



COUNTY OF
IMPERIAL

DEPARTMENT OF
PUBLIC WORKS

155 S. 11th Street
El Centro, CA
92243

Tel: (442) 265-1818
Fax: (442) 265-1858

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Public Works works for the Public

COUNTY OF IMPERIAL PUBLIC WORKS

155 S. 11th Street
El Centro, CA 92243

County Project: No.SR6309BH (BHCIP-B4-236) -County of Imperial Behavioral Health Services (BHS) El Centro Mental Health Triage and Engagement Services Expansion Project.

Located at 202 N. 8th Street, El Centro CA. 92243

County Project No. SR6309BH (BHCIP – B4-236)

ADDENDUM NO. 4

JUNE 23, 2025

This *ADDENDUM* is hereby made part of the Contract Documents and specifications to the same extent as if originally included therein, and shall be signed by the Respondent and included with the proposal.

This Addendum contains:

- Clarifications made in form of questions from contractors interested in this project.
- Construction Plans that replace both the original project construction plans and the construction plans in previous Addendums.
- Technical Specification by IC IT Department
- Exhibit VIII Specifications by Sanders Inc., Architecture / Engineering.

Clarification No.1: “Will the following project for Imperial County BHS Tenant Improvements involve any security system upgrades? Do you have any plans or specs on the project at this point?”

Answer: For reference to the security systems please see the following sheets are incorporated into the Construction Plan set: LV1, LV2, LV3, LV4 & LV5 these plans.

Clarification No.2: “Exhibit VIII states that single mode or multimode fiber is needed but does not state which one specifically is needed for the project. Could you please provide clarity on this?”

Answer: 12 Strand single mode fiber with LC terminator on each end.

Clarification No.3: “Plan page A1.2 (Arch Floor Plan) shows rooms 2A-10A not to be in scope. Mechanical floor plan page M1.1 shows work to be done above ceiling. Please clarify.”

Answer: No mechanical work is required to be performed for the area shown in Architectural Sheet A1.2 – Floor Plan Architectural issued in Addendum One. The rooms in question belong to the Behavioral Program, called Casa Serena, which has recently been remodeled.

Clarification No.4: “Controls. There is no note in the plans for controls or thermostats. Should we bid a standalone Wi-Fi based controller of a BAS system?”

Answer: Proceed with the installation of standalone Wi-Fi-based controllers. A BAS system is not required for this project.

Clarification No.5: “On A1.2 Room Station-1 Wall type ‘C’ calls for a 2” Furr-out on a new 6” wall, please confirm that is the intent. Also, the typical metal stud size is 2 ½” is it acceptable to change the Furr-out wall stud size from 2” to 2 ½”?”

Answer: Confirming it is the intent, and it is acceptable to use a 2-1/2 fur-out wall.

Clarification No.6: “North wall of Corridor B1C has a wall transition size from 3 5/8” to 4” wall. Please confirm the transition location.”

Answer: The portion of the wall along Corridor B1C that is called out to be 4” is in error. The portion of the wall shall be 3/58”.

Clarification No.7: “Where does detail 15 on AX5.2 Apply?”

Answer: The design intent of detail 15 is to use it at hard lid ceilings.

Clarification No.8: “Do you know what access control system and CCTV you are standardized on?”

Answer: For Access control specifications and Video Surveillance, refer to Exhibit VIII – Technical Specs in the Project Manual. Parts for access control that the county uses.

- Isonas RC-04-PRX-WK Pure IP Proximity Wall Mount Reader-Controller with Keypad
- Isonas Power Net Cable – 10-Foot
- Isonas ACC-EDK-3A Advanced Security Module
- Hes 8000C-630

Clarification No.9: “Will this project also require a fire alarm and/or nurse call? Is there a standard for those as well?”

Answer: Yes, the project requires a fully functioning Fire Alarm System, provided and installed by the Contractor. The Fire Alarm system is required to be submitted as a deferred Submittal to the City of El Centro. A nurse call system is not required for this project. A fire alarm system specification section will be issued in a subsequent Addendum.

Clarification No.10: “Who is the typical fire alarm provider for the county? We need to include it as a deferred submittal item in this project but want to make sure I am working with the appropriate party.

*Answer: The company we use for installation or maintenance of the panels that are going to be relocated Imperial County hires First Choice Alarm 760.347.6883
PO BOX 6047, La Quinta, CA 92248*

Clarification No.11: Is this a new building project?

Answer: No, it is Modernization/Addition. It is a functioning mental health service provider that operates 24 hours a day, 7 days a week.

Clarification No.12: Will the project require a server or workstation?

Answer: "IC IT department will be providing server and workstation; the contractor will provide and install the server rack cabinet No. APC NetShelter AR3155.

1. The Contractor shall provide and submit as a deferred submittal the modifications to the existing wet pipe fire suppression system.

• **DRAWINGS**

➤ S1 – FOUNDATION PLAN

- The referenced sheet in the plan set has been revised and is required to be replaced:
 - S1 – FOUNDATION PLAN.
- The attached Addendum drawing will replace the referenced sheet; the revisions are clouded.
 - AD-3.01_S1 – FOUNDATION PLAN.

➤ The following sheet is hereby issued and incorporated into the plan set.

- AS1.0 – CONSTRUCTION PHASING PLAN

➤ REFERENCE DRAWINGS – EXISTING WET PIPE FIRE SUPPRESSION SYSTEM

- The EXISTING WET PIPE FIRE SUPPRESSION SYSTEM drawings are hereby attached as referenced drawings.

➤ Sheet CM1 – COMMUNICATIONS PLAN

- The referenced sheet in the plan set is in error and shall be removed from the project.

➤ The following sheets are hereby issued and incorporated into the plan set.

- LV1 - Overall Building Layout
- LV2 - Voice and Data Cabling Plan
- LV3 - Access Control Plan
- LV4 - Video Surveillance Plan
- LV5 - Low Voltage Layers

The Consultant is responsible for advising any and all subconsultants of this change. Each Respondent must acknowledge receipt of this addendum in the noted space below and must be attached to the proposal.



John Gay, PE
Director of Public Works

Acknowledgement of Addendum No. 4

County Project No. SR6309BH (BHCIP-B4-236) County of Imperial Behavioral Health Services (BHS) El Centro Mental Health Triage and Engagement Services Expansion Project, Located at 202 N. 8th Street, El Centro CA. 92243

License No: _____

Print or Type Company Name: _____

Print or Type Authorized Name: _____

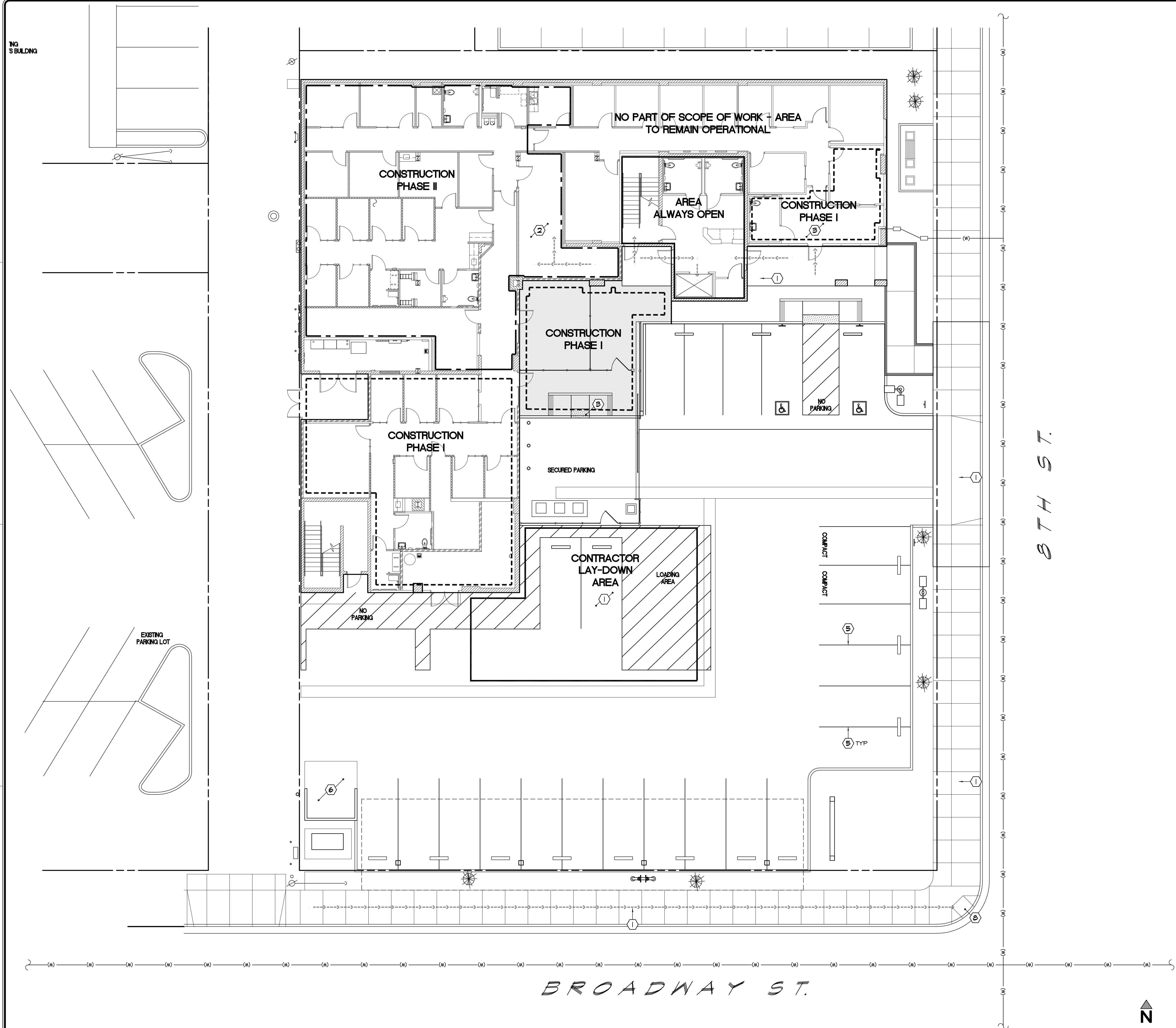
Authorized Signature of Consultant: _____

Date Signed: _____

FOUNDATION PLAN

CONSTRUCTION PHASING PLAN

ING
S BUILDING



ACCESSIBILITY SITE PLAN

KEYNOTES:

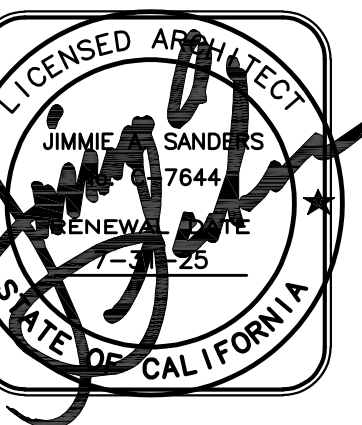
- ① CONTRACTOR LAY DOWN AREA - PROVIDE 6'-0" CHAIN LINK FENCE
- ② EXISTING ENTRY TO REMAIN OPEN DURING PHASE I OF CONSTRUCTION
- ③ EXISTING ENTRY TO REMAIN OPEN DURING PHASE II AND PORTION OF PHASE I OF CONSTRUCTION

LEGEND:

----- PROPOSED ACCESSIBLE PATH OF TRAVEL - CLEAR OF CONSTRUCTION

NOTES:

1. THE BEHAVIORAL HEALTH FACILITY OPERATES 24 HOURS 7 DAYS A WEEK.
2. DURING THE CONSTRUCTION THE CONTRACTOR HAS TO MAINTAIN THE FACILITY IN OPERABLE WORKING CONDITIONS.
3. UTILITY DISRUPTIONS SHALL BE MAINTAIN AT A BARE MINIMUM STILL MAINTAINING OPERATIONS TO CONTINUE.
4. THE CONTRACTOR IS RESPONSIBLE TO PROCURE ANY ENCROACHMENT PERMITS THROUGH THE CITY OF EL CENTRO.
5. DURING THE MODIFICATIONS/ALTERATIONS OF THE EXISTING NET PIPE FIRE SUPPRESSION SYSTEM THE CONTRACTOR SHALL PROVIDE A FIRE WATCH DURING THE TIME THE SYSTEM IS NOT OPERATIONAL.



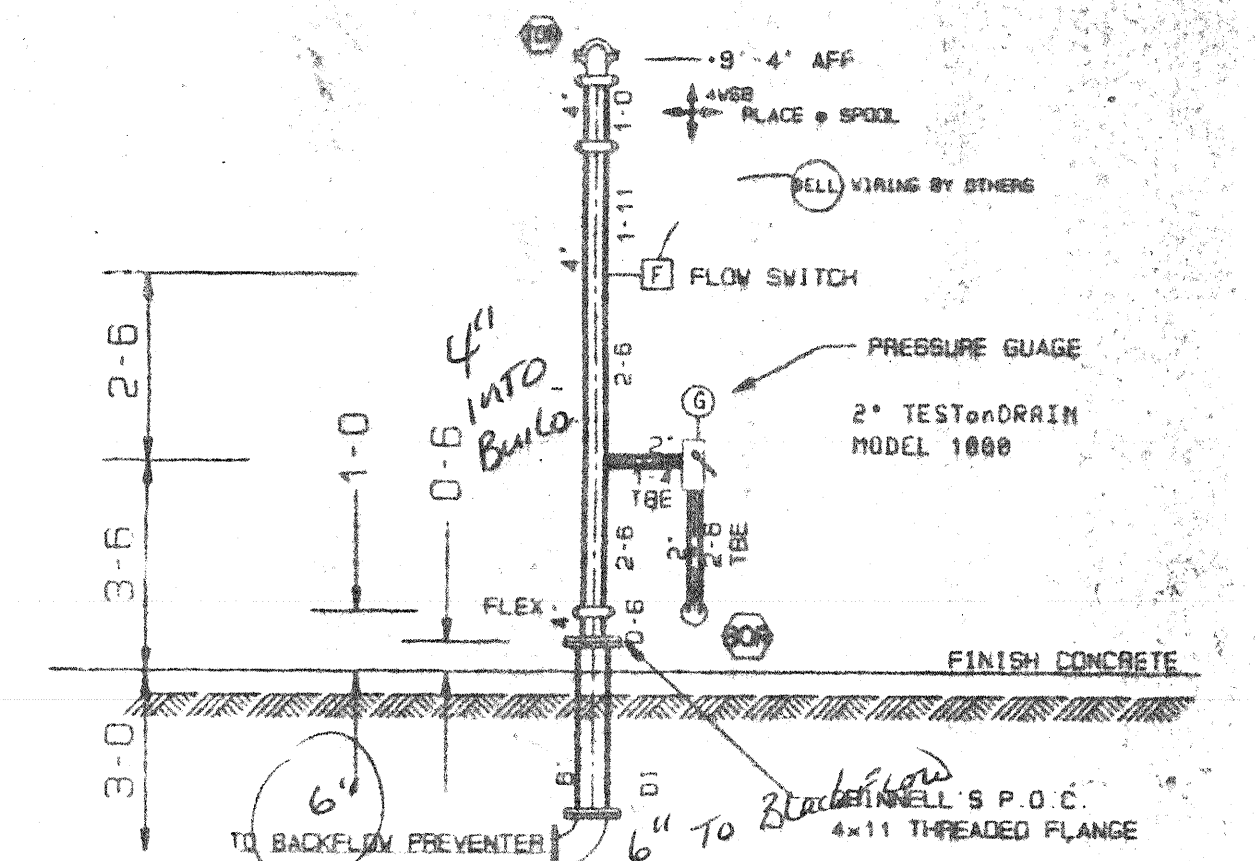
Sanders, Inc.
Architecture/Engineering
1102 INDUSTRY WAY, SUITE A
EL CENTRO, CA 92243
760 353 5440
FAX 760 353 5442

Document Date
06-08-25
Date Last Revised

Project Title
EL CENTRO - BEHAVIORAL HEALTH
TENANT IMPROVEMENTS - MENTAL HEALTH TRIAGE AND ENGAGEMENT SERVICES
Sheet Title
CONSTRUCTION PHASING PLAN

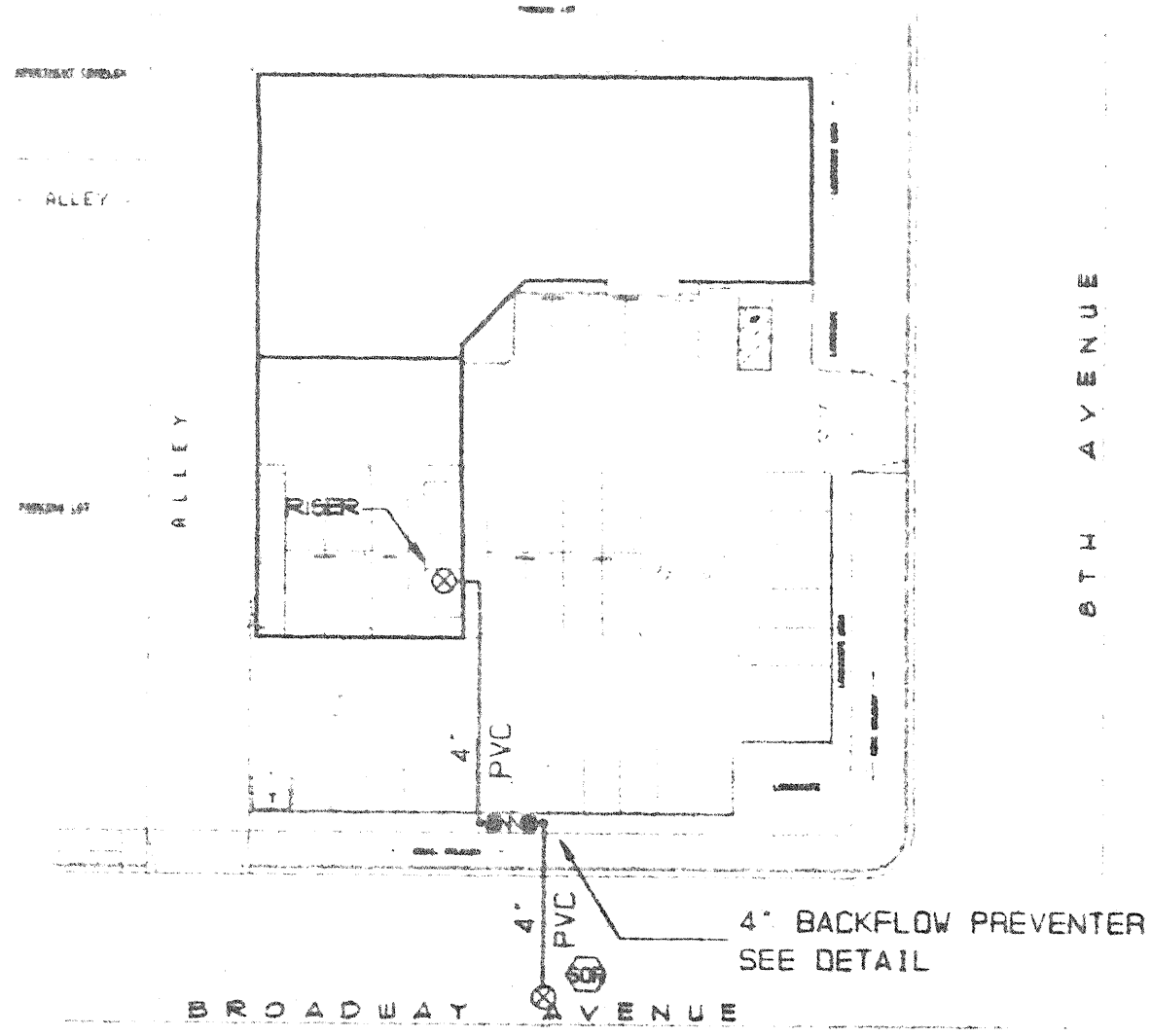
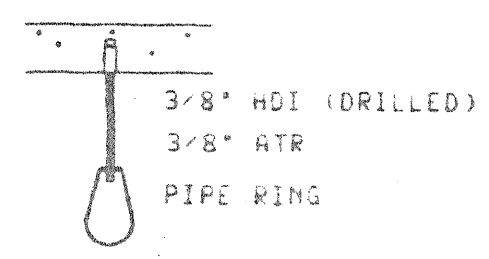
Project Number
22-6600
Sheet Number
AS10

**REFERENCE DRAWINGS –
EXISTING WET PIPE FIRE SUPPRESSION SYSTEM.**



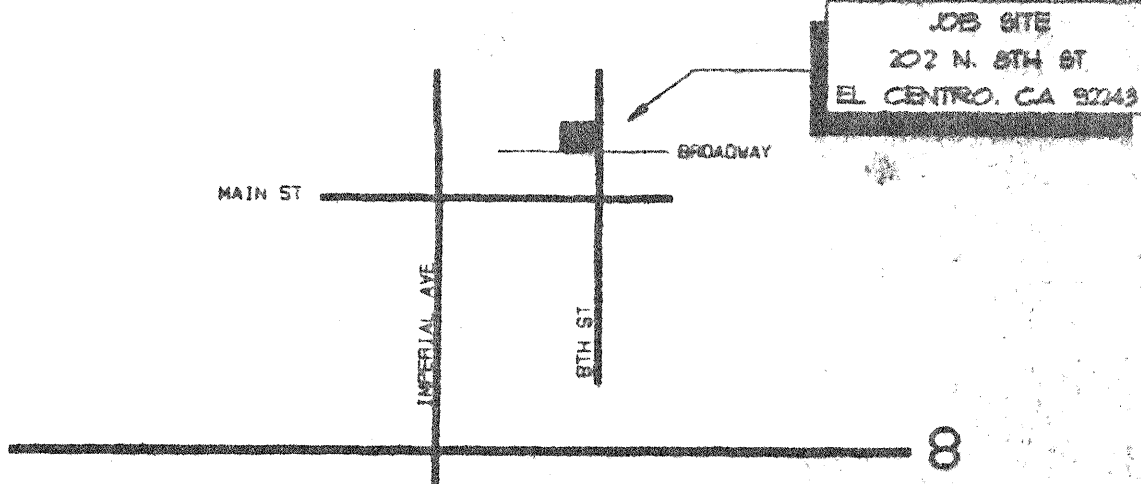
N.T.S.

- 1) FIRE PROTECTION SYSTEM DESIGN BASED ON THE REQUIREMENTS OF NFPA-13 1991 & PER EL CENTRO FIRE DEPARTMENT.
- 2) SPRINKLER SPACING IN ALL AREAS TO BE LIGHT HAZARD 2.5 SQ. FT. WITH A DENSITY OF .10/1635 SQ. FT.
- 3) FIRE PROTECTION PIPING INSTALLATION SHALL BE PER NFPA-13 1991.
- 4) ALL MATERIALS SHALL BE U.L. LISTED FOR FIRE PROTECTION USE.
- 5) ALL ABOVE GRADE PIPING TO BE "XL" STEEL FOR PIPING UP TO 2" DIA., 2 1/2" - & UP TO BE SCH. 10 THINWALL OR SUPERFLOW BLACK STEEL. FITTINGS TO BE CAST IRON BLACK CLASS 125 FOR PIPING UP TO 2" DIA., ROLL GROOVED FOR 2 1/2" - UP.
- 6) HANGERS TO BE INSTALLED PER NFPA-13 1991.
- 7) SWAYBRACE INSTALLATION SHALL BE PER NFPA-13. ALL BOLTING CONNECTIONS SHALL BE 1/2" DIA.
- 8) PROVIDE SPARE HEAD BOX WITH 3 HEADS OF EACH TYPE WITH WRENCHES
- 9) PROVIDE WALL PLATES TO EXPOSED PIPING PENETRATING EXTERIOR WALLS.
- 10) PROVIDE SIGNS FOR ALL VALVES.
- 11) PROVIDE WEATHERPROOF CAULKING FOR ALL PIPES PASSING THROUGH EXTERIOR WALLS.



UNDERGROUND DETAIL


PIPING PLAN - FIRST FLOOR

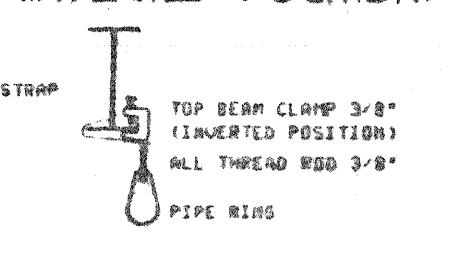


VICINITY MAP

APPROVED

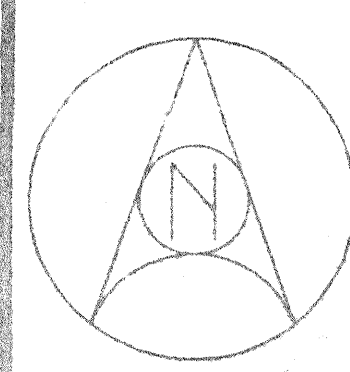
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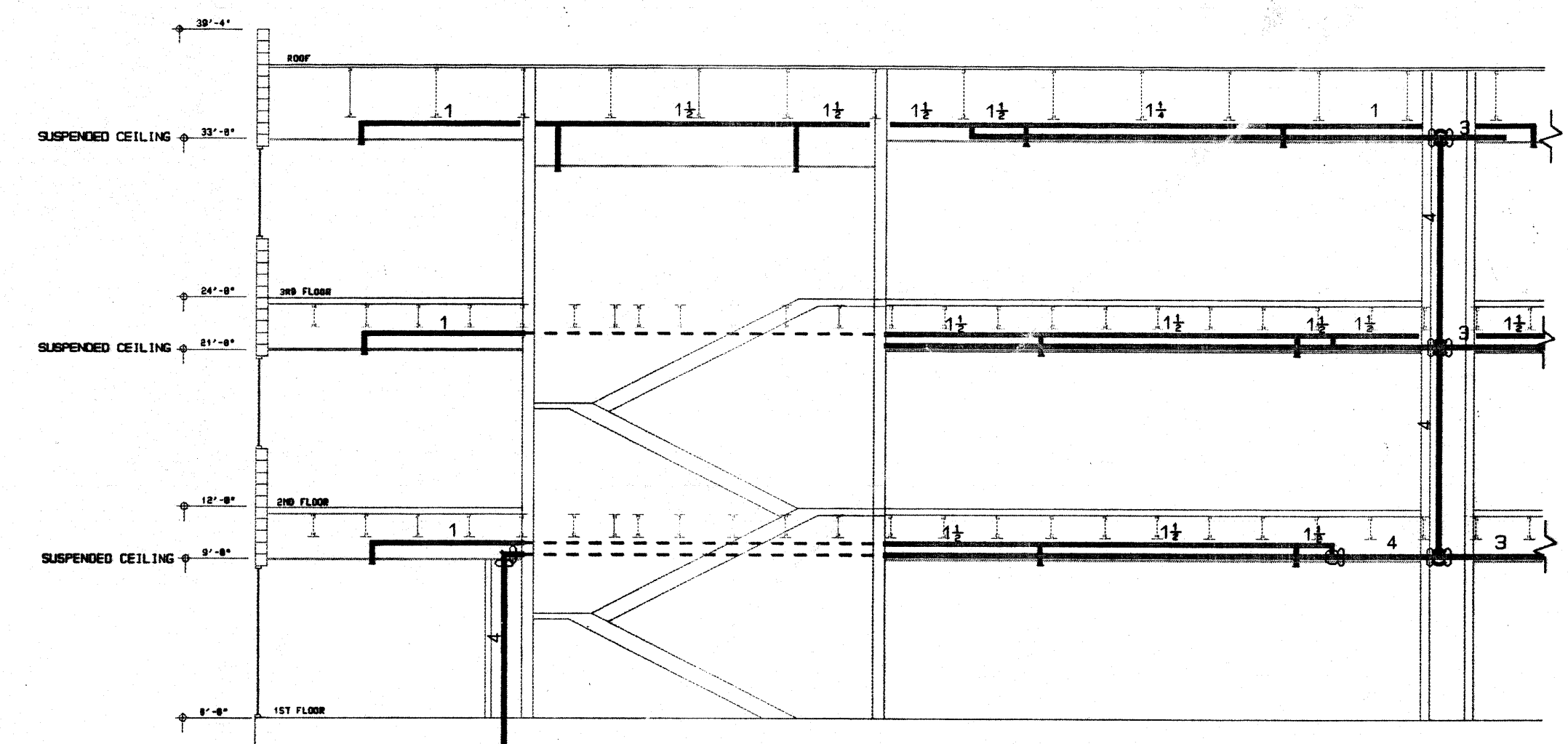
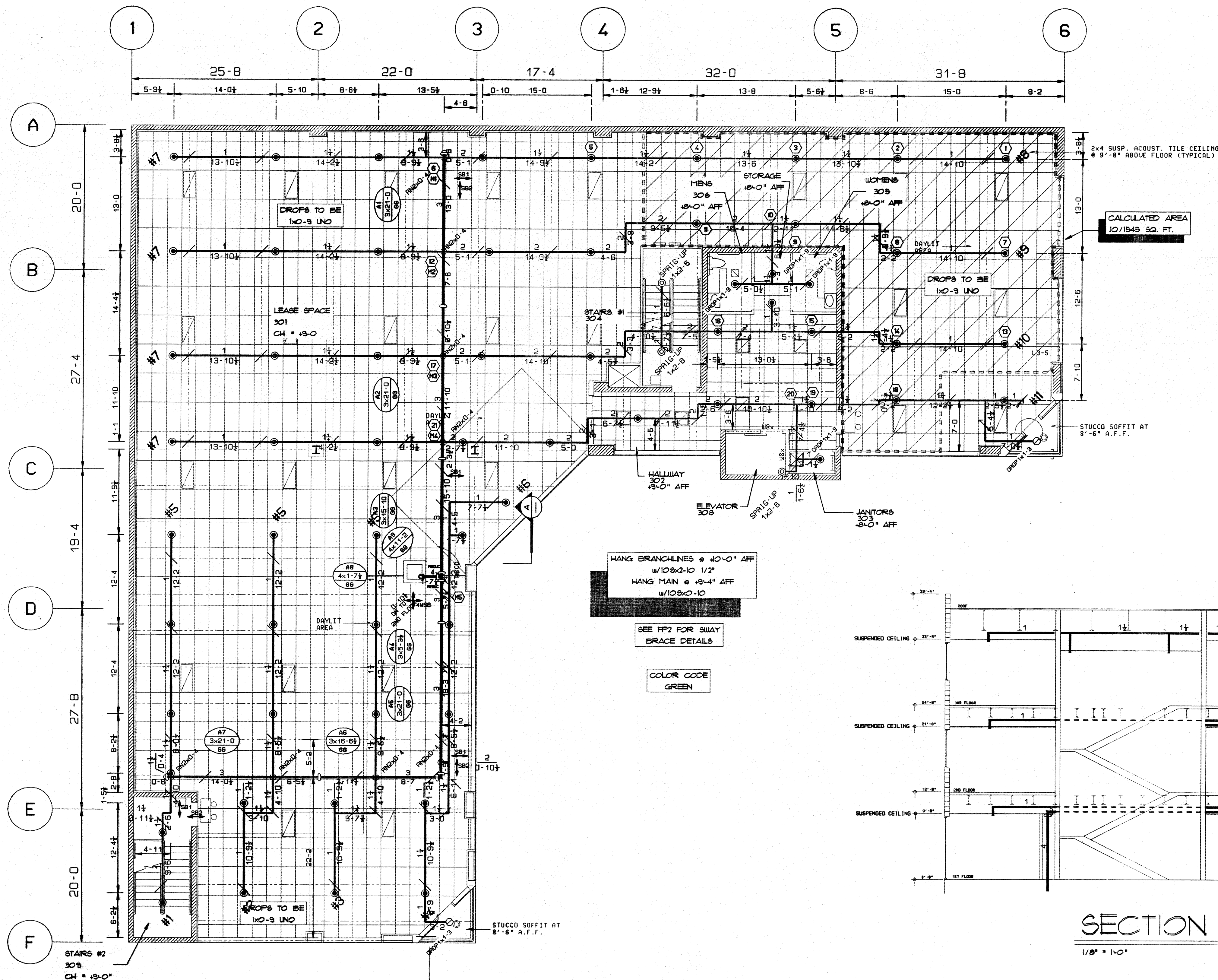
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	CONTRACT WITH: DUGGINS CONSTRUCTION		DRAWN BY: JEROME HUNTPESS
	DESCRIPTION: FIRST FLOOR PIPING PLAN		CHECKED BY: P. G.
	SYSTEM DESIGN DATA		DATE: May 13, 1998
HAZARDOUS MATERIAL LOCATION: _____ SYSTEM USED: _____ DESIGNS: _____ DENSITY: _____ GPM: _____ FT. _____ SQ. FT. AND _____ AREA OF APPLICATION: _____ SQ. FT. _____ DISTANCE: _____ GPM _____ TOTAL SYSTEM REQUIREMENTS: _____ PSI. AT _____ PSI. _____ WATER SUPPLY INFORMATION: STATIC PRESSURE: _____ PSI. _____ RESIDUAL PRESSURE _____ PSI. WITH _____ GPM FLOWING _____ TEST AT _____ DATE _____		THESE PLANS PREPARED AT: SAN DIEGO ENGINEERING DEPARTMENT DRAWING NO. _____ OF 1 OF 3 CONTRACT NO.: 987-196862-A9	
EXECUTIVE OFFICES EXETER, N.H.			



1/8" = 1-0"

CONTRACT NAME:		SCALE:	
BROADWAY PROFESSIONAL CENTER		AS NOTED	
202 N. 3TH AVE		DRAWN BY:	
EL CENTRO, CA 92423		JEROME MUNTRESS	
CONTRACT WITH: DUGGINS CONSTRUCTION		CHECKED BY:	
		P.G.	
DESCRIPTION:		DATE:	
SECOND FLOOR PILING PLAN		November 13, 1997	
SYSTEM DESIGN DATA		THESE PILING PREPARED AT:	
HAZARD CLASSIFICATION:		SAN DIEGO	
SPECIFICATIONS:		ENGINEERING DEPARTMENT	
DESIGN DATA: DENSITY		DRAWING NO.	
SPM 50. FT.	50. FT.-HD.	FP2 OF 3	
RATE OF APPLICATION:	50. FT. ALLOWANCES:	CONTRACT NO.	
TOTAL SCOUR	SPM	#87-108662-A9	
REQUIREMENTS:	SPM, AT		
WATER SURFACE INFORMATION: STATIC PRESSURE		PSI	
RESIDUAL PRESSURE	PSI, WITH	PSI FLOWING	
TEST	BY	DATE	
TRAIL AT			





PIPING PLAN - THIRD FLOOR

1/8" = 1'-0"

IMPORTANT

In locations subject to freezing conditions, it is the owner's responsibility to provide heat throughout wet pipe sprinkler systems area and in enclosures for dry pipe deluge and other types of valves controlling water supplies to sprinkler systems. This drawing and the information and design application herein contained is the property of Grinnell Fire Protection Systems Company, Inc. and/or its subsidiaries and is loaned upon express conditions that the same be returned to GFS upon request; all information herein contained shall be treated as secret, and confidential; no reproduction of this drawing or any part thereof shall be made without written consent of GFS. Created by the Grinnell Design System. "All rights reserved". Copyright by Grinnell Corporation 1998.

NO. 00 DATE BY REVISIONS - SEE FLAGGED AREA ON PLAN ELTA

CONTRACT RESPONSIBILITIES

ITEM	G.F.P.S.	OTHERS
STREET WATER CONNECTION	by OTHERS	
UNDERGROUND WATER MAINS	by OTHERS	
EXCAVATIONS	by OTHERS	
BACKFILL	by OTHERS	
WIRING	by OTHERS	
PAINTING	by OTHERS	

SPRINKLERS

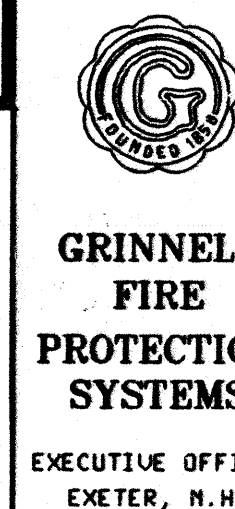
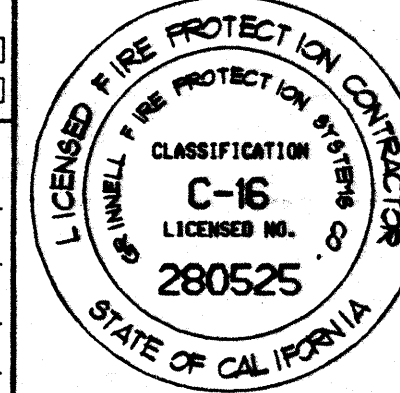
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MODEL A	1/2	155	BRASS	SSU	⊙	1
MODEL A	1/2	155	WHITE	WHITE RECESSED	⊙	2

SYSTEM TYPE

WET	4"	DELUGE	<input type="checkbox"/>
DRY	<input type="checkbox"/>	PREACTION	<input type="checkbox"/>

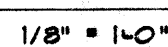
APPROVALS

<input type="checkbox"/> ISO	OUT	IN
<input type="checkbox"/> IRI	OUT	IN
<input type="checkbox"/> FM	OUT	IN
<input checked="" type="checkbox"/> ECFD	OUT	IN



CONTRACT NAME: BROADWAY PROFESSIONAL CENTER 202 N. 8TH AVE. EL CENTRO, CA 92243	SCALE: AS NOTED
CONTRACT WITH: DUGGINS CONSTRUCTION	DATE: August 13, 1998
DESCRIPTION: THIRD FLOOR PIPING PLAN	THESE PLANS PREPARED AT: SAN DIEGO
SYSTEM DESIGN DATA	ENGINEERING DEPARTMENT
HAZARD CLASSIFICATION: LIGHT HAZARD	DRAWING NO. FP3 OF 3
DESIGN DATA: AREA OF APPLICATION: 1545 SQ. FT. MAX 255 MAX SQ. FT./NO. 253.2 SQ. FT. AT 45.4 PSI. AT 59 PSI. WITH 857 GPM FLOWING	CONTRACT NO: 887-196862-09

T225



**GRINNELL
FIRE
PROTECTION
SYSTEMS**

**EXECUTIVE OFFICES
EXETER, N.H.**

CONTRACT NAME:
BROADWAY PROFESSIONAL CENTER
202 N. 8TH AVE
EL CENTRO, CA 92243

CONTRACT WITH: **DUGGINS CONSTRUCTION**

DESCRIPTION: **SECOND FLOOR PIPING PLAN**

SYSTEM DESIGN DATA

PROJECT CLASSIFICATION:	SYSTEM AREA:	
HYDRAULIC DENSITY	OPH/50 FT.	50 FT./NO.
DESIGN DATA:	50 FT. HOSE ALLOWANCES:	GPM
AREA OF APPLICATION:	GPM AT	PSI
TOTAL SYSTEM REQUIREMENTS:		PSI
WATER SUPPLY INFORMATION: STATIC PRESSURE		GPM FLOWING
RESIDUAL PRESSURE	PSI WITH	

TEST TAPEN AT **BY** **DATE**

SCALE:
AS NOTED

DRAWN BY:
JEROME HUNTRESS

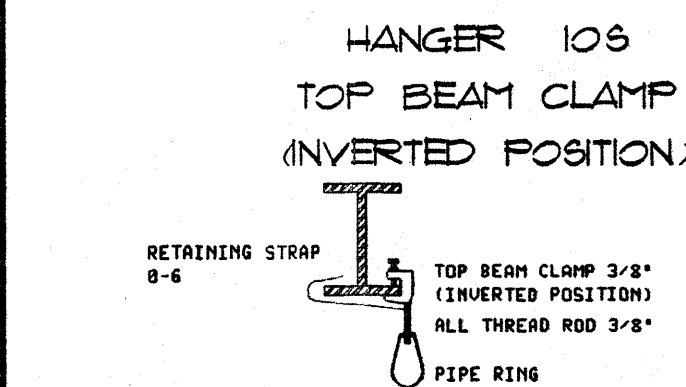
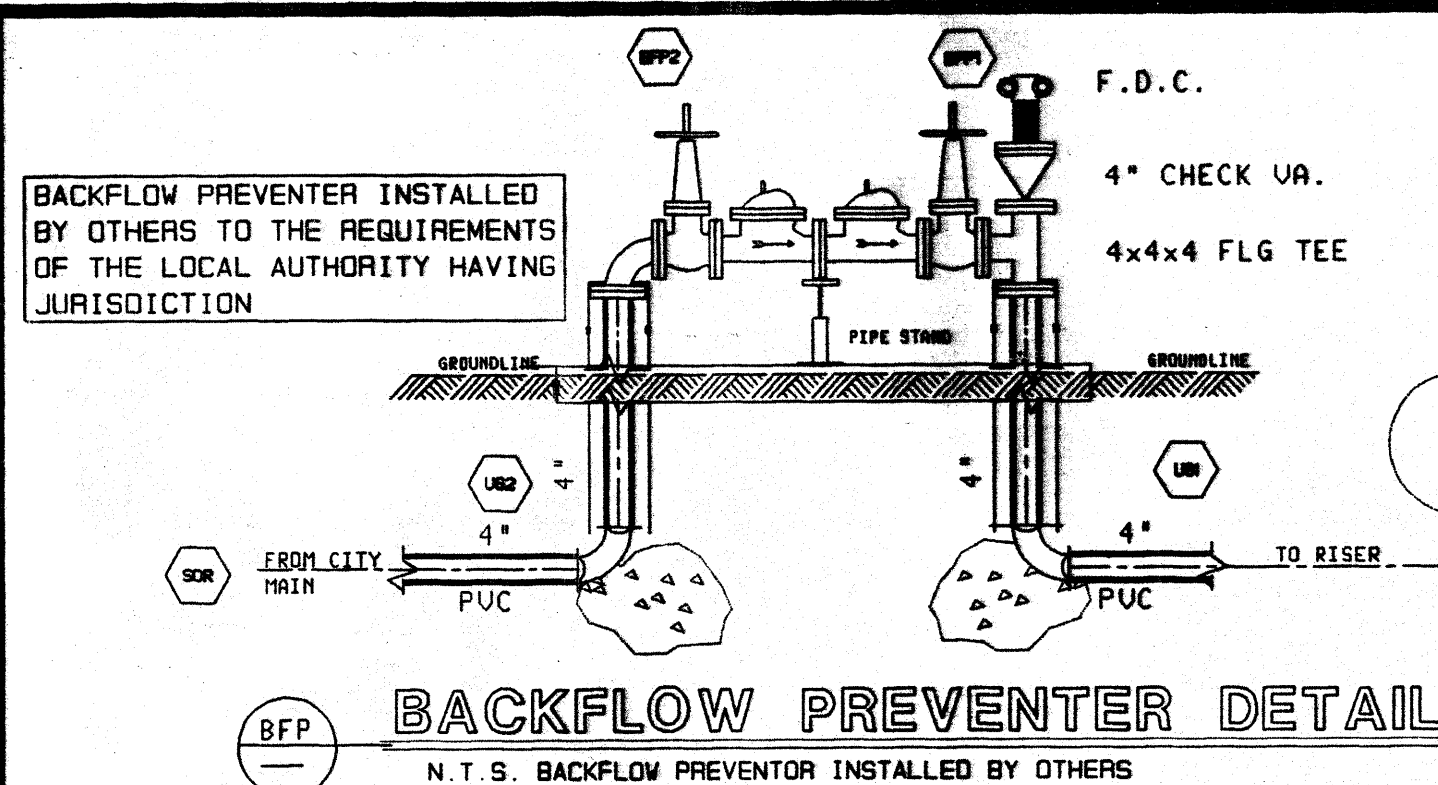
CHECKED BY:
P.G.

DATE:
August 13, 1998

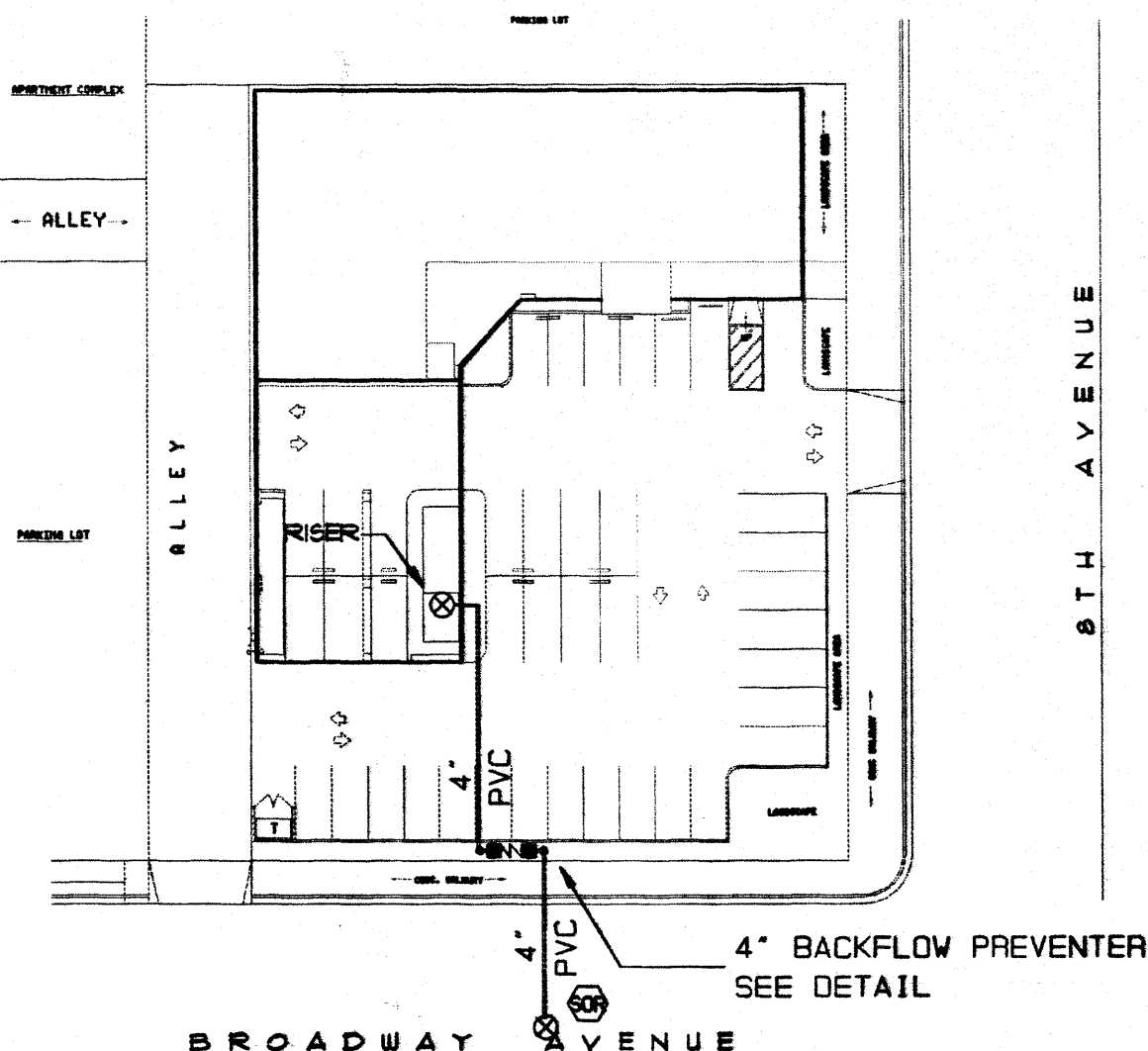
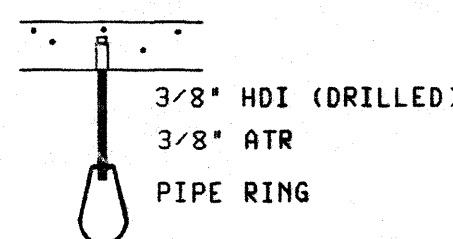
THESE PLANS PREPARED AT:
SAN DIEGO
ENGINEERING DEPARTMENT

DRAWING NO.
FP2 OF 3

CONTRACT NO.:
887-196862-R9

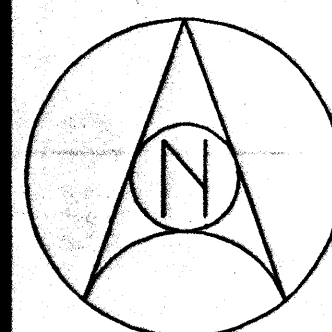


HANGER 4C
CONCRETE ANCHOR



UNDERGROUND DETAIL

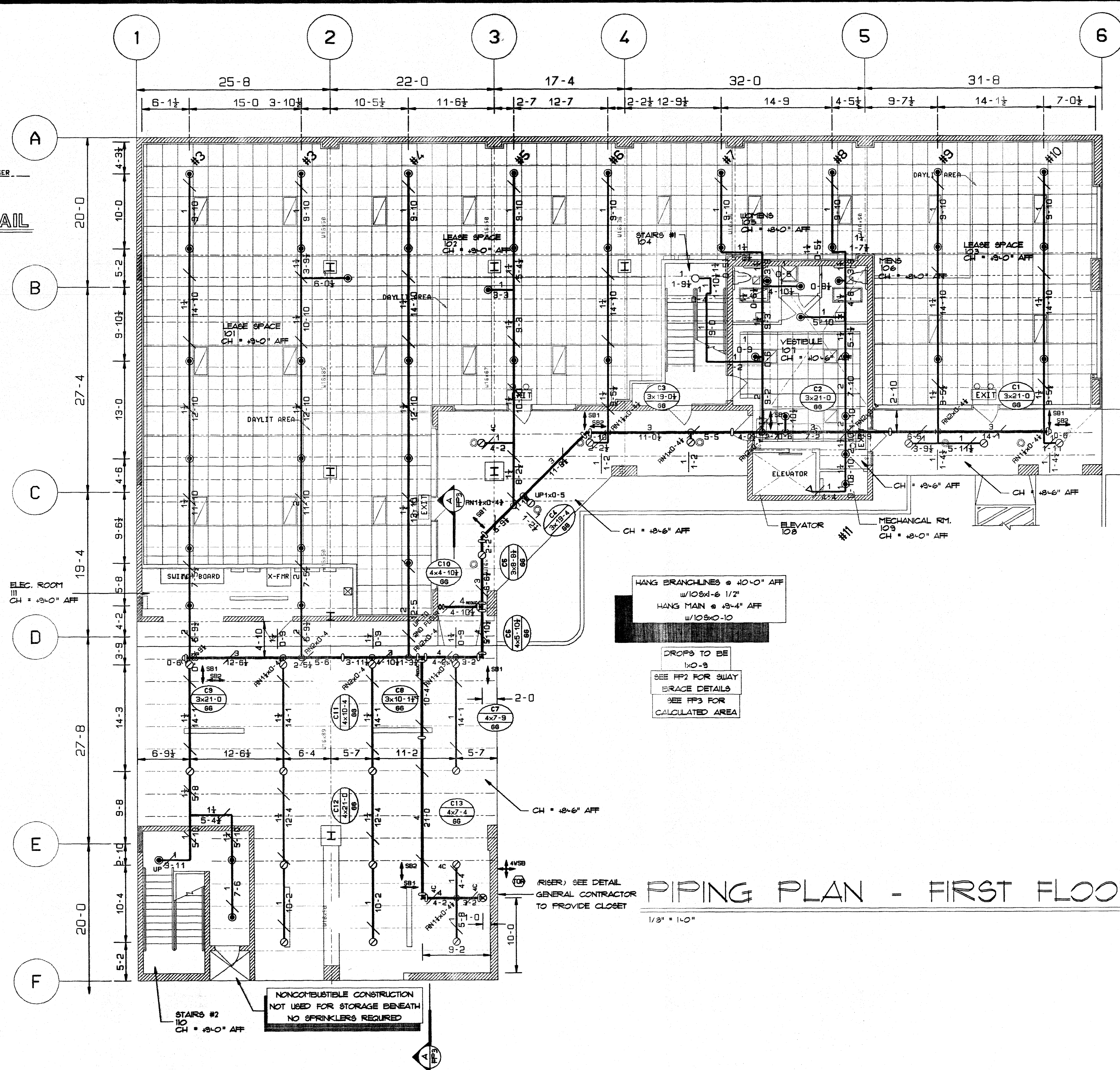
N.T.S.



IMPORTANT

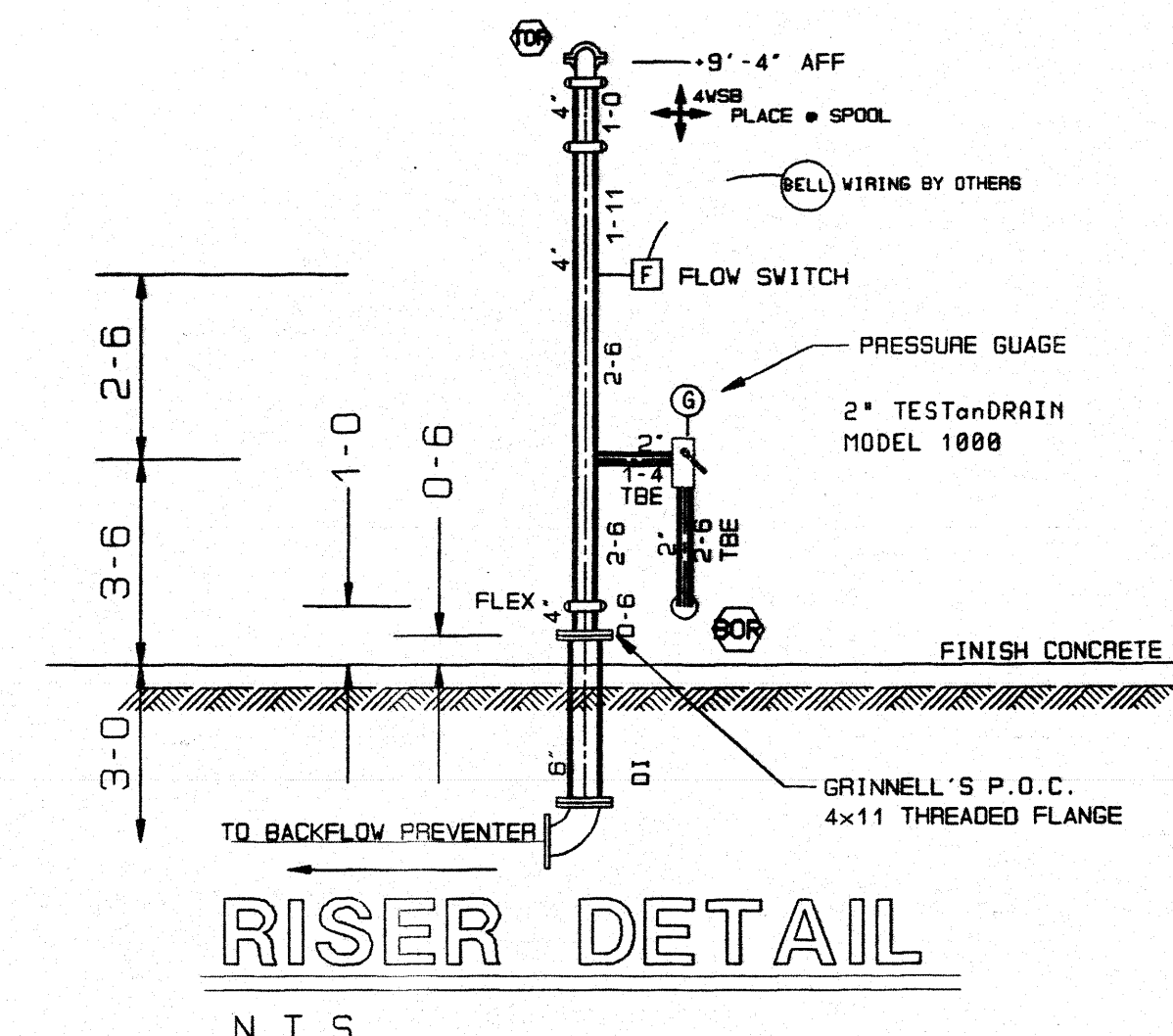
In localities subject to freezing conditions, it is the owner's responsibility to provide heat throughout wet pipe sprinkler systems areas and in enclosures for dry pipe deluge and other types of valves controlling water supplies to sprinkler systems. This drawing and the information and design application herein contained is the property of Grinnell Fire Protection Systems Company, Inc. and/or its subsidiaries and is loaned upon express conditions that the same be returned to GFPS upon request; all information herein contained shall be treated as secret, and confidential; no reproduction of this drawing or any part thereof shall be made without written consent of GFPS.

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PIPING PLAN - FIRST FLOOR

1/8" = 1'-0"

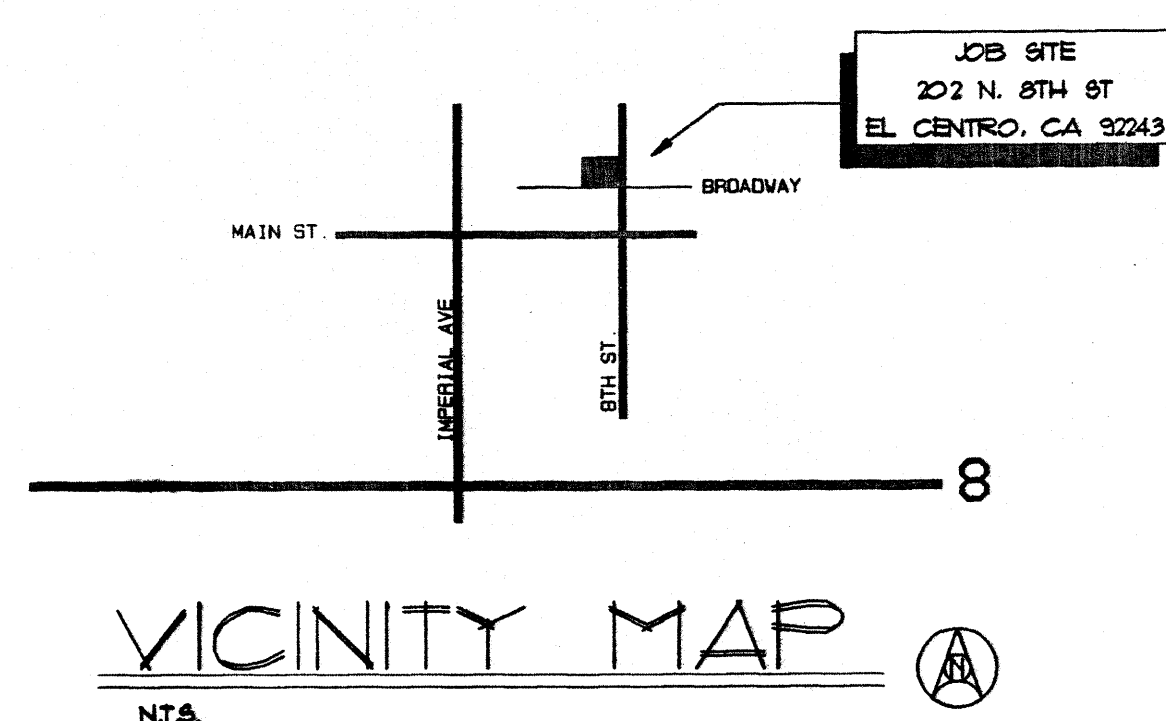


RISER DETAIL

N.T.S.

GENERAL NOTES FOR OVERHEAD PIPING

- 1) FIRE PROTECTION SYSTEM DESIGN BASED ON THE REQUIREMENTS OF NFPA-13 1991 & PER EL CENTRO FIRE DEPARTMENT.
- 2) SPRINKLER SPACING IN ALL AREAS TO BE LIGHT HAZARD 225 SQ. FT. WITH A DENSITY OF .10/1635 SQ. FT.
- 3) FIRE PROTECTION PIPING INSTALLATION SHALL BE PER NFPA-13 1991.
- 4) ALL MATERIALS SHALL BE U.L. LISTED FOR FIRE PROTECTION USE.
- 5) ALL ABOVE GRADE PIPING TO BE "XL" STEEL FOR PIPING UP TO 2" DIA. 2 1/2" - & UP TO BE SCH. 10 THINWALL OR SUPERFLOW, BLACK STEEL. FITTINGS TO BE CAST IRON BLACK CLASS 125 FOR PIPING UP TO 2" DIA., ROLL GROOVED FOR 2 1/2" - UP.
- 6) HANGERS TO BE INSTALLED PER NFPA-13 1991.
- 7) SWAYBRACE INSTALLATION SHALL BE PER NFPA-13. ALL BOLTING CONNECTIONS SHALL BE 1/2" DIA.
- 8) PROVIDE SPARE HEAD BOX WITH 3 HEADS OF EACH TYPE WITH WRENCHES.
- 9) PROVIDE WALL PLATES TO EXPOSED PIPING PENETRATING EXTERIOR WALLS.
- 10) PROVIDE SIGNS FOR ALL VALVES.
- 11) PROVIDE WEATHERPROOF CAULKING FOR ALL PIPES PASSING THROUGH EXTERIOR WALLS.

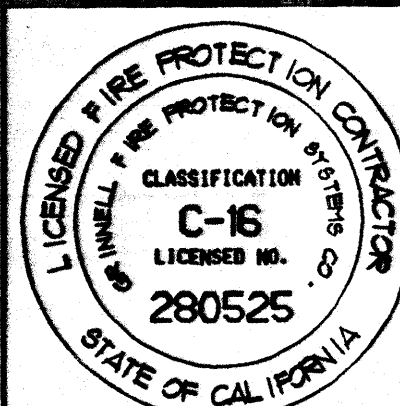


VICINITY MAP

N.T.S.

GRINNELL FIRE PROTECTION SYSTEMS EXECUTIVE OFFICES EXETER, N.H.		CONTRACT NO.: BROADWAY PROFESSIONAL CENTER 202 N. 8TH AVE. EL CENTRO, CA 92243		SCALE: AS NOTED DRAWN BY: JEROME HUNTRESS CHECKED BY: P.G. DATE: May 13, 1998 THESE PLANS PREPARED AT: SAN DIEGO ENGINEERING DEPARTMENT DRAWING NO. FP1 OF 3 CONTRACT NO. 887-196062-29	
CONTRACT WITH: DUGGINS CONSTRUCTION DESCRIPTION: FIRST FLOOR PIPING PLAN SYSTEM DESIGN DATA		HAZARD CLASSIFICATION: LIGHT HAZARD DESIGN DENSITY: 0.10 GPM/SQ. FT. AREA OF APPLICATION: 225 SQ. FT.		SYSTEM AREA: 225 SQ. FT. DESIGN DENSITY: 0.10 GPM/SQ. FT. AREA OF APPLICATION: 225 SQ. FT.	
REMAINING PRESSURE: 100 PSI. TEST TAKEN AT:		REMAINING PRESSURE: 100 PSI. TEST TAKEN AT:		REMAINING PRESSURE: 100 PSI. TEST TAKEN AT:	

CONTRACT RESPONSIBILITIES				SPRINKLERS				SYSTEM TYPE	
ITEM	G.F.P.S.	OTHERS	TYPE	ORIFICE	TEMP.	FINISH	CANOPY	SYMBOL	QTY.
STREET WATER CONNECTION	by GFPS	by OTHERS	MODEL A	1/2	155	WHITE	WHITE RECESSED	⊙	24
UNDERGROUND WATER MAINS	by GFPS	by OTHERS	MODEL A	1/2	155	CHROME	CHROME RECESSED	⊙	41
EXCAVATIONS	by GFPS	by OTHERS	MODEL A	1/2	155	BRASS	CHROME RECESSED	⊙	1
BACKFILL	by GFPS	by OTHERS							
WIRING	by GFPS	by OTHERS							
PAINTING	by GFPS	by OTHERS							
TOTAL THIS SHEET				66					



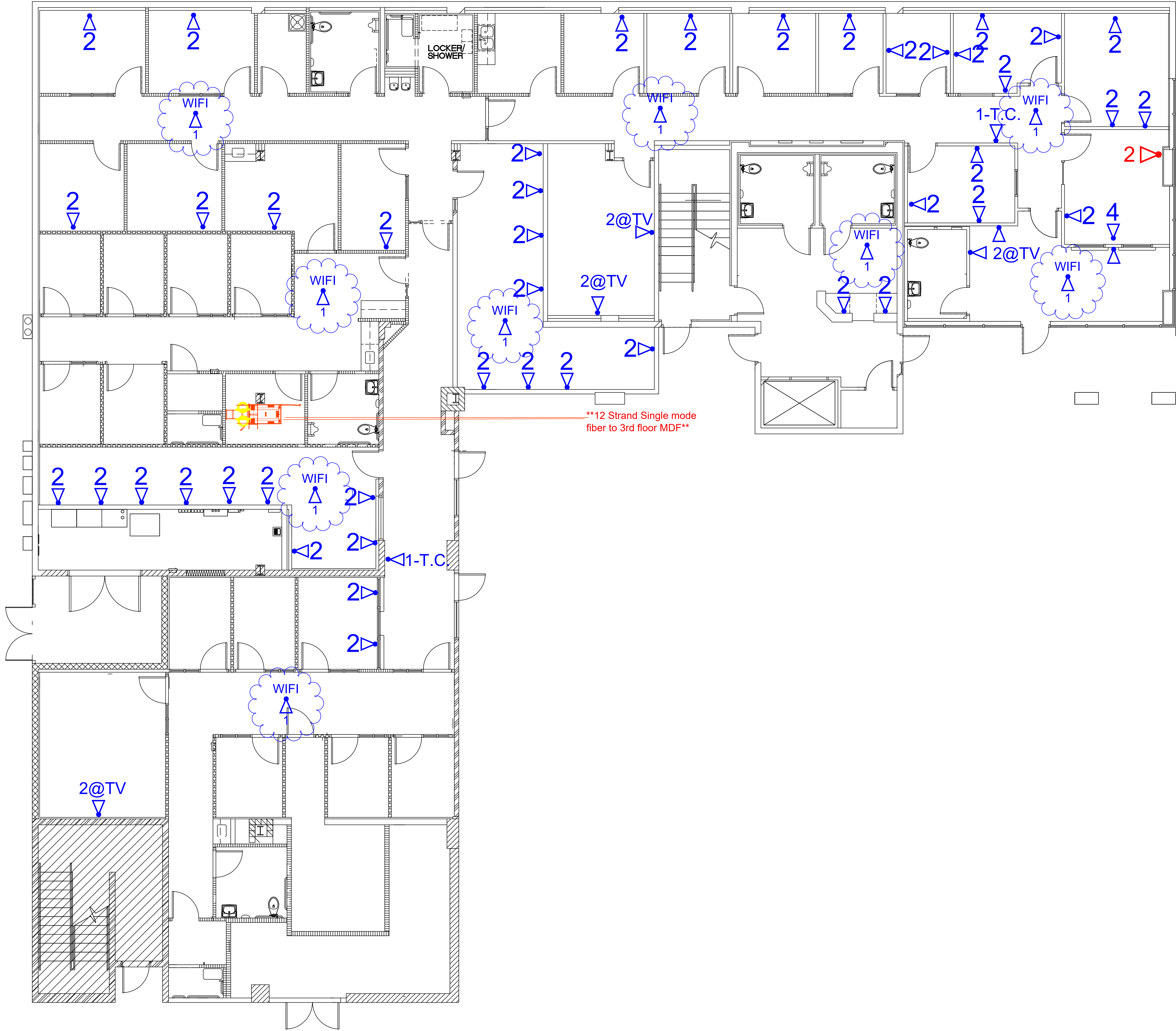
PLANS BY I.C. I.T. DEPARTMENT:

- **LV1 – OVERALL BUILDING LAYOUT.**
- **LV2 – VOICE AND DATA CABLING PLAN.**
- **LV3 – ACCESS CONTROL PLAN.**
- **LV4 – VIDEO SURVEILLANCE PLAN.**
- **LV5 – LOW VOLTAGE LAYERS.**



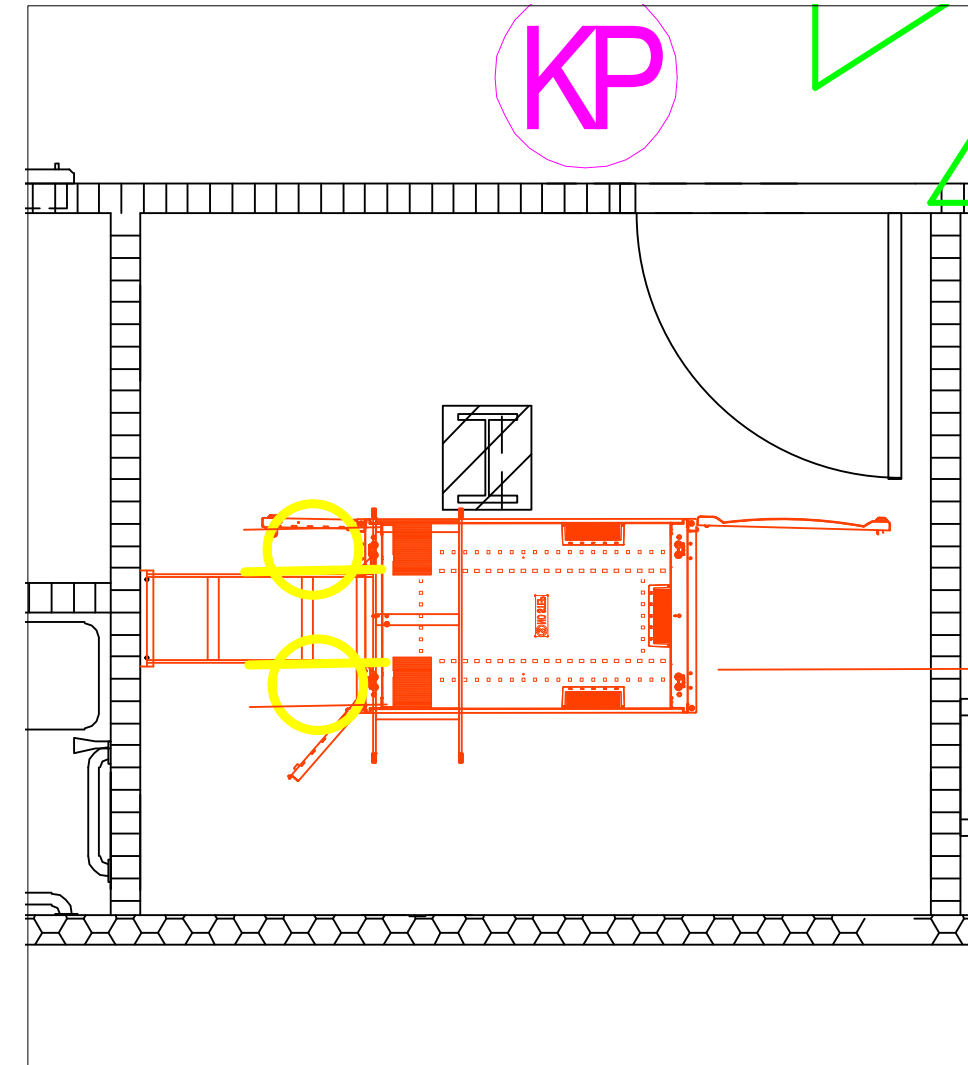
Plan Legend	
LV-1	Overall Building Plan
LV-2	Communications Plan
LV-3	Access Control Plan
LV-4	Video Surveillance Plan
LV-5	All Layers
LV-6	N/A

Designed MG		5/19/2025	BHS 202 Main Crisis Project	202 Main St.	Crisis/Casa Serena	El Centro, CA. 92243	Approved _____	Date _____
Drawn MG		05/19/2025						
Revised on								
Title			OVERALL BUILDING LAYOUT				Job Class —	
County of Imperial		Information Technologies Systems		940 West Main Street Suite #201 El Centro, CA. 92243 (442) 265-1940				
C:\Users\kshah\OneDrive\Photos\COI Logo.png								
REVISIONS								
Date		Approved						
Description								
File No.		Bhs202crisis						
Drawing No.		LV1						
Sheet		1 of 5						



LEGEND

- WIFI 1
One CAT6 at each WiFi Location /
Number of Cables Noted
- 1-T.C.
One CAT6 at each Time Clock
** Height @ 45" to Center of Single Bang Box **
- # @M
(#) CAT6 at each A/V Location
** Height @ 52" to Center of Single Bang Box **
- 2@TV
2 CAT6 at each TV Location
** Height @ 72" to Center of Single Bang Box Unless
noted on Plan / 120 Outlet @ Specified Height also **
- 2
Two CAT6 at each Printer Location
** Dedicated 20AMP circuit needed **
- 1 P
One CAT6 at each Phone Location
** Height @ 48" to Center of Single Gang Box **
- #
CAT6 at each Location
** # Determines Quantity @ Standard Outlet Height **



Designed TM 12/03/2019		Drawn TM 12/03/2019		Revised on 12/03/2019	
BHS 202 Main Crisis Project		Crisis/Casa Serena		El Centro, CA. 92243	
202 Main St.		Voice & Data Cabling Plan		Approved _____ Date _____ Title _____ Job _____ Class _____	
County of Imperial		Information Technologies Systems		940 West Main Street Suite #201 El Centro, CA. 92243 (941) 425-1640	
REVISIONS		Approved			
Date	Description				
File No. Bhs202crisis		Drawing No. LV2		Sheet 2 of 5	

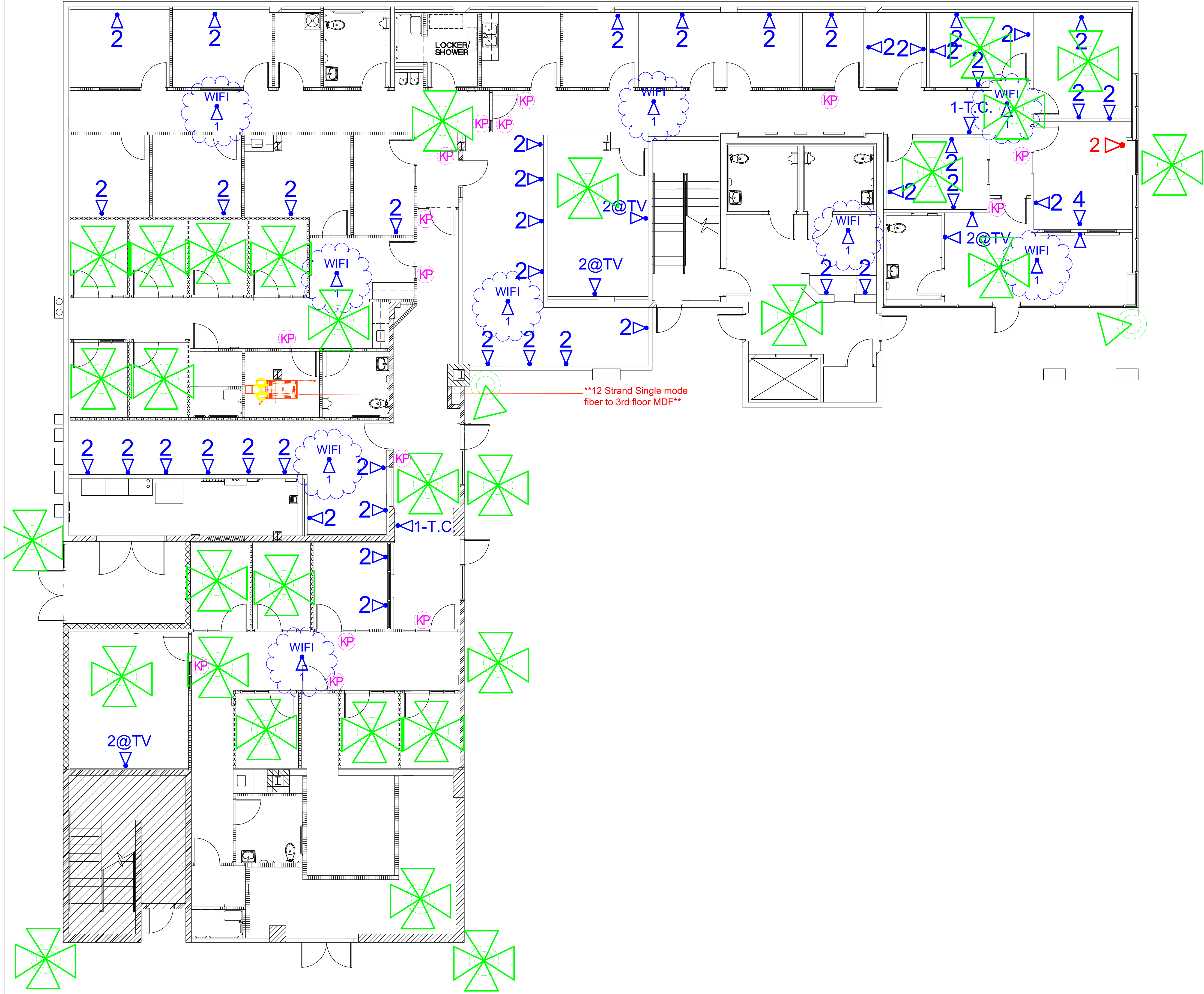


LEGEND

One CAT6 at each Camera Location. Terminate and leave in ceiling

All cameras to be provided and installed by Owner.

Designed MG 05/19/2025		BHS 202 Main Crisis Project		County of Imperial		REVISIONS		File No. Bhs202crisis	
Drawn MG 05/19/2025		202 Main St.		Information Technologies Systems		Date		Drawing No. LV4	
Revised on		Crisis/Casa Serena		940 West Main Street Suite #201 El Centro, CA. 92243 (647) 425-1640		Description		Sheet 4 of 5	
Approved _____		Video Surveillance Plan		C:\Users\kshah\Documents\Bhs202\CS Logo.png		Approved			
Title _____		El Centro, CA. 92243							
Job _____									
Class _____									



**12 Strand Single mode
fiber to 3rd floor MDF**

LEGEND

WIFI
1

1-T.C.

2

2@TV

2

KP

360° Camera

One CAT6 at each WiFi Location /
Number of Cables Noted

One CAT6 at each Time Clock
** Height @ 45" to Center of Single Bang Box **

CAT6 at each Location
** # Determines Quantity @ Standard Outlet Height **

2 CAT6 at each TV Location
** Height @ 72" to Center of Single Bang Box Unless
noted on Plan / 120 Outlet @ Specified Height also **

Two CAT6 at each Printer Location
** Dedicated 20AMP circuit needed **

One CAT6 at each Key Pad Location
** Height @ 52" to Center of Single Bang Box **

One CAT6 at each Dome Camera
Location. Terminate and leave in
ceiling w/ 15' Service Loop.

One CAT6 at each 360° Camera
Location. Terminate and leave in
ceiling w/ 15' Service Loop.

Designed MG 05/19/2025

Drawn MG 05/19/2025

Revised on 12/03/2019

BHS 202 Main Crisis Project

315 Waterman Ave
Crisis/Casa Serena
El Centro, CA. 92243

County of Imperial
Information Technologies Systems

940 West Main Street
Suite #201
El Centro, CA. 92243
(941) 426-1640

REVISIONS

Date	Description	Approved

File No.
Bhs202crisis

Drawing No.
LV5

Sheet 5 of 5

Approved _____
Title _____

All Low Voltage Layers

Date _____
Job _____
Class _____

TECHNICAL SPECIFICATIONS BY I.C. I.T. DEPARTMENT



Structured Cabling / Communications Standards

Goals

County of Imperial has a cabling infrastructure standard for all new and existing facilities. This standard applies to all data and voice solutions. The data cabling shall support Ethernet, Fast Ethernet, Gigabit Ethernet, VOIP, and Video over IP solutions. The Structured Cabling will facilitate Voice (VOIP), Data, Copiers, Fax's, WiFi, Kronos Clocks, Cameras, Access Control Devices and Wireless Network Antennas for our connected County Network. The traditional voice cabling shall support traditional phone systems, as well as fax communications. This standard ensures the county will receive a quality installation, guaranteed performance, and reduce on-going maintenance costs.

1. Standards and Codes

All aspects of the installation must follow Telecommunication Industry standards including the ANSI/EIA/TIA 568 (Telecommunication Cabling Standard), ANSI/EIA/TIA 569 (Pathways and Spaces), ANSI/EIA/TIA 607-B (Bonding and Grounding), and the ANSI/EIA/TIA 942 (Standard for Data Centers); as well as federal, state, and local codes.

2. Cable Design

2a. If the building will connect to our Voice over IP phone system (ShoreTel), then the default Configuration for each workstation outlet shall be 2 data connections. The data connections shall be Category 6 rated. All Category 6 cables shall terminate in the telecommunications room on patch panels. The Category 6 cables and connectors shall be 'White' in, color. The following locations shall be included in every project. See Communications Plans for quantities and locations.

- | | |
|---|--|
| 1 | 2 per workstation (VOIP) / 3 per workstation (Traditional Voice) |
| 2 | 2 per copier/fax location |
| 3 | 1 per WiFi location |
| 4 | 1 per Kronos / Time Clock location |
| 5 | 1 per Camera Location |
| 6 | 1 per KP – Keypad Location |
| 7 | 2 per Wireless Antenna Exterior (Outdoor Rated Shielded cable) |

2b. If the building supports a traditional voice system, then the default configuration for each workstation outlet shall be one (2) data connection and one (1) traditional voice connection. All cabling and connections shall be same as above.

2c. Backbone cables supporting the traditional voice solutions shall be a high-pair Category 3 cable, which shall be terminated in the telecommunications rooms on 110-blocks.

2d. Backbone cables supporting data applications shall use Multimode or Single Mode fiber (specified on drawings). The selection of fiber shall depend on the actual distance and network performance requirements. The default fiber optic connector for Multimode and Single mode cabling is the 'LC' connector.

3. Cable Performance

All data and voice drops shall be tested to the Category 6 permanent-link performance specifications. All fiber drops shall be tested to the performance standards defined in ANSI/EIA/TIA 802.3z.

4. Conditioned Space

All data closets must be air-conditioned space. IDF and MDF spaces should maintain positive air pressure and should be designed for a minimum of one air change per hour. Recommended equipment would be a dedicated mini-split air-conditioner inside of the data closet, the temperature range should be maintained at a range of 65 and 75 degrees F. Alternate Air flow distribution within the IDF and MDF should be accomplished via the use of supply and return ducts, the temperature range should be maintained at a range of 65 and 75 degrees F. Please refer to final construction drawings for details.

5. Kronos Clock Locations

All locations noted by TC (Time Clock / Kronos) require (1) Category 6 cable to each location. Cable at noted Keypad location may be terminated on CAT 6 jack in a biscuit and left within single gang box with 1' pigtail, the other end shall be terminated on patch panel. Cable must be terminated on both ends and tested as any other Category 6 cable. The outlet for the clock will need to be at 45" to center. See Communications Plans or Attachment for more details.

6. Access Control

All locations noted by KP (Keypad) require (1) Category 6 cable to each location. Cable at noted Keypad location may be terminated on CAT 6 jack in a biscuit and left within single gang box with 1' pigtail, the other end shall be terminated on patch panel. Cable must be terminated on both ends and tested as any other Category 6 cable. Keypad height to be 52" to Center of single gang box. If noted in lease documents for contractor to supply hardware, the Access Control System must be Isonas. Detailed parts list must be submitted as part of submittal package for review. See Communications Plans or Attachment for more details.

7. Video Surveillance

All locations noted on plans with the camera symbol require (1) Category 6 cable to each location. Cable at noted camera location may be terminated on CAT 6 jack in a biscuit and left with a 10' coil above ceiling; the other end shall be terminated on patch panel. Cable must be terminated on both ends and tested as any other Category 6 cable. If noted in lease documents for contractor to supply hardware, the Video Surveillance System must be Detailed parts list must be submitted as part of submittal package for review. See Communications Plans or Attachment for more details.

8. Racks. Cabinets. and Pathways Design

At least one rack, cabinet or wall mount cabinet shall be securely mounted in each telecommunication space to support the data cabling and network equipment. The fiber optic housing shall be mounted at the top of the rack or cabinet. The data patch panels and cable management will be mounted just below the fiber optic housing. 2U Horizontal management shall

be installed above and below all panels installed on the rack. 6" double sided Vertical management shall be install on both sides of any open rack design. Cable shall enter from the top, and be cleanly dressed. Overhead cabling shall be independently supported, and never laid on ceiling tiles, tied to any conduit, or attached to ceiling supports. Overhead pathways are required for large cable bundles. J-Hooks may be installed to support small cable bundles. All outside plant cables shall be placed in conduit. Each fiber optic cable shall be placed within an inner duct. See Communications Plans or Attachment for more details.

9. Firestop and Grounding

Firestops materials shall be installed to re-establish the integrity of each through-wall or through-floor penetration as required by local code. All firestop products shall be installed in accordance with the manufacturer recommendations. All equipment racks, cabinets, and raceway systems shall be bonded and grounded per ANSI/EIA/TIA 607-B

10. Products

All products shall be installed in compliance with the manufactures instructions. County of Imperial standard equipment, hardware, cable and connectivity products must be the following Approved Manufactures.

- All Fiber products to be Corning
- All Structured Cabling to be CommScope (Systimax)
- All Racks to be APC or Tripp Lite Products
- All Access Control equipment to be Isonas
- All Electric strikes to be HESS

11. Documentation

The contractor is required to provide cable test results for each data and fiber optic cable. As-built drawings are required, which identify the label of each Category 6 jack, telecommunication space locations, workstation outlet locations, cabling pathways, firestop and grounding components. All manufacture warranties must be provided from manufactures. All documentation must be provided in hard (2 copies) and soft copy as well as AutoCAD .dwg format.

12. Warranties

Every installation shall provide a 25-year extended warranty on the horizontal and backbone cabling solutions by the product manufactures. The extended warranty shall include (but not limited to), product, performance, and application guarantees. If hardware is provided all hardware product warranties shall be attached in closeout documentation.

13. Contractor Qualifications

Contractor qualifications shall include proven experience, certified staff, multiple customer references, and their ability to offer the extended warranty available by the Approved Product Manufactures that are listed above (See Sec 9).

**EXHIBIT “VIII”
TECHNICAL SPECIFICATIONS.**

HAZARDOUS MATERIALS
PROCEDURES & REQUIREMENTS

1. Summary

This document includes information applicable to hazardous materials and hazardous waste abatement.

2. Notice of Hazardous Waste or Materials

- a. Contractor shall give notice in writing immediately to the Owner, the Construction Manager, and the Architect promptly, before any of the following materials are disturbed, of any:
 - (1) Material that Contractor believes may be a material that is hazardous waste or hazardous material, as defined in section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law;
 - (2) Other material that may present a substantial danger to persons or property exposed thereto in connection with Work at the site.
- b. Contractor's written notice shall indicate whether the hazardous waste or material was shown or indicated in the Contract Documents to be within the scope of Work, and whether the materials were brought to the site by Contractor, its Subcontractors, suppliers, or anyone else for whom Contractor is responsible. As used in this section the term "hazardous materials" shall include, without limitation, asbestos, lead, Polychlorinated biphenyl (PCB), petroleum and related hydrocarbons, and radioactive material.
- c. In response to Contractor's written notice, the Owner shall investigate the identified conditions.
- d. If the Owner determines that conditions do not involve hazardous materials or that no change in terms of Contract is justified, the Owner shall so notify Contractor in writing, stating reasons. If the Owner and Contractor cannot agree on whether conditions justify an adjustment in Contract Price or Contract Time, or on the extent of any adjustment, Contractor shall proceed with the Work as directed by the Owner.
- e. If after receipt of notice from the Owner, Contractor does not agree to resume Work based on a reasonable belief it is unsafe, or does not agree to resume Work under special conditions, then Owner may order such portion of Work that is in connection with such hazardous condition or such affected area to be deleted from the Work, or performed by others, or Owner may invoke its rights to terminate the Contract in whole or in part. Owner will determine entitlement to or the amount or extent of an adjustment, if any, in Contract Price or Contract Time as a result of the Contractor's refusal to resume Work hereunder and Owner's performing the Work by others.
- f. If Contractor stops Work in connection with any hazardous condition and in any area affected thereby, Contractor shall immediately redeploy its workers, equipment, and materials, as necessary, to other portions of the Work to minimize delay and disruption to the greatest extent commercially feasible.

3. Additional Warranties and Representations

- a. Contractor represents and warrants that it, its employees, and its subcontractors and their employees, shall at all times have the required levels of familiarity with the Site and the Work, training, and ability to comply fully with all applicable laws and contractual requirements for safe and expeditious performance of the Work, including whatever training is or may be required regarding the activities to be performed (including, but not limited to, all training required to address adequately the actual or potential dangers of Contract performance).
- b. Contractor represents and warrants that it, its employees, and its subcontractors and their employees, shall at all times have and maintain in good standing any and all certifications and licenses required by applicable federal, state, and other governmental and quasi-governmental requirements applicable to the Work.

4. Monitoring and Testing

- a. The Owner reserves the right, in its sole discretion, to conduct air monitoring, earth monitoring, Work monitoring, and any other tests (in addition to testing required under the contract or applicable law), to monitor Contract requirements of safe and statutorily compliant work methods and (where applicable) safe re-entry level air standards under state and federal law upon completion of the job, and compliance of the work with periodic and final inspection by public and quasi-public entities having jurisdiction.
- b. Contractor acknowledges that the Owner has the right to perform, or cause to be performed, various activities and tests including, but not limited to, pre-abatement, during abatement, and post-abatement air monitoring, that Owner shall have no obligation to perform said activities and tests, and that a portion of said activities and tests may take place prior to the completion of the Work by Contractor. In the event Owner elects to perform these activities and tests, Contractor shall afford Owner ample access to the Site and all areas of the Work as may be necessary for the performance of these activities and tests. Contractor will include the potential impact of these activities or tests by Owner in the Contract Price and the Scheduled Completion Date.
- c. Notwithstanding Owner's rights granted by this paragraph, Contractor may retain its own industrial hygiene consultant at Contractor's own expense and may collect samples and may perform tests including, but not limited to, pre-abatement, during abatement, and post-abatement personal air monitoring, and Owner reserves the right to request documentation of all such activities and tests performed by Contractor relating to the Work and Contractor shall immediately provide that documentation upon request.

5. Compliance with Laws

- a. Contractor shall perform safe, expeditious, and orderly work in accordance with the best practices and the highest standards in the hazardous waste abatement, removal, and disposal industry, the

- (2) Storage, handling, or use of asbestos, PCB, lead, petroleum based products, radioactive material, or other hazardous materials;
- (3) The generation, processing, treatment, storage, transport, disposal, destruction, or other management of asbestos, PCB, lead, petroleum, radioactive material, or hazardous waste materials or other waste materials of any kind; and
- (4) The protection of environmentally sensitive areas such as wetlands and coastal areas.

6. Disposal

- a. Contractor has the sole responsibility for identifying current waste storage, handling, transportation, and disposal regulations for the job Site and for each waste disposal facility. Contractor must comply fully at its sole cost and expense with these regulations and any applicable law. Owner may, but is not obligated to, require submittals with this information for it to review consistent with the Contract Documents.
- b. Contractor shall develop and implement a system acceptable to Owner to track hazardous waste from the Site to disposal, including appropriate "Hazardous Waste Manifests" on the EPA form, so that Owner may track the volume of hazardous waste disposal in each landfill. Contractor shall obtain certificate of receipt from each landfill in which hazardous waste is deposited, and Contractor shall submit such reports to the Owner.
- c. Contractor shall provide Owner with the name and address of each waste disposal facility prior to any disposal, and Owner shall have the express right to reject any proposed disposal facility. Contractor shall not use any disposal facility to which Owner has objected.

7. Permits

- a. Before performing any of the Work, and at such other times as may be required by applicable law, Contractor shall deliver all requisite notices and obtain the approval of all governmental and quasi-governmental authorities having jurisdiction over the Work. Contractor shall submit evidence satisfactory to Owner that it and any disposal facility:
 - (1) have obtained all required permits, approvals, and the like in a timely manner both prior to commencement of the Work and thereafter as and when required by applicable law; and
 - (2) are in compliance with all such permits, approvals and the regulations.

For example, before commencing any work in connection with the Work involving asbestos-containing materials, or PCBs, or other hazardous materials subject to regulation, Contractor agrees to provide the required notice of intent to renovate or demolish to the appropriate state or federal agency having jurisdiction, by certified mail, return receipt requested, or by some other method of transmittal for which a return receipt is obtained, and to send a copy of that notice to Owner. Contractor shall not conduct any Work involving asbestos-containing materials or PCBs unless Contractor has first confirmed that the appropriate agency having jurisdiction is in receipt of the required notification. All permits, licenses, and bonds that are required by governmental or quasi-governmental authorities, and all fees, deposits, tap fees, offsite easements, and asbestos and PCB disposal facilities expenses necessary for the prosecution of the Work, shall be procured and paid for by Contractor. Contractor shall give all notices and comply with the all applicable laws bearing on the conduct of the Work as drawn and specified. If

For example, before commencing any work in connection with the Work involving asbestos-containing materials, or PCBs, or other hazardous materials subject to regulation, Contractor agrees to provide the required notice of intent to renovate or demolish to the appropriate state or federal agency having jurisdiction, by certified mail, return receipt requested, or by some other method of transmittal for which a return receipt is obtained, and to send a copy of that notice to Owner. Contractor shall not conduct any Work involving asbestos-containing materials or PCBs unless Contractor has first confirmed that the appropriate agency having jurisdiction is in receipt of the required notification. All permits, licenses, and bonds that are required by governmental or quasi-governmental authorities, and all fees, deposits, tap fees, offsite easements, and asbestos and PCB disposal facilities expenses necessary for the prosecution of the Work, shall be procured and paid for by Contractor. Contractor shall give all notices and comply with the all applicable laws bearing on the conduct of the Work as drawn and specified. If Contractor observes or reasonably should have observed that Plans and Specifications and other Contract Documents are at variance therewith, it shall be responsible for promptly notifying Owner in writing of such fact. If Contractor performs any Work contrary to applicable laws, it shall bear responsibility therefrom.

- b. In the case of any permits or notices held in Owner's name or of necessity to be made in Owner's name, Owner shall cooperate with Contractor in securing the permit or giving the notice, but the Contractor shall prepare for Owner review and execution upon approval, all necessary applications, notices, and other materials.

8. Indemnification

To the fullest extent permitted by law, the indemnities and limitations of liability expressed throughout the Contract Documents apply with equal force and effect to any claims or liabilities imposed or existing by virtue of the removal, abatement, and disposal of hazardous waste. This includes, but is not limited to, liabilities connected to the selection and use of a waste disposal facility, a waste transporter, personal injury, property damage, loss of use of property, damage to the environment or natural resources, or “disposal” and “release” of materials associated with the Work (as defined in 42 U.S.C. § 9601 *et seq.*).

9. Termination

Owner shall have an absolute right to terminate for default immediately without notice and without an opportunity to cure should Contractor knowingly or recklessly commit a material breach of the terms of the Contract Documents, or any applicable law, on any matter involving the exposure of persons or property to hazardous waste. However, if the breach of contract exposing persons or property to hazardous waste is due solely to an ordinary, unintentional, and non-reckless failure to exercise reasonable care, then the procedures for termination for cause shall apply without modification.

END OF DOCUMENT

SUMMARY OF WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Site Access Conditions and Requirements;
- B. Special Conditions.

1.02 SUMMARY OF WORK COVERED BY CONTRACT DOCUMENTS

The Work of this Contract consists of the following: The contractor shall remodel the interior space of an existing shell building consisting of 7,261 sq ft.. The existing 1,328 sf carport shall be removed and converted to B occupancy, for a total area of 8,593 sq ft for the new tenant space. The scope of work will require new interior partition walls, reflected ceilings, flooring, and the addition of new restrooms and showers, as shown on the plans. The existing fire sprinkler and fire alarm systems of the existing building shall be modified to accommodate the new tenant space.

The use of this facility is a mental health triage unit that provides immediate response to individuals exhibiting psychiatric symptoms during regular working hours. The individuals occupying the clinic are capable of self-preservation.

This facility does not have a licence, nor does it qualify as an institutional group i-3, a correctional mental health facility, as described in Section 408.1 of the CBC (California Building Code).

1.03 CONTRACTS

- A. Perform the Work under a single, fixed-price Contract.

1.04 CODES, REGULATIONS, AND STANDARDS

- A. The codes, regulations, and standards adopted by the state and federal agencies having jurisdiction shall govern minimum requirements for this Project. Where codes, regulations, and standards conflict with the Contract Documents, these conflicts shall be brought to the immediate attention of the Owner and the Architect.
- B. Codes, regulations, and standards shall be as published, effective as of the date of bid opening, unless otherwise specified or indicated.

1.05 PROJECT RECORD DOCUMENTS

- A. Contractor shall maintain the construction project documents at the site and shall record actual revisions performed to the scope of Work in the following documents:

- (1) Contract Drawings.

OWNER OF IMPERIAL BEHAVIORAL HEALTH SERVICES
(BHS)
EL CENTRO MENTAL HEALTH TRIAGE AND
ENGAGEMENT SERVICES EXPANSION OWNER PROJECT
NO. SR6309BH(BHCIP-B4 236)

SUMMARY OF WORK
DOCUMENT 01 11 00-3

- (2) Specifications.
 - (3) Addenda.
 - (4) Change Orders and other modifications to the Contract.
 - (5) Reviewed shop drawings, product data, and samples.
 - (6) Field test records.
 - (7) Inspection certificates.
 - (8) Manufacturer's certificates.
- B. Contractor shall store Record Documents separate from documents used for construction. Provide files, racks, and secure storage for Record Documents and samples.
 - C. Contractor shall record information concurrent with construction progress.
 - D. Specifications: Contractor shall legibly mark and record at each product section of the Specifications the description of the actual product(s) installed, including the following:
 - (1) Manufacturer's name and product model and number.
 - (2) Product substitutions or alternates utilized.
 - (3) Changes made by Addenda and Change Orders and written directives.

1.06 EXAMINATION OF EXISTING CONDITIONS

- A. Prior to commencing the Work Contractor shall examine the Project Site.
- B. Prior to commencement of Work, Contractor shall survey the Site and existing buildings and improvements to observe existing damage and defects such as cracks, sags, broken, missing or damaged glazing, other building elements and Site improvements, and other damage.
- C. Should Contractor observe cracks, sags, and other damage to and defects of the Site and adjacent buildings, paving, and other items not indicated in the Contract Documents, Contractor shall immediately report same to the Owner and the Architect.

1.07 CONTRACTOR'S USE OF PREMISES

- A. If unoccupied and only with Owner's prior written approval, Contractor may use the building(s) at the Project Site without limitation for its operations, storage, and office facilities for the performance of the Work. If the Owner chooses to beneficially occupy any building(s), Contractor must obtain the Owner's written approval for Contractor's use of spaces and types of operations to be performed within the building(s) while so occupied. Contractor's access to the building(s) shall be limited to the areas indicated.
- B. If the space at the Project Site is not sufficient for Contractor's operations, storage, office facilities and/or parking, Contractor shall arrange and pay for any additional facilities needed by Contractor.

- C. Contractor shall not interfere with use of or access to occupied portions of the building(s) or adjacent property.
- D. Contractor shall maintain corridors, stairs, halls, and other exit-ways of building clear and free of debris and obstructions at all times.
- E. No one other than those directly involved in the demolition and construction, or specifically designated by the Owner or the Architect shall be permitted in the areas of work during demolition and construction activities.
- F. The Contractor shall install the construction fence and maintain that it will be locked when not in use. Keys to this fencing will be provided to the Owner.

1.08 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

- A. The Drawings show above-grade and below-grade structures, utility lines, and other installations that are known or believed to exist in the area of the Work. Contractor shall locate these existing installations before proceeding with excavation and other operations that could damage same; maintain them in service, where appropriate; and repair damage to them caused by the performance of the Work. Should damage occur to these existing installations, the costs of repair shall be at the Contractor's expense and made to the Owner's satisfaction.
- B. Contractor shall be alert to the possibility of the existence of additional structures and utilities. If Contractor encounters additional structures and utilities, Contractor will immediately report to the Owner for disposition of same as indicated in the General Conditions.

1.09 UTILITY SHUTDOWNS AND INTERRUPTIONS

- A. Contractor shall give the Owner a minimum of three (3) days written notice in advance of any need to shut off existing utility services or to effect equipment interruptions. The Owner will set exact time and duration for shutdown, and will assist Contractor with shutdown. Work required to re-establish utility services shall be performed by the Contractor.
- B. Contractor shall obtain Owner's written approval in advance of deliveries of material or equipment or other activities that may conflict with Owner's use of the building(s) or adjacent facilities.

1.10 STRUCTURAL INTEGRITY

- A. Contractor shall be responsible for and supervise each operation and work that could affect structural integrity of various building elements, both permanent and temporary.
- B. Contractor shall include structural connections and fastenings as indicated or required for complete performance of the Work.

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

ALLOWANCE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Non-specified work.

1.2 RELATED SECTIONS

A. Document 01 10 00 (Summary of Work)

B. Document 01 29 00 (Payments and Completion)

C. Document 01 32 19 (Submittal Procedures)

1.3 ALLOWANCES

A. The contractor shall provide the following Allowances for the exclusive use of the owner and/or their representatives. The allowances shall be carried as a separate line item included in the bid.

B. Provide Lump-sum allowances included in the BASE BID for the following items:

- | | |
|---|---------------|
| 1. Provide Allowance 01 for additional architectural finishes | \$ 40,000.00 |
| 2. Provide Allowance 02 for additional unforeseen conditions | \$ 50,000.00 |
| 3. Provide Allowance 03 for door hardware | \$ 50,000.00 |
| 4. Provide Allowance 04 for Construction Phasing | \$ 150,000.00 |

C. Contractor's costs, without overhead and profit, for products, delivery, installation, labor, insurance, payroll, taxes, bonding and equipment rental will be included in Allowance Expenditure Directive authorizing expenditure of funds from this Allowance. No overhead and profit shall be added to the Allowance Expenditure Directive.

D. Funds will be drawn from Allowance only with County of Imperial approval evidenced by an Allowance Expenditure Directive.

E. At Contract closeout, funds remaining in Allowance will be credited to County of Imperial by Change Order.

F. Whenever costs are more than the Allowance, the amount covered by the Allowance will be approved at cost. The Contract Price shall be adjusted by Change Order for amounts in excess of the Allowance.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF DOCUMENT

PRODUCT OPTIONS AND SUBSTITUTIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. Instructions to Bidders;
- B. General Conditions, including, without limitation, Substitutions For Specified Items; and
- C. Special Conditions.

1.02 SUBSTITUTIONS OF MATERIALS AND EQUIPMENT

- A. Catalog numbers and specific brands or trade names followed by the designation "or equal" are used in conjunction with material and equipment required by the Specifications to establish the standards of quality, utility, and appearance required. Substitutions which are equal in quality, utility, and appearance to those specified may be reviewed subject to the provisions of the General Conditions.
- B. Wherever more than one manufacturer's product is specified, the first-named product is the basis for the design used in the work and the use of alternative-named manufacturers' products or substitutes may require modifications in that design. If such alternatives are proposed by Contractor and are approved by the County of Imperial and/or the Architect, Contractor shall assume all costs required to make necessary revisions and modifications of the design resulting from the substitutions requested by the Contractor.
- C. When materials and equipment are specified by first manufacturer's name and product number, second manufacturer's name and "or approved equal," supporting data for the second product, if proposed by Contractor, shall be submitted in accordance with the requirements for substitutions. The County of Imperial's Board has found and determined that certain item(s) shall be used on this Project based on the purpose(s) indicated pursuant to Public Contract Code section 3400(c). These findings, as well as the products and brand or trade names, have been identified in the Notice to Bidders.
- D. The Contractor will not be allowed to substitute specified items unless the request for substitution is submitted as follows:
 - (1) County of Imperial must receive any notice of request for substitution of a specified item a minimum of ten (10) calendar days prior to bid opening.
 - (2) Within 35 days after the date of the Notice of Award, the Contractor shall submit data substantiating the request(s) for all substitution(s) containing sufficient information to assess acceptability of product or system and impact on Project, including, without limitation, the requirements specified in the Special Conditions and the technical Specifications. Insufficient information shall be grounds for rejection of substitution.

- E. If the County of Imperial and/or Architect, in reviewing proposed substitute materials and equipment, require revisions or corrections to be made to previously accepted Shop Drawings and supplemental supporting data to be resubmitted, Contractor shall promptly do so. If any proposed substitution is judged by the County of Imperial and/or Architect to be unacceptable, the specified material or equipment shall be provided.
- F. Samples may be required. Tests required by the County of Imperial and/or Architect for the determination of quality and utility shall be made at the expense of Contractor, with acceptance of the test procedure first given by the County of Imperial.
- G. In reviewing the supporting data submitted for substitutions, the County of Imperial and/or Architect will use for purposes of comparison all the characteristics of the specified material or equipment as they appear in the manufacturer's published data even though all the characteristics may not have been particularly mentioned in the Contract Documents. If more than two (2) submissions of supporting data are required, the cost of reviewing the additional supporting data shall be borne by Contractor, and the County of Imperial will deduct the costs from the Contract Price. The Contractor shall be responsible for any re-design costs occasioned by County of Imperial's acceptance and/or approval of any substitute.
- H. The Contractor shall, in the event that a substitute is less costly than that specified, credit the County of Imperial with one hundred percent (100%) of the net difference between the substitute and the originally specified material. In this event, the Contractor agrees to execute a deductive Change Order to reflect that credit. In the event Contractor furnishes a material, process, or article more expensive than that specified, the difference in the cost of that material, process, or article so furnished shall be borne by Contractor.
- I. In no event shall the County of Imperial be liable for any increase in Contract Price or Contract Time due to any claimed delay in the evaluation of any proposed substitute or in the acceptance or rejection of any proposed substitute.

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

DOCUMENT 01 26 00

CHANGES IN THE WORK

CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE PROVISIONS IN THE AGREEMENT, GENERAL CONDITIONS, AND SPECIAL CONDITIONS, IF USED, RELATED TO CHANGES AND/OR REQUESTS FOR CHANGES.

END OF DOCUMENT

SECTION 01 29 76 - APPLICATIONS FOR PAYMENT

PART 1 – GENERAL

1.01 SUMMARY

- A. Coordinate the Schedule of Values and Applications for Payment with the Contractor's Construction Schedule.
- B. Schedule of Values: Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.
 - 1. Submit the Schedule of Values at the earliest possible date but no later than 7 days before submittal of the initial Applications for Payment.
- C. Format and Content: Use the Project Manual table of contents as a guide to establish the format for the Schedule of Values. Provide at least one line item for each Specification Section.
- D. Applications for Payment shall be consistent with previous applications and payments as certified by the Construction Manager and Architect and paid for by the Owner.
- E. Payment-Application Times: As per General Conditions, Article 58.
- F. Payment-Application Forms: Use AIA Document G702 and Continuation Sheets G703 (OR EQUAL) as the form for Applications for Payment.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 29 76

SCHEDULING OF WORK

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions;
- B. Special Conditions;
- C. Summary of Work; and
- D. Submittals.

1.02 SECTION INCLUDES

- A. Scheduling of Work under this Contract shall be performed by Contractor in accordance with requirements of this Section.
 - (1) Development of schedule, cost and resource loading of the schedule, monthly payment requests, and project status reporting requirements of the Contract shall employ computerized Critical Path Method (“CPM”) scheduling (“CPM Schedule”).
 - (2) CPM Schedule shall be cost loaded based on Schedule of Values as approved by County of Imperial.
 - (3) Submit schedules and reports as specified in the General Conditions.
- B. Upon Award of Contract, Contractor shall immediately commence development of Initial and Original CPM Schedules to ensure compliance with CPM Schedule submittal requirements.

1.03 CONSTRUCTION SCHEDULE

- A. Within ten (10) days of issuance of the Notice to Proceed and before request for first progress payment, the Contractor shall prepare and submit to the Project Manager a construction progress schedule conforming to the Milestone Schedule below.
- B. The Construction Schedule shall be continuously updated, and an updated schedule shall be submitted with each application for progress payment. Each revised schedule shall indicate the work actually accomplished during the previous period and the schedule for completion of the remaining work.
- C. Milestone Schedule:

ACTIVITY DESCRIPTION

REQUIRED COMPLETION

1.04 QUALIFICATIONS

- A. Contractor shall employ experienced scheduling personnel qualified to use the latest version of [i.e., Primavera Project Planner]. Experience level required is set forth below. Contractor may employ such personnel directly or may employ a consultant for this purpose.
- (1) The written statement shall identify the individual who will perform CPM scheduling.
 - (2) Capability and experience shall be verified by description of construction projects on which individual has successfully applied computerized CPM.
 - (3) Required level of experience shall include at least two (2) projects of similar nature and scope with value not less than three fourths ($\frac{3}{4}$) of the Total Bid Price of this Project. The written statement shall provide contact persons for referenced projects with current telephone and address information.
- B. County of Imperial reserves the right to approve or reject Contractor's scheduler or consultant at any time. County of Imperial reserves the right to refuse replacing of Contractor's scheduler or consultant, if County of Imperial believes replacement will negatively affect the scheduling of Work under this Contract.

1.05 GENERAL

- A. Progress Schedule shall be based on and incorporate milestone and completion dates specified in Contract Documents.
- B. Overall time of completion and time of completion for each milestone shown on Progress Schedule shall adhere to times in the Contract, unless an earlier (advanced) time of completion is requested by Contractor and agreed to by County of Imperial. Any such agreement shall be formalized by a Change Order.
- (1) County of Imperial is not required to accept an early completion schedule, i.e., one that shows an earlier completion date than the Contract Time.
 - (2) Contractor shall not be entitled to extra compensation in event agreement is reached on an earlier completion schedule and Contractor completes its Work, for whatever reason, beyond completion date shown in its early completion schedule but within the Contract Time.
 - (3) A schedule showing the work completed in less than the Contract Time, and that has been accepted by County of Imperial, shall be considered to have Project Float. The Project Float is the time between the scheduled completion of the work and the Completion Date. Project Float is a resource available to both County of Imperial and the Contractor.
- C. Ownership Project Float: Neither the County of Imperial nor Contractor owns Project Float. The Project owns the Project Float. As such, liability for delay of the Completion Date rests with the party whose actions, last in time, actually cause delay to the Completion Date.

- (1) For example, if Party A uses some, but not all of the Project Float and Party B later uses remainder of the Project Float as well as additional time beyond the Project Float, Party B shall be liable for the time that represents a delay to the Completion Date.
 - (2) Party A would not be responsible for the time since it did not consume the entire Project Float and additional Project Float remained; therefore, the Completion Date was unaffected by Party A.
- D. Progress Schedule shall be the basis for evaluating job progress, payment requests, and time extension requests. Responsibility for developing Contract CPM Schedule and monitoring actual progress as compared to Progress Schedule rests with Contractor.
- E. Failure of Progress Schedule to include any element of the Work, or any inaccuracy in Progress Schedule, will not relieve Contractor from responsibility for accomplishing the Work in accordance with the Contract. County of Imperial's acceptance of schedule shall be for its use in monitoring and evaluating job progress, payment requests, and time extension requests and shall not, in any manner, impose a duty of care upon County of Imperial, or act to relieve Contractor of its responsibility for means and methods of construction.
- F. Transmit each item under the form approved by County of Imperial.
- (1) Identify Project with County of Imperial Contract number and name of Contractor.
 - (2) Provide space for Contractor's approval stamp and County of Imperial's review stamps.
 - (3) Submittals received from sources other than Contractor will be returned to the Contractor without County of Imperial's review.

1.06 INITIAL CPM SCHEDULE

- A. Initial CPM Schedule submitted for review at the pre-construction conference shall serve as Contractor's schedule for up to ninety (90) calendar days after the Notice to Proceed.
- B. Indicate detailed plan for the Work to be completed in first ninety (90) days of the Contract; details of planned mobilization of plant and equipment; sequence of early operations; procurement of materials and equipment. Show Work beyond ninety (90) calendar days in summary form.
- C. Initial CPM Schedule shall be time scaled.
- D. Initial CPM Schedule shall be cost and resource loaded. Accepted cost and resource loaded schedule will be used as basis for monthly progress payments until acceptance of the Original CPM Schedule. Use of Initial CPM Schedule for progress payments shall not exceed ninety (90) calendar days.
- E. County of Imperial and Contractor shall meet to review and discuss the Initial CPM Schedule within seven (7) calendar days after it has been submitted to County of Imperial.
- (1) County of Imperial's review and comment on the schedule shall be limited to Contract conformance (with sequencing, coordination, and milestone requirements).
 - (2) Contractor shall make corrections to schedule necessary to comply with Contract requirements and shall adjust schedule to incorporate any missing information requested

by County of Imperial. Contractor shall resubmit Initial CPM Schedule if requested by County of Imperial.

- F. If, during the first ninety (90) days after Notice to Proceed, the Contractor is of the opinion that any of the Work included on its Initial CPM Schedule has been impacted, the Contractor shall submit to County of Imperial a written Time Impact Evaluation ("TIE") in accordance with Article 1.12 of this Section. The TIE shall be based on the most current update of the Initial CPM Schedule.

1.07 ORIGINAL CPM SCHEDULE

- A. Submit a detailed proposed Original CPM Schedule presenting an orderly and realistic plan for completion of the Work in conformance with requirements as specified herein.
- B. Progress Schedule shall include or comply with following requirements:
- (1) Time scaled, cost and resource (labor and major equipment) loaded CPM schedule.
 - (2) No activity on schedule shall have duration longer than fifteen (15) work days, with exception of submittal, approval, fabrication and procurement activities, unless otherwise approved by County of Imperial.
 - (a) Activity durations shall be total number of actual work days required to perform that activity.
 - (3) The start and completion dates of all items of Work, their major components, and milestone completion dates, if any.
 - (4) County of Imperial furnished materials and equipment, if any, identified as separate activities.
 - (5) Activities for maintaining Project Record Documents.
 - (6) Dependencies (or relationships) between activities.
 - (7) Processing/approval of submittals and shop drawings for all material and equipment required per the Contract. Activities that are dependent on submittal acceptance or material delivery shall not be scheduled to start earlier than expected acceptance or delivery dates.
 - (a) Include time for submittals, re-submittals and reviews by County of Imperial. Coordinate with accepted schedule for submission of Shop Drawings, samples, and other submittals.
 - (b) Contractor shall be responsible for all impacts resulting from re-submittal of Shop Drawings and submittals.
 - (8) Procurement of major equipment, through receipt and inspection at jobsite, identified as separate activity.
 - (a) Include time for fabrication and delivery of manufactured products for the Work.

- (b) Show dependencies between procurement and construction.
- (9) Activity description; what Work is to be accomplished and where.
- (10) The total cost of performing each activity shall be total of labor, material, and equipment, excluding overhead and profit of Contractor. Overhead and profit of the General Contractor shall be shown as a separate activity in the schedule. Sum of cost for all activities shall equal total Contract value.
- (11) Resources required (labor and major equipment) to perform each activity.
- (12) Responsibility code for each activity corresponding to Contractor or Subcontractor responsible for performing the Work.
- (13) Identify the activities which constitute the controlling operations or critical path. No more than twenty-five (25%) of the activities shall be critical or near critical. Near critical is defined as float in the range of one (1) to (10) days.
- (14) Twenty (20) workdays for developing punch list(s), completion of punch-list items, and final clean up for the Work or any designated portion thereof. No other activities shall be scheduled during this period.
- (15) Interface with the work of other contractors, County of Imperial, and agencies such as, but not limited to, utility companies.
- (16) Show detailed Subcontractor Work activities. In addition, furnish copies of Subcontractor schedules upon which CPM was built.
 - (a) Also furnish for each Subcontractor, as determined by County of Imperial, submitted on Subcontractor letterhead, a statement certifying that Subcontractor concurs with Contractor's Original CPM Schedule and that Subcontractor's related schedules have been incorporated, including activity duration, cost and resource loading.
 - (b) Subcontractor schedules shall be independently derived and not a copy of Contractor's schedule.
 - (c) In addition to Contractor's schedule and resource loading, obtain from electrical, mechanical, and plumbing Subcontractors, and other Subcontractors as required by County of Imperial, productivity calculations common to their trades, such as units per person day, feet of pipe per day per person, feet of wiring per day per person, and similar information.
 - (d) Furnish schedule for Contractor/Subcontractor CPM schedule meetings which shall be held prior to submission of Original CPM schedule to County of Imperial. County of Imperial shall be permitted to attend scheduled meetings as an observer.
- (17) Activity durations shall be in Work days.

- (18) Submit with the schedule a list of anticipated non-Work days, such as weekends and holidays. The Progress Schedule shall exclude in its Work day calendar all non-Work days on which Contractor anticipates critical Work will not be performed.
- C. Original CPM Schedule Review Meeting: Contractor shall, within sixty (60) days from the Notice to Proceed date, meet with County of Imperial to review the Original CPM Schedule submittal.
 - (1) Contractor shall have its Project Manager, Project Superintendent, Project Scheduler, and key Subcontractor representatives, as required by County of Imperial, in attendance. The meeting will take place over a continuous one (1) day period.
 - (2) County of Imperial's review will be limited to submittal's conformance to Contract requirements including, but not limited to, coordination requirements. However, review may also include:
 - (a) Clarifications of Contract Requirements.
 - (b) Directions to include activities and information missing from submittal.
 - (c) Requests to Contractor to clarify its schedule.
 - (3) Within five (5) days of the Schedule Review Meeting, Contractor shall respond in writing to all questions and comments expressed by County of Imperial at the Meeting.

1.08 ADJUSTMENTS TO CPM SCHEDULE

- A. Adjustments to Original CPM Schedule: Contractor shall have adjusted the Original CPM Schedule submittal to address all review comments from original CPM Schedule review meeting and resubmit network diagrams and reports for County of Imperial's review.
 - (1) County of Imperial, within ten (10) days from date that Contractor submitted the revised schedule, will either:
 - (a) Accept schedule and cost and resource loaded activities as submitted, or
 - (b) Advise Contractor in writing to review any part or parts of schedule which either do not meet Contract requirements or are unsatisfactory for County of Imperial to monitor Project's progress, resources, and status or evaluate monthly payment request by Contractor.
 - (2) County of Imperial may accept schedule with conditions that the first monthly CPM Schedule update be revised to correct deficiencies identified.
 - (3) When schedule is accepted, it shall be considered the "Original CPM Schedule" which will then be immediately updated to reflect the current status of the work.
 - (4) County of Imperial reserves right to require Contractor to adjust, add to, or clarify any portion of schedule which may later be discovered to be insufficient for monitoring of Work or approval of partial payment requests. No additional compensation will be provided for such adjustments, additions, or clarifications.

- B. Acceptance of Contractor's schedule by County of Imperial will be based solely upon schedule's compliance with Contract requirements.
- (1) By way of Contractor assigning activity durations and proposing sequence of Work, Contractor agrees to utilize sufficient and necessary management and other resources to perform work in accordance with the schedule.
 - (2) Upon submittal of schedule update, updated schedule shall be considered "current" CPM Schedule.
 - (3) Submission of Contractor's schedule to County of Imperial shall not relieve Contractor of total responsibility for scheduling, sequencing, and pursuing Work to comply with requirements of Contract Documents, including adverse effects such as delays resulting from ill-timed Work.
- C. Submittal of Original CPM Schedule, and subsequent schedule updates, shall be understood to be Contractor's representation that the Schedule meets requirements of Contract Documents and that Work shall be executed in sequence indicated on the schedule.
- D. Contractor shall distribute Original CPM Schedule to Subcontractors for review and written acceptance, which shall be noted on Subcontractors' letterheads to Contractor and transmitted to County of Imperial for the record.

1.09 MONTHLY CPM SCHEDULE UPDATE SUBMITTALS

- A. Following acceptance of Contractor's Original CPM Schedule, Contractor shall monitor progress of Work and adjust schedule each month to reflect actual progress and any anticipated changes to planned activities.
- (1) Each schedule update submitted shall be complete, including all information requested for the Original CPM Schedule submittal.
 - (2) Each update shall continue to show all Work activities including those already completed. These completed activities shall accurately reflect "as built" information by indicating when activities were actually started and completed.
- B. A meeting will be held on approximately the twenty-fifth (25th) of each month to review the schedule update submittal and progress payment application.
- (1) At this meeting, at a minimum, the following items will be reviewed: Percent (%) complete of each activity; Time Impact Evaluations for Change Orders and Time Extension Request; actual and anticipated activity sequence changes; actual and anticipated duration changes; and actual and anticipated Contractor delays.
 - (2) These meetings are considered a critical component of overall monthly schedule update submittal and Contractor shall have appropriate personnel attend. At a minimum, these meetings shall be attended by Contractor's General Superintendent and Scheduler.
 - (3) Contractor shall plan on the meeting taking no less than four (4) hours.
- C. Within five (5) working days after monthly schedule update meeting, Contractor shall submit the updated CPM Schedule update.

- D. Within five (5) work days of receipt of above noted revised submittals, County of Imperial will either accept or reject monthly schedule update submittal.
 - (1) If accepted, percent (%) complete shown in monthly update will be basis for Application for Payment by the Contractor. The schedule update shall be submitted as part of the Contractor's Application for Payment.
 - (2) If rejected, update shall be corrected and resubmitted by Contractor before the Application for Payment is submitted.
- E. Neither updating, changing or revising of any report, curve, schedule, or narrative submitted to County of Imperial by Contractor under this Contract, nor County of Imperial's review or acceptance of any such report, curve, schedule or narrative shall have the effect of amending or modifying in any way the Completion Date or milestone dates or of modifying or limiting in any way Contractor's obligations under this Contract.

1.10 SCHEDULE REVISIONS

- A. Updating the Schedule to reflect actual progress shall not be considered revisions to the Schedule. Since scheduling is a dynamic process, revisions to activity durations and sequences are expected on a monthly basis.
- B. To reflect revisions to the Schedule, the Contractor shall provide County of Imperial with a written narrative with a full description and reasons for each Work activity revised. For revisions affecting the sequence of work, the Contractor shall provide a schedule diagram which compares the original sequence to the revised sequence of work. The Contractor shall provide the written narrative and schedule diagram for revisions two (2) working days in advance of the monthly schedule update meeting.
- C. Schedule revisions shall not be incorporated into any schedule update until the revisions have been reviewed by County of Imperial. County of Imperial may request further information and justification for schedule revisions and Contractor shall, within three (3) days, provide County of Imperial with a complete written narrative response to County of Imperial's request.
- D. If the Contractor's revision is still not accepted by County of Imperial, and the Contractor disagrees with County of Imperial's position, the Contractor has seven (7) calendar days from receipt of County of Imperial's letter rejecting the revision to provide a written narrative providing full justification and explanation for the revision. The Contractor's failure to respond in writing within seven (7) calendar days of County of Imperial's written rejection of a schedule revision shall be contractually interpreted as acceptance of County of Imperial's position, and the Contractor waives its rights to subsequently dispute or file a claim regarding County of Imperial's position.
- E. At County of Imperial's discretion, the Contractor can be required to provide Subcontractor certifications of performance regarding proposed schedule revisions affecting said Subcontractors.

1.11 RECOVERY SCHEDULE

- A. If the Schedule Update shows a completion date twenty-one (21) calendar days beyond the Contract Completion Date, or individual milestone completion dates, the Contractor shall submit to County of Imperial the proposed revisions to recover the lost time within seven (7) calendar days. As part of this submittal, the Contractor shall provide a written narrative for each revision

made to recapture the lost time. If the revisions include sequence changes, the Contractor shall provide a schedule diagram comparing the original sequence to the revised sequence of work.

- B. The revisions shall not be incorporated into any schedule update until the revisions have been reviewed by County of Imperial.
- C. If the Contractor's revisions are not accepted by County of Imperial, County of Imperial and the Contractor shall follow the procedures in paragraph 1.09.C, 1.09.D and 1.09.E above.
- D. At County of Imperial's discretion, the Contractor can be required to provide Subcontractor certifications for revisions affecting said Subcontractors.

1.12 TIME IMPACT EVALUATION ("TIE") FOR CHANGE ORDERS, AND OTHER DELAYS

- A. When Contractor is directed to proceed with changed Work, the Contractor shall prepare and submit within fourteen (14) calendar days from the Notice to Proceed a TIE which includes both a written narrative and a schedule diagram depicting how the changed Work affects other schedule activities. The schedule diagram shall show how the Contractor proposes to incorporate the changed Work in the schedule and how it impacts the current schedule-update critical path. The Contractor is also responsible for requesting time extensions based on the TIE's impact on the critical path. The diagram must be tied to the main sequence of schedule activities to enable County of Imperial to evaluate the impact of changed Work to the scheduled critical path.
- B. Contractor shall be required to comply with the requirements of Paragraph 1.09.A for all types of delays such as, but not limited to, Contractor/Subcontractor delays, adverse weather delays, strikes, procurement delays, fabrication delays, etc.
- C. Contractor shall be responsible for all costs associated with the preparation of TIEs, and the process of incorporating them into the current schedule update. The Contractor shall provide County of Imperial with four (4) copies of each TIE.
- D. Once agreement has been reached on a TIE, the Contract Time will be adjusted accordingly. If agreement is not reached on a TIE, the Contract Time may be extended in an amount County of Imperial allows, and the Contractor may submit a claim for additional time claimed by contractor.

1.13 TIME EXTENSIONS

- A. The Contractor is responsible for requesting time extensions for time impacts that, in the opinion of the Contractor, impact the critical path of the current schedule update. Notice of time impacts shall be given in accord with the General Conditions.
- B. Where an event for which County of Imperial is responsible impacts the projected Completion Date, the Contractor shall provide a written mitigation plan, including a schedule diagram, which explains how (e.g., increase crew size, overtime, etc.) the impact can be mitigated. The Contractor shall also include a detailed cost breakdown of the labor, equipment, and material the Contractor would expend to mitigate County of Imperial-caused time impact. The Contractor shall submit its mitigation plan to County of Imperial within fourteen (14) calendar days from the date of discovery of the impact. The Contractor is responsible for the cost to prepare the mitigation plan.
- C. Failure to request time, provide TIE, or provide the required mitigation plan will result in Contractor waiving its right to a time extension and cost to mitigate the delay.

- D. No time will be granted under this Contract for cumulative effect of changes.
- E. County of Imperial will not be obligated to consider any time extension request unless the Contractor complies with the requirements of Contract Documents.
- F. Failure of the Contractor to perform in accordance with the current schedule update shall not be excused by submittal of time extension requests.
- G. If the Contractor does not submit a TIE within the required fourteen (14) calendar days for any issue, it is mutually agreed that the Contractor does not require a time extension for said issue.

1.14 SCHEDULE REPORTS

- A. Submit four (4) copies of the following reports with the Initial CPM Schedule, the Original CPM Schedule, and each monthly update.
- B. Required Reports:
 - (1) Two activity listing reports: one sorted by activity number and one by total Project Float. These reports shall also include each activity's early/late and actual start and finish dates, original and remaining duration, Project Float, responsibility code, and the logic relationship of activities.
 - (2) Cost report sorted by activity number including each activity's associated cost, percentage of Work accomplished, earned value- to date, previous payments, and amount earned for current update period.
 - (3) Schedule plots presenting time-scaled network diagram showing activities and their relationships with the controlling operations or critical path clearly highlighted.
 - (4) Cash flow report calculated by early start, late start, and indicating actual progress. Provide an exhibit depicting this information in graphic form.
 - (5) Planned versus actual resource (i.e., labor) histogram calculated by early start and late start.
- C. Other Reports:

In addition to above reports, County of Imperial may request, from month to month, any two of the following reports. Submit four (4) copies of all reports.

 - (1) Activities by early start.
 - (2) Activities by late start.
 - (3) Activities grouped by Subcontractors or selected trades.
 - (4) Activities with scheduled early start dates in a given time frame, such as fifteen (15) or thirty (30) day outlook.
- D. Furnish County of Imperial with report files on compact disks containing all schedule files for each report generated.

1.15 PROJECT STATUS REPORTING

- A. In addition to submittal requirements for CPM scheduling identified in this Section, Contractor shall provide a monthly project status report (i.e., written narrative report) to be submitted in conjunction with each CPM Schedule as specified herein. Status reporting shall be in form specified below.
- B. Contractor shall prepare monthly written narrative reports of status of Project for submission to County of Imperial. Written status reports shall include:
 - (1) Status of major Project components (percent (%) complete, amount of time ahead or behind schedule) and an explanation of how Project will be brought back on schedule if delays have occurred.
 - (2) Progress made on critical activities indicated on CPM Schedule.
 - (3) Explanations for any lack of work on critical path activities planned to be performed during last month.
 - (4) Explanations for any schedule changes, including changes to logic or to activity durations.
 - (5) List of critical activities scheduled to be performed next month.
 - (6) Status of major material and equipment procurement.
 - (7) Any delays encountered during reporting period.
 - (8) Contractor shall provide printed report indicating actual versus planned resource loading for each trade and each activity. This report shall be provided on weekly and monthly basis.
 - (a) Actual resource shall be accumulated in field by Contractor, and shall be as noted on Contractor's daily reports. These reports will be basis for information provided in computer-generated monthly and weekly printed reports.
 - (b) Contractor shall explain all variances and mitigation measures.
 - (9) Contractor may include any other information pertinent to status of Project. Contractor shall include additional status information requested by County of Imperial at no additional cost.
 - (10) Status reports, and the information contained therein, shall not be construed as claims, notice of claims, notice of delay, or requests for changes or compensation.

1.16 WEEKLY SCHEDULE REPORT

At the Weekly Progress Meeting, the Contractor shall provide and present a time-scaled three (3) week look-ahead schedule that is based and correlated by activity number to the current schedule (i.e., Initial, Original CPM, or Schedule Update).

1.17 DAILY CONSTRUCTION REPORTS

On a daily basis, Contractor shall submit a daily activity report to County of Imperial for each workday, including weekends and holidays when worked. Contractor shall develop the daily construction reports on a computer-generated database capable of sorting daily Work, manpower, and man-hours by Contractor, Subcontractor, area, sub-area, and Change Order Work. Upon request of County of Imperial, furnish computer disk of this data base. Obtain County of Imperial's written approval of daily construction report data base format prior to implementation. Include in report:

- A. Project name and Project number.
- B. Contractor's name and address.
- C. Weather, temperature, and any unusual site conditions.
- D. Brief description and location of the day's scheduled activities and any special problems and accidents, including Work of Subcontractors. Descriptions shall be referenced to CPM scheduled activities.
- E. Worker quantities for its own Work force and for Subcontractors of any tier.
- F. Equipment, other than hand tools, utilized by Contractor and Subcontractors.

1.18 PERIODIC VERIFIED REPORTS

Contractor shall complete and verify construction reports on a form prescribed by the Division of the State Architect and file reports on the first day of February, May, August, and November during the preceding quarter year; at the completion of the Contract; at the completion of the Work; at the suspension of Work for a period of more than one (1) month; whenever the services of Contractor or any of Contractor's Subcontractors are terminated for any reason; and at any time a special verified report is required by the Division of the State Architect. Refer to section 4-336 and section 4-343 of Part 1, Title 24 of the California Code of Regulations.

PART 2 – PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

SUBMITTALS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Contractor's Submittals and Schedules, Drawings and Specifications;
- B. Special Conditions.

1.02 SECTION INCLUDES:

- A. Definitions:
 - (1) Shop Drawings and Product Data are as indicated in the General Conditions and include, but are not limited to, fabrication, erection, layout and setting drawings, formwork and falsework drawings, manufacturers' standard drawings, descriptive literature, catalogues, brochures, performance and test data, wiring and control diagrams. In addition, there are other drawings and descriptive data pertaining to materials, equipment, piping, duct and conduit systems, and methods of construction as may be required to show that the materials, equipment or systems and all positions conform to the requirement of the Contract Documents, including, without limitation, the Drawings.
 - (2) "Manufactured" applies to standard units usually mass-produced; "fabricated" means specifically assembled or made out of selected materials to meet design requirements. Shop Drawings shall establish the actual detail of manufactured or fabricated items, indicated proper relation to adjoining work and amplify design details of mechanical and electrical equipment in proper relation to physical spaces in the structure.
 - (3) Manufacturer's Instructions: Where any item of Work is required by the Contract Documents to be furnished, installed, or performed, at a minimum, in accordance with a specified product manufacturer's instructions, the Contractor shall procure and distribute copies of these to the County of Imperial, the Architect, and all other concerned parties and shall furnish, install, or perform the work, at a minimum, in accordance with those instructions.
- B. Samples, Shop Drawings, Product Data, and other items as specified, in accordance with the following requirements:
 - (1) Contractor shall submit all Shop Drawings, Product Data, and Samples to the County of Imperial, the Architect, the Project Inspector, and the Construction Manager.
 - (2) Contractor shall comply with all time frames herein and in the General Conditions and, in any case, shall submit required information in sufficient time to permit proper consideration and action before ordering any materials or items represented by such Shop Drawings, Product Data, and/or Samples.

- (3) Contractor shall allow sufficient time so that no delay occurs due to required lead time in ordering or delivery of any item to the Site. Contractor shall be responsible for any delay in progress of Work due to its failure to observe these requirements.
- (4) Time for completion of Work shall not be extended on account of Contractor's failure to promptly submit Shop Drawings, Product Data, and/or Samples.
- (5) Reference numbers on Shop Drawings shall have Architectural and/or Engineering Contract Drawings reference numbers for details, sections, and "cuts" shown on Shop Drawings. These reference numbers shall be in addition to any numbering system that Contractor chooses to use or has adopted as standard.
- (6) When the magnitude or complexity of submittal material prevents a complete review within the stated time frame, Contractor shall make this submittal in increments to avoid extended delays.
- (7) Contractor shall certify on submittals for review that submittals conform to Contract requirements. Also certify that Contractor-furnished equipment can be installed in allocated space. In event of any variance, Contractor shall specifically state in transmittal and on Shop Drawings, portions vary and require approval of a substitute. Submittals shall not be used as a means of requesting a substitution.
- (8) Unless specified otherwise, sampling, preparation of samples, and tests shall be in accordance with the latest standard of the American Society for Testing and Materials.
- (9) Upon demand by Architect or County of Imperial, Contractor shall submit samples of materials and/or articles for tests or examinations and consideration before Contractor incorporates same in Work. Contractor shall be solely responsible for delays due to sample(s) not being submitted in time to allow for tests. Acceptance or rejection will be expressed in writing. Work shall be equal to approved samples in every respect. Samples that are of value after testing will remain the property of Contractor.

C. Submittal Schedule:

- (1) Contractor shall prepare its proposed submittal schedule that is coordinated with the proposed construction schedule and submit both to the County of Imperial within ten (10) days after the date of the Notice to Proceed. Contractor's proposed schedules shall become the Project Construction Schedule and the Project Submittal Schedule after each is approved by the County of Imperial.
- (2) Contractor is responsible for all lost time should the initial submittal be rejected, marked "revise and resubmit", etc.
- (3) All Submittals shall be forwarded to the County of Imperial by the date indicated on the approved Submittal Schedule, unless an earlier date is necessary to maintain the Construction Schedule, in which case those Submittals shall be forwarded to the County of Imperial so as not to delay the Construction Schedule.
- (4) Contractor may be assessed \$100 a day for each day it is late in submitting a shop drawing or sample. No extensions of time will be granted to Trade Contractor or any Subcontractor because of its failure to have shop drawings and samples submitted in accordance with the Schedule.

1.03 SHOP DRAWINGS:

- A. Contractor shall submit one reproducible transparency and six (6) opaque reproductions. The County of Imperial will review and return the reproducible copy and one (1) opaque reproduction to Contractor.
- B. Before commencing installation of any Work, the Contractor shall submit and receive approval of all drawings, descriptive data, and material list(s) as required to accomplish Work.
- C. Review of Shop Drawings is regarded as a service to assist Contractor and in all cases original Contract Documents shall take precedence as outlined under General Conditions.
- D. No claim for extra time or payment shall be based on work shown on Shop Drawings unless the claim is (1) noted on Contractor's transmittal letter accompanying Shop Drawings and (2) Contractor has complied with all applicable provisions of the General Conditions, including, without limitation, provisions regarding changes and payment, and all required written approvals.
- E. County of Imperial shall not review Shop Drawings for quantities of materials or number of items supplied.
- F. County of Imperial's and/or Architect's review of Shop Drawing will be general. County of Imperial and/or Architect review does not relieve Contractor of responsibility for dimensions, accuracy, proper fitting, construction of Work, furnishing of materials, or Work required by Contract Documents and not indicated on Shop Drawings. The County of Imperial's and/or Architect's review of Shop Drawings is not to be construed as approving departures from Contract Documents.
- G. Review of Shop Drawings and Schedules does not relieve Contractor from responsibility for any aspect of those Drawings or Schedules that is a violation of local, County of Imperial, State, or Federal laws, rules, ordinances, or rules and regulations of commissions, boards, or other authorities or utilities having jurisdiction.
- H. Before submitting Shop Drawings for review, Contractor shall check Shop Drawings of its subcontractors for accuracy, and confirm that all Work contiguous with and having bearing on other work shown on Shop Drawings is accurately drawn and in conformance with Contract Documents.
- I. Submitted drawings and details must bear stamp of approval of Contractor:
 - (1) Stamp and signature shall clearly certify that Contractor has checked Shop Drawings for compliance with Drawings.
 - (2) If Contractor submits a Shop Drawing without an executed stamp of approval, or whenever it is evident (despite stamp) that Drawings have not been checked, the County of Imperial and/or Architect will not consider them and will return them to the Contractor for revision and resubmission. In that event, it will be deemed that Contractor has not complied with this provision and Contractor shall bear risk of all delays to same extent as if it had not submitted any Shop Drawings or details.
- J. Submission of Shop Drawings (in either original submission or when resubmitted with correction) constitutes evidence that Contractor has checked all information thereon and that it accepts and is willing to perform Work as shown.
- K. Contractor shall pay for cost of any changes in construction due to improper checking and coordination. Contractor shall be responsible for all additional costs, including coordination.

Contractor shall be responsible for costs incurred by itself, the County of Imperial, the Architect, the Project Inspector, the Construction Manager, any other Subcontractor or contractor, etc., due to improperly checked and/or coordination of submittals.

L. Shop Drawings must clearly delineate the following information:

- (1) Project name and address.
- (2) Specification number and description.
- (3) Architect's name and project number.
- (4) Shop Drawing title, number, date, and scale.
- (5) Names of Contractor, Subcontractor(s) and fabricator.
- (6) Working and erection dimensions.
- (7) Arrangements and sectional views.
- (8) Necessary details, including complete information for making connections with other Work.
- (9) Kinds of materials and finishes.
- (10) Descriptive names of materials and equipment, classified item numbers, and locations at which materials or equipment are to be installed in the Work. Contractor shall use same reference identification(s) as shown on Contract Drawings.

M. Contractor shall prepare composite drawings and installation layouts when required to solve tight field conditions.

- (1) Shop Drawings shall consist of dimensioned plans and elevations and must give complete information, particularly as to size and location of sleeves, inserts, attachments, openings, conduits, ducts, boxes, structural interferences, etc.
- (2) Contractor shall coordinate these composite Shop Drawings and installation layouts in the field between itself and its Subcontractor(s) for proper relationship to the Work, the work of other trades, and the field conditions. The Contractor shall check and approve all submittal(s) before submitting them for final review.

1.04 PRODUCT DATA OR NON REPRODUCIBLE SUBMITTALS:

- A. Contractor shall submit manufacturer's printed literature in original form. Any fading type of reproduction will not be accepted. Contractor must submit a minimum of six (6) each, to the County of Imperial. County of Imperial shall return one (1) to the Contractor, who shall reproduce whatever additional copies it requires for distribution.
- B. Contractor shall submit six (6) copies of a complete list of all major items of mechanical, plumbing, and electrical equipment and materials in accordance with the approved Submittal Schedule, except as required earlier to comply with the approved Construction Schedule. Other items specified are to be submitted prior to commencing Work. Contractor shall submit items of like kind at one time in a neat and orderly manner. Partial lists will not be acceptable.

- C. Submittals shall include manufacturer's specifications, physical dimensions, and ratings of all equipment. Contractor shall furnish performance curves for all pumps and fans. Where printed literature describes items in addition to that item being submitted, submitted item shall be clearly marked on sheet and superfluous information shall be crossed out. If highlighting is used, Contractor shall mark all copies.
- D. Equipment submittals shall be complete and include space requirements, weight, electrical and mechanical requirements, performance data, and supplemental information that may be requested.
- E. Imported Materials Certification must be submitted at least ten (10) days before material is delivered.

1.05 SAMPLES:

- A. Contractor shall submit for approval Samples as required and within the time frame in the Contract Documents. Materials such as concrete, mortar, etc., which require on-site testing will be obtained from Project Site.
- B. Contractor shall submit four (4) samples except where greater or lesser number is specifically required by Contract Documents including, without limitation, the Specifications.
 - (1) Samples must be of sufficient size and quality to clearly illustrate functional characteristics, with integrally related parts and attachment devices.
 - (2) Samples must show full range of texture, color, and pattern.
- C. Contractor shall make all Submittals, unless it has authorized Subcontractor(s) to submit and Contractor has notified the County of Imperial in writing to this effect.
- D. Samples to be shipped prepaid or hand-delivered to the County of Imperial.
- E. Contractor shall mark samples to show name of Project, name of Contractor submitting, Contract number and segment of Work where representative Sample will be used, all applicable Specifications Sections and documents, Contract Drawing Number and detail, and ASTM or FS reference, if applicable.
- F. Contractor shall not deliver any material to Site prior to receipt of County of Imperial's and/or Architect's completed written review and approval. Contractor shall furnish materials equal in every respect to approved Samples and execute Work in conformance therewith.
- G. County of Imperial's and/or Architect's review, acceptance, and/or approval of Sample(s) will not preclude rejections of any material upon discovery of defects in same prior to final acceptance of completed Work.
- H. After a material has been approved, no change in brand or make will be permitted.
- I. Contractor shall prepare its Submittal Schedule and submit Samples of materials requiring laboratory tests to specified laboratory for testing not less than ninety (90) days before such materials are required to be used in Work.
- J. Samples which are rejected must be resubmitted promptly after notification of rejection and be marked "Resubmitted Sample" in addition to other information required.
- K. Field Samples and Mock-Ups are to be removed by Contractor at County of Imperial's direction:

- (1) Size: As Specified.
- (2) Furnish catalog numbers and similar data, as requested.

1.06 REVIEW AND RESUBMISSION REQUIREMENTS:

- A. The County of Imperial will arrange for review of Sample(s), Shop Drawing(s), Product Data, and other submittal(s) by appropriate reviewer and return to Contractor as provided below within twenty-one (21) days after receipt or within twenty-one (21) days after receipt of all related information necessary for such review, whichever is later.
- B. One (1) copy of product or materials data will be returned to Contractor with the review status.
- C. Samples to be incorporated into the Work will be returned to Contractor, together with a written notice designating the Sample with the appropriate review status and indicating errors discovered on review, if any. Other Samples will not be returned, but the same notice will be given with respect thereto, and that notice shall be considered a return of the Sample.
- D. Contractor shall revise and resubmit any Sample(s), Shop Drawing(s), Product Data, and other submittal(s) as required by the reviewer. Such resubmittals will be reviewed and returned in the same manner as original Sample(s), Shop Drawing(s), Product Data, and other submittal(s), within fourteen (14) days after receipt thereof or within fourteen (14) days after receipt of all related information necessary for such review. Such resubmittal shall not delay the Work.
- E. Contractor may proceed with any of the Work covered by Sample(s), Shop Drawing(s), Product Data, and other submittal(s) upon its return if designated as no exception taken, or revise as noted, provided the Contractor proceeds in accordance with the County of Imperial and/or the Architect's notes and comments.
- F. Contractor shall not begin any of the work covered by a Sample(s), Shop Drawing(s), Product Data, and other submittal(s), designated as revise and resubmit or rejected, until a revision or correction thereof has been reviewed and returned to Contractor.
- G. Sample(s), Shop Drawing(s), Product Data, and other submittal(s) designated as revise and resubmit or rejected and requiring resubmittal, shall be revised or corrected and resubmitted to the County of Imperial no later than fourteen (14) days or a shorter period as required to comply with the approved Construction Schedule, after its return to Contractor.
- H. Neither the review nor the lack of review of any Sample(s), Shop Drawing(s), Product Data, and other submittal(s) shall waive any of the requirements of the Contract Documents, or relieve Contractor of any obligation thereunder.
- I. County of Imperial's and/or Architect's review of Shop Drawings does not relieve the Contractor of responsibility for any errors that may exist. Contractor is responsible for the dimensions and design of adequate connections and details and for satisfactory construction of all the Work.

PART 2 – PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

SITE STANDARDS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including without limitation, Site Access, Conditions, and Regulations;
- B. Special Conditions;
- C. Drug-Free Workplace Certification;
- D. Tobacco-Free Environment Certification;
- E. Criminal Background Investigation/Fingerprinting Certification;
- F. Temporary Facilities and Controls.

1.02 REQUIREMENTS OF THE COUNTY OF IMPERIAL:

- A. Drug-Free Schools and Safety Requirements:
 - (1) All school sites and other County of Imperial Facilities have been declared “Drug-Free Zones.” No drugs, alcohol and/or smoking are allowed at any time in any buildings and/or grounds on County of Imperial property. No students, staff, visitors, or contractors are to use drugs on these sites.
 - (2) Smoking and the use of tobacco products by all persons is prohibited on or in County of Imperial property. County of Imperial property includes school buildings, school grounds, school-owned vehicles and vehicles owned by others while on County of Imperial property. Contractor shall post: "Non-Smoking Area" in a highly visible location in each work area, staging area, and parking area. Contractor may designate a smoking area outside of County of Imperial property within the public right-of-way, provided that this area remains quiet and unobtrusive to adjacent neighbors. This smoking area is to be kept clean at all times.
 - (3) Contractor shall ensure that no alcohol, firearms, weapons, or controlled substances enter or are used at the Site. Contractor shall immediately remove from the Site and terminate the employment of any employee(s) found in violation of this provision.
- B. Language: Profanity or other unacceptable and/or loud language will not be tolerated, "Cat calls" or other derogatory language toward students, staff, volunteers, parents or public will not be allowed.
- C. Disturbing the Peace (Noise and Lighting):

- (1) Contractor shall observe the noise ordinance of the Site at all times including, without limitation, all applicable local, city, and/or state laws, ordinances, and/or regulations regarding noise and allowable noise levels.
- (2) The use of radios, etc., shall be controlled to keep all sound at a level that cannot be heard beyond the immediate area of use. County of Imperial reserves the right to prohibit the use of radios at the Site, except for mobile phones or other handheld communication radios.
- (3) If portable lights are used after dark, all light must be located so as not to direct light into neighboring property.

D. Traffic:

- (1) Driving on the Premises shall be limited to periods when students and public are not present. If driving or deliveries must be made during the school hours, two (2) or more ground guides shall lead the vehicle across the area of travel. In no case shall driving take place across playgrounds or other pedestrian paths during recess, lunch, and/or class period changes. The speed limit on-the Premises shall be five (5) miles per hour (maximum) or less if conditions require.
- (2) All paths of travel for deliveries, including without limitation, material, equipment, and supply deliveries, shall be reviewed and approved by County of Imperial in advance. Any damage will be repaired to the pre-damaged condition by the Contractor.
- (3) County of Imperial shall designate a construction entry to the Site. If Contractor requests, County of Imperial determines it is required, and to the extent possible, County of Imperial shall designate a staging area so as not to interfere with the normal functioning of school facilities. Location of gates and fencing shall be approved in advance with County of Imperial and at Contractor's expense.
- (4) Parking areas shall be reviewed and approved by County of Imperial in advance. No parking is to occur under the drip line of trees or in softscape areas that could otherwise be damaged.

- E.** All of the above shall be observed and complied with by the Contractor and all workers on the Site. Failure to follow these directives could result in individual(s) being suspended or removed from the work force at the discretion of the County of Imperial. The same rules and regulations shall apply equally to delivery personnel, inspectors, consultants, and other visitors to the Site.

PART 2 - PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Obtaining of Permits, Licenses and Registrations and Work to Comply with All Applicable Laws and Regulations;
- B. Special Conditions; and
- C. Quality Control.

1.02 DESCRIPTION:

This section covers the general requirements for regulatory requirements pertaining to the Work and is supplementary to all other regulatory requirements mentioned or referenced elsewhere in the Contract Documents.

1.03 REQUIREMENTS OF REGULATORY AGENCIES:

- A. All statutes, ordinances, laws, rules, codes, regulations, standards, and the lawful orders of all public authorities having jurisdiction over the Work, are hereby incorporated into these Contract Documents as if repeated in full herein and are intended to be included in any reference to Code or Building Code, unless otherwise specified, including, without limitation, the references in the list below. Contractor shall make available at the Site copies of all the listed documents applicable to the Work as the County of Imperial and/or Architect may request, including, without limitation, applicable portions of the California Code of Regulations ("CCR").
 - (1) California Building Standards Administrative Code, Part 1, Title 24, CCR.
 - (2) California Building Code (CBC), Part 2, Title 24, CCR; (International Building Code volumes 1-2 and California Amendments).
 - (3) California Electrical Code (CEC), Part 3, Title 24, CCR; (National Electrical Code and California Amendments).
 - (4) California Mechanical Code (CMC), Part 4, Title 24, CCR; (Uniform Mechanical Code and California Amendments).
 - (5) California Plumbing Code (CPC), Part 5, Title 24, CCR; (Uniform Plumbing Code and California Amendments).
 - (6) California Fire Code (CFC), Part 9, Title 24, CCR; (International Fire Code and California Amendments).

- (7) California Green Building Standards Code (CALGreen), Part 11, Title 24, CCR.
- (8) California Referenced Standards Code, Part 12, Title 24, CCR.
- (9) State Fire Marshal Regulations, Public Safety, Title 19, CCR.
- (10) Partial List of Applicable National Fire Protection Association (NFPA) Standards:
 - (a) NFPA 13 - Automatic Sprinkler System.
 - (b) NFPA 14 - Standpipes Systems.
 - (c) NFPA 17A - Wet Chemical System
 - (d) NFPA 24 - Private Fire Mains.
 - (e) (California Amended) NFPA 72 - National Fire Alarm Codes.
 - (f) NFPA 253 - Critical Radiant Flux of Floor Covering System.
 - (g) NFPA 2001 - Clean Agent Fire Extinguishing Systems.
- (11) California Division of the State Architect interpretation of Regulations (“DSA IR”), including, without limitation:
 - (a) DSA IR A-6 — Construction Change Document Submittal and Approval Processes.
 - (b) DSA IR A-7 — Project Inspector Certification and Approval.
 - (c) DSA IR A-8 — Project Inspector and Assistant Inspector Duties and Performance.
 - (d) DSA IR A-12 — Assistant Inspector Approval.
- (12) DSA Procedures (“DSA PR”)
 - (a) DSA PR 13-01 – Construction Oversight Process
 - (b) DSA PR 13-02 – Project Certification Process

B. This Project shall be governed by applicable regulations, including, without limitation, the State of California’s Administrative Regulations for the Division of the State Architect-Structural Safety (DSA/SS), Chapter 4, Part 1, Title 24, CCR, and the most current version on the date the bids are opened and as it pertains to school construction including, without limitation:

- (1) Test and testing laboratory per Section 4-335. County of Imperial shall pay for the testing laboratory.
- (2) Special inspections per Section 4-333(c).

- (3) Deferred Approvals per section 4-317(g).
- (4) Verified reports per Sections 4-336 & 4-343(c).
- (5) Duties of the Architect & Engineers shall be per Sections 4-333(a) and 4-341.
- (6) Duties of the Contractor shall be per Section 4-343.
- (7) Duties of Project Inspector shall be per Section 4-334.
- (8) Addenda and Construction Change Documents per Section 4-338.

Contractor shall keep and make available all applicable parts of the most current version of Title 24 referred to in the plans and specifications at the Site during construction.

C. Items of deferred approval shall be clearly marked on the first sheet of the Architect's and/or Engineer's approved Drawings. All items later submitted for approval shall be per Title 24 requirements to the DSA.

- (1) Contractor shall submit the following to Architect for review and endorsement:
 - (a) Product information on proposed material/system supplier.
 - (b) Drawings, specifications, and calculations prepared, signed, and stamped by an architect or engineer licensed in the State of California for that portion of the Work.
 - (c) All other requirements as may be required by DSA.
- (2) Cost of preparing and submitting documentation per DSA Deferred Approval requirements including required modifications to Drawings and Specifications, whether or not indicated in the Contract Documents, shall be borne by Contractor.
- (3) Contractor shall not begin fabrication and installation of deferred approval items without first obtaining DSA approval of Drawings and Specifications.
- (4) Schedule of Work Subject to DSA Deferred Approval: Window wall systems exceeding 10 feet in span.

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

ABBREVIATIONS AND ACRONYMS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions including without limitation, Definitions;
- B. Special Conditions.

1.02 DOCUMENT INCLUDES:

- A. Abbreviations used throughout the Contract Documents.
- B. Reference to a technical society, organization, or body is by abbreviation, as follows:

1.	AA	The Aluminum Association
2.	AASHTO	American Association of State Highway and Transportation Officials
3.	ABPA	Acoustical and Board Products Association
4.	ACI	American Concrete Institute
5.	AGA	American Gas Association
6.	AGC	Associated General Contractors of America
7.	AHC	Architectural Hardware Consultant
8.	AHRI	Air Conditioning, Heating, Refrigeration Institute
9.	AI	Asphalt Institute
10.	AIA	American Institute of Architects
11.	AISC	American Institute of Steel Construction
12.	AISI	American Iron and Steel Institute
13.	AMCA	Air Movement and Control Association
14.	ANSI	American National Standards Institute
15.	APA	APA – The Engineered Wood Association
16.	ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
17.	ASSE	American Society of Civil Engineers
18.	ASME	American Society of Mechanical Engineers
19.	ASTM	American Society of Testing and Materials
20.	AWPA	American Wood Protection Association
21.	AWPI	American Wood preservers Institute
22.	AWS	American Welding Society
23.	AWSC	American Welding Society Code
24.	AWI	Architectural Woodwork Institute
25.	AWWA	American Water Works Association
26.	BIA	The Brick Industry Association
27.	CCR	California Code of Regulations
28.	CLFMI	Chain Link Fence Manufacturers Institute
29.	CRA	California Redwood Association

30.	CRSI	Concrete Reinforcing Steel Institute
31.	CS	Commercial Standards
32.	CSI	Construction Specifications Institute
33.	CTI	Cooling Technology Institute
34.	FGIA	Fenestration and Glazing Industry Alliance
35.	FGMA	Flat Glass Manufacturer's Association
36.	FIA	Factory Insurance Association
37.	FM	Factory Mutual Global
38.	FS/FED SPEC	Federal Specification
39.	FTI	Facing Title Institute
40.	GA	Gypsum Association
41.	IAPMO	International Association of Plumbing and Mechanical Officials
42.	ICC	International Code Council
43.	IEEE	Institute of Electrical and Electronic Engineers
44.	IES	Illuminating Engineering Society
45.	MCAC	Mason Contractors Association of California
46.	MIMA	Mineral Wool Insulation Manufacturers Association
47.	MLMA	Metal Lath Manufacturers Association
48.	MS/MIL SPEC	Military Specifications
49.	NAAMM	National Association of Architectural Metal Manufacturers
50.	NBHA	National Builders Hardware Association
51.	NCMA	National Concrete Masonry Association
52.	NCSEA	National Council of Structural Engineers Associations
53.	NEC	National Electrical Code
54.	NEMA	National Electrical Manufacturers Association
55.	NIST	National Institute of Standards and Technology
56.	NSI	Natural Stone Institute
57.	NTMA	National Terrazzo and Mosaic Association
58.	ORS	Office of Regulatory Services (California)
59.	OSHA	Occupational Safety and Health Act
60.	PCI	Precast Concrete Institute
61.	PCA	Portland Cement Association
62.	PCA	Painting Contractors Association
63.	PDI	Plumbing Drainage Institute
64.	PEI	Porcelain Enamel Institute
65.	PG&E	Pacific Gas & Electric Company
66.	PS	Product Standards
67.	SDI	Steel Door Institute; Steel Deck Institute
68.	SJI	Steel Joist Institute
69.	SSPC	Society for Protective Coatings
70.	TCNA	Tile Council of North America
71.	TPI	Truss Plate Institute
72.	UBC	Uniform Building Code
73.	UL	Underwriters Laboratories Code
74.	UMC	Uniform Mechanical Code
75.	USDA	United States Department of Agriculture
76.	VI	Vermiculite Institute
77.	WCLIB	West Coast Lumber Inspection Bureau
78.	WDMA	Window and Door Manufacturers Association
79.	WEUSER	Western Electric Utilities Service Engineering Requirements
80.	WIC	Woodwork Institute of California

PART 2 - PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

DEFINITIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions including without limitation, Definitions;
- B. Special Conditions.

1.02 QUALITY ASSURANCE

- A. For products or workmanship specified by association, trade, or Federal Standards, Contractor shall comply with requirements of the standard, except when more rigid requirements are specified in the Contract Documents, or are required by applicable codes.
- B. Contractor shall conform to current reference standard publication date in effect on the date of bid opening.
- C. Contractor shall obtain copies of standards unless specifically required not to by the Contract Documents.
- D. Contractor shall maintain a copy of all standards at jobsite during submittals, planning, and progress of the specific Work, until final completion, unless specifically required not to by the Contract Documents.
- E. Should specified reference standards conflict with Contract Documents, Contractor shall request clarification from the County of Imperial and/or the Architect before proceeding.
- F. The contractual relationship of the parties to the Contract shall not be altered from the contractual relationship as indicated in the Contract Documents by mention or inference otherwise in any referenced document.
- G. Governing Codes shall be as shown in the Contract Documents including, without limitation, the Specifications.

END OF DOCUMENT

REFERENCES

PART 1 - GENERAL

1.01 SCHEDULE OF REFERENCES:

The following information is intended only for the general assistance of the Contractor, and the County of Imperial does not represent that all of the information is current. It is the Contractor's responsibility to verify the correct information for each of the entities listed.

AA	The Aluminum Association 1400 Crystal Drive, Suite 430 Arlington, VA 22202 www.aluminum.org	703/358-2960
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AABC	Associated Air Balance Council 2401 Pennsylvania Avenue NW, Suite 330 Washington, DC 20037 www.aabc.com	202/737-0202
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AASHTO	American Association of State Highway and Transportation Officials 555 12th St. NW - Suite 1000 Washington, DC 20004 www.transportation.org	202/624-5800
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AATCC	American Association of Textile Chemists and Colorists P.O. Box 12215 One Davis Drive Research Triangle Park, NC 27709 2215 www.aatcc.org	919/549-8141
ACA	American Coatings Association 901 New York Ave., NW, Suite 300 West Washington DC, 20001 www.paint.org	202/462-6272

ACI	American Concrete Institute 38800 Country Club Dr. Farmington Hills, MI 48331-3439 www.concrete.org	248/848-3800
ACPA	American Concrete Pipe Association 5605 N. MacArthur Blvd., Suite 340 Irving, TX 75038 www.concrete-pipe.org	972/506-7216
ADC	Air Duct Council 1901 N. Roselle Road, Suite 800 Schaumburg, Illinois 60195 www.flexibleduct.org	847/706-6750
AF&PA	American Forest and Paper Association 1101 K Street, NW, Suite 700 Washington, DC 20005 www.afandpa.org	202/463-2700
AGA	American Gas Association 400 North Capitol Street, NW, Suite 450 Washington, DC 20001 www.aga.org	202/824-7000
AGC	Associate General Contractors of America 2300 Wilson Blvd., Suite 300 Arlington, VA 22201 www.agc.org	703/548-3118
AHA	American Hardboard Association 1210 West Northwest Highway Palatine, IL 60067 domensino.com/AHA/default.htm	847/934-880
AI	Asphalt Institute 2696 Research Park Drive Lexington, KY 40511-8480 www.asphaltinstitute.org	859/288-4960
AIA	The American Institute of Architects 1735 New York Ave., NW Washington, DC 20006-5292 www.aia.org	202/626-7300
AISC	American Institute of Steel Construction 130 East Randolph Street Suite 2000 Chicago, IL 60601 www.aisc.org	312.670.2400

AIA	American Insurance Association (formerly the National Board of Fire Underwriters) 555 12th St, NW, Suite 550 Washington DC 20004 www.aiadc.org	800/242-3837
AISI	American Iron and Steel Institute 25 Massachusetts Ave., NW, Suite 800 Washington, DC 20001 www.steel.org	202/452.7100
AITC	American Institute of Timber Construction 1010 South 336th Street, #210 Federal Way, WA 98003-7394 www.aitc-glulam.org	253/835.3344
ALI	Associated Laboratories, Inc. P.O. Box 152837 Dallas, TX 75315 www.assoc-labs.com	214/565-0593
ALSC	American Lumber Standards Committee, Inc. 7470 New Technology Way, Suite F Frederick, MD 21703 www.alsc.org	301/972-1700
AMCA	Air Movement and Control Association International, Inc. 30 W. University Drive Arlington Heights, IL 60004 www.amca.org	847/394-0150
ANLA	American Nursery & Landscape Association (now AmericanHort) 2130 Stella Court Columbus, OH 43215 www.americanhort.org	202/789-2900
ANSI	American National Standards Institute 1899 L Street, NW, 11th Floor Washington, DC, 20036 www.ansi.org	202/293.8020
APA	APA-The Engineered Wood Association 7011 S. 19th Street Tacoma, WA 98466-5333 www.apawood.org	253/565-6600

APA	Architectural Precast Association 325 John Know Rd, Ste L103 Tallahassee, FL 32303 www.archprecast.org	850/205.5637
ARI	Air Conditioning and Refrigeration Institute (now Air-Conditioning, Heating, & Refrigeration Institute) 2311 Wilson Blvd, Suite 400 Arlington, VA 22201 www.ahrinet.org	703/524-8800
ARMA	Asphalt Roofing Manufacturers Association Public Information Department 529 14th Street, NW Suite 1280 Washington, DC 20045 www.asphaltroofing.org	202/591-2490
ASA	The Acoustical Society of America Suite 300 1305 Walt Whitman Road Melville, NY 11747-4300 https://acousticalsociety.org/	516/576-2360
ASCE	American Society of Civil Engineers 1801 Alexander Bell Drive Reston, VA 20191 www.asce.org	800/548-2723 703/295-6300
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers 180 Technology Parkway Peachtree Corners, GA 30092 www.ashrae.org	800/527-4723 404/636-8400
ASLA	American Society of Landscape Architects 636 Eye Street, NW Washington, DC 20001-3736 www.asla.org	202/898-2444
ASME	American Society of Mechanical Engineers Two Park Avenue New York, NY 10016-5990 www.asme.org	800/834-2763
ASPE	American Society of Plumbing Engineers 6400 Shafer Court, Suite 350 Rosemont, IL 60018 http://aspe.org	847/296-0002

ASQ	American Society for Quality P.O. Box 3005 Milwaukee, WI 53201-3005 or 600 North Plankinton Avenue Milwaukee, WI 53203 http://asq.org	800/248-1946 414/272-8575
ASSE	American Society of Sanitary Engineering 18927 Hickory Creek Dr., Suite 220 Mokena, IL 60448 www.asse-plumbing.org	708/995-3019
ASTM	ASTM International 100 Barr Harbor Drive PO Box C700 West Conshohocken, PA, 19428-2959 www.astm.org	610/832-9500
AWCI	Association of the Wall and Ceiling Industry 513 West Broad Street, Suite 210 Falls Church, VA 22046 www.awci.org	703/538-1600
AWPA	American Wood Protection Association P.O. Box 361784 Birmingham, AL 35236-1784 www.awpa.com	205/733-4077
AWPI	American Wood Preservers Institute 2750 Prosperity Ave. Suite 550 Fairfax, VA 22031-4312 www.arcat.com	800/356-AWPI 703/204-0500
AWS	American Welding Society 8669 NW 36 Street, Suite 130 Miami, Florida 33166 www.aws.org	800/443-9353 305/443-9353
AWI	Architectural Woodwork Institute 46179 Westlake Drive, Suite 120 Potomac Falls, VA 20165-5874 www.awinet.org	571/323-3636
AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235 www.awwa.org	800/926-7337 303/794 7711

BHMA	Builders Hardware Manufacturers Association 355 Lexington Avenue, 15th floor New York, NY 10017 www.buildershardware.com	212/297-2122
BIA	The Brick Industry Association 12007 Sunrise Valley Drive, Suite 430 Reston, VA 20191 www.gobrick.com	703/620-0010
CGA	Compressed Gas Association 8484 Westpark Drive, Suite 220 McLean VA 22102 www.cganet.com	703/788-2700
CISCA	Ceilings & Interior Systems Construction Association 1010 Jorie Blvd, Suite 30 Oak Brook, IL 60523 www.cisca.org	630/584-1919
CISPI	Cast Iron Soil Pipe Institute 2401 Fieldcrest Dr. Mundelein, IL 60060 www.cispi.org	224/864-2910
CLFMI	Chain Link Fence Manufacturers Institute 10015 Old Columbia Road, Suite B-215 Columbia, MD 21046 chainlinkinfo.org	301/596-2583
CPA	Composite Panel Association 19465 Deerfield Avenue, Suite 306 Leesburg, VA 20176 www.compositepanel.org	703/724-1128
CPSC	Consumer Product Safety Commission 4330 East West Highway Bethesda, MD 20814 www.cpsc.gov	800/638-2772
CRA	California Redwood Association 818 Grayson Road, Suite 201 Pleasant Hill, CA 94523 www.calredwood.org	925/935-1499

CRI	Carpet and Rug Institute 100 S. Hamilton Street Dalton, Georgia 30722-2048 www.carpet-rug.org	706/278-3176
CRSI	Concrete Reinforcing Steel Institute 933 N. Plum Grove Road Schaumburg, IL 60173 4758 www.crsi.org	847/517-1200
CSI	The Construction Specifications Institute 123 North Pitt St, Ste 450 Alexandria VA 22314 www.csinet.org	800/689-2900
CTIOA	Ceramic Tile Institute of America 12061 Jefferson Blvd. Culver City, CA 90230-6219 www.ctioa.org	310/574-7800
DHA	Decorative Hardwoods Association (formerly Hardwood Plywood & Veneer Association) 42777 Trade West Dr. Sterling, VA 20166 https://www.decorativehardwoods.org/	703/435-2900
DHI	Door and Hardware Institute (formerly National Builders Hardware Association) 2001 K Street NW, 3rd Floor North Washington, DC 20006 www.dhi.org	202/367-1134
DIPRA	Ductile Iron Pipe Research Association P.O. Box 190306 Birmingham, AL 35219 www.dipra.org	205/402-8700
DOC	U.S. Department of Commerce 1401 Constitution Ave., NW Washington, D.C. 20230 www.commerce.gov	202/482-2000
DOT	U.S. Department of Transportation 1200 New Jersey Avenue, SE Washington, DC 20590 www.dot.gov	855/368-4200
EJMA	Expansion Joint Manufacturers Association, Inc. 25 North Broadway Tarrytown, NY 10591 www.ejma.org	914/332-0040

EPA	Environmental Protection Agency Ariel Rios Building 1200 Pennsylvania Avenue, N.W. Washington, DC 20460 www.epa.gov	202/272-0167
FCICA	Floor Covering Installation Contractors Association 800 Roosevelt Rd., Bldg. C, Suite 312 Glen Ellyn, IL 60137 www.fcica.com	630/672-3702
FGIA	Fenestration and Glazing Industry Alliance 1900 E Golf Rd, Suite 1250 Schaumburg, IL 60173 www.aamanet.org	847/303-5664
FM Global	Factory Mutual Insurance Company Amy Daley Global Practice Leader – Education, Public Entities, Health Care FM Global 270 Central Avenue Johnston, RI 02919-4949 www.fmglobal.com	401/275-3000 401/275-3029
FS	General Services Administration (GSA) Index of Federal Specifications, Standards and Commercial Item Descriptions 470 East L'Enfant Plaza, SW, Suite 8100 Washington, DC 20407 www.gsa.gov	202/619-8925
GA	The Gypsum Association 962 Wayne Ave., Suite 620 Silver Spring, MD 20910 www.gypsum.org	301/277-8686
GANA	Glass Association of North America 1945 Old Gallows Road Suite 750 Vienna, VA 22182 www.glasswebsite.com	866/342-5642 Ext 127
HMA	Hardwood Manufacturers Association 665 Rodi Road, Suite 305 Pittsburgh, PA 15235 http://hmamembers.org	412/244-0440

IAPMO	International Association of Plumbing and Mechanical Officials (formerly the Western Plumbing Officials Association) 4755 E. Philadelphia St. Ontario, CA 91761 www.iapmo.org	909/472-4100
ICC	International Code Council 500 New Jersey Avenue, NW, 6th Floor Washington, DC 20001 www.iccsafe.org	888/422-7233
IEEE	Institute of Electrical and Electronics Engineers 3 Park Avenue, 17th Floor New York, NY 10016-5997 www.ieee.org	212/419-7900
IES	Illuminating Engineering Society 120 Wall Street, Floor 17 New York, NY 10005-4001 www.ies.org	212/248-5000
ITRK	Intertek Testing Services 3933 US Route 11 Cortland, NY 13045 www.intertek.com	607/753-6711
MCAA	Mechanical Contractors Association of America 1385 Piccard Drive Rockville, MD 20850 www.mcaa.org	301/869-5800
MMPA (formerly WMMPA)	Moulding & Millwork Producers Association (formerly Wood Moulding & Millwork Producers Association) 507 First Street Woodland, CA 95695 www.wmmpa.com	530/661-9591 800/550-7889
MSS	Manufacturers Standardization Society (MSS) of the Valve and Fittings Industry 127 Park Street, NE Vienna, VA 22180-4602 http://mss-hq.org	703/281-6613
NAAMM	National Association of Architectural Metal Manufacturers 800 Roosevelt Rd. Bldg. C, Suite 312 Glen Ellyn, IL 60137 www.naamm.org	630/942-6591

NAIMA	North American Insulation Manufacturers Association 11 Canal Center Plaza, Suite 103 Alexandria, VA 22314 www.naima.org	703/684-0084
NALP	National Association of Landscape Professionals (formerly Professional Landcare Network) 12500 Fair Lakes Circle, Suite 200 Fairfax, VA 22033 https://www.landscapeprofessionals.org/	703/736-9666
NAPA	National Asphalt Pavement Association 6406 Ivy Lane, Suite 350 Greenbelt, MD USA 20770-1441 www.asphaltpavement.org	888/468-6499 301/731-4748
NCSPA	National Corrugated Steel Pipe Association 14070 Proton Road, Suite 100 LB9 Dallas, TX 75244 www.ncspa.org	972/850-1907
NCMA	National Concrete Masonry Association 13750 Sunrise Valley Drive Herndon, VA 20171-4662 www.ncma.org	703/713-1900
NEBB	National Environmental Balancing Bureau 8575 Grovemont Circle Gaithersburg, MD 20877 www.nebb.org	301/977-3698
NECA	National Electrical Contractors Association 1201 Pennsylvania Ave. NW Washington, D.C., 20004 www.necanet.org	202/991-6300
NEMA	National Electrical Manufacturers Association 1300 North 17th Street, Suite 1752 Rosslyn, Virginia 22209 www.nema.org	703/841-3200

NEII	National Elevator Industry, Inc. 5537 SW Urish Road Topeka, KS 66610 https://nationalelevatorindustry.org/	703/589-9985
NFPA	National Fire Protection Association 1 Batterymarch Park Quincy, Massachusetts USA 02169-7471 www.nfpa.org	617/770-3000
NHLA	National Hardwood Lumber Association PO Box 34518 Memphis, TN 38184 www.nhla.com	901/377-1818
NIA	National Insulation Association 516 Herndon Pkwy., Ste. D Herndon, VA 20170 www.insulation.org	703/464-6422
NRCA	National Roofing Contractors Association 10255 W. Higgins Road, Suite 600 Rosemont, IL 60018-5607 www.nrca.net	847/299-9070
NSF	NSF International 789 N. Dixboro Road Ann Arbor, MI 48113-0140, USA www.nsf.org	800/673-6275 734/769-8010
NSI	Natural Stone Institute (formerly Marble Institute of America) 380 E. Lorain St. Oberlin, OH 44074 https://www.naturalstoneinstitute.org/	440/250-9222
NTMA	National Terrazzo and Mosaic Association PO Box 2605 Fredericksburg, TX 78624 www.ntma.com	800/323-9736
OSHA	Occupational Safety and Health Act U.S. Department of Labor Occupational Safety & Health Administration 200 Constitution Ave., NW Washington, D.C. 20210 www.osha.gov	800/321-OSHA (6742)

PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 60077 or 200 Massachusetts Ave NW, Suite 200 Washington, D.C. 20001 www.cement.org	847/966-6200 202/408-9494
PCA	Painting Contractors Association (formerly Painting and Decorating Contractors of America) 2316 Millpark Drive Maryland Heights, MO https://www.pcapainted.org/	800/322-7322
PCI	Precast/Prestressed Concrete Institute 8770 W. Bryn Mawr Ave., Suite 1150 Chicago, IL 60631 www.pci.org	312/786-0300
PDI	Plumbing & Drainage Institute 800 Turnpike Street, Suite 300 North Andover, MA 01845 http://pdionline.org	978/557-0720 800/589-8956
PEI	Porcelain Enamel Institute, Inc. P.O. Box 920220 Norcross, GA 30010 www.porcelainenamel.com	770/676-9366
PG&E	Pacific Gas & Electric Company www.pge.com	800/743-5000
PLIB	Pacific Lumber Inspection Bureau (formerly West Coast Lumber Inspection Bureau) 1010 South 336th Street #210 Federal Way, WA 98003-7394 https://www.plib.org/	253/835-3344
RFCI	Resilient Floor Covering Institute 115 Broad Street, Suite 201 La Grange GA 30240 www.rfci.com	706/882-3833
SDI	Steel Deck Institute P.O. Box 426 Glenshaw, PA 15116 www.sdi.org	412/487-3325

SDI	Steel Door Institute 30200 Detroit Road Westlake, Ohio 44145 www.steeldoor.org	440/899-0010
SJI	Steel Joist Institute 140 West Evans Street Suite 203 Florence, SC 29501 http://steeljoist.org	843/407-4091
SMA	Stucco Manufacturers Association 5753 E Santa Ana Cyn Rd, #G-156 Anaheim, CA 92807 www.stuccomfgassoc.com	714/473-9579
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association 4201 Lafayette Center Drive Chantilly, Virginia 20151-1219 www.smacna.org	703/803-2980
SPI	SPI: The Plastics Industry Trade Association, Inc. 1425 K St. NW, Suite 500 Washington, DC 20005 www.plasticsindustry.org	202/974-5200
SSPC	Society for Protective Coatings (formerly the Steel Structures Painting Council) 800 Trumbull Drive Pittsburgh, PA 15205 www.sspc.org	412/281-2331 877/281-7772
TCA	The Tile Council of North America 100 Clemson Research Blvd. Anderson, SC 29625 www.tcnatile.com	864/646-8453
TPI	Truss Plate Institute 2670 Crain Highway, Ste. 203 Waldorf, MD 20601 www.tpinst.org	240/587-5582
TPI	Turfgrass Producers International 444 E. Roosevelt Road #346 Lombard, IL 60148 www.turfgrasssod.org	800/405-8873 847/649-5555

TCIA	Tree Care Industry Association (formerly the National Arborist Association) 670 N Commercial Street Suite #201 Manchester, NH 03101 www.tcia.org	800/733-2622
TVI	The Vermiculite Institute c/o The Schundler Company 10 Central Street Nahant, MA 01908 www.vermiculiteinstitute.org	732/287-2244
UL	Underwriters Laboratories Inc. 333 Pfingsten Road Northbrook, IL 60062-2096 www.ul.com	847/272-8800 877/854-3577
UNI	Uni-Bell PVC Pipe Association 201 E. John Carpenter Freeway, Suite 750 Irving, TX 75062 www.uni-bell.org	972/243-3902
USDA	U.S. Department of Agriculture 1400 Independence Ave., S.W. Washington, DC 20250 www.usda.gov	202/720-2791
WA	Wallcoverings Association 35 E Wacker Dr Suite 850 Chicago, IL 60601 www.wallcoverings.org	312/224-2574
WCMA	Window Covering Manufacturers Association 355 Lexington Avenue 15th Floor New York, New York 10017 www.wcmanet.org	212/297-2122
WDMA	Window & Door Manufacturers Association 330 N Wabash Avenue, Suite 2000 Chicago, IL 60611 or 2001 K Street NW, 3rd Floor North Washington, D.C. 20006 www.wdma.com	312/321-6802 202/367-1157
WI	Woodwork Institute 1455 Response Road, Suite 110 Sacramento, CA 95815 www.wicnet.org	916/372-9943

WRI	Wire Reinforcement Institute 942 Main Street Hartford, CT 06103 www.wirereinforcementinstitute.org	860/240-9545
WWCA	Western Wall & Ceiling Contractors Association 1910 N. Lime St. Orange, California 92865 www.wwcca.org	714/221-5520
WWPA	Western Wood Products Association (formerly Redwood Inspection Service) 1500 SW First Ave., STE 870 Portland, OR 97201www.wwpa.org	503/224-3930

PART 2 - PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

QUALITY CONTROL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Inspector, Inspections and Tests, Uncovering of Work and Non-conforming of Work and Correction of Work;
- B. Special Conditions.

1.02 RELATED CODES:

- A. The Work is governed by requirements of Title 24, California Code of Regulations (“CCR”), and the Contractor shall keep a copy of these available at the job Site for ready reference during construction.
- B. The Division of the State Architect (“DSA”) shall be notified at or before the start of construction.

1.03 OBSERVATION AND SUPERVISION:

- A. The County of Imperial and Architect or their appointed representatives will review the Work and the Contractor shall provide facilities and access to the Work at all times as required to facilitate this review. Administration by the Architect and any consulting Structural Engineer will be in accordance with applicable regulations, including, without limitation, CCR, Part 1, Title 24, Section 4-341.
- B. One or more Project Inspector(s) approved by DSA and employed by or in contract with the County of Imperial, referred to hereinafter as the “Project Inspector”, will observe the work in accordance with CCR, Part 1, Title 24, Sections 4-333(b) and 4-342:
 - (1) The Project Inspector and Special Inspector(s) shall have access to the Work wherever it is in preparation or progress for ascertaining that the Work is in accordance with the Contract Documents and all applicable code sections. The Contractor shall provide facilities and operation of equipment as needed, and access as required and shall provide assistance for sampling or measuring materials.
 - (2) The Project Inspector will notify the County of Imperial and Architect and call the attention of the Contractor to any observed failure of Work or material to conform to Contract Documents.
 - (3) The Project Inspector shall observe and monitor all testing and inspection activities required.

The Contractor shall conform with all applicable laws as indicated in the Contract Documents, including, without limitation, to CCR, Part 1, Title 24, Section 4-343. The Contractor shall supervise and direct the Work and maintain a competent superintendent on the job who is authorized to act in all matters pertaining to the Work. The Contractor's superintendent shall also inspect all materials, as they arrive, for compliance with the Contract Documents. Contractor shall reject defective Work or materials immediately upon delivery or failure of the Work or material to comply with the Contract Documents. The Contractor shall submit verified reports as indicated in the Contract Documents, including, without limitation, the Specifications and as required by Part 1, Title 24, Section 4-336.

1.04 TESTING AGENCIES:

- A. Testing agencies and tests shall be in conformance with the General Documents and the requirements of Part 1, Title 24, Section 4- 335.
- B. Testing and inspection in connection with earthwork shall be under the direction of the County of Imperial's consulting soils engineer, if any, referred to hereinafter as the "Soils Engineer."
- C. Testing and inspection of construction materials and workmanship shall be performed by a qualified laboratory, referred to hereinafter as the "Testing Laboratory." The Testing Laboratory shall be under direction of an engineer registered in the State of California, shall conform to requirements of ASTM E329, and shall be employed by or in contract with the County of Imperial.

1.05 TESTS AND INSPECTIONS:

- A. The Contractor shall be responsible for notifying the County of Imperial and Project Inspector of all required tests and inspections. Contractor shall notify the County of Imperial and Project Inspector at least seventy-two hours (72) hours in advance of performing any Work requiring testing or inspection.
- B. The Contractor shall provide access to Work to be tested and furnish incidental labor, equipment, and facilities to facilitate all inspections and tests.
- C. The County of Imperial will pay for first inspections and tests required by the "CCR", and other inspections or tests that the County of Imperial and/or the Architect may direct to have made, including the following principal items:
 - (1) Tests and observations for earthwork and paving.
 - (2) Tests for concrete mix designs, including tests of trial batches.
 - (3) Tests and inspections for structural steel work.
 - (4) Field tests for framing lumber moisture content.
 - (5) Additional tests directed by the County of Imperial that establish that materials and installation comply with the Contract Documents.
 - (6) Tests and observations of welding and expansion anchors.

- D. The County of Imperial may at its discretion, pay and then back charge the Contractor for:
- (1) Retests or reinspections, if required, and tests or inspections required due to Contractor error or lack of required identifications of material.
 - (2) Uncovering of work in accordance with Contract Documents.
 - (3) Testing done on weekends, holidays, and overtime will be chargeable to the Contractor for the overtime portion.
 - (4) Testing done off Site.
- E. Testing and inspection reports and certifications:
- (1) If initially received by Contractor, Contractor shall provide to each of the following a copy of the agency or laboratory report of each test or inspection or certification.
 - (a) The County of Imperial;
 - (b) The Construction Manager, if any;
 - (c) The Architect;
 - (d) The Consulting Engineer, if any;
 - (e) Other engineers on the Project, as appropriate;
 - (f) The Project Inspector; and
 - (g) The Contractor.
 - (2) When the test or inspection is one required by the CCR, a copy of the report shall also be provided to the DSA.

PART 2 - PRODUCTS

2.01 TYPE OF TESTS AND INSPECTIONS

- A. Testing and inspection shall be in accordance with DSA Form 103 (or current version)

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

TEMPORARY FACILITIES AND CONTROLS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions;
- B. Special Conditions;
- C. Site Standards; and
- D. Construction Waste Management and Disposal.

1.02 TEMPORARY UTILITIES:

- A. Electric Power and Lighting:
 - (1) Contractor will pay for power during the course of the Work. To the extent power is available in the building(s) or on the Site, Contractor may use the County of Imperial's existing utilities by making prearranged payments to the County of Imperial for the utilities used by Contractor and all Subcontractors. Contractor shall be responsible for providing temporary facilities required to deliver that power service from its existing location in the building(s) or on the Site to point of intended use.
 - (2) Contractor shall verify characteristics of power available in building(s) or on the Site. Contractor shall take all actions required to make modifications where power of higher voltage or different phases of current are required. Contractor shall be fully responsible for providing that service and shall pay all costs required therefor.
 - (3) Contractor shall furnish, wire for, install, and maintain temporary electrical lights wherever it is necessary to provide illumination for the proper performance and/or observation of the Work: a minimum of 20 foot-candles for rough work and 50 foot-candles for finish work.
 - (4) Contractor shall be responsible for maintaining existing lighting levels in the project vicinity should temporary outages or service interruptions occur.
- B. Heat and Ventilation:
 - (1) Contractor shall provide temporary heat to maintain environmental conditions to facilitate progress of the Work, to meet specified minimum conditions for the installation and curing of materials, and to protect materials and finishes from damage due to improper temperature and humidity conditions. Portable heaters shall be standard units complete with controls.

- (2) Contractor shall provide forced ventilation and dehumidification, as required, of enclosed areas for proper installation and curing of materials, to disperse humidity, and to prevent hazardous accumulations of dust, fumes, vapors, and gases.
- (3) Contractor shall pay the costs of installation, maintenance, operation, and removal of temporary heat and ventilation, including costs for fuel consumed, required for the performance of the Work.

C. Water:

- (1) Contractor shall pay for water used during the course of the Work. Contractor shall coordinate and pay for installation or use of water meter in compliance with local water agency requirements. To the extent water is then available in the building(s) or on the Site, Contractor may use the County of Imperial's existing utilities by making prearranged payments to the County of Imperial for the utilities used by Contractor and all Subcontractors. Contractor shall be responsible for providing temporary facilities required to deliver such utility service from its existing location in the building(s), on the Site, or other location approved by the local water agency, to point of intended use.
- (2) Contractor shall use backflow preventers on water lines at point of connection to County of Imperial's water supply. Backflow preventers shall comply with requirements of Uniform Plumbing Code.
- (3) Contractor shall make potable water available for human consumption.

D. Sanitary Facilities:

- (1) Contractor shall provide sanitary temporary facilities in no fewer numbers than required by law and such additional facilities as may be directed by the Inspector for the use of all workers. The facilities shall be maintained in a sanitary condition at all times and shall be left at the Site until removal is directed by the Inspector or Contractor completes all other work at the Site.
- (2) Use of toilet facilities in the Work under construction shall not be permitted except by consent of the Inspector and the County of Imperial.

E. Telephone Service:

- (1) Contractor shall arrange with local telephone service company for telephone service as required for the performance of the Work. Contractor shall, at a minimum, provide in its field office one line for telephone and one line for fax machine.
- (2) Contractor shall pay the costs for telephone and fax lines installation, maintenance, service, and removal.

F. Fire Protection:

- (1) Contractor shall provide and maintain fire extinguishers and other equipment for fire protection. Such equipment shall be designated for use for fire protection only and shall comply with all requirements of the California Fire, State Fire Marshall and/or its designee.
- (2) Where on-site welding and burning of steel is unavoidable, Contractor shall provide protection for adjacent surfaces.

G. Trash Removal:

- (1) Contractor shall provide trash removal on a timely basis. Under no circumstance shall Contractor use County of Imperial trash service.

H. Field Office:

- (1) If Contractor chooses to provide a field office, it shall be an acceptable construction trailer that is well-lit and ventilated. The construction trailer shall be equipped with shelves, desks, filing cabinet, chairs, and such other items of equipment needed. Trailer and equipment are the property of the Contractor and must be removed from the Site upon completion of the Work. Contractor may use the corridor adjacent to the construction area for an office area, if approved in writing by County of Imperial.
- (2) Contractor shall provide any additional electric lighting and power required for the trailer. Contractor shall make adequate provisions for heating and cooling as required.

I. Temporary Facilities:

- (1)

1.03 CONSTRUCTION AIDS:

A. Plant and Equipment:

- (1) Contractor shall furnish, operate, and maintain a complete plant for fabricating, handling, conveying, installing, and erecting materials and equipment; and for conveyances for transporting workers. Include elevators, hoists, debris chutes, and other equipment, tools, and appliances necessary for performance of the Work.
- (2) Contractor shall maintain plant and equipment in safe and efficient operating condition. Damages due to defective plant and equipment, and uses made thereof, shall be repaired by Contractor at no expense to the County of Imperial.

B. None of the County of Imperial's tools and equipment shall be used by Contractor for the performance of the Work.

1.04 BARRIERS AND ENCLOSURES:

A. Contractor shall obtain the County of Imperial's written permission for locations and types of temporary barriers and enclosures, including fire-rated materials proposed for use, prior to their installation.

- B. Contractor shall provide and maintain temporary enclosures to prevent public entry and to protect persons using other buildings and portions of the Site and/or Premises, the public, and workers. Contractor shall also protect the Work and existing facilities from the elements, and adjacent construction and improvements, persons, and trees and plants from damage and injury from demolition and construction operations.
- C. Contractor shall provide site access to existing facilities for persons using other buildings and portions of the Site, the public, and for deliveries and other services and activities.
- D. Tree and Plant Protection:
- (1) Contractor shall preserve and protect existing trees and plants on the Premises that are not designated or required to be removed, and those adjacent to the Premises.
 - (2) Contractor shall provide barriers to a minimum height of 4'-0" around drip line of each tree and plant, around each group of trees and plants, as applicable, in the proximity of demolition and construction operations, or as denoted on the Plans.
 - (3) Contractor shall not park trucks, store materials, perform Work or cross over landscaped areas. Contractor shall not dispose of paint thinners, water from cleaning, plastering or concrete operations, or other deleterious materials in landscaped areas, storm drain systems, or sewers. Plant materials damaged as a result of the performance of the Work shall, at the option of the County of Imperial and at Contractor's expense, either be replaced with new plant materials equal in size to those damaged or by payment of an amount representing the value of the damaged materials as determined by the County of Imperial.
 - (4) Contractor shall remove soil that has been contaminated during the performance of the Work by oil, solvents, and other materials which could be harmful to trees and plants, and replace with good soil, at Contractor's expense.
 - (5) Excavation around Trees:
 - (a) Excavation within drip lines of trees shall be done only where absolutely necessary and with written permission from the County of Imperial.
 - (b) Where trenching for utilities is required within drip lines, tunneling under and around roots shall be by hand digging and shall be approved by the County of Imperial. Main lateral roots and taproots shall not be cut. All roots 2 inches in diameter and larger shall be tunneled under and heavily wrapped with wet burlap so as to prevent scarring or excessive drying. Smaller roots that interfere with installation of new work may be cut with prior approval by the County of Imperial. Roots must first be cut with a Vermeer, or equivalent, root cutter prior to any trenching.
 - (c) Where excavation for new construction is required within drip line of trees, hand excavation shall be employed to minimize damage to root system. Roots shall be relocated in backfill areas wherever possible. If encountered immediately adjacent to location of new construction, roots shall be cut approximately 6 inches back from new construction.
 - (d) Approved excavations shall be carefully backfilled with the excavated materials approved for backfilling. Backfill shall conform to adjacent grades without

dips, sunken areas, humps, or other surface irregularities. Do not use mechanical equipment to compact backfill. Tamp carefully using hand tools, refilling and tamping until Final Acceptance as necessary to offset settlement.

- (e) Exposed roots shall not be allowed to dry out before permanent backfill is placed. Temporary earth cover shall be provided, or roots shall be wrapped with four layers of wet, untreated burlap and temporarily supported and protected from damage until permanently relocated and covered with backfill.
- (f) Accidentally broken roots should be sawed cleanly 3 inches behind ragged end.

1.05 SECURITY:

The Contractor shall be responsible for project security for materials, tools, equipment, supplies, and completed and partially completed Work.

1.06 TEMPORARY CONTROLS:

A. Noise Control:

- (1) Contractor acknowledges that adjacent facilities may remain in operation during all or a portion of the Work period, and it shall take all reasonable precautions to minimize noise as required by applicable laws and the Contract Documents.
- (2) Notice of proposed noisy operations, including without limitation, operation of pneumatic demolition tools, concrete saws, and other equipment, shall be submitted to the County of Imperial a minimum of forty-eight (48) hours in advance of their performance.

B. Noise and Vibration:

- (1) Equipment and impact tools shall have intake and exhaust mufflers.
- (2) Contractor shall cooperate with County of Imperial to minimize and/or cease the use of noisy and vibratory equipment if that equipment becomes objectionable by its longevity.

C. Dust and Dirt:

- (1) Contractor shall conduct demolition and construction operations to minimize the generation of dust and dirt, and prevent dust and dirt from interfering with the progress of the Work and from accumulating in the Work and adjacent areas including, without limitation, occupied facilities.
- (2) Contractor shall periodically water exterior demolition and construction areas to minimize the generation of dust and dirt.
- (3) Contractor shall ensure that all hauling equipment and trucks carrying loads of soil and debris shall have their loads sprayed with water or covered with tarpaulins, and as otherwise required by local and state ordinance.
- (4) Contractor shall prevent dust and dirt from accumulating on walks, roadways, parking areas, and planting, and from washing into sewer and storm drain lines.

D. Water:

- (1) Contractor shall not permit surface and subsurface water, and other liquids, to accumulate in or about the vicinity of the Premises. Should accumulation develop, Contractor shall control the water or other liquid, and suitably dispose of it by means of temporary pumps, piping, drainage lines, troughs, ditches, dams, or other methods.

E. Pollution:

- (1) No burning of refuse, debris, or other materials shall be permitted on or in the vicinity of the Premises.
- (2) Contractor shall comply with applicable regulatory requirements and anti-pollution ordinances during the conduct of the Work including, without limitation, demolition, construction, and disposal operations.

F. Lighting:

- (1) If portable lights are used after dark, all light must be located so as not to direct light into neighboring property.

1.07 JOB SIGN(S):

A. General:

- (1) Contractor shall provide and maintain a Project identification sign with the design, text, and colors designated by the County of Imperial and/or the Design Professional; locate sign as approved by the County of Imperial.
- (2) Signs other than the specified Project sign and or signs required by law, for safety, or for egress, shall not be permitted, unless otherwise approved in advance by the County of Imperial.

B. Materials:

- (1) Structure and Framing: Structurally sound, new or used wood or metal; wood shall be nominal 3/4-inch exterior grade plywood.
- (2) Sign Surface: Minimum 3/4-inch exterior grade plywood.
- (3) Rough Hardware: Galvanized.
- (4) Paint: Exterior quality, of type and colors selected by the County of Imperial and/or the Design Professional.

C. Fabrication:

- (1) Contractor shall fabricate to provide smooth, even surface for painting.
- (2) Size: 4'-0" x 8'-0", unless otherwise indicated.
- (3) Contractor shall paint exposed surfaces of supports, framing, and surface material with exterior grade paint: one coat of primer and one coat of finish paint.
- (4) Text and Graphics: As indicated.

1.08 PUBLICITY RELEASES:

- A. Contractor shall not release any information, story, photograph, plan, or drawing relating information about the Project to anyone, including press and other public communications medium, including, without limitation, on website(s) without the written permission of the County of Imperial.

PART 2 – PRODUCTS Not used.

PART 3 – EXECUTION Not used.

END OF DOCUMENT

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions;
- B. Special Conditions; and
- C. Temporary Facilities and Controls.

1.02 SECTION INCLUDES:

- A. Administrative and procedural requirements for the following:
 - (1) Salvaging non-hazardous construction waste.
 - (2) Recycling non-hazardous construction waste.
 - (3) Disposing of non-hazardous construction waste.

1.03 DEFINITIONS:

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.04 PERFORMANCE REQUIREMENTS:

- A. General: Develop waste management plan that results in end-of Project rates for salvage/recycling of sixty-five percent (65%) by weight (or by volume, but not a combination) of total waste generated by the Work.

1.05 SUBMITTALS:

- A. Waste Management Plan: Submit waste management plan within 30 days of date established for commencement of the Work.
- B. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit copies of report. Include the following information:
 - (1) Material category.
 - (2) Generation point of waste.
 - (3) Total quantity of waste in tons or cubic yards.
 - (4) Quantity of waste salvaged, both estimated and actual in tons or cubic yards.
 - (5) Quantity of waste recycled, both estimated and actual in tons or cubic yards.
 - (6) Total quantity of waste recovered (salvaged plus recycled) in tons or cubic yards.
 - (7) Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.
- C. Waste Reduction Calculations: Before request for final payment, submit copies of calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
- D. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.
- E. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.
- F. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- G. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- H. Qualification Data: For Waste Management Coordinator.
- I. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

J. Submittal procedures and quantities are specified in Document 01 33 00.

1.06 QUALITY ASSURANCE:

- A. Waste Management Coordinator Qualifications: LEED Accredited Professional by U.S. Green Building Council.
- B. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Waste Management Conference: Conduct conference at Project site to comply with requirements. Review methods and procedures related to waste management including, but not limited to, the following:
 - (1) Review and discuss waste management plan including responsibilities of Waste Management Coordinator.
 - (2) Review requirements for documenting quantities of each type of waste and its disposition.
 - (3) Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
 - (4) Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
 - (5) Review waste management requirements for each trade.

1.07 WASTE MANAGEMENT PLAN:

- A. General: Develop plan consisting of waste identification, waste reduction work plan, and cost/revenue analysis. Indicate quantities by weight or volume, but use same units of measurement throughout waste management plan.
- B. Waste Identification: Indicate anticipated types and quantities of site-clearing and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.
- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
 - (1) Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
 - (2) Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
 - (3) Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
 - (4) Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.

- (5) Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
- (6) Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.

PART 2 - PRODUCTS Not Used.

PART 3 - EXECUTION

3.01 PLAN IMPLEMENTATION:

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
 - (1) Comply with Document 01 50 00 for operation, termination, and removal requirements.
- B. [Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan. Coordinator shall be present at Project site full time for duration of Project.]
- C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
 - (1) Distribute waste management plan to everyone concerned within 3 days of submittal return.
 - (2) Distribute waste management plan to entities when they first begin work on site. Review plan procedures and locations established for salvage, recycling, and disposal.
- D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - (1) Designate and label specific areas of Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
 - (2) Comply with Document 01 50 00 for controlling dust and dirt, environmental protection, and noise control.

3.02 RECYCLING CONSTRUCTION WASTE:

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to the Contractor.
- C. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.

- (1) Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project Site. Include list of acceptable and unacceptable materials at each container and bin.
 - (a) Inspect containers and bins for contamination and remove contaminated materials if found.
- (2) Stockpile processed materials on site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
- (3) Stockpile materials away from construction area. Do not store within drip line of remaining trees.
- (4) Store components off the ground and protect from the weather.
- (5) Remove recyclable waste off County of Imperial property and transport to recycling receiver or processor.

D. Packaging:

- (1) Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
- (2) Polystyrene Packaging: Separate and bag material.
- (3) Pallets: As much as possible, require deliveries using pallets to remove pallets from Project Site. For pallets that remain on Site, break down pallets into component wood pieces and comply with requirements for recycling wood.
- (4) Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

E. Site-Clearing Wastes: Chip brush, branches, and trees on site.

F. Wood Materials:

- (1) Clean Cut-Offs of Lumber: Grind or chip into small pieces.
- (2) Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

G. Gypsum Board: Stack large clean pieces on wood pallets and store in a dry location.

- (1) Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.

3.03 DISPOSAL OF WASTE:

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project Site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

- (1) Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on site.

- (2) Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials.
- C. Disposal: Transport waste materials off County of Imperial property and legally dispose of them.

END OF DOCUMENT

OWNER-FURNISHED PRODUCTS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions;
- B. Special Conditions; and
- C. Materials and Equipment.

1.02 SECTION INCLUDES

- A. Requirements for the following:
 - (1) Installing Owner-furnished materials and equipment.
 - (2) Providing necessary utilities, connections and rough-ins.

1.03 DEFINITIONS

- A. Owner: County of Imperial, who is providing/furnishing materials and equipment.
- B. Installing Contactor: Contractor, who is installing the materials and equipment furnished by the Owner.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Receive, store and handle products in accordance with the manufacturer's instructions.
- B. Protect equipment items as required to prevent damage during storage and construction.

PART 2 – PRODUCTS

2.01 GENERAL PRODUCT REQUIREMENTS

- A. Installing Contractor's Responsibilities:
 - (1) Verify mounting and utility requirements for Owner-furnished materials and equipment items.
 - (2) Provide mounting and utility rough in for all items where required.
 - (a) Rough in locations, sizes, capacities, and similar type items shall be as indicated and required by product manufacturer.

B. Owner and Installing Contractor(s) Responsibilities:

- (1) Owner-Furnished/Contractor Installed ("OFCI"): Furnished by the Owner; installed by the Installing Contractor.
 - (a) General: Owner and Installing Contractor(s) will coordinate deliveries of materials and equipment to coincide with the construction schedule.
 - (b) Owner will furnish specified materials and equipment delivered to the site. Owner/vendor's representative shall be present on Site at the time of delivery to comply with the contract requirements and Specifications Section 01 43 00, Materials and Equipment, Article 1.04.
 - (c) The Owner furnishing specified materials and equipment is responsible to provide manufacturer guarantees as required by the Contract to the Installing Contractor.
 - (d) The Installing Contractor shall:
 - 1) Review, verify and accept the approved manufacturer's submittal/Shop Drawings for all materials and equipment required to be installed by the Installer Contractor and furnished by the Owner. Any discrepancies, including but not limited to possible space conflicts, should be brought to the attention of the Project Manager and/or Program Manager, if applicable.
 - 2) Coordinate timely delivery. Installing Contractor shall receive materials and equipment at Site when delivered and give written receipt at time of delivery, noting visible defects or omissions; if such declaration is not given, the Installing Contractor shall assume responsibility for such defects and omissions.
 - 3) Store materials and equipment until ready for installation and protect from loss and damage. Installing Contractor is responsible for providing adequate storage space.
 - 4) Coordinate with other bid package contractors and field measurement to ensure complete installation.
 - 5) Uncrate, assemble, and set in place.
 - 6) Provide adequate supports.
 - 7) Install materials and equipment in accordance with manufacturer's recommendations, instructions, and Shop Drawings, supply labor and material required, and make mechanical, plumbing, and electrical connections required to operate equipment.
 - 8) Be certified by equipment manufacturer for installation of the specific equipment supplied by the Owner.
 - 9) Provide anchorage and/or bracing as required for seismic restraint per Title 24, UBC Standard 27-11 and all other applicable codes.

- 10) Provide the contract-required warranty and guarantee for all work, materials and equipment, and installation upon its completion and acceptance by the County of Imperial. Guarantee includes all costs associated with the removal, shipping to and from the Site, and re-installation of any equipment found to be defective.

C. Compatibility with Space and Service Requirements:

- (1) Equipment items shall be compatible with space limitations indicated and as shown on the Contract Documents and specified in other sections of the Specifications.
- (2) Modifications to equipment items required to conform to space limitations specified for rough in shall not cause additional cost to the County of Imperial.

D. Manufacturer's printed descriptions, specifications, and instructions shall govern the Work unless specifically indicated or specified otherwise.

2.02 FURNISHED MATERIALS AND EQUIPMENT

A. All furnished materials and equipment are indicated or scheduled on the Contract Documents.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install equipment items in accordance with the manufacturer's instructions.
- B. Set equipment items securely in place, rigidly or flexibly mounted in accordance with manufacturers' directions.
- C. Make electrical and mechanical connections as indicated and required.
- D. Touch-up and restore damaged or defaced finishes to the Owner's satisfaction.

3.02 CLEANING AND PROTECTION

- A. Repair or replace items not acceptable to the Architect or Owner.
- B. Upon completion of installation, clean equipment items in accordance with manufacturer's recommendations, and protect from damage until final acceptance of the Work by the Owner.

END OF DOCUMENT

PRODUCT DELIVERY, STORAGE AND HANDLING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Site Access, Conditions and Requirements;
- B. Special Conditions.

1.02 PRODUCTS

- A. Products are as defined in the General Conditions.
- B. Contractor shall not use and/or reuse materials and/or equipment removed from existing Premises, except as specifically permitted by the Contract Documents.
- C. Contractor shall provide interchangeable components of the same manufacturer, for similar components.

1.03 TRANSPORTATION AND HANDLING

- A. Contractor shall transport and handle Products in accordance with manufacturer's instructions.
- B. Contractor shall promptly inspect shipments to confirm that Products comply with requirements, quantities are correct, and products are undamaged.
- C. Contractor shall provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

1.04 STORAGE AND PROTECTION

- A. Contractor shall store and protect Products in accordance with manufacturer's instructions, with seals and labels intact and legible. Contractor shall store sensitive products in weather-tight, climate controlled enclosures.
- B. For exterior storage of fabricated Products, Contractor shall place on sloped supports, above ground.
- C. Contractor shall provide off-site storage and protection when Site does not permit on-site storage or protection.
- D. Contractor shall cover products subject to deterioration with impervious sheet covering and provide ventilation to avoid condensation.
- E. Contractor shall store loose granular materials on solid flat surfaces in a well-drained area and prevent mixing with foreign matter.

- F. Contractor shall provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.
- G. Contractor shall arrange storage of Products to permit access for inspection and periodically inspect to assure Products are undamaged and are maintained under specified conditions.

PART 2 – PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

FIELD ENGINEERING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Site Investigation, and Soils Investigation Report;
- B. Special Conditions;
- C. Site-Visit Certification.

1.02 REQUIREMENTS INCLUDED:

- A. Contractor shall provide and pay for field engineering services by a California-registered engineer, required for the project, including, without limitations:
 - (1) Survey work required in execution of the Project.
 - (2) Civil or other professional engineering services specified, or required to execute Contractor's construction methods.

1.03 QUALIFICATIONS OF SURVEYOR OR ENGINEERS:

Contractor shall only use a qualified licensed engineer or registered land surveyor, to whom County of Imperial makes no objection.

1.04 SURVEY REFERENCE POINTS:

- A. Existing basic horizontal and vertical control points for the Project are those designated on the Drawings.
- B. Contractor shall locate and protect control points prior to starting Site Work and preserve all permanent reference points during construction. In addition Contractor shall:
 - (1) Make no changes or relocation without prior written notice to County of Imperial and Architect.
 - (2) Report to County of Imperial and Architect when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
 - (3) Require surveyor to replace Project control points based on original survey control that may be lost or destroyed.

1.05 RECORDS:

Contractor shall maintain a complete, accurate log of all control and survey work as it progresses.

1.06 SUBMITTALS:

- A. Contractor shall submit name and address of Surveyor and Professional Engineer to County of Imperial and Architect prior to its/their work on the Project.
- B. On request of County of Imperial and Architect, Contractor shall submit documentation to verify accuracy of field engineering work, at no additional cost to the County of Imperial.
- C. Contractor shall submit a certificate signed by registered engineer or surveyor certifying that elevations and locations of improvements are in conformance or nonconformance with Contract Documents.

PART 2 – PRODUCTS Not Used.

PART 3 - EXECUTION

3.01 COMPLIANCE WITH LAWS:

Contractor is responsible for meeting all applicable codes, OSHA, safety and shoring requirements.

3.02 NONCONFORMING WORK:

Contractor is responsible for any re-surveying required by correction of nonconforming work.

END OF DOCUMENT

CUTTING AND PATCHING

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Inspector, Inspections, and Tests, Integration of Work, Nonconforming Work, and Correction of Work, and Uncovering Work;
- B. Special Conditions;
- C. Hazardous Materials Procedures and Requirements;
- D. Hazardous Materials Certification;
- E. Lead-Based Paint Certification;
- F. Imported Materials Certification.

1.02 CUTTING AND PATCHING:

- A. Contractor shall be responsible for all cutting, fitting, and patching, including associated excavation and backfill, required to complete the Work or to:
 - (1) Make several parts fit together properly.
 - (2) Uncover portions of Work to provide for installation of ill-timed Work.
 - (3) Remove and replace defective Work.
 - (4) Remove and replace Work not conforming to requirements of Contract Documents.
 - (5) Remove Samples of installed Work as specified for testing.
 - (6) Provide routine penetrations of non-structural surfaces for installation of piping and electrical conduit.
 - (7) Attaching new materials to existing remodeling areas – including painting (or other finishes) to match existing conditions.
- B. In addition to Contract requirements, upon written instructions from the County of Imperial, Contractor shall uncover Work to provide for observations of covered Work in accordance with the Contract Documents; remove samples of installed materials for testing as directed by County of Imperial; and remove Work to provide for alteration of existing Work.

- C. Contractor shall not cut or alter Work, or any part of it, in such a way that endangers or compromises the integrity of the Work, the Project, or work of others.

1.03 SUBMITTALS:

- A. Prior to any cutting or alterations that may affect the structural safety of Project, or work of others, and well in advance of executing such cutting or alterations, Contractor shall submit written notice to County of Imperial pursuant to the applicable notice provisions of the Contract Documents, requesting consent to proceed with the cutting or alteration, including the following:

- (1) The work of the County of Imperial or other trades.
- (2) Structural value or integrity of any element of Project.
- (3) Integrity or effectiveness of weather-exposed or weather-resistant elements or systems.
- (4) Efficiency, operational life, maintenance or safety of operational elements.
- (5) Visual qualities of sight-exposed elements.

- B. Contractor's Request shall also include:

- (1) Identification of Project.
- (2) Description of affected Work.
- (3) Necessity for cutting, alteration, or excavations.
- (4) Effects of Work on County of Imperial, other trades, or structural or weatherproof integrity of Project.
- (5) Description of proposed Work:
 - (a) Scope of cutting, patching, alteration, or excavation.
 - (b) Trades that will execute Work.
 - (c) Products proposed to be used.
 - (d) Extent of refinishing to be done.
- (6) Alternates to cutting and patching.
- (7) Cost proposal, when applicable.
- (8) The scheduled date the Contractor intends to perform the Work and the duration of time to complete the Work.
- (9) Written permission of County of Imperial or other County of Imperial contractor(s) whose work will be affected.

1.04 QUALITY ASSURANCE:

- A. Contractor shall ensure that cutting, fitting, and patching shall achieve security, strength, weather protection, appearance for aesthetic match, efficiency, operational life, maintenance, safety of operational elements, and the continuity of existing fire ratings.
- B. Contractor shall ensure that cutting, fitting, and patching shall successfully duplicate undisturbed adjacent profiles, materials, textures, finishes, colors, and that materials shall match existing construction. Where there is dispute as to whether duplication is successful or has been achieved to a reasonable degree, the County of Imperial's decision shall be final.

1.05 PAYMENT FOR COSTS:

- A. Cost caused by ill-timed or defective Work or Work not conforming to Contract Documents, including costs for additional services of the County of Imperial, its consultants, including but not limited to the Construction Manager, the Architect, the Project Inspector(s), Engineers, and Agents, will be paid by Contractor and/or deducted from the Contract by the County of Imperial.
- B. County of Imperial shall only pay for cost of Work if it is part of the original Contract Price or if a change has been made to the contract in compliance with the provisions of the General Conditions. Cost of Work performed upon instructions from the County of Imperial, other than defective or nonconforming Work, will be paid by County of Imperial on approval of written Change Order. Contractor shall provide written cost proposals prior to proceeding with cutting and patching.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Contractor shall provide for replacement and restoration of Work removed. Contractor shall comply with the Contract Documents and with the Industry Standard(s), for the type of Work, and the Specification requirements for each specific product involved. If not specified, Contractor shall first recommend a product of a manufacturer or appropriate trade association for approval by the County of Imperial.
- B. Materials to be cut and patched include those damaged by the performance of the Work.

PART 3 – EXECUTION

3.01 INSPECTION:

- A. Contractor shall inspect existing conditions of the Site and the Work, including elements subject to movement or damage during cutting and patching, excavating and backfilling. After uncovering Work, Contractor shall inspect conditions affecting installation of new products.
- B. Contractor shall report unsatisfactory or questionable conditions in writing to County of Imperial as indicated in the General Conditions and shall proceed with Work as indicated in the General Conditions by County of Imperial.

3.02 PREPARATION:

- A. Contractor shall provide shoring, bracing and supports as required to maintain structural integrity for all portions of the Project, including all requirements of the Project.

- B. Contractor shall provide devices and methods to protect other portions of Project from damage.
- C. Contractor shall, provide all necessary protection from weather and extremes of temperature and humidity for the Project, including without limitation, any work that may be exposed by cutting and patching Work. Contractor shall keep excavations free from water.

3.03 ERECTION, INSTALLATION AND APPLICATION:

- A. With respect to performance, Contractor shall:
 - (1) Execute fitting and adjustment of products to provide finished installation to comply with and match specified tolerances and finishes.
 - (2) Execute cutting and demolition by methods that will prevent damage to other Work, and provide proper surfaces to receive installation of repairs and new Work.
 - (3) Execute cutting, demolition excavating, and backfilling by methods that will prevent damage to other Work and damage from settlement.
- B. Contractor shall employ original installer or fabricator to perform cutting and patching for:
 - (1) Weather-exposed surfaces and moisture-resistant elements such as roofing, sheet metal, sealants, waterproofing, and other trades.
 - (2) Sight-exposed finished surfaces.
- C. Contractor shall execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances, and finishes as shown or specified in the Contract Documents including, without limitation, the Drawings and Specifications.
- D. Contractor shall fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces. Contractor shall conform to all Code requirements for penetrations or the Drawings and Specifications, whichever calls for a higher quality or more thorough requirement. Contractor shall maintain integrity of both rated and non-rated fire walls, ceilings, floors, etc.
- E. Contractor shall restore Work which has been cut or removed. Contractor shall install new products to provide completed Work in accordance with requirements of the Contract Documents and as required to match surrounding areas and surfaces.
- F. Contractor shall refinish all continuous surfaces to nearest intersection as necessary to match the existing finish to any new finish.

END OF DOCUMENT

ALTERATION PROJECT PROCEDURES

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Integration of Work, Purchase of Materials and Equipment, Uncovering of Work and Non-conforming Work and Correction of Work and Trenches;
- B. Special Conditions.

PART 2 - PRODUCTS

2.01 PRODUCTS FOR PATCHING AND EXTENDING WORK:

- A. New Materials: As specified in the Contract Documents including, without limitation, in the Specifications, Contractor shall match existing products, conditions, and work for patching and extending work.
- B. Type and Quality of Existing Products: Contractor shall determine by inspection, by testing products where necessary, by referring to existing conditions and to the Work as a standard.

PART 3 - EXECUTION

3.01 EXAMINATION:

- A. Contractor shall verify that demolition is complete and that areas are ready for installation of new Work.
- B. By beginning restoration Work, Contractor acknowledges and accepts the existing conditions.

3.02 PREPARATION:

- A. Contractor shall cut, move, or remove items as necessary for access to alterations and renovation Work. Contractor shall replace and restore these at completion.
- B. Contractor shall remove unsuitable material not as salvage unless otherwise indicated in the Contract Documents. Unsuitable material may include, without limitation, rotted wood, corroded metals, and deteriorated masonry and concrete. Contractor shall replace materials as specified for finished Work.
- C. Contractor shall remove debris and abandoned items from all areas of the Site and from concealed spaces.
- D. Contractor shall prepare surface and remove surface finishes to provide for proper installation of new Work and finishes.

- E. Contractor shall close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity. Contractor shall insulate ductwork and piping to prevent condensation in exposed areas. Contractor shall insulate building cavities for thermal and/or acoustical protection, as detailed.

3.03 INSTALLATION:

- A. Contractor shall coordinate Work of all alternations and renovations to expedite completion and to accommodate County of Imperial occupancy.
- B. Designated Areas and Finishes: Contractor shall complete all installations in all respects, including operational, mechanical work and electrical work.
- C. Contractor shall remove, cut, and patch Work in a manner to minimize damage and to provide a means of restoring Products and finishes to original or specified condition.
- D. Contractor shall refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with a neat and square or straight transition to adjacent finishes.
- E. Contractor shall install products as specified in the Contract Documents, including without limitation, the Specifications.

3.04 TRANSITIONS:

- A. Where new Work abuts or aligns with existing, Contractor shall perform a smooth and even transition. Patched Work must match existing adjacent work in texture and appearance.
- B. When finished surfaces are cut so that a smooth transition with new Work is not possible, Contractor shall terminate existing surface along a straight line at a natural line of division and make a recommendation for resolution to the County of Imperial and the Architect for review and approval.

3.05 ADJUSTMENTS:

- A. Where removal of partitions or walls results in adjacent spaces becoming one, Contractor shall rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
- B. Where a change of plane of 1/4 inch or more occurs, Contractor shall submit a recommendation for providing a smooth transition to the County of Imperial and the Architect for review and approval.
- C. Contractor shall trim and seal existing wood doors and shall trim and paint metal doors as necessary to clear new floor finish and refinish trim as required.
- D. Contractor shall fit Work at penetrations of surfaces.

3.06 REPAIR OF DAMAGED SURFACES:

- A. Contractor shall patch or replace portions of existing surfaces, which are damaged, lifted, discolored, or showing other imperfections, in the area where the Work is performed.
- B. Contractor shall repair substrate prior to patching finish.

3.07 CULTIVATED AREAS AND OTHER SURFACE IMPROVEMENTS:

- A. Cultivated or planted areas and other surface improvements which are damaged by actions of the Contractor shall be restored by Contractor to their original condition or better, where indicated.
- B. Contractor shall protect and replace, if damaged, all existing guard posts, barricades, and fences.
- C. Contractor shall give special attention to avoid damaging or killing trees, bushes and/or shrubs on the Premises and/or identified in the Contract Documents, including without limitation, the Drawings.

3.08 FINISHES:

- A. Contractor shall finish surfaces as specified in the Contract Documents, including without limitations, the provisions of all Divisions of the Specifications.
- B. Contractor shall finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, Contractor shall refinish entire surface to nearest intersections.

3.09 CLEANING:

- A. Contractor shall continually clean the Site and the Premises as indicated in the Contract Documents, including without limitation, the provisions in the General Conditions and the Specifications regarding cleaning.

END OF DOCUMENT

CONTRACT CLOSEOUT AND FINAL CLEANING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Completion of Work;
- B. Special Conditions;
- C. Temporary Facilities and Controls.

1.02 CLOSEOUT PROCEDURES

Contractor shall comply with all closeout provisions as indicated in the General Conditions.

1.03 FINAL CLEANING

- A. Contractor shall execute final cleaning prior to final inspection.
- B. Contractor shall clean interior and exterior glass and all surfaces exposed to view; remove temporary labels, tape, stains, and foreign substances, polish transparent and glossy surfaces, wax and polish new vinyl floor surfaces, vacuum carpeted and soft surfaces.
- C. Contractor shall clean equipment and fixtures to a sanitary condition.
- D. Contractor shall replace filters of operating equipment.
- E. Contractor shall clean debris from roofs, gutters, down spouts, and drainage systems.
- F. Contractor shall clean Site, sweep paved areas, and rake clean landscaped surfaces.
- G. Contractor shall remove waste and surplus materials, rubbish, and construction facilities from the Site and surrounding areas.

1.04 ADJUSTING

Contractor shall adjust operating products and equipment to ensure smooth and unhindered operation.

1.05 RECORD DOCUMENTS AND SHOP DRAWINGS

- A. Contractor shall legibly mark each item to record actual construction, including:
 - (1) Measured depths of foundation in relation to finish floor datum.

- (2) Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permit surface improvements.
 - (3) Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - (4) Field changes of dimension and detail.
 - (5) Details not on original Contract Drawings
 - (6) Changes made by modification(s).
 - (7) References to related Shop Drawings and modifications.
- B. Contractor will provide one set of Record Drawings to County of Imperial.
- C. Contractor shall submit all required documents to County of Imperial and/or Architect prior to or with its final Application for Payment.

1.06 INSTRUCTION OF COUNTY OF IMPERIAL PERSONNEL

- A. Before final inspection, at agreed upon times, Contractor shall instruct County of Imperial's designated personnel in operation, adjustment, and maintenance of products, equipment, and systems.
- B. For equipment requiring seasonal operation, Contractor shall perform instructions for other seasons within six months or by the change of season.
- C. Contractor shall use operation and maintenance manuals as basis for instruction. Contractor shall review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
- D. Contractor shall prepare and insert additional data in Operation and Maintenance Manual when the need for such data becomes apparent during instruction.
- E. Contractor shall review contents of manual with personnel in detail to explain all aspects of operation and maintenance.

1.07 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Contractor shall provide products, spare parts, maintenance, and extra materials in quantities specified in the Specifications and in Manufacturer's recommendations.
- B. Contractor shall provide County of Imperial with all required Operation and Maintenance Data at one time. Partial or piecemeal submissions of Operation and Maintenance Data will not be accepted.

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

OPERATION AND MAINTENANCE DATA

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Completion of the Work;
- B. Special Conditions.

1.02 QUALITY ASSURANCE:

Contractor shall prepare instructions and data by personnel experienced in maintenance and operation of described products.

1.03 FORMAT:

- A. Contractor shall prepare data in the form of an instructional manual entitled "OPERATIONS AND MAINTENANCE MANUAL & INSTRUCTIONS" ("Manual").
- B. Binders: Contractor shall use commercial quality, 8-1/2 by 11 inch, three-side rings, with durable plastic covers; two inch maximum ring size. When multiple binders are used, Contractor shall correlate data into related consistent groupings.
- C. Cover: Contractor shall identify each binder with typed or printed title "OPERATION AND MAINTENANCE MANUAL & INSTRUCTIONS"; and shall list title of Project and identify subject matter of contents.
- D. Contractor shall arrange content by systems process flow under section numbers and sequence of Table of Contents of the Contract Documents.
- E. Contractor shall provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- F. Text: The content shall include Manufacturer's printed data, or typewritten data on 24 pound paper.
- G. Drawings: Contractor shall provide with reinforced punched binder tab and shall bind in with text; folding larger drawings to size of text pages.

1.04 CONTENTS, EACH VOLUME:

- A. Table of Contents: Contractor shall provide title of Project; names, addresses, and telephone numbers of the Architect, any engineers, subconsultants, Subcontractor(s), and Contractor with name of responsible parties; and schedule of products and systems, indexed to content of the volume.

- B. For Each Product or System: Contractor shall list names, addresses, and telephone numbers of Subcontractor(s) and suppliers, including local source of supplies and replacement parts.
- C. Product Data: Contractor shall mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- D. Drawings: Contractor shall supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Contractor shall not use Project Record Documents as maintenance drawings.
- E. Text: Contractor shall include any and all information as required to supplement product data. Contractor shall provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.
- F. Warranties and Bonds: Contractor shall bind in one copy of each.

1.05 MANUAL FOR MATERIALS AND FINISHES:

- A. Building Products, Applied Materials, and Finishes: Contractor shall include product data, with catalog number, size, composition, and color and texture designations. Contractor shall provide information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Contractor shall include Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture Protection and Weather Exposed Products: Contractor shall include product data listing applicable reference standards, chemical composition, and details of installation. Contractor shall provide recommendations for inspections, maintenance, and repair.
- D. Additional Requirements: Contractor shall include all additional requirements as specified in the Specifications.
- E. Contractor shall provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

1.06 MANUAL FOR EQUIPMENT AND SYSTEMS:

- A. Each Item of Equipment and Each System: Contractor shall include description of unit or system, and component parts and identify function, normal operating characteristics, and limiting conditions. Contractor shall include performance curves, with engineering data and tests, and complete nomenclature, and commercial number of replaceable parts.
- B. Panelboard Circuit Directories: Contractor shall provide electrical service characteristics, controls, and communications.
- C. Contractor shall include color coded wiring diagrams as installed.
- D. Operating Procedures: Contractor shall include start-up, break-in, and routine normal operating instructions and sequences. Contractor shall include regulation, control, stopping, shut-down, and emergency instructions. Contractor shall include summer, winter, and any special operating instructions.

- E. Maintenance Requirements: Contractor shall include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- F. Contractor shall provide servicing and lubrication schedule, and list of lubricants required.
- G. Contractor shall include manufacturer's printed operation and maintenance instructions.
- H. Contractor shall include sequence of operation by controls manufacturer.
- I. Contractor shall provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- J. Contractor shall provide control diagrams by controls manufacturer as installed.
- K. Contractor shall provide Contractor's coordination drawings, with color coded piping diagrams as installed.
- L. Contractor shall provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- M. Contractor shall provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- N. Additional Requirements: Contractor shall include all additional requirements as specified in Specification(s).
- O. Contractor shall provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

1.07 SUBMITTAL:

- A. Contractor shall submit to the County of Imperial for review two (2) copies of preliminary draft or proposed formats and outlines of the contents of the Manual within thirty (30) days of Contractor's start of Work.
- B. For equipment, or component parts of equipment put into service during construction and to be operated by County of Imperial, Contractor shall submit draft content for that portion of the Manual within ten (10) days after acceptance of that equipment or component.
- C. Contractor shall submit two (2) copies of a complete Manual in final form prior to final Application for Payment. Copy will be returned with Architect/Engineer comments. Contractor must revise the content of the Manual as required by County of Imperial prior to County of Imperial's approval of Contractor's final Application for Payment.
- D. Contractor must submit two (2) copies of revised Manual in final form within ten (10) days after final inspection.

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

WARRANTIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Warranty/Guarantee Information;
- B. Special Conditions.

1.02 FORMAT

- A. Binders: Contractor shall use commercial quality, 8-1/2 by 11 inch, three-side rings, with durable plastic covers; two inch maximum ring size.
- B. Cover: Contractor shall identify each binder with typed or printed title "WARRANTIES" and shall list title of Project.
- C. Table of Contents: Contractor shall provide title of Project; name, address, and telephone number of Contractor and equipment supplier; and name of responsible principal. Contractor shall identify each item with the number and title of the specific Specification, document, provision, or section in which the name of the product or work item is specified.
- D. Contractor shall separate each warranty with index tab sheets keyed to the Table of Contents listing, providing full information and using separate typed sheets as necessary. Contractor shall list each applicable and/or responsible Subcontractor(s), supplier(s), and/or manufacturer(s), with name, address, and telephone number of each responsible principal(s).

1.03 PREPARATION:

- A. Contractor shall obtain warranties, executed in duplicate by each applicable and/or responsible subcontractor(s), supplier(s), and manufacturer(s), within ten (10) days after completion of the applicable item or work. Except for items put into use with County of Imperial's permission, Contractor shall leave date of beginning of time of warranty blank until the date of completion is determined.
- B. Contractor shall verify that documents are in proper form, contain full information, and are notarized, when required.
- C. Contractor shall co-execute submittals when required.
- D. Contractor shall retain warranties until time specified for submittal.

1.04 TIME OF SUBMITTALS:

- A. For equipment or component parts of equipment put into service during construction with County of Imperial's permission, Contractor shall submit a draft warranty for that equipment or component within ten (10) days after acceptance of that equipment or component.
- B. Contractor shall submit for County of Imperial approval all warranties and related documents within ten (10) days after date of completion. Contractor must revise the warranties as required by the County of Imperial prior to County of Imperial's approval of Contractor's final Application for Payment.
- C. For items of work delayed beyond date of completion, Contractor shall provide an updated submittal within ten (10) days after acceptance, listing the date of acceptance as start of warranty period.

PART 2 - PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

RECORD DOCUMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Documents on Work;
- B. Special Conditions.

PART 2 - RECORD DRAWINGS

2.01 GENERAL:

- A. As indicated in the Contract Documents, the County of Imperial will provide Contractor with one set of reproducible, full size original Contract Drawings (mylars).
- B. Contractor shall maintain at each Project Site one set of marked-up plans and shall transfer all changes and information to those marked-up plans, as often as required in the Contract Documents, but in no case less than once each month. Contractor shall submit to the Project Inspector one set of reproducible vellums of the Project Record Drawings ("As-Builts") showing all changes incorporated into the Work since the preceding monthly submittal. The As-Builts shall be available at the Project Site. The Contractor shall submit reproducible vellums at the conclusion of the Project following review of the blue-line prints.
- C. Label and date each Record Drawing "RECORD DOCUMENT" in legibly printed letters.
- D. All deviations in construction, including but not limited to pipe and conduit locations and deviations caused by without limitation Change Orders, Construction Claim Directives, RFI's, and Addenda, shall be accurately and legibly recorded by Contractor.
- E. Locations and changes shall be done by Contractor in a neat and legible manner and, where applicable, indicated by drawing a "cloud" around the changed or additional information.

2.02 RECORD DRAWING INFORMATION:

- A. Contractor shall record the following information:
 - (1) Locations of Work buried under or outside each building, including, without limitation, all utilities, plumbing and electrical lines, and conduits.
 - (2) Actual numbering of each electrical circuit to match panel schedule.
 - (3) Locations of significant Work concealed inside each building whose general locations are changed from those shown on the Contract Drawings.

- (4) Locations of all items, not necessarily concealed, which vary from the Contract Documents.
- (5) Installed location of all cathodic protection anodes.
- (6) Deviations from the sizes, locations, and other features of installations shown in the Contract Documents.
- (7) Locations of underground work, points of connection with existing utilities, changes in direction, valves, manholes, catch basins, capped stubouts, invert elevations, etc.
- (8) Sufficient information to locate Work concealed in each building with reasonable ease and accuracy.

In some instances, this information may be recorded by dimension. In other instances, it may be recorded in relation to the spaces in the building near which it was installed.

- B. Contractor shall provide additional drawings as necessary for clarification.
- C. Contractor shall provide reproducible record drawings, made from final Shop Drawings marked "No Exceptions Taken" or "Approved as Noted."
- D. After review and approval of the marked-up specifications by the Project Inspector, Contractor shall provide electronic copies of the drawings (in PDF format) with one file with all of the sheets and one set of individual sheet files at the conclusion of the Project.

PART 3 - RECORD SPECIFICATIONS

3.01 GENERAL:

- A. Contractor shall mark each section legibly to record manufacturer, trade name, catalog number, and supplier of each Product and item of equipment actually installed.
- B. After review and approval of the marked-up specifications by the Project Inspector, Contractor shall provide one electronic copy of the specifications (in PDF format) at the conclusion of the Project.

PART 4 - MAINTENANCE OF RECORD DOCUMENTS

4.01 GENERAL

- A. Contractor shall store Record Documents apart from documents used for construction as follows:
 - (1) Provide files and racks for storage of Record Documents.
 - (2) Maintain Record Documents in a clean, dry, legible condition and in good order.
- B. Contractor shall not use Record Documents for construction purposes.

PART 5 – PRODUCTS Not Used.

END OF DOCUMENT

SECTION 02 41 31 SELECTIVE SITE DEMOLITION

PART 1 – GENERAL

1.01 SUMMARY

- A. Provisions of General Conditions, Supplementary Conditions, and Division 01 apply to this section.

Scope of work: Complete all demolition work as shown on contract documents or as required to permit the installation of new construction, including but not limited to the following

1. Remove existing site concrete and misc. site improvements.
2. Remove existing trees as required for completion of new construction.

1.02 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the Owner's property, demolished materials shall become the Contractor's property and shall be removed from the site with further disposition at the Contractor's option.
- B. Record drawings at Project closeout according to Section 01 77 19 "Contract Closeout."
 1. Identify and accurately locate capped utilities and other subsurface structural, electrical, or mechanical conditions.

1.03 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: Engage an experienced firm that has successfully completed demolition work similar to that indicated for this project.
- B. Public Utilities: Give all required notices, pay fees and charges, and arrange for disconnection and removal of abandoned public utilities and meters.
- C. Photographic and Video Documentation: Refer to Section 01380. Before starting work of this section, provide one set of photographs and one video of existing conditions to be affected by the demolition work. Provide progress videos as the work of demolition progresses, at intervals as approved, illustrating substrates, connections, concealed conditions, preservation of historic construction, and other conditions which will benefit subsequent work.

1.04 DEFINITIONS: The following terms have the meanings indicated when used in this section and on related drawings.

- A. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain the Owner's property.
- B. Remove and Salvage: Items indicated to be removed and salvaged remain the Owner's property. Remove, clean, and pack or crate items to protect against damage. Identify contents of containers and deliver to Owner's designated storage area.
- C. Remove and Reinstall: Remove items indicated; clean, service, and otherwise prepare them for reuse; store and protect against damage. Reinstall items in locations indicated.

- D. Existing to Remain: Protect construction indicated to remain against damage and soiling during demolition. When permitted by the Architect, items may be removed to a suitable, protected storage location during demolition and then cleaned and reinstalled in their original locations.

1.05 ENVIRONMENTAL CONDITIONS

- A. Hazardous Materials: Prior to starting work, obtain from the Owner certification that hazardous materials have been removed. In the event additional material which is suspected to be friable asbestos or other regulated hazardous material is encountered during the demolition work, the Contractor shall stop work in such areas and notify the Owner. The materials will be inspected and tested, if necessary, by the Owner. If the material is found to be friable asbestos or other hazardous material, the Owner will provide for its removal or encapsulation without delay at Owner's expense. After treatment the Owner will test and certify that the contamination has been removed or controlled to within legal requirements and Contractor will be notified to proceed with the work in writing.
- B. Noise Control: Perform all work in a manner and at times which will keep production of objectionable noise to a minimum amount of noise. Instruct all workers in noise control procedures. Noise that adversely affects adjacent properties will not be tolerated. Such conditions shall be the Owner's determination.
- C. Dust Control: Take appropriate action to check the spread of dust, and to avoid the creation of a nuisance in the surrounding area. Do not use water if it results in hazardous or objectionable conditions, such as flooding or pollution. Comply with all dust regulations imposed by local air pollution agencies. Remove dust and dirt from work area at least daily or more frequently as needed or directed.
- D. Pest Control: Take appropriate measures to prevent the spread of pests and vermin from areas where work is being performed to other areas including the site and adjacent buildings.

1.06 PROJECT SITE CONDITIONS

- A. The intent of the drawings is to show existing site and building conditions with information developed from the original construction documents, field surveys, and Owner's records, and to generally show the amount and types of demolition and removals required to prepare existing areas for new work. Contractor shall make a detailed survey of existing conditions pertaining to the work before commencing demolition.
- B. Extent: perform removals to extent required plus such additional removals as are necessary for completion even though not indicated or specified.

1.07 PROTECTION

- A. Existing Work: Protect existing work which is to remain in place.
- B. Trees: Protect trees within the project site which might be damaged during demolition.

1.08 EXPLOSIVES: Use of explosives will not be permitted.

1.09 BURNING: Burning will not be permitted.

PART 2 – PRODUCTS (Not Applicable)

PART 3 - EXECUTION

- 3.01 EXAMINATION: Verify that utilities have been disconnected and capped.
- 3.02 PREPARATION: Conduct demolition operations and remove debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
- 3.03 UTILITIES
- A. Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with demolition operations.
 - B. Prior to demolition or in the event unrecorded utilities are encountered, notify Owner or serving utility companies, as applicable, for work necessary and scheduled to be performed. Coordinate responsibility for limits of utility removals and be responsible for the removal of all utility installations both above and below grade except for those installations the utility companies agree to remove. Use care to protect utility lines to remain in service, repair all damage which does occur, and remove those not to remain in service.
 - C. Interruption of Service: In the event existing utility service requires interruption to accomplish the demolition work, obtain written approval by the Owner for interruption of service. Request approval not less than 48 hours prior to proposed scheduled interruption. State the exact services involved and the expected duration. Except in an emergency affecting life and limb, do not cause any interruption of utility service without written authorization from the Owner.
 - D. Provide for protection of utility lines to remain in service. Repair damage done to these facilities as a result of the work of this section, to the satisfaction of the Owner. Locations of existing utilities to remain shall be identified on record drawings, and their physical location shall be indicated by tags or stakes as applicable.
- 3.04 WORKMANSHIP
- A. Partial demolition and removal: When portions of pavement, slabs, sidewalks, curbs, curb and gutters and cross-gutters are to be removed, cut with a concrete saw full depth along all joint lines. Provide additional saw cut 2" away from saw cut on joint line, on the demolition side. Provide double saw cut at all areas to be demolished. All saw cuts shall be full depth.
- 3.05 DEMOLITION OF SITE IMPROVEMENTS
- A. Site Improvements: Remove walks and pavement, including base courses and miscellaneous improvements.
 - B. Paving and Slabs: Remove asphaltic concrete paving and slabs including aggregate base as indicated.
 - C. Underground Utilities: Expose pipe and conduit and cap at property line with permanent waterproof plugs or seals of concrete or metal. Except for items indicated to be abandoned in place, remove on-site abandoned pipe and conduit, cap and seal remaining pipe or conduit ends, and backfill the excavations as specified for new construction.
- 3.06 SALVAGE AND DISPOSAL
- A. General: Existing items Owner intends to retain will be designated by the Owner prior to start of work. Contractor shall carefully remove, salvage, box or bundle as approved, and deliver such items to storage as directed.

- B. Disposal: All removed material other than items to be salvaged or reused shall become Contractor's property and be removed from Owner's property. Clean up and dispose of debris promptly and continuously as the work progresses, and do not allow to accumulate. Sprinkle water on the surface to prevent dust nuisance. Secure and pay for required hauling permits and pay dumping fees and charges.

END OF SECTION 02 41 31

SECTION 03 31 13

STRUCTURAL CONCRETE

PART 1 - GENERAL

1.01 SUMMARY

- A. Provisions of General Conditions, Supplementary Conditions, and Division One apply to this section.
- B. Scope of work: The work under this section includes furnishing all labor, materials, and equipment, and performing all operations in connection with Structural Concrete, as indicated on the drawings, specified herein, or reasonably required to complete the work. The work includes, but is not limited to the following:
 - 1. All cast-in-place concrete, including footings and slab on grade.
 - 2. Concrete Mix Designs.
 - 3. Equipment bases.
 - 4. Setting anchor bolts, inserts, dowels, and accessories cast in concrete, which are specified under this and other sections.
 - 5. Vapor barrier under interior floor slabs on grade.
 - 6. Grout and drypack.
 - 7. Formwork, shoring, bracing and anchorage.
 - 8. Concrete reinforcement and accessories.
- C. Related Sections
 - 1. Section 01 45 24 Testing and Inspection Requirements for School Construction
 - 2. Section 03 35 00 Concrete Floor Finishing

1.02 DEFINITIONS AND REFERENCES

- A. Definitions
 - 1. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.
- B. References
 - 1. ACI 318-2014 Building Code Requirements for Structural Concrete.
 - 2. ASTM A615 – Deformed and Plain Carbon – Steel Bars for Concrete Reinforcement.
 - 3. ASTM C33 – Concrete Aggregates.
 - 4. ASTM C94 – Ready-Mixed Concrete.
 - 5. ASTM C150 – Portland Cement.
 - 6. ASTM C309 – Liquid Membrane – Forming compounds for Curing Concrete.
 - 7. Chapter 19A, California Building Code.

1.03 SUBMITTALS

- A. Product Data: For each type of product indicated.

- B. Design Mixtures: Provide design mix for each concrete mixture. Design mix shall include data substantiating the reliability of the proposed mix. Submit alternate design mixtures when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.
 - 1. Each design mixture shall be stamped and signed by a registered professional engineer licensed in the state of California.
 - 2. Indicate amounts of mixing water to be withheld for later addition at project site.
- C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

1.04 QUALITY ASSURANCE

- A. Specified cement and aggregates shall be from single sources only.
- B. Regulatory Requirements: Conform to Chapter 19A, California Building Code.
- C. Tests: Testing and analysis of concrete will be performed under provisions of Section 01 45 24, Testing and Inspection Requirements for School Construction.
- D. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
- E. Evaluation and acceptance of concrete shall conform to ACI 318, Section 26.12. Samples for strength testing shall be taken at least once a day or not less than once for each 50 cubic yards of concrete or not less than once for each 2,000 square feet of surface area for slabs or walls.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.

PART 2 - PRODUCTS

2.01 FORM MATERIALS

- A. Conform to ACI 318, Section 26.11.
- B. Plywood Forms: Douglas Fir species; solid one side sound undamaged sheets.
- C. Lumber: Douglas Fir species; construction grade with grade stamp clearly visible.
- D. Form Ties: Removable metal of adjustable length, cone ends.

2.02 REINFORCING STEEL

- A. Reinforcing Steel: ASTM A615, 60 ksi yield grade billet steel deformed bars. Welded bars shall be ASTM A706, 60 ksi yield grade.
- B. Welded Steel Wire Fabric: Plain type, ASTM A1064; in flat sheets.

2.03 CONCRETE MATERIALS

- A. Cement: ASTM C150, Type V, Portland Type, conforming to Section 1903A.1, California Building Code.
- B. Aggregates: ASTM C33, conforming to Section 1903A.5, California Building Code.
- C. Fly Ash: Shall conform to Section 1903A.6, California Building Code.
- D. Water: Provide water per ASTM C1602. Clean and not detrimental to concrete.

2.04 CONCRETE MIX

- A. Mix and deliver concrete in accordance with ACI 318 Sections 4.8, 19.3 and 26.4..
 - 1. Selection of Concrete Proportions: Concrete proportions shall be determined in accordance with the provisions of ACI 318, Section 26.4.
 - 2. A registered civil engineer with experience in concrete mix design shall select the relative amounts of ingredients to be used as basic proportions of the concrete mixes proposed for use under this provision.
 - 3. Do not exceed 0.45 water-cement ratio, by weight.
 - 4. Concrete shall be mixed by transit mixers only.

- B. Provide concrete to the following criteria:

Element	Min 28 day Strength PSI	Max Slump	Max Size Aggregate	Type
Foundation	4,500	4 inch	1 inch	Reg.
Slabs	4,500	4 inch	3/4 inch	Reg.

- C. Admixtures may be added to the concrete to control the set, effect water reduction and increase in workability at the contractor's option, or at the request of the Engineer, but in either case at the expense of the contractor. Except as otherwise specified, such admixtures shall be a water reducing normal retarding admixture conforming to ASTM C 494 and may be either a hydroxylated carboxylic acid type or a hydroxylated polymer type, but shall contain no calcium chloride. The required quantities of cement shall be used. The quantity of admixture used and the method of mixing shall be in accordance with the manufacturer's printed instructions.
 - 1. Superplasticizers shall not be used without permission of the Engineer. If used, superplasticizers shall conform to ASTM C-494, Type F or G; batch plant added using second or third generation only.
 - 2. Admixtures shall be subject to the approval of DSA.

2.05 ACCESSORIES

- A. Bonding Agent: Polyvinyl Acetate; HIBOND, manufactured by Lambert Corporation, Orlando, FL, LOCK BOND NO. 906, manufactured by MacklanBurg-Duncan Co., City of Industry, CA, or equal as approved in accordance with Section 01 25 00 for Substitutions.

2.06 REINFORCED VAPOR BARRIER

- A. Manufacturer: Reef Industries, Inc. 9209 Alameda Genoa Road, Houston Texas 77075. Phone (800) 231 6074. Web Site www.reefindustries.com.
- B. Reinforced Vapor Retarder under wood flooring: Griffolyn Vaporguard, 3-ply laminate, with aluminum core surrounded by (2) layers of multi-axially oriented, high density polyethylene sheets.
- C. Reinforced Vapor Retarder under VCT and carpet: Griffolyn Type 85, 5-ply laminate, combining (3) layers of high density polyethylene and (2) high strength non-woven cord grids.

2.07 CURING MATERIALS

- A. Water: Clean from a source suitable for domestic consumption.
- B. Curing Compound: ASTM C309, SHUR-CURE manufactured by Paul M. Wolff Co. water based membrane forming concrete curing compound. White pigmented.

2.08 DRY PACK AND NON-SHRINK GROUT

- A. Drypack: Field mixture of 1 part Portland Cement to 2 ½ parts fine aggregate conforming to ASTM C-33 mixed to a damp consistency such that a ball molded in the hand will stick together and hold its shape. In lieu of field mixing Contractor may use factory mixed drypack material, EUCLID Dry Pack Grout or equal.
- B. Non-Shrink Grout: EUCLID Hi-Flow Grout or equal.
- C. Epoxy Grout: Mult-component, premeasured, fast-curing combination of thermosetting resins and inert fillers. EUCLID Euco High Strength Grout or equal.

PART 3 - EXECUTION

3.01 FORMWORK

- A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 318 Section 26.11.
- B. Verify lines, levels and measurement before proceeding with formwork.
- C. Hand trip sides and bottom of earth forms; remove loose dirt.
- D. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.
- E. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.
- F. Align joints and make watertight. Keep form joints to a minimum.
- G. Obtain approval before framing openings in structural members which are not indicated on Drawings.

3.02 REINFORCED VAPOR BARRIER

- A. Install reinforced vapor retarders in accordance with ASTM E 1643 and manufacturer's written instructions.

3.03 PROTECTION

- A. Adequately protect staff, personnel and public from harm and accident during formwork. Conform to California Code of Regulations, Title 8, Subchapter 4, Construction Safety Orders.

3.04 REINFORCEMENT

- A. Place, support and secure reinforcement against displacement.

3.05 PREPARATION FOR CONCRETE WORK

- A. Weather Provisions: Make Provisions for weather conditions in accordance with ACI Specifications ACI 318 , the recommendation of the Testing Laboratory, and acceptable to the Architect
 - 1. Hot Weather Requirements: Concrete to be placed during hot weather shall comply with the requirements of ACI Section 26.5.5.
- B. Excavations: Before placing of concrete for foundations, insure that the excavations have been inspected and approved by the Soils Engineer. Remove loose dirt from excavations.
- C. Before concrete is placed upon or against concrete that has taken its initial set or has hardened, remove encrustations from the forms and reinforcement, and mechanically roughen hardened concrete to minimum ¼ inch coarseness amplitude.
- D. Prepare previously placed concrete by cleaning with sandblasting to remove laitance and expose clean aggregate.
- E. In locations where new concrete is doweled to existing work, drill holes in existing concrete, epoxy set 12 inch long No. 4 steel dowels at 18 inches oc.

3.06 PLACING CONCRETE

- A. Place concrete in accordance with ACI 318 Section 26.5.2.
- B. Notify Architect minimum 24 hours prior to commencement of operations. All excavations, forms and reinforcing shall be inspected and approved by the Architect prior to placement.
- C. Ensure reinforcement, inserts, embedded parts and accessories are not disturbed during concrete placement.
- D. When detailed on the drawings, separate slabs on grade from vertical surfaces with ½ inch thick joint filler.
- E. Extend joint filler from bottom of slab to within ½ inch of finished slab surface using one-component polyurethane sealant as specified in Section 07 92 00.
- F. Place concrete continuously between predetermined expansion, control and construction joints.
- G. Do not interrupt successive placement; do not permit cold joints to occur.
- H. Avoid segregation of materials. Perform tamping and vibrating so as to produce a dense, smooth application free of rock pockets and voids. Do not use vibrators to move concrete horizontally.

- I. Provide special mix prepared by the Testing Laboratory and approved by the Architect utilizing smaller aggregates in areas of reinforcing congestion to prevent the formation of rock pockets.
- J. Do not allow concrete to fall free from any height which will cause materials to segregate. Maximum height of free fall permitted in any case: 4 feet. Utilize trunks or additional chutes where doubt occurs.
- K. Construction Joints: Wash surface of each joint shortly after pouring to expose clean, sound aggregate. Sandblast surface to remove laitance remaining or loose aggregate as approved by the Architect. Conform to ACI 318, Section 26.5.6. Apply bonding agent in accordance with manufacturer's instructions.

3.07 CONCRETE FINISHING

- A. Provide formed concrete surfaces to be left exposed with smooth rubbed finish.
- B. Provide smooth trowel finish at flat surfaces.

3.08 CURING AND PROTECTION

- A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures and mechanical injury.
- B. Maintain concrete with minimal moisture loss at above 50 degrees F temperature for period necessary for hydration of cement and hardening of concrete. Dusting with dry cement to absorb excess water is prohibited.
- C. Cure only as specified herein and in accordance with ACI 318, Section 26.5.3. Membrane curing compound method not permitted for interior cast-in-place concrete slabs.
- D. Moisture Cure: Spray water over floor slab areas and maintain wet for minimum of seven (7) days or spread polyethylene film over floor slab areas, lapping edges and sides, minimum 6 inches and sealing with pressure sensitive tape; cover with plywood or otherwise protect film from damage; maintain in place for minimum of seven (7) days. Do not permit traffic over floor slabs during the seven (7) day curing period.
- E. Vertical Surfaces: Spray water over surfaces and maintain wet for 10 days.
- F. Quality Control: Proper curing of concrete surfaces shall be the responsibility of the Contractor under this section.

3.09 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Sections 01 45 24 Testing and Inspection Requirements for School Construction.
- B. Provide free access to work and cooperate with Testing Laboratory.

3.10 PATCHING

- A. Clean all exposed concrete surfaces and all adjoining work stained by leakage of concrete. Remove all fins, butts and projections by grinding. Patch voids, rock pockets, holes, cracks and similar imperfections by chipping loose concrete and exposing clean, sound aggregate.

3.11 DEFECTIVE CONCRETE

- A. Remove concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- B. Repair or replacement of defective concrete will be determined by the Architect.
- C. Do not patch, fill, touch-up, repair or replace exposed concrete except upon express approval of Architect for each individual area.

3.12 MOISTURE TEST FOR CONCRETE FLOORS

- A. It shall be the Contractor's responsibility to provide a concrete floor slab meeting the maximum moisture vapor emissions herein specified and the contractor shall exercise care in all aspects of mixing, placing and curing the concrete floor slabs so that a minimum of mitigation treatment will be required.
- B. Prior to ordering floor materials that are adhesive applied, contractor shall conduct Calcium-Chloride "Dome" tests to verify that concrete floor slabs are dry with maximum moisture vapor emissions of five lbs. Per 1,000 s.f. in 24 hours and that slabs exhibit negative alkalinity, carbonization or dusting. Apply the moisture test in four (4) different areas of each floor location, with at least one test for each 1,000 s.f. of floor area.
- C. Should the moisture emissions exceed five lbs. Per 1,000 s.f. in 24 hours as specified herein at the time of installation of adhesive applied floor coverings, and the Petrographic Analysis, ASTM C856, confirms that the placement of concrete slabs was not in conformance with requirements of this section and that the water cement ratio exceeded 0.45 or the concrete was cured less than 7 days, the General Contractor, at no additional cost to the Owner, shall reduce the moisture emission level to that specified by use of a vapor emission treatment system.

3.13 DRY PACK AND GROUTING

- A. Drypacking: Mix materials thoroughly with minimum amount of water. Install drypack by forcing and rodding to fill voids and provide complete bearing under plates. Finish exposed surfaces smooth and cure with damp burlap or liquid curing compound.
- B. Non-Shrink Grouting: Mix grout material per manufacturer's instructions. Surfaces to receive the non-shrink grout shall be clean, and shall be moistened thoroughly immediately before placing the mortar. Before grouting, surfaces to be in contact shall be roughened and cleaned thoroughly, loose particles shall be removed and the surface flushed thoroughly with neat cement grout immediately before the grouting mortar is placed. Place fluid grout from one side only and puddle, chain, or pump for complete filling of voids; do not remove the dams or forms until grout attains initial set. Finish exposed surfaces smooth, and cure as recommended by grout manufacturer.

END OF SECTION 03 31 13

SECTION 08 11 13

STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.01 SUMMARY

- A. Provisions of General Conditions, Supplementary Conditions, and Division One apply to this section.
- B. Scope of work: The work under this section includes furnishing all labor, materials, and equipment and performing all operations in connection with Steel Doors and Frames, as indicated on the drawings, specified herein, or reasonably required to complete the work. The work includes, but is not limited to the following:
 - 1. Provide hollow metal doors.
 - 2. Provide hollow metal door frames.

1.02 REFERENCES

- A. SDI – Steel Door Institute
- B. HMMA – Hollow Metal Manufacture’s Association
- C. SDI 100 – Recommended Specifications for Standard Steel Doors and Frames
- D. SDI 105 – Recommended Erection Standards for Steel Frames
- E. SDI 111 – Recommended Standard Details for Steel Doors and Frames
- F. SDI 117 – Manufacturing Tolerances Standard Steel Doors and Frames
- G. HMMA 810 – Hollow Metal Doors
- H. HMMA 820 – Hollow Metal Frames
- I. HMMA 830 – Hardware Preparation and locations for Hollow Metal Doors and Frames
- J. HMMA 840 – Installation and Storage of Hollow Metal Doors and Frames
- K. NFPA 80 – Fire Doors and Windows

1.03 SUBMITTALS: Submit as per Section 01 33 00.

- A. Submit shop drawings for frames indicating frame configuration, anchor types and spacing, location of cutouts for hardware, reinforcements for hardware and finish.
- B. Submit shop drawings for doors indicating core material, location of cutouts for hardware, reinforcements for hardware and finish.
- C. Submit product date.
- D. Submit manufacturer’s installation instructions.

1.04 QUALITY ASSURANCE

- A. Frames and doors to conform to SDI and HMMA standards except where exceeded by this specification.
- B. Manufacturer: Company specializing in manufacturing the products specified in this section having minimum five years experience.

1.05 DELIVERY, STORAGE AND PROTECTION

- A. Deliver and protect doors and frames with manufacturer's shipping safeguards.
- B. Attach spreader bars on welded frames to preclude warping or bending during delivery and storage.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Subject to compliance with requirements, provide products by one of the following:
 - 1. Curries.
 - 2. Stiles.
 - 3. Ceco Door Products.
 - 4. Steelcraft.

2.02 FIRE-RATED DOOR ASSEMBLIES

- A. NFPA 80, identical to assemblies tested per ASTM E 152, and labeled and listed by UL

2.03 WELDED FRAMES

- A. Type: Combination buck frame and integral stop and flat trim, double rabbit profiles as indicated on the drawings. Cold rolled steel as per ASTM A336.
- B. Exterior Frames: 14 gauge
- C. Interior Frames: 16 gauge
- D. Provide profiles as per drawings.
- E. Anchors: Provide (2) anchors at head for openings up to 48 inches, maximum 30" on center. Provide (3) anchors per jamb for doors up to 84" in height, additional anchors at maximum 30" on center for higher doors.
 - 1. Provide appropriate type of anchors consistent with type of wall construction for each installation and in conformance with HMMA 820 and SDI 111.
- F. Floor Attachment: Provide metal anchor with provision for expansion anchor attachment to concrete floor.
- G. Hardware Attachment: Mortise, reinforce, drill and tap at factory to receive specified hardware. Install minimum 10 gage reinforcing welded to frame for typical surface mounted hardware. Install minimum 7 gage reinforcing for hinges in accordance with HMMA 820. Tap to templates.

H. Galvanized: A-60.

2.04 WELDED FRAME FABRICATION

- A. Fabricate exterior welded steel frames as saw mitered and full inside welded unit type or machine-mitered and full welded unit type, in accordance with HMMA 820. Weld and grind smooth. No intermittent welds or plate splices permitted at intersections.
- B. Fabricate interior welded steel frames as machine mitered face-welded unit type in accordance with HMMA 820. Weld and grind smooth.
- C. Where cross mullions or T intersections occur, frames shall be fabricated as butted and face-welded assembly joints, in accordance with HMMA 820.
- D. Machine mitered faces and butt-joined integral stops permitted with continuous welds.
- E. Fabricate frames with hardware reinforcements plates welded in place.
- F. Fabricate frames to accept anchors as described in HMMA 820 and SDI 111 for type of wall construction.

2.05 EXTERIOR DOORS

- A. SDI 100 Level / Model: 3/2
- B. Door Thickness: 1 3/4"
- C. Face Skin: 16 gauge face sheets
- D. Material: Galvanized A-60
- E. Door Edges: 1/8" bevel on lock side
- F. Edge Construction: Continuous weld and ground smooth the full height of door, seamless.
- G. Core: Polyurethane
- H. Top Channel: 16 Gauge minimum. Provide flush top channel.
- I. Bottom Channel: 16 Gauge minimum.
- J. Size: As per drawings.
- K. Hinge Rail and Reinforcement: Full height channel, 14 gauge extruded to 10 gauge equivalent at tapped holes.
- L. Lock Rail: Full height channel, 14 gauge.
- M. Closer Reinforcement: 12 gauge.

2.06 INTERIOR DOORS

- A. SDI 100 Level / Model: 3/2
- B. Door Thickness: 1 3/4"

- C. Face Skin: 16 gauge face sheets
- D. Material: Galvanized A-60
- E. Door Edges: 1/8" bevel on lock side
- F. Edge Construction: Continuous weld and ground smooth the full height of door, seamless.
- G. Core: Polyurethane
- H. Top Channel: 16 Gauge minimum. Provide flush top channel.
- I. Bottom Channel: 16 Gauge minimum.
- J. Size: As per drawings.
- K. Hinge Rail and Reinforcement: Full height channel, 14 gauge extruded to 10 gauge equivalent at tapped holes.
- L. Lock Rail: Full height channel, 14 gauge.
- M. Closer Reinforcement: 12 gauge.

2.07 DOOR FABRICATION

- A. Fabricate doors from cold rolled steel conforming to ASTM A366 or ASTM A527.
- B. Non-handed doors are not permitted.
- C. Hinge fillers are not permitted.
- D. Fabricate doors with cutouts sized for hardware and openings as indicated.
- E. Reinforce, drill and tap doors to receive mortise hinges, locks, latches, flush bolts and closures. Use reinforcing gauges as listed in Table V of SDI 100.

2.08 PROTECTIVE COATING

- A. Frames: Pretreat and shop prime with modified alkyd, air dried conforming to ANSI-A224.1, approved primer. Series P10-1009, Gray, TNEMEC or equal.
- B. Doors: Pretreat and shop prime with modified alkyd, air dried conforming to ANSI-A224.1, approved primer. Series P10-1009, Gray, TNEMEC or equal.

2.09 VISION LIGHT FRAMES

- A. Provided under Section 08 81 00.

PART 3 - EXECUTION

3.01 GENERAL

- A. Install steel doors, frames, and accessories according to Shop Drawings, manufacturer's data, and as specified.

3.02 FRAME INSTALLATION

- A. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set.
 - 1. Install frames in accordance with HMMA 840 and SDI 105.
 - 2. Conform to standard of tolerances as required in HMMA 840 and SDI 117
 - 3. Coordinate anchor placement with type of wall construction.
 - 4. Install fire-rated frames according to NFPA 80, product UL listing and manufacturers recommendations.

3.03 DOOR INSTALLATION

- A. Fit hollow-metal doors accurately in frames.
 - 1. Install Doors in accordance with SDI 100.
 - 2. Fire-Rated Doors: Install fire rated doors according to NFPA 80, product UL listing and manufacturers recommendations. Install with clearances specified in NFPA 80.
 - 3. Smoke-Control Doors: Comply with NFPA 105.

END OF SECTION 08 11 13

DOCUMENT
08 14 16 FLUSH WOOD DOORS

PART 1 – GENERAL

1.01 SUMMARY

- A. The work under this section includes furnishing all labor, materials, and equipment, and performing all operations in connection with Flush Wood Doors, as indicated on the Drawings, specified herein, or reasonably required to complete the work. The work includes, but is not limited to the following:
 - 1. Non-rated wood doors with prefinished flush faces.
 - 2. Fire-rated wood doors with prefinished flush faces.

1.02 REFERENCES

- A. NFPA-80 – Standards for Fire Doors Edition.
- B. AWI – Architectural Woodwork Institute.
- C. WDMA – Window and Door Manufacturers Association: IS 1-A Industry Standard for Architectural Flush Wood Doors.
- D. ANSI/NWMA I.S.1 – Industry Standard for Wood Flush Doors.
- E. ANSI A208.1 – Wood Particle Board.
- F. ASTM C612 – Mineral Fiber Block and Board Thermal Insulation.
- G. ASTM E152 – Fire Tests of Door Assemblies.
- H. California Building Code – Conform to Section 1005.8 for fire rated doors.
- I. Underwriters Laboratories – UL 10c, Positive Pressure Fire Door Test Method.

1.03 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Submit shop drawings indicating door elevations and sections, materials, thickness, door swing, stile and rail dimensions, veneers, undercuts, storage and erection details, locations of finish hardware by dimension and locations / details of all openings.
- C. Do not proceed with any fabrication until all details are approved.
- D. Submit certification that doors and frames comply with UL10c, Positive Pressure Fire Door Test Method.
- E. Submit manufacturer's product data and installation instructions.
- F. Submit three samples of each door type specified, illustrating each face veneer and door construction specified.

1.04 WARRANTY

- A. Provide manufacturer's signed guarantee for all wood doors. Guarantee period: Lifetime of original installation. Door exhibiting defects in materials or workmanship within guarantee period shall be replaced (including hanging and finishing) with new doors. These terms shall be part of the manufacturer's standard warranty.
- B. Replace defective doors which have:
 - 1. Delamination in any degree.
 - 2. Warp or twist of 1/4" or more in any 3' – 6" x 7' plane of door face.

1.05 QUALITY ASSURANCE

- A. Fire-Rated Wood Doors:
 - 1. Provide wood doors which are identical in materials and construction to units tested in door and frame assemblies in accordance UL10c, Positive Pressure Fire Door Test Method and which are labeled and listed for ratings indicated by UL testing and inspection agency.
 - 2. Doors: Comply with UL10c where required.
 - 3. Provide smoke gaskets as required by manufacturers' individual authorities in compliance with UL10c.
 - 4. Conform to ASTM E152.
 - 5. Conform to NFPA 80 for fire rated class indicated.
- B. Provide doors from one manufacturer to ensure uniformity in quality of appearance and construction. All materials supplied for this project to conform to the AWI Section 200 and 1300 for custom wood doors.
- C. Wood door supplier to be a qualified direct distributor of products to be furnished.

1.06 DELIVERY, STORAGE, AND PROTECTION

- A. Protect doors during transit, storage and handling to help prevent damage, soiling and deterioration.
- B. Comply with manufacturer's instructions and with on-site-care requirements of AWI Section 1300-G-23 Care and installation at site.
- C. Deliver prefinished components in manufacturer's original unopened protective covering or container, clearly marked with manufacturer's name, brand name and identifying number on covering.
- D. Do not walk or stack other materials on top of stacked doors. Do not drag doors across one another.
- E. Exposed wood at tops, bottoms and cutouts for hardware and accessories shall be sealed prior to shipment.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. GRAHAM
 - 1. <http://www.grahamdoors.com>
- B. Acceptable Substitutions
 - 1. Marshfield Door Systems

- a. <http://www.marshfelddoorsystems.com>
- 2. VT Industries
 - a. <http://www.vtindustries.com>

2.02 STANDARD DOORS

A. Interior Non-Rated Doors

- 1. Type: Graham GPD-PC.
- 2. Construction: 7-Ply Construction.
- 3. Thickness: 1-3/4 inches.
- 4. Core: Solid bonded particle core (PC).
- 5. Vertical Edges: Hardwood to match face veneer over structural composite lumber (SCL), glued to core.
- 6. Horizontal Edges: Structural composite lumber (SCL), glued to core.
- 7. Duty Level: Extra-Heavy Duty.
- 8. Adhesives: Type I per WDMA TM-6.
- 9. Facing:
 - a. Grade: Grade "A" per WDMA I.S. 1-A.
 - b. Adhesive: Type 1
 - c. Thickness: 1/50" minimum at 12% moisture content after finish sanding.
 - d. Species: Hardrock Maple.
 - e. Cut: Plain Sliced.
 - f. Assembly: Book Match.
 - g. Symmetry: Running Match.

2.03 FIRE-RATED DOORS

A. Interior 20-Minute Doors

- 1. Type: Graham GPD-PC.
- 2. Construction: 7-Ply Construction.
- 3. Thickness: 1-3/4 inches.
- 4. Core: Solid bonded particle core (PC).
- 5. Vertical Edges: Hardwood to match face veneer over structural composite lumber (SCL), glued to core.
- 6. Horizontal Edges: Structural composite lumber (SCL), glued to core.
- 7. Duty Level: Extra-Heavy Duty.
- 8. Adhesives: Type I per WDMA TM-6.
- 9. Facing:
 - a. Grade: Grade "A" per WDMA I.S. 1-A.
 - b. Adhesive: Type 1
 - c. Thickness: 1/50" minimum at 12% moisture content after finish sanding.
 - d. Species: Hardrock Maple.
 - e. Cut: Plain Sliced.
 - f. Assembly: Book Match.
 - g. Symmetry: Running Match.

B. Interior 60-Minute Doors

- 1. Type: Graham GPD-FD.

2. Construction: 7-Ply Construction.
3. Thickness: 1-3/4 inches.
4. Core: Bonded Fire Resistive Composite (FD) containing no asbestos.
5. Vertical Edges: Hardwood to match face veneer over fire resistive composite, glued to core.
6. Horizontal Edges: Fire resistive composite, glued to core.
7. Duty Level: Extra-Heavy Duty.
8. Adhesives: Type I per WDMA TM-6.
9. Facing:
 - a. Grade: Grade "A" per WDMA I.S. 1-A.
 - b. Adhesive: Type 1
 - c. Thickness: 1/50" minimum at 12% moisture content after finish sanding.
 - d. Species: Hardrock Maple.
 - e. Cut: Plain Sliced.
 - f. Assembly: Book Match.
 - g. Symmetry: Running Match.

2.04 FABRICATION

- A. Fabricate wood doors in accordance with requirements of WDMA I.S. 1-A Quality Standards.
- B. Fabricate fire rated doors in accordance with requirements of Underwriters' Laboratories, with metal label on each door including UL-10c.
 1. Attach permanent metal fire rating label to door on top edge.
- C. Premachine doors at factory for finish hardware.
- D. Veneer: Face veneer grain shall run vertically.

2.05 FINISH

- A. Provide factory applied finish as per manufacturer.

2.06 VISION LITE FRAMES

- A. Provided under Section 08 81 00.
- B. Fire-rated doors: to have UL approved glazing system.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Adjusting:
 1. Adjust and check each door to ensure proper operating and function.
 2. Replace or rehang doors which are hinge bound and do not swing or operate freely. Replace or rehang doors which are warped, twisted or which are not in true planes.
- B. Fire doors and frames shall be installed in accordance with their listing, NFPA No. 80 and the manufacturer's instructions.

- C. Condition doors to average temperature and humidity in area of installation for not less than 48 hours prior to installation. Store doors per recommendations of WDMA I.S. 1-A, "Care and Installation at Job Site."
- D. Ensure that smoke gaskets are in-place before prefinished door installation.

3.02 PROTECTING AND CLEANING

- A. Clean prefinished doors and hardware per manufacture's recommendations.
- B. Protect doors as directed under Section 01 74 00.
- C. Replace prefinished doors damaged during installation.

END OF SECTION 08 14 16

SECTION 08 81 00

GLAZING

PART 1 – GENERAL

1.01 SUMMARY

- A. Provisions of General Conditions, Supplementary Conditions, and Division One apply to this section.
- B. Scope of Work: The work under this section includes furnishing all labor, materials, and equipment and performing all operations in connection with Glazing, as indicated on the drawings, specified herein, or reasonably required to complete the work. The work includes, but is not limited to the following:
 - 1. Provide glazing at hollow metal framed door sidelites.
 - 2. Provide glazing in vision light doors.

1.02 REFERENCES

- A. All glazing shall meet the minimum requirements of the CBC, Chapter 24.
- B. All glazing in hazardous locations as per CBC, Section 2406.3 shall pass the test requirements of UBC Standard 24-2, Part I.
- C. Tempered / Heat-Treated Glass shall comply with ASTM C 1048; Type I; Quality q3.

1.03 SUBMITTALS

- A. Submit as per Section 01 33 00.
 - 1. Submit product data on glass type specified: Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements.
 - 2. Setting blocks and glazing tape.
- B. Submit (3) 12”x12” samples of each type of material specified illustrating color, tint and design.

1.04 QUALITY ASSURANCE

- A. Perform work in accordance with FGMA Glazing Manual and FGMA Sealant Manual.
- B. All tint shall be integral part of glazing, vinyl coated tint not allowed.

1.05 WARRANTY

- A. Provide ten year manufacturer’s warranty.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Insulated and Laminated Glazing

1. PPG Industries, Inc.
 - a. <http://www.ppg.com>

B. Security Vision Lite Frames

1. Air Louvers, Inc.
 - a. <http://www.airlouvers.com>

2.02 STANDARD GLAZING

A. Insulated Glass

1. Product: PPG Commercial One-Inch Insulating Glass Unit.
2. Construction: 1" total thickness: 1/4" tempered glass + 1/2" airspace + 1/4" tempered glass.
3. Low-e Coating: Solarban 70XL (on surface 3).
4. Tint: Bronze (on surface 2).
5. Locations: Exterior Doors and Windows, see door and window schedules.

B. Security Vision Lites

1. Product
 - a. Frame: Air Louvers, Inc. model VLF-S10.
 - b. Glazing: PPG Monolithic Laminated Glass.
2. Construction: 1/2" total thickness: 1/4" float glass + 0.060" clear PVB + 1/4" float glass.
3. Low-e Coating: None.
4. Tint: None (clear glass).
5. Locations: Interior Doors, see door schedule.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Protect glass edges from damage during handling and installation.
- C. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- D. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

3.02 PROTECTING AND CLEANING

- A. Protect glass from contact with contaminating substances resulting from construction operations, including weld splatter.

1. Remove and replace glass that is broken, chipped, cracked, abraded, or damaged in any way, including natural causes, accidents, and vandalism, during construction period.
- B. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended by glass manufacturer.

END OF SECTION 08 81 00

SECTION 09 22 16

NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.01 SUMMARY

- A. Provisions of General Conditions, Supplementary Conditions, and Division One apply to this section.
- B. Scope of work: The work under this section includes furnishing all labor, materials, and equipment and performing all operations in connection with Non-Structural Metal Framing, as indicated on the drawings, specified herein, or reasonably required to complete the work. The work includes, but is not limited to the following:
 - 1. Provide metal stud framing at interior partition walls and furred walls.
 - 2. Provide metal stud framing at exterior furred walls.
 - 3. Provide metal ceiling joists and soffits.
 - 4. Provide framing accessories.

1.02 REFERENCES

- A. ASTM C 645 – 98 Standard Specification for Nonstructural Steel Framing Members.

1.03 SUBMITTALS

- A. Submit product data describing standard framing member materials and finish, product criteria, load charts, limitations and accessories.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements: ICC Approved.
- B. Manufacturer: Company specializing in non-bearing metal studs with minimum 5 years experience.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Stud Framing Materials:
 - 1. Studs: ASTM C 645, minimum yield 33 ksi, hot dip galvanized or electro galvanized sheet steel, C type, 16 gage thick, 6" minimum width.
 - 2. Track: Formed Sheet Steel; channel shaped; same width as studs; tight fit; 16 gage thick; solid web; long leg at ceilings
 - 3. Fasteners: ASTM C954 self drilling, self tapping screws, Type S-12 pan head, ½" long.
 - 4. Stiffeners: 3/4", .3 lbs per lin. ft., cold or hot rolled channel, 16 gage.
 - 5. Anchorage Devices: Drilled expansion anchors, minimum 3/8" diameter x 2 ¼" embedment.
- B. Ceiling Framing Materials:

1. Joist: ASTM C 645, minimum yield 33 ksi, hot dip galvanized or electro galvanized sheet steel, C type, 18 gage thick, 6" minimum width.
2. Track: Formed Sheet Steel; oversized channel; same width as studs; tight fit; 16 gage thick.
3. Fasteners: ASTM C954 self drilling, self tapping screws, Type S-12 pan head, 1/2" long.
4. Mid Span Support: As per contract documents.
5. Anchorage Devices: As per contract documents.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Perform work in accordance with ASTM C754.
- B. Install prefabricated slip track at top of wall. Attach to supporting structure above.
- C. Align and fasten top and bottom runners at maximum 32" O.C.
- D. Construct corners and intersections as per contract documents.
- E. Stud splicing not permissible.
- F. Provide all backing as required.
- G. Wall Tolerances:
 1. Maximum Variation from true position: 1/8"
 2. Maximum variation of any member from plane: 1/8"
 3. Maximum variation between parallel walls: 1/8"

END OF SECTION 09 22 16

SECTION 09 24 00

PORTLAND CEMENT PLASTER

PART 1 – GENERAL

1.01 SUMMARY

- A. Provisions of General Conditions, Supplementary Conditions, and Division One apply to this section.
- B. Scope of work: The work under this section includes furnishing all labor, materials, and equipment and performing all operations in connection with Portland Cement Plaster, as indicated on the drawings, specified herein, or reasonably required to complete the work. The work includes, but is not limited to the following:
 - 1. Metal furring and lathing.
 - 2. Portland cement plaster system

1.02 SUBMITTALS

- A. Product Data for each product specified and samples for each type of finish indicated.

1.03 ENVIRONMENTAL REQUIREMENTS

- A. Comply with the minimum requirements of Section 2510 and 2512 of The California Building Code, minimum requirements of referenced plaster application standards and recommendations of plaster manufacturer for environmental conditions before, during and after application of plaster.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Metal Lath
 - 1. Plaster walls with solid plywood substrate: Expanded diamond mesh, self furred, (dimpled, ¼” offset), 3.4 lbs. per sq. yd., galvanized, manufactured by Western Metal Lath and Steel Framing.
- B. Metal Accessories
 - 1. Casing Bead: 7/8”, 26 gauge, manufactured by Western Metal Lath and Steel Framing.
 - 2. Base Screed: Casing Bead with weep holes: 7/8”, 26 gauge, manufactured by Western Metal Lath and Steel Framing.
 - 3. Corner: welded wire, Wescorner, manufactured by Western Metal Lath and Steel Framing.
 - 4. Control Joint: 7/8”, 28 gauge, No. XJ15-3, manufactured by Western Metal Lath and Steel Framing
- C. Paper Backing: Asphalt-impregnated paper complying with Federal Standard UU-B-790a, Type I, Grade D (vapor permeable), Style 2, Jumbo Tex, manufactured by Fortifiber Corporation.
- D. Base-Coat Cements: White or gray, as required.
 - 1. Portland cement, ASTM C 150, Type I.

- E. Base-Coat Aggregate: ASTM C 897, sand.
- F. Finish Coat: Material and color as indicated below:
 - 1. Acrylic-Based Finish Coat: Factory-mixed formulation of acrylic emulsion, colorfast mineral pigments, and fine aggregates specifically recommended by acrylic-based finish manufacturer for use over portland cement plaster base coats.
 - 1. Acrylic Color: as selected by Architect
 - 2. Acrylic Texture: Fine sand float finish
- G. Water: Potable water shall be used for mixing
- H. Mixing: Mechanically mix proportioned cementitious and aggregate materials with water to comply with applicable referenced application standard and with recommendations of plaster manufacturer.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Lathing and Furring: Install lath and furring indicated to comply with ML/SFA 920, "Guide Specifications for Metal Lathing and Furring," and with ASTM C 1063.
- B. Isolation: Where lathing and metal support systems abut building structure horizontally and where partition or wall abuts overhead structure, sufficiently isolate from structural movement to prevent transfer of loading from building structure. Install slip- or cushion-type joints to absorb deflections but maintain lateral support.
 - 1. Frame both sides of control joints independently and do not bridge joints with furring and lath or accessories.
- C. Metal Lath: Install metal lath at all plaster finishes. Provide appropriate type, configuration, and weight of metal lath selected from materials indicated that comply with ML/SFA 920, "Guide Specifications for Metal Lathing and Furring," and with ASTM C 1063.
 - 1. Plaster walls with solid plywood substrate: Expanded diamond-mesh lath, 3.4-lb/sq. yd. minimum weight.
 - 2. Metal lath shall stand away from the support ¼ inch.
- D. Paper backing shall be installed at all wall surfaces. Install two layers of building paper over all solid plywood substrate. Punctures or breaks shall be entirely covered with a second layer before application of metal lath.
- E. Preparing Solid Surfaces for Plastering: Clean plaster bases and substrates for direct application of plaster, removing loose material and substances that may impair the Work.
 - 1. Etch concrete and concrete unit masonry surfaces indicated for direct plaster application to obtain adequate suction and mechanical bond of plaster (where dash coat, bonding agent, or additive is not used).
 - 2. Apply bonding agent on concrete and concrete unit masonry surfaces indicated for direct plaster application; comply with manufacturer's written instructions for application.
 - 3. Apply dash coat on concrete surfaces indicated for direct plaster application. Moist-cure dash coat for at least 24 hours after application and before plastering.

4. Install temporary grounds and screeds to ensure accurate rodding of plaster to true surfaces; coordinate with scratch-coat work.
 5. Surface Conditioning: Immediately before plastering, dampen surfaces indicated for direct plaster application, except where a bonding agent has been applied. Moisten to obtain optimum suction for plastering.
- F. Installation of Plastering Accessories: Comply with referenced lathing and furring installation standards for provision and location of plaster accessories of type indicated. Install accessories of type indicated at following locations:
1. External Corners: Install corner reinforcement at external corners.
 2. Casing bead: Install casing beads at all places where plaster abuts dissimilar material, or as per details.
 3. Control Joints: Install at locations indicated on plans.
- G. Plaster Application: Apply plaster in accordance with Section 2507 and 2512 of the California Building Code.
1. Sequence plaster application with installation and protection of other work so that neither will be damaged by installation of other. Do not use materials that are frozen, caked, lumpy, dirty, or contaminated by foreign materials. Do not use excessive water in mixing and applying plaster materials.
 2. Base Coat Application: Apply in accordance with Section 2507 and 2512 of the California Building Code.
 - a. Base Coat 1 (scratch): Apply with sufficient material and pressure to completely embed into metal lath and develop a thickness of 3/8" and shall be scratched horizontally to form a key.
 - b. Base Coat 2 (brown): The second coat shall be brought out to proper thickness, rodded and floated sufficiently rough to provide adequate bond for the finish coat.
 3. Tolerances: Do not deviate more than plus or minus 1/8 inch in 10 feet from a true plane in finished plaster surfaces, as measured by a 10-foot straightedge placed at any location on surface.
 4. Grout hollow-metal frames, bases, and similar work occurring in plastered areas, with base-coat plaster material, before lathing where necessary. Except where full grouting is indicated or required for fire-resistance rating, grout at least 6 inches at each jamb anchor.
 5. Corners: Make internal corners and angles square; finish external corners flush with cornerbeads on interior work, square and true with plaster faces on exterior work.
 6. Thickness: Apply in accordance with Section 2512 of The California Building Code and ASTM C 926. Total of 7/8".
 7. Number of Coats: Apply plaster in 2 or 3 coats as indicated below or as shown.
 - a. Three Coats: Over the following plaster base:
 - 1) Metal lath.
 - b. Two Coats: Over the following bases:
 - 1) Concrete unit masonry.
- H. Base Coat Proportions: The proportion of aggregate to cementitious materials shall be as set forth in Table 2507.2 of The California Building Code.

1. Measuring Ingredients: Proportion and measure ingredients by means of calibrated boxes or containers of such nature that quantities measured can be readily and accurately checked at any time. Proportioning by shovel is not acceptable.
 2. Mixing Plaster: Mix plaster by machine for a minimum of 2 minutes. Mix no more plaster than can be properly placed within ½ hour after mixing.
- I. Moist-cure plaster base and finish coats to comply with the minimum requirements Table 2507.2 of The California Building Code. Keep scratch and brown coat moist. Continued water spraying shall be maintained, including weekends and holidays.
1. Cure time between base coat 1 (scratch) and base coat 2 (brown) shall be 7 days.
 2. Cure time between base coat 2 (brown) and finish coat shall be 14 days.
- J. Finish Coats: As follows:
1. Float Finish: Apply finish coat to a minimum thickness of 1/8 inch to completely cover base coat, uniformly floated to a true even plane with fine-textured float sand finish.
- K. Finish Coat Sample: The Contractor shall execute a 8' x 8' sample of each type of finish in texture and color as required, for approval by the Architect before proceeding with finish coats. Finish work shall match approved sample.
- L. Cutting and Patching: Repair cracks and indented surfaces. Point-up finish plaster surfaces around items that are built into or penetrate plaster surfaces. Repair or replace work to eliminate blisters, buckles, check cracking, dry outs, efflorescence, excessive pinholes, and similar defects. Repair or replace work as necessary to comply with required visual effects.
- M. Cleaning and Protecting: Remove plaster from other surfaces not to be plastered. When plastering is completed, remove unused materials, containers, equipment, and plaster debris. Protect plaster work from damage or deterioration until Substantial Completion.

END OF SECTION 09 24 00

SECTION 09 29 00

GYPSUM BOARD

PART 1 - GENERAL

1.01 SUMMARY

- A. Provisions of General Conditions, Supplementary Conditions, and Division One apply to this section.
- B. Scope of work: The work under this section includes furnishing all labor, materials, and equipment and performing all operations in connection with Gypsum Board Assemblies, as indicated on the drawings, specified herein, or reasonably required to complete the work. The work includes, but is not limited to the following:
 - 1. Gypsum Board at ceilings.
 - 2. Gypsum Board at walls.
 - 3. Taped and sanded joint treatment.
 - 4. Texture

1.02 SUBMITTALS

- A. Submit product data for gypsum board, joint tape and fasteners as per Section 01 33 00.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Gypsum Wallboard: ASTM C 36, United States Gypsum Company, Sheetrock brand Gypsum Panels, 5/8" Type X, tapered edge.
- B. Gypsum Wallboard Joint Treatment Materials: Provide joint treatment materials complying with ASTM C 475 and the recommendations of both the manufacturers of sheet products and of joint treatment materials for each application indicated.
 - 1. Joint Tape: Sheetrock Joint Tape, cross fibered paper.
 - 2. Joint Compound: United States Gypsum Company, Sheetrock All Purpose Joint Compound Ready Mixed.
- C. Gypsum Board Accessories:
 - 1. Corner Bead: United States Gypsum Company, Sheetrock Brand Paper Faced Metal 3/4" Bullnose.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Commencement of work constitutes acceptance of substrate. All framing members shall be true and straight. Any framing or furring member that varies more than 1/8" from the plane of adjacent framing or furring members shall be corrected under the rough carpentry section before gypsum

wallboard is installed. Inspect all substrate and report all conditions which will jeopardize smooth satisfactory finish.

- B. Tolerances: Maximum variation from true flatness shall be 1/8" in 10 feet in any direction.

3.02 INSTALLATION

- A. Gypsum Board Application and Finishing Standards: Install and finish gypsum panels to comply with ASTM C 840, GA-216 and Section 2508 of The California Building Code.
- B. Installing Gypsum Board Trim Accessories: For trim accessories with back flanges, fasten to framing with the same fasteners used to fasten gypsum board. Otherwise, fasten trim accessories according to accessory manufacturer's directions for type, length, and spacing of fasteners.
 - 1. Install cornerbead at external corners.
 - 2. Install edge trim where edge of gypsum panels would otherwise be exposed.
- C. Finishing Gypsum Board Assemblies: Treat gypsum board joints, interior angles, flanges of cornerbead, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration.
 - 1. Prefill open joints and damaged areas using All Purpose Joint Compound.
 - 2. Apply joint tape over gypsum board joints, including over trim accessories with flanges. Embed joint tape in joint compound.
 - 3. Apply two coats of joint compound or finishing compound over all joints and dimples from fasteners. Sand between coats as required.
- D. Apply Gypsum Board Texture Finishes as follows:
 - 1. Provide texture as per finish schedule.
- E. Ceilings: Provide minimum 5/8" gypsum board at ceilings.
- F. Walls: Provide minimum 5/8" gypsum board full height of all walls, to bottom chord of truss, unless noted otherwise.

END OF SECTION 09 29 00

SECTION 09 30 13

CERAMIC TILE

PART 1 - GENERAL

1.01 SUMMARY

- A. Provisions of General Conditions, Supplementary Conditions, and Division 01 apply to this section.
- B. Scope of work: The work under this section includes furnishing all labor, materials, and equipment and performing all operations in connection with Ceramic Tile, as indicated on the drawings, specified herein, or reasonably required to complete the work. The work includes, but is not limited to the following.
 - 1. Provide ceramic tile at toilet rooms.
 - 2. Provide 5/8" cementitious backer board over 1/2" OSB at all toilet room walls.
 - 3. Provide exterior tile wainscoat.

1.02 REFERENCES

- A. Handbook for Ceramic Tile Installation

1.03 SUBMITTALS

- A. In addition to Product Data for each type of tile and setting material indicated, submit the following:
 - 1. Samples of each type and composition of tile and for each color and texture required.
 - 2. Product data indicating manufacturer's specifications instructions for using mortar and grout.

1.04 REGULATORY REQUIREMENTS

- A. Ceramic tile flooring shall be stable, firm, and slip resistant. CBC Section 11B-302.1
- B. Static Coefficient of Friction: Tile shall be non-slip, with static coefficient of friction, wet or dry as per ASTM C 1028:
 - 1. Level Surfaces: Minimum 0.6.
 - 2. Step Treads: Minimum 0.6.

1.05 ADDITIONAL MATERIAL

- A. Contractor shall provide 3 % additional tile and trim pieces of each type, color and size used for this project. Deliver to Owner in securely packaged and labeled boxes.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Tile Products Manufacturers: Dal-Tile Corporation, or Equal.
- B. Tile-Setting and Grouting Materials Manufacturers:
 - 1. Laticrete International, Inc.
 - 2. Custom Building Products

- C. ANSI Ceramic Tile Standard: Provide tile that complies with Standard Grade requirements of ANSI A137.1, "Specifications for Ceramic Tile," for types, compositions, and other characteristics indicated.
- D. Factory Blending: For tile exhibiting color variations within the ranges selected during sample submittals, blend tile in the factory and package so tile units taken from one package show the same range in colors as those taken from other packages and match approved Samples.
- E. INTERIOR FLOOR TILE at RESTROOMS
 - 1. Field Tile: DAL TILE VERANDA SOLIDS Colorbody Porcelain
 - a. Composition: Porcelain
 - b. Size: 13" x 13"
 - c. Nominal Thickness: 3/8"
- F. INTERIOR WALL TILE at RESTROOMS
 - 1. Field Tile: DAL TILE VERANDA SOLIDS Colorbody Porcelain
 - a. Composition: Porcelain
 - b. Module Size: 13" x 20"
 - c. Nominal Thickness: 3/8"
 - 2. Wall Accent: DAL TILE COLOR WAVE Glass Mosaics
 - a. Composition: Glass
 - b. Module Size: 1" x 1"
 - c. Nominal Thickness: 5/16"
- G. INTERIOR WALL TILE at CLASSROOM WALLS and CORRIDOR
 - 1. Field Tile: DAL TILE VERANDA SOLIDS Colorbody Porcelain
 - a. Composition: Porcelain
 - b. Module Size: 13" x 20"
 - c. Nominal Thickness: 3/8"
- H. EXTERIOR TILE WAINSCOAT
 - 1. Wall Tile: DAL TILE FORMULA Colorbody Porcelain Tile
 - a. Composition: Porcelain
 - b. Module Size: 24"x48"
 - c. Finish: unpolished
 - d. Nominal Thickness: 7/16"
 - e. Color: as selected by architect
 - f. Provide chamfer at top and bottom edge and all outside corners.
- I. Trim Units: Provide tile trim units to match characteristics of adjoining flat tile and to comply with the following requirements:
 - 1. Size: As indicated, coordinated with sizes and coursing of adjoining flat tile where applicable.

2. Provide radius at all inside corners, provide bullnose at all outside corners, provide cove base at all wall tile that abuts floor tile.
- J. Thin Bed Setting Material: Provide materials complying with ANSI A118.4.
1. LatiCrete 254 Platinum
- K. Grouting and Sealing Materials, as follows:
1. Walls
 - a. LATICRETE LATAPOXY 2000 Industrial Grout
 - b. LATICRETE Latasil 9118 Primer
 2. Floors
 - a. Laticrete LATAPOXY 2000 Industrial Grout
 - b. LATICRETE Latasil 9118 Primer

PART 3 - EXECUTION

3.01 PREPARATION

- A. Provide concrete substrates for tile floors installed with dry-set or latex-portland cement mortars that comply with flatness tolerances specified in referenced ANSI A108 series of tile installation standards for installations indicated.
 1. Use trowelable leveling and patching compounds per tile-setting material manufacturer's written instructions to fill cracks, holes, and depressions.
 2. Remove protrusions, bumps, and ridges by sanding or grinding.
- B. Blending: For tile exhibiting color variations within the ranges selected during Sample submittals, verify that tile has been blended in the factory and packaged so tile units taken from one package show the same range in colors as those taken from other packages and match approved Samples.
- C. ANSI Tile Installation Standards: Comply with parts of ANSI A108 series of tile installation standards in "Specifications for Installation of Ceramic Tile" that apply to types of setting and grouting materials and to methods indicated.
- D. TCA Installation Guidelines: TCA's "Handbook for Ceramic Tile Installation." Comply with TCA installation methods indicated.
 1. Interior wall tile: W244C-07
 2. Interior Floor tile at toilet rooms: F113-07
- E. Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions, unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- F. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

- G. Jointing Pattern: Lay tile in grid pattern, unless otherwise indicated. Align joints where adjoining tiles on floor, base, walls, and trim are the same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.
- H. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
1. Locate joints in tile surfaces directly above joints in concrete substrates.
 2. Prepare joints and apply sealants to comply with requirements of Division 7 Section "Joint Sealants."
- I. Mixing:
1. Mix Latex Portland Cement Mortar in accordance with manufacturer's instructions.
 2. The proper mortar consistency is such that when applied with the recommended notched trowel to the backing, the ridges formed in the mortar will not flow or slump.
- J. Installation of Setting Beds at Floors:
1. Install setting bed in accordance with TCA Handbook for Ceramic Tile Installation.
- K. Mortar Application:
1. Clean surface thoroughly. Dampen if dry, but do not saturate.
 2. Apply mortar with flat side of trowel, comb mortar using a notched trowel to obtain even setting bed. Tile shall not be applied to skinned over mortar.
- L. Floor Tile Installation: Install tile to comply with requirements indicated, including those referencing TCA installation methods and ANSI A108 series of tile installation standards.
1. Joint Widths: Install tile on floors with the following joint widths:
 - a. Porcelain Tile: 1/4"
 2. Back Buttering: For installations indicated, obtain 100 percent mortar coverage by complying with applicable special requirements for back buttering of tile in referenced ANSI A108 series of tile installation standards.
 3. Metal Edge Strips: Install at locations indicated or where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with top of tile.
 4. Sound tile after setting. Replace hollow sounding units.
 5. Provide water proofing / anti-fracture membrane on all floors
- M. Wall Tile Installation: Install types of tile designated for wall installations to comply with requirements indicated, including those referencing TCA installation methods and ANSI setting-bed standards.
1. Joint Widths: Install tile on walls with the following joint widths:
 - a. Ceramic Mosaic Tile: 1/16 inch (1.6 mm).
 - b. Wall Tile: 1/16 inch (1.6 mm).

2. Back Buttering: For installations indicated, obtain 100 percent mortar coverage by complying with applicable special requirements for back buttering of tile in referenced ANSI A108 series of tile installation standards.

N. Installation of Grout:

1. Remove all mortar from face and edges of tile.
2. Force a maximum amount of grout into the joints. Cushioned edge tile shall be finished evenly to the depth of the cushion. Square edge tile shall be finished flush with the tile surface. Finished joint shall be uniform in color, smooth and without pinholes, voids or low spots.
3. Grout tile to comply with the requirements of the following tile installation standards:
 - a. For ceramic tile grouts (sand-portland cement, dry-set, commercial portland cement, and latex-portland cement grouts), comply with ANSI A108.10.
 - b. For chemical-resistant epoxy grouts, comply with ANSI A108.6.
 - c. For chemical-resistant furan grouts, comply with ANSI A108.8.

O. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter. Use cleaning materials and methods that comply with tile and grout manufacturers' written instructions.

1. Remove temporary protective coating by method recommended by coating manufacturer that is acceptable to brick and grout manufacturer. Trap and remove coating to prevent it from clogging drains.

END OF SECTION 09 30 13

SECTION 09 51 13

ACOUSTICAL PANEL CEILINGS – LAY-IN

PART 1 – GENERAL

1.01 SUMMARY

- A. Provisions of General Conditions, Supplementary Conditions, and Division 01 apply to this section.
- B. Scope of Work: The work under this section includes furnishing all labor, materials, and equipment, and performing all operations in connection with Acoustical Panel Ceilings as indicated on the drawings, specified herein, or reasonably required to complete the work. The work includes, but is not limited to the following:
 - 1. Provide Acoustic Panels for Standard Ceilings.

1.02 SUBMITTALS

- A. Product Data.
- B. Samples: Submit three samples of each panel type.

1.03 ADDITIONAL MATERIALS

- A. Provide ten cartons of each of each type of material specified.

1.04 QUALITY ASSURANCE

- A. Interior wet work shall be completed prior to installation of panels. Windows and doors shall be in place. HVAC system shall be installed and operable to maintain a temperature range of 60 to 90 degrees F and maximum 70 percent relative humidity.
- B. Fire Classification Requirements: ASTM E84; All materials shall have flame spread of less than 25 and a smoke density rating of less than 450.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. USG Corporation
- B. Or approved equal

2.02 STANDARD CEILING Type 1

- C. Acoustical Panel: USG “F” Fissured
 - 1. Location: all supended ceilings
 - 2. Size: 24” x 24”.

3. Thickness: 3/4".
4. Light Reflectance: 0.70.
5. Weight: 1.45 lbs/SF.
6. Edge Detail: SL, Angled Tegular.
7. Material: Cast mineral fiber.
8. Color: White.
9. Acoustics: NRC 0.70, CAC Min. 35

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install panels when all work above grid is complete.
- B. Install panels in place free from damaged edges or other defects detrimental to appearance and function.
- C. Replace all soiled panels.

END OF SECTION 09 51 13

Altro Wood Comfort
Commercial Smooth Sheet Vinyl Flooring
SECTION 09 65 16.23
RESILIENT SHEET FLOORING
(Commercial Smooth Sheet Vinyl Flooring)

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: This section includes labor, materials and other services necessary to complete resilient sheet flooring and accessories work. Conform with requirements of all Sections of Division 1, General Requirements, as it applies to the work of this Section.
- B. Related Sections:
 - 1. Section 03300 - Cast-in-Place Concrete: Concrete finishing.
 - 2. Section 06100 - Rough Carpentry: Plywood floor sheathing.
 - 3. Division 7 - Thermal and Moisture Protection.
 - 4. Division 15 - Mechanical.

1.02 REFERENCES

- A. **ASTM D 2047**, Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine.
- B. **ASTM E 648/NFPA 253**, Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
- C. **ASTM E662**, Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
- D. **ASTM F710**, Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
- E. **ASTM F 970**, Standard Test Method for Static Load Limit.
- F. **ASTM F1482**, Standard Guide to Wood Underlayment Products Available for Use Under Resilient Flooring.
- G. **ASTM F1303**, Standard Specification for Sheet Vinyl Floor Covering with Backing.
- H. **ASTM F2170**, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
- I. (RFCI) Resilient Floor Covering Institute
 - 1. RFCI Standard Slab Moisture Test Method (Calcium Chloride Method)

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's current printed product literature, specifications, installation instructions, and field reports in accordance with Section 01330 - Submittal Procedures.
- B. Shop Drawings: Submit shop drawings to indicate materials, details, and accessories in accordance with Section 01330 - Submittal Procedures including but limited to the following:
 - 1. Submit a cut diagram indicating seam locations and roll direction. Use mitered seam layouts for corners when changing directions 180 degrees (e.g. when running material down corridors which bisect at a right angle), unless approved otherwise.
- C. Samples: Submit duplicate 12" x 12" (300 mm x 300 mm) sample pieces of sheet material, 12" (300 mm) long [gully edge] [cap strip] [joint cover strip] [cove former] in accordance with Section 01330 - Submittal Procedures.
- D. Closeout Submittals: Submit the following:
 - 1. Operation and maintenance data for installed products in accordance with Division 1 Closeout Submittals Section. Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project.
 - 1. Training: Installer who has attended an Altro flooring installation training clinic.
- B. Regulatory Requirements: Provide sheet vinyl flooring in compliance with the following:
 - 1. Americans with Disabilities Act Architectural Guidelines (ADAAG).
 - 2. Occupational Safety & Health Administration (OSHA).

- C. Mock-ups: Install at project site a job mock-up using acceptable products and manufacturer approved installation methods, including concrete substrate testing.
 - 1. Maintenance: Maintain mock-up during construction for workmanship comparison; remove and legally dispose of mock-up when no longer required.
 - 2. Incorporation: Mock-up may be incorporated into final construction upon Owner's approval.
- D. Pre-installation Meeting: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions, manufacturer's warranty requirements, and installer qualifications.

1.05 SITE CONDITIONS

- A. Temperature Requirements: If storage temperature is below 65F (18C) or the floor temperature is below 50F (10C), the Altro safety flooring product must be moved to a warmer place and allowed to reach this temperature before unrolling or installation. For further information, refer to current Altro Installation Practices and Quick Facts.
- B. Maintain air temperature and structural base temperature at flooring installation area between 68F (20C) and 80F (26C) for 48 hours before, during and 24 hours after installation.

1.06 WARRANTY

- A. Warranty period for Altro Wood Comfort shall be 10 years commencing on date of substantial completion. Refer to conditions of the contract for project warranty provisions.

1.07 BACKING

- A. Altro Wood Comfort uses non-woven polyester/cellulose, glass fiber reinforcement.

PART 2 PRODUCTS

2.01 FLOORING

- A. Sheet Vinyl Manufacturer: Wood Comfort by Altro, Telephone 800.377.5597, E-Mail Assistance: support@altrofloors.com
- B. Acceptable material: Altro Wood Comfort (measurements and product weights given below are approximate): Slip Resistance ASTM 2047 >.6 dry >.7 wet

COLORS

- 2. **Vintage Cherry Comfort WSMSC2803:** Thickness: 0.11" (2.85 mm); Roll Width: 6' 7" (2 m); Roll Length 65'5" (20 m); Roll Weight: 230 lb (102 kg);

2.02 ACCESSORIES

- A. **Vinyl welding rod:** Acceptable material:
 - 1. Altro weld rod
- B. **Cove former:** Acceptable material, sized to suit application:
 - 1. Altro Cove former [20R - 24 mm (1") radius] [38R - 45 mm (1.75") radius].
- C. **Gulley edge:** Acceptable material, vinyl, sized to suit application:
 - 1. Altro Gulley Edge [GA 35/25] [GE 35RE] [GE 25RE].
- D. **Cap strip:** Acceptable material, sized to suit application, [Vinyl] [stainless steel]:
 - 1. Altro Cap Strip [C4] [C7] [C8] [C11].
- E. **Subfloor Filler and Leveler:** Use only gray Portland cement-based "moisture tolerant" underlayments, and patching compounds. Use for filling cracks, holes or leveling. White gypsum materials are not acceptable.
- F. **Metal edge strips:**
 - 1. Aluminum extruded, smooth, [mill finish] stainless steel with lip to extend over flooring.
- G. **Adhesives**
 - 1. Ecofix 20- Hard set for heavy rolling loads

PART 3 EXECUTION

3.01 EXAMINATION

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog, installation instructions.
- B. Site Verification of Conditions: Verify substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.

3.02 PREPARATION

- A. Flooring shall be installed over subfloors conforming to ASTM F710 for concrete and other monolithic floors or ASTM F1482 for wood subfloors.
- B. Always conduct moisture tests per ASTM F-2170 on all concrete slabs regardless of age or grade level. ASTM F-2170 Relative Humidity (RH) test results must not exceed 90%.
- C. Do not proceed with work until results of moisture condition tests are acceptable.
- D. When patching, a moisture tolerant patching compound must always be used.

3.03 INSTALLATION

- A. Wood Comfort Installation: Install Altro flooring in accordance with the current posted Altro Installation Practices and Quick Facts Guide. All Seams shall be heat welded with Altro Weldrod™ only. Failure to install Altro flooring in accordance with recommended procedures will void the Altro Limited Product Warranty.
- B. Coved Installation: Where Altro flooring is coved up wall surfaces and other abutments, installation shall be in accordance with Altro flooring Installation Practices using the following accessories:
 - 1. At standard wall finishes: Use Altro C7 vinyl cap strip to accommodate sheet vinyl to a height as indicated.
 - 2. At ceramic tile, Altro Whiterock semi-rigid wall cladding or FRP paneling: Use Altro C8 Vinyl Captile Strip or C4 cap, respectively.
 - 3. At 0.75" (19.1 mm) radius coving at juncture of vertical and horizontal surfaces: Use Altro Vinyl Cove Former 20R.
 - 4. At 1.5" (38 mm) radius coving at juncture of vertical and horizontal surfaces: Use Altro Vinyl Cove Former 38R.
 - 5. Top set cove base: Install in accordance with manufacturer's instructions.

3.04 SOUND INSULATION

- 1. Altro Wood Comfort provides 15dB of sound insulation.

3.05 CLEANING

Specifier Note: Altro flooring is unaffected by surface water and most chemicals which do not have a solvent action on vinyl. Certain organic solvents and chemicals, including asphalt, can cause staining. Acids and dyes may affect the color, which should be selected accordingly. Contact Altro for information about the effect of chemicals on Altro flooring.

- A. Cleaning: Remove temporary coverings and protection of adjacent work areas.
 - 1. Repair or replace damaged installed products.
 - 2. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance.
- B. Protection:
 - 1. Sweep or vacuum all construction debris and dust first, then clean the flooring with Altro Clean 44 using an auto scrubber.

3.06 PROTECTION

- A. Cover and protect finished installation from damage from other trades using a non-staining, temporary floor protection

system, such as a reusable textured plastic sheeting.

Wood Comfort should be covered and protected from all other trades during construction with a suitable non-staining protective covering without taping to the surface of the flooring.

----- END OF SECTION -----

SECTION 10 14 00 SIGNS

PART 1 - GENERAL

1.01 SUMMARY

- A. Provisions of General Conditions, Supplementary Conditions, and Division 01 apply to this section.
- B. Scope of work: The work under this section includes furnishing all labor, materials, and equipment and performing all operations in connection with Signage, as indicated on the drawings, specified herein, or reasonably required to complete the work. The work includes, but is not limited to the following:
 - 1. Room identification signs.
 - 2. Restroom signs
 - 3. Occupancy signs
 - 4. Accessibility signs

1.02 REFERENCES

- A. ASTM A53 – Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
- B. ASTM A500 – Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- C. FED-STD-595 – Colors used in Government Procurement.
- D. ASTM D4802 – Poly (Methyl Methacrylate) Acrylic Plastic Sheet.
- E. Chapters 10, 11B and 30 of California Building Code.

1.03 SUBMITTALS

- A. Submit under provisions of Section 01 33 00, Submittal Procedures.
- B. Submit shop drawings listing sign styles, lettering and locations and overall dimensions of each sign.
- C. Submit samples illustrating full size sample sign of each type, style and color specified.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. All Signage shall conform to CBC Section 1007.9 and 11B-703.
 - 2. Tactile exit signage shall be provided per CBC 1011.3.
 - 3. Raised characters shall comply with CBC Section 11B-703.2
 - a. Depth: It shall be 1/32 inch minimum above their background.
 - b. Tactile Character type. Tactile characters on signs shall be sans serif uppercase characters and be duplicated Contracted (Grade 2) Braille.
 - c. Tactile Character size. Raised characters shall be a minimum of 5/8 inch and a maximum of 2 inches high based on the letter “I”. CBC Section 11B-703.2.5.
 - d. Finish and contrast: Contrast between characters, symbols and their backgrounds shall have a non glare finish. Character shall contrast with their background with either light

- characters on a dark background or dark characters on a light background. CBC Section 11B-703.5.1.
- e. Proportions: Raised characters on signs shall be selected from fonts where the width of the uppercase letter "O" is 60% minimum and 110% maximum of the height of the uppercase letter "I". Stroke thickness of the uppercase letter "I" shall be 15% maximum of the height of the character. CBC 11B-703.4 and 11B-703.6
 - f. Character Spacing: Spacing between individual tactile characters shall comply with CBC Section 11B-703.2.7 and 11B-703.2.8
 - g. Braille: It shall be contracted (Grade 2) and shall comply with CBC Section 11B703.3 and 11B-703.4. Braille dots shall have domed and rounded shape and shall comply with CBC Table and Figure 11B-703.3.1.
4. Mounting height: A tactile sign shall be located 48" minimum to the baseline of the lowest Braille cells and 60" maximum to the baseline of the highest line of raised characters above the finish floor or ground surface.
 5. Mounting location: A tactile sign shall be located on the approach side, as one enters or exits rooms or spaces, and be reached within 0" of the required clear floor space per CBC Section and Figure 11B-703.4.2 as follows
 - a. a clear floor space of 18"x18" minimum, centered on the tactile characters, shall be provided beyond the arc of any door swings between the closed position and 45 degree open position.
 - b. On the wall at the latch side of a single door.
 - c. On the inactive leaf of a double door with one active leaf.
 - d. On the nearest adjacent wall where there is no wall space at the latch side of a single door or no space at the right side of a double door with two active leaves.
 6. Visual characters shall comply with CBC Section 11B-703.5 and shall be 40" minimum above finish floor or ground.
 7. Pictograms shall comply with CBC Section 11B-703.6
 8. Symbol of accessibility shall comply with CBC Section 11B-703.7

PART 2 - PRODUCTS

2.01 GENERAL

- A. Room Identification Signage: Provide room identification signs where indicated. Install on wall adjacent to door latch, on latch side, 60 inches above finished floor to bottom of tactile lettering.
 1. Materials: Laminated acrylic Plastic Sheet, ASTM D4802, 1/4 inch thick
 - a. Upper Layer: Non-glare clear acrylic, 1/8 inch thick.
 - b. Lower Layer: Opaque acrylic, 1/8 inch thick.
 2. Fasteners: stainless steel mechanical mounting, vandal / tamper resistant.
 3. Color: As selected by Architect
 4. Lettering Type Style: Helvetica Medium, caps only
- B. Restroom Signage: Doorways leading to restrooms shall be identified with sign as detailed on drawings.
 1. Materials: Laminated acrylic Plastic Sheet, ASTM D4802.
 2. Male Restroom Signage: As per detail on drawings.
 3. Female Restroom Signage: As per detail on drawings.

4. Unisex Restroom Signage: As per detail on drawings.
 5. Fasteners: stainless steel mechanical mounting, vandal / tamper resistant.
 6. Color: As selected by Architect.
 7. Lettering Type Style: sans serif, caps only.
- C. Occupant Load Sign: Provide maximum occupancy load signs where indicated.
1. Materials: Laminated acrylic Plastic Sheet, ASTM D4802, clear ¼ inch thick.
 - a. Upper Layer: Non-glare clear acrylic, 1/8 inch thick.
 - b. Lower Layer: Opaque acrylic, 1/8 inch thick.
 2. Fasteners: stainless steel mechanical mounting, vandal / tamper resistant.
 3. Color: As selected by Architect.
 4. Lettering Type Style: Helvetica Medium.
 5. Obtain occupant load number from Architect.
- D. Accessibility Sign: Provide at each accessible building entrance.
1. Sign shall be visible to persons along approaching pedestrian ways. Provide additional directional signs as indicated on drawings.
 2. Fasteners: stainless steel mechanical mounting, vandal / tamper resistant.
- E. Parking Area Signs:
1. Materials:
 - a. Post mounted and wall mounted signs shall be fabricated from 16 guage enameling iron with porcelain enamel finish.
 - b. Mount signs to post with minimum two 3/16 inch diameter round head bolts with tamperproof nuts, galvanized.
 - c. Posts: 2" diameter galvanized steel pipe weighing a minimum of 3.65 lbs per foot and conforming to ASTM A53, Schedule or 2 inch x 2 inch galvanized steel tubing, weighing a minimum of 4.32 lbs per foot and conforming to ASTM A500, Grade B, 3/16 inch wall thickness.
 2. Traffic Entry Warning Signs: As per drawings.
 3. Parking Stall Signs: As per drawings.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work.
- B. Beginning of installation means installer accepts existing surfaces.

3.02 INSTALLATION

- A. Locate signs where indicated, using mounting methods specified. Install level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.
 1. Post mounted signs: Set post in concrete base minimum 12 inch diameter and 18 inches deep. Signs set in paving shall be mounted in core drilled holes minimum 8 inch diameter and 18 inches deep with top of concrete fill flush to paving.

2. Wall mounted signs shall be installed after painting of wall surface.

3.03 CLEANING

- A. After installation, clean soiled surfaces. Protect units from damage until acceptance by the Owner.

END OF SECTION 10 14 00

SECTION 10 28 13

TOILET ROOM ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

- A. Provisions of General Conditions, Supplementary Conditions, and Division 01 apply to this section.
- B. Scope of work: The work under this section includes furnishing all labor, materials, and equipment and performing all operations in connection with Toilet Room Accessories, as indicated on the drawings, specified herein, or reasonably required to complete the work. The work includes, but is not limited to the following.
 - 1. Provide paper and soap dispensers.
 - 2. Provide waste receptacles.
 - 3. Provide warm air dryers
 - 4. Provide mirrors.
 - 5. Provide grab bars
 - 6. Provide underlavatory guards

1.02 SUBMITTALS

- A. Manufacturer's Product Data. Include construction details, material descriptions and thicknesses, dimensions, profiles, fastening and mounting methods, specified options, and finishes for each type of accessory specified.

1.03 ACCESSIBILITY REQUIREMENTS

- A. Toilet accessories required to be accessible shall be mounted at heights according to CBC Section 11B-602 through 11B-612.
- B. Grab bars in toilet facilities and bathing facilities shall comply with CBC Section 11B-609. Grab bars and any wall or other surfaces adjacent to grab bars shall be free of sharp or abrasive elements and shall have rounded edges. The space around the grab bars shall be as follows
 - 1. 1-1/2" between grab bar and the wall
 - 2. 1-1/2" minimum between the grab bar and projecting objects below and at the ends.
 - 3. 12" minimum between the grab bar and projecting objects above.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Manufacturers: Provide accessories by one of the following:
 - 1. Bradley, (basis for design)
 - 2. Bobrick
- B. Toilet Paper Dispensers:
 - 1. Model: Bradley 522

2. Quantity: Provide (1) at each toilet
 3. Location: Verify with Architect.
 4. Accessible stall: Bradley 5412
- C. Paper towel dispenser and waste receptacle:
1. Model: Bradley 2017-10, semi-recessed Bradex.
 2. Quantity: Provide (1) at single use toilet rooms. Provide (2) at joint use toilet rooms.
 3. Location: Verify with Architect.
- D. Feminine Napkin Disposal:
1. Model: Bradley 4731-15, recessed.
 2. Quantity: Provide (1) at each female toilet.
 3. Location: Verify with Architect.
- E. Toilet Seat Cover:
1. Model: Bradley 584.
 2. Quantity: Provide (1) at each toilet.
 3. Location: Verify with Architect.
- F. Soap Dispenser:
1. Model: Bradley 6562.
 2. Quantity: Provide (1) at each lavatory.
 3. Location: Install above lavatory.
- G. Mirrors:
1. Model: Bobrick B-290, 18" x 36".
 2. Quantity: Provide (1) at each lavatory.
 3. Location: See interior elevations.
- H. Hand Dryers:
1. Manufacturer: Saniflow
 2. Description: Speedflow, cast iron white enameled coating, surface mounted, 4" projection
 3. Model: M06AF-UL.
 4. Quantity: Provide (1) at each lavatory
 5. Location: See interior elevations.
 6. Electrical: verify voltage with electrical drawings
- I. Grab Bars:
1. Model: Bobrick B-490 Series
 2. Quantity and Configuration: As per drawings
 3. Location: As per drawings.
- J. Keys: Provide universal keys for internal access to accessories for servicing and resupplying.
Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer.
- B. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- C. Secure mirrors to walls in concealed, tamper-resistant screws. Set units level, plumb, and square at locations indicated, according to manufacturer's written instructions for substrate indicated.
- D. Install grab bars to withstand a downward load of at least 250 lbf, when tested according to method in ASTM F 446.
- E. Verify all dimensions shown on drawings by taking field measurements.
- F. Coordinate with all other trades whose work relates to the items specified herein for the placing of all required backing and furring to ensure proper anchorage and proper fit.
- G. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION 10 28 13

SECTION 12 32 16 PLASTIC LAMINATE – CLAD CASEWORK

PART 1 - GENERAL

1.01 SUMMARY

- A. Provisions of General Conditions, Supplementary Conditions, and Division 01 apply to this section.
- B. Scope of work: The work under this section includes furnishing all labor, materials, and equipment and performing all operations in connection with Plastic Laminate – Clad Casework, as indicated on the drawings, specified herein, or reasonably required to complete the work. The work includes, but is not limited to the following.
 - 1. Provide base cabinet units.
 - 2. Provide upper cabinet units.
 - 3. Provide wall units.
 - 4. Provide countertops.
- C. Casework located at the following locations are included in this section
 - 1. All casework as per floor plan

1.02 REFERENCES

- A. NEMA LD-3 High Pressure Decorative Laminates
- B. PS 1 – Construction and Industrial Plywood
- C. PS 20 – American Softwood Lumber Standard
- D. PS 51 Hardwood and Decorative Plywood
- E. WI – Woodwork Institute
- F. AWS – Architectural Woodwork Standard
- G. Chapter 16A, California Building Code
- H. ANSI A208.1 Wood Particle Board
- I. AQMD – Local Air Quality Management County of Imperial Regulations

1.03 ACCESSIBILITY REQUIREMENTS

- A. Operable parts all accessible casework shall comply with CBC Section 11B-309.
- B. MDF: Medium Density Fiberboard
- C. Exposed Portions of Cabinets: Surfaces visible when doors and drawers are closed, including bottoms of cabinets more than 48” above floor, and surfaces visible in open cabinets

- D. Semi-exposed Portions of Cabinets: Surfaces behind solid doors, such as interiors of cabinets, shelves, dividers, interiors and sides of drawers, and interior faces of doors. Tops of cases 78 inches or more above floor are defined as semi-exposed.
- E. Concealed Portions of Cabinets: Surfaces not usually visible after installation, including sleepers, web frames, dust panels, and ends and backs that are placed directly against walls or other cabinets.
- F. Hardwood Plywood: A panel product composed of layers or plies of veneer, or of veneers in combination with lumber core, hardboard core, MDF core, or particleboard core, joined with adhesive, and faced both front and back with hardwood veneers.

1.04 SUBMITTALS

- A. Submit as per Section 01 33 00, Submittal Procedures.
- B. LEED Submittals:
 - 1. Product Data for Credit MR 4.1 and MR 4.2: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content.
 - a. Include statement indicating costs for each product having recycled content.
 - 2. Certificates for Credit MR 7: Chain-of-custody certificates certifying that wood used to produce cabinets and countertops complies with forest certification requirements. Include evidence that manufacturer is certified for chain of custody by an FSC-accredited certification body.
 - b. Include statement indicating costs for each certified wood product.
 - 3. Product Data for Credit EQ 4.4: For adhesives and composite wood products, documentation indicating that product contains no urea formaldehyde.
- C. Submit Shop drawings showing location of each item, dimensioned plans and elevations and large-scale details.
- D. Shop drawings shall include materials, components profiles, fastening methods, assembly methods, joint details, accessory listings and schedule of finishes.
- E. Product Data:
 - 1. For each type of product indicated.
 - 2. All hardware.
- F. Submit a complete line of plastic laminate chips, in wood grains and solid colors, identified with manufacturer's name and chip number.
- G. Submit 6 inch sample of PVC edge banding.
- H. Cabinet Samples:

1. Provide full size base cabinet with countertop and upper cabinet of each casework type indicated, in specified finish with hardware installed. Include pair of doors and at least one drawer.
2. Approved sample unit may be used as part of the Work.

1.05 QUALITY ASSURANCE

- A. Cabinets and countertops shall be manufactured in accordance with the latest edition of the Architectural Woodworks Standards (AWS) for Grade specified herein or to higher standards as specified herein or shown on drawings.
- B. Before delivery to the jobsite, the casework supplier shall submit a Woodwork Institute (WI) Certified Compliance Certificate indicating the products he will furnish for this project, and certifying that they will fully meet all the requirements of the Grade specified.
- C. Confirmation of all WI inspections shall be submitted.
- D. All WI cost shall be included.
- E. All Casework construction shall comply with the structural requirements of Table 16A-O, California Building Code for required horizontal force factor for anchorage of non-structural items.
- F. Forest Certification: Fabricate cabinets and countertops with wood and wood-based products produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."
- G. Coordination: Coordinate layout and installation of framing and reinforcements in walls and partitions for support of manufactured wood casework

1.06 DELIVERY, STORAGE AND HANDLING

- A. Conform to Section 26, WIC Manual of Millwork and WIC Technical.
- B. Deliver manufactured wood casework only after painting, utility roughing-in, and similar operations that could damage, soil, or deteriorate casework have been completed in installation areas. If casework must be stored in other than installation areas, store only in areas where environmental conditions meet are equal to conditions that will be maintained when building is occupied.
- C. Keep finished surfaces covered with polyethylene film or other protective covering during handling and installation.

1.07 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install manufactured wood casework until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Verify actual dimensions of construction contiguous with manufactured wood casework by field measurements before fabrication.

1.08 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of manufactured wood casework that fails in material or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
 - a. Delamination of components or other failures of glue bond.
 - b. Warping of components.
 - c. Failure of operating hardware.
 - d. Deterioration of finishes.
2. Warranty Period: Five years from date of substantial completion.

PART 2 - PRODUCTS

2.01 GENERAL

A. Grade:

1. Laboratory Grade in accordance with WIC Manual of Millwork, Section 15.
2. Grade Rules Modifications:
 - a. Interior surfaces of open cabinets shall be Premium Grade.
 - b. Interior surfaces of hinged doors shall be Premium Grade.

2.02 MATERIALS, GENERAL

A. Plastic Laminate: High pressure decorative laminate complying with NEMA LD-3.

1. Cabinet Surfaces:
 - a. Vertical surfaces: Decorative high pressure laminate, general purpose type, .028 inch thick
 - b. Horizontal surfaces: Decorative high pressure laminate, .050 inches thick
 - c. Post formed: Decorative high pressure laminate, .042 inch thick
2. Countertops:
 - a. Horizontal surfaces: Decorative high pressure laminate, .050 inches thick
 - b. Post formed: Decorative high pressure laminate, .042 inch thick
3. Countertops (Chemical and Stain Resistant):
 - a. Horizontal surfaces: Decorative high pressure laminate, .050 inches thick
 - b. Post formed: Decorative high pressure laminate, .042 inch thick
4. Laminate Backing Sheet: NEMA LD-3 BKS/-91 Backing grade, undercoated plastic laminate, with face material of .028 inches or BKS/-92 with face material of .042 or .050 inches.
5. Laminate Manufacturers: Products of the following manufacturer or supplier form the basis for design and quality intended.

- a. Formica Corporation.
 - b. Ralph Wilson Plastics Co.
 - c. Nevamar Corporation.
- B. Thermoset Decorative Panel: Particle Board or MDF finished with thermally fused, melamine-impregnated decorative paper complying with LMA SAT-1.
- C. Wood Materials: Mahogany or other close grain hardwood
- D. Sheet Materials:
 - 1. Wood Particleboard: Industrial Grade, ANSI A208.1, Table I, Grade 1-M-2, composed of wood chips, medium density made with water-resistant binder.
 - 2. MDF: ANSI A208.2, Grade 130.
 - A. Hardwood Plywood PS 51; rotary cut Philippine mahogany, or other close-grain hardwood. All plywood shall be laminated on both sides for a balanced panel.
- B. Edgebanding for Plastic Laminate: Rigid PVC extrusions, through color with satin finish.
 - 1. 3 mm thick at doors and drawer fronts and face of casework.
 - 2. 1 mm thick elsewhere.
- C. Edgebanding for Thermoset Decorative Panels: PVC or polyester edge banding complying with LMA EDG-1 and matching thermoset decorative panels.
- D. Low-Emitting Materials: Provide manufactured wood casework, including countertops, made with adhesives and composite wood products containing no urea formaldehyde.

2.03 CABINET MATERIALS

- A. Exposed Cabinet Materials:
 - 1. Plastic Laminate: NEMA Grade VGS.
 - 2. Provide specified edgebanding on all exposed edges.
- B. Semi-exposed Cabinet Materials:
 - 1. Thermoset Decorative Panels: Provide thermoset decorative panels for semi-exposed surfaces unless otherwise indicated.
 - 2. Plastic Laminate at interior surfaces of open cabinets
 - 3. Plastic Laminate at interior surface of hinged doors
- C. Concealed Cabinet Materials:
 - 1. Plastic Laminate: Grade BKL.

2.04 DESIGN, COLOR, AND FINISH

- A. Design: Provide manufactured wood casework of the following design:

1. Construction Style: Style A frameless
 2. Construction Type: Type I, multiple self-supporting units rigidly joined together.
 3. Door and Drawer Front Style: Flush overlay with wire pulls.
- B. Thermoset Decorative Panel Colors, Patterns, and Finishes: As selected by Architect from casework manufacturer's full range.
- C. Plastic-Laminate Colors, Patterns, and Finishes: As selected by Architect from plastic-laminate manufacturer's full range.
- D. PVC Edgebanding Color: As selected from casework manufacturer's full range.

2.05 COUNTERTOPS

- A. Countertops, General: Provide smooth, clean exposed tops and edges in uniform plane free of defects. Provide front and end overhand of 1 inch over base cabinets.
- B. Plastic-Laminate Tops: Plastic-laminate sheet, shop bonded to both sides of 1-1/8-inch plywood or particleboard. Sand surfaces to which plastic laminate is to be bonded.
1. Plastic Laminate for Flat Tops: NEMA Grade HGS.
 2. Plastic Laminate for Backing: NEMA Grade BKL.

2.06 DRAWERS

- A. Drawer Manufacturers: Products of the following manufacturer or supplier form the basis for design and quality intended.
1. DBS Drawer Box Specialties, (800) 422 9881.
- B. Drawer Specifications:
1. Material: Prefinished Hardwood Maple Plywood
 2. Sides: 15 mm", Prefinished Hardwood Maple Plywood, 11 ply
 3. Bottom: 1/2", Prefinished Hardwood Maple Plywood, 9 ply
 4. Bottom detail: DBS Option A.
 5. Corner detail: Dovetail
 6. Top edge detail: Bullnose, pre-finished plywood
 7. Face: 3/4" plastic laminate anchored to drawer box

2.07 CABINET HARDWARE

- A. Drawer Slides: Minimum 100 lb capacity for all drawers. Full extension ball bearing type only. ACCURIDE A3832 or equal.
- B. File Drawer Slides: Minimum 150 lb capacity for all drawers. Full extension ball bearing type only. ACCURIDE A417 or equal.
- C. Hinges: Heavy duty wrap around, non-removal type pin butts, ROCKFORD 851. Minimum of 2 hinges on doors under 42 inches in height, minimum of 3 hinges on doors over 42 inches in height.
- D. Shelf Seismic Restraint Clip: Hettich #1005082, Provide at all open shelves.

- E. Magnetic Cathes: EPCO 592. Provide at all cabinet doors.
- F. Elbow Catches: EPCO 1018 Stainless Steel. Provide at inactive cabinet door leaf.
- G. Pulls: Builders No. 9054, 4 inch center to center, stainless steel, U shaped wire pull.
- H. Door Locks: Minimum 5 pin tumbler, OLYMPUS-700SC Schlage keyway, integrated with key system specified in Section 08 71 00 Door Hardware
- I. Drawers Locks: Minimum 5 pin tumbler, OLYMPUS-800SC Schlage keyway, integrated with key system specified in Section 08 71 00 Door Hardware
- J. Keying for Door and Drawer Locks: Each room keyed differently, all locks keyed to master key, integrated with key system specified in Section 08 71 00 Door Hardware
- K. Padlockable Cam Lock: OLYMPUS DCP with DCNP-500-ARP Anti-rotation plate.

2.08 CABINET FABRICATION

- A. Shop assemble casework for delivery to site in units easily handled and to permit passage through building openings.
- B. Apply plastic laminate in full uninterrupted sheets consistent with manufactured sizes. Make corners and joints hairline.
- C. Countertop Backsplash: Coved
- D. Countertop Edge: Rolled, no drip bullnose where sink occurs
- E. Plastic Laminate Faced Cabinet Construction: As required by referenced quality standard, but not less than the following:
 - 1. Semi-Exposed Surfaces: Low pressure decorative melamine overlay, except as specified herein.
 - a. Provide high pressure laminate to all visible surfaces from a seated or standing position, including interior surfaces of open casework, shelving and surfaces behind glass doors.
 - b. Provide high pressure laminate to interior surfaces of hinged doors.
 - 2. Bottoms and Ends of Cabinets, and Tops of Wall Cabinets and Tall Cabinets: 3/4-inch particleboard, plastic-laminate faced on exposed surfaces, thermoset decorative panels on semi-exposed surfaces.
 - 3. Shelves: Thermoset decorative panels.
 - a. 3/4 inch thick for shelves less than 32 inches in length
 - b. 1 inch thick for shelves over 32 inches in length
 - 4. Backs of Cabinets: 1/2-inch particleboard, plastic-laminate faced [on exposed surfaces, thermoset decorative panels on semi-exposed surfaces].
 - 5. Drawer Fronts: 3/4-inch particleboard, plastic-laminate faced.
 - 6. Doors: 3/4-inch particleboard or MDF with wood stiles and rails, plastic-laminate faced.

- F. Drawer lock anchor: Provide ¾" x 4" backer for cam of padlockable cam lock
- G. TOEKICK: Provide ¾" Hardwood Plywood, 9 ply, detached.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Verify adequacy of backing and support framing.

3.02 EXAMINATION

- A. Examine areas, with installer present, for compliance with requirements for installation tolerances, location of framing and reinforcements, and other conditions affecting performance of manufactured wood casework.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.03 INSTALLATION, GENERAL

- C. Set and secure casework in strict accordance with Section 26, WIC Manual of Millwork.
- D. Casework shall be anchored to wall or floors to conform to the minimum requirements of Section 1613A and 1614A, California Building Code.

3.04 CASEWORK INSTALLATION

- A. Install level, plumb, and true; shim as required, using concealed shims. Where manufactured wood casework abuts other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical.
- B. Base Cabinets: Set cabinets straight, level, and plumb. Adjust subtops within 1/16-inch of a single plane. Fasten cabinets to masonry or framing, wood blocking, or reinforcements in walls and partitions with fasteners spaced 24 inches o.c. Bolt adjacent cabinets together with joints flush, tight, and uniform. Align similar adjoining doors and drawers to a tolerance of 1/16 inch.
 - 1. Where base cabinets are not installed adjacent to walls, fasten to floor at toe space with fasteners spaced 16 inches o.c. Secure sides of cabinets to floor, where they do not adjoin other cabinets, with not less than two fasteners.
- C. Wall Cabinets: Hang cabinets straight, level, and plumb. Adjust fronts and bottoms within 1/16 inch of a single plane. Fasten to hanging strips, masonry, or framing, blocking, or reinforcements in walls or partitions. Align similar adjoining doors to a tolerance of 1/16 inch.
 - 1. Fasten through back, near top and bottom, at ends, and not more than 16 inches o.c.
 - 2. Use toggle bolts at hollow masonry.
 - 3. Use expansion anchors at solid masonry.
 - 4. Use No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish at metal-framed partitions.

- 5. Use toggle bolts at plaster on metal lath.
- D. Install hardware uniformly and precisely. Set hinges snug and flat in mortises unless otherwise indicated. Adjust and align hardware so moving parts operate freely and contact points meet accurately. Allow for final adjustment after installation.
- E. Adjust casework and hardware so doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.05 INSTALLATION OF TOPS

- A. Field Jointing: Where possible, make in the same manner as shop jointing, using dowels, splines, adhesives, and fasteners recommended by manufacturer. Prepare edges to be joined in shop so project-site processing of top and edge surfaces is not required. Locate field joints where shown on shop drawings.
 - 1. Secure field joints in plastic-laminate countertops with concealed clamping devices located within 6 inches of front and back edges and at intervals not exceeding 24 inches. Tighten according to manufacturer's written instructions to exert a constant, heavy-clamping pressure at joints.
- B. Secure tops to cabinets with Z-or L-type fasteners or equivalent, using two or more fasteners at each front, end, and back.
- C. About top and edge surfaces in one true plane, with internal supports placed to prevent deflection.
- D. Secure backsplashes and end splashes to walls with adhesives.
- E. Seal junctures of tops, splashes, and walls with mildew-resistant silicone sealant or another permanently elastic sealing compound recommended by countertop material manufacturer.

3.06 CLEANING AND PROTECTING

- A. Repair or remove and replace defective work as directed on completion of installation.
- B. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.
- C. Protection: Provide 6-mil plastic or other suitable water-resistant covering over countertop surfaces. Tape to underside of countertop at a minimum of 48-inches o.c. Remove protection at substantial completion.

END OF SECTION 12 32 16

SECTION 21 13 13 – WET-PIPE SPRINKLER SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

- A. Provisions of General Conditions, Supplementary Conditions, and Division One apply to this section.
- B. Scope of work: The work under this section includes furnishing all labor, materials, equipment, appliances, and necessary incidentals for the complete installation of all fire protection systems as indicated and as specified herein. These specifications are intended to describe, generally, the scope of work to be performed under this contract. All work necessary for a complete operating fire protection system in areas indicated, including but not limited to:
 - 1. Fixtures and equipment.
 - 2. Trenching and compaction of underground piping.
 - 3. Fire sprinkler piping.
 - 4. New fire sprinkler riser for Clinic and new riser for each existing tenant.
- C. Areas to be provided with sprinklers shall be:
 - 1. Entire structure
- D. Related Work not in this section:
 - 1. The following work, although similar in nature or relevant to the work of the section, is required in other sections or is to be furnished by others:
 - a. Underground dedicated water line for private fire hydrants and building sprinkler system. See Fire Protection Drawings.
 - b. Interior riser stubbed 18" above finished floor with flange. See Fire Protection Drawings.
- E. Guarantees: Furnish a written guarantee form, required under Division 1, against defects in materials and workmanship for 1 year. Guarantee shall include repair of damage to, or replacement if so required of any part of premises caused by water leaks or breaks in pipe, fixtures, or equipment provide under this Division, except when damage is caused by abuse.
- F. Permits and Fees: Contractor shall coordinate for all permits required by all governing agencies. Owner shall pay all permit fees.

1.02 REFERENCES

- A. National Fire Protection Association (NFPA):
 - 1. NFPA 13, Installation of Sprinkler Systems
 - 2. NFPA 25, Care & Maintenance of Sprinkler Systems
 - 3. NFPA 14, Installation of Standpipe and Hose Systems
 - 4. NFPA 24, Private Fire Service Mains and Their Appurtenances
- B. American Society for Testing & Materials (ASTM)
- C. American Welding Society (AWS): Standard Qualifications of Welding Procedures and Welders for Piping and Tubing

- D. California Building Code
- E. California Fire Code

1.03 SUBMITTALS

- A. Submit product data as per section 01 33 00 - Submittals.

1.04 QUALITY ASSURANCE

- A. Applicator Qualifications: Contractor shall provide evidence of having a minimum of five (5) years experience in the fabrication and installation of fire protection systems and must possess a valid C-16 California Fire Sprinkler Contractor's License.
- B. Requirements of Governing Agencies: Conform to all requirements of the agencies listed below in addition to all other agencies having jurisdiction.
 - 1. Governing Agency
 - 2. California State Fire Marshall
 - 3. Local Fire Marshal

1.05 PERMITTING

- A. The fire sprinkler system is a deferred approval item. Contractor shall be responsible to provide a complete design and drawings for submittal to governing agency for review and approval. Drawings shall be stamped and signed by a licensed engineer.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. All materials to be used in this project shall be new and shall have U.L. or F.M. and CSFM approval.
- B. Pipe and fittings Above Ground:
 - 1. Branch piping: Schedule 40 black steel pipe, ASTM A53 with Class 125 Standard cast-iron screwed fittings, ANSI B16.4. Thin Wall Pipe and Light Wall Pipe are approved for this project in all areas out of reach of students.
 - 2. Main Piping: Schedule 40 black steel pipe, ASTM A53, threaded, welded, rolled groove without metal removal or grooved end in accordance with manufacturer's instructions, Victaulic's, Gustin-Bacon or equal. Fittings shall be standard weight weld or Class 125 Standard cast-iron screwed fittings, ANSI B16.4 or Victaulic fittings with grade E gaskets. Thin Wall Pipe and Light Wall Pipe are approved for this project in all areas out of reach of students.
 - 3. Mechanical couplings and fittings shall be of same manufacturer.
 - 4. Victaulic type or equal, Hookers and FIT fittings are not acceptable.
- C. Pipe and fittings Below Ground:
 - 1. Class 51 ductile iron pipe cement-lined, ANSI A21.51 and ANSI A21.4. Fittings shall be 250-lb. cast-iron cement-lined, ANSI 21.10 and ANSI A21.4. Joints shall be restrained type,

consisting of bolted mechanical joint, with joint retainer gland, ANSI A21.11. Refer to pipe protection as specified herein.

2. As approved by Code Authorities, approved PVC piping may be used as an option on-site, beyond 5-feet of building boundary.

D. Valves (Provide supervisory switches at all control valves):

1. O.S. & Y. Valves; 175 lb. WWP 2 inch and smaller: Stockham B-133, Crane 459 or Nibco T-104-0 or equal, bronze body, screwed.
2. O.S. & Y. Valves; 175 lb. WWP 2-1/2 inch and larger: Stockham G-634, Crane 467 or Nibco F-607-0, or equal, iron body, flanged.
3. Butterfly Valves: 175 psig, ductile iron body; nickel plated ductile iron disc; stainless steel stem; integral tamper switch; slow close gear operator.
4. Angle Valves: 175 lb. WWP, Nibco T-301, or equal, bronze screwed.
5. Check Valves; 2-1/2 inch and larger: 175 lb. WWP, Victaulic Series 717 or Gruvlok Series 7800 FP, or equal.
6. Check Valves (Non-Slam): Muessco 101 AP, 125 lb. ANSI iron body, bronze seats and discs and stainless steel spring.
7. Alarm Bell: Water operated motor gong with guard. Provide signage "Sprinkler Fire Alarm".
8. Pressure Switches: U.L. listed, automatic recycle retard with DPDT contacts, Potter-Roemer 6200 series, Viking VSR-D or equal.
9. Alarm Check Valve Assembly: Grinnell Model H-2, Viking model F-1 or G-1 or equal, completed with retard chamber and all necessary appurtenances.

E. Fire Sprinkler Heads:

1. Sprinkler heads for all other finished areas shall be recessed type with chrome finish head and white color finish for escutcheon; Viking Micromatic Model M, Central or equal.
2. In areas where there are no finished ceilings, upright or pendant type shall be provide as required to suit installation; Viking Model M, with brass finish, Central or equal.
3. Provide 6 spare sprinkler heads of each type with wrench in cabinet per NFPA 13.
4. All sprinkler heads shall be quick response type.

F. Pressure Gauges: U.L. approved equivalent to Potter-Roemer 6240 or equal, 0-300 PSI rating.

G. Fire Department Connections: Two (2) way inlet connection with caps and chains, rough brass, Standard S133 (4 x 2-1/2 x 2-1/2), post type and labeled "Auto-Sprk", with local fire department hose thread, Potter Roemer 5730 or equal.

H. Post indicator and Valve: 175 psig cast-iron body bronze mounted, double disc, non-rising stem gate valve with indicating post flange and round, full length adjustable cast iron body indicator post. Handle shall be secured with pad break-a-way type and lock. Control operator nut shall be 36 to 42 inches above grade, Stockham F-635-O valve and G-91 post, Kennedy or equal (provide supervisory switch).

PART 3 - EXECUTION

3.01 INSPECTIONS

- A. Inspections: Prior to commencing work required by this section, inspect all work of other trades and verify that such work has been properly completed and installed to allow for proper installation of all materials and methods required of this section.

1. All fire protection system shall be installed in accordance with the requirements of all governing authorities and the referenced standards.

3.02 INSTALLATION

A. Discrepancies:

1. In the event of discrepancy, immediately notify the Architect.
2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.
3. Interferences between installed work and various trades due to lack of coordination shall be resolved by the Architect whose decision is final. Relocate or offset any work as required to accommodate work of other trades, at no extra cost to the Owner, when so directed by the Architect.

B. Conform to all requirements of agencies having jurisdiction.

C. Attention is called to requirements that air conditioning, plumbing and electrical systems are to be installed in locations adjacent to sprinkler system piping.

1. Coordinate efforts with other trades doing work on site to avoid interference.
2. When limited space conditions exist above ceilings due to installation of combined trades, penetrations through the structural beams will be provided at designated locations mid-height of the beam and at one third intervals of beam span. Verify and coordinate all locations per structural drawings and Structural Engineer.
3. Work specified shall be installed and arranged as directed in a satisfactory manner.
4. Check conditions at site and examine pertinent drawings before preparing working drawings. Take measurements for this work, verify drawings of other trades and be responsible for proper installation in available space for appurtenances herein specified or indicated.
5. Before making any changes considered necessary, secure approval from the Architect for such variations.

D. Sleeves: All sleeves in concealed and exterior walls shall be 20 gauge galvanized iron 1 inch O.D. larger than the pipe, caulking in a moisture proof manner.

E. Flexible Connections:

1. Flexible connections shall be of approved design and installed where, when or deemed necessary.
2. Where piping crosses seismic joints, install a flexible pipe expansion joint of approved design to absorb the specified seismic movement in any direction. Shop drawings of proposed joint shall be submitted.

F. Penetrations through fire rated walls or floors shall be U.L. listed through penetration firestop system assemblies for fire separation rating as required and installed per manufacturers printed instructions. Provide and install polished chromium plated brass floor ceiling or wall plates for all pipes, exposed in finished portions of the building.

G. For buried cast iron and ductile iron valves, pipe and fittings: Install inside a 9 mil polyethylene sleeve in accordance with AWWA Standard C-105. Any steel parts, such as bolts, nuts, clamps, tie-rods, etc., shall be coated with Koppers Bitumastic 505 before encasing in polyethylene sleeve.

3.03 FLASHING INSTALLATION

- A. Provide flashing for all pipe and tubing extending through the roof. Extend the base flashing at least 8-inches in all directions from the pipe and turn the cap flashing down into the pipe. Flashing shall be installed as to be watertight.

3.04 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform roof tests and inspections and to prepare test reports.
- B. Test system in accordance with NFPA #13, #14, #24, CSFM and local Fire requirements. Attention is called to NFPA pamphlets 13 and 24 requiring flushing and testing in the presence of Architect, Owner's Insurance Underwriter and IOR.
- C. Certification: Upon completion, subcontractor and general contractor's representatives shall jointly inspect work of this Section and deliver a written certification to the Architect, that installed materials and workmanship conform to specifications. Provide the NFPA certificate (under ground and above ground) to the Owner, the Architect, the local fire official, and Governing Agency.
- D. All labeling of valves and equipment shall be done as required.

END OF SECTION 21 13 13

SECTION 22 00 00 PLUMBING

PART 1 – GENERAL

1.01 SUMMARY

- A. The drawings and general provisions of the Contract, including General and Special Conditions and Division 1 Specification Sections, shall govern the work in this section the same as though written herein in full. It is the intent to provide a complete, tested, and operating plumbing system.
- B. Scope of Work: The work to be done under this heading shall include furnishing all labor, materials, fixtures and services together with the demolition, installation, testing and adjusting necessary to the acceptable completion of all the plumbing work shown on the drawings or as herein specified.
- C. Description Of Work
 - 1. The following list is intended to generally describe the various plumbing systems to be installed, but shall not be considered as a limit of the work to be performed under this section of the specifications:
 - a. Provide classrooms sinks

1.02 SUBMITTALS

- A. The Plumbing Contractor shall provide submittal data for all fixtures and material being furnished by him to the Architect for approval. Submit the following according to the Conditions of the Contract and Division 1 Specifications Sections: 01 33 00.
 - 1. Product data for:
 - a. Classroom sink package
- B. Each submittal brochure shall contain all of the items listed above and shall be bound with covers, indexed with tabs and have a table of contents. Submittals shall indicate make, specific model and size, accessories, dimensional drawings, diagrams and other pertinent information. Submit all items at one time. Partial submittals are not acceptable. Substitutions of materials and fixtures from that specified herein, noted on the drawings or as outlined in the General or Supplementary Conditions shall be clearly identified as substitutes. Deviation data to clearly demonstrate equivalency and comparisons between specified items and proposed substitutions shall be provided by the Plumbing Contractor unless prior arrangements are made to compensate the Architect for researching this data. "Equivalent" submittals lacking this information will be returned "not reviewed". Approval of substitutions shall in no way relieve the Plumbing Contractor from the responsibility of complying with the plans and specifications and installation in the space available.
- C. The following submittals for closing out the job shall be a prerequisite to the issuance of Final Certificate of Payment.
 - 1. Certificates of water quality
 - 2. Reproducible "As-built" (record) drawings
 - 3. Approved inspection reports
 - 4. Guarantee

1.03 QUALITY ASSURANCE

- A. Work of the contract shall satisfy the requirements of:
 - 1. IAPMO, ASME, ANSI, ASTM, CISPI standards for base materials.
 - 2. N.F.P.A.- 13
 - 3. American Gas Association (A.G.A.)
 - 4. 2013 California Building Code (CBC) Title 24, Part 2, CCR
 - 5. 2013 California Electric Code (CEC) Title 24, Part 3, CCR
 - 6. 2013 California Mechanical Code (CMC) Title 24, Part 4, CCR
 - 7. 2013 California Plumbing Code (CPC) Title 24, Part 5, CCR
 - 8. OSHPD OPM
- B. All brazers and welders shall be qualified with the brazing and welding procedures set forth in ASME Boiler and Pressure Vessel Code – current edition. If the work of any welder or brazer creates a reasonable doubt as to his skill, the Architect/Engineer may require the welder to be requalified.
- C. Provide manufacturer's certificate that materials and fixtures meet or exceed minimum requirements as specified.
- D. Where these drawings and specifications call for or describe materials or construction of a better quality or larger sizes than required by all laws, codes ordinances, regulations and orders of any public authority bearing on the performance of the work, the drawings and specifications shall take precedence.
- E. Testing and Inspections: Contractor shall arrange for inspections required by authority having jurisdiction and deliver any certificates of such inspections to the Owner. Owner shall pay for all inspections required.
- F. Permits: Owner shall apply and pay for all permits required by any public authority having jurisdiction.

1.04 PRODUCT AND FIXTURE DELIVERY, STORAGE AND HANDLING

- A. Exercise care in transporting and handling to avoid damage to and contamination of materials and fixtures.
- B. Materials and fixtures kept at the job site shall be stored in enclosures or under protective covering. Material and fixtures shall be stored above grade in manufacturer's original, unopened protective packaging and kept as clean and dry as possible.
- C. Damage to materials and/or fixtures due to negligence in handling, storage or delivery shall be cause to reject and replace all such damaged material and/or fixtures at the Contractor's own expense with no additional cost to the Project.

1.05 PROJECT CONDITIONS, SUPERVISION AND WORKMANSHIP

- A. The Plumbing Contractor shall examine the complete project drawings and make a preliminary examination of the site. The Plumbing Contractor shall also examine in advance methods for installation, means to be provided for getting fixtures and equipment into place, routing of piping and any other requirements of the work. This shall include verification that all systems and all fixtures

will fit spaces allotted. Work shall be installed so that indicated ceiling heights are maintained, with no portion of the work requiring excessive furring.

- B. The Plumbing Contractor must consider and include any additional cost involved in verifying and coordinating the work with existing conditions and points of connection. If situations arise where the work cannot be installed as intended, the Owner's representative must be informed to assist in resolving the problem.
- C. Fixtures shall be located within rooms as indicated on Architectural and Plumbing drawings. In the event these drawings do not indicate locations by exact dimension, such locations shall be obtained from the Architect prior to installation. Should the Plumbing Contractor elect to install such fixtures without prior instruction, he shall be subject to removal and reinstallation of such fixtures at the discretion of the Architect without additional cost to the project.
- D. The Plumbing Contractor shall provide all the rigging, scaffolding, tools, tackle, hoist, personnel safety equipment, labor, etc., necessary to complete the installation of fixtures and materials in accordance with the intent of this specification.
- E. The Plumbing Contractor must coordinate all areas of the work required with the Owner's Representative as they relate to material, storage, trash removal, hours of work, job site office, telephone, sanitary facilities, electrical power, drinking water, hoisting, temporary barriers, safety measures, etc., including cost of such items.
- F. The Plumbing Contractor is responsible to coordinate demolition and reconstruction (cutting and patching) of walls, floors, and ceilings required for the performance of the work of this Section of the Contract. Other appropriate Contractor is responsible for the actual demolition and reconstruction of walls, floors and ceilings. The Plumbing Contractor is responsible for demolition and reconstruction of existing hardscape as required for performance of work under this Section of the Contract.
- G. The Plumbing Contractor shall have a competent Job Superintendent and/or Foreman on site or available at all times by phone ("pager") during project progress with authority to act on the Contractor's behalf and to supervise the installation of the work under this section. Superintendent shall also be responsible in conferring with other trades as to the proper execution and conduct of the work under this section so that work may be carried on as rapidly as possible and still maintain coordination with the other trades in progress at the same time.
- H. All workmanship shall be first class in every respect and shall be performed only by skilled mechanics recognized as such in each of their respective trades.

1.06 DRAWINGS AND SPECIFICATIONS

- A. Drawing and specifications are intended to complement each other and are required to be taken together to provide all associated items of work, materials and equipment necessary for a complete installation.
- B. A set of plumbing drawings will accompany these specifications showing the arrangements and sizes of piping systems and principal connections to the plumbing fixtures. Drawings and specifications are intended to complement each other to the extent that all associated items of work and materials necessary to the completion of the installation of the systems shall be provided whether or not mentioned in the specifications or shown on the drawings.
- C. Discrepancies between Architectural and Plumbing drawings: the drawings showing the greater number of fixtures shall govern. Where fixtures are indicated on the Architectural plan, but not

similarly shown on the Plumbing drawings and where such items are covered by specifications, all such items together with the necessary appurtenances and services shall be provided. Discrepancies as described above are inadvertent and it shall be the Plumbing Contractor's responsibility to comply with the intent of this paragraph and the Contract.

- D. Plumbing work, as laid out, is to some extent, diagrammatic and locations thereon are drawn to scale where possible. It is not the intention of the drawings to show all the offsets, fittings, and accessories. Locations indicated shall be adhered to as closely as possible; reasonable deviations therefrom shall be made at no additional expense.

1.07 AS-BUILT DRAWINGS

- A. As-built drawings shall be provided by modular building manufacturer.

1.08 GUARANTEE

- A. All work shall be guaranteed for a minimum period of one year from either the official date of completion or from the official date of acceptance by the Owner whichever is the later date.
- B. Certain items shall be guaranteed for a longer period, as stated in the specification for those items.
- C. Should any trouble develop during this time due to defective material, faulty workmanship, or non-compliance with plans, specifications, codes, or written directions of the Owner, Architect, or Inspector the Plumbing Contractor shall furnish all necessary labor and materials to correct the trouble without additional charges.

PART 2 – PRODUCTS

2.01 GENERAL

- A. All materials shall be new, of commercial quality, and shall be standard current products of manufacturers regularly engaged in the production of plumbing products. Unless indicated otherwise, all fixtures, and equipment shall conform to the same requirements as "materials". Use the same brand of manufacture for each class of fixtures, equipment, or material.

2.02 PIPING SYSTEMS MATERIALS

- A. Piping Systems shall be provided by Modular Building Manufacturer

2.03 PLUMBING FIXTURES

- A. Fixtures shall be as scheduled on the drawings.
- B. Provide all necessary angle stops, risers, escutcheons, 17-gauge CP traps, sealant, etc. as required for fixtures.
- C. Accessibility Requirements:
 - 1. Accessible plumbing fixtures shall comply with all of the requirements of CBC Division 6

2. Heights and location of all accessible fixtures shall be mounted according to CBC Section 11B-602 through 11B-612.
3. Fixture controls shall comply with CBC Section 11B-601.3 for drinking fountains, 11B-604.6 for water closets, 11B-604.9.5 for children's water closets, 11B-605.4 for urinals, 11B-606.4 for lavatories and sinks, 11B-607.5 for bathtubs, 11B-608.5 for showers, and 11B-611.3 for washing machines and clothes dryers.
4. Accessible sinks shall not exceed 6-1/2" in depth, Sinks shall be mounted with the front of the higher rim and counter surface 34" maximum above the finish floor or ground.
5. Water supply and drain pipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks. CBC Section 11B-606.

PART 3 – EXECUTION

3.02 INSTALLATION OF PIPING, FIXTURES AND EQUIPMENT

- A. Install classroom sinks in plastic laminate tops.

3.03 PLUMBING FIXTURES AND MISCELLANEOUS EQUIPMENT

- A. All fixtures shall be anchored and set level with relation to walls and floor lines in a neat and workmanlike manner using equal spacing and neat grouping.
- B. Fill all joints between plumbing fixtures and walls or floors or cabinets with Dow-Corning 780 Sealant or Sonolastic Sealant, color to match fixtures. Sealant shall be applied as recommended by the manufacturer, workmanship subject to approval of Architect or his representative.
- C. All fixtures shall be covered and protected until completion of the work. Fixtures shall be cleaned and all fittings shall be polished. Metal parts shall be polished chrome plated brass unless otherwise indicated. All exposed piping and fittings shall be polished chrome plated.

3.04 STERILIZATION

- A. The Plumbing Contractor shall provide feed and flush nipples near point of connection of new piping to building hot and cold water system to facilitate systems flushing and chlorinating.
- B. Provide the services of a commercial disinfecting/chlorinating company to perform standard commercial water systems sterilization, Atlantis Chlor, Walsh Enterprises or equivalent.
- C. Flush out all new water piping to thoroughly remove all dirt and debris.
- D. Chlorinate all new water piping up to points of connection to existing building systems.
- E. Flush solution with clear water and until residual chlorine levels are equal to level of incoming City water supply.

- F. Obtain test samples of flushed out systems and test to verify that total plate count of bacteria/c.c. of sample is less than 100 or equal to the supply and for negative coliform organisms per ANSI/AWWA C651-92. Testing shall be performed by a State of California approved water testing laboratory.
- G. Repeat the above procedure until results in paragraph F above are obtained.
- H. Provide certificates of final satisfactory test results as part of close out requirements.

END OF SECTION 22 00 00

SECTION 23 00 00 – HEATING, VENTING AND AIR CONDITIONING

PART 1 - GENERAL

1.01 SUMMARY

- A. Provisions of General Conditions, Supplementary Conditions, and Division One apply to this section and shall govern the work the same as though written herein in full. It is the intent to provide a complete tested, balanced and operating heating, ventilating and air conditioning system.
- B. Scope of Work: The work under this section includes furnishing all labor, materials, fixtures and services together with the demolition, installation, testing and adjusting necessary to the acceptable completion of all the heating, ventilating and air-conditioning (HVAC) work shown on the drawings or as herein specified.
- C. Description of the Systems: The following list is intended to generally describe the various HVAC systems components to be installed, but shall not be considered as a limit of the work to be performed under this section of the specifications.
 - 1. Rooftop Package Heat Pumps
 - 2. Rooftop ERV units
 - 3. Automatic Temperature Control including low voltage wiring
 - 4. Ductwork systems and accessories
 - 5. Toilet Exhaust Systems
 - 6. General Exhaust Systems
 - 7. Air distribution equipment
 - 8. Insulation and duct liner
 - 9. Testing, Adjusting and Balancing
- D. Related Work not in this Section:
 - 1. The following work will not be furnished under this section of the specifications but will be included in other specification sections:
 - a. All line voltage wiring (regardless of voltage) and all miscellaneous wiring devices and all connections thereto and all line and low voltage conduit. All electrical disconnects and starters not integral to equipment scheduled and / or specified. All timeclocks and miscellaneous “on-off” control devices.
 - b. Openings in wall and roofs
 - c. Roofing, including flashing
 - d. Condensate drains
 - e. Direct digital control system (DDC) in Section 23 09 13
 - f. Finish painting
- E. Work Under Seperate Contracts
 - 1. Automatic fire protection will be designed and installed under separate contract with the Owner.

1.02 SUBMITTALS

- A. The HVAC Contractor shall provide submittal data for all equipment and material being furnished by him to the Architect for approval. Submit the following according to the Conditions of the Contract and Division 1 Specifications Section: 01 33 00.
 - 1. Product Data for:

- a. Ductwork, ductwork accessories and supports.
 - b. Dampers, all types including combination fire/smoke dampers
 - c. Fire-safing material
 - d. Supply, return and exhaust grilles and diffusers
 - e. Pipe and Duct insulation and acoustical duct liner
 - f. Insulated flexible duct
 - g. Filters
 - h. Gauges and thermometers
 - i. Duct sealant and coatings
 - j. Heating hot water boilers and pumps
 - k. Energy recovery ventilators (ERV's)
 - l. Exhaust fans, all types
 - m. Fan-coil and makeup fan-coil units
 - n. Variable frequency drives (VFD's)
2. Wiring diagrams for:
- a. all equipment requiring power
- B. Each submittal brochure shall contain all of the items listed above and shall be bound with covers, indexed with tabs and have a table of contents. Submittals shall indicate make, specific model and size, accessories, dimensional drawings, wiring diagrams and other pertinent information. Submit all items at one time. Partial submittals are not acceptable. Substitutions of materials and fixtures from that specified herein, noted on the drawings or as outlined in the General or Supplementary Conditions shall be clearly identified as deviations. Deviation data to clearly demonstrate equivalency and comparisons between specified and proposed items shall be provided by the HVAC Contractor unless prior arrangements are made to compensate the Engineer for researching this data. This data shall specifically include tabulated comparisons between scheduled and proposed equipment in the following areas:
1. Weight (including curbs and other accessories).
 2. Dimensions
 3. Electrical requirements (voltage, phase, full load amps).
 4. Sound levels
 5. Performance (efficiencies, heating, cooling, air flow, static pressure, pressure drops, etc.)
- C. "Equivalent" submittals lacking above information will be returned "not reviewed". Approval of substitutions shall in no way relieve the HVAC Contractor from the responsibility of complying with the design intent of the plans and specifications and for installation in the space available.
- D. Shop Drawings for coordination, fabrication, and installation:
1. Dimension drawings for concrete pad equipment foundations including bolt sizes and locations (1/4" scale minimum).
 2. Details of suspension, supports and seismic restraint and anchors for above ceiling hung equipment.
 3. Chilled and hot water piping drawings (1/4" scale).
 4. Ductwork fabrication and installation drawings for all congested areas including laboratory classrooms with fume hood exhaust and make-up air and laboratory classrooms with formaldehyde venting and makeup air.
 5. The contract HVAC drawings shall not be used and substituted for ductwork and piping shop drawings.
 6. Coordinate location of piping and ductwork systems with electrical, plumbing and fire protection systems in the preparation of shop drawings. Provide number of copies of prints of piping and ductwork as required by the Owner's representative for use in coordination with the other trades.

E. The following submittals for closing out the job shall be a prerequisite to the issuance of Final Certificate of Payment:

1. Test and Balance Reports
2. Reproducible "As-built" (record) drawings
3. Approved inspection reports
4. Guarantee

1.03 QUALITY ASSURANCE

A. Work of the Contract Documents shall satisfy the requirements of:

1. Air Diffusion Council (ADC).
2. ASME, ASTM and ANSI standards for base materials.
3. California Fire Marshal requirements for fire and smoke dampers.
4. ASHRAE standards for heat transfer coils and air filters.
5. National Fire Protection Association standards (N.F.P.A.).
6. SMACNA Seismic Restraint Manual Guideline for Mechanical Systems.
7. 2013 California Building Code (C.B.C.).
8. 2013 California Mechanical Code (C.M.C.) (Title 24, Part 4)
9. 2013 California Fire Code (C.F.C.).

B. Where these drawings and specifications call for or describe materials or construction of a better quality or larger sizes than required by all laws, codes, ordinances, rules, regulations and orders of any public authority bearing on the performance of the work, the drawings and specification shall take precedence.

1.04 PRODUCT AND EQUIPMENT DELIVERY, STORAGE AND HANDLING

- A. Exercise care in transporting and handling to avoid damage to and contamination of materials and equipment.
- B. Materials and equipment kept at the job site shall be stored in enclosures or under protective covering to prevent physical and weather damage or the introduction of foreign material. Material and equipment shall be stored above grade in manufacturer's original, unopened protective packaging and kept as clean and dry as possible.
- C. Damage to materials and/or equipment due to negligence in handling, storage or delivery shall be cause to reject and replace all such damaged material and/or equipment at the Contractor's own expense with no additional cost to the Project.

1.05 PROJECT CONDITIONS, SUPERVISION AND WORKMANSHIP

- A. The HVAC Contractor shall examine the complete project drawings and make a preliminary examination of the site. The HVAC Contractor shall also examine in advance methods for installation, means to be provided for getting ductwork and equipment into place and any other requirements of the work. This shall include verification that all systems and all equipment will fit spaces allotted. Work shall be installed so that indicated ceiling heights are maintained, with no portion of the work requiring excessive furring.
- B. The HVAC Contractor must consider and include any additional cost involved in verifying and coordinating the work with existing conditions and points of connection. If situations arise where the work cannot be installed as intended, the Owner's representative must be informed to assist in resolving the problem.

- C. Maintain ample headroom in passageways and rooms, and clearance around all equipment, ductwork, conduits and pipelines shall be maintained for unrestricted passage and for easy servicing. Install the work to maintain indicated ceiling heights.
- D. The HVAC Contractor shall provide all the rigging, scaffolding, tools, tackle, hoists, personnel safety equipment, labor, etc., necessary to complete the installation of equipment and materials in accordance with the intent of this specification.
- E. The HVAC Contractor must coordinate all areas of the work required with the Owner's Representative as they relate to material, storage, trash removal, hours of work, job site office, telephone, sanitary facilities, electrical power, drinking water, hoisting, temporary barriers, safety measures, etc., including cost of such items.
- F. The HVAC Contractor is responsible to coordinate demolition and reconstruction (cutting and patching) of walls, floors, and ceilings required for the performance of the work of this Section of the Contract. The appropriate Contractor shall perform the actual work of demolition and reconstruction of walls, floors and ceilings.
- G. The HVAC Contractor shall have a competent Job Superintendent and/or Foreman on-site or available at all times by phone ("pager") during project progress with authority to act on the Contractor's behalf and to supervise the installation of the work under this section. Superintendent shall also be responsible in conferring with other trades as to the proper execution and conduct of the work under this section so that work may be carried on as rapidly as possible and still maintain coordination with the other trades in progress at the same time.
- H. All workmanship shall be first class in every respect and shall be performed only by skilled mechanics recognized as such in each of their respective trades.

1.06 DESCRIPTION OF THE SYSTEMS

- A. The following list is intended to generally describe the various HVAC systems components to be installed, but shall not be considered as a limit of the work to be performed under this section of the specifications:
 - 1. Heating Hot Water Boilers
 - 2. Heating Hot Water Pumps
 - 3. 4-Pipe Fan-Coil and Units
 - 4. Energy Recovery Ventilators
 - 5. Direct Digital Control (DDC) System
 - 6. Ductwork systems and accessories
 - 7. Toilet exhaust systems
 - 8. General exhaust systems
 - 9. Laboratory Fume Hood exhaust and make-up air systems including connections to fume hoods including exhaust and make-up air control valves.
 - 10. Laboratory Exhaust (formaldehyde venting) Exhaust Fans
 - 11. Air distribution equipment
 - 12. Duct and Pipe Insulation and duct liner
 - 13. Testing, Adjusting and Balancing.

1.07 DRAWINGS AND SPECIFICATIONS

- A. Drawing and specifications are intended to complement each other and are required to be taken together to provide all associated items of work, materials and equipment necessary for a complete installation.

- B. A set of HVAC drawings will accompany these specifications showing the arrangements and sizes of ductwork and piping systems. Drawings and specifications are intended to complement each other to the extent that all associated items of work and materials necessary to the completion of the installation of the systems shall be provided whether or not mentioned in the specifications or shown on the drawings.
- C. Discrepancies between Architectural and HVAC drawings: In the case of discrepancies between the Architectural drawings and the HVAC drawings, the drawing showing the greater number of items or pieces of equipment shall govern unless otherwise directed by the Architect. Discrepancies encountered among drawings are to be brought to the attention of the Architect for clarification. In the case of diffusers, thermostats or other mechanical items indicated on architectural drawings but not on HVAC drawings, specifications for such items shall be deemed to be respectively similar to other such items which are covered by specifications and all necessary services and appurtenances shall be provided. Discrepancies as described above are inadvertent and it shall be the Contractor's responsibility to check the intent of this paragraph.
- D. HVAC work, as laid out, is to some extent, diagrammatic and locations thereon are drawn to scale where possible. It is not the intention of the drawings to show all the offsets, fittings, and accessories. Locations indicated shall be adhered to as closely as possible; reasonable deviations therefrom shall be made at no additional expense.

1.08 PERMITS AND FEES

- A. Contractor shall arrange for inspections required by authority having jurisdiction. Deliver any certificates of such inspections to the Owner.
- B. Owner shall apply and pay for all permits required by any public authority having jurisdiction. Owner shall pay for all inspections required.

1.09 RECORD DRAWINGS

- A. Submit reproducible record ("As-Built") drawings as required by the General Conditions showing final locations of all equipment, piping and ductwork.

1.10 GUARANTEE AND OPERATION

- A. The HVAC Contractor shall furnish to the Owner a guarantee in writing. All work shall be guaranteed for a minimum period of one year from either the official date of completion or from the official date of acceptance by the Owner whichever is the later date.
- B. It is to be understood that any equipment and systems requested in writing to be put into service by the Owner to serve their needs while the project is still under construction and used for that purpose only, shall be considered as accepted on the date said equipment is put into operation. The warranty for any such particular piece of equipment shall then be in effect as of the day of acceptance. Date of acceptance for all other materials and equipment not so used shall become effective on the date of acceptance for the entire project by the Owner.
- C. Guarantee shall warrant all materials and equipment to be free from defects whether they be of faulty manufacture or defective workmanship, and the HVAC Contractor shall agree to replace any such material or equipment at his expense that may prove defective from either cause within the warranty period.

PART 2 – PRODUCTS

2.01 GENERAL

- A. All materials and equipment shall be new, full weight, of best quality suitable for desert environment, with the same brand of manufacture used for each class of material or equipment. All similar materials and equipment such as heat pumps, fans and air distribution devices shall be of the same type and manufacture unless specified otherwise. All equipment and devices shall be designed for resistance to earthquake disturbances. All equipment shall have motors, controls, accessories and fans properly fastened to the equipment to prevent "break-away" during an earthquake. All rotating equipment shall operate in factory standard dynamic balance. Failure to comply with these conditions shall be cause for rejection of any such material or equipment installed; the HVAC Contractor shall be so advised and shall be subject to removing all rejected material or equipment and replacing same with approved material or equipment at his expense.

2.02 MOTORS AND CONTROLLERS

- A. Furnish with each piece of equipment all motors and solid state controls.
- B. Motors shall conform to latest NEMA motor standard requirements and shall be manufactured by Gould, GE, Louis Allis or Marathon of a type suitable for service intended. Motors shall be rated to operate at an ambient temperature of 40° C. Oiling devices shall be located where readily accessible. In general, motors of ½ HP capacity or larger shall be three phase, and smaller motors shall be single phase. Motors for belt-driven equipment shall be provided with adjustable slide rails. Nameplate horsepower of motor submitted shall be equal to or greater than scheduled horsepower and shall be greater than required brake horsepower to handle load. All motors shall be premium high efficiency models where available.
- C. Starters for equipment other than packaged air-cooled chillers shall be provided by Division 26 Electrical.
- D. Variable Frequency Drives (VFD's) shall be provided with the equipment being controlled as a part of that equipment package. VFD's shall be provided with a BacNet interface to ensure compatibility with the project direct digital control (DDC) system.
- E. Electrical devices that fall within scope of UL testing capabilities shall be so tested and marked.

2.03 SHEET METAL DUCTWORK

- A. All ductwork shall be constructed of new galvanized prime grade steel sheets in accordance with Duct Construction Standards published by Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA). Fume hood and formaldehyde exhaust ductwork shall be 4 mil inside/1 mil outside PVS coated 20 gage spiral galvanized steel.
- B. Unless otherwise noted on Drawings, pressure-velocity classification of supply and return ductwork from HVAC units and fans shall be in accordance with Table 1-1 of SMACNA Manual.
- C. Installed ductwork shall meet "Functional Standards for Rectangular Low Pressure Ducts" cited in SMACNA Manual with respect to sheet deflection and vibration, reinforcing, seam and joint integrity, beam strength of duct section and duct leakage.
- D. Ductwork gauge and reinforcing shall comply with Tables 1-3 through 1-5 of SMACNA Manual to specified or noted static pressure rating.
- E. Duct sizes 19 inches to 48 inches wide and larger which have more than 10 square feet of unbraced panel shall be beaded or cross-braced unless ducts have nonconductive covering or acoustical liner. See Figure 1-8 of SMACNA Manual.

- F. For duct longitudinal seams use button punch snap lock for up to 20 gauge metal. Use Pittsburgh lock for up to 18 gauge metal and for fittings.
- G. Duct connectors shall be as follows or connectors of equal performance.
 - Width 0 to 60 inches: S-Slip.
 - Depth 0 to 18 inches: Drive slip.
 - Depth 19 to 30 inches: Reinforced drive slip.

Corner closures shall be as shown on Figures 1-13 through 1-18 of SMACNA Manual or as recommended by duct connection system manufacturer.
- H. Provide turning vanes in each square elbow. Construct turning vanes as shown in Figures 2-3 and 2-4 of SMACNA Manual. Use single thickness turning vanes with $\frac{3}{4}$ inch flat trailing edge for velocities below 2000 FPM. For higher velocities use double thickness turning vanes.
- I. Duct transition and offsets shall be as shown in Figure 2-9 of SMACNA Manual.
- J. Main or parallel duct splits shall be as shown in Figure 2-7 of SMACNA Manual. Splitter blade shall be 16 gauge minimum and leading edge shall be hemmed.
- K. Round laterals and branches shall be made up with 45° taps and saddles to round or rectangular main or branch ducts as shown in SMACNA figure 3-4.
- L. Each individual air supply or return device, whether sidewall or ceiling diffuser, shall be fitted with a device to permit adjustment of air amount supplied to unit independently of any other outlet. These devices may take the form of outlet boots with opposed blade dampers, or of branch duct with dampers, as installation conditions dictate, but in any case, each shall be fitted with a means of manual adjustment of air amount delivered to outlet.
- M. Unless otherwise noted on drawings, duct sizes shown on drawings are for net free area.

2.04 DUCT AND PIPING INSULATION

- A. General: All instructions and associated materials such as coverings, vapor barriers, mastics and adhesives shall bear the Underwriters' Laboratories listing. U.L. rating not to exceed: flame spread 25, smoke developed 50. Insulation shall meet the requirements of NFPA Pamphlet No. 90-A and 2016 California Mechanical Code. The insulation Contractor shall provide a certificate that the system is installed and all materials comply with the Underwriters' Laboratories requirements. All insulation shall be delivered to the job site in unopened packages from the manufacturer. Approved manufacturers: Certainteed, Owens-Corning, Manville, Knauf.
- B. Duct wrap: 1 1/2 inch thick Fiber Glass, faced with Type IV (scrim-reinforced foil-craft laminate vapor barrier), 2 inch overlap tab along edge, 1-lb. density.
- C. Insulate all heating hot water and chilled water piping with 1-1/2" thickness (runouts may be 1/2" thickness) fiberglass pipe insulation with FSK jacket, Knauf 1000 Degree or approved equivalent. Provide molded fitting covers at all elbows and B-Line #B3154 metal shields at all pipe hangers. Cover all insulated piping exposed to the weather with aluminum jacketing.

2.05 DUCT LINER

- A. General: All liners and associated materials such as coverings, vapor barriers, mastics and adhesives shall bear the Underwriter's Laboratories listing. U.L. rating not to exceed: flame spread 25, smoke developed 50. Insulation shall meet the requirements of NFPA Pamphlet No. 90-A and California Mechanical Code. The insulation Contractor shall provide a certificate that the system is installed and

all materials comply with the Underwriter's Laboratories requirements. Any liner delivered to the job site shall be in unopened packages from the manufacturer. Approved Manufacturers: Certainteed, Owens-Corning, Manville, Knauf.

- B. Provide duct liner in plenums and ductwork where indicated on plans in accordance with SMACNA "Duct Liner Application Standard," 2nd edition.
- C. Unless otherwise noted on drawings, use flexible duct liner with 1-1/2 pound density, 1 inch thickness.
- D. Duct liner shall be adhered to sheet metal and with edges coated with one of the adhesives conforming to Standard for Adhesives for Duct Liner, ASC-A-7001C-1972, OF Adhesive Sealant Council, Inc. Duct liner shall be further secured with fasteners conforming to Mechanical Fastener Standard, MF-111975, on page 22 of Duct Liner Application Standard.

2.06 FLEXIBLE CONNECTIONS

- A. Furnish flexible connections fabricated of Durodon fabric with Hypalon coating, Metal Fab or Super Metal Fab, which shall meet requirements of UL test procedure UL-214. Fabric shall be coated on exterior side, with inorganic elastomeric compound and shall be able to withstand exposure to 250° to -50° F and shall be ozone resistant and airtight. Connectors shall be pre-assembled utilizing 24 gauge metal edges and shall have 3 inches or 6 inches as required exposed fabric and shall be as manufactured by Duro-Dyne Corporation.

2.07 ACCESS DOORS

- A. Provide access doors in ductwork to provide access to automatic dampers, fire and smoke dampers. Where ducts are insulated access doors shall be double skin doors with 1 inch insulation in door. Where size of duct permits, doors shall be 18 inches x 16 inches. Doors 24 inches x 16 inches and larger shall be provided with Ventlok No. 100 or 140. Provide identification for fire and/or smoke damper access openings. Stencil the words FIRE (or SMOKE) DAMPER on access doors in sheet metal ducts.

2.08 INSULATED FLEXIBLE DUCT

- A. The flexible duct for connection between ducting and air diffusers and grilles shall be a factory fabricated assembly consisting of an inner sleeve, insulation and an outer moisture barrier. The inner sleeve shall be constructed of an elastomeric compound helix. No installed flexible duct lengths shall exceed 8'-0". U.L. rating not to exceed: flame spread 25, smoke developed 50
- B. A minimum 1 inch thick fiberglass insulating blanket shall encase the inner sleeve and be sheathed with an outer moisture barrier of a reinforced metalized Mylar/neoprene laminated or equal.
- C. Acoustical performance of the flexible duct shall be in accordance with Air Diffusion Council Flexible Air Duct Test FD72R1: Paragraph 3.2.1, Sound Attenuation. The test data shall be made by accredited independent testing laboratory in accordance with the above testing procedure.
- D. Materials shall be Automation industries, Inc. Thermaflex G-KM Class I flexible air duct or equal, rated for 6" positive to .5" negative pressures.
- E. Aluminum flexible ductwork is not an approved material for this project.

2.09 FIRE/SMOKE DAMPERS

- A. Furnish and install all fire, smoke and combination fire/smoke dampers as required by the 2016 California Building and Mechanical Codes. Dampers shall be U.L. labeled and shall comply with the

requirements of N.F.P.A.-90A, and shall be approved by the State of California Fire Marshal. Dampers shall be Ruskin, Greenheck or approved equivalent, as follows:

1. Fire – Style B (rectangular), 95% or greater free area, rated for surface penetrated.
2. Fire – Style C (round), 100% free area, rated for surface penetrated.
3. Smoke – SD35 or SDRS25, 120 volt operator.
4. Combination Fire/Smoke – FSD35, 120 volt operator.

B. Provide smoke detectors for smoke damper operation, located as required per 2016 CMC.

2.10 MANUAL BALANCING DAMPERS

- A. Provide Ruskin MD-35 or equivalent opposed blade manual balancing damper fabricated from galvanized steel.
- B. Provide minimum 22 gauge butterfly type damper with locking damper/quadrant and regulator set for round duct.

2.11 GRILLES, REGISTERS AND DIFFUSERS

- A. Grilles, registers and diffusers units shall be all metal and constructed to have a neat, well-made appearance. Grille framework shall be rigidly constructed; flange corners shall be mitered and supported. Face bars shall be of heavy gauge metal to adequately resist bending or twisting and fit tightly and closely within framework. Units shall have a neck to slip inside ductwork for an airtight noiseless connection.
- B. Check drawings to supply proper outlets and adapting framework for type of construction at each outlet. Adapter shall be same finish as unit and be of configuration manufacturer recommends for construction involved.
- C. Manufacturer furnishing grilles, registers and diffusers shall verify sizes against CFM requirements for each outlet to get intended throw without objectionable noise.
- D. Provide grilles, registers and diffusers as scheduled on the drawings, Krueger, Metalaire, Titus, J & J, Price or Tuttle and Bailey.

2.12 DISPOSABLE AIR FILTERS

- A. Air filters shall be Farr 30/30, ECO-AIR #E35, or approved equivalent, pleated type.
- B. Provide two sets of filters for equipment requiring filters. Filters in heat pumps shall be 2 inches thick, disposable type.
- C. Filters shall have a rated average dust spot efficiency of 25-30% when tested in accordance with ASHRAE 52.1 test method.
- D. Filters shall be capable of operating with face velocities up to 500 FPM without impairing efficiency and shall have an initial resistance not to exceed 0.17 inch W.G. and shall be listed Underwriters Laboratories 900 Class 2 and with State of California Fire Marshal.

2.13 DUCT SEALANT/PROTECTIVE COATINGS

- A. Sealant for interior longitudinal and transverse duct seams shall be United McGill “UNI-GRIP” vinyl acrylic type, or equivalent by Foster.

- B. For ducts exposed to the weather use United McGill “UNI-WEATHER” all weather duct sealer, or equivalent by Foster
- C. For ducts exposed to the weather coat ducts with appropriate primer for finish painting by Painting Contractor.

2.14 EQUIPMENT

- A. All equipment shall be of manufacturers and capacities as scheduled herein or on the drawings or approved equivalent by:
 - 1. Roof top package units: Carrier as scheduled (No known equivalent).
 - 2. Exhaust Fans: Greenheck as scheduled or equivalents by Cook.
 - 3. Energy Recovery Ventilators: MicroMetl as scheduled.
 - 4. Make-Up Air Units: Champion, or equivalent.
 - 5. Air Distribution: Titus as scheduled or equivalent by Price, Metalaire.
 - 6. Fire and Fire/Smoke Dampers and Access Panels: Ruskin as specified herein or equivalent by Greenheck, Potorff or ABL.

PART 3 – EXECUTION

3.01 VERIFICATION

- A. Before fabrication and installation of work, carefully verify all dimensions, sizes and actual building conditions. Coordinate work with other affected trades to avoid possible conflicts and resolve same where such exist. Install work to conform to structure, avoid obstructions, preserve headroom and keep openings and passageways clear.
- B. Work shall be installed so that ceiling heights indicated are maintained with no portion of work requiring furring. Changes necessary, resulting from lack of such verifications and coordinations, shall not be a cause for additional expense.
- C. Air distribution devices, access panels and controls shall be located within rooms as indicated on the architectural and HVAC drawings. In the event these drawings do not indicate exact locations, such locations shall be obtained from the Architect. In the event they are installed without instruction and if directed to be relocated as a result, they shall be moved and reinstalled without additional cost. Submit all pertinent information as to size, location and approximate number of additional access panels required. It shall further be the responsibility under this section to confer with all the trades on the project, and, wherever possible, dampers or other equipment shall be so grouped so that the least number of panels will be required.
- D. Diffusers, grilles, registers, controls, thermostats, etc., shall be located within rooms as indicated on Architectural and HVAC drawings. In the event these drawings do not indicate exact locations, such locations shall be obtained from the Architect. In the event they are installed without instruction and if directed to be relocated, they shall be moved and reinstalled without additional expense.

3.02 GENERAL INSTALLATION

- A. Because of small scale of the drawings, it is not intended that all of the offsets and accessories required be shown. All equipment apparatus, ductwork, piping and associated accessories shall be installed as closely as possible to indicated locations on drawings; but reasonable necessary deviations therefrom shall be made at no additional expense.

- B. There shall be NO cutting of structural members without prior written approval from Architect or his representative.
- C. Equipment shall be installed in locations shown in accordance with the equipment manufacturer's written installation instructions. Maintain all necessary clearances for air flow, access, repair and to electric control panels, etc.

3.03 HANGERS, MOUNTS AND SUPPORTS

- A. Equipment, piping, ductwork and accessories shall be individually mounted and/or hung from the structure. Approved hangers, and curbs shall be provided.
- B. Ductwork support upper attachments shall comply with Figures 4-1 and 4-2 of SMACNA Manual.
- C. Ductwork support lower attachments shall comply with Figure 4-4 of SMACNA Manual..
- D. Hanger sizes shall be per Tables 4-1 and 4-2 of SMACNA Manual.

3.04 CLEANING AND PROTECTION

- A. Interior of ductwork and equipment shall be cleaned and all scale, sand and dirt removed before closing and shall remain closed until final connections or extensions thereto are made.
- B. Equipment shall be provided with adequate protection when installed where damage may result by further construction, the weather, painting or plastering. If damage is incurred during construction, all damaged equipment shall be repainted, repaired or replaced to match new construction with no additional cost to Owner.
- C. Protective guards: All exposed parts such as shafts, couplings, drives and associated items shall be covered with guards to comply with the California State Safety Orders of Division of Industrial Accidents. Where guards are covering belt drives, provision shall be made for checking the RPM of the rotating parts.

3.05 DUCTWORK SYSTEMS

- A. Install all supply ductwork, return ductwork and exhaust ductwork in accordance with SMACNA recommendations and California Mechanical Code.
- B. Provide flexible ductwork only where indicated.
- C. Run ductwork in straight lines parallel with, or at right angles to, the lines of the building unless otherwise shown on the drawings.
- D. Run ductwork so as to not to interfere with doors, or other openings, or to prevent access to equipment.
- E. Conceal all ductwork except in equipment room(s) or where noted otherwise on drawings.
- F. Seal all duct seams and joints so the leakage rate is less than 5% of the system operating air flow.
- G. Provide final duct connections to all equipment requiring same and furnish all material required for final connection.
- H. Install ductwork and accessories to provide a system free from buckling, warping, leaking, vibration, rattles and objectionable noise.

- I. Fabricate and install exposed ductwork on the roof so as to shed rainwater off the top surface with no ponding at any point.
- J. During and after complete installation of ductwork, entire system shall be cleaned of rubbish, plaster, dirt and other debris before any grilles, outlets or registers are installed.
- K. Use radius elbows wherever possible. Where indicated or where space or condition does not permit use of radius elbows, use square elbows with turning vanes as specified herein.
- L. Flange duct openings where grilles and registers are attached. Paint the inside of all supply, return and exhaust ducts one coat of flat black paint, wherever the duct or duct liner is visible through openings. Exposed interior ducts through walls, ceilings, roofs, etc., shall have a metal collar to conceal opening between duct and finished surface.
- M. In reducing from one duct size to another, provide an angle of not more than 15 degrees from line parallel to air flow, for low pressure ductwork.
- N. Inlet and discharge connections to all air handling equipment shall have flexible connections.
- O. Multi-blade dampers, splitter dampers, extractors, turning vanes and other devices shall be provided where shown on drawings and where required to balance the air systems.
- P. Where ducts are insulated on inside (liner), dimensions shall be increased as required for thickness of liner beyond dimensions shown. Sizes indicated are net clear dimensions.

3.06 INSULATION INSTALLATION

- A. Duct Liner: Liner shall be adhered to all interior sides of duct with 100% coverage of Underwriter's Laboratories listed self-extinguishing adhesive such as Benjamin Fosters' 85-20 "Spark Free" or Minnesota Mining 38. Mechanical fasteners, similar to Graham Welded Pins, Tuff-Weld nylon hangers or Stic-Klips, shall be used on maximum 12-inch centers at top sections (when width exceeds 12 inches) and on sides (when height exceeds 24- inches); coating shall be exposed to the air stream. All exposed edges and the leading edge of all cross joints of the liner shall be coated with the same adhesive used to secure the duct liner to the metal surface.
- B. Duct Insulation: Insulation shall be installed per insulation written installation instructions. Duct liner shall be adhered to sheet metal and with edges coated with one of the adhesives conforming to Standard for Adhesives for Duct Liner, ASC-A-7001C-1972, OF Adhesive Sealant Council, Inc. Duct liner shall be further secured with fasteners conforming to Mechanical Fastener Standard, MF-111975, on page 22 of Duct Liner Application Standard.
- C. Insulate exposed and concealed kiln exhaust duct with insulation as noted above.

3.07 TAGGING AND IDENTIFICATION

- A. Equipment: Install laminated plastic equipment I.D. tags for all equipment provided. Tags shall be permanently secured to equipment using pop rivets. Engrave identity number of each item of equipment. Coordinate I.D. number designated for each piece of equipment with the room identification provided by the owner.
- B. HVAC Equipment: The following items of new equipment are scheduled on the drawings:
 - 1. Hot water pumps (HWP's)
 - 2. Air-Cooled Chillers (CH's)
 - 3. Hot Water Boilers (B's)
 - 4. Fume Hood Exhaust Fans (FHE's)

5. Laboratory (formaldehyde venting) Exhaust Fans (LEF's)
 6. Exhaust fans (EF's)
 7. Fan-Coil Units (FC's)
 8. Energy Recovery Ventilators (ERV's)
 9. Make-Up Air Fan-Coil Units (MUA's)
- C. HVAC Piping and Ductwork: Seton, or equivalent, pressure sensitive labels and directional arrows applied per ANSI A13.1-1981. Apply labels at all valve and damper locations in addition to ANSI requirements. Valves: Seton, or equivalent, 1" diameter brass valve tags with jack chain. Dampers: 1" bakelite nameplates affixed to adjacent ductwork. Provide valve and damper charts in Owner's Operation and Maintenance Manuals.

3.08 TESTS AND BALANCING

- A. All equipment and apparatus necessary for the tests shall be furnished by the Contractor. All defects disclosed by the tests shall be rectified without additional expense.
- B. Heating, Ventilating and Air Conditioning Systems: Provide the services of an approved independent air balancing testing agency to balance, adjust and test all air moving equipment and air distribution and exhausting systems, heating hot and chilled water systems, on both cooling and heating cycles as herein specified. All work shall be done under the direct supervision of a qualified and experienced Heating, Ventilating and Air Conditioning Technician. All instruments used shall be accurately calibrated and maintained in good working order. Agency or Contractor shall be a member of A.A.B.C. or T.A.B.B.
- C. Air balancing and testing shall not begin until system has been completed and is in full working order. All heating, ventilating and air conditioning systems and equipment shall be in full operation and shall continue the operation of same during each working day of testing and balancing. All electrical lighting systems shall be in operation during the testing when room temperatures are recorded.
- D. Air Systems: Upon the completion of the heating, ventilating and air conditioning system, the agency shall perform the following tests and balance each system in accordance with the following requirements:
1. Test and record system supply and return static pressures, at each fan-coil and makeup air fan-coil unit, exhaust fan and energy recovery ventilator.
 2. Test and adjust system for design return air, design outside air, and design relief air CFM.
 3. Check and record running load amps for all equipment and RPM for all fans.
 4. Obtain the assistance of the controls contractor in the balancing of laboratory fume hood exhaust, formaldehyde exhaust and makeup air systems and for laboratory classroom roomside pressures.
 5. Test and adjust each diffuser, grille, register and air terminal unit to within 5% of design requirements.
 6. All diffusers, grilles and registers shall be adjusted to minimize drafts in all occupied areas.
 7. Make all changes in the pulleys, belts and dampers or the addition of dampers required for correct balance.
- E. Upon completing of balancing and testing insert all information on a sheet listing all items required by specifications and be included in complete test and balance report. Six copies of the testing and balancing report shall be submitted to the Architect for evaluation and approval within 15 days after completion of tests and prior to final acceptance of the project.
- F. The testing agency shall provide a 13 month warranty, effective from date of final contract acceptance of project, during which the testing agency will provide field services to reset areas, change CFM requirements, or adjust conditions not foreseen during design.

3.09 OPERATING AND MAINTENANCE INSTRUCTIONS

- A. Provide three sets of written operating, maintenance and lubrication instructions for all installed systems and equipment.
- B. Provide the services of a competent representative to instruct the Owner's representative in the operation of all systems.

END OF SECTION 23 00 00

SECTION 26 05 00 – COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.01 SUMMARY

- A. Scope Of Work: The work under this division includes furnishing all labor, material, and equipment necessary for the installation and placing into operation of the electrical systems as indicated on the drawings. The work includes, but is not necessarily limited to, furnishing and installing the following:
1. Complete power and lighting, distribution board, generator and all accessories, transformers, panels, switches, feeders, branch circuits, lighting fixtures, lamps, controls and accessories.
 2. Motor and power wiring for all motor and/or equipment furnished under the contract. Except as otherwise specified to be furnished by or under other divisions of this specification, all wiring devices, conduit, feeders, and final connections to all equipment shall be furnished under this section.
 3. Install electrical control wiring for all equipment, except as described in 1.24, "Mechanical/Electrical Coordination Requirements".
 4. All equipment and materials specified in this division.
 5. Empty conduit systems as indicated on the drawings.
 6. All other items and/or work indicated on the drawings.
 7. Extension of the existing power and communications systems.
- B. This division of the specification outlines the provisions of the contract work to be performed under this division. This section applies to and forms a part of each section of specifications in Division 26 and all work performed under the electrical and communications contracts. In addition, work in this division is governed by the provisions of the bidding requirements, contract forms, general conditions, supplementary conditions, and all sections under general requirements.
- C. These specifications contain statements which may be more definitive or more restrictive than those contained in the General Conditions. Where these statements occur, they shall take precedence over the General Conditions.
- D. Where the word 'provide' or 'provision' is used, it shall be definitely interpreted as 'furnishing and installing complete in operating condition'. Where the words 'as indicated' or 'as shown' are used, it shall mean as shown on contract drawings.
- E. Where items are specified in the singular, this division shall provide the quantity as shown on drawings plus any spares or extras mentioned on drawings or specifications. All specified and supplied equipment shall be new.

1.02 DEFINITIONS

- A. Concealed: Hidden from sight, as in trenches, chases, hollow construction, or above furred spaces, hung ceilings B acoustical or plastic type, or exposed to view only in tunnels, attics, shafts, crawl spaces, unfinished spaces, or other areas solely for maintenance and repair.
- B. Exposed, Non-concealed, Unfinished Space: A room or space that is ordinarily accessible only to building maintenance personnel, a room noted on the 'finish schedule' with exposed and unpainted construction for walls, floors, or ceilings or specifically mentioned as 'unfinished'.

- C. Finish Space: Any space ordinarily visible, including exterior areas.

1.03 SUBMITTALS

A. Shop Drawings:

1. Submit shop drawings and all data in accordance with Section 01 33 00 for all equipment provided under this division.
2. Shop drawings submittals processed are not change orders: the purpose of shop drawings submittals by the contractor is to demonstrate to the Architect that the Contractor understands the design concept. He demonstrates his understanding by indicating which equipment and material he intends to furnish and install and by detailing the fabrication and installation methods of material and equipment he intends to use. If deviations, discrepancies, or conflicts between submittals and specifications are discovered either prior to or after submittals are processed, the design drawings and specifications shall control and shall be followed.

- B. Manufacturer's data and dimension sheets shall be submitted giving all pertinent physical and engineering data including weights, cross sections and maintenance instructions. Standard items of equipment such as receptacles, switches, plates, etc., which are cataloged items, shall be listed by manufacturer.

- C. Index all submittals and reference to these specifications. All submittal items shall be assembled and submitted in a single complete binder. Partial submittals will not be reviewed.

- D. Project Closeout: Prior to completion of project, compile a complete equipment maintenance manual for all equipment supplied under sections of this division, as described below.

1. Equipment Lists and Maintenance Manuals:

- a. Prior to completion of job, contractor shall compile a complete equipment list and maintenance manuals. The equipment list shall include the following items for every piece of material equipment supplied under this section of the specifications:
 2. Name, model, and manufacturer
 3. Complete parts drawings and lists
 4. Local supply for parts and replacement and telephone number.
5. All tags, inspection slips, instruction packages, etc., removed from equipment as shipped from the factory, properly identified as to the piece of equipment it was taken from.
6. Maintenance manuals shall be furnished for each applicable section of the specifications and shall be suitably bound with hard covers and shall include all available manufacturers' operating and maintenance instructions, together with "as-built" drawings to properly operate and maintain the equipment. The equipment lists and maintenance manuals shall be submitted in duplicate to the Architect for approval not less than 10 days prior to the completion of the job. The maintenance manuals shall also include the name, address, and phone numbers of all subcontractors involved in any of the work specified herein. Four copies of the maintenance manuals bound in single volumes shall be provided.

1.04 QUALITY ASSURANCE

- A. The following standard publications of the latest editions enforced and supplements thereto shall form a part of these specifications. All electrical work must, as a minimum, be in accordance with these standards.
1. National Fire Protection Association
 2. Underwriters' Laboratories, Inc. (UL)
 3. Certified Ballast Manufacturers' Association (CBM)
 4. National Electrical Manufacturers' Association (NEMA)
 5. Institute of Electrical & Electronics Engineers (IEEE)
 6. American Society for Testing & Materials (ASTM)
 7. National Board of Fire Underwriters (NBFU)
 8. National Board of Standards (NBS)
 9. American National Standards Institute (ANSI)
 10. Insulated Power Cable Engineers Association (IPECS)
 11. Electrical Testing Laboratories (ETL)
 12. National Electrical Safety Code (NESC)
 13. California Electrical Code Title 24, Part 3
 14. California Building Code
 15. Americans with Disability Act (ADA)
 16. California Fire Code
- B. Comply with all applicable laws, ordinances, rules, regulations, codes, or rulings of governmental units having jurisdiction as well as standards of NFPA, and serving utility requirements.
- C. Owner shall pay all permit fees and inspections required by any public authority having jurisdiction. Contractor shall coordinate work and arrange inspections with any public authority having jurisdiction.
- D. Installation procedures methods and conditions shall comply with the latest requirements of the Federal Occupational Safety and Health Act (OSHA).
- E. Cover no work until inspected, tested, and approved by the Architect. Where work is covered before inspection and test, uncover it and when inspected, tested, and approved, restore all work to original proper condition at no additional cost to Owner.

1.05 DRAWINGS AND SPECIFICATIONS

- A. Drawings and specifications are intended to complement each other. Where a conflict exists between the requirements of the drawings and/or the specifications, request clarification.
- B. The Architect shall interpret the drawings and the specifications, and his decision as to the true intent and meaning thereof and the quality, quantity, and sufficiency of the materials and workmanship furnished there under shall be accepted as final and conclusive.
- C. In case of conflicts not clarified prior to Bidding deadline, use the most costly alternative (better quality, greater quantity, or larger size) in preparing the Bid. A clarification will be issued to the successful Bidder as soon as feasible after the Award and if appropriate, a deductive change order will be issued.
- D. All provisions shall be deemed mandatory except as expressly indicated as optional by the word "may" or "option".

1.06 EXAMINATION OF PREMISES

- A. Examine the construction drawings and premises prior to bidding. No allowances will be made for not being knowledgeable of existing conditions.

1.07 WORK AND MATERIALS

- A. Unless otherwise specified, all materials must be new and of the best quality. Perform all labor in a thorough and workmanlike manner, to the satisfaction of the Architect.
- B. All materials provided under the contract must bear the UL label where normally available. Note that this requirement may be repeated under equipment specifications. In general, such devices as will void the label should be provided in separate enclosures and wired to the labeled unit in proper manner.

1.08 SUBSTITUTIONS

- A. Substitutions will be allowed only in strict conformance with the General Conditions of the Contract and Division.
 - 1. Whenever in specifications any materials, process, or article is indicated or specified by grade, patent, or proprietary name or by name of manufacturer such specification shall be deemed to be used for the purpose of facilitating description of material, process, or article desired and shall be substantially equal or better in every respect to that so indicated or specified. If material, process, or article offered by Contractor is not, in opinion of architect, substantially equal or better in every respect to that specified, then Contractor shall furnish material, process or article specified. Burden of proof as to equality of any material, process, or article shall rest with Contractor. Contractor shall submit request together with substantiating data for substitution of an "or equal" item within thirty-five (35) days after award of contract. Provision authorizing submission of "or-equal" justification data shall not in any way authorize an extension of time for performance of this contract.

1.09 EQUIPMENT PURCHASES

- A. Arrange for purchase and delivery of all materials and equipment within 20 days after approval of submittals. All materials and equipment must be ordered in ample quantities for delivery at the proper time. If items are not on the project in time to expedite completion, the Owner may purchase said equipment and materials and deduct the cost from the contract sum.
- B. Provide all materials of similar class or service by one manufacturer.

1.10 COOPERATIVE WORK

- A. Correct without charge any work requiring alteration due to lack of proper supervision or failure to make proper provision in time. Correct without charge any damage to adjacent work caused by the alteration.
- B. Cooperative work includes: General supervision and responsibility for proper location and size of work related to this division, but provided under the other sections of these specifications, and installation of sleeves, inserts, and anchor bolts for work under each section in this division.

1.11 VERIFICATION OF DIMENSIONS

- A. Scaled and figured dimensions are approximate only. Before proceeding with work, carefully check and verify dimensions, etc., and be responsible for properly fitting equipment and materials together and to the structure in properly fitting equipment and materials together and to the structure in spaces provided.
- B. Drawings are essentially diagrammatic, and many offsets, bends, pull boxes, special fittings, and exact locations are not indicated. Carefully study drawings and premises in order to determine best methods, exact location, routes, building obstructions, etc. and install apparatus and equipment in manner and locations to avoid obstructions, preserve headroom, keep openings and passageways clean, and maintain proper clearances.

1.12 CLEANUP

- A. In addition to cleanup specified under other sections, thoroughly clean all parts of the equipment. Where exposed parts are to be painted, thoroughly clean off any spattered construction materials and remove all oil and grease spots. Wipe the surface carefully and scrape out all cracks and corners.
- B. Use steel brushes on exposed metal work to carefully remove rust, etc., and leave smooth and clean.
- C. During the progress of the work, keep the premises clean and free of debris.

PART 2 – PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 CUTTING AND PATCHING

- A. Cut existing work and patch as necessary to properly install new work. As the work progresses, leave necessary openings, holes, chases, etc., in their correct location. If the required openings, holes, chases, etc., are not in their correct locations, make the necessary corrections at no cost to the Owner. Avoid excessive cutting and do not cut structural members without the consent of the Architect and DSA.

3.02 CONCRETE

- A. Where used for structures to be provided under the contract such as bases, etc., concrete work, and associated reinforcing shall be as specified under architectural. See architectural drawings for details.
- B. See other sections for additional requirements for underground vaults, cable ducts, etc.

3.03 PAINTING

- A. Paint all unfinished metal with one coat of rust-inhibiting primer. (Galvanized and factory painted equipment shall be considered as having a sub-base finish.)
- B. Finished painting is specified Under "Finishes".

- C. Furnish all connections to electrical services furnished under other sections except as otherwise specifically designated. Provide all necessary connections, etc., required to properly connect all services and equipment.
- D. General: Painting requirements of this section are supplementary to other Painting Sections.
- E. Switchboards, panels, terminal cabinets, equipment enclosures, wireways, boxes, conduit, etc.: Standard gray or galvanized manufacturers' finish unless otherwise noted herein.
- F. Exceptions in public areas:
 - 1. Flush panels and cabinets: Fronts shall have factory applied primer and field applied oil base semi-gloss enamel finish coat (except metal plated parts) to match adjacent wall surfaces.
 - 2. Surface panels, cabinets and wireways: Same as "1. Flush Panels" above except also paint the enclosure (can) using the same paint as is on adjacent surface in lieu of semi-gloss paint. Apply etching compound (galvanized surfaces) and undercoater prior to finish coat.
 - 3. Surface and flush boxes: Paint to match adjacent surfaces as described in "2. Surface panels" above.
 - 4. Exposed conduit: Paint to match adjacent surfaces as described in "2. Surface panels" above.
 - 5. Ferrous metal miscellaneous parts (except stainless steel): Galvanized in accordance with ASTM A123 or A153.
 - 6. Lighting fixtures in public areas: Standard manufacturers' finish except as modified by the LIGHTING section, including Fixture Schedule. Exception: Paint the trims of recessed fixtures to match adjacent wall or ceiling surface if so directed by Owner's representative.
 - 7. Wiring devices, device plates and floor boxes in public areas: As specified in WIRING DEVICES and DEVICE PLATES Sections.

3.04 UTILITY SERVICES

- A. Upon notification of award of contract, notify the serving power, telephone utilities of the following:
 - 1. Name and address of Contractor.
 - 2. Estimated times of construction start, completion and required service connections.
 - 3. Project service voltage, phase load, and service size.

3.05 TEMPORARY LIGHTING AND POWER

- A. Contractor shall provide on-site generation, labor, materials and/or any required utility fees associated with the installation and maintenance of a temporary power source for Contractor's equipment or field offices during the period of construction.
- B. Building and site shall be sufficiently illuminated so that construction work can be safely performed. Lights shall be controlled by switches located with consideration for safety, security, and convenience.

3.06 RECORD DRAWINGS

- A. The Electrical Division shall maintain record drawings as specified in Section 01 78 39.
- B. Drawings shall show locations of all concealed and exposed conduit runs, giving the number and size of conduit wires. Underground ducts shall be shown with cross section elevations. Drawing changes shall not be identified only with referencing COR's and RFI's, the drawings shall reflect all the actual changes made.

- C. Two sets of reproducible as-built drawings shall be delivered to the Architect. See Section 01 78 39 for additional requirements.

3.07 EXCAVATION AND BACKFILL

- A. Perform all necessary excavation, shoring, and backfilling required for the proper laying of all conduits inside the building and premises, and outside as may be necessary. Remove all excess excavated materials from the site, or as otherwise directed by the Architect.
- B. Excavate all trenches open cut, keep trench banks as nearly vertical as practicable, and sheet and brace trenches where required for stability and safety. Excavate trenches true to line and make bottoms no wider than necessary to provide ample work room. Grade trench bottoms accurately. Machine grade only to the top line of the conduits, doing the remainder by hand. Do not cut any trench near or under footings without first consulting the Architect. All trenches shall be done in accordance with OSHA standards and regulations.
- C. Trenching and backfilling shall be done as per Section 31 23 33. No stones or coarse lumps shall be laid directly on conduit or conduits.
- D. Provide pumps and drainage of all open trenches for purposes of installing electrical duct and wiring.

3.08 ACCESSIBILITY

- A. Install all control devices or other specialties requiring reading, adjustment, inspection, repairs, removal, or replacement conveniently and accessibly throughout the finished building.
- B. All required access doors or panels in walls and ceilings are to be furnished and installed as part of the work under this section.
- C. Provide doors which pierce a fire separation with same fire ratings as the separations.
- D. Refer to 'Finish Schedule' for types of walls and ceilings in each area and the architectural drawings for rated wall construction.
- E. Coordinate work of the various sections to locate specialties requiring accessibility with others to avoid unnecessary duplication of access doors.

3.09 FLASHING

- A. Flash and counterflash all conduits penetrating roofing membrane.

3.10 IDENTIFICATION OF EQUIPMENT

- A. All electrical equipment shall be labeled, tagged, stamped, or otherwise identified in accordance with the following schedules:
- B. General:
 - 1. In general, the installed laminated nameplates as hereinafter called for shall also clearly indicate its use, areas served, circuit identification, voltage and any other useful data.
 - 2. All auxiliary systems, including communications, shall be labeled to indicate function.
 - 3. All labels, tags, and stamps shall use the owner room designation and room numbering system.

4. Provide nameplates for safety switches, switchboards, breakers mounted in switchboards, relay cabinets, signal terminal cabinets, individually mounted enclosed breakers, panelboards, starters, time clocks, remote control switches and similar items. Nameplates shall be laminated black-white-black backlit or phenolic plastic with 1/4-inch high lettering engraved through the outer covering except where specifically described otherwise. Affix with self-tapping machine screws (no rivets or glue). The screws shall not project beyond the backside face of enclosure doors or panels.
- C. Conduits and outlet boxes for all special systems including emergency power, fire alarm, and communications systems shall be color coded for identification throughout. Conduits shall be spray painted with the system color code at 3-foot intervals. Outlet and junction boxes shall be spray painted with the system color code on the exterior of the box, except boxes which are flush mounted in walls, ceilings, or floors shall be painted on the inside of the box. System color codes shall be as follows:
- | | |
|------------------------------------|--------|
| 1. Emergency Power Systems | Orange |
| 2. Fire Alarm System | Red |
| 3. Nurse Call System | Blue |
| 4. Music/Paging System | Yellow |
| 5. Intercom System | Pink |
| 6. Telephone System | White |
| 7. Data System | Gray |
| 8. SMATV/Radio Program System | Brown |
| 9. Miscellaneous Signaling Systems | Violet |
- D. Lighting and Local Panelboards Transformers:
1. Panel identification shall be with white and black micarta nameplates. Emergency power distribution panels shall be identified with red and white micarta nameplates. Letters shall be no less than 3/8" high.
 2. Circuit directory shall be 2-column typewritten card set under glass or glass equivalent. Each circuit shall be identified by the room number and/or number of unit and other pertinent data as required.
 3. The circuit directory shall reference the building number and room number as designated by the school directory. Circuit directories which reference the building number and room number as designated on drawings are not acceptable.
- E. Distribution Switchboards and Feeders Sections, Motor Control Centers, Automatic Transfer Switches:
1. Identification shall be with 1" H 4" laminated white micarta nameplates with black lettering on each major component, each with name and/or number of unit and other pertinent data as required. Emergency power distribution panels shall be identified with red micarta nameplates and white lettering. Letters shall be no less than 3/8" high.
 2. Circuit breakers and switches shall be identified by number and name with 3/8" H 1-1/2" laminated micarta nameplates with 3/16" high letters mounted adjacent to or on circuit breaker or switch.
- F. Disconnect Switches, Motor Starters and Transformers:
1. Identification shall be with white micarta laminated labels and 3/8" high black lettering.
 2. Emergency equipment shall be identified with red labels and 3/8" high white lettering.

3.11 CONSTRUCTION FACILITIES

- A. Furnish and maintain from the beginning to the completion all lawful and necessary guards, railings, fences, canopies, lights, warning signs, etc. Take all necessary precautions required by City, State Laws, and OSHA to avoid injury or damage to any persons and property.
- B. Temporary power and lighting for construction purposes shall be provided under this section. Refer to 'temporary facilities' for description of work.

3.12 GUARANTEE

- A. Guarantee all material, equipment and workmanship for all sections under this division in writing to be free from defect of material and workmanship for one year from date of final acceptance, as outlined in the general conditions. Replace without charge any material or equipment proving defective during this period. The guarantee shall include performance of equipment under all site conditions, conditions of load, installing any additional items of control and/or protective devices, as required.

3.13 PATENTS

- A. Refer to the General Conditions for Contractor's responsibilities regarding patents.

3.14 MECHANICAL / ELECTRICAL COORDINATION REQUIREMENTS

- A. All electrical work performed for this project shall conform to the National Electrical Code, to Local Building Codes and in conformance with Division 16 of these specifications whether provided under the Mechanical or the Electrical sections of the specifications. Where the mechanical contractor is required to provide electrical work, he shall arrange for the work to be done by a licensed electrical contractor using qualified electricians. The Mechanical Contractor shall be solely and completely responsible for the correct functioning of all mechanical equipment regardless of who provided the electrical work.
- B. The Mechanical Contractor shall provide the following:
 - 1. All motors required by mechanical equipment.
 - 2. All starters for mechanical equipment which are integral to equipment scheduled and / or specified.
 - 3. All wiring interior to packaged equipment furnished as an integral part of the equipment.
 - 4. All control wiring for mechanical systems.
 - 5. All control systems required by mechanical equipment.
 - 6. Control wiring shall be defined as all wiring, either line voltage or low voltage, required for the control and interlocking of equipment, including but not limited to wiring to motor control stations, solenoid valves, pressure switches, limit switches, flow switches, thermostats, humidistats, safety devices and other components required for the proper operation of the equipment.
 - 7. Motor starters supplied by Mechanical shall be fused combination type minimum size 1, and conform to appropriate NEMA standards for the service required. Provide NEMA type 3R/12 enclosures in wet locations. Provide all starters with appropriately sized overload protection and heater strips provided in each phase, hand/off auto switches, a minimum of 2 NO and NC auxiliary contacts as required, and an integral disconnecting means. For 1/2 horsepower motors and below, when control requirements do not dictate the use of a starter, a manual motor starter switch with overload protection in each phase may be provided. Acceptable manufacturers are Allen Bradley, General Electric, Square D, Furnas and Westinghouse.
- C. The Electrical Contractor shall provide the following for mechanical equipment:

1. All power wiring.
 2. Electrical disconnects as shown on the electrical drawings.
 3. All starters not integral to equipment scheduled and / or specified and all starters forming part of a motor control center.
- D. All power wiring and conduit to equipment furnished under Mechanical Division shall be provided under Electrical Division. Control wiring, whether line voltage or low voltage, shall be provided under the division which furnishes the equipment.
- E. Conduit for wiring for all HVAC and plumbing control shall be furnished and installed under Electrical Division.
- F. Power wiring shall be defined as all wiring between the panelboard switchboard overcurrent device, motor control center starter or switch, and the safety disconnect switch or control panel serving the equipment. Also, the power wiring between safety disconnect switch and the equipment line terminals.
- G. All motor starters which are not part of motor control centers and which are required for equipment furnished under this division shall be furnished and installed under the Electrical Division.
- H. Electrical Division shall make all final connections of power wiring to equipment furnished under this division.
- I. Wiring diagrams complete with all connection details shall be furnished under each respective section.

3.15 EQUIPMENT ROUGH-IN

- A. Rough-in all equipment, fixtures, etc. as designed on the drawings and as specified herein. The drawings indicate only the approximate location of rough-ins. The exact rough-in locations for manufactured equipment must be determined from large scale certified drawings. Mounting heights of all switches, receptacles, wall mounted fixtures and such equipment must be coordinated with the architectural designs. The contractor shall obtain all rough-in information before progressing with any work for rough-in connections. Minor changes in the contract drawings shall be anticipated and provided for under this division of the specifications to comply with rough-in drawings.

3.16 OWNER-FURNISHED AND OTHER EQUIPMENT

- A. Rough-in and make final connections to all Owner-furnished equipment shown on the drawings and specified, and all equipment furnished under other sections of the specifications.

3.17 EQUIPMENT FINAL CONNECTIONS

- A. Provide all final connections for the following:
1. All equipment furnished under this Division.
 2. Electrical equipment furnished under other sections of the specification.
 3. Owner-furnished equipment as specified under this Division.

3.18 INSERTS, ANCHORS, AND MOUNTING SLEEVES

- A. Inserts and anchors must be:

1. Furnished and installed for support of work under this Division.
 2. Adjustable concrete hanger inserts installed in new concrete work shall be as manufactured by Grinnell or approved equal.
 3. Installed in location as approved by the Architect. Expandable lead type anchors installed in existing concrete with minimum surface damage, as manufactured by Ackerman-Johnson, Pierce, Diamond, or Hilti.
 4. Toggle Bolts, or "Molly-Anchors" where installed in concrete block walls.
 5. Complete with 3/16" or heavier steel back-up plate where used to support heavy items. Thru-bolts for back-up plate shall be concealed from view, except as otherwise indicated. Refer to drawings for details of supports at post-tension concrete slab.
 6. Mounting of equipment that is of such size as to be free standing and that equipment which cannot conveniently be located on walls such as motor starters, etc., shall be rigidly supported on a framework of galvanized steel angle of Unistrut or B-line systems with all unfinished edges painted.
- B. Furnish and install all sleeves as required for the installation of all work under all sections of this division. Sleeves through floors, roof, and walls shall be as described in conduit section.

3.19 SEISMIC RESTRAINTS

- A. Provide the work in compliance with the most stringent seismic requirements for Zone 4, of applicable Codes including the Title 24 and California Code of Regulations (CCR) California Building Code, but with the requirements herein as minimum standards. Provide seismic restraints for materials and equipment of this Division, including (but not limited to) the items listed below. The attachments shall resist forces applied to the center of gravity of the components. Criteria shall be the operating weight of the item times .5g for horizontal forces and .33g for vertical forces. Design for the horizontal force to be applied in any direction. Wall mounted or suspended components shall, in addition, resist a downward force of 200 pounds minimum added to the operating weight.
- B. All switchgear and other free standing electrical equipment shall be anchored to withstand seismic forces in this area.
- C. Switchboards, transformers, and all free-standing panels or cabinets and similar equipment.
- D. Suspended lighting fixtures.
- E. Lighting fixtures integral with ceiling or directly mounted to ceiling.
- F. Suspended conduit hangers and trapezes.
- G. Suspended electrical conduit, 2-1/2" nominal size and larger, shall have individual hangers not longer than 12" from the top of the pipe to the bottom of the support for the hanger. If a longer hanger is used, Contractor shall apply seismic restraints. Supporting calculations and details shall be submitted for Title 24 compliance review.
- H. Four #9-12 gauge hanger wires shall be provided to each recessed troffer one located at each diagonal corner. In addition troffers shall be fastened with two self tapping screws at each end of fixture through housing to main runners of the T-bar grid. Installation of these screws shall in no way deform the fixture housing. Provide spacers between the fixture housing and the T-bar grid where required.

- I. Provide bracing and anchorage of conduit hangers and trapezes in accordance with SMACNA published "Guidelines for Seismic Restraints of Mechanical Systems".
- J. Pendant, suspended, or stem mounted lighting fixtures shall have approved earthquake resistant hangers if code required and have movable joints at ceiling and fixture when more than one stem is used per fixture. In addition, fixtures shall have steel stranded aircraft cable attached to the structure and to the fixture at each point of support, in addition to the fixture hanger. Cables shall be installed slack and shall be capable of supporting four times the vertical load. The fixture shall be capable of swinging 45° in any direction. Where a 45° swing would cause the fixture to strike a wall or other object, suitable cables or other means of bracing shall be added to prevent the fixture from swinging against the other object.
- K. Carefully review the space available to insure that the restraint systems proposed will not impair the required equipment clearance, working space or access.
- L. Submit details of the seismic anchorages and receive approval of the Owner's representative prior to installation. Details shown on the drawings are for reference only and may not be suitable for the actual equipment to be installed. Exception: Details for seismic anchorage may be omitted for equipment installed on a floor or roof and weighing less than 400 lbs. but the installation shall be subject to the approval of the Owner's representative.

3.20 RUSTPROOFING

- A. Rust proofing must be applied to all ferrous metals as follows:
 - 1. Hot-dipped galvanized shall be applied after forming of angle-iron, bolts, anchors, etc.
 - 2. Hot-dipped galvanized shall be applied after fabrication for junction boxes and pull boxes cast in concrete.

3.21 GENERAL WIRING

- A. Where located adjacent in walls, outlet boxes shall not be placed back to back, nor shall extension rings be used in place of double boxes, all to limit sound transmission between rooms. Provide short horizontal nipple between adjacent outlet boxes, which shall have depth sufficient to maintain wall coverage in rear by masonry wall.
- B. In those isolated instances in which construction conditions will not permit staggered outlet boxes, provide "Flamesafe" FSD 1077 fire stopping pads or approved equal, over the outlet box.
- C. Complete rough-in requirements of all equipment to be wired under the contract are not indicated. Coordinate with respective trades furnishing equipment or with the Architect as the case may be for complete and accurate requirements to result in a neat, workmanlike installation.
- D. Provide proper size and type of feeds from proper sources for all such items indicated, checking drawings of all trades to ensure inclusion of all items.

3.22 SEPARATE CONDUIT SYSTEMS

- A. Each electrical and signal system shall be contained in a separate conduit system as shown on the drawings and as specified herein. This includes each power system, each lighting system, each signal system of whatever nature, telephone, emergency system, sound system, control system, fire alarm system, etc.

- B. Further, each item of building equipment must have its own run of power wiring. Control wiring may be included in properly sized conduit for equipment feeders of #6 AWG and smaller, having separate conduit for larger sizes.

3.23 SPECIAL CONDUIT REQUIREMENTS

- A. The electrical contractor shall furnish and install all conduits for the total and complete conduit for the following communication systems.
 - 1. Clock and Bell
- B. The fire alarm system shall be in conduit at all areas.
- C. Conduit for all low voltage systems, including fire alarm and clock and bell located above suspended ceiling shall be installed below gypsum board on bottom chord of truss, exposed.
- D. Provide a pull chord in all spare conduit and where conductors are installed by others.

END OF SECTION 26 05 00

SECTION 26 05 26 - GROUNDING

PART 1 - GENERAL

1.01 SUMMARY

- A. Provisions of General Conditions, Supplementary Conditions, Division One, and Section 26 05 00 Common Work Results for Electrical apply to this section.
- B. The scope of work under this section includes furnishing all labor, materials, and equipment and performing all operations in connection with Grounding, as indicated on the drawings, specified herein, or reasonably required to complete the work. The work includes, but is not limited to the following:
 - 1. Furnish and install grounding and grounding conductors.

PART 2 – PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 GROUNDING

- A. All panelboard cabinets, equipment, enclosures, and complete conduit system shall be grounded securely in accordance with pertinent sections of Article 250 of CEC. Conductors shall be copper. All electrically operated equipment shall be bonded to the grounded conduit system. All non-current carrying conductive surfaces that are likely to become energized and subject to personal contact shall be grounded by one or more of the methods detailed in Article 250 CEC. All ground connections shall have clean contact surfaces. Install all grounding conductors in conduit and make connections readily accessible for inspection. Furnish and install grounding electrodes as described on the drawings.
- B. Grounding of metal raceways shall be assured by means of provisions of grounding bushings on feeder conduit terminations at the panelboard, and by means of insulated continuous stranded copper grounding wire extended from the grounds bus in the panelboard to the conduit grounding bushings.
- C. Except for connections which access for periodic testing is required, make grounding connections which are buried or otherwise inaccessible by exothermite type process.
- D. Equipment Grounding Conductors:
 - 1. Provide copper THWN insulated equipment grounding conductors in all raceways.
 - 2. The grounding conductors shall be provided whether scheduled or shown on the drawings or not, and, if necessary, the conduit size shall be increased to accommodate them. These grounding conductors shall be connected to the ground terminals on the device or enclosure at each end of the installation and shall be interconnected with the other ground terminals and conductors to form a continuous wired grounding system throughout the electrical wiring system.
- E. Ground Rods: 3/4" diameter × 8-foot copper clad steel. Drive full length into earth with the top 3-inch minimum below grade or underside of slab. Where ground rods cannot be driven vertically to the desired depth below grade, they shall be driven at an angle away from or parallel to the exterior

wall. When driven parallel to the wall, the angle shall not exceed 45°. The rod shall penetrate to a depth of permanent ground moisture. When ground rods cannot be driven because of bedrock at less than 4 feet below grade level, a counterpoise ground electrode shall be used in place of rods. The counterpoise system shall consist of not less than 50 feet of No. 2 AWG bare tinned copper wire, buried to a depth of at least 18" below grade, for each ground rod shown. The wires shall be run in a straight line. Each pad-mounted transformer and vacuum interrupting sectionalizing switch shall be grounded using the methods indicated herein.

- F. Connections: Connection to inaccessible ground rods below ground shall be made using exothermic welding devices. Above ground and accessible connections shall be made using exothermic devices. Multiple bolt silicon bronze connectors, Burndy or O.Z. Electric; or exothermic welded, Burndy, Erico Cadweld products, or equal.
- G. Test each grounding electrode for resistance at the connection point before connecting any wires. Resistance at the grounding electrode shall not exceed the following:
 - 1. Service Equipment, 25 ohms
 - 2. Interior Electrical Systems, 25 ohms
 - 3. Exterior Transformers, 10 ohms
 - 4. Junction Boxes and Manholes, 10 ohms
- H. If the above values are not achieved with the installed system, notify the Owner's representative.
- I. Each ground electrode shall be tested using a ground resistance meter, or other suitable instrument, in conformance with the manufacturer's directions. Submit a report listing as a minimum the date of testing, name of tester, instrument used, location and type of ground electrode, and resistance in ohms. Submit within five (5) days after testing is completed.

END OF SECTION 26 05 26

SECTION 26 50 00 – LIGHTING

PART 1 - GENERAL

1.01 SUMMARY

- A. Provisions of General Conditions, Supplementary Conditions, and Division One apply to this section.
- B. Scope of Work: The work under this section includes furnishing all labor, materials, and equipment and performing all operations in connection with Lighting, as indicated on the drawings, specified herein, or reasonably required to complete the work.

1.02 SUBMITTALS

- A. Comply with requirements of Section 01 33 00 – SUBMITTALS.
- B. Material List including reflector type and each type of lamp and ballast.
- C. Catalog cuts for each fixture and pole including complete photometric data in IES format.
- D. Electronic ballast warranty.

1.03 GENERAL REQUIREMENTS

- A. Provide U.L. listed and labeled lighting fixtures complete with lamps at light outlets indicated on the drawings. Each fixture shall bear the U.L. label, and shall comply with Code Requirements. Exterior fixtures shall be U.L. approved for damp locations in soffits and for wet locations elsewhere and shall be so labeled.
- B. Design (including the frames) of recessed fixtures shall be compatible with the ceiling construction. Verify the type of ceiling and suspension method prior to ordering fixtures. Architect's favorable review of the shop drawings for both the ceiling system and the lighting fixtures, with "No Exception Taken" or "Approved" on the Architect's stamp, will not relieve the Contractor of the ceiling/lighting fixture compatibility requirement.
- C. Fixtures are listed and described in the Fixture Schedule and in the following paragraphs. Fixture catalog numbers are to be used as a guide only and shall be understood to be followed by the words "except as modified by the total fixture description both text and pictorial". Provide accessories, features and adaptations necessary to meet the requirements of the description.
- D. If the fixture designation is omitted from a light outlet, assume a fixture of the type used in similar areas in preparing the bid. Confirm type with Architect prior to ordering.

1.04 ACCEPTABLE MANUFACTURERS

- A. Electromagnetic Advance, Valmont Electric
- B. Ballasts Jefferson, Universal, Sola or equal
- C. Electronic Ballasts Magnetek-Universal, Motorola, EBT or equal
- D. Lamps Sylvania, General Electric, N.A. Phillips, Osram or equal

1.05 LAMP REPLACEMENT

- A. Replace lamps which burn out after Owner's use or acceptance of the project (or of an area in the case of beneficial occupancy).
- B. Lamps (except incandescent) which burn out with 120 days.
- C. Incandescent lamps which burn out after usage which is less than 80% of rated life.

PART 2 - PRODUCTS

2.01 FINISH

- A. Treat surface mounted fixtures and exposed trim of recessed fixtures with a rust-inhabitant process. This process shall be Bonderlite or Oakite Crysoat or equal zinc phosphate bonding process. Refer to PAINT, FINISHES AND COLORS sections.

2.02 OPTICAL SYSTEMS

- A. Lighting fixtures for use with HPS lamps shall have the optical system specifically designed for a clear HPS lamp of the wattage indicated.

2.03 BALLAST WIRING

- A. Where multiple level switching of fluorescent fixtures is indicated on the drawings, wire ballasts for symmetrical grouping of lamps. For example in three lamp tandem fixtures, two inner and four outer lamps shall be switch controlled.

2.04 EXIT SIGN FIXTURES

- A. Emergency exit sign fixtures with illumination by LED's (Light Emitting Diodes), fully enclosed within aluminum housing and providing even illumination of letters through an optical diffuser to meet or exceed requirements of NFPA Life Safety Coded 101 and the OSHA code. The power supply shall be dual input 120/277V 60 Hz. All components shall be solid state, with surge protection and short circuit protection and each LED shall be individually driven such that failure of one will not affect another.

2.05 BALLASTS

- A. Emergency battery pack ballasts for fluorescent lighting fixtures shall consist of an automatic power failure device, test switch, pilot light, and fully automatic solid-state charge in a self-contained power pack furnished by the fixture manufacturer as an integral part of the fixture. Charger shall be either trickle, float, constant current or constant potential type, or a combination of these. Battery shall be no maintenance nickel cadmium type with capacity to supply power to one lamp for each fixture for 90 minutes minimum. Unit shall be capable of operating a dead fluorescent lamp.
- B. Fluorescent HID ballasts and emergency battery pack ballasts shall be guaranteed for 3 years.

2.06 LAMPS

- A. Provide lamps as listed below unless specifically indicated otherwise in the Lighting Fixture Schedule.

- 2.07 B. Incandescent General Service Lamps: Inside frosted, standard life, 130V.
FLUORESCENT LAMPS
- A. Compact Fluorescent; 3500K degree color for interior locations.
- B. 40 watt "Biax"; 3500K.
- C. Rapid-start lamps; 3500K.
- D. High Intensity Discharge (HID) Lamps:
1. Metal halide light fixtures that utilize a horizontal lamp configuration shall be provided with a clear lamp rated for horizontal operation.
- E. Each type of lamp by only one manufacturer color consistency.
- 2.08 LIGHT TRANSMITTING PLASTICS
- A. All plastic shall be 100% virgin acrylic. Pattern #12 lenses shall be minimum .125-inch thick overall with .08-in. prism depth.
- 2.09 LIGHTING CONTROL SYSTEM – MOTION SENSING
- A. Motion sensing lighting control system shall be installed where shown to switch lighting fixtures ON when a room or area is entered and OFF after a preset time delay after sensing no motion or occupancy.
- B. System shall consist of motion sensor units, switchpacks, wiring, and miscellaneous electrical hardware. Ceiling mounted sensing and switchpack units shall be manufacturers by Novitas, Watt-Stopper or equal. Wall switch type unit shall be provided by Novitas or equal.
- 2.10 EMERGENCY INVERTER SYSTEMS
- A. Furnish and install interruptible 3600 VA emergency AC inverter system manufactured by Chloride, Emerg-Lite, Exide, Lithonia, or equal capable of serving a 2400 VA 277 volt 60 Hz connected load for a period of 90 minutes to 87.5 percent of output voltage. System shall be listed to UL Standard 924.
- B. The entire system, including inverter, battery charger, transfer equipment and battery, shall be designed for maximum reliability in emergency service and shall be designed with modular construction for easy field replacement. System transfer time to emergency mode shall be no more than 50 milliseconds. All solid-state components shall be conservatively rated. Electronics shall carry a one year warranty.
- C. The system shall be designed to operate from 277 volt 1-phase 60 Hz input voltage and supply the normally ON loads at 277 volts single phase 60 Hz.
- D. Supply normally ON loads at 277 volts single-phase 60 Hz and also supply normally OFF loads at 120 volts single-phase 60 Hz, at Building.
- E. Inverter:
1. The DC to AC inverter shall be of the solid state type with ferroresonant output transformer to provide 120/277 volt 1-phase 60 Hz sine wave output such that the output voltage is regulated to

within $\pm 5\%$ from 10% load to full load at unity power factor and the frequency is regulated within ± 1 Hz. Total harmonic distortion of the output shall be approximately 5% at full resistive load and nominal input.

2. System efficiency shall be at least 90% in the standby mode to minimize power consumption. Inverter efficiency shall be greater than 80% in emergency mode to insure maximum utilization of battery capacity and to minimize space.
3. To minimize power consumption, inverter shall not operate continuously; however, low level logic stage shall operate when AC supply is available to minimize interruption of power to load.
4. Self-protective features shall include short circuit protection, failsafe startup, automatic low battery shutdown, reverse input polarity protection and 5-minute operation at 130% of unit rating. The input power and control circuitry shall be separately fused.

F. Charger:

1. The battery charger shall be a solid state, constant voltage, current limited device incorporating internal red visual indicators to signal float and high charge mode. Charger shall be equipped with timed automatic equalize charge to periodically bring batteries up to full capacity. Charger shall be capable of recharging batteries in accordance with the requirements of UL 924.

G. Battery:

1. The Battery shall be sized to power the fully-loaded inverter for 90 minutes in accordance with UL requirement and shall be sealed, maintenance free lead calcium requiring no addition of water during service life. Expected service life shall be 10 years and warranty shall be a total of 10 years consisting of 1 years full replacement plus 9 years prorated replacement.

H. Controls:

1. Instrumentation and controls shall be suitable to determine that the system is operating in a satisfactory manner. As a minimum, these shall include utility power indicator, inverter bypassed indicator, DC battery voltmeter, AC output voltmeter, DC battery ammeter, system test switch, high-charge indicator.

I. Enclosure:

1. System electronics shall be enclosed in a free standing, 14-gauge, NEMA 1 sheet steel enclosure painted with key-lock hinged doors. Battery enclosures of similar construction shall be supplied as required. All electronics shall be mounted on easily removable modules with quick disconnect inter-wiring. All potentially hazardous components shall have safety covers and be properly marked with tags to indicate safe handling.

J. Accessories:

1. Inverter units shall be provided with output circuit breakers.
2. AC ammeter.

PART 3 – EXECUTION

3.01 FIXTURE MOUNTING

- A. Provide fixture supports. Design (including the frames) of recessed fixtures shall be compatible with the ceiling construction. Verify the type of ceiling and suspension method prior to ordering fixtures. Architect favorable review of the shop drawings for both the ceiling system and the lighting fixtures,

with “No Exception Taken” or “Approved” on the Owner’s representative’s stamp, will not relieve the Contractor of the ceiling/lighting fixture compatibility requirement.

- B. Mount pendant fixtures at the heights indicated on the drawings, unless otherwise directed by Architect.
- C. Verify the ceiling or wall construction, voltage, and the mounting requirements of each fixture and provide plaster frames, special flanges, concrete pour housings, boxes, brackets, adapters, hangers, stems, canopies, special ballasts or lenses, and other materials necessary to properly purchase and mount the fixture.
- D. Attach surface fixtures mounted on accessible panel type suspended ceilings to a main runner with a positive clamping device made of minimum 12 gauge steel. Rotational spring catches will not be permitted. Mount fixtures which are on combustible ceilings on spacers as required by Code unless Code approved for mounting directly on ceiling.
- E. See “Seismic Restraints” under Section 26 05 00 – Common Work Results for Electrical.

3.02 FIXTURE LOCATIONS

- A. Locate fixtures installed in Mechanical Equipment Rooms after ducts and piping are in place for maximum working space coverage. Connect with exposed conduit. Provide conduit with conduit fittings for boxes and offsets. Support fixtures from the structure independently of ducts or piping.

3.03 FIXTURE INSTALLATION

- A. Provide outlet boxes for recessed fixtures in a manner approved by the Code. In non-accessible ceilings provide access to junction boxes, ballast, transformers, and battery packs through fixture apertures: no access panels in ceiling. Provide appropriately temperature rated insulation for branch wires to recessed fixtures.
- B. Install lighting fixtures securely, level, plumb, aligned, and in straight rows. Lighting fixtures must be installed so they do not shift during relamping or adjustment.
- C. Recessed Fixtures:
 - 1. Supports: Provide seismic clips and bracing per Code. Refer to Section 26 05 00 Common Work Results for Electrical.
 - 2. Holes for Recessed Fixtures
 - 3. Minimum-width fixture trims are specified for this project. Cut holes to follow fixture housing exactly so no gaps will be visible after trims are installed.
 - 4. Round holes in acoustic tiles: Pre-cut in center of tiles, using adjustable-diameter cutter on slow-speed drill press.
 - 5. Install bottom of housing aligned with finished ceiling.
 - 6. Keep ceiling insulation at least 3” away from fixture.
 - 7. Install trims after painting of spaces. Install trims tightly, with no gaps, or light leaks. For exterior fixtures provide seals and gasketing to prevent insect entry into the fixtures. If soffits recessed fixtures are not available with a sealed housing, provide effective gasketing for the lens and for the lens trim/soffit surface interface.
- D. Ceiling-Mounted and Pendant Fixtures:
 - 1. Supports: Provide support for outlet boxes so fixtures can be installed securely, including seismic supports and restraints per Code.

2. Fixture weight less than 50 lb. at each suspension point: hang from strap or stud on outlet box.

END OF SECTION 26 50 00

SECTION 28 31 10 – FIRE ALARM

PART 1 - GENERAL

1.01 SUMMARY

- A. Provisions of General Conditions, Supplementary Conditions, and Division One apply to this section.
- B. Scope of Work: The work under this section includes furnishing all labor, materials, and equipment, and performing all operations in connection with the Fire Alarm System, as indicated on the drawings, specified herein, or reasonably required to complete the work. The work includes, but is not limited to the following:
 - 1. Furnish and install fire alarm devices to include all addressable signal initiating devices, audible and visual alarm devices, conduit, wire, fittings, and accessories required to provide a complete operating system.
 - 2. Connect the new Simplex Fire Alarm control panel with the existing fire alarm system in the administration office. Provide all necessary relays, control modules and programming.
 - 3. The specifications require the system to be Simplex. Any contractor requesting consideration for a substitute system shall provide the following documents to the Architect of Record ten (10) days prior to the bid:
 - a. Documentation showing the contractor is a factory direct office of the equipment being considered for substitution. No independent distributors will be allowed.
 - b. The contractor's UL Certificate qualifying the contractor for fire alarm installations.
 - c. Full set of submittals and drawings incorporating the substituted equipment. This shall include location layout, battery calculations of the main control panel and any transponders, and line loss of the signal circuit.

1.02 REFERENCES

- A. The latest editions of the publications listed below, form a part of this specification to the extent required by the references thereto:
 - 1. 2016 California Building Code (CBC), Part 2, Title 24, CCR (2015 International Building Code, Vol. 1&2, and 2016 California Amendments)
 - 2. 2016 California Electric Code (CEC), part 3, title 24, CCR(2014 National Electric Code 2016 California Amendments)
 - 3. 2016 California Mechanical Code (CMC), Part 4, Title 24, CCR, (2015 IAPMO Uniform Mechanical Code and 2016 California Amendments)
 - 4. NFPA #72 2016 Edition with California State Amendments
 - 5. 2016 California Fire Code (CFC), Part 9 Title 24, CCR, (2015 International Fire Code and 2016 California Amendments)
 - 6. Underwriters Laboratories, Inc (UL)

50 Cabinets and Boxes
268 Smoke Detectors, Combustion Products Types for Fire
Protective Signaling Systems
38 Manually actuated Signaling boxes for use with Fire
Protective Signaling Systems
521 Fire Detection Thermostats
464 Signal Appliances, Audible

- 7. California State Fire Marshal Listing (CSFM)
- B. Electrical Systems, as specified in Division 26.
- C. Communications Systems, as specified in Division 27.

1.03 SUBMITTALS

- A. In addition to the required submittals specified elsewhere, provide California State Fire marshal (CSFM) listings of all devices and equipment to be used.
- B. Provide complete shop drawings of the fire alarm system including the following items on the plans for approval by the School District prior to the start of construction.
 - 1. Complete battery load calculations, and line voltage drop calculations.
 - 2. Conduit size, number, and type of wires to each device, terminal cabinets and enclosures.
 - 3. Location, type and address of all system devices.
 - 4. Reconfiguration (signal and initiating).
 - 5. Complete riser diagrams and signal floor plan. Drawings shall contain State Fire Marshal approval.
 - 6. Backboard layouts (with detailed dimensions).

PART 2 - PRODUCTS

2.01 FIRE ALARM CONTROL PANEL (FACP)

- A. Fire Alarm Control Panel (FACP). The FACP shall be a Simplex 4100.
- B. The system shall be controlled and supervised by a microprocessor based monitoring fire alarm control panel. The systems shall be addressable, field configurable, programmable and editable. The system shall continuously scan devices for change of status. Each device shall have it's own unique address, but shall also be grouped by building as a separate zone for remote annunciation and alarm report purposes.
- C. The fire alarm control panel shall be housed in a lockable, code gauge steel cabinet with 80 character LCD display, master controller operator's panel, I indicating lamps, silence switch and reset switch mounted on cabinet front. The fire alarm control panel shall contain a voice tone generator and a sufficient number of amplifiers in order to provide evacuation tones and digital voice messages throughout the facility. Messages and tones are to be field programmable and initially set to temporal code when an alarm is initiated. An annunciator and message board shall be provided in the main lobby.
- D. The fire alarm control panel shall come with standardized software for on-site customization of the system. The unit shall be capable of providing a 600 event historical log with zone or point selectable alarm verification.
- E. The unit shall support 127 addressable points per module and one output point, SPST contact per zone. Provide the number of modules necessary to control and supervise fire alarm devices as shown on the Drawings, as well as to provide 25% spare capacity).
- F. The fire alarm control panel shall be capable of providing a Walk Test.

- G. The power feed for the FACP shall be 3-wire, 120volt, A.C. single phase (20A circuit) permanently labeled "FIRE ALARM CONTROL POWER", terminating at the master fire alarm control and supervisory panel in the general office and originating at the main electrical switchboard of the building that contains the FACP. The label shall be red with 1/4" high white lettering. The circuit breaker must be provided with a lonce-on device.
- H. In addition to the two A.C. circuits, the panel shall be equipped with a D.C. battery to activate an audible alarm and pilot light in case of a power failure on either A.C. circuit.
- I. Batteries must drive signaling devices per current requirements NFPA 72. Battery calculations are required as part of the submittal. Provide type and wiring configuration of batteries. Submittal shall specify point to point on OHM's Law.
- J. The master fire alarm panel shall be equipped with a manual pull lever type, supervised report station.

2.02 FIRE DETECTION DEVICES

- A. With the exception of the manually operated report station required at the master fire alarm panel and large assembly areas, the remainder of the school facility shall be equipped with approved, electronically supervised, automatic fire detection devices, such that every room, space, including concealed spaces, such as the attic spaces above ceilings, etc., is provided with approved coverage.
- B. Automatic fire detection devices shall be True Alarm addressable analog smoke and heat detectors. Where used, heat detectors shall be fixed temperature x rate of rise, fixed at 135°F and a 15°F/min rate of rise. In janitor rooms equipped with kilns, devices shall be fixed at 170°F. Use Simplex True Alarm Photo-Electrical Smoke Detectors. Model #4098-9714 with 4098-9792 Base.
- C. A 3/4" thick, fire resistive, plywood backboard shall be installed in the electric room for the fire alarm security, intercom and CCTV systems at each building. All fire alarm wiring shall terminate on U.L. approved strips on this backboard at a section clearly designated for fire alarm only. All wiring shall be labeled at termination strip. Wiring shall be configured such that all end of line resistors will be installed at terminal strip on signal backboards.

2.03 MANUAL FIRE ALARM STATIONS

- A. Manual Fire Alarm Stations shall be an addressable double action, breakglass type with a key operated test-reset lock in order that they may be tested, and so designed that after Actual Emergency Operation, they cannot be restored to normal except by use of a key. An operated station shall automatically condition itself so as to be visually detected, as operated, at a minimum distance of one hundred feet, front or side. Manual Stations shall be constructed of die-formed satin-finished aluminum, with operating directions provided on the cover in depressed red letters. The word FIRE shall appear on each side of the stations in depressed letters, one-half inch in size or larger. Stations shall be suitable for semi-flush mounting on a standard single-gang box or switch plate and shall be provided with a terminal block for connection of Fire Alarm System Wiring. Pull Station shall be Simplex #4099-9021.

1. Manual Pull Stations shall comply with CBC Sections 11B-205 and 11B-403.

2.04 ALARM SPEAKER/STROBE DEVICES

- A. Furnish and install where indicated on the drawings, alarm speaker/strobe devices. The audible/visual devices shall be a combination addressable speaker/strobe. The speaker shall be 25 or 70 vrms. The visual shall be rated at 24 vdc.

- B. The audible shall be of rugged vandal-resistant construction. The visual section shall be a strobe using a Xenon flashtube in a clear housing with Solid State circuiting for maximum reliability and efficiency. The strobe unit shall have a meantime between failure (MTBF) of 1,000 hours or greater. The strobe section shall have a minimum intensity rating of 8,000 peak candela with a flash rate of 1 minimum – 2 maximum flash per second, Per NFPA 72, 18.5.3.1)
- C. The alarm speaker/strobe device shall be of the semi-flush type designed for mounting to a standard 4” square deep electrical outlet box. Each device shall be provided with a semi-flush accessory plate. Exterior speakers shall be weatherproof.
- D. Synchronization Requirements: The strobes shall flash at a synchronized rate and the speakers shall sound with synchronized output.

2.05 HEAT DETECTOR DEVICES

- A. Heat detectors shall be addressable, fixed temperature x rate of rise, fixed at 135°F and a 15°F/min rate of rise. In janitor rooms equipped with kilns, devices shall be fixed at 170°F. Heat Detector shall be True Alarm series. Simplex 4098 series.

2.06 SMOKE DETECTOR DEVICES

- A. Smoke detectors shall be True Alarm Analogue addressable, photo-electric. Simplex 4098-9714.
- B. Projected Beam Smoke Detectors shall be Fire Ray Reflective Beam Smoke Detectors. The system comprises of a single unit incorporating an infra-red Transmitter and Receiver. The signal is reflected by a prism and analyzed for smoke presence.

2.07 WIRING

- A. All wiring shall be in accordance with the California Electrical Code (CEC), State Codes, National Fire Protection Association Standard 72, 2016 Edition with state amendments.
- B. All underground conductors for communication circuits shall be West Penn Wire Aqua Seal Fire Alarm Cables. Part No AQZ93.
 - 2. Description: 18/2 Stranded bare copper conductors, overall shield with Aquaseal tape and overall jacket.
 - 3. NEC Rating: FPL – PLTC, NEC Article 760 and 725
 - 4. Approvals: UL Listed-Direct Burial
 - 5. Construction Parameters
 - a. Conductor: 18 AWG Bare Copper
 - b. Stranding: 7x26
 - c. Insulation Material: PVC with Nylon
 - d. Insulation Thickness: Nylon .005” Nominal
 - e. Number of Conductors: 2 (1 Pair)
 - f. Shield: 100% Aluminum Polyester Foil
 - g. Jacket Material: Sunlight / Moisture Resistant PVC
 - h. Jacket Thickness: 0.040” Nominal
 - i. Overall Cable Diameter: 0.310” Nominal
 - j. Approximate Cable Weight: 48 lbs / 1M Nom.
 - k. Flame Rating: UL 1685 Vertical Tray

- C. All underground conductors for power circuit shall be XHHW-2.
- D. No splices allowed in underground wiring.
- E. Interior, dry location wiring for low voltage initiating circuits shall be #18 AWG copper, twisted shielded pair minimum, signaling circuits shall be No. 14 AWG minimum, and wiring for 120 volt circuits shall be No. 12 AWG minimum unless detailed otherwise in drawings. All wiring shall be color coded, solid copper conductor. Use of power limited cable shall be restricted to controls listed for this purpose. Single conductors shall be type XHHW copper.
- F. Twenty (20) percent spare conductors shall be provided from the main Fire Alarm Control Panel to each Fire Alarm (signal) Terminal backboard. These spares shall be terminated and marked at the Fire Alarm Cabinet and each Terminal backboard.
- G. Wire markers shall be provided for each wire connected to equipment. The marker shall be of the taped bank type, of permanent material, and shall be suitable and permanently stamped with the proper identification. The markers shall be attached in a manner that will not permit accidental detachment. Changing of wire colors within circuits shall be unacceptable.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. The installation shall be accomplished by factory authorized technicians. The factory technician shall be state certified as an FLS technician.
- B. System shall be installed using material, supplies and methods of wiring previously covered under other sections.
- C. Contractor shall provide a complete schematic of terminal to terminal wiring within the FACP and show destination of all wires leaving the FACP. These are to be submitted at the time of final inspection.

3.02 TESTS

- A. Upon completion of installation, the system shall be subjected to operational tests, and when all necessary corrections have been accomplished, the Architect shall be advised and will schedule a final inspection test by a representative of the Owner.
- B. The Contractor shall furnish all instruments, labor, and materials required for the tests and a qualified technician to conduct the tests. Any deficiencies found shall be corrected by the Contractor and system retested as necessary prior to final acceptance. Tests shall be per NFPA 72 and as a minimum shall include the following:
 - 1. Operation of each signal initiating device. Special equipment required for testing ionization detectors and heat detectors shall be provided by the Contractor at the time of the test.
 - 2. Operation of all features of the system under normal operation.
 - 3. Operation of all supervisory features of the system.
 - 4. Operation of all features of the system on standby power with primary powers "OFF".

3.03 DOCUMENTATION

- A. Contractor shall provide the following to DSA, the District, the Architect, and the local fire official at the time of final inspection:
1. As-builts of fire alarm system.
 2. NFPA Certificate of Compliance stating that the system has been installed in accordance with approved plans and specifications and Codes.

END OF SECTION 28 31 10

SECTION 32 13 00 SITEWORK CONCRETE

PART 1 - GENERAL

1.01 SUMMARY

- A. Provisions of General Conditions, Supplementary Conditions, and Division 01 apply to this Section.
- B. Scope of work: The work under this section includes furnishing all labor, materials, and equipment, and performing all operations in connection with Sitework Concrete, as indicated on the Drawings, specified herein, or reasonably required to complete the work. The work includes, but is not limited to the following.
 - 1. Cast-In-Place concrete sidewalks.
- C. Related Sections:
 - 1. Section 31 23 00 Excavation and Fill
 - 2. Section 31 22 19 Finish Grading

1.02 REFERENCES

- A. ASTM A185 – Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
- B. ASTM A615 – Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
- C. ASTM C33 – Concrete Aggregates.
- D. ASTM C94 – Ready-mixed Concrete.
- E. ASTM C150 – Portland Cement.
- F. ASTM C171 – Sheet Materials for Curing Concrete.
- G. ASTM C979 – Pigments for Integrally Colored Concrete.
- H. ASTM D1751 – Preformed Expansion Joint Fillers for Concrete, Paving and Structural Construction.
- I. ASTM C309 – Liquid Membrane-Forming Compounds for Curing Concrete.
- J. Chapter 19A, California Building Code.

1.03 ACCESSIBILITY REQUIREMENTS

- A. Concrete paving shall be stable, firm, and slip resistant and shall comply with CBC Section 11B-302 and 11B-403.

1.04 SUBMITTALS

- A. Submit under provisions of Section 01 33 00, Submittal Procedures.
- B. Layout Drawings: Provide layout drawing showing location of each type of pavement and construction, and dimensioned locations of expansion and control joints. Do not deviate from location of expansion joints and control joints shown on the drawings.
- C. Design Mixtures: Provide design mix for each concrete mixture. Design mix shall include data substantiating the reliability of the proposed mix. Submit alternate design mixtures when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.

1. Each design mixture shall be stamped and signed by a registered professional engineer licensed in the state of California.
2. Indicate amounts of mixing water to be withheld for later addition at project site.

D. Product Data

1. Expansion material
2. Curing materials

E. Site Samples

1. Prepare samples indicating slab construction and finish, at the site, cast in the directed locations and orientations. Prepare a minimum 8 foot square sample of each texture and finish required for the project. Include a transverse expansion joint, control joints and edging. Where paving adjoins other material such as pavers, include one edge of sample constructed of the other materials.
2. Approved samples may be part of permanent construction if the sample meets all project requirements and is approved.

1.05 QUALITY ASSURANCE

- A. Sitework Concrete work subject to the provisions of Section 01 45 24, Testing and Inspection Requirements, at the option of the Architect.
- B. Maintain one copy of all records on site.
- C. Acquire cement and aggregate from same source for all work.
- D. Conform to Section 1905A.13, California Building Code, when concreting during hot weather.
- E. Conform to Section 1905A.12, California Building Code, when concreting during cold weather. No pouring permitted below 40 degrees Fahrenheit.

1.06 PROJECT RECORD DOCUMENTS

- A. Accurately record actual locations of embedded sleeves, utilities and components which are concealed from view.

PART 2 - PRODUCTS

2.01 CONCRETE MATERIALS

- A. Cement: ASTM C150 – Type V Portland Type, one manufacturing plant only.
- B. Aggregates: ASTM C33, single source for all materials.
- C. Water: Clean, fresh and potable

2.02 ACCESSORIES

- A. Expansion joints:

1. Expansion Joint Filler – ASTM D1751: Close cell bituminous saturated fiberboard, ½ inch thick; FIBER EXPANSION JOINT manufactured by The Burke Co., Montebello, CA, or approved equal.
2. Joint Devices: Integral extruded polystyrene plastic; ½ inch thick, with removable top strip exposing sealant trough; JOINT CAPS, manufactured by The Burke Company, or equal.
3. Sealant: Polyurethane two-component type, self leveling, for level surface application, UREXPAN NR-200, manufactured by the Pecora Corp., Harleysville PA, or equal. Color shall be selected by the Architect from manufacturer's standard list of colors.
4. Sealant Primer: As recommended by Sealant Manufacturer.

2.03 CONCRETE MIX

A. Mix and deliver concrete in accordance with Section 1905A, California Building Code.

1. Deliver concrete in transit mixers only. Mix concrete for 10 minutes minimum at a peripheral drum speed of approximately 200 feet per minute. Mix at jobsite minimum 3 minutes. Discharge loads in less than 1-1/2 hours or under 300 revolutions of the drum, whichever comes first, after water is first added.
2. Design Mix: Conform to 1905A.2 – 1905A.6, California Building Code.
3. A registered civil engineer with experience in concrete mix design shall select the relative amounts of ingredients to be used as basic proportions of the concrete mixes proposed for use under this provision.
4. Selection of Concrete Proportions: Concrete proportions shall be determined in accordance with the provisions of ACI 318, Section 5.2.
5. Quantities of Materials: Provide Weighmaster's Certificate for each load of concrete.
6. Do not exceed 0.45 water-cement ratio, by weight.
7. Concrete shall be mixed by transit mixers only.

B. Required Strength: Minimum 4,500 psi for sitework concrete.

2.04 REINFORCEMENT

A. Reinforcing Steel: ASTM A615; 40 ksi yield grade; deformed billet steel bars, uncoated finish.

B. Welded Steel Wire Fabric: Plain type, ASTM A185; in flat sheets; uncoated finish, 6 x 6 inch, No. 10 gage.

C. Tie Wire: Annealed steel, minimum 16 gage size.

D. Dowels: ASTM A615; 40 ksi yield grade, deformed steel, uncoated finish.

E. Fiber Reinforced Concrete

1. FIBERMESH 150: ASTM C 1116/C 1116M, Type III Fiber Reinforced Concrete. Manufactured by PROPOX CONCRETE SYSTEMS. 100% virgin homopolymer polypropylene multifilament fibers containing no reprocessed olefin materials. Provide 1.0 – 1.5 lbs. per cubic yard.
2. FIBERMESH 650: ASTM C 1116/C 1116M, Type III Fiber Reinforced Concrete. Manufactured by PROPOX CONCRETE SYSTEMS. Alloy polymer macro-synthetic fiber featuring e3 patented technology manufactured to an optimum gradation and highly oriented to allow greater surface area contact within the concrete resulting in increased interfacial bonding and flexural toughness efficiency. Provide a minimum of 3.0 lbs. per cubic yard

2.05 CURING MATERIALS

- A. Polyethylene Film ASTM C171; 8 mil thick, clear, manufactured from virgin resin with no scrap or additives. POLYETHYLENE, No. 227, manufactured by The Burke Co., Montebello, CA, or equal.
- B. Water: Potable and not detrimental to concrete.
- C. Curing Compound: ASTM C309; wax resin base, WHITE PIGMENTED CURING COMPOUND, by The Burke Co., Montebello, CA, or equal.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify site concerns.
- B. Verify requirements for concrete cover over reinforcement.
- C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely and will not cause hardship in placing concrete.

3.02 PREPARATION

- A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.
- B. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

3.03 PLACING CONCRETE (GENERAL)

- A. Convey and deposit concrete in accordance with Section 1905A, California Building Code. Remove loose dirt from excavations.
- B. Notify Job Inspector minimum 24 hours prior to commencement of operations.
- C. Ensure reinforcement, inserts, embedded parts, formed joint fillers, joint devices and accessories are not disturbed during concrete placement.
- D. Ensure sub-base or base materials have been compacted or otherwise treated.
- E. Install joint fillers, primer and sealant in accordance with manufacturer's instructions.
- F. Place concrete continuously between predetermined expansion joints.
- G. Do not interrupt successive placement; do not permit cold joints to occur. Avoid segregation of materials. Perform tamping and vibrating so as to produce a dense, smooth application free of rock pockets and voids. Do not use vibrators to move concrete horizontally.

- H. Do not allow concrete to fall free from any height which will cause materials to segregate. Maximum height of free fall permitted in any case: 5 feet.
- I. Defective Installation: Repair and clean at Contractor's expense all concrete damaged or discolored during construction. Where concrete requires repair before acceptance, the repair shall be made by removing and replacing entire section between joints and not by refinishing the damaged portion.
- J. Proper curing of concrete surfaces is the responsibility of the Contractor. Concrete failing to meet specified strength shall be removed and replaced.

3.04 ON-SITE CONCRETE SIDEWALKS AND RAMPS

- A. Forms, Wood: Free from warp, with smooth and straight upper edges, surfaced one side, minimum thickness 1-1/2 inches adequate to resist springing or deflection from placing concrete.
- B. Forms, Metal: Gage sufficient to provide equivalent rigidity and strength.
- C. Reinforcement: Unless indicated otherwise on the drawings, provide welded steel wire fabric, 6 inches by 6 inches, No. 6 gage at mid-height of sidewalks and ramps. Interrupt reinforcement at expansion joints.
- D. Concrete Placement: Dampen subgrade to retain moisture in concrete mix. Tamp and spade to consolidate concrete for entire length of pour. Strike off upper surface to specified grades.
- E. Expansion Joint: Locate joint filler as shown on drawings or at maximum 60 feet centers and where slabs join vertical surfaces. Install vertically, full depth of concrete leaving plastic cap at 1/2 inch depth at top for sealant application.
 - 1. Provide 1/2 inch diameter greased steel dowels, 12 inches long at expansion joints with one end of dowel lubricated to allow for longitudinal movement. Spacing: 16 inches on center maximum, 6 inches from edges.
 - 2. Remove plastic caps. Prime both sides of joint and apply self-leveling sealant. Provide smooth concave surface.
- F. Control Joints – Saw Cut: After floating and finishing, saw cut concrete to a depth of: depth of concrete/4. Curved or non-aligned joints not acceptable. Sealant application not required. Space joints 12 ft maximum oc both ways or as patterned on the drawings.
- G. Finish:
 - 1. Screed concrete to required grade, float to a smooth, flat, uniform surface. Edge all headers to 1/4 inch radius. Edge expansion joints to 1/4 inch radius. Steel trowel to hard surface.
 - 2. Grades less than 6 percent: After final troweling, apply a medium hard broom finish transverse to centerline or direction of traffic.
 - 3. Grades 6 percent or more: Apply slip resistant heavy broom finish and remark as necessary after final finish to assure neat uniform edges, joints and score lines.
 - 4. Walkway grades in excess of five percent shall conform to Section 11B-403 and 11B-302.1, California Building Code.
- H. Curing: Cure surfaces utilizing one of the following methods:
 - 1. Spraying: Spray water over slab areas and maintain wet for 7 days.

2. Spread polyethylene film over slab areas, lapping edges and sides, minimum 6 inches and sealing with pressure sensitive tape; cover with plywood or otherwise protect film from damage; maintain in place for 7 days.
3. Apply liquid curing compound at rate of 200 sf per gallon, using power sprayer equipped with agitator. Do not apply liquid curing compound to surfaces scheduled to receive paving units of any kind.

END OF SECTION 09 68 16

SECTION 33 11 16 - SITE WATER DISTRIBUTION PIPING

PART 1 – GENERAL

1.01 SUMMARY

- A. Provisions of General Conditions, Supplementary Conditions, and Division One apply to this section.
- B. Scope of Work: The work under this section includes furnishing all labor, materials, and equipment and performing all operations in connection with the Site Water Distribution Piping, as indicated on the drawings, specified herein, or reasonably required to complete the work. The work includes but is not limited to:
 - 1. Water piping.
 - 2. Valves and valve boxes.
 - 3. Lateral services extended to 5-feet from building.
 - 4. Connections of laterals to existing mains.
 - 5. Connection of building water system to laterals 5-feet from building.
 - 6. Testing and sterilization.
- C. Related Work Not in This Section:
 - 1. Section 31 23 33: Trenching and Backfilling.

1.02 SUBMITTALS

- A. Material List: Submit list of materials proposed for use accompanied by manufacturer's latest printed literature with technical data.
- B. Certificates: Manufacturer's certification that materials meet specified requirements.

1.03 QUALITY ASSURANCE

- A. Comply with the following codes and regulations:
 - 1. Plumbing code: Applicable portions of Uniform Plumbing Code pertaining to plumbing materials, construction, and installation of products.
 - 2. ANSI: Applicable American National Standards pertaining to products and installation of domestic water piping systems.
 - 3. American Water Works Association (AWWA) where noted.
 - 4. UL and FM: Provide valves used in fire protection piping, which are UL listed and FM approved.
 - 5. Greenbook Section 306.
 - 6. Local fire department regulations pertaining to fire protection systems.
- B. Manufacturers: Firms regularly engaged in manufacture of water piping systems products, of types, materials, and sizes required, whose products have been in satisfactory use in similar service for not less than 5 years.
- C. Inspection and Testing:
 - 1. Refer to Section 31 23 33, Trenching and Backfill for Compaction of Trenching.

1.04 RECORD DRAWINGS

- A. Provide complete record drawings showing dimensioned locations and depths of all piping, and exact locations of all accessories.

PART 2 - PRODUCTS

2.01 PIPE

- A. Poly Vinyl Chloride (PVC) Plastic Pipe: Manufactured of material conforming to ASTM D1784, class 12454B, designated as PVC 1120 in ASTM D1795.
 - 1. Pipe 4 inches through 12 inches diameter: Pipe, couplings, and fittings 4 inch through 12 inch diameter shall conform to requirements of AWWA C900, Class 150, CIOD pipe dimensions only, elastomeric gasket joint only, unless otherwise indicated or specified.

2.02 FITTINGS AND SPECIALS

- A. For Poly Vinyl Chloride (PVC) Pipe:
 - 1. For Pipe 4 inch through 12 inch diameter: Fittings and specials shall be cast iron, bell end in accordance with AWWA C110, 150 psi pressure rating unless otherwise indicated or specified, except that profile of bell may have special dimensions as required by pipe manufacturer, or may be fittings and specials of same material as pipe with elastomeric gaskets, all in conformance with requirements of AWWA C900. Cast-iron fittings and specials shall be cement-mortar lined (standard thickness) in accordance with ANSI A21.4. Fittings shall be for bell and spigot pipe or plain end pipe, or as applicable.

2.03 JOINTS

- A. PVC Pipe: Joints for pipe, fittings and couplings for pipe shall match the specified pipe. Joints connecting pipe of differing materials shall be made in accordance with manufacturer's recommendation.

2.04 VALVES

- A. Gate valves shall be designed for a working pressure of not less than 150 psi and conform to AWWA C509. Valve connections shall be as required for piping in which they are installed. Valves shall have a clear waterway equal to full nominal diameter of valve, and shall be opened by turning counterclockwise. Operating nut or wheel shall have an arrow cast in the metal, indicating direction of opening.
 - 1. Valves 3 inches and larger shall be iron body, bronze mounted, and shall conform to AWWA C500. Flanges shall not be buried. An approved pit shall be provided for all flanged connections.
 - 2. Cast iron wedge shall have sealing surfaces of the wedge permanently bonded with resilient material to meet ASTM tests for rubber to metal bond ASTM D429. All body bolts shall be type 316, stainless steel. Valves shall be Mueller "RS" or equal. All underground valves shall be NS and all above ground valves shall be OS&Y.

- B. Check valves: Swing type spring loaded, 200 psig working pressure, seat readily and tightly with the face of the closure elements made of a non-corrodible material such as bronze composition conforming to ASTM B62.
- C. Valve Boxes: Valve boxes shall be cast iron or concrete, except that concrete boxes may be installed only in locations not subjected to vehicular traffic. Cast-iron boxes shall be extension type with slide-type adjustment and with flared base. Minimum thickness of metal shall be 3/16 inch. Concrete boxes shall be standard product of a manufacturer of precast concrete equipment. Word "WATER" shall be cast in cover. Boxes shall be of such length as will be adapted, without full extension, to depth of cover required over pipe at valve location. The valve box and the installation of the gate valve shall conform to AWWA C509.

2.05 FIRE SPRINKLER APPURTENANCES

- A. Post indicators: U.L. approved type.
- B. Tracer Wire for Non-Metallic Piping: Tracer wire shall be bare copper or aluminum wire not less than 0.10 inch in diameter and shall be provided in sufficient length to be continuous over all runs of non-metallic piping.
- C. Pipe bedding and backfill shall conform to requirements of Subsections 306-1.2 and 306-1.3 of the Standard Specifications.
- D. Thrust blocks: Portland cement concrete conforming to requirements of Section 03 31 13.

PART 3 – EXECUTION

3.01 TRENCH EXCAVATION

- A. Perform all excavation for the construction of trenches and all additional excavation required for structures forming a part of the pipeline. Trench excavation shall conform to the requirements of Section 306-1 of Standard Specifications.
- B. Trenches shall be inspected by the Soils Engineer before proceeding with the work.

3.02 INSTALLATION OF PIPE

- A. Handling: Pipe and accessories shall be handled to insure delivery to trench in sound, undamaged condition. Particular care shall be taken not to injure pipe coating or lining. If coating or lining of any pipe or fitting is damaged, repair shall be made by Contractor at his expense in a satisfactory manner. No other pipe or material of any kind shall be placed inside a pipe or fitting after coating has been applied. Pipe shall be carried into position and not dragged. Use of pinch bars and tongs for aligning or turning pipe will be permitted only on bare ends of pipe. Interior of pipe and accessories shall be thoroughly cleaned of foreign matter before being lowered into trench and shall be kept clean during laying operations by plugging or other approved method. Before installation, pipe shall be examined for defects. Material found to be defective before or after laying shall be replaced with sound material without additional expense to the Owner. Rubber gaskets that are not to be installed immediately shall be stored in a cool and dark place. Poly vinyl chloride pipe and fittings shall be handled and stored in accordance with manufacturer's recommendations.
- B. Cutting of Pipe: Cutting of pipe shall be done in a neat and workmanlike manner without damage to pipe. Unless otherwise recommended by manufacturer, cutting shall be done with an approved-type

mechanical cutter. Wheel cutter shall be used when practicable. Copper tubing shall be cut square and all burrs shall be removed.

- C. Sewer and Irrigation Lines: Where location of water pipe is not clearly defined in dimensions on drawings, water pipe shall not be laid closer horizontally than 10'-0" clear from a sewer or irrigation line except where bottom of water pipe will be at least 12 inches above top of sewer or irrigation pipe, in which case water pipe shall not be laid closer horizontally than 6'-0" from sewer or irrigation. Where water lines cross under gravity flow sewer lines, sewer pipe for a distance of at least 10'-0" each side of crossing shall be fully encased on concrete or shall be made of pressure pipe with no joint located within 3'-0" horizontally of crossing.

D. Joint Deflection:

1. Flexible Plastic Pipe: Maximum offset in alignment between adjacent pipe joints shall be recommended by manufacturer, but in no case shall it exceed 5 degrees.

E. Placing and Laying:

1. Pipe and accessories shall be carefully lowered into trench by means of derrick, ropes, belt slings, or other authorized equipment. Under no circumstances shall any of water-line materials be dropped or dumped into trench, care shall be taken to avoid abrasion of pipe coating. Except where necessary in making connections with other lines, pipe shall be laid with bells facing in direction of laying. Full length of each section of pipe shall rest solidly upon pipe bed, with recesses excavated to accommodate bells, couplings, and joints. Pipe that has grade or joint disturbed after laying shall be taken up and relaid. Pipe shall not be laid in water or when trench conditions are unsuitable for work. Water shall be kept out of trench until jointing is completed. When work is not in progress, open ends of pipe, fittings, and valves shall be securely closed so that no trench water, earth, or other substance will enter pipes or fittings. Where any part of coating or lining is damaged, repair shall be made by Contractor at his expense in a satisfactory manner. Pipe ends left for future connections shall be valved, plugged, or capped, and anchored, as indicated.
2. PVC shall be installed in accordance with AWWA M23.

F. Jointing:

1. PVC Pipe: Pipe 4 inch through 12 inch diameter shall have elastomeric gasket joints as specified in AWWA C900. Jointing procedure shall be as specified for pipe less than 4 inch diameter with configuration utilizing elastomeric ring gasket.
2. Connections between different types of pipe and accessories shall be made with transition fittings approved by the Owner.

- G. Service Lines: Service lines shall include pipeline connecting building piping to water distribution lines at a point approximately 5'-0" outside building. All valves shall be provided with extension service boxes of lengths required. Service lines shall be constructed in accordance with following requirements:

1. Service lines 2 inches in size shall have a gate valve.
2. Service lines larger than 2 inches shall be connected to main by a rigid connection and shall have a gate valve.

3.03 THRUST BLOCKS

- A. Plugs, caps, tees and bends of deflecting 22-1/2 degrees or more, either vertically or horizontally, on water lines 6 inches in diameter or larger, and fire hydrants shall be provided with thrust blocking, or metal tie rods and clamps or lugs, as directed. Valves shall be securely anchored or shall be provided with thrust blocking to prevent movement. Thrust blocking shall be concrete of a mix not leaner than 1 cement: 2-1/2 sand: 5 gravel, and having a compressive strength of not less than 2,000 psi after 28 days. Blocking shall be placed between solid ground and hydrant or fitting to be anchored. Unless otherwise indicated or directed, base and thrust bearing sides of thrust blocks shall be poured directly against undisturbed earth. Sides of thrust blocks not subject to thrust may be poured against forms. Area of bearing shall be as indicated or as directed. Blocking shall be placed so that fitting joints will be accessible for repair. Steel rods and clamps shall be protected by galvanizing or by coating with bituminous paint.
- B. The area of the thrust blocks shall conform to the following table:

Size	Fitting	Area
10 inch	90 degree ell	13.68 square feet
	45 degree ell	7.41 square feet
	Valves, tees, dead ends	9.68 square feet
8 inch	90 degree ell	9.10 square feet
	45 degree ell	4.92 square feet
	Valves, tees, dead ends	6.43 square feet
6 inch	90 degree ell	5.29 square feet
	45 degree ell	2.86 square feet
	Valves, tees, dead ends	3.74 square feet

3.04 HYDROSTATIC TEST

- A. Where any section of a water line is provided with concrete thrust blocking for fitting or hydrants, hydrostatic tests shall not be made until at least five (5) days after installation of concrete thrust blocking unless otherwise approved. Method proposed for disposal of waste water from hydrostatic tests and disaffection shall be submitted to the Architect for approval prior to performing hydrostatic tests.
- B. Pressure Tests: After pipe is laid, joints completed, fire hydrants permanently installed, and trench partially backfilled leaving joints exposed for examination, newly laid piping or any valved section of piping shall, unless otherwise specified, be subjected for one hour to a hydrostatic pressure test of 200 psi. Each valve shall be opened and closed several times during test. Exposed pipe, joints, fittings, hydrants, and valves shall be carefully examined during partially open trench test. Joints showing visible leakage shall be replaced or remade as necessary. Cracked or defective pipe, joints, fittings, hydrants, and valves discovered in consequence of this pressure test shall be removed and replaced with sound material, and test shall be repeated until test results are satisfactory. Piping and specials requiring replacement disclosed by hydrostatic tests and all work connected therewith shall be at Contractor's expense.
- C. Leakage Test: Leakage test shall be conducted after pressure tests have been satisfactorily completed. Duration of each leakage test shall be at least two hours; and during test, water line shall be subjected to 200 psi pressure. Leakage is defined as quantity of water to be supplied into the newly laid pipe, or any valved or approved section thereof necessary to maintain specified leakage test pressure after pipe has been filled with water and the air expelled. No piping installation will be accepted until leakage is less than number of gallons per hour as determined by formula:

$L = 0.000135 \text{ IND (P raised to } \frac{1}{2} \text{ power)}$ for all pipe materials.

1. In which L equals allowable leakage in gallons per hour; N is number of joints in length of pipeline tested; D is nominal diameter of pipe in inches; and P is average test pressure during leakage test, in psi gauge.
 2. If any test of pipe discloses leakage greater than that specified in foregoing table, defective joints shall be located and repaired until leakage is within specified allowance.
- D. Time for Making Test: Except for joint material setting or where concrete reaction backing necessitates a five day delay, pipelines jointed with rubber gaskets, mechanical or push-on joints, or couplings may be subjected to hydrostatic pressure, inspected, and tested for leakage at any time after partial completion of backfill. Cement-mortar lined pipe may be filled with water as recommended by manufacturer before being subjected to pressure test and subsequent leakage test.
- E. Concurrent Hydrostatic Tests: Contractor may elect to conduct hydrostatic tests using either or both of the following procedures. Regardless of sequence of tests employed, results of pressure tests, leakage tests, and disinfection shall be satisfactory as specified. All replacement, repair, or retesting required shall be accomplished by Contractor.
1. Pressure test and leakage test may be conducted concurrently.
 2. Hydrostatic tests disinfection may be conducted concurrently, using water treated for disinfection to accomplish hydrostatic tests. If water is lost when treated for disinfection and air is admitted to the unit being tested, or if any repair procedure results in contamination of unit, disinfection shall be reaccomplished.

3.05 DISINFECTION

- A. Before acceptance of potable water operation, each unit of completed water line shall be disinfected as prescribed by AWWA C651 and Section 22 00 00, Paragraph 3.12 – Sterilization. Unit will not be accepted until satisfactory bacteriological results have been obtained. The system shall not be connected to CSA 64's facilities prior to disinfection and acceptance by the General Manager of CSA 64.

3.06 CLEANING

- A. At all times, maintain premises free from accumulation of debris, waste materials, unusable materials, together with excess equipment, tools and other implements of service resulting from work of this section.
- B. Debris, waste, or unused construction materials shall not be used for fill or backfill.

END OF SECTION 33 11 16