



**Business Services  
Contracts Office**

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**ADDENDUM NO. 4**

Date: January 18, 2023

Issued by: Sacramento City Unified School District

**Project: Project #: 0262-461-CBW-R-M  
Clayton B. Wire Rehabilitation and Maintenance Project**

This addenda shall supersede the original Information, attachments, and specifications regarding Project No. **0262-461-CBW-R-M** where it adds to, deletes from, clarifies or otherwise modifies them. All other conditions and any previous addenda shall remain unchanged.

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**Part A – Bidding and Contract Requirements**

**Refer to Project Manuals, Book 1 and 2, Table of Contents, Technical Specifications**

**ADD** Division 08      08 11 00 Metal Doors and Frames  
**ADD** Division 09      09 51 00 Acoustical Ceilings  
**ADD** Division 09      09 65 16 Resilient Flooring – Sheet Vinyl  
**ADD** Division 10      10 21 13 Toilet Compartments and Cubicles  
**ADD** Division 26      26 50 00 Lighting

**AD4.01 Refer to Project Manual, Book 1, Exhibit F – Assessment Sheets:**

All the Assessment Sheets have been revised with items indicated below and uploaded as an Excel Workbook to e-Builder and can be found at the e-Builder link:

<https://gateway.app.e-builder.net/app/bidders/landing?bidpackageid=cab1d7e1-014b-4d77-94be-f6c44ac48969>

**AD4.02 Refer to Project Manual, Book 1, Exhibit F – All Assessment Sheets that contain Repair Type: Interior Light Bulb Replacement:**

**Delete** Repair Type Interior Light Bulb Replacement

**AD4.03 Refer to Project Manual, Book 1, Exhibit F – All Assessment Sheets that contain Repair Type: Interior Paint:**

**Add** to Paint Comments + Door

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**AD4.04 Refer to Project Manual, Book 1, Exhibit F – Assessment Sheets:**

**REPLACE** Classroom 14 Assessment Sheet in its entirety:

- Interior Electrical Panel Scope has been revised to include adding a door to the panel
- Interior Ceiling Tiles Scope has been removed
- Interior Repair Type Added: Provide & Install New T-Bar Grid & 2x4 Acoustical Tiles with the comment: Ceiling has been removed, no demo needed
- Interior Fluorescent Light Fixture Bulbs replaced with, “Provided & Install New 2x4 LED Fixtures, Quantity of 12 Fixtures.”
- Interior Demo Restroom scope has been updated to include: Remove walls, ceiling & fixtures. Cut & Cap all lines. Patch-back walls and paint with rest of room.

**AD4.05 Refer to Project Manual, Book 1, Exhibit F – Assessment Sheets:**

**REPLACE** Classroom 15 Assessment Sheet in its entirety:

- Interior Provide and Install new LED Light Fixtures replaced with, “Provided & Install New 2x4 LED Fixtures, Quantity of 12 Fixtures.”
- Interior Demo Restroom Comment added: Remove walls, ceiling & fixtures. Cut & Cap all lines. Patch-back walls and paint with rest of room
- Interior Ceiling Repair has been revised to “Provide & Install New T-Bar Grid & 2x4 Acoustical Tiles” with the comment: “Ceiling has been removed; no demo needed”

**AD4.06 Refer to Project Manual, Book 1, Exhibit F – Assessment Sheets:**

**REPLACE** Classroom 19 Assessment Sheet in its entirety:

- SQFT has been revised from 224 SQFT to 784 SQF

**Part B – TECHNICAL REQUIREMENTS**

**AD4.07 Refer to Project Manual, Book 2:**

**ADD** SECTION 07 31 13 Shingle Roof

**ADD** SECTION 08 11 00 Metal Doors and Frames

**ADD** SECTION 09 51 00 Acoustical Ceilings

**ADD** SECTION 09 65 16 Resilient Flooring – Sheet Vinyl

**ADD** SECTION 10 21 13 Toilet Compartments and Cubicles

**ADD** SECTION 26 50 00 Lighting

**Part C - DRAWINGS**

**(Not Used)**

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**Part D- BIDDERS QUESTIONS**

**AD1.09 REFER TO FOLLOWING BIDDER'S RFIs:**

**Question #1:** CR 15 – Ceiling Repair: Is this going to be drywall or T-bar?

**Response:** Assessment Sheets for CR 14 & 15 have been revised to indicate Provide & Install New T-Bar Ceiling & 2 x 4 Acoustical Tiles (See AD4.01 & AD4.02 above, attached assessment sheets & Specs)

**Question #2:** CR 19 – Is 224 SF the correct room SF for the classroom? It seems small.

**Response:** Correct SF is 784

**Question #3:** Portable Restroom – Boys & Girls: What is the flooring substrate?

**Response:** Assumed plywood (See AD4.04 and attached assessment sheet)

**Question #4:** Do you have a district spec for the exterior signage or a detail?

**Response:** District does not have spec. Please match to existing, with understanding new colors will look different than faded existing.

**Question #5:** Do you have a spec for the toilet partitions in the portable restroom?

**Response:** District does have a spec section. Please see attached section 10 21 13 Toilet Compartments and Cubicles

**Question #8:** CR 14 & CR 15 have a note to Demo the classroom restrooms. Is the intent of the demo to remove the fixtures and cut and cap the plumbing only?

**Response:** Assessment Sheets for CR 14 & CR 15 have had the comment added: "Remove walls, ceiling & fixtures. Cut & Cap all lines. Patch-back walls and paint with rest of room." (Please see AD4.02 & 4.03 and attached Assessment Sheets)

**Question #9:** Do you have a spec for the new blinds in CR 13 -B1?

**Response:** District does not have spec section. Please match existing mini-blinds as close as possible.

**Question #12:** Do you have a spec for the Vinyl flooring and base?

**Response:** District does have a spec section. Please see attached 09 65 16 Resilient Flooring – Sheet Vinyl

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**Question #13:** Is there an existing fence that needs to be demolished? How tall is the new 100 ft. chain link fence with slats?

**Response:** Existing chain-link fence stays in place. Only vinyl slates are to be added. Fence assumed to be 5' tall.

**Question #14:** Do you have a spec for the fire extinguishers?

**Response:** No, but please provide Multipurpose Dry Chemical with wall-mount bracket.

**List of Attachments:**

**AD4.10** Exhibit E – Exterior Scope (1 Page)

**AD4.11** Exhibit F – Assessment Sheets (45 Pages)

**AD4.12** Specification Section 07 31 13 Shingle Roof

**AD4.12** Specification Section 08 11 00 Metal Doors and Frames

**AD4.13** Specification Section 09 51 00 Acoustical Ceilings

**AD4.14** Specification Section 09 65 16 Resilient Flooring – Sheet Vinyl

**AD4.15** Specification Section 10 21 13 Toilet Compartments and Cubicles

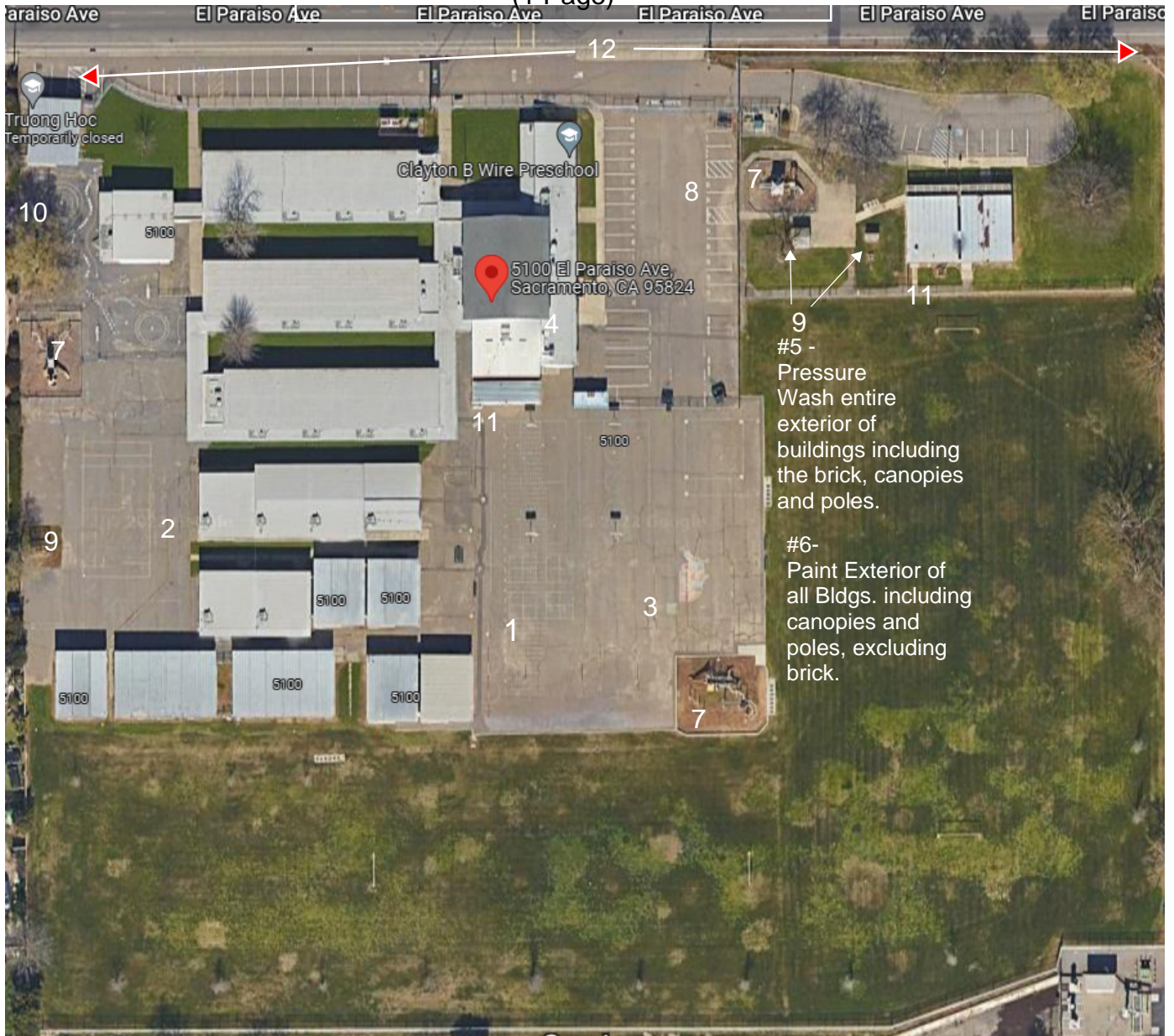
**END OF ADDENDUM NO. 4**

**Contractor to sign as acknowledgment of receipt and return with Bid:**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Company Name (please print) \_\_\_\_\_

## Exhibit E - Exterior Repairs (1 Page)



### Miscellaneous Exterior

Item	Repair Type	Comments
1	Tetherball Refresh (East) - Qty of 3	Provide & Install new Ball and Teather
2	Tetherball Refresh (West) - Qty of 4	Provide & Install new Ball and Teather
3	Volleyball Poles - Qty or 3	Remove & Provide and Install New Poles
4	Basketball Backboards and Hoops Replaced - Qty of 4	Poles to Remain, Provide & Install new Backboards, Hoops & Nets
5	Pressure Wash	Complete Exterior of all Buildings including the brick
6	Paint entire exterior of campus buildings including canopies and poles, excluding brink exterior	
7	All Play Areas - Qyt of 3	Remove Existing Bark - Provide & Install New Park
8	Site signage needed (Example: ADA Parking)	Scope TBD - Covered by Owner Allowance
9	Items to Demo & Remove	Free standing structures in Pre-Shool Yard + West Aspahl Area
10	Vinyl Privacy Slates added at Kinder Playground existing 5' high chainlink fence	~100 LF of Privacy slates only
11	Remove Existing Drinking Fountain & Install OFCI Bottle Filler, Qty of 1, on South side of Portable Restroom Bldg and Qty of 1, on South side of P10 Pre-School Bldg.	Provide Pick-up of Units from District Location. District Standard Spec will be Provided
12	Paint Ornamental Fence Black ~ 650 LF	

Attachment AD4.11 - Exhibit F - Assessment Sheets

**Admin Office**

~ Interior SQFT = 260

~ Interior Average Wall Height 9'-5"

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ Door
Interior	Paint	Walls + Trim + Ceiling
Interior	Ceiling Tiles Reattached and Painted	
Exterior	Provide & Install Provide & Install Room Signage	Confirm Naming of Rooms

## Admin Closet

~Interior SQFT = 49

~Interior Average Wall Height = 8.0

Int/Ext	Repair Type	Comments
Interior	Provide & Install New Carpet w/ Rubber Base	
Interior	Paint	Walls + Trim + Ceiling (Hard Lid)
Interior	Casework Painted	

**Bldg 001**

**Nurse Office & Restroom**

~ Interior Vinyl Floor SQFT = 240

~ Interior Average Wall Height = 10' 4"

Int/Ext	Repair Type	Comments
Interior	New Vinyl Floor Tile	
Interior	Paint	Walls + Trim + Ceiling
Interior	T-Bar Ceiling Acoustical Tiles	1 Tile Replaced, Rest Put in Place Up & Painted
Interior	Casework Painted	
Interior	Casework Repaired	Adjust Doors
Interior	Rest Room - New Vinyl Floor	Replace with New Vinyl (See Spec for District Standard, color TBD)



**Bldg 001****Principal Office**

~Interior SQFT = 184

~Interior Average Wall Height = 12'-9"

**Principal Bathroom**

~Interior SQFT = 28

~Interior Wall Height = 12'-9"

<b>Int/Ext</b>	<b>Repair Type</b>	<b>Comments</b>
Interior	Provide & Install New Carpet w/ Rubber Base	Walk-Off Mat @ Door
Interior	Paint	Walls + Trim + Case Work + Ceiling Tiles
Interior	Ceiling Tiles: Replace (2), Secure Remaining & Paint	Replace 2, Secure Remaining & Paint
Interior	Casework Painted	
Interior	Restroom - Paint	Walls + Trim + Ceiling

## Admin - Break/Galley Kitchen

~Interior SQFT = 80

~Interior Average Wall Height = 8'3"

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide & Install New Carpet w/ Rubber Base	Walk-Off Mat @ Door
Interior	Paint	Walls + Trim + Ceiling Tiles
Interior	Reattach loose ceiling tiles	
Interior	Casework Painted	
Interior	Casework Repaired	Cabinet Door Adjustments Needed
Interior	Door Repair	

## MPR Kitchen Office/Storage

~Interior SQFT = 80

~ Interior Wall Height 8' 3"

Int/Ext	Repair Type	Comments
Interior	Provide & Install New Carpet w/ Rubber Base	
Interior	Paint	Walls + Trim + Ceiling (Hard Lid)
Interior	Casework Painted	
Interior	Casework Repaired	Door Adjustments Needed on cabinets outside of Office/Storage Room

## MPR Kitchen

~ Interior SQFT = 500

~ Interior Wall Height = 9'

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide & Install Vinyl Floor	
Interior	Paint	Walls + Trim + Ceiling Tiles
Interior	Ceiling Tiles	Replace (2) , Secure as needed & Paint
Interior	Casework Painted	
Interior	Casework Repaired	Tighten Handles
Interior	Casework Reattached	Cabinet Door
Interior	Casework Removed	Remove Metal Cabinet Over the Sink

## MPR Storage

~Interior SQFT = 200

~ Interior Wall Height = 9.6 Hard Lid

Int/Ext	Repair Type	Comments
Interior	Paint	Walls + Trims + Ceiling (Hard Lid)
Interior	Casework Painted	

## MPR - Breakroom

~Interior SQFT = 280

~Interior Wall Height = 9.2

Int/Ext	Repair Type	Comments
Interior	Paint	
Interior	Provide & Install Vinyl Floor	
Exterior	Door Repair	Door Closure Repair

## MPR

Interior SQFT = 2480

Stage SQFT = 1200 (In addition to)

Interior Wall Height = 20'

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Stage + Stairs next to Stage - 6 Steps (NOT Main Floor)
Interior	Paint (Main Area + Stage)	Walls + Trim + Ceiling
Interior	Flourescent Light Fixture Bulbs Replaced with Pro	Both Main and Stage
Interior	Ceiling (Main Area) - Smooth Texture & Paint	Ceiling Tiles and Mastic will be removed by HAZMAT Contractor (NIC)
Interior	Casework Painted (Stage)	
Interior	Stage Elevator	Confirm Operational, repair as needed. (Allowance)
Interior	Ice Machine	Repair Plumbing Pipes as needed. (Allowance)

**CR 01**

~Interior SQFT = 930

~ Interior Wall Height = 12'4"

<b>Int/Ext</b>	<b>Repair Type</b>	<b>Comments</b>
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (2) Doors & Sink
Interior	Paint	Walls + Trim + Ceiling Tiles + Doors
Interior	Casework Painted	
Exterior	Provide & Install Provide & Install Room Signage	One New Sign



**CR 02**

~Interior SQFT = 930

~ Interior Wall Height = 12'4"

<b>Int/Ext</b>	<b>Repair Type</b>	<b>Comments</b>
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (2) Doors & Sink
Interior	Paint	Walls + Trim + Ceiling Tiles + Doors
Interior	Ceiling Acoustical Tiles Secured	
Interior	Casework Painted	
Exterior	Provide & Install Room Signage	One New Sign

**CR 03**

~Interior SQFT = 930

~ Interior Wall Height = 12'4"

<b>Int/Ext</b>	<b>Repair Type</b>	<b>Comments</b>
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (2) Doors & Sink
Interior	Paint	Walls + Trim + Ceiling + Doors
Interior	Ceiling Acoustical Tiles	Replace 2, Secure as needed
Interior	Casework Painted	
Exterior	Provide & Install Room Signage	One New Sign

**CR 04**

~Interior SQFT = 930

~ Interior Wall Height = 12'4"

**Storage Room in CR 04**

~Interior SQFT = 50

~Interior Wall Height = 8'6"

<b>Int/Ext</b>	<b>Repair Type</b>	<b>Comments</b>
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (2) Doors & Sink
Interior	Paint	Walls + Trim + Ceiling Tiles + Doors
Interior	Ceiling Acoustical Tiles	Re-Attach as Needed
Interior	Casework Painted	
Interior	Storage Room Paint	Walls + Ceiling (Hard Lid)
Exterior	Provide & Install Room Signage	One New Sign

**CR 05 (Set-up as a Library)**

~Interior SQFT = 930

~Interior Average Wall Height = 12'4"

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (2) Doors & Sink
Interior	Paint	Walls + Trim + Ceiling Tiles + Doors (Not Casework)
Interior	Ceiling Tiles	Replace 10, Secure as needed & Paint
Exterior	Provide & Install Room Signage	One New Sign

### CR 06 (Currently Set-up as a Library)

~Interior SQFT = 930

~Interior Average Wall Height = 12'4"

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (2) Doors & Sink
Interior	Paint	Walls + Trim (Not Tackable Surface and Not Ceiling Tiles) + Doors
Exterior	Provide & Install Room Signage	One New Sign

**CR 07**

~Interior SQFT = 930

~Interior Average Wall Height = 12'4"

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (2) Doors & Sink
Interior	Paint	Walls + Trim (Not Tackable Surface and Not Ceiling Tiles) + Doors
Exterior	Provide & Install Room Signage	One New Sign

**CR 08**

~Interior SQFT = 930

~Interior Average Wall Height = 12'4"

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (2) Doors & Sink
Interior	Paint	Walls + Trim (Not Tackable Surface and Not Ceiling Tiles) + Doors
Interior	Ceiling Tiles	Secure Tiles as Needed
Exterior	Door Repair	1 Door - Weather Strip Replaced
Exterior	Provide & Install Room Signage	One New Sign

**CR 09**

~Interior SQFT = 930

~Interior Average Wall Height = 12'4"

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (2) Doors & Sink
Interior	Paint	Walls + Trim + Ceiling Tiles + Doors
Interior	Ceiling Tiles	5 Replaced, Secure as Needed
Interior	Casework Painted	(Currently Not Painted)
Exterior	Provide & Install Room Signage	One New Sign



## CR 10

~Interior SQFT = 930

~Interior Average Wall Height = 12'4"

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (2) Doors & Sink
Interior	Paint	Walls + Trim + Ceiling Tiles + Doors
Interior	Ceiling Tiles	Secure as Needed
Interior	Casework Painted	
Interior	Casework Repaired	
Exterior	Door Repair	North side door needs to be repaired
Exterior	Provide & Install Room Signage	One New Sign

**CR 11**

~Interior SQFT = 930

~Interior Average Wall Height = 12'4"

<b>Int/Ext</b>	<b>Repair Type</b>	<b>Comments</b>
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (2) Doors & Sink
Interior	Paint	Walls + Trim + Ceiling Tiles + Doors
Interior	Ceiling Tiles Re-Attach as Needed	
Interior	Casework Painted	
Exterior	Provide & Install Room Signage	One New Sign

## CR 12

~Interior SQFT = 930

~Interior Average Wall Height = 12'4"

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (2) Doors & Sink
Interior	Paint	Walls + Trim + Ceiling Tiles + Doors
Interior	Ceiling Tiles	1 Replace = Re-Attach as Needed
Interior	Casework Painted	
Exterior	Provide & Install Room Signage	One New Sign

**CR 13 - B1**

~Interior SQFT = 870

~Interior Wall Height = 8'5"

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (2) Doors & Sink
Interior	Paint	Walls + Trim + Doors
Interior	Casework Reattached	
Interior	Install New Blinds	Replace (4)
Exterior	Dry Rot	Dry Rot on Roof Soffit 2'x4' Area
Exterior	Provide & Install Room Signage	One New Sign
Exterior	Ramps/Stairs Repaired	Replace Plywood on (2) Ramps

## CR 14

~Interior SQFT = 960

~ Interior Wall Height = 10'2"

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (2) Doors & Sink
Interior	Paint	Walls + Trim + Ceiling Tiles + Doors
Interior	Provide & Install New 2x4 LED Light Fixtures into new T-Bar grid. Quantity of 12 Fixtures	
Interior	Interior Electrical Panel Repair Work	Panel Used as the Light Switch for Room - Provide and Install New Light Swith and New Panel Door
Interior	Provide & Install New T-Bar Grid & 2x4 Acoustical Tiles	Ceiling has been removed, no demo needed
Interior	Demo Restroom	Remove walls, ceiling & fixtures. Cut & Cap all lines. Patch-back walls and paint with rest of room
Interior	Casework Painted	
Interior	Casework Repaired	Handles
Exterior	Dry Rot	NE Corner Trim Replacement
Exterior	Provide & Install Room Signage	One New Sign

**CR 15**

~Interior SQFT = 960

~ Interior Wall Height = 10'2"

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (2) Doors & Sink
Interior	Paint	Walls + Trim + New Ceiling + Doors
Interior	Provide & Install New 2x4 LED Light Fixtures into new T-Bar grid. Quantity of 12 Fixtures	
Interior	Provide & Install New T-Bar Grid & 2x4 Acoustical Tiles	Ceiling has been removed, no demo needed
Interior	Floor Dry Rot	Replace 4 sheets of 4x8 floor plywood
Interior	Demo Restroom	Remove walls, ceiling & fixtures. Cut & Cap all lines. Patch-back walls and paint with rest of room
Interior	Casework Painted	
Interior	Casework Repaired	Repair Countertops (See Photo)
Interior	Roof Substrate Repair	(See Photo)
Exterior	Wall Dry Rot	Dry Rot at Side of Window, Replace Rotted Roof Sheeting (See Photo)
Exterior	Open Electrical Conduit with Exposed Wires	Remove and Cap (See Photo)
Exterior	Provide & Install Room Signage	One New Sign

CR 15 Photos



Repair Countertops



Roof Substrate Repair



Dry Rot at Side of Window



Open Electrical Conduit with Exposed Wires

**CR 16**

~Interior SQFT = 960

~ Interior Wall Height = 10'2"

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (2) Doors & Sink
Interior	Paint	Walls + Trim + Ceiling + Doors
Interior	Ceiling Repair	Ceiling tiles will have been removed - Replace with Drywall & Paint
Interior	Casework Painted	
Exterior	Provide & Install Room Signage	One New Sign



**CR 17**

~Interior SQFT = 960

~ Interior Wall Height = 10'2"

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (2) Doors & Sink
Interior	Paint	Walls + Trim + Ceiling + Doors
Interior	Casework Painted	
Interior	Casework Repaired	Edge of Countertop
Exterior	Door Replacement	2 Wood Doors Replaced
Exterior	Provide & Install Room Signage	One New Sign

**CR 18**

~Interior SQFT = 784

~Interior Wall Height = 10'2"

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (2) Doors & Sink
Interior	Paint	Walls + Trim + Ceiling + Doors
Interior	Ceiling Tiles	Re-Attached as Needed
Interior	Casework Painted	
Interior	Casework Repaired	2 Handles Needed
Interior	Drapes	Remove
Exterior	Provide & Install Room Signage	One New Sign

**CR 19**

~Interior SQFT = 784

~Interior Wall Height = 10'2"

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (2) Doors & Sink
Interior	Paint	Walls + Trim + Ceiling + Doors
Interior	Ceiling Tiles	Replace 4 + Secure As Needed
Interior	Casework Painted	
Interior	Casework Repaired	Replace Missing Handle
Interior	Drapes	Remove
Exterior	Dry Rot	10' x 10' Area + Mod Seam Facia
Exterior	Provide & Install Room Signage	One New Sign

**CR 20**

~Interior SQFT = 900

~Interior Wall Height = 10'2"

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (2) Doors & Sink
Interior	Paint	Walls + Trim + Doors
Interior	Ceiling Acoustical 2 x 4 Tiles	Replace All Ceiling Tiles
Exterior	Provide & Install Room Signage	One New Sign

## CR 21

~Interior SQFT = 900

~Interior Wall Height = 10'2"

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (2) Doors & Sink
Interior	Paint	Walls + Trim + Doors
Interior	Ceiling Acoustical 2 x 4 Tiles	Replace All Ceiling Tiles
Exterior	Door Replaced	1 Door
Exterior	Provide & Install Room Signage	One New Sign





Plywood Replaced on 1 Ramp & 1 Stairs

**CR 22**

~Interior SQFT = 960

~Interior Wall Height = 8'

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (2) Doors & Sink
Interior	Paint	Walls + Trim + Doors
Interior	Ceiling Acoustical 2 x 4 Tiles	Replace 1 Tile
Interior	Shelving Painted	18' x 6' of shelving (Not casework)
Interior	Shelving Reattached	18' x 6'
Exterior	Door Replaced	1- South Door
Exterior	Wall Dry Rot	Hole Above Door, infill (See Photo)
Exterior	Electrical Repair	Install Cap on Electrical Conduit (See Photo)
Exterior	Provide & Install Room Signage	One New Sign
Exterior	Ramps/Stairs Repaired	Replace Plywood at Front & Back Doors (See Photos)

**CR 23**

~Interior SQFT = 960

~Interior Wall Height = 8'

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (2) Doors & Sink
Interior	Paint	Walls + Trim + Doors
Interior	Ceiling Acoustical 2 x 4 Tiles	Remove and Replace all 2 x 4 Tiles
Interior	Floor Dry Rot	Southwest corner (See Photo)
Interior	Casework Painted	6'x6' case work
Interior	Casework Reattached	6'x6' case work
Exterior	Door Replaced	
Exterior	Wall Dry Rot	Dry Rot at SW Trim & Corner (See Photo)
Exterior	Provide & Install Room Signage	One New Sign
Exterior	Ramps/Stairs Repaired	Plywood Replaced on (1) ramp and (1) stairs (See Photo)



**CR 24**

`Interior SQFT = 600

~Interior Wall Height = 8'

Int/Ext	Repair Type	Yes = X	M&O Possibly Address?	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	Y		
Interior	Provide and Install New Carpet w/ Rubber Base	Y		Walk-Off Mat @ Door & Sink
Interior	Paint	Y		Walls + Trim + Doors
Interior	Modular Seam Trim Reattached - 30'	Y		
Exterior	Door Replaced	Y		
Exterior	Wall Dry Rot	Y		See Notes for Bldg P07 on CR 26

**CR 25****`Interior SQFT = 600****~Interior Wall Height = 8'**

<b>Int/Ext</b>	<b>Repair Type</b>	<b>Comments</b>
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ Door & Sink
Interior	Paint	Walls + Trim + Doors
Exterior	Wall Dry Rot	See Notes for Bldg P07 on CR 26

**CR 26**

`Interior SQFT = 600

~Interior Wall Height = 8'

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ Door & Sink
Interior	Paint	Walls + Trim + Doors
Interior	Light Fixtures Repaired	Add 2 x 4 lenses (10 Fixtures)
Exterior	Wall Dry Rot	Remove & Replace Siding: West Side 100 SQ FT. East Side 60 SQFT at bottom. South Side 120 SQFT. 45 SQFT at top. Remove & Replace S/W corner Trim.

**CR 27**

~Interior SQFT = 960

~Interior Wall Height = 8'

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ Door & Sink
Interior	Paint	Walls + Trim + Doors
Interior	Reattach Mod Seam Trim	
Exterior	Wall Dry Rot	Remove and Replace Skirting: East Side 12 SQFT. South Side 60 SQFT. Remove and Replace Trim: South East Corner

**CR 28**

~Interior SQFT = 960

~Interior Wall Height = 8'

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ Door & Sink
Interior	Paint	Walls + Trim + Doors
Interior	Reattach Mod Seam Trim	
Exterior	Wall Dry Rot	Remove & Replace NW Corner Trim. Remove & Replace 60 SQFT of Skirt Siding with 2 Vents.
Exterior	Provide & Install Room Signage	One New Sign

**CR 33**

~Interior SQFT = 960

~Interior Wall Height = 8'

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Tackable Surface	Remove and Replace 8x8 Section
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ Door & Sink
Interior	Paint	Walls + Trim + Doors
Interior	Electrical Outlet Repair	Repair - Falling off Wall
Interior	Ceiling Acoustical 2 x 4 Tiles	Remove and Replace all Tiles
Exterior	Door Replaced	(1) Door
Exterior	Wall Dry Rot	Remove and Replace: South Side 300 SQFT & East Side 60 SQFT
Exterior	Provide & Install Room Signage	One New Sign

**CR K1**

~Interior SQFT = 900

~Interior Average Wall Height = 12'3"

**Rest Room**

~ 45 SQFT

~Interior Wall Height = 10'

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (3) Door & Sink
Interior	Paint	Walls + Trim + Ceiling + Doors
Interior	Ceiling Tiles	Replace 1- Re-Attach as Needed
Interior	New Restroom Vinyl Flooring	
Interior	Casework Painted	
Exterior	Door Repair	Weather strip needed (2) doors
Exterior	Provide & Install Room Signage	One New Sign
Exterior	Paint	

## T-K (PreSchool)

~Interior SQFT = 1215

~Interior Wall Height = 8'

Int/Ext	Repair Type	Comments
Interior	Provide and Install Fire Extinguisher w/ Bracket	
Interior	Provide and Install New Carpet w/ Rubber Base	Walk-Off Mat @ (3) Door & Sink
Interior	Paint	Walls + Trim + Doors + Doors
Interior	Ceiling Acoustical 2 x 4 Tiles	Replace (20) Ceiling Tiles
Exterior	Wall Dry Rot	Remove & Replace: Entire East Side Paneling & Trim: 341 SQFT. Remove & Replace: South Side 204 SQFT. Remove & Replace: West Side 32 SQFT. Remove & Replace: Skirting Entire Building ~240 SQFT.
Exterior	Ramps/Stairs Repaired	



## Portable Restroom - Boys & Girls

Not Shown on Site Plan

~ Exterior Bldg SQFT = 600

~ Exterior Bldg. Height = 10'

Repair Type	Comments
Provide & Install Flooring Substraight - Assumed Plywood	Removal of Substrate (NIC)
Provide & Provide & Install Vinyl Flooring	
Provide & Install FRP	Replace (1) 4x8 FRP Section
Provide & Install New Partitions	Removal of Partitions (NIC)
Provide & Install New Ceiling Tiles	Removal of Ceiling Tiles (NIC)
Paint Ceiling Grid	Paint Grid
Exterior Door - Remove, Provide & Install New Metal Door	
Provide & Install New Ceiling Tiles	Removal of Ceiling Tiles (NIC)
Paint Ceiling Grid	Paint Ceiling Grid
Provide & Provide & Install Vinyl Flooring	
Provide & Install New Partitions	Removal of Partitions (NIC)

### Permanent Restrooms (4)

Repair Type	Comments
Paint	Walls (Including Tiles) + Ceiling (Hard Lids) Color TBD
Deep Clean	

Attachment AD4.12  
07 31 13  
**CB Wire – Shingle Roof Division 07 Spec**

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Furnish and install specified roofing and related components CB Wire school.
- B. Work includes:
  - 1. Removal and replacement of designated roofing.
  - 2. Installation of the following:
    - a. One ply of synthetic underlayment.
    - b. Granule surfaced, Cool Roof rated asphalt shingle roofing.
    - c. Associated metal flashing.
- C. Include 3 squares of extra shingles in base bid for District stock.

1.2 REFERENCES

- A. ASTM D 225 - Standard Specification for Asphalt Shingles (Organic Felt) Surfaced with Mineral Granules.
- B. ASTM D 226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
- C. ASTM D 3018 - Standard Specification for Class A Shingles Surfaced with Mineral Granules.
- D. ASTM D 3161 - Standard Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method).
- E. ASTM E 108 - Standard Test Methods for Fire Tests of Roof Coverings.

1.3 SUBMITTALS

- A. Product Data: Provide manufacturer's printed product information indicating material characteristics, performance criteria, and product limitations.
- B. Manufacturer's Installation Instructions: Provide published instructions that indicate preparation required and installation procedures.

1.4 QUALITY ASSURANCE

- A. Contractor shall:
  - 1. Be experienced in shingle roof installation.
  - 2. Be acceptable by District.
  - 3. Be a Manufacturer Approved Contractor.

4. Have not been in Chapter 7 during the last ten (10) years.
- B. Maintain one copy of manufacturer's application instructions on project site.
- C. Verify that manufacturer's label contains reference to specified ASTM standards.

## 1.5 WARRANTY

- A. Manufacturer's Warranty: Furnish shingle manufacturer's warranty for product(s) of this section as follows:

### ASPHALT FIBER GLASS SHINGLES

1. Owens Corning: Lifetime limited warranty.
- B. Warranty Supplement: Provide manufacturer's supplemental Tru Protection warranty to cover labor and materials in the event of a material defect for the following period after completion of application of shingles:
  1. First ten years.

## PART 2 PRODUCTS

### 2.1 MANUFACTURER

- A. Provide products manufactured by Owens Corning Roofing and Asphalt, LLC or District Approved Equal.
- B. Substitutions of ASTM shingles that meet or exceed those specified will be allowed based upon District acceptance.

### 2.2 ASPHALT FIBER GLASS SHINGLES

- A. **Owens Corning TruDefinition Duration Cool Shingles:** Conforming to ASTM D 3018 Type I - Self-Sealing; UL Certification of ASTM D 3462, ASTM D 3161 Class "F" (110-mph)/UL997 Wind Resistance, and UL Class A Fire Resistance; glass fiber mat base, ceramically colored/UV resistant mineral surface granules across entire face of shingle; three-layer laminated four-tab shingle.
  1. Color: TBD
  2. Product Attributes: Includes SureNail Technology, a woven fabric reinforcing strip in the nailing zone on the shingle's top surface.

### 2.3 SHEET MATERIALS

- A. Underlayment: Weather-shedding synthetic polyolefin barrier.

1. ProArmor Synthetic Roof Underlayment or equal.

## 2.4 FLASHING MATERIALS

- A. Sheet Flashing: 24 gauge, bonderized and painted to match school colors.

## 2.5 ACCESSORIES

- A. Nails: Standard round wire type roofing nails, corrosion resistant; hot dipped zinc coated steel, aluminum, or chromated steel; minimum 3/8 inch head diameter; minimum 11 or 12 gage shank diameter; shank to be of sufficient length to penetrate through roof sheathing or 3/4 inch into solid wood, plywood, or non-veneer wood decking.
- B. Asphalt Roofing Cement: ASTM D 4586, Type I or II.

## 2.6 ROOF VENTILATION

- A. Low Profile Vent:
  1. Provide 72 square inches of Net Free Ventilation Area (NFVA).
  2. O'Hagin WeatherMaster or equal.
  3. Install 4 on either side of ridge for a total of 8 new vents.

## 2.7 FLASHING FABRICATION

- A. Form flashing to protect roofing materials from physical damage and shed water.
- B. Form sections square and accurate to profile, in maximum possible lengths, free from distortion or defects detrimental to appearance or performance.
- C. All edge metal on the rake edges will have a minimum 4" face with a kick & hem and be installed with a continuous cleat. Edge metal at gutters will have a minimum 3" face and kick and hem.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify existing site conditions.
- B. Verify that roof penetrations and plumbing stacks are in place and flashed to deck surface.
- C. Verify roof openings are correctly framed prior to installing work of this section.

- D. Verify deck surfaces are dry and free of ridges, warps, or voids.

### 3.2 ROOF DECK PREPARATION

- A. Follow shingle manufacturer's recommendations for acceptable roof deck materials.
- B. Broom clean deck surfaces under eave protection and underlayment prior to their application.

### 3.3 INSTALLATION - PROTECTIVE UNDERLAYMENT

- A. Install one layer of synthetic underlayment perpendicular to slope of roof and lap minimum 4 inches over eave protection.
  - 1. Install according to manufacturer's instructions.

### 3.4 INSTALLATION - METAL FLASHING

- A. Weather-lap joints minimum 2 inches.
- B. Seal work projecting through or mounted on roofing with asphalt roofing cement and make weather-tight.

### 3.5 INSTALLATION - ASPHALT SHINGLES

- A. Install shingles in accordance with manufacturer's instructions for product type and application specified.

### 3.6 FIELD QUALITY CONTROL

- A. Visual inspection of the Work will be provided by District.

### 3.4 PROTECTION OF FINISHED WORK

- A. Protect finished work.
- B. Do not permit traffic over finished roof surface.
- C. Remove all dirt and debris from the field of the roof and the gutters. Inspect the building grounds and remove all miscellaneous debris.

END OF SECTION

Attachment AD4.13

SECTION 08 11 00

METAL DOORS AND FRAMES

**PART 1 - GENERAL**

1.01 SUMMARY

A. Work Included:

1. Non-rated and fire rated rolled steel doors, panels, and frames.
2. Louvers.

B. Referenced Sections:

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Section 08 14 00 - Wood Doors and Frames.
3. Section 08 16 13 - FRP Doors.
4. Section 08 43 00 - Storefronts.
5. Section 08 71 00 - Door Hardware.
6. Section 08 80 00 - Glazing.

1.02 REFERENCES

- A. ANSI A250 .8 – Recommended Specification for Standard Steel Doors and Frames.
- B. ANSI A250.3 - Test Procedure and Acceptance Criteria for Factory-Applied Finish Painted Steel Surfaces for Steel Doors and Frames.
- C. ANSI A250 .10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
- D. ASTM A653 - Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot- Dip Process.
- E. ASTM A924 - General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
- F. CEC - California Energy Commission.
- G. NFPA 80 - Fire Doors and Windows.
- H. SDI-105 - Recommended Erection Instructions for Steel Frames.

- I. DHI - Door and Hardware Institute.
- J. CBC - California Building Code, (CCR) California Code of Regulations, Title 24, Part 2 and Part 6.
- K. UL 9 - Fire Tests of Window Assemblies.
- L. UL 10C - Fire Tests of Door Assemblies.

### 1.03 QUALITY ASSURANCE

- A. Conform to requirements of ANSI A250.8.
- B. Fire rated door, panel and frame construction to conform to UL 9 and UL 10C.
- C. Installed frame and door assembly to conform to NFPA 80 for fire rated class indicated on Drawings.
- D. Installed exterior frame and door assembly to be weather tight
- E. Manufacturer shall have both fabrication and assembly plant located within the continental United States or Canada. Products that are either fabricated or assembled outside the continental United States or Canada are not acceptable.

### 1.04 SYSTEM REQUIREMENTS

#### A. Performance Requirements

1. Thermal Performance: Glazed exterior borrowed lite, side lite and transom lite frames shall have an overall minimum u-value of 1.19 as rated in accordance with the default table method approved by the California Energy Commission (CEC). Provide Label Certificate FC-1, Figure 3-3, from the Nonresidential Compliance Manual documenting compliance with the CBC, California Building Code, (CCR) California Code of Regulations, Title 24, Part 6, Section 116, Table 116-A.
2. Solar Heat Gain Coefficient: Glazed exterior borrowed lite, side lite and transom lite frames shall have an overall maximum solar heat gain coefficient of 0.68 as rated in accordance with default table method approved by the California Energy Commission (CEC). Provide Label Certificate FC-1, Figure 3-3, from the Nonresidential Compliance Manual documenting compliance with the CBC, California Building Code, (CCR) California Code of Regulations, Title 24, Part 6, Section 116, Table 116-B.

#### A. Regulatory Requirements

1. Conform to CBC, California Building Code, (CCR) California Code of Regulations, Title 24, Part 2 for fire rated frames and doors.
2. Conform to CBC, California Building Code, (CCR) California Code of Regulations, Title 24, Part 6, for u- value and solar heat gain coefficient.

### 1.05 SUBMITTALS



- A. Submit shop drawings and product data under provisions of Section 01 33 00.
- B. Indicate frame configuration, anchor types and spacings, location of cutouts for hardware, reinforcement, and finish.
- C. Indicate door elevations, internal reinforcement, closure method, and cut outs for glazing and louvers.
- D. Submit two (2) samples of exterior frame profile at mullion intersection.
- E. Submit Label Certificate FC-1, Figure 3-3, from the Nonresidential Compliance Manual documenting compliance with the CBC, California Building Code, (CCR) California Code of Regulations, Title 24, Part 6, Section 116, Table 116-A and 116-8.

#### 1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, protect, and handle products under provisions of Section 016200.
- B. Store products on site under cover.
- C. Place products on at least 4-inch wood sills to prevent rust and damage.
- D. Protect doors and frames with resilient packaging.

#### 1.08 SEQUENCING AND SCHEDULING

- A. Sequence work under the provisions of Section 01 32 13.
- B. Schedule work under the provisions of Section 01 32 13.
- C. Schedule delivery of all doors and frames so as not to delay progress of other trades.

### **PART 2 - PRODUCTS**

#### 2.01 ACCEPTABLE MANUFACTURERS

- A. Amweld Building Products, Inc., [www.amweld.com](http://www.amweld.com).
- B. Curries Mfg. Inc., [www.curries.com](http://www.curries.com).
- C. Door Components, Inc., [www.doorcomponents.com](http://www.doorcomponents.com).
- D. Fleming, [www.flemingdoor.com](http://www.flemingdoor.com).
- E. Krieger Steel Products Company, [www.kriegersteel.com](http://www.kriegersteel.com).

F. Republic Builders Products Corporation, [www.republicdoor.com](http://www.republicdoor.com).

G. Curries, [www.curries.com](http://www.curries.com).

H. Ceco, [www.cecodoor.com](http://www.cecodoor.com).

I. Substitutions: Under provisions of Section 01 25 13.

## 2.02 MATERIALS

### A. Doors, Panels and Frames

1. Steel: Commercial quality cold rolled steel conforming to ASTM A653 galvanized to A60 or G60 coating class or Type 8, A40 (ZF120) according to ASTM A924 with minimized spangle, mill phosphatized.
2. Exterior Doors: ANSI A250.8, Level 3, extra heavy-duty, Model 2, continuous welded seam, minimum 0.053-inch-thick faces (16 GA. Minimum).
3. Interior Doors: ANSI A250.8, Level 2 heavy duty, Model 1, minimum 0.042-inch-thick faces (18 GA. Minimum).
4. Exterior Frames: ANSI A250 .8, Level 3, 0.067-inch-thick material (14 GA. Minimum), core thickness.
5. Interior Frames: ANSI A250 .8, Level 2, 0.053-inch-thick material (16 GA. Minimum), core thickness.
6. Panels: Same materials and construction as specified for doors.

### B. Door Core

1. Exterior Core: Polystyrene insulation.
2. Interior Door Core: Impregnated cardboard honeycomb.

### C. Closer Channels

1. Close top and bottom edge of exterior door flush with inverted steel channel closure. Weld all joints watertight.

### D. Frame Anchors

1. Masonry Anchors: Adjustable T-strap, 0.053-inch-thick steel, corrugated, 2-inch x 10-inch size. Fire rated frames to have UL listed perforated strap anchor permanently anchored to frame.
2. Metal Stud Anchor: Z type anchor, welded to frame, 0.053-inch-thick steel, UL listed as required for fire rating.
3. Wood Stud Anchor: U shaped anchor, welded to frame, 1 inch wide, 0.053-inch-thick steel, with 2 pre-punched holes in nailing flange. UL listed as required for fire rating.
4. Existing Wall Anchor: 0.053-inch-thick pipe spacer with 2-inch x 0.053-inch-thick steel plate sized to accommodate a 3/8 diameter countersunk flathead expansion anchor. UL listed as required for fire rating.

5. Floor Clip: Angle anchor, full width of frame, 0.067-inch-thick steel.
- E. Protective Coatings
1. Bituminous Coating: Fibered asphalt-based corrosion proofing and sound deadener compound. Equivalent to Transcoat 101-F, [www.oilservice.com](http://www.oilservice.com).
  2. Primer: Clean and treat with three stage iron phosphate process. Provide baked-on shop coat of EPA compliant gray synthetic rust - inhibitive enamel primer meeting acceptance criteria of ANSI 250.10.
- F. Hardware Reinforcement
1. Fabricate frames and doors with hardware reinforcement plates welded in place.
  2. Hinge reinforcing shall be full width of frame profile.
  3. Provide spacers for all thru-bolted hardware.
  4. Reinforcement components shall be the following minimum thickness:
  5. Hinge (door and frame)      3/16 inch
  6. Mortise Lock or Deadbolt    0.093 inch
  7. Bored Lock or Deadbolt      0.093 inch
  8. Flush Bolt Front              0.093 inch
  9. Surface Bolt                    0.093 inch
  10. Surface Applied Closer      0.093 inch
  11. Hold Open Arm                0.093 inch
  12. Pull Plates and Bars        0.067 inch
  13. Surface Exit Device         0.093 inch
  14. Floor Checking Hinge       0.167 inch
  15. Pivot Hinge                    0.167 inch

### 2.03 ACCESSORIES

- A. Door Louvers: 18-gauge, non-vision, inverted split "Y louver with 12-gauge security grille two sides, prime coat finish for field painting. Provide optional galvanized attached mesh insect screen. Size as shown on Drawings.
1. Anemostat security door louvers, model #PLSL.
  2. Air Louvers Inc., Model 1500-A.
- B. PeepHoles: Schlage 190 Degree Wide Angle Viewer. Satin nickel finish.
- C. Rubber Silencers: Resilient rubber as supplied by Section 08 71 00.
- D. Glazing Stops: Rolled steel channel shape, mitered corners; prepared for countersink style tamperproof screws at door installations, square butt at light frames.

### 2.03 FABRICATION

- A. When shipping limitations so dictate, frames for large openings shall be fabricated in sections designed for splicing.
- B. All spliced joints shall occur on the interior side of exterior frames.
- C. Fabricate frames as full profile welded units.
- D. All face, rabbet and soffit joints between abutting members shall be continuously welded and finished smooth when exposed to exterior.
- E. Corner joints shall have all contact edges closed tight, with faces mitered and continuously welded.
- F. Frames with multiple openings shall have mullion members fabricated with no visible seams or joints. All face, rabbet and soffit joints between abutted members shall be continuously welded and finished smooth when exposed to exterior.
- G. Provide 3/8-inch back bend return on frames where gypsum board wall material occurs whether on one or both sides.
- H. Mullions for Double Doors: Removable type supplied by Section 08 71 00.
- I. Dust cover boxes or mortar guards of 0.016-inch-thick steel shall be provided at all hardware mortises on frames.
- J. Reinforce frames wider than 48 inches with roll formed, 0.093-inch-thick steel channels fitted tightly and welded into frame head, inverted U-shape profile.
- K. Prepare frame for silencers except for frames which receive weatherstripping. Provide three (3) single rubber silencers for single doors on strike side, and two (2) single silencers on frame head at double doors without mullions.
- L. Provide steel spreader temporarily attached to feet of both jambs as a brace during shipping and handling. Spreader is not to be used for installation purposes.
- M. Attach fire rated label to each frame and door unit.
- O. Manufacturing Tolerances
  - 1. Manufacturing tolerance shall be maintained within the following limits:
  - 2. Frame width                   +1/16 inch -1/32 inch
  - 3. Frame height                +-3/64 inch
  - 4. Frame face                   +-1/32 inch
  - 5. Frame stop                   +-1/32 inch
  - 6. Frame rabbet                +-1/64 inch
  - 7. Frame depth                 +-1/32 inch
  - 8. Frame throat                +-1/16 inch
  - 9. Door width and height   +-3/64 inch

10. Door thickness	+1/16 inch
11. Hardware location	+1/32 inch
12. Door flatness	+1/16 inch

## 2.4 FINISHES

- A. Primer: Baked on rust-inhibitive enamel.
- B. Finish: Site paint under provisions of Section 09 91 00.
- C. Coat inside of frame profile for frames installed in masonry construction with bituminous coating to a thickness of 1/16 inch. Coating may be factory or site applied. Do not apply coating to fire rated frames.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. Install frames in accordance with SDI-105.
- B. Install doors in accordance with DHI.
- C. Install fire doors and frames in accordance with NFPA 80.
- D. Installation of exterior doors and frames to be weathertight and waterproof.
- E. Seal penetration of all surface applied screws on exterior face of frames at glass stops and hardware attachments.
- F. Coordinate with wall construction and details for anchor placement. Provide anchors as follows:
- G. Frames up to 7 feet 6 inches height - 4 anchors each jamb.
- H. Frames 7 feet 6 inches to 8 feet 0-inch height - 5 anchors each jamb, plus an additional anchor for each 2 feet or fraction thereof over 8 feet 0 inch.
- I. Frames for double doors; minimum of two (2) anchors in head approximately 12 inches from each jamb.
- J. Borrowed lite frames; two (2) anchors each jamb plus 1 for each 18 inches or fraction thereof over 3 feet 0 inch. Minimum two (2) anchors in head and sill approximately 12 inches from each jamb plus 1 for each 30 inches of length or fraction thereof.
- K. Floor anchors - one (1) anchor each jamb for interior doors. Where wall construction will not allow placement of floor anchor, provide one (1) additional jamb anchor as close to floor as possible.

- L. Existing wall anchors shall be welded to provide non-removable condition. Welded bolt head to be ground, dressed and finished smooth.
- M. Frames installed in masonry walls to be fully grouted with masonry grout.
- N. Exposed field welds to be finished smooth and touched up.
- O. Primed or painted surfaces which are scratched or marred shall be touched up.
- P. Hardware to be applied in accordance with hardware manufacturer's templates and instructions.
- Q. Coordinate installation of glass and glazing.
- R. Install door louvers.
- S. Install roll formed steel reinforcement channels between two abutting frames. Anchor to structure and floor.

### 3.02 CONSTRUCTION

#### A. INSTALLATION TOLERANCES

- 1. Edge clearance for swinging doors shall not exceed the following:
  - a. Between door and frame at head and jamb: 1/8 inch.
  - b. Between edge of pair of doors: 1/8 inch.
  - c. At door sill with threshold. (From bottom of door to top of threshold): 3/8 inch.
  - d. At door sill with no threshold: 1/2 inch.
  - e. At door bottom and rigid floor covering per NFPA 80: 1/2 inch.
  - f. At door bottom and nominal floor covering per NFPA 80: 5/8 inch.
- 2. Frame installation tolerance shall not exceed the following:
  - a. Squareness  $\pm 1/16$  inch.
  - b. Alignment  $\pm 1/16$  inch.
  - c. Plumbness  $\pm 1/16$  inch.
  - d. Diagonal Distortion  $\pm 1/32$  inch.

END OF SECTION

Attachment AD4.14

SECTION 09 51 00

ACOUSTICAL CEILINGS

**PART 1 – GENERAL**

1.01 SUMMARY

A. Section Includes:

1. Lay-in acoustical ceiling systems and metal suspension system.

B. Related Requirements:

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Section 09 29 00 - Gypsum Board.
5. Division 23 - HVAC.
6. Division 26 - Electrical.

1.02 REFERENCES

- A. Conform to CBC requirements and UL - Tunnel Test for Fire Hazard Classification of Building Materials.
- B. CISCA: Acoustical Ceilings Use and Practice.
- C. Division of the State Architect: Comply with requirements of IR 25-2.10.
- D. ASTM A641 - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
- E. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- F. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
- G. ASTM C635 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
- H. ASTM C636 - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
- I. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

- J. ASTM E580 – Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions.
- K. ASTM E1264 - Standard Classification for Acoustical Ceiling Products.
- L. ASTM E1414 - Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum.
- M. ASTM E1477 - Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.
- N. ASCE 7 - Minimum Design Loads for Buildings and Other Structures, as amended by CBC 1615A.1.16.
- O. CHPS Low-Emitting Materials Table: Materials submitted must be listed as low emitting on the CHPS website, [www.CHPS.net](http://www.CHPS.net).

### 1.03 SUBMITTALS

#### A. Samples:

1. Lay in panels of each specified type, 6-inch by 6-inch minimum size.
2. Suspension System: 12-inch-long samples of suspension system members, connections, moldings and wall angles, for each color specified.

#### B. Shop Drawings:

1. Indicate complete plan layouts and installation details.
2. Indicate related Work of other sections which is installed in, attached to, or penetrates ceiling areas, such as air distribution and electrical devices.

#### C. Product Data:

1. Suspension System for Lay-in Ceiling: Printed data for suspension system components, including load tests, indicating conformance to specified tests and standards.
2. Acoustical units: Printed data indicating conformance to specified tests and standards.

- D. Maintenance Materials: Provide extra panels equal to 1 percent of the area of each typical module size of acoustical panel, but not less than eight (8) of each specified size, style and color.

### 1.04 QUALITY ASSURANCE

- A. Ceiling systems shall consist of lay-in acoustical ceiling panels by a single manufacturer and suspension systems by a single manufacturer for the entire project.

- B. Qualifications of Installer: Minimum five (5) years' experience in installing acoustical ceiling systems of the types specified.



C. Design Criteria:

1. Deflection of finished surface to 1/360 of span or less.
2. 1/8-inch maximum permissible variation from true plane measured from 10-foot straightedge placed on surface of finished acoustical fiber units.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to the Project site in original sealed packages.
- B. Storage: Store materials in building area where they will be installed, in original package. Keep clean and free from damage due to water or deteriorating elements.
- C. Handle in a manner to prevent damage during storage and installation.

1.06 PROJECT CONDITIONS

- A. Installation of acoustical ceiling system shall not begin until the building is enclosed, permanent heating and cooling is in operation, and residual moisture from plaster and concrete work has dissipated. Building areas to receive ceilings shall be free of construction dust and debris.
- B. Environmental Requirements: Maintain temperature in space at 55 degrees F or above for 24 hours before, during, and after installation of materials.
- C. Scheduling:
  1. Before concealing Work of other sections, verify required tests and inspections have been completed.
  2. Coordinate with related Work of other sections. Coordinate location and symmetrical placement of air distribution devices, electrical devices, and penetrations with related Work section.

1.07 WARRANTY

- A. Manufacturer shall provide a 10-year material warranty.
- B. Installer shall provide a two (2) year fabrication and installation warranty.

**PART 2 - PRODUCTS**

2.01 ACCEPTABLE MANUFACTURERS

- A. USG Corporation.
- B. Armstrong World Industries.
- C. CertainTeed Ceilings Corp.

D. Or Approved Equal.

## 2.02 SUSPENSION SYSTEM

- A. Metal suspension system for acoustical lay-in tile shall be hot-dipped galvanized steel conforming to ASTM A653. Main beams and cross tees shall be double-web steel construction with exposed flange design, with factory punched cross tee slots, hanger holes and integral couplings.
- B. Metal suspension system for acoustical lay-in tile shall conform with ASTM C635, C636 and E580 and section 13.5.6 of ASCE 7, as amended by CBC Section 1615A.1.16, for installation in high seismic areas.
- C. Structural classification of suspension systems shall be heavy-duty in conformance to ASTM C635.
- D. Vertical Strut: USG Donn Compression Post, or equal, or as indicated; types and designs complying with requirements of authorities having jurisdiction and seismic Zones D, E and F requirements. Provide base attachment clip for connection of vertical strut to main beams.
- E. Wall Molding: Fabricated from galvanized steel with 2-inch horizontal leg and hemmed edges, same finish as main and cross tees.
- F. Spacer/Stabilizer Bars: Provide for tying together the ends of main runners and cross tees that are not attached to wall molding.
- G. Hanger Wire: 0.106-inch diameter (0.144-inch diameter for pendant fixtures), galvanized soft annealed mild steel wire as defined in ASTM A641, Class 1 coating.
- H. Provide attachment devices and any other required accessories for a complete suspended ceiling system installation.

## 2.03 ACOUSTICAL CEILING PANELS

- A. Acoustical ceiling panels shall be class A in accordance to ASTM E1264.
- B. Acoustical panels shall meet the following surface-burning characteristics when tested in accordance to ASTM E84 for Class A materials:
  - 1. Maximum Flame Spread: 25.
  - 2. Maximum Smoke Developed: 50.
- C. Mold and Mildew Resistance: Panels and faces shall be treated with a biocide paint additive or an antimicrobial solution to inhibit mold and mildew.

## 2.04 CEILING TYPES

- A. ACT 1 - Classrooms:

1. Acoustical Ceiling Panels:
    - a. Panel Name: Armstrong Fine Fissured High NRC 1811, USG Radar Climaplus HiNRC 22311, CertainTeed Fine Fissured HHF 497 HNRC, or equal.
    - b. Panel Size: 2-foot by 4-foot.
    - c. Panel Thickness: 3/4 inch.
    - d. Edge Detail: Lay-in.
    - e. Light Reflectance: 0.82 minimum, complying with ASTM E1477.
    - f. CAC: Minimum 40, UL Classified, complying with ASTM E1414.
    - g. NRC: Minimum 0.70, UL Classified, complying with ASTM C423.
    - h. Color: White.
    - i. Recycled Content: Minimum 37 percent.
  2. Suspension System:
    - a. Suspension System Name: Prelude XL by Armstrong, Donn DX by USG, 1200 Seismic Series by Chicago Metallic Corporation, or equal.
    - b. Color: White.
- B. ACT 2 - Administration:
1. Acoustical Ceiling Panels:
    - a. Panel Name: Armstrong Ultima 1912, USG Mars ClimaPlus 86985, CertainTeed Symphony M No. 1222BF-OVT-1, or equal.
    - b. Panel Size: 2-foot by 2-foot.
    - c. Panel Thickness: 3/4 inch.
    - d. Edge Detail: Beveled tegular.
    - e. Light Reflectance: 0.89 minimum, in accordance with ASTM E1477.
    - f. CAC: Minimum 35, UL Classified, complying with ASTM E1414.
    - g. NRC: Minimum 0.75, UL Classified, complying with ASTM C423.
    - h. Color: White.
    - i. Recycled Content: 74 percent minimum.
  2. Suspension System:
    - a. Suspension System Name: Silhouette XL by Armstrong, Fineline by USG, 4500 Ultraline Series by Chicago Metallic Corporation, or equal.
    - b. Color: White.
- C. ACT 3 - Cafeteria:
1. Acoustical Ceiling Panel:
    - a. Panel Name: Armstrong Optima Open Plan 3250PB, USG Halcyon Eco No. 97315, or equal. Formaldehyde free.
    - b. Panel Size: 2-foot by 2-foot.
    - c. Panel Thickness: 1 inch.
    - d. Edge Detail: Tegular.
    - e. Light Reflectance: 0.88 minimum, complying with ASTM E1477.
    - f. NRC: Minimum 0.95, UL Classified, complying with ASTM C423.

- g. Color: White.
  - h. Recycled Content: Minimum 28 percent.
2. Suspension System:
- a. Suspension System Name: Prelude XL by Armstrong, Donn DX by USG, 1200 Seismic Series by Chicago Metallic Corporation, or equal.
  - b. Color: White.
- D. ACT 4 – Other areas:
1. Acoustical Ceiling Panel:
- a. Panel Name: Armstrong Fine Fissured 1729, USG Radar Climaplus 2410, CertainTeed Hytone Fine Fissured HHF 197, or equal.
  - b. Panel Size: 2-foot by 4-foot.
  - c. Panel Thickness: 5/8 inch.
  - d. Edge Detail: Lay-in.
  - e. Light Reflectance: 0.82 minimum, complying with ASTM E1477.
  - f. CAC: Minimum 35, UL Classified, complying with ASTM E1414.
  - g. NRC: Minimum 0.55, UL Classified; complying with ASTM C423.
  - h. Color: White.
  - i. Recycled Content: Minimum 37 percent.
2. Suspension System:
- a. Suspension System Name: Prelude XL by Armstrong, Donn DX by USG, 1200 Seismic Series by Chicago Metallic Corporation, or equal.
  - b. Color: White.

### **PART 3 - EXECUTION**

#### **3.01 PREPARATION**

- A. Furnish layouts for inserts, clips or other supports and struts required to be installed by the Work of other trades that depend on the suspended ceiling system for support.
- B. Coordinate related Work to ensure completion prior to installation of clips or fasteners.
- C. Compare layouts with construction conditions. Tile shall be spaced symmetrically about the centerlines of the room or space, and shall start with a tile or joint line as required to avoid narrow tiles at the finish edges unless indicated otherwise. Joints shall be tight with joint lines straight and aligned with the walls. Ceiling moldings shall be provided where tile abuts wall with matching caulking to eliminate any space.

#### **3.02 INSTALLATION**

- A. Suspension Systems

1. Install suspension system in accordance with ASTM C636 and ASTM E580.
2. System shall be complete; with joints neatly and tightly joined and securely fastened; suspension members shall be installed in a true, flat, level plane.
3. Hanger Wires: 0.106-inch diameter minimum; larger sizes as indicated or required.
  - a. Fasten wires to panel points and structure above per most stringent requirements of fabricator and CBC and as indicated on Drawings.
  - b. Wires exceeding 1:6 out-of-plumb shall be braced with counter-sloping wires.
  - c. Maintain wires at least 6 inches from non-braced ducts, pipes, conduits, and other items.
  - d. Install wire along main runners at 4 feet on center. Terminal ends of each main runner and cross tee must be supported within 8 inches of each wall with a perimeter wire or within 1/4 of the length of the end tee, whichever is least, for the perimeter of the ceiling area.
  - e. Where obstructions prevent direct suspension, provide trapezes or equivalent devices; 1 1/2-inch minimum cold rolled channels back-to-back may be installed for spans to 6 feet maximum.
  - f. Wire shall be straight, without extraneous kinks or bend. Hanger wire connections must be capable of carrying a 200 - pound pull without stretching or shifting the suspension clip.
4. Bracing Wires to Resist Seismic Forces: 0.106-inch diameter minimum, larger sizes as indicated or required.
  - a. System for Bracing Ceilings: Lay-in Ceiling Systems: Install one (1) 4 wire set of sway bracing wires and a vertical strut for each 144 square feet maximum of ceiling area. Locate wire sets and struts at 12 feet maximum on center. At ceiling perimeters, wire-sets shall be installed within 6 feet of walls.
  - b. Install 4-wire sets and struts within 2 inches of cross-runner intersection with main runner; space wires 90 degrees from each other.
  - c. Do not install sway bracing wires at an angle greater than 45 degrees with the ceiling plane.
  - d. Wires shall be tight, without causing ceiling to lift.
  - e. Fasten struts in accordance with CBC requirements.
  - f. Maintain wires at least 6 inches from non-braced ducts, pipes, conduit, and other items.
5. Provide additional wires, 0.106-inch diameter minimum, necessary to properly support suspension at electrical devices, air distribution devices, vertical soffits, and other concentrated loads.
6. Suspension:
  - a. Suspension members shall be fastened to two (2) adjacent walls per ASTM 580; but shall be at least 3/4 inches minimum clear of other walls.
  - b. Any suspension members not fastened to walls shall be interconnected to prevent spreading, near their free end, with a horizontal metal strut or stabilizer bar or 0.064-inch diameter taut tie wire.
  - c. Provide additional tees or sub tees to frame openings for lights, air distribution devices, electrical devices, and other items penetrating through ceiling, which do not have an integral flange to support and conceal cut edges of acoustic panels. Provide cross bracing necessary to securely support any surface mounted fixtures or other items.
7. Attachment of Wires:
  - a. To Metal Deck or Steel Framing Members: Install as required by current code.
  - b. To Suspension Members: Insert through holes in members or supporting clips.
  - c. Wires shall be fastened with three (3) tight turns minimum for hanger wires and four (4) tight turns minimum bracing wires. Turns shall be made in a 1 1/2-inch maximum distance.

**B. Suspension System for 2-foot by 4-foot Lay-in Acoustical Ceilings:**

1. Main Runners: Install main runners 48 inches apart; 0.106-inch diameter hanger wires space 48 inches on center maximum along runners, and within 8 inches of ends.
2. Install wall moldings with fasteners to studs. Install corner caps at molding intersections.
3. Cross Tees: Install between main runners in a repetitive pattern of 2-foot spacings.
4. Sub-Tees: Install at edges of penetrations.

**C. Acoustical Panels**

1. Install panels into suspension system. Partial panels shall be neatly cut and fitted to suspension and around penetrations and/or obstructions. Duplicate tegular edges at partial panels; cuts to be straight. Repaint cut tiles to match color or as directed by manufacturer for mylar facing at visually exposed conditions or as required by the Architect.
2. Penetrations through the ceilings for sprinkler heads and other similar devices that are not integrally tied to the ceiling system in the lateral direction shall have a 2-inch oversized ring, sleeve or adapter through the ceiling tile to allow free movement of 1 inch in horizontal directions. Alternatively, per ASTM E580, a flexible sprinkler hose fitting that can accommodate 1 inch of ceiling movement shall be permitted to be used in lieu of the oversized ring, sleeve or adapter.

**D. Air Distribution Devices**

1. Refer to and coordinate with Division 23 - HVAC.
2. Install air distribution grilles and other devices into suspension system. Install 4 taut wires, each 0.106-inch diameter minimum, to each device within 3 inches of device corners, to support their weight independent of the suspension system.

**E. Light Fixtures**

1. Refer to and coordinate with Division 26 - Electrical.
2. Fixtures weighing less than 56 pounds: Install fixtures into suspension systems and fasten earthquake clips to suspension members. Install minimum 2 slack safety wires, each 0.106 inch diameter minimum, to each fixture at diagonally opposite corners, to support their weight independent of the system.
3. Fixtures weighing 56 pounds or more: Install fixtures into suspension system and fasten earthquake clips to suspension system members as required by the Drawings and/or code. Install not less than 4 taut 0.106-inch diameter wires capable of supporting four (4) times the fixture load.
4. Support pendant-mounted light fixtures directly from the structure above with hanger wires or cables passing through each pendant hanger and capable of supporting two (2) times the weight of the fixture. Brace the pendant-mounted light fixtures by either a bracing assembly at the ceiling penetration or below the ceiling to the walls, as indicated in the drawings.

**3.03 CLEANING**

- A. General: After installation of acoustical material has been completed, clean surfaces of the material, removing any dirt or discolorations. Replace panels as required.
- B. Acoustical Panels: Minor abraded spots and cut edges shall be touched up with the same paint as was used for factory applied finish of the lay-in panels.
- C. Remove and replace work that cannot be successfully cleaned and repaired to eliminate evidence of damage.
- D. Remove rubbish, debris, and waste materials and legally dispose of off of the Project site.

3.04 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

END OF SECTION

Attachment AD4.15  
SECTION 09 65 16

RESILIENT FLOORING – SHEET VINYL

**PART 1 – GENERAL**

1.01 SUMMARY

A. Section Includes:

1. Resilient sheet vinyl flooring with integral cove base.

B. Related Sections:

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Section 03 31 00 - Cast-in-Place Concrete.
3. Section 09 29 00 – Gypsum Board.

1.02 DEFINITIONS

- A. Pop-up: A pop-up is defined as any surface deviation or looseness of substrate that is equal to or greater than 1/64 (0.015625) inch above the concrete floor level, regardless of the size.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's published technical data describing materials, construction and recommended installation procedures. Submit technical data and installation instructions for each adhesive material. Submit list and Product Data of recommended finish materials.
- B. Maintenance Instructions: Submit manufacturer's recommendations for maintenance, care and cleaning.
- C. Samples: Submit samples of each type of resilient sheet flooring in each available color and pattern. Following color selections, submit 12-inch square Samples of each selected color and pattern. Submit pint cans of each type of adhesive.
- D. Installer's Experience Qualifications: Submit list of not less than five (5) projects, extending over period of not less than five (5) years, indicating installer's experience record. Submit letter from manufacturer indicating manufacturer's approval for installer of the products.

1.04 QUALITY ASSURANCE

- A. Qualifications of Installer: Minimum five (5) years' experience in successfully installing the specified products or similar flooring materials.



B. Comply with the following as a minimum requirement:

1. Materials shall be compliant with requirements of CBC Chapter 11B and ADAAG.
2. ASTM E84: Class A Flame Spread Rating of 25 or less.
3. Fire Test Data: ASTM E648, NFPA 253, ASTM E662, NFPA 258.
4. Moisture Testing: ASTM F1869.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Materials shall be delivered to the Project site in original unopened manufacturer's packaging clearly labeled with manufacturer's name. Materials shall be stored at not less than 70 degrees F for not less than 48 hours before installation.

1.06 PROJECT CONDITIONS

- A. Ventilation and Temperature: Verify areas that are to receive new flooring are ventilated to remove fumes from installation materials, and areas are within temperature range recommended by the various material manufactures for Project site installation conditions.

1.07 WARRANTY

- A. Manufacturer shall provide two (2) year material warranty.
- B. Installer shall provide a two (2) year fabrication and installation warranty.

**PART 2 – PRODUCTS**

2.01 ACCEPTABLE MANUFACTURERS

- A, Armstrong Contract Interiors.
- B. Azrock.
- C. **Congoleum.**
- D. Or Approved Equal.

2.02 MATERIALS

- A. Sheet vinyl: Conform to ASTM F1303, Type II, and Grade 1. Sheet vinyl shall be Class A, inorganic fibrous asbestos-free backing, 0.090-inch gauge with 0.050-inch wear layer, colors and patterns as selected.
- B. Crack Filler and Leveling Compound: Cementitious type, Durabond's Webcrete No. 95, Ardex SD-F, Armstrong S-194 or equal, as recommended by flooring manufacturer.

- C. Concrete Primer: Non-staining type recommended by manufacturer of resilient sheet vinyl flooring.
- D. Adhesive and Seam-Sealing Treatment for Sheet Vinyl: Adhesives shall be suitable for on-, above-, and below-grade installation. Seam treatment shall be as recommended by flooring manufacturer and as follows:
  - 1. Un-backed sheet vinyl:
    - a. Heat weld.
    - b. Liquid chemical sealer.
    - c. Special seam adhesive.
  - 2. Fibrous-backed sheet vinyl:
    - a. Liquid chemical sealer.
    - b. Special seam adhesive.
- E. Accessories: Stainless steel or extruded aluminum top trim and ¾ inch radius plastic fillets with integral cove base.
- F. Miscellaneous Shapes: Provide miscellaneous moldings as follows and as required to complete the installation. Catalog numbers are those of Mercer. Colors shall be as selected by Architect from manufacturer’s standard colors.
  - 1. Corner Guards, No. 695 Junior Corner Guard.
  - 2. Utility Moldings: No. 655 Utility Molding.
  - 3. Carpet to Tile: No. 150 Tile-Carpet Joiner.
  - 4. Tile Reducer: No. 633, 1/8-inch size.
- G. Underlayment: One of the following, grades stamped on panels as indicated.
  - 1. Underlayment A-C Exterior, Sanded Face.
  - 2. Underlayment B-C Exterior, Sanded Face.
  - 3. C-C Plugged Exterior, Sanded Face.
  - 4. Underlayment C-C. Plugged Exterior, Sanded Face.
- H. Floor Sealer: Provide one of the following:
  - 1. Super Polymer 85, manufactured by Maintex.
  - 2. Butcher’s Mainstay Floor Finish, manufactured by Waxie Stationary Supply.
  - 3. Polymer L. A. manufactured by Alkot Industries.
  - 4. Equal.
- I. Slip – resistance: Minimum coefficient of friction 0.6 per ASTM D2047

### **PART 3 - EXECUTION**

#### **3.01 COORDINATION**

- A. Coordinate with related Work to assure level, smooth, and clean finish surfaces to receive floor tile.

### 3.02 EXAMINATION

- A. Field verify dimensions and other conditions affecting the Work of this section before commencing the Work of this section.
- B. Before the Work of this section is started, examine surfaces to receive resilient sheet vinyl flooring and correct deficiencies before starting the Work of this section.

### 3.03 PREPARATION

#### A. Concrete Slabs:

1. Do not start preparation until concrete floor slabs are at least 90 days old.
2. Leveling: Check subfloors for level, and make floor slabs true to level and plane within a tolerance of 1/8 inch in 10 feet. Test floor areas both ways with a 10-foot straightedge and repair high and low areas exceeding allowable tolerance. Pop ups shall be hammered out and floor filled with a cementitious leveling compound. Remove high areas by power sanding, stone rubbing or grinding, chipping off and filling with leveling compound, or equivalent method. Fill low areas with leveling compound. Repair and level the surfaces having abrupt changes in plane, such as trowel marks or ridges, whether or not within the allowable tolerance. Clean areas where repairs are performed.
3. Cleaning: After leveling, if required, clean substrates of deleterious substances and foreign matter.
4. Cracks or Depressions: Fill voids with cementitious leveling compound of the type recommended by flooring manufacturer for the specific conditions.
5. Moisture Testing: Test new and old concrete slabs for adequate dryness. Testing shall conform to ASTM F1869, and the following. Minimum testing requirements are three calcium chloride tests for the first 1,000 square feet of floor area, and one for each additional 1,000 square feet or fraction thereof. Unless more stringent requirements are recommended by flooring manufacturer, maximum allowable moisture release at time of flooring installation shall be three pounds per 24 hours per 1,000 square feet. Provide report of test as specified above. For each test, perform the following steps:
  - a. Weigh the sealed dish of crystals immediately prior to exposure. Record starting weight, date, and time.
  - b. Open kit and set crystal dish on clean concrete surface. Immediately install plastic dome over the dish. Confirm the dome is gasketed to the concrete and is airtight.
  - c. Leave test to absorb moisture for 60 to 72 hours. Maintain room temperature above 55 degrees F for duration of test.
  - d. After exposure, remove and discard housing. Replace dish lid and tape shut. Weigh the sample within one hour of removal from floor.
  - e. Compute the vapor emission in pounds, indicate location of test and vapor emission on report.
  - f. Delay application of flooring until sub-floors are sufficiently dry, or perform remedial measures as recommended by flooring materials manufacturer.

6. Priming: Prime concrete floor slabs installed directly on grade and other slabs if recommended by flooring manufacturer.

B. Wood Subfloors:

1. Install plywood underlayment on wood subfloors, except where subfloor is acceptable to flooring manufacturer. Install underlayment with smooth side up, leaving 1/16 inch at panel edges and ends. Leave a 1/8 of an inch gap between the underlayment and adjoining vertical surfaces. Edge gaps shall be filled with sealant before the finish floor is installed. Offset underlayment edges and sub floor edges 4 inches and stagger panel corners. Joints in plywood shall not be located at doorways or within 12 inches of center of doorway.
2. Install 14-gauge annular nails, of length sufficient to penetrate into subflooring, to fasten underlayment. Locate nails 3/8 inch to 3/4 inch from panel edges, spaced one inch on center, staggered. Nail at 8 inches each way in the field. Nails in plywood shall not be over driven. Staples are not permitted.
3. Sweep floors and vacuum sanding dust.

3.04 INSTALLATION

- A. Sheet Vinyl: Install flooring with adhesives as recommended by flooring manufacturer. Reverse alternate sheet widths, match pattern as required and cut seams to provide tight joints and preserve flooring pattern. Seal seams as specified with no skips or gaps. Closely trim to pipes, jambs, outlets, and like conditions. Form with integral cove base, 6 inches high unless otherwise indicated, over plastic fillets, finished at top with metal trim.
- B. Sheet Vinyl with Heat-Welded Seams:
1. Install as above and in accordance with manufacturer's instructions.
  2. Cut sheet material in lengths and sizes required. Reverse alternate sheets, where recommended by flooring manufacturer. Lay cut sheets flat and allow to acclimate to room temperature before installation.
  3. Mix and install adhesives in accordance with manufacturer's instructions. Provide safety precautions during mixing and installation as recommended by adhesive manufacturer.
  4. Install sheets and roll over floor surface. Adhere entire flooring using adhesives as recommended by flooring manufacturer. Work out wrinkles and air pockets. Roll material in two directions starting at center of sheet. Fit flooring neatly and tightly around penetrations. Scribe flooring to doorjambs. Terminate in center of doorways beneath closed doors.
  5. Cut, rout, and heat weld seams, with equipment and methods recommended by flooring manufacturer. Routing depth shall be no greater than 2/3 of the wear layer thickness. Insert welding rod and thermally fuse rod and adjacent material to produce a seamless homogeneous surface. Allow heat weld to cool and trim in two (2) passes. Second trimming shall result in flush, smooth surface at seams including walls and corners of integral cove areas. Inspect completed seams and reseal if necessary.

6. Extend sheets up wall to form integral coved base, 6-inch high unless otherwise indicated. Install cove fillets in corners and where walls intersect floors and other vertical surfaces to be covered. Install adhesive on vertical surfaces and hand roll flooring into place. Install metal edging strip at top of base.
- C. Sheet Vinyl with Liquid Seam Sealer or Special Seam Adhesive (double-cut or recess- scribe seams with no gaps):
1. Install as above and in accordance with manufacturer’s instructions.
  2. Liquid Seam Sealer: Install chemical sealer inside seams and field cuts including integral cove areas with applicator as recommended by flooring manufacturer. Protect chemically sealed seams from traffic for a minimum of 3 hours.
  3. Special Seam Adhesive: Install special seam adhesive beneath seams and field cuts including integral cove areas. Install adhesives as recommended by flooring manufacturer. Remove excess adhesive at seams. Protect newly sealed seams from traffic.
- D. Installation of Trim Shapes: Provide reducer strips to cover exposed edges of resilient flooring. Provide carpet-to-tile strips at junctions with carpet.
- E. Install adhesive in a thin film evenly with a notched trowel, with type of trowel recommended by flooring manufacturer.
1. Mix adhesive in accordance with manufacturer’s instructions.
  2. Install adhesive only in the area that can be covered by flooring material within the adhesive manufacturer’s recommended working time.
  3. Remove adhesive that has dried or filmed over.
- F. Provide reducer where floor covering edges are exposed, such as at center of the door or where floor coverings terminate.

### 3.05 CLEANING

- A. Keep flooring surfaces clean as installation progresses.
- B. Clean flooring when sufficiently seated and remove foreign substances.
- C. Finish sheet vinyl flooring with two (2) coats of floor finish installed in accordance with manufacturers instruction. Do not buff unless specifically required. Provide the manufacturers recommended drying time for each coat.
- D. Clean adjacent surfaces of adhesive or other materials. Replace damaged or defective Work.
- E. Remove rubbish, debris and waste material and legally dispose off the Project site.

### 3.06 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

END OF SECTION

## Attachment AD4.16

## SECTION 10 21 13

## TOILET COMPARTMENTS AND CUBICLES

**PART 1 – GENERAL**

## 1.01 SUMMARY

## A. Section Includes:

1. Toilet Compartments.
2. Urinal Screens.
3. Shower Dividers.
4. Dressing Compartments.

## B. Related Sections

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
2. Section 06 10 00 – Rough Carpentry.
3. Section 03 30 00 – Cast-In-Place Concrete.
4. Section 05 50 00 – Metal Fabrications
5. Section 10 28 00 - Washroom Accessories.

## 1.02 REFERENCES

- A. National Fire Protection Association 101 Life Safety Code, Chapters 5, 6, 8-30.
- B. ANSI A117.1: Accessible and Usable Buildings And Facilities.
- C. Title 24, California Code of Regulations, Parts 2, 3, and 5.
- D. ADA, Accessibility Guidelines for Buildings and Facilities, Federal Register Volume 56, Number 144, Rules and Regulations.
- E. US Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) Program.
- F. American Society for Testing and Materials Standards:
  1. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
  2. ASTM D2794 Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
  3. ASTM D2197 Standard Test Method for Adhesion of Organic Coatings by Scrape Adhesion.
  4. ASTM D6578 Standard Practice for Determination of Graffiti Resistance.

### 1.03 SYSTEM DESCRIPTION

#### A. Performance Requirements

1. Graffiti Resistance: Partition material shall have the following graffiti removal characteristics when tested in accordance with ASTM D6578-00 Standard Practice for Determination of Graffiti Resistance in accordance with Section 9, "Graffiti Removal Procedure Using Manual Solvent Rubs":
  - a. Cleanability: Five (5) required staining agents shall be cleaned off material.
2. Scratch Resistance: Partition material shall have the following characteristics when tested in accordance with ASTM D2197-98(2002) Standard Test Method for Adhesion of Organic Coating by Scrape Adhesion, using Gardner Stock #PA-2197/ST pointed stylus attachment on scrape tester:
  - a. Scratch Resistance: Maximum Load Value shall exceed 10 kilograms.
3. Impact Resistance: Partition material shall have the following characteristics when tested in accordance with ASTM D2794-93(1999)e1 Standard Test Method for Resistance of Organic Coating to the Effects of Rapid Deformation (Impact), using .625" hemispherical indenter with 2-lb impact weight:
  - a. Impact Resistance: Maximum Impact Force value shall exceed 30 inch-lbs.
4. Fire Resistance: Partition material shall comply with the following requirements, when tested in accordance with ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials:
  - a. Smoke Developed Index: Not to exceed 450.
  - b. Flame Spread Index: Not to exceed 75.
  - c. Material Fire Ratings:
    - 1) National Fire Protection Association (NFPA): Class B.
    - 2) International Code Council (ICC): Class B.

### 1.04 SUBMITTALS

#### A. Comply with requirements of Section 01 33 00.

#### B. Manufacturer's Data.

1. Provide required number copies of:
  - a. Product data sheets.
  - b. Installation instructions.
  - c. Cleaning and maintenance instructions.
  - d. Replacement parts information.

#### C. Shop Drawings.

1. Provide required number of copies of all shop drawings.



2. Show fabrication and erection of compartment assemblies, to extent not fully described by manufacturer's data sheets.
3. Show anchorage, accessory items and finishes.
4. Provide location drawings for bolt hole locations in supporting members for attachment of compartments.

D. Samples.

1. Furnish scale model of compartments, including stile, shoe, door, door hardware, divider panel, and mounting brackets.
2. Furnish sections showing stile anchoring and leveling devices, concealed threaded inserts, panel, stile, and edge construction.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver items in manufacturer's original unopened protective packaging.
- B. Store materials in original protective packaging to prevent physical damage or wetting.
- C. Handle so as to prevent damage to finished surfaces.

1.07 WARRANTY

- A. Furnish ten-year limited warranty for panels, doors, and stiles against breakage, corrosion, delamination, and defects in factory workmanship.
- B. Furnish one-year guarantee against defects in material and workmanship for stainless steel door hardware and mounting brackets.

1.08 ATTIC STOCK

- A. Provide two additional latches and associated hardware per toilet room included in scope of work.
- B. Provide one additional 12-inch-wide stile per toilet room included in scope of work.
- C. Provide one additional 36-inch-wide stall door per toilet room included in scope of work.

**PART 2 - PRODUCTS**

2.01 MANUFACTURER (DISTRICT STANDARD)

- A. Model numbers for toilet partitions manufactured by Bobrick Washroom Equipment, Inc., represented by R. E. Edwards & Associates (925-829-2942), are listed to establish a standard of quality for design, function, materials, workmanship, and appearance. Other manufacturers may be submitted for evaluation by the architect by following the conditions of the substitutions clause. Unless approval is obtained ten days prior to the bid date, all bids shall be based on the standard of

quality. The architect shall be the sole judge as to the acceptability of all products submitted for substitution.

B. Toilet partitions shall be the product(s) of a single manufacturer.

## 2.02 MOUNTING CONFIGURATIONS

A. Toilet Partitions/Shower Dividers/Dressing Compartments shall be:

1. Overhead-Braced (1092.67 Sierra™ Series)

B. Urinal Screens shall be:

1. Floor-Anchored (1091 Sierra Series):

- or -

Post-to-Ceiling (1093 Sierra Series)

- or -

Wall-Hung (1095 Sierra Series)

## 2.03 COMPONENTS/MATERIALS

A. Stiles, Panels, Doors, and Screens shall be all be manufactured from Solid Color Reinforced Composite material.

B. Toilet Partition Material

1. Toilet partitions shall be constructed of Solid Color Reinforced Composite material, which is composed of dyes, organic fibrous material, and polycarbonate/phenolic resins. Material shall have a non-ghosting, graffiti-resistant surface integrally bonded to core through a series of manufacturing steps requiring thermal and mechanical pressure. Edges of material shall be the same color as the surface.
2. Subject to compliance with the material performance requirements, toilet partitions manufactured by others may be constructed from Solid Surface materials including, but not limited to:
  - a. Dupont Corian Privacy Plus Partitions.
  - b. WilsonArt Solid Surface.
3. Toilet partitions constructed of High-Density Polyethylene (HDPE) or High-Density Polypropylene will not be acceptable.

C. Finish Thickness

1. Stiles and doors shall be 3/4" (19 mm).
2. Panels and benches shall be 1/2" (13 mm).

D. Hardware

1. All hardware shall be Bobrick "1092.67DS Optional Institutional Hardware". Where Specifications and/or Drawings conflict with Bobrick "1092.67 Optional Institutional Hardware" requirements, the Bobrick "1092.67 Optional Institutional Hardware" requirements shall prevail.
2. Provide optional Door Plate Bobrick Part No. 1002510 at top and bottom of each partition door.
3. All hardware to be 18-8, type-304 stainless steel with satin finish.
4. Hardware of chrome-plated "Zamak", aluminum, or plastic is unacceptable.

#### E. Latch

1. Sliding door latch shall be 14 gauge (2 mm) and shall slide on nylon track.
2. Sliding door latch shall require less than 5-lb force to operate. Twisting latch operation will not be acceptable.
3. Latch track shall be attached to door by machine screws into factory-installed threaded brass inserts.
4. Threaded brass inserts shall be factory installed for door hinge and latch connections and shall withstand a direct pull exceeding 1,500 lbs. per insert.
5. Through bolted, stainless steel, pin-in-head Torx sex bolt fasteners shall be used at latch keeper-to-stile connections and shall withstand direct pull force exceeding 1,500 lbs. per fastener.

#### F. Hinges

1. Hinge shall be 16-gauge (1.6-mm) continuous piano hinge.
2. All doors shall be equipped with self-closing hinge.
3. Continuous piano hinge shall be attached to door and stile by theft-resistant, pin-in-head Torx stainless steel machine screws into factory-installed, threaded brass inserts
4. Fasteners secured directly into the core are not acceptable.
5. Door shall be furnished with two 11-gauge (3-mm) stainless steel door stop plates with attached rubber bumpers to resist door from being kicked in/out beyond stile.
6. Door stops and hinges shall be secured with stainless steel, pin-in-head Torx machine screws into threaded brass inserts.
7. Threaded brass inserts shall withstand a direct pull force exceeding 1,500 lbs per insert.

#### G. Mounting Bracket

1. Mounting brackets shall be 18-gauge (1.2- mm) stainless steel and extend full height of panel.
2. U-channels shall be furnished to secure panels to stiles.
3. Angle brackets shall be furnished to secure stiles to walls and panels to walls.
4. Fasteners at locations connecting panels-to-stiles shall utilize through bolted, stainless steel, pin-in-head Torx sex bolt fasteners. Through-bolted fasteners shall withstand direct pull force exceeding 1,500 lbs. per fastener.
5. Wall mounted urinal screen brackets shall be 11 gauge (3 mm) double thickness.

- #### H. Leveling Device shall be 7-gauge, 3/16" (5-mm) hot rolled steel bar; chromate-treated and zinc-plated; through-bolted to base of solid color reinforced composite stile.

- I. Stile Shoe shall be one-piece, 4" (102-mm) high, type-304, 22-gauge (0.8-mm) stainless steel with satin finish. Top shall have 90° return to stile. Shoe will be composed of one-piece of stainless steel and capable of being fastened (by clip) to stiles starting at wall line.
- J. Headrail (Overhead Braced) shall be satin finish, extruded anodized aluminum (.125" / 3-mm thick) with anti-grip profile.
- K. Full-Height Post: At all partition panels over 5'-0" in unsupported length, provide a full-height 1-1/4"x1-1/4" stainless-steel post, Bobrick Part No. 1000070 and Anchor Package Part No. 1002703. Provide floor and ceiling saddles. Fasteners into concrete floor shall be stainless steel. The panel shall be anchored to post to help eliminate side to side flex of the panel. At locations where post is taller than 8'-0" and/or is in a high vandalism area, provide custom stainless steel post with slip-joint as detailed on drawings.
- L. Grab Bar Anchors for Toilet Partitions: At all locations as shown on drawings where grab bars are mounted on partition system, provide Bobrick 2586 Series stainless steel backing plate.
- G. Coat Hook
  - 1. Coat Hook shall Bobrick Model B-233 and be constructed of stainless steel and shall project no more than 1-1/8" (29 mm) from face of door.
  - 2. Coat hook shall be secured by to door by through-bolted, theft-resistant, pin-in-head Torx stainless steel screws. Through-bolted fasteners shall withstand a direct pull force exceeding 1,500 lbs. per fastener.
  - 3. Coat Hook shall act as door bumper on in-swing doors.
  - 4. Mounting height = 48" maximum above finished floor.
- H. Door Pull: Accessible stall door shall have a compliant loop or U-shaped door pull on inside and outside of door immediately below latch.
- I. Door Bumpers: Provide wall door bumper for all doors where partition door will impact wall finish. Wall bumper shall be equal to Trimco, Model No. 1270CVPV. Mount on wall at height to match partition door handle.

## 2.04 FABRICATION

- A. Vandal-Resistant Hardware Option: for Institutional Hardware option add suffix .67 to 1092 Series.

## PART 3 – EXECUTION

### 3.01 EXAMINATION

- A. Check areas scheduled to receive compartments for correct dimensions, plumbness of walls, and soundness of surfaces that would affect installation of mounting brackets.
- B. Verify spacing of plumbing fixtures to assure compatibility with installation of compartments.

- C. Do not begin installation of compartments until conditions are satisfactory.

### 3.02 ERECTION

- A. Install compartments rigidly, straight, plumb, and level and in accordance with manufacturer's installation instructions.
- B. Installation methods shall conform to manufacturer's recommendation for backing and proper support.
- C. Conceal evidence of drilling, cutting, and fitting to room finish.
- D. Maintain uniform clearance at vertical edge of doors.
- F. Attach panel brackets securely to walls using anchor devices. All anchors shall be into solid wood blocking. No plastic expansion sleeves will be accepted.
- G. Attach panels and pilasters to bracket with through-sleeve tamperproof bolts and nuts.
- H. Anchor urinal screen panels to walls with continuous panel brackets. At free end, provide full-height post as noted in Paragraph 2.03-K.
- I. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster. Conceal floor fastenings with pilaster shoes.
- J. Equip each door with one hinge, one door latch, and one coat hook and bumper.
- K. Install door strike and keeper with door bumper on each pilaster in alignment with door latch.
- L. Adjust hinges to locate doors in partial opening position when unlatched. Return outswing doors to close position.
- M. Contractor shall install backing/blocking as required for secure attachment.
- N. Confirm all locations of full-height post and provide blocking in ceiling space. Contractor shall open ceiling as required to install 4x4 blocking for attachment of post.
- O. At locations of grab bars mounted on partition system, Contractor shall carefully measure and drill panels for grab bar anchors.
- P. Where full-height stainless steel brackets extend above ceramic tile wainscot, provide plywood shim between wall and bracket to act as spacer. Shim shall be narrower than brackets to allow for sealant joint. After shim installation, provide sealant joint between wall and bracket to completely enclose edge of plywood.

### 3.03 ADJUSTMENT AND CLEANING

- A. Adjust hardware for proper operation after installation.
- B. Set hinge cam on in-swinging doors to hold doors open when unlatched.
- C. Set hinge cam on out-swinging doors to hold unlatched doors in closed position.
- D. Clean exposed surfaces of compartments, hardware, and fittings.
- E. Remove protective maskings. Clean surfaces.
- F. Field touch-up of scratches or damaged enamel finish will not be permitted.
- G. Replace damaged or scratched materials with new materials.

END OF SECTION

SECTION 26 50 00

LIGHTING

**PART 1 - GENERAL**

1.01 SUMMARY

- A. Work included: Labor, materials, and equipment necessary to complete the installation required for the item specified under this Division, including but not limited to:
  - 1. Interior luminaires (lighting fixtures.)
  - 2. Exterior luminaires.
  - 3. Light-emitting diode (LED) assemblies.
  - 4. Drivers and transformers.
  - 5. Optical components; including diffusers, refractors, reflectors, and louvers.
  - 6. Poles and brackets.
  - 7. Unit battery equipment.
- B. Related Work: Consult all other Sections, determine the extent and character of related Work, and properly coordinate Work specified herein with that specified elsewhere to produce a complete installation.
  - 1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.
  - 2. Division 03: Concrete; for cast-in place bases for lighting poles and bollards.
  - 3. Division 05: Metals; for fittings, brackets, backing supports, rods, etc. as required for support and bracing of luminaires.
  - 4. Division 09: Finishes; for ceilings, wall assemblies, acoustical treatment, and field painting of luminaires.

1.02 REFERENCES

- A. Comply with the latest edition of the following applicable Specifications and Standards except as otherwise indicated or specified:
  - 1. American National Standards Institute (ANSI):
    - ANSI/IEC 60529; American National Standard for Degrees of Protection Provided by Enclosures (IP Code)
    - C137.0 Lighting System Terms and Definitions.
    - C137.1 0-10V Dimming Interface for LED Drivers and Controls
  - 2. Underwriters Laboratories, Inc. (UL):
    - UL 66; Fixture Wire.
    - UL 102.3; Standard Method of Fire Test of Light Diffusers and Lenses.

- UL 844; Luminares for Use in Hazardous (Classified) Locations.
  - UL 924; Emergency Lighting and Power Equipment.
  - UL924a; Auxiliary Power Supplies (for generator-backed systems.)
  - UL 1574; Track Lighting Systems.
  - UL 1598; Luminares.
  - UL 1598C; Light-Emitting Diode Retrofit Luminaire Conversion Kits.
  - UL 1838; Low Voltage Landscape Lighting Systems.
  - UL 1993; Self-Ballasted Lamps and Lamp Adapters.
  - UL 2007A; Shatter Containment of Lamps for Use in Regulated Food Establishments.
  - UL 2108; Low Voltage Lighting Systems.
  - UL 2592; Low Voltage LED Wire.
  - UL 5085-3; Low Voltage Transformers: Class 2.
  - UL 8750; Light Emitting Diode (LED) Equipment for Use in Lighting Products.
  - UL 8753; Field-Replaceable Light Emitting Diode (LED) Light Engines.
  - UL 8754; Holders, Bases, and Connectors for Solid-State (LED) Light Engines and Arrays.
3. National Electrical Manufacturers Associations (NEMA):
- SSL-1; Electronic Drivers for LED Devices, Arrays or Systems.
  - SSL-4; Retrofit Lamps—Minimum Performance Requirements.
  - 77; Temporal Light Artifacts: Test Methods and Guidance for Acceptance Criteria.
  - LE-4; Recessed Luminares, Ceiling Compatibility
  - 100; Wire Insulation Colors for Lighting Systems
4. Illuminating Engineering Society of North America (IESNA):
- TM-15; Luminaire Classification System for Outdoor Luminares.
  - TM-21; Projecting Long Term Lumen Maintenance of LED Light Sources.
  - TM-30; Method for Evaluating Light Source Color Rendition.
  - TM-30-Annex E Recommendations for Specifying Light Source Color Rendition
  - LM-79; Electrical and Photometric Measurements of Solid-State Lighting Products.
  - LM-80; Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays and Modules.
  - LM-84; Measuring Luminous Flux and Color Maintenance of LED Lamps, Light Engines, and Luminares.



LM-86; Measuring Luminous Flux and Color Maintenance of Remote Phosphor Components

5. Restriction of Hazardous Substances (RoHS):

RoHS 3; Directive 2015/863 - Cat 5. Lighting: lamps, luminaires, light bulbs.

1.03 SYSTEM DESCRIPTION

- A. Provide and install a fully functional and operating lighting system as indicated, complete with light engines, lamps, wiring, and securely attached to support system to meet all seismic code requirements.
- B. Where catalog number and narrative or pictorial descriptions are provided, the written description shall take precedence and prevail.

1.04 SUBSTITUTIONS

- A. Refer to Section 260010: Basic Electrical Requirements for specific Equipment requirements.
- B. Items specified under this Section and Luminaire Schedule are subject to the requirements, with the following qualifications:
  - 1. Items solely specified by Manufacturer name and catalog number, without qualifiers: Provide as specified – No Substitutions.
  - 2. Items specified by multiple Manufacturers, without qualifiers: Provide any listed manufacturer – No Substitutions.
  - 3. Items specified by sole or multiple Manufacturers, followed by “Or Approved Equal” or “Or Approved Equivalent”: Conform to substitution requirements outlined for Equipment.
  - 4. Items specified by sole or multiple Manufacturers, followed by “Or Equal” or “Or Equivalent”: Products that meet the salient requirements are acceptable to provide.
    - a. Equivalency is at the sole judgement of the Architect and Engineer.
    - b. Should a submitted, unspecified product fail to meet the requirements of Equivalency, provide specified products at no additional cost to the Owner.
- C. Equivalency shall be determined by review of the following luminaire characteristics where applicable. Lack of pertinent data on any characteristic shall constitute justification for rejection of the submittal or substitution.
  - 1. Performance:
    - a. Distribution.
    - b. Utilization.
    - c. Luminance distribution (Average brightness / maximum brightness.)
    - d. Spacing to mounting height ratio.
    - e. Overall luminaire efficiency.
  - 2. Construction:
    - a. Engineering.
    - b. Workmanship.

- c. Rigidity.
- d. Permanence of materials and finishes.
- 3. Installation Ease:
  - a. Captive parts and captive hardware.
  - b. Provision for leveling.
  - c. Through-wiring ease.
- 4. Maintenance:
  - a. Ease of relamping / replacement of LED array.
  - b. Ease of replacement of driver/ballast and lamp sockets.
- 5. Appearance:
  - a. Architectural integration.
  - b. Light tightness.
  - c. Styling.
  - d. Conformance with design intent.
  - e. When requested, furnish a working sample complete with housing, trim, 8' cord and plug, and specified lamp.

#### 1.05 SUBMITTALS

- A. Submit in accordance with the requirements of Section 260010: Basic Electrical Requirements, the following items:
  - 1. Complete bill of material listing (index) of all luminaires. Index shall be organized in the same sequence as the Luminaire Schedule (alphabetical.) Include in the index:
    - a. Type per the Luminaire Schedule.
    - b. Manufacturer.
    - c. Complete catalog number, including all accessories and appurtenances required for the installation.
    - d. Voltage.
    - e. Poles, arms, and brackets, if applicable.
    - f. Lamping, if applicable.
  - 2. Manufacturer's data sheets/catalog cuts for each product and component specified herein, listing all physical and electrical characteristics and ratings indicating compliance with all listed standards.
    - a. Identify luminaire type on each sheet.
    - b. Clearly mark on each data sheet the specific item(s) being submitted. Obfuscate or otherwise delete options on data sheets that are not provided.
  - 3. Driver or transformer and/or lamp data sheets as applicable to submitted item.
  - 4. Manufacturer's installation instructions.

5. Warranty.
6. U.L. labeling information.
7. Photometric Reports consisting of:
  - a. Independent Testing Laboratories, Inc. or equal, photometric test report for each luminaire listed on the Luminaire Schedule. Test reports shall be based on Illuminating Engineering Society published test procedures and shall contain candlepower distribution curves in five lateral planes for luminaires with asymmetric distributions and luminance data for vertical angles above 45 degrees from nadir.
  - b. Coefficient of utilization table.
  - c. Zonal lumen summary including overall luminaire efficiency.
8. Shop Drawings:
  - a. Where noted in the Luminaire Schedule, submit Shop Drawings from Manufacturer detailing modified or custom luminaires indicating dimensions, weights, methods of field assembly, components, features, accessories, methods of support, etc.
9. Mock-ups: Provide mock-up luminaire samples where "MOCK-UP" is indicated in the Luminaire Schedule. Refer to Part 3 – Execution for requirements.

1.06 OPERATION AND MAINTENANCE MANUAL

- A. Supply operation and maintenance manuals in accordance with the requirements of Section 260010: Basic Electrical Requirements, to include the following:
  1. An updated index per 1.05-A.
  2. One complete set of final submittals of actual product installed, including product data and shop drawings.
  3. Instructions for routine maintenance.
  4. Pictorial parts list and parts number.
  5. Telephone numbers for authorized parts and service distributors.

1.07 QUALITY ASSURANCE

- A. All materials, equipment and parts comprising the units specified herein shall be new, unused, and currently under production.
- B. Only products and applications listed in this Section may be used on the Project unless otherwise submitted.

1.08 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Delivery: Luminaires shall not be delivered to the Project site until protected storage space is available. Storage outdoors covered by rainproof material is not acceptable. Equipment damaged during shipment shall be replaced and returned to Manufacturer at no cost to Owner.
- B. Storage: Store in a clean, dry, ventilated space free from temperature extremes. Maintain factory wrapping or provide a heavy canvas/plastic cover to protect units from dirt, water, construction debris and traffic. Provide heat where required to prevent condensation.

- C. Handling: Handle in accordance with Manufacturer's written instructions. Be careful to prevent internal component damage, breakage, denting and scoring. Damaged units shall not be installed. Replace damaged units and return equipment to Manufacturer.

1.09 WARRANTY

- A. Units and components offered under this Section shall be covered by a **1**-year parts and labor warranty for malfunctions resulting from defects in materials and workmanship. Warranty shall begin upon acceptance by the Owner.

**PART 2 - PRODUCTS**

2.01 MANUFACTURERS

- A. Products furnished by the following Manufacturers shall be acceptable if in compliance with all features specified herein and indicated on the Drawings.
  - 1. Luminaires, Poles, and Exit Signs: as listed in the Luminaire Schedule.
  - 2. Light-Emitting Diode (LED) Arrays:
    - a. Cree.
    - b. Nichia.
    - c. Citizen.
    - d. Lumileds.
    - e. Samsung.
    - f. Lumenetix Araya.
    - g. Xicato.
    - h. Bridgelux.
    - i. LEDs provided by Luminaire Manufacturer listed in the Luminaire Schedule: meeting the technical and warranty requirements of this Section.
  - 3. LED replacement and integral-driver lamps:
    - a. General Electric.
    - b. Osram.
    - c. Cree.
    - d. Maxlite.
    - e. Green Creative.
    - f. Sora.
  - 4. LED drivers (DC output):
    - a. eldoLED.
    - b. Lutron.
    - c. Signify Advance.
    - d. Osram.

- e. Q-Tran.
  - f. Universal Lighting Technologies.
  - g. Drivers provided by Luminaire Manufacturer listed in the Luminaire Schedule: meeting the technical and warranty requirements of this Section.
5. Transformers for LED systems (AC output):
- a. Q-Tran.
  - b. Hatch.
  - c. Semper Fi.
  - d. Transformers provided by Luminaire Manufacturer listed in the Luminaire Schedule: meeting the technical and warranty requirements of this Section.
6. Unit battery equipment:
- a. Philips Bodine.
  - b. Myers/Iota.
  - c. Unit battery equipment provided by Luminaire Manufacturers listed in the Luminaire Schedule: meeting the technical and warranty requirements of this Section.
- B. Substitutions: Under provisions of Section 260010: Basic Electrical Requirements.

## 2.02 GENERAL

- A. Luminaires new and complete with mounting accessories, junction boxes, trims, and lamps.
- B. Luminaire assemblies U.L. listed appropriate to mounting conditions and application. All labels affixed to the luminaire shall be in a location not visible from normal viewing angles.
- C. Each luminaire family type (downlights, etc.) supplied by only one manufacturer.
- D. Recessed luminaires installed in fire rated ceilings and using a fire rated protective cover shall be thermally protected for this application and shall carry a fire rated listing.
- E. Luminaires installed under canopies, roofs or open areas and similar damp or wet locations shall be UL listed and labeled as suitable for damp or wet locations.
- F. Luminaires shall bear the IP rating appropriate for the application.
- G. Luminaires shall be free of light leaks and shall be designed to provide sufficient ventilation of light engines, including ventilation holes where required.

## 2.03 LUMINAIRE CONSTRUCTION

- A. All sheet metal Work shall be free from tool marks and dents and shall have accurate angles bent as sharp as compatible with the gauges of the required metal. 20-gauge (0.7-mm or 0.027-inch) minimum.
  - 1. Finish: Baked white dry polyester powder, unless otherwise specified, with a minimum average reflectance of 85% on all exposed and light reflecting surfaces. Steel components shall be prepared for finishing with a 5-step zinc phosphating process prior to painting.
  - 2. Luminaire (including all painted component parts) shall be painted after fabrication unless specifically noted in the Luminaire Schedule.

- B. Extruded Aluminum Housings: One-piece housing of AA 6063 T5 extruded aluminum with 0.14 minimum thickness smooth and free of tooling lines in one uninterrupted section of 1-foot to 24-foot with the cross sectional dimensions as indicated in the Luminaire Schedule.
- C. Die-Cast Aluminum Housings:
  - 1. Single-piece casting to ensure water tightness.
  - 2. Low copper (<0.7% Cu) aluminum alloy.
  - 3. Minimum Class 4 Consumer Grade per NADCA Standards.
- D. All surfaces shall be cleaned and dressed to eliminate all exposed sharp edges or burrs.
- E. All intersections and joints shall be formed true and of adequate strength and structural rigidity to prevent any distortion after assembly.
- F. End Plates: Die cast end plates shall be mechanically attached without exposed fasteners. End caps shall be minimum 0.125" thick.
- G. All mitered corners or joints shall be accurately aligned with abutting intersecting members. Sheet metal Work shall be properly fabricated so that planes will not deform (i.e. become concave or convex) due to normal expected ambient and operating conditions.
- H. Ferrous mounting hardware and accessories shall be finished using either a galvanic or phosphate primer/baked enamel process to prevent corrosion and discoloration of adjacent materials.
- I. Fasteners shall be manufactured of galvanized steel.
- J. Adjustable Lamp Mechanisms: To have aiming stops which can be permanently set to position lamp vertically and rotationally.
- K. Recessed luminaires: Equip with through-wire junction box. Box, driver, and replaceable components shall be accessible from the ceiling opening of the luminaire.
- L. Finish:
  - 1. All exposed aluminum surfaces shall be treated with an acid wash and clear water rinse prior to painting. The luminaire shall then be electrostatically painted, or powder coated, and oven baked in the color indicated in the Luminaire Schedule.
  - 2. All exposed steel surfaces shall be treated with an acid wash and clear water rinse, then prime coated. The luminaire shall then be electrostatically painted, or powder coated, and oven baked in the color indicated in the Luminaire Schedule.
- M. Door Frames for lensed luminaires: White painted, flat aluminum with mitered corners.

## 2.04 SUSPENSION

- A. Suspension Devices, type as specified in the Luminaire Schedule:
  - 1. Aircraft Cable: Stainless steel type - 3/32" nominal diameter, stranded, with positive pressure, field adjustable clamp at luminaire connection.
  - 2. Rigid Pendant: 1/2" nominal diameter or as specifically shown on drawings. Supplied by luminaire manufacturer when available as standard product. At luminaire end of stems, provide earthquake type swivel fitting to permit 45-degree swing in any direction away from vertical.

3. Chain hangers: Length to suit mounting height if shown or as field conditions dictate. Use two heavy duty chains with "S" hooks at each suspension point. Length to suit mounting height as shown on Drawings.
- B. Suspension system must permit  $\pm 13$ -mm (1/2") minimum vertical adjustment after installation.
- C. Supports:
  1. Provide internal safety cable from luminaire body to stud in outlet box.
  2. Carry luminaire weight to structure and provide horizontal bracing from suspension points to ceiling framing to prevent sideways shifting. Provide diagonal seismic restraint wires per code.
- D. Feed Point:
  1. Flat-plate canopy to cover outlet box, with holes for support cable and power cord, concealed fasteners to permit splice inspection after installation.
  2. At the electrified connection provide straight cord feed.
  3. Power cord: white multi-conductor cord, parallel to support cable (aircraft cable); within pendant (rigid pendant); or flexible conduit (chain hanger).
  4. Where emergency feed is required, a separate feed point shall be provided.
- E. Non-feed Points:
  1. 13-mm (1/2") O.D. polished chrome end sleeve, inside threaded 1/4"-20, with 50-mm (2") diameter. Flat white plate to cover hole in ceiling. Top of cable with ball swaged on end, to fit inside sleeve.
  2. Contractor to provide support above ceiling as required.
- F. Suspension method shall allow adjustment to be made in hanging length to allow for variance in ceiling height.
- G. All exposed paintable suspension components shall have the same finish and color as the luminaire housing.

## 2.05 LAMP HOLDERS

- A. Of configuration and design to accept standard lamp bases.
- B. Wiring channels and lampholder mountings shall be rigid and accurately constructed.
- C. Integral-driver LED:
  1. Medium screw base: Unglazed porcelain body or thermoplastic (PET GF) with copper-alloy screw shell. 660watt, 250volt rated.
  2. Bi-Pin base: Ceramic casing with mica cover plate, copper allow contact surfaces. Pin distance designed for lamp provided.

## 2.06 LED ARRAYS

- A. Minimum lumen maintenance per LM-80 measurements and TM-21 calculations: L90 at 60,000 hours.
- B. Maximum burnout: B90 at 200,000-hours.
- C. Free of mercury and toxic materials; RoHS compliant.

D. Linear LED boards: LED pitch shall be consistent throughout the luminaire and shall remain consistent from the end of one board to the start of the next. LED pitch shall be the same from the endcap of the luminaire to the last LED on the board as the LED pitch throughout the luminaire. Luminaire shall have a continuous luminous appearance – bright or dark spots are not acceptable.

E. White LEDs:

1. Interior

- a. Correlated Color Temperature (CCT): 4000K
- b. Minimum efficacy: 75 lumens per watt.
- c. L70 lifetime: minimum 80,000-hours (extrapolated.)
- d. Correlated Color Temperature (CCT); as specified in Luminaire Schedule. Maximum 3-step MacAdam ellipse variation throughout listed life (L70).
- e. Color Rendering Index (CRI); minimum 80 Ra.
- f. R9 value; minimum 30.
- g. TM30 values;  $R_f > 75$ ,  $92 > R_g > 110$ .

2. Exterior

- a. Correlated Color Temperature (CCT): 4000K
- b. Minimum efficacy: 100 lumens per watt.
- c. L70 lifetime: minimum 100,000-hours (extrapolated.)
- d. Correlated Color Temperature (CCT); as specified in Luminaire Schedule. Maximum 4-step MacAdam ellipse variation throughout listed life (L70).
- e. Color Rendering Index (CRI); minimum 70 Ra.
- f. R9 value; minimum 20.
- g. TM30 values;  $R_f > 70$ ,  $80 > R_g > 120$ .

F. Tunable White LEDs:

1. CCT range as specified in Luminaire Schedule.
2. Color temperature at each “step” shall follow the Planckian Locus (Black Body Curve), +/- 50K.
3. Color adjustment via separate 0-10volt input from driver.
4. Submit Chromaticity curves for review.

G. RGB Color LEDs:

1. As specified in Luminaire Schedule.

## 2.07 LED DRIVERS:

A. LED drivers shall be integral to luminaire housing or remotely located, when specified, within 15 feet of diode assembly.

1. Luminaires shall be provided with the UL listed or equivalent driver and low voltage power supply as recommended by Manufacturer to insure proper and consistent lamp and luminaire



performance. The number of LEDs per luminaire per power supply shall not be exceeded, and LEDs shall not be wired to a high capacity driver unless recommended by Manufacturer.

2. Light Emitting Diode (LED) control gears shall operate with sustained variations of +/- 10% in voltage and frequency without damage to the driver and have a power factor not less than 90%. Regulations: +/-5% across the listed load range.
3. Driver input current shall have Total Harmonic Distortion (THD) of less than 20%. The Driver shall have a Class A sound rating unless otherwise specified.
4. Control gear shall be rated for 50-degree C ambient temperature.
5. All control gear shall facilitate smooth, flicker-free dimming from 100% to 10%, 1% or 0.1% as noted on the Luminaire Schedule.

## 2.08 LENSES

### A. Acrylic:

1. Lenses shall be extruded or injection molded crystal clear 100% virgin acrylic (except as indicated otherwise). For lenses with male pattern of pyramids or cones, specified minimum thickness refers to distance from flat surface to base of pyramids (cones) or thickness of undisturbed material. For lenses with female pattern, specified minimum thickness refers to overall thickness of material.
2. Lenses shall fully eliminate lamp images when viewed from all directions within 45 to 90-degree angles from vertical, where the ratio of lamp spacing to the distance from lamp underside to top of lens does not exceed 1.50. Within the viewing angle from 0 to 45-degrees the ratio of maximum brightness (under a lamp) to minimum brightness (between lamps) shall not exceed 3 to 1.
3. Finishes (i.e. sandblasting, etching, polishing) shall be performed as described in the Luminaire Schedule.
4. Plastic electrical light diffusers must meet the requirements of Section 2-5209, CAC, Flame Spread Rating.
5. Prismatic Acrylic:
  - a. Extruded of clear virgin acrylic plastic, 0.125" minimum overall thickness, 0.100" nominal unpenetrated thickness, Pattern 12 with flat sided female prisms running at 45 degrees off panel axis unless otherwise specified in the luminaire schedule. Concave prisms are not acceptable.
6. Opal acrylic:
  - a. Extruded or injection molded of virgin acrylic plastic, 0.080" minimum overall thickness.

## 2.09 REFLECTOR CONES

- A. Reflector cones shall be manufactured of uniform gauge, not less than 0.032" thick, high purity aluminum, Alcoa 3002 alloy, free of spin marks or other defects or blemishes caused during manufacturing.
- B. The finish on the inner surface of the reflector shall be as described in the Luminaire Schedule and as produced by the Alzak process. The reflector shall have an anodic coating of not less than four mils thick. The reflector inner surface shall be free of water spotting and shall maintain a reflectivity

- ratio of not less than 83% on clear specular finishes. The reflectors shall have a low iridescence finish.
- C. All luminaires using Alzak reflector cones shall be supplied by the same manufacturer unless directed otherwise in Luminaire Schedule.
  - D. Provide 45-degree lamp and lamp imaging cut-off unless otherwise specified in the Luminaire Schedule. Where upper reflector is separated from cone, cut-off shall be 45-degrees unless otherwise noted.
  - E. Plastic materials shall not be used for reflector cones or aperture plate materials.
  - F. Luminaires in which reflector cones are riveted or welded to the housing or where removal of the cone requires pressure to be applied to the finished surface of the reflector shall not be acceptable.
  - G. Cone flange shall be formed as an integral part of the cone and shall have identical color and finish as the cone, except when specified otherwise in the Luminaire Schedule. The flange major surface shall be perpendicular to the cone axis. The width of the flange shall adequately cover the ceiling opening without light leaks. No luminaire parts (housing, mounting frame, etc.) shall be visible between the ceiling surface and the edge of the cone flange.
  - H. Reflector cone retention devices shall not deform the cone in any manner.

#### 2.10 TRACK LIGHTING SYSTEMS

- A. Lighting Track: Extruded aluminum track with extruded poly-vinyl insulator. 20amp copper conductor strips with separate ground to provide electrical and mechanical connection for the specified track mounted luminaires.
  - 1. Line Voltage Dimming: Number of circuits as indicated in luminaire schedule, with separate neutrals per circuit.
  - 2. 0-10V Dimming: Labeled and listed for the application.
  - 3. Wireless Dimming: Provide with QR code to allow users to access the associated wireless application.
- B. Provide connectors, elbows, stems, feed ends, end caps and fittings to make a complete system.
- C. Track Fittings: To provide positive mechanical and electrical connection for track heads to track. Removable fitting either twists into or snaps into specified lighting track.
- D. Luminaire dimensions: Proper for the various wattage noted on the plans and as recommended by the luminaire manufacturer or as specified.
- E. Adjustable Lamp Mechanisms: To have adjustable aiming which can be set to position lamp vertically and rotationally.
- F. Drivers: Integral to track fitting, to provide proper DC current to LED arrays.
- G. Finish: All visible surfaces to be of color and texture as directed in Luminaire Schedule.
- H. Labels: Track and track fittings shall be compatible and be U.L. labeled and listed as a system.

#### 2.11 POLES

- A. Wind-load strength: 80 mph and 1.3 gust factor for total support assembly, including pole, base and anchorage, where used, to carry the combined Effective Projected Area (EPA) rating of the

luminaire heads, arms, supports, and appurtenances at the indicated heights above grade without deflection or whipping.

- B. Pole shafts:
  - 1. Round straight, round tapered, square straight, or square tapered as noted on the Luminaire Schedule.
  - 2. Steel poles: Steel tubing conforming to ASTM A 500, Grade B, carbon steel with a minimum yield of 46,000 psi. Single piece construction up to 40-feet in height.
- C. Arm, bracket and tenon mount materials: Finish to match poles.
- D. Mountings, fastenings, and appurtenances: Corrosion-resistant components compatible with the poles and luminaires that will not cause galvanic action at contact points. Provide mountings that will correctly position the luminaire to provide the indicated light distribution.
- E. Handhole: Provide handhole and cover near base of pole shaft for access to wiring compartment.
- F. Grounding lug: Provide grounding lug for grounding conductor with access through handhole.
- G. Pole bases: Anchor type with galvanized steel hold-down or anchor bolts, leveling nuts and bolt covers.
- H. Anchor bolt covers: Spun or two-piece gravity held unless otherwise specified.
- I. Pole-top tenons: Fabricated to support the luminaire indicated and securely fastened to the pole top.

## 2.12 LIGHTING TRANSFORMERS

- A. Low voltage transformers:
  - 1. Low voltage transformers shall be core and coil construction, unless otherwise noted.
  - 2. Primary voltage shall be as noted in Luminaire Schedule, secondary voltage 12volt AC, unless otherwise noted.
  - 3. Sound rating shall be the best available. Replace excessively noisy transformers at no cost to the Owner.

## 2.13 UNIT BATTERY EQUIPMENT

- A. LED Emergency Power Supplies
  - 1. Standard Features:
    - a. Safety compliance to UL 924; CAN/CSAC22.2 No.141-10 and NFPA requirements for 90-minute egress
    - b. Open circuit / short circuit protection
    - c. Operating temperature: 32-degree F/0-degree C to 122-degree F/50-degree C
  - 2. Test switch / charging indicator light
  - 3. Emergency reaction time < 1-sec
  - 4. Powder coat steel, stainless or galvan-nealed case
  - 5. Field-replaceable NiCd battery pack (x2) with quick connect
  - 6. Min. lead wire length: 6in UL 1452 solid / #18 AWG 1000volt / 90-degree C

**PART 3 - EXECUTION**

**3.01 EXAMINATION**

- A. Contractor shall thoroughly examine Project site conditions for acceptance of luminaire installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

**3.02 PREPARATION**

- A. Architectural Plans shall govern exact ceiling construction and mounting conditions for all luminaires. Locate as shown on the architectural elevations and reflected ceiling plan.
- B. Consult Architectural Drawings for details of ceiling construction, finish, and other applicable details.
- C. Contractor shall be responsible for coordination of luminaire mounting and compatibility with ceiling construction.
- D. Luminaires in areas where exposed or concealed pipe and ductwork prevents direct access to the structural ceiling shall be provided with appropriate support system to install luminaire below obstructions to avoid conflicts with same.

**3.03 ARCHITECTURAL COORDINATION**

- A. Where luminaires are mounted in architectural coves, soffits, valances, or cabinets and are given an overall length, the Contractor shall verify all lengths in the field prior to releasing order.
- B. Where luminaires are surface mounted or suspended to match the length of walls or other architectural elements, the Contractor shall verify all lengths in the field prior to releasing order.
- C. Mounting heights specified on drawings:
  - 1. Wall mounted luminaires: shall be to centerline of luminaire.
  - 2. Pendant mounted luminaires: shall be to bottom of luminaire unless specifically identified in the Luminaire Schedule or on drawings.

**3.04 INSTALLATION**

- A. Install luminaires in accordance with Manufacturer's written instructions, as indicated on the Drawings and as specified herein.
- B. Contractor shall be responsible for all supports, hangers, and hardware necessary for a complete installation.
- C. Luminaires shall be plumb, level, square, in straight lines and without distortion.
- D. Remedy light leaks that may develop after installation of recessed or enclosed luminaires.
- E. Adjustable luminaires shall be installed with "dead" zone of rotation away from intended aiming point.

**3.05 LUMINAIRE SUPPORTS**

- A. Physical (gravity) supports:
  - 1. Recessed luminaires in wood framed ceilings shall be supported by 2" x 4" hangers fastened to adjacent ceiling joists.
  - 2. Recessed downlights in wood frame ceilings shall be supported with Manufacturers supplied bar hangers and shall be installed according to the Manufacturer's instructions.

3. Surface mounted luminaires solely supported by recessed boxes in a gypsum board ceiling shall have a 1-1/8" steel bar screwed or welded to the back of the box. This steel bar must be long enough to span two ceiling support channels and shall be attached to the channels by twisting wire around the bar and the support channel. For luminaires weighing over 50-pounds, provide studs in recessed box.
  4. Support surface mounted luminaires more than 18" wide at or near each corner or edge, in addition to support from outlet box.
  5. Support recessed downlights manufactured with built-in brackets by twisting wire around the bracket and two adjacent ceiling support channel runners on either side of the luminaire.
  6. Support outlet boxes as specified in Section 260533: Boxes. Provide all boxes with grounding pigtail.
  7. On concrete ceilings, use one of the following for supporting luminaires other than by outlet box:
    - a. Preset concrete inserts, provided inserts are completely covered by the luminaire after installation.
    - b. 1/4-20 threaded appropriate length wedge type anchor.
- B. Seismic supports:
1. Recessed luminaires in suspended ceilings shall be supported by connecting two support wires to the luminaire at diagonal opposite corners for luminaires weighing 56 pounds or less. Connect four wires, one at each corner for luminaires weighing more than 56 pounds.
  2. Surface mounted luminaires on suspended ceilings shall be attached to the main ceiling runner with at least two positive clamping devices and shall have an additional support wire attached to each clamping device and to the structure above.
  3. Recessed downlight luminaires in suspended ceilings shall be supported by connecting one support wire to the luminaire housing.
  4. All suspended luminaires shall be able to swing 45-degrees from vertical in any direction without obstruction.
    - a. Furnish suspended rigid pendant luminaires with universal joint type hanger canopy and longitudinal sway adapter at each stem, to permit 45-degree swivel on 360-degree circle at canopy and 45-degree longitudinal movement at sway adapter.
    - b. Submit Drawings of hanger assembly for review prior to ordering.
    - c. If suspended luminaire is not free to swing 45-degrees in any direction, without obstructions, provide seismic restraint to prevent contact in conformance with California Uniform Building Code, Section 2330, Seismic Design.
  5. All recessed modular luminaires shall be furnished with earthquake clips where installed in tee bar ceiling.

### 3.06 INSTALLATION OF POLES

- A. General: Store poles on decay-resistant treated skids at least 1-foot above grade and vegetation. Support pole to prevent distortion and arrange to provide free air circulation.

- B. Metal poles: Retain factory-applied pole wrappings until just before pole installation. For poles with nonmetallic finishes, handle with web fabric straps.
- C. Wood poles: Do not drag treated poles along the ground. Do not handle poles with tongs, cant hooks and other pointed tools capable of producing indentation more than ¼-inch in depth. Do not apply tools to ground line section of poles.
- D. Pole installation: Use fabric web slings (not chain or cable) to raise and set poles.

### 3.07 CONCRETE FOUNDATIONS

- A. Construct concrete foundations conforming to Division 03, Section "Cast-In-Place Concrete."
- B. Utilize manufacturer's bolt templates to properly position anchor bolts.
- C. Provide leveling nut to anchor bolt prior to pole base. After pole leveling, pack non-shrink grout between pole base and concrete foundation.
- D. Comply with details and Manufacturer's recommendations for reinforcing, anchor bolts, nuts and washers.

### 3.08 ATTIC STOCK

- A. Spare Parts: Provide spare parts totaling 5 percent of the quantity specified, or two total, whichever is greater, of the following:
  - 1. Luminaires:
  - 2. Lenses:
  - 3. LED Drivers:
  - 4. LED Modules:

### 3.09 IDENTIFICATION SYSTEM

- A. All concealed junction box cover plates for the lighting branch circuit system shall be clearly marked with a permanent black ink felt pen identifying the branch circuit (both panel designation and circuit number) contained in the box.

### 3.10 FIELD QUALITY CONTROL

- A. Visual and mechanical inspection:
  - 1. Inspect for physical damage, defects, alignment and fit.
  - 2. Perform operational test of each luminaire after installed, circuited, and energized.
  - 3. Perform emergency operational test of all luminaires connected to emergency circuiting by simulating normal power source failure.
- B. Contractor shall replace at no cost to the Owner all equipment which is found defective or do not operate within factory specified tolerances.

### 3.11 MOCK-UPS

- A. The purpose of the mock-up is to study the general appearance and performance of and to make comparisons between the various lighting systems. At that time, certain minimal test variations may be requested as to lamp location, lamp type, reflector shape, color, etc. Final modifications, if any, shall be considered a part of these Specifications and shall be accomplished with no additional cost to the Owner.

- B. Where noted in the Luminaire Schedule, the Contractor shall provide sample(s) for use in full-size field mockup of specific luminaires.
- C. The Contractor shall allow time in the bid and be responsible for procuring and installing a sample luminaire on the Project for review, prior to acceptance and final installation.
- D. This mock-up will be required to be coordinated and reviewed with the Owner's Representative and the Architect or Engineer.
- E. The Contractor shall be responsible for providing the labor and materials for the field mock-up including, but not limited to, special rigging or scaffolding and adjustments in the field, as directed by the Architect or Engineer.
- F. The mock-up installation shall closely conform to the conditions of the actual final installation as to height, distance from adjacent surfaces, number and type of lamps, material, color, etc.
- G. The Contractor shall submit a written description of each proposed mock-up with Drawings in order to obtain Architect's approval prior to commencement of each mock-up.
- H. Exterior mockups will occur at night, starting 2-hours after local sunset. Dates to be coordinated with design team to suit schedules. Contractor to propose multiple dates at least 4 weeks in advance.
- I. Allow two, 6-hour mockup sessions per luminaire. The second mockup, if required, will occur after additional or alternate equipment is available.
- J. Contractor to provide all required security, sidewalk closures, lifts, walkie-talkies (4 minimum) and manpower to make changes to color and intensity of the temporary luminaires.
- K. Mockup luminaire shall not be used for final permanent installation unless approved by the design team.

### 3.12 ADJUSTING AND AIMING

- A. Aiming will occur at night under the direction of the Owner's Representative and the Architect or Engineer. The Contractor shall be responsible for providing the labor and materials for field aiming. This shall include, but not limited to, special rigging or scaffolding, adjusting luminaires in field, testing of various lenses or louvers, as directed by the Architect or Engineer.
- B. Aim all directional luminaires, including but not limited to luminaires described in the Contract Documents or by the luminaire manufacturer as "aimable," "adjustable," or "asymmetric" as follows:
  - 1. To provide the lighting pattern for which the luminaire is designed.
  - 2. To provide the lighting pattern as shown on the drawings.
  - 3. To predetermined aiming points as shown on the drawings.
  - 4. Where aiming cannot be determined, request, in writing, clarification from the Specifier, indicating luminaires needing clarification.
- C. Re-aim luminaires as determined by Architect during final project walkthrough.

### 3.13 CLEANING

- A. Clean luminaires prior to Project closeout in accordance with Manufacturer's recommended materials and methods.

B. Remove all debris, fingerprints, and packaging remnants.

END OF SECTION