORK, 1-800-227-2600
- REFER TO SMUD COMMITTMENT DRAWINGS AND COORDINATE ALL UNDERGROUND UTILITY WORK WITH THE SMUD INSPECTOR PRIOR
- HANDHOLE LOCATIONS ARE DIAGRAMMATIC AND NOT DIMENSIONED. LOCATE NEW HANDHOLES IN CLOSEST LANDSCAPED AREA WHEREVER POSSIBLE, COORDINATE WITH LANDSCAPE ARCHITECT. PROVIDE WITH STEEL TRAFFIC RATED LID IN ANY AREA SUBJECT TO VEHICULAR TRAFFIC.
- HANDHOLES/PULLBOXES FOR POWER DISTRIBUTION SHALL BE N40 MIN., LID SHALL BE ENGRAVED "POWER", UON. REFER TO POWER ONE-LINE DIAGRAM FOR FEEDER REQUIREMENTS.
- HANDHOLES/PULLBOXES FOR SIGNAL SYSTEMS DUCT BANK SHALL BE N48 MIN U.O.N. LID SHALL BE ENGRAVED "SIGNAL".
- HANDHOLES/PULLBOXES FOR SITE LIGHTING SHALL BE MIN. N16. LID SHALL BE ENGRAVED "LIGHTING". MINIMUM CONDUIT SIZE 1", MINIMUM WIRE SIZE #10 FOR SITE LIGHTING.
- REFER TO THE POWER ONE-LINE DIAGRAM FOR NEW FEEDER REQUIREMENTS. REFER TO SIGNAL RISER DIAGRAMS FOR LOW VOLTAGE CABLING REQUIREMENTS.
- REFER TO B/E801 FOR TYPICAL HANDHOLE/PULLBOX INSTALLATION. REFER TO C/E801 FOR TYPICAL JOINT TRENCH INSTALLATION.
- CONTRACTOR SHALL COORDINATE ALL UTILITY REQUIREMENTS WITH THE LOCAL UTILITY COMPANY, INCLUDING POWER (SMUD), TELEPHONE (AT&T) AND CABLE TV (COMCAST). PROVIDE A PULL STRING IN ALL EMPTY CONDUITS.
- PROVIDE 6-INCH WIDE UNDERGROUND WARNING TAPE ABOVE ALL NEW UNDERGROUND CONDUITS/CABLES, INSTALL AT 12-INCHES ABOVE THE CONDUITS/CABLES, PROVIDE 'RED' TAPE FOR POWER APPLICATIONS. PROVIDE 'ORANGE' TAPE FOR LOW VOLTAGE APPLICATIONS. PROVIDE BOTH 'RED' AND 'ORANGE' TAPES FOR JOINT TRENCH APPLICATIONS.

NUMBERED SHEET NOTES EXISTING SMUD PULL BOX, PROVIDE NEW CONDUIT PER SMUD ELECTRIC SERVICE REQUIREMENTS. PROVIDE NEW SMUD PRIMARY PULL BOX, 6'X8', PER SMUD ELECTRIC SERVICE REQUIREMENTS, DRAWING U12P3X7. 2-4"C. SMUD UNDERGROUND PRIMARY, INSTALL PER SMUD ELECTRIC SERVICE REQUIREMENTS. SMUD PAD MOUNTED TRANSFORMER. PROVIDE CONCRETE PAD, BLOCK-OUTS, GROUNDING, ETC PER SMUD ELECTRIC SERVICE REQUIREMENTS, REFER TO DRAWING UVD2.3A1 PROVIDE SECONDARY SERVICE FEEDER TO MAIN SWITCHBOARD. REFER TO POWER ONE-LINE DIAGRAM, A/E701. EXISTING ELECTRICAL YARD TO BE DEMOLISHED. REMOVE TRANSFORMER 'TDSBL' (300 KVA) AND SWITCH BOARD 'DSBL' (1000A, 120/208V). REMOVE FEEDERS CONDUCTORS BACK TO THE MSB AT THE CENTREX BUILDING YARD. LABEL 600A/3P BREAKER IN MSB AS SPARE. PROVIDE NEW TELECOM PULL BOX, 3' x 5' x 3'H NOMINAL INSIDE DIMENSIONS. PROVIDE WITH TORSION SPRING ASSISTED H-20 COVER, SAFETY LATCHES, CONDUIT KNOCKOUTS ON ALL 4 WALLS, TWO CABLE JACKS ON LONG WALLS AND ONE ON SHORT WALLS. MORTAR CONDUIT OPENINGS. NEW MAIN SWITCHBOARD, REFER TO POWER ONE-LINE DIAGRAM A/E701. INSTALL ON HOUSEKEEPING PAD PER B/E802. ROUTE FEEDERS TO MECHANICAL EQUIPMENT, ELECTRICAL GEAR, PER POWER ONE-LINE DIAGRAM A/E701. PROPOSED UNDERGROUND PATHWAY SHOWN; ALTERNATE ROUTING OR ROUTING OVERHEAD AT CONTRACTOR'S DISCRETION. NEW UNDERGROUND TELECOM CONDUITS IN JOINT TRENCH. REFER TO CIVIL DRAWINGS. LOCATE UNDERGROUND TELECOM CONDUIT (4-4") AND INTERCEPT WITH A 3'X5'X3' INTERCEPT BOX. INTERCEPT BOX SHALL HAVE H-20 COVER WITH LOCKING SAFTEY HINGES, SUMP, CABLE RACKS. JENSEN PRECAST MODEL 35TA-I OR EQUAL. 12 TERMINATE 3-4"C INTO EXISTING MHN-4. STUB CONDUITS FOR FUTURE USE IN LANDSCAPE AREA AND MARK LOCATION. PROVIDE 120V CIRCUIT TO RELOCATED IRRIGATION CONTROLLER, USE SPARE CIRCUIT FROM EXISTING BUILDING 120/208V PANEL. ROUTE NEW CONDUIT IN ACCESSIBLE CEILING SPACE. REFER TO LANDSCAPE PLANS. PROVIDE 120V CONNECTION TO NEW IRRIGATION CONTROLLER, VERIFY HARDWIRE OR GFCI RECEPTACLE WITH WP WHILE-IN-USE COVER. REFER TO LANDSCAPE PLANS. FIRE ALARM CONTROL PANEL (FACP). REFER TO E5.00B FOR POWER REQUIREMENTS. PROVIDE 1" UNDERGROUND PATHWAY FROM FACP TO SITE BACKFLOW PREVENTERS AND PIV IN JOINT TRENCH. STUB CONDUITS FOR FUTURE USE AT DAVIES HALL, VERIFY EXACT LOCATION TO STUB WITH LRCCD IT PRIOR TO INSTALLATION. LOCATE AND PROTECT EXISTING TELECOMMUNICATIONS CONDUITS IN AREA OF NEW JOINT HYDRONIC TRENCH. PROVIDE 2-1.25" MTC FROM SOUTH WALL OF ELECT RM 110B ((F) PANEL LOCATION) FOR (F) EV CHARGING STATIONS. VERIFY LOCATION OF SITE CONDUIT STUBS WITH THE OWNER AND MARK LOCATION.





- HANDHOLE LOCATIONS ARE DIAGRAMMATIC AND NOT DIMENSIONED. LOCATE NEW HANDHOLES IN CLOSEST LANDSCAPED AREA WHEREVER POSSIBLE, COORDINATE WITH
- "LIGHTING". SITE LIGHTING CONDUITS TO BE 1.0" MINIMUM, UON. CONDUCTORS TO BE #10
- EXISTING SITE LIGHTING THAT IS TO REMAIN (REFER TO NUMBERED SHEET NOTES #3, #4) CONSTRUCTION. PROVIDE TEMPORARY CONTROLLED POWER AS REQUIRED IF EXISTING









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