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<td>Corporation Yard Police Building 21, 22</td>
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Legend: Y = Yes, N = No, NA = Not Applicable
Indian Valley Campus Structural Assessment
1.3 MECHANICAL ASSESSMENT

1.3.1 Overview

This report summarizes our mechanical assessment for the following buildings: Pomo Cluster and Power Plant 2.

The Pomo cluster contains general academic classrooms, labs, offices including machine, welding, and auto repair and body shops. Power Plant 2 provides temperature controlled condenser water for water source heat pumps in buildings throughout the IVC campus.

1.3.2 Power Plant 2 (Heat pump condenser water systems only exposed to outdoor environment)

1.3.2.1 Equipment: Hot Water Boiler, 1500 MBH
Make and Year: Ajax, WGX–1600, 1974

Observations:
- The hot water piping and threaded valve connections are corroded. The hot water piping does not have insulation. See Figure 1.
- The pipe supports/hangers do not comply with code required pipe support.
- The front and top sections of this boiler are corroded.
- Corrosion has set in at the threaded boiler connection.
- It appears that the boiler had a leak that led to the corrosion of the cast iron plate.
- The gas piping is supported by the drip leg.
- Although the boiler operates normally, it was not operating at the time of visit due to a lack of demand for heating hot water.
- The unit is beyond its service life and is deteriorated. Repairs are required constantly.

1.3.2.2 Equipment: Hot Water Boiler, 2250 MBH
Make and Year: WGX–2250, 1974

Observations:
- The hot water piping and threaded valve connections were corroded. The hot water piping does not have insulation.
- The face and top of boiler are corroded. See Figure 3.
- There is corrosion at the threaded boiler connection.
- It appears that the boiler had a leak that lead to the corrosion of the cast iron plate.
- The pipe supports/hangers do not comply with code required pipe support.
- The gas piping is supported by the drip leg.
- Although the boiler operates normally, it was not operating at the time of visit due to a lack of demand for heating hot water.
- The unit is beyond its service life and is deteriorated. Repairs are required constantly.

1.3.2.3 Equipment: Hot Water Boiler, 1500 MBH
Make and Year: Bryan CL-160 (Date unknown)

Observations:
- This exterior of this high quality boiler appears in good condition.
- The gas piping is supported by the drip leg.
EXISTING FACILITIES ASSESSMENT

- Although the boiler operates normally, it was not operating at the time of visit due to a lack of demand for heating hot water.
- The unit is beyond its service life and is deteriorated. Repairs are required constantly.

1.3.2.4 Equipment: Condenser Water Pump (CWP), HP (3 units)
Make and Year: Bell and Gossett, VSC/VSS 6x8x12L, 1974, but motor more recently replaced.
Observations:
- The CWPs do not have any vibration isolators. The pump frames were directly bolted to the concrete pads without neoprene pads. See Figure 2.
- The pumps and connecting piping were heavily corroded.
- Connecting condenser water piping support do not comply with current code requirements.
- Of the three pumps, only one was operating at the time of visit. This unit appears to be newer than the other two. It's in very good condition.
- One of the pumps is leaking. There was a major water leak on the one of the pumps.

1.3.2.5 Equipment: Cooling Towers (CT) (total of 3)
Make and Year: BAC V1-100-1; BAC V1-66-1; BAC V27-3
Observations:
- Only the BAC V1-100-1 cooling tower was operating at the time of this visit.
- The exterior of cooling towers appear is in a fair condition.
- The condenser water piping and valving of the three CTs are severely corroded. See Figure 5.
- IVC O&M personnel indicated major leaks in underground condenser water distribution system piping.
- Building automatic isolation valve motorized operators are located outside but not protected in weatherproof enclosures and thus have deteriorated to an inoperable condition.
- The main 6" overhead piping does not have code required pipe support.

1.3.2.6 Equipment: Expansion and Chemical feed Tanks
Observations:
- The exterior of the expansion tank is in good condition. The chemical feed tank is severely corroded.

1.3.3 Building 4 – Machine and Metals Tech

1.3.3.1 Equipment: Water Source Heat Pump, 240 MBH
Make and Year: Snyder General VWH-22CP, 1992
Observations:
- This is a single zone floor mounted unit in the mechanical mezzanine. It serves the north side of the Machine Shop (including instructor's offices) through an exposed ducted air distribution system. The unit has an outside air intake connection.
- This unit appears to be in good condition. However, according to the class instructor, the unit has been taken out of commission for maintenance an excessive amount of time causing class disruptions.
- There is no duct smoke detector in the unit.
- Seismic bracing for condenser water and condensate drain piping and ductwork does not appear to fully meet current codes and standards.
EXISTING FACILITIES ASSESSMENT

- Side wall supply grilles appear to have no balance dampers.

1.3.3.2 Equipment: Exhaust Fans (3)
Make and Year: Trane Utility Fan CF24

Observations:
- These fans are floor-mounted in mechanical mezzanine centrifugal up blast utility type with housed spring isolators.
- The fans exhaust the welder hood through rooftop air outlets.

1.3.3.3 Equipment: Radiant Heaters (8 units)
Make and Year: Lambert, Model XL-20, 20 MBH

Observations:
- Gas fired radiant heaters serve the south side of the Welder Shop. See Figure 6.

1.3.4 Classroom Building 5

1.3.4.1 Equipment: Water Source Heat Pumps (HP), multiple ceiling mounted
Make and Year: CommandAir Model SWPH, 1974

Observations:
- These single zone heat pumps are mounted above the ceilings within the classrooms, study rooms, break rooms and offices they serve. They are 30 years old and are beyond their service life.
- These units are noisy and maintenance in the limited ceiling clearance available is very difficult to perform. See Figure 4.
- The units are inefficient by today's energy standards with no 100% outside fresh air "free cooling" capabilities. The analog electric controls cannot provide full building automation energy management capabilities.
- HP thermostats do not have lockable covers and are mounted over 5 feet above floor.
- The HP seismic bracing and condenser water and condensate drain piping support does not conform to current code.
- No secondary drain pans have been installed below units to protect ceilings and space occupants from water leakage from units.
- The HP distribution duct is made from rigid fiberglass board type (lower quality than stronger standard sheet metal duct). Evidence of field patches to tears and cracks ductwork was observed.

1.3.5 Classroom Building 6

1.3.5.1 Equipment: Water Source Heat Pumps (HP)
Make and Year: Command Air SWPH, 1974

Observations:
- The conditions and equipment installation for this building (Classroom Building 6) are very comparable with those Classroom Building 5. Please see the first seven items on section 1.3.4.1. for more details.

1.3.5.2 Equipment: Water Source Heat Pumps (HP), multiple ceiling mounted
Make and Year: Command Air SWPH, 1974
EXISTING FACILITIES ASSESSMENT

Observations:
- The conditions and equipment installation for this building (Classroom Building 7) are very comparable with those Classroom Building 5. Please see the first seven items on section 1.3.4.1. for more details.

1.3.5.3 Equipment: Chem Lab fume exhaust hoods
Observations:
- Fume hoods not operational (used for storage of items not requiring fume exhaust).

1.3.6 Classroom Building 3

1.3.6.1 Equipment: Water Source Heat Pumps (HP), multiple ceiling mounted
Make and Year: Command Air, SWPH, 1974

Observations:
- The conditions and equipment installation for this building (Classroom Building 3) are very comparable with those Classroom Building 5. Please see the first seven items on section 1.3.4.1. for more details.

1.3.7 Building 2-Auto Repair Shop

1.3.7.1 Equipment: Industrial Exhaust Fans (with auto tail pipe flex connections and ceiling mounted gas fired unit heaters)

Observations:
- The auto shop exhaust system appears to provide adequate ventilation. However, the negative pressure condition created by this system pulls products of natural gas combustion from ceiling mounted exposed unit heaters into the space resulting in noxious fumes and odors within the space. (Code deficiency).

1.3.8 Building 1- Auto Body Shop

1.3.8.1 Equipment: Gas Fired Forced Air Furnaces (with exposed ducted air distribution).
Make and Year: 1.) Flex Aire Furnace GMF, 1999
2.) Janitrol Forced Air Furnace, Model 341363

Observations:
- Flex Aire Furnace - Input 313 MBH, output 250 MBH.
- Janitrol Furnace - Output 125 MBH.
- This system appears to be operating adequately
- Equipment and ductwork installation does not appear to fully meet current seismic bracing codes and standards. The Flex Aire furnace was vibrating noticeably.
- Body shop is not exhausted but air purification is accomplished by unducted ceiling mounted fan powered electrostatic recirculating filter boxes.
- Forced air furnace does not have a smoke detector in supply duct. This is a code violation.

1.3.8.2 Equipment: Paint shop supply and exhaust
Make and Year: 1.) Reznor, PPV Pak II
2.) Reznor, RDF2-120

Observations:
- Exhaust is filtered to wall exhaust fan.
- Make up supply air is provided by outside pad mounted gas fired forced air furnaces.
EXISTING FACILITIES ASSESSMENT

- An "explosion" safety room is equipped with a dedicated emergency exhaust system.

1.3.9 Recommendations

- The mechanical systems are beyond their service life and are recommended to be replaced, in their entirety.
- Should this building be modernized, the mechanical systems would need major modernization.
1.3.10 Figures

Figure 1
Hot Water Boilers

Figure 2
Condenser Water Pump

Figure 3
Heavily corroded boiler

Figure 4
Limited ceiling clearance around Heat Pump (typical)

Figure 5
Corroded piping and valves

Figure 6
Typical radiant heater
1.4 ELECTRICAL ASSESSMENT

1.4.1 Overview

This report summarizes our electrical assessment for the following cluster: POMO CLUSTER.

Electrical Systems:
- Power Distribution System
- Lighting System
- Wiring Devices
- Fire Alarm System

1.4.2 Observations:

Power Distribution System:

- The cluster is served by the campus 12kV underground primary feeder from the 12kV campus distribution system. The 12kV system feeds the 12kV switchgear at Substation "C", located within the Pomo cluster. The 12kV system consists of an outdoor 12kV primary Selector Switch and 12kV Unit Substation.

- The unit substation distribution section is rated 1600 amp, 480/277 volt, 3-phase, 4-wire and serves all the buildings within the POMO cluster. 480/208 volts transformers and branch circuit panelboards are utilized to provide power to 208/120 volts devices/equipment in the buildings within the cluster.

- The electrical equipment is manufactured by Square D and is approximately 30 years old. Based on a visual inspection, the electrical equipment appears to be in proper working condition. However, the dependability of the power distribution system is questionable due to the age of the electrical equipment.

Lighting System:

- The Automobile Shop area in Building 1 utilizes 1x4 industrial strip lights with two energy efficient T8F32 fluorescent lamps.

- Most classrooms utilize recessed, 2x4 lens light fixtures with two non-energy efficient T12F40 fluorescent lamps. The light fixtures in these rooms appear to be in working condition with slight discoloration of the lens.

- Building 4 Machine Room uses metal halide high bay light fixtures that appear to be fairly new. Some light fixtures require re-lamping of burnt out lamps.

- The Restrooms, Corridor, and Storage Room use surface mounted 1x4, 2-lamp cross section light fixtures with acrylic prismatic lens. The light fixtures utilize non-energy efficient T12F40 fluorescent lamps. The light fixtures in these rooms appear to be in working condition with slight discoloration of the lens.

- Occupancy sensors are located in support spaces only. There are no occupancy sensors in Classrooms.
EXISTING FACILITIES ASSESSMENT

- Emergency egress lighting is achieved via wall-mounted emergency battery unit with two lamp heads mounted on the unit. The emergency battery units are located in Stairways, Corridors, Hallways, and Lobby area as a means of illuminating the egress pathway.
- There is no emergency egress lighting in Building 4 Machine Room area.
- Exit signs are non-Illuminated
- There is no bi-level switching.
- Exterior building and canopy mounted light fixtures are dirty and appear corroded. Some light fixtures may require re-lamping.

Wiring Devices:

- Light switches are mounted +54 inches above finished floor throughout.
- Receptacle outlets are mounted less than +15 inches above finished floor throughout.
- There is a 120 volt receptacle within 26 feet of all mechanical equipment.

Fire Alarm System:

- Each building is served by a stand-alone, non-addressable Simplex Fire Alarm Terminal Cabinet. All Terminal Cabinets are tied back to a local, exterior, pole mounted annunciator. Additionally, the entire cluster is tied back to the Main Fire Alarm System Control Panel located in Building 33.
- There are horn devices in Corridor and Lobby. Pull Stations are located within close proximity of main entrance and exit doors.
- There are no fire alarm strobes or smoke and heat detection.

1.4.3 Code Deficiencies:

Power Distribution System:

- There are HVAC ducts installed above a motor control center in Building 1. The current Electrical Code (NEC 110.26) requires piping and similar foreign systems to be installed clear of the vertical space above the electrical equipment. See Figure 1.
- Conduits from 480 volt Panel "DL" in Building 1 are lacking proper structural support per the requirements of California Building Code (CBC 1632A). See Figure 2.
- Receptacle outlet in IDF Room of Building 1 has exposed wiring and requires cover plate.

Lighting System:

- Light fixtures utilizing T12F40 lamps are not energy efficient and no longer comply with the requirements of the California Energy Commission Title 24.
- Emergency egress lighting illumination appears to be inadequate in many areas of the buildings. The current California Building Code (CBC 1003.2.8.1) requires a minimum 1 foot-candle egress pathway illumination.
- Exit signs are non-Illuminated and have lower case lettering. See Figure 3.
EXISTING FACILITIES ASSESSMENT

Wiring Devices:

- Majority of light switches are mounted 54 inches above finished floor. The ADA requirement for a switch mounting height is 48 inches maximum (ADA 4.27.3) above finished floor.
- Most receptacle outlets are mounted less than +15 inches above finished floor, and therefore are non ADA compliant. The current ADA requirement for 120 volt receptacle mounting height is 15 inches minimum (ADA 4.27.3) above finished floor.
- There are many locations where a GFCI receptacle outlet is required but not present. The current National Electrical Code (NEC 210.8) requires outlets installed within 6 feet of a sink to be GFCI type.

Fire Alarm System:

- Pull Stations are mounted 66 inches above finished floor. The ADA required mounting height is 48 inches maximum (ADA 4.27.3) above finished floor. See Figure 3.
- There are no smoke detectors in electrical and mechanical rooms.
- There are no visual notification devices.

1.4.4 Recommendations:

- The electrical systems are beyond their service life and are recommended to be replaced, in their entirety.
- Should this building be modernized, the following systems would require upgrading or replacing:
  - Power Distribution System: Replace all original equipment.
  - Lighting System: Provide fixtures with energy efficient T8 or T5 lamps throughout. Install occupancy sensors throughout.
  - Fire Alarm System: Provide campus wide addressable system compliant with ADA.
- Code deficiencies have been noted and would require remediation. Code deficiencies are from visual inspections and additional code deficiencies will most likely be observed during construction.
1.4.5 Figures:

Figure 1

Figure 2

Figure 3
1.5 PLUMBING ASSESSMENT

1.5.1 Overview

This report summarizes our mechanical assessment for the following buildings: Pomo Cluster and Power Plant 2.

The Pomo cluster contains general academic classrooms, labs, offices including machine, welding, and auto repair and body shops. Power Plant 2 provides temperature controlled condenser water for water source heat pumps in buildings throughout the IVC campus.

1.5.2 Power Plant 2

1.5.2.1 Gas Service

Observations:
- Strong gas odor at the 4" supply riser suggests an underground piping gas leak.
- Black steel piping downstream of the regulator and going below grade does not appear to be corrosion protected.
- IVC O&M personnel indicate extensive underground gas pipe corrosion has occurred causing major gas leakages.

1.5.2.2 Domestic Water Service

Observations:
- Main service is 2" diameter pipe to PRV and water meter. The reduced pressure backflow preventor (RPBP) and pressure regulator assembly does not have pipe support.
- The RPBP and pressure regulator assembly does not have pipe support.

1.5.3 Building 4 – Machine and Metals Technology

Observations:
- No hot water to existing sinks.
- No janitor's service sink (Instructor indicates needed for mopping machine shop floors).
- No fire sprinkler system (single story building).
- Welder shop emergency eye wash/shower not ADA accessible.

1.5.4 Classroom Building 5

Equipment: Hot Water Heater
Make and Year: Nautilus, High Recovery, Model No: GXN5131-X with Armstrong Hot Water Pump
motor

Observations:
- Drinking fountains not ADA accessible
- No fire sprinkler system (single story building)
- Toilet Lavatory faucets not ADA accessible.

1.5.5 Classroom Building 6

Observations:
- No hot water to existing classroom sinks, toilet lavatories or mop sinks.
EXISTING FACILITIES ASSESSMENT

- Drinking fountains not ADA accessible
- 2 Story building protected by fire sprinkler system. (However, no fire sprinklers observed to be in space between roof and ceiling of this wood structure.)
- Toilet lavatory faucets not ADA accessible (mismatched faucet handles)
- Leaky toilet supply pipe stem

1.5.6 Classroom Building 7

Observations:
- No hot water to existing classroom sinks, toilet lavatories or mop sinks
- Drinking fountains not ADA accessible
- 2 story building protected by fire sprinkler system. (However, no fire sprinklers observed to be in space between roof and ceiling of this wood structure.)
- Chem lab emergency eye wash/shower not ADA accessible
- Chem lab compressed air and gas outlets not operational.
- Toilet lavatory faucets not ADA accessible.
- Chem Lab sink faucets are not ADA accessible. See Figure 1.

1.5.7 Classroom Building 3

Observations:
- No hot water to existing classroom sinks, toilet lavatories or mop sinks
- Drinking fountains not ADA accessible
- 2 story building protected by fire sprinkler system. (However, no fire sprinklers observed to be in space between roof and ceiling of this wood structure.)
- Toilet lavatory faucets not ADA accessible

1.5.8 Building 2- Auto Repair Shop

Equipment: A.O. Smith gas fired water heater

Observations:
- There is an oil separator upstream of the floor drain connections to the site sanitary sewer.
- Hot water is available to existing sinks, toilet lavatories and mop sinks
- Drinking fountains and emergency eye wash/shower not ADA accessible
- No fire sprinkler system (single story building).
- Toilet fixtures not fully ADA accessible
- Hot water heater unit installation not in compliance with current codes and standards.
- Unit and piping not adequately seismically braced and piping, not insulated, no drain containment pan under unit. See Figure 2.
- A compressed air system (with storage tank mounted air compressor) serves pneumatic powered auto repair tools via flex hose drop connections from rigid overhead distribution piping.

1.5.9 Building 1 - Auto Body Shop

Equipment: Gas Fired Water Heater
Make and Year: Rheem Glas, Model G168-858 (199 MBH)

Observations:
- Hot water is available to existing sinks, toilet lavatories
- Drinking fountains and emergency eye wash/shower are not ADA accessible
EXISTING FACILITIES ASSESSMENT

- No fire sprinkler system (single story building).
- Toilet lavatory faucets not ADA accessible.
- Hot water heater unit installation not in compliance with current codes and standards.
- Unit and piping not adequately seismically braced and piping not insulated, no drain containment pan under unit.

1.5.10 Fire Protection

1.5.11 Recommendations

- The plumbing systems are beyond their service life and are recommended to be replaced, in their entirety.
- A fire protection system, preferably wet sprinkler system, should be provided as required by CBC Chapter 9.
- Should this building be modernized, the plumbing and fire protection systems would need major modernization.
1.5.12 Figures

Figure 1

Figure 2
1.6 INFORMATION TECHNOLOGY ASSESSMENT

1.6.1 Overview for the Pomo (PM) Building Cluster

This report summarizes our assessment of information technology (IT) systems infrastructure for the Pomo (PM) building cluster. The Pomo cluster consists of buildings 1, 2, 3, 4, 5, 6, and 7 and includes general academic classrooms, labs and offices, machine, welding, auto repair, and auto collision shop.

The existing Indian Valley Campus (IVC) structured cabling system and network has been in operation for approximately five years. The network operates at 10/100 megabit over an optical fiber backbone cabling medium. Local IDF (Intermediate Distribution Frame) cabinets are located in many of the campus buildings to support local workstation outlets.

1.6.2 Terms and Definitions:

MPOE – Main point of entry
MDF – Main Distribution Frame
IDF – Intermediate Distribution Frame
VoIP – Voice over Internet Protocol
EIA/TIA – Electronic Industries Alliance/Telecommunications Industry Association
WAP – Wireless Access Point
UPS – Uninterruptible Power Supply
MAN – Metropolitan Area Network
CBC – California Building Code
PoE – Power over Ethernet
VLAN – Virtual Local Area Network

1.6.3 Building 1 - Auto Collision Shop

1.6.3.1 IDF:

- IDF located in a common electrical/IT/water riser (OS&Y) room 144 accessible from the building interior. See Figure 1.
- The cable terminations and active network equipment is installed in a wall mounted 19" Equipment Rack. The Equipment Rack includes the following items:
  - Panduit patch panel for data cable terminations
  - HP ProCurve 4000M 10/100Mb Ethernet Switch
  - Corning fiber optic termination panel
- Grounding: no apparent compliance with EIA/TIA 607 for separate grounding busbar (TGB)
- Ventilation: appears adequate
- Conduit entry is not sealed
- Power to IDF: local 120 VAC branch circuit
- There is no UPS Installed in this IDF – Network equipments susceptible to power failures
- Backbone cable:
  - 12-strand multi-mode (MM) 62.5 um fiber from building 6
1.6.3.2 Workstation outlets:
- Voice outlets consist of any one of the following: original wiring of copper conductor pairs to analog voice outlets (approximately 50% campus wide); digital phones (approximately 30% campus wide); new phones are VoIP (approximately 20% campus wide) and connected via Cat. 5e cable. VoIP currently requires local wall power converter since network switched do not support PoE.
- Data outlets: Category 5e cables are extended from a Category 5e Patch Panel in the IDF to RJ-45 jack inserts at each workstation data outlet.

1.6.3.3 Wireless access: none.

1.6.3.4 Horizontal cabling:
- Category 5e cables are installed from the IDF patch panel to workstation data outlets.
- Maximum distance from IDF to workstation is within the 90 meter EIA/TIA distance limitation.

1.6.3.5 Pathways:
- Surface raceway in conjunction with open wiring is typically used for vertical and horizontal pathways within finished space.
- Sealing of conduit and cable penetrations: required for compliance with EIA/TIA 569A.
- Seismic support of pathways: required for compliance with CBC 1632.1.

1.6.3.6 Identification
- Identification of cables is incomplete and not fully compliant with EIA/TIA 606.
- Workstation outlet connectors and the related IDF patch panel in most cases properly indicate network connections.

1.6.3.7 There are no drawings to document existing conditions or cable records.
1.6.4 Building 2 – Auto Technology Lab

1.6.4.1 IDF:
- IDF is located in first floor room 135. See Figure 2.
- The cable terminations and active network equipment is installed in a wall mounted 19" Equipment Rack. The Equipment Rack includes the following items:
  - Panduit patch panel for data cable terminations
  - HP ProCurve 4000M 10/100Mb Ethernet Switch
  - Coming fiber optic termination panel
- Grounding: no apparent compliance with EIA/TIA 607 for separate grounding busbar (TGB)
- Ventilation: appears adequate
- Conduit entry is not sealed
- Power to IDF: local 120 VAC branch circuit
- There is no UPS installed in this IDF – Network equipments susceptible to power failures
- Backbone cable:
  - 24-strand multi-mode (MM) 62.5 um fiber from building 8 - Cable strapped to conduit on wall.

1.6.4.2 Workstation outlets:
- Voice outlets consist of any one of the following: original wiring of copper conductor pairs to analog voice outlets (approximately 50% campus wide); digital phones (approximately 30% campus wide); new phones are VoIP (approximately 20% campus wide) and connected via Cat. 5e cable. VoIP currently requires local wall power converter since network switch does not support PoE.
- Data outlets: Category 5e cables are extended from a Category 5e Patch Panel in the IDF to RJ-45 jack inserts at each workstation data outlet.

1.6.4.3 Wireless access: none

1.6.4.4 Horizontal cabling
- Category 5e cables are installed from the IDF patch panel to workstation data outlets.
- Maximum distance from IDF to workstation is within the 90 meter EIA/TIA distance limitation.

1.6.4.5 Pathways:
- Surface raceway in conjunction with open wiring systems are typically used for vertical and horizontal pathways within finished space.
- Sealing of conduit and cable penetrations: required for compliance with EIA/TIA 569A.
- Seismic support of pathways: required for compliance with CBC 1632.1.

1.6.4.6 Identification
- Identification of cables is incomplete and not fully compliant with EIA/TIA 606.
EXISTING FACILITIES ASSESSMENT

- Workstation outlet connectors and the related IDF patch panel in most cases properly indicate network connections

1.6.4.7 There are no drawings to document existing conditions or cable records
EXISTING FACILITIES ASSESSMENT

1.6.5 Building 3 - General Classroom Building/Medical Assisting Lab:

1.6.5.1 IDF:

- IDF is located on 2nd floor in equipment room 269 common to electrical/IT. See Figure 3.
- The cable terminations and active network equipment is installed in a wall mounted 19" Equipment Rack. The Equipment Rack includes the following items:
  - Panduit patch panel for data cable terminations
  - HP ProCurve 4000M 10/100Mb Ethernet Switch
  - Corning fiber optic termination panel
- Grounding: no apparent compliance with EIA/TIA 568 for separate grounding busbar (TGB) - Grounding conductor slacked and unconnected at the backboard.
- Ventilation: appears adequate
- Conduit entry is not sealed
- Power to IDF: local 120 VAC branch circuit
- There is no UPS installed in this IDF – Network equipments susceptible to power failures
- Backbone cable:
  - 12-strand multi-mode (MM) 62.5 um fiber from building 6

1.6.5.2 Workstation outlets:

- Voice outlets consist of any one of the following: original wiring of copper conductor pairs to analog voice outlets (approximately 50% campus wide); digital phones (approximately 30% campus wide); new phones are VoIP (approximately 20% campus wide) and connected via Cat. 5e cable. VoIP currently requires local wall power converter since network switched do not support PoE.
- Data outlets: Category 5e cables are extended from a Category 5e Patch Panel in the IDF to RJ-45 jack inserts at each workstation data outlet.

1.6.5.3 Wireless access: none.

1.6.5.4 Horizontal cabling:

- Category 5e cables are installed from the IDF patch panel to workstation data outlets.
- Maximum distance from IDF to workstation is within the 90 meter EIA/TIA distance limitation.

1.6.5.5 Pathways:

- Surface raceway is typically used in conjunction with concealed conduit and wiring for vertical and horizontal pathways within finished spaces.
- Firestopping and sealing of conduit and cable penetrations; required for compliance with EIA/TIA 599A.
- Seismic support of pathways: required for compliance with CBC 1632.1.
1.6.5.6 Identification

- Identification of cables is incomplete and not fully compliant with EIA/TIA 606.
- Workstation outlet connectors and the related IDF patch panel in most cases properly indicate network connections.

1.6.5.7 There are no drawings to document existing conditions or cable records.
1.6.6 Building 4 – Machine and Metals Technology

1.6.6.1 IDF – none. Voice and data services originate in building 5.

1.6.6.2 Workstation outlets:

- Voice outlets consist of any one of the following: original wiring of copper conductor pairs to analog voice outlets (approximately 50% campus wide); digital phones (approximately 30% campus wide); new phones are VoIP (approximately 20% campus wide) and connected via Cat. 5e cable. VoIP currently requires local wall power converter since network switched do not support PoE.
- Data outlets: Category 5e cables are extended from a Category 5e Patch Panel in the IDF to RJ-45 Jack inserts at each workstation data outlet.

1.6.6.3 Wireless access: none.

1.6.6.4 Horizontal cabling:

- Category 5e cables are installed from the IDF patch panel to workstation data outlets.
- Maximum distance from IDF to workstation is within the 90 meter EIA/TIA distance limitation.

1.6.6.5 Pathways:

- Surface raceway in conjunction with open wiring systems are typically used for vertical and horizontal pathways within finished space.
- Sealing of cable and sleeve penetrations: incomplete and not compliant with EIA/TIA 569A.
- Seismic support of pathway support and anchorage required for compliance with CBC 1632.1.

1.6.6.6 Identification

- Identification of cables is incomplete and not fully compliant with EIA/TIA 606.
- Workstation outlet connectors and the related IDF patch panel in most cases properly indicate network connections.

1.6.6.7 There are no drawings to document existing conditions or cable records.
EXISTING FACILITIES ASSESSMENT

1.6.7 Building 5 – Math Lab/Food Vending

1.6.7.1 IDF:
- IDF is located in equipment room 182 accessed from exterior and common to electrical/IT. See Figure 4.
- The cable terminations and active network equipment is installed in a wall mounted 19° Equipment Rack. The Equipment Rack includes the following items:
  - Panduit patch panel for data cable terminations
  - HP ProCurve 4000M 10/100Mbs Ethernet Switch
  - Corning fiber optic termination panel
- Grounding: no apparent compliance with EIA/TIA 607 for separate grounding busbar (TGB) - Grounding conductor slackened and unconnected at the backboard.
- Ventilation: appears adequate
- Conduit entry is sealed
- Power to IDF: local 120 VAC branch circuit
- There is no UPS installed in this IDF – Network equipments susceptible to power failures
- Backbone cable:
  - 12-strand multi-mode (MM) 62.5 um fiber from building 6

1.6.7.2 Workstation outlets:
- Voice outlets consist of any one of the following: original wiring of copper conductor pairs to analog voice outlets (approximately 50% campus wide); digital phones (approximately 30% campus wide); new phones are VoIP (approximately 20% campus wide) and connected via Cat 5e cable. VoIP currently requires local wall power converter since network switches do not support PoE.
- Data outlets: Category 5e cables are extended from a Category 5e Patch Panel in the IDF to RJ-45 jack inserts at each workstation data outlet.

1.6.7.3 Wireless access: none.

1.6.7.4 Horizontal cabling:
- Category 5e cables are installed from the IDF patch panel to workstation data outlets.
- Maximum distance from IDF to workstation is within the 90 meter EIA/TIA distance limitation.

1.6.7.5 Pathways:
- Surface raceway is typically used in conjunction with concealed conduit and wiring for vertical and horizontal pathways within finished spaces.
- Firestopping and sealing of conduit and cable penetrations: required for compliance with EIA/TIA 569A.
- Seismic support of pathways: required for compliance with CBC 1632.1.
EXISTING FACILITIES ASSESSMENT

1.6.7.6 Identification
- Identification of cables is incomplete and not fully compliant with EIA/TIA 568a.
- Workstation outlet connectors and the related IDF patch panel in most cases properly indicate network connections.

1.6.7.7 There are no drawings to document existing conditions or cable records.
EXISTING FACILITIES ASSESSMENT

1.6.8 Building 6: General Classroom/Chemistry/Biology:

1.6.8.1 IDF:
- Located in equipment first floor room 102 accessed from interior and common to electrical/IT. See Figure 5
- The cable terminations and active network equipment is installed in a well mounted 19" Equipment Rack. The Equipment Rack includes the following items:
  - Panduit patch panel for data cable terminations
  - HP ProCurve 4000M 10/100Mb Ethernet Switch
  - Selcor fiber optic termination panel
- Grounding: no apparent compliance with EIA/TIA 607 for separate grounding busbar (TGB).
- Grounding conductor stacked and unconnected at the backboard.
- Ventilation: appears adequate
- Conduit entry is not sealed
- Power to IDF: local 120 VAC branch circuit
- There is no UPS installed in this IDF – Network equipments susceptible to power failures
- Backbone cable:
  - Five (5) fiber optic cables: bidgs. 1, 2, 3, 5, 7.
  - 24 strand multi-mode (MM) fiber from MDF.

1.6.8.2 Workstation outlets:
- Voice outlets consist of any one of the following: original wiring of copper conductor pairs to analog voice outlets (approximately 50% campus wide); digital phones (approximately 30% campus wide); new phones are VoIP (approximately 20% campus wide) and connected via Cat. 5e cable. VoIP currently requires local wall power converter since network switched do not support PoE.
- Data outlets: Category 5e cables are extended from a Category 5e Patch Panel in the IDF to RJ-45 jack inserts at each workstation data outlet.

1.6.8.3 Wireless access: none.

1.6.8.4 Horizontal cabling:
- Category 5e cables are installed from the IDF patch panel to workstation data outlets.
- Maximum distance from IDF to workstation is within the 90 meter EIA/TIA distance limitation.

1.6.8.5 Pathways:
- Surface raceway is typically used in conjunction with concealed conduit and wiring for vertical and horizontal pathways within finished spaces.
- Firestopping and sealing of conduit and cable penetrations: required for compliance with EIA/TIA 569A.
- Seismic support of pathways: required for compliance with CBC 1632.1.
EXISTING FACILITIES ASSESSMENT

1.6.6.6 Identification

- Identification of cables is incomplete and not fully compliant with EIA/TIA 606.
- Workstation outlet connectors and the related IDF patch panel in most cases properly indicate network connections.

1.6.6.7 There are no drawings to document existing conditions or cable records.
EXISTING FACILITIES ASSESSMENT

1.6.9 Building 7: General Classroom/Offices/English:

1.6.9.1 IDF:

- Located in equipment room (94) accessed from interior corridor and common to electrical/IT systems. See Figure 6.
- The cable terminations and active network equipment is installed in a wall-mounted 19\(^\circ\) Equipment Rack. The Equipment Rack includes the following items:
  - Panduit patch panel for data cable terminations
  - HP ProCurve 4000M 10/100Mb Ethernet Switch
  - Corning fiber optic termination panel
- Grounding: no apparent compliance with EIA/TIA 607 for separate grounding busbar (TGB)
- Ventilation: appears adequate
- Conduit entry is not sealed
- Power to IDF: local 120 VAC branch circuit
- There is no UPS installed in this IDF -- Network equipments susceptible to power failures
- Backbone cable:
  - Backbone cable: 12 strand multi-mode (MM) fiber from bldg. 6 IDF.

1.6.9.2 Workstation outlets:

- Voice outlets consist of any one of the following: original wiring of copper conductor pairs to analog voice outlets (approximately 50% campus wide); digital phones (approximately 30% campus wide); new phones are VoIP (approximately 20% campus wide) and connected via Cat. 5e cable. VoIP currently requires local wall power converter since network switched do not support PoE.
- Data outlets: Category 5e cables are extended from a Category 5e Patch Panel in the IDF to RJ-45 jack inserts at each workstation data outlet.

1.6.9.3 Wireless access: located in IDF/Electrical room, HP PM 194-API, Access port 420.

1.6.9.4 Horizontal cabling:

- Category 5e cables are installed from the IDF patch panel to workstation data outlets.
- Maximum distance from IDF to workstation is within the 90 meter EIA/TIA distance limitation.

1.6.9.5 Pathways:

- Surface raceway is typically used in conjunction with concealed conduit and wiring for vertical and horizontal pathways within finished spaces.
- Firestopping and sealing of conduit and cable penetrations: required for compliance with EIA/TIA-569A.
- Seismic support of pathways: required for compliance with CBC 1632.1.
EXISTING FACILITIES ASSESSMENT

1.8.9.6 Identification
- Identification of cables is incomplete and not fully compliant with EIA/TIA 606.
- Workstation outlet connectors and the related IDF patch panel in most cases properly indicate network connections.

1.8.9.7 There are no drawings to document existing conditions or cable records.
1.6.10 Figures

Figure 1
Auto Collision Shop, Building 1, IDF - room 144

Figure 2
Auto Technology Lab, Building 2, IDF Cabinet - room 135

Figure 3
Medical Assisting, Building 3, IDF - Second floor room 260

Figure 4
Cafeteria IDF Cabinet, Building 5 IDF - room 192

Figure 5
Environmental Science, Building 6, IDF - First Floor, room 102

Figure 6
Cafeteria IDF Cabinet, Building 7 IDF - room 94
2.3 MECHANICAL ASSESSMENT

2.3.1 Overview

This report summarizes our mechanical assessment for the following buildings: Administrative Services Cluster and Power Plant 3.

The Administrative Services Cluster of 5 buildings contains general administrative, student services and information services offices plus computer room, Campus store (now closed) and child care area; while Power Plant 3 contains electrical power equipment (see Electrical Section of this Report).

2.3.2 Power Plant 3 (contains electrical power central plant/telecommunications equipment only (no HVAC equipment))

Observations:
- Main electrical room is ventilated only by natural outside air transfer through filterless wall louveres (allowing dirt and insects to enter from outside).
- The telecommunications room is cooled by a residential type "thru-the-wall" air conditioning unit of about ¾ ton refrigeration capacity. Although this unit appears to provide the adequate space temperature control required for operation of this critical Campus facility, there is no back up cooling available should this unit fail and apparently no alarm system to quickly alert O&M personnel of air conditioning unit failure.

2.3.3 Administration Building 9

2.3.3.1 Equipment: Water Source Heat Pumps (HP), multiple ceiling mounted
Make and Year: Commandaire Model SWPH, ~1974

Observations:
- These single zone heat pumps are mounted above the ceilings within the class rooms, study rooms, break rooms and offices they serve. See Figure 1: They are 30 years old and are beyond their service life.
- These units are noisy and maintenance in the limited ceiling clearance available is very difficult to perform.
- The units are inefficient by today's energy standards with no 100% outside fresh air "free cooling" capabilities. The analog electric controls cannot provide full building automation energy management capabilities.
- HP thermostats do not have lockable covers and are mounted over 5 feet above floor.
- The HP seismic bracing and condenser water and condensate drain piping support does not conform to current code.
- No secondary drain pans have been installed below units to protect ceilings and space occupants from water leakage from units. See Figure 2.
- The HP distribution duct is made from rigid fiberglass board type (lower quality than stronger standard sheet metal duct). Evidence of field patches to tears and cracks ductwork was observed.
- Electrical Transformer room 109 has no ventilation except for openings in the floor and ceiling. The space is overly warm and dirt and insects appear to have entered from floor opening.
- A portable electric heater is located in office area of room 100. This is evidence of inadequate temperature control in this area. See Figure 3.
2.3.4 **Student Services Building 8**

2.3.4.1 Equipment: Water Source Heat Pumps (HP), multiple ceiling mounted  
Make and Year: CommandAir  Model SWPH, ~1974

Observations:
- The conditions and equipment installation for this building (Student Services Building 8) are very comparable with those of the Administration Building 9. Please see the first seven items on section 2.3.3.1, for more details.
- Several offices along the West building perimeter are served by a single heat pump unit located in the ceiling space above with thermostat located in one of the offices. If unit is turned off at the thermostat, all of the other offices served by this heat pump will have no ventilation.

2.3.5 **EOPS Building 10**

2.3.5.1 Equipment: Water Source Heat Pumps (HP), multiple ceiling mounted  
Make and Year: CommandAir  Model SWPH, ~1974

Observations:
- The conditions and equipment installation for this building (EOPS Building 10) are very comparable with those of the Administration Building 9. Please see the first seven items on section 2.3.3.1, for more details.
- There’s an abandoned exhaust hood on the roof that used to serve the Copy Room.

2.3.6 **Information Services Building 11**

2.3.6.1 Equipment: Water Source Heat Pumps (HP), multiple ceiling mounted  
Make and Year: CommandAir  Model SWPH, ~1974

Observations:
- The conditions and equipment installation for this building (Information Services Building 11) are very comparable with those of the Administration Building 9. Please see the first seven items on section 2.3.3.1, for more details.
- The noise from the exhaust fan in the toilet rooms is excessively loud.
- Office 208, located in the NW section of the building, does not have a separate zone heat pump control. A portable electric heater is located in this office, which indicates poor temperature control in the room.
- Room 209, a computer server room, is served by a split system unit with a Liebert condensing unit. There are no diffusers installed on the ceiling. It appears that the perforations on the ceiling tiles are utilized to diffuse supply air. The unit is in good condition.
- Room 205 has water stains on the ceiling indicating leak from heat pump.
- Room 214 (containing electrical panels) has a ceiling mounted heat pump, capped water pipes and a floor sink in it. Since this room is now utilized as an Electrical Room, this HVAC and plumbing equipment would be prohibited from remaining within the room.

2.3.6.2 Equipment: Floor mounted AC Unit (located in Computer room 101)  
Make and Model: Liebert Challenger 2, c.1974
EXISTING FACILITIES ASSESSMENT

Observations:
- The AC is a high-quality type unit. It's in very good operating condition and the room temperature control is acceptable. Thera Computer Center staff member were satisfied with the computer room cooling requirements.

2.3.7 Bookstore / Child Care Building 12

2.3.7.1 Equipment: Multiple Source Heat Pumps (HP), multiple ceiling mounted
Make and Year: CommandAire Model SWPH, ~1974

Observations:
- The conditions and equipment installation for this building (Bookstore / Child Care Building 12) are very comparable with those of the Administration Building 9. Please see the first seven items on section 2.3.3.1 for more details.
- Room 1211 has water stains on ceiling tiles indicating leak from heat pump. See Figure 4.
- The heat pump serving the Child Care Center was not operational at the time of visit. Room 105 (occupied by many children and adult care providers) was hot, odorous and very humid.
- The thermostatic serving the heat pump is installed in a poor location, which would cause temperature problems in the area.

2.3.8 Recommendations
- The mechanical systems are beyond their service life and are recommended to be replaced, in their entirety.
- Should this building be modernized, the mechanical systems would need major modernization.
2.3.9 Figures

Figure 1
Typical ceiling mounted Heat Pump

Figure 2
Heat Pump with no drain pan

Figure 3
Electric Heater

Figure 4
Water leak from Heat Pump
2.4 ELECTRICAL ASSESSMENT

2.4.1 Overview:

This report summarizes our electrical assessment for the Administrative Services cluster.

Electrical Systems:
- Power Distribution System
- Lighting System
- Wiring Devices
- Fire Alarm System

2.4.2 Observations:

Power Distribution System:

- The cluster is served by the 12kV underground primary feeder from the 12kV campus loop distribution system. The 12kV system feeds the 12kV switchgear located in Power Plant #3, located behind the Bookstore (Building #12). The 12kV System comprised of a 12kV Primary switch and a 12kV/Unit Substation.

- The secondary distribution section of the unit substation, Distribution Panel "L," is rated 1200 amp, 480/277 volt, 3-phase, 4-wire and provides power to all the buildings within the Administrative Services cluster. 480 volts to 120/208 volts transformers are utilized to provide power to 208/120 volts devices/equipment in the buildings within the cluster.

- Building 11 elevator is disabled. Reason unknown.

- Building 11 Server Room utilizes a Powerware UPS system for back-up power. The UPS equipment is approximately 3-4 years old.

- The 75kVA Transformer in Building 11 is inaccessible via 5 feet, 1 inch high door opening. There is a pendant Industrial fixture suspended at 48 inches above finished floor with no wire guard. Additionally, closet is very hot due to lack of ventilation. See Figures 1 and 2.

- The electrical equipment is manufactured by Square D and is approximately 30 years old. Based on a visual inspection, the electrical equipment appears to be in proper working condition. However, the dependability of the power distribution system is questionable due to the age of the electrical equipment.

Lighting System:

- Lighting for most of the buildings consists of recessed, 2x4 lens fixtures with non-energy efficient T12 lamps. The light fixtures appear to be in proper working condition with slight discoloration of the lenses.

- Building 9 Reception Area utilizes non-energy efficient Incandescent lamps.

- Building 9 Conference Room utilizes non-energy efficient Incandescent fixtures.

- Building 9 Restrooms appear to have been recently remodeled and have new lighting with energy efficient T8 lamps, occupancy sensors, and emergency egress lighting.

- The lighting fixtures in Building 12 Day Care Center are indirect type fixtures with parabolic lens and energy efficient T8 lamps. The rest of the building has old, inefficient lighting.
EXISTING FACILITIES ASSESSMENT

- Building 12 Common Gathering Room uses pendant downlights with 150W metal halide lamps.
- There is no occupancy sensors present in most parts of the buildings. As noted above, only Restrooms in Building 9 have occupancy sensors.
- Emergency egress lighting is achieved via wall mounted emergency battery unit with two lamp heads mounted on the unit. The emergency battery units are located in Stairways, Corridors, Hallways, and Lobby area as a means of illuminating the egress pathway.
- There is no bi-level switching.
- Some of the buildings have non-illuminated exit signs. See Figure 10.
- Exterior building and canopy mounted fixtures are dirty and appear corroded. Some fixtures may require re-lamping. See Figure 3.

Wiring Devices:
- Light switches are mounted +54 inches above finished floor throughout. See Figure 5.
- Receptacle outlets are mounted less than +15 inches above finished floor throughout.
- There is a 120 volt receptacle within 25 feet of all mechanical equipment.
- All office areas appear to be lacking receptacle outlets. There are numerous power strips under all workstations and in some cases power strips are plugged into other power strips. See Figures 4 and 8.
- Building 8 Office Area has unprotected power cords that can be damaged by chairs and tables. Additionally, there is a copier power cord running across a walkway creating a tripping hazard. See Figure 6.
- Majority of the wiring devices in the building are old and have reached the end of useful life due to age and deterioration. Due to age and use, receptacle outlet contacts lose tension to securely hold inserted plugs and wiring terminations loosen.

Fire Alarm System:
- Each building is served by a stand-alone, non-addressable Fire Alarm Control Panel. All Fire Alarm Control Panels are tied back to a local, exterior, pole mounted annunciator. Additionally, the entire cluster is tied back to the Main Fire Alarm System Control Panel located in Building 33. There are multiple fire alarm system manufacturers present in this cluster of buildings: Simplex, Notifier, and Siemens.
- Building 8 has fairly new devices; accessibility to the Fire Alarm Control Panel was not available during the time of the assessment.
- Building 9 uses a Notifier system. The system appears to be about 10 years old.
- Building 10 uses a Notifier system. The system appears to be about 5 years old. There are old horns left behind from a previous system.
- Building 11 uses a Simplex system. There is partial smoke detection coverage and no heat detection.
- The Fire Alarm Control Panel in Building 12 is a Siemens Cerberus Pyrotronics System Model MXL-1Q. This panel is monitored by a monitoring company and has the capability to dial-out both alarm and trouble conditions.
EXISTING FACILITIES ASSESSMENT

- There is full internal coverage of horn devices.
- Pull stations are located within close proximity of main entrance and exit doors. See Figure 5.
- There are fire alarm strobes in common areas and open office spaces.

2.4.3 Code Deficiencies:

Lighting System:

- Light fixtures utilizing T12F40 lamps are not energy efficient and no longer comply with the requirement § of the California Energy Commission Title 24.
- Emergency egress lighting illumination appears to be inadequate in many areas of the buildings. The current California Building Code (CB 1003.2.9.1) requires a minimum 1 foot-candle egress pathway illumination.
- Exit signs are non-illuminated. See Figure 10.

Wiring Devices:

- Majority of light switches are mounted 64 inches above finished floor. The ADA requirement for a switch mounting height is 48 inches maximum (ADA 4.27.3) above finished floor.
- Most receptacle outlets are mounted less than ±15° above finished floor and therefore are non-ADA compliant. The current ADA requirement for 120 volt receptacle mounting height is 15 inches minimum (ADA 4.27.3) above finished floor.
- There are many locations where a GFCI receptacle outlet is not present. The current National Electrical Code (NEC 210.8) requires outlets installed within 6 feet of a sink to be GFCI type.
- Building 12 Corridor has junction box with exposed wiring.
- Building 12 exterior canopy lighting conduits have inadequate support causing a drooping effect. Conduits shall be securely fastened in place and supported in accordance with NEC 344.30. See Figure 11.

2.4.4 Recommendations:

- The electrical systems are beyond their service life and are recommended to be replaced, in their entirety.
- Code deficiencies have been noted and would require remediation. Code deficiencies are from visual inspections and additional code deficiencies will most likely be observed during construction.
- Should this building be modernized, the following systems would require upgrading or replacing:
  - Power Distribution System: Replace all original equipment.
  - Lighting System: Provide fixtures with energy efficient T8 or T5 lamps throughout. Install occupancy sensors throughout.
  - Fire Alarm System: Provide campus-wide addressable system compliant with ADA.
2.4.5 Figures:

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6
2.5 PLUMBING ASSESSMENT

2.5.1 Overview

This report summarizes our plumbing assessment for the following buildings: Administrative Services Cluster and Power Plant 3.

The Administrative Services cluster of 5 buildings contains general administrative, student services and information services offices plus computer room, Campus Store (now closed) and child care area while Power Plant 3 contains electrical power equipment (see Electrical Section of this Report).

2.5.2 Power Plant 3 contains electrical power central plant equipment only (no Plumbing equipment)

2.5.3 Administration Building 9

Equipment: Electric Water Heater
Make and Model: National de Luxe, made by Automatic Electric Water Heater, N50C-6, 9kW

Observations:
- There is an electric water heater serving the sinks or toilet lavatories.
- Toilet lavatory faucets not ADA accessible.
- No fire sprinkler system (single story building)
- Drinking fountains not ADA accessible.
- Break room sink not ADA accessible
- Waterless urinal conserves water but requires frequent cleaning.

2.5.4 Student Services Building 8

Observations:
- No hot water to existing sinks, toilet lavatories or mop sinks
- Drinking fountains not ADA accessible
- No fire sprinkler system (single story building)
- Toilet Lavatory faucets not ADA accessible.

2.5.5 EOPS Building 10

Observations:
- No hot water to existing sinks
- Drinking fountains not ADA accessible
- No fire sprinkler system (single story building)
- Sink not ADA accessible

2.5.6 Information Services Building 11

Observations:
- No hot water to existing sinks, toilet lavatories or mop sinks
- Drinking fountains not ADA accessible
- 2 story building not protected by fire sprinkler system
EXISTING FACILITIES ASSESSMENT

- Toilet lavatory and sink faucets not ADA accessible

2.6.7 Book Store/Child Care Building 12

Equipment: Electric Water Heater
Make and Model: A.O. Smith DSE 65 (9000w)

Observations:
- Sinks not ADA accessible
- Hot water is available to existing sinks, toilet lavatories or mop sinks
- Drinking fountains not ADA accessible
- No fire sprinkler system (single story building).
- Toilet lavatory faucets not ADA accessible
- The water heater installation does not comply with the current codes and standards: The unit and piping do not have code compliant support and bracing.
- HW piping not insulated, no drain containment pan under unit, drain pipe spills to grade outside room (not approved receptacle) See Figure 1.

2.6.8 Recommendations
- The plumbing and fire protection systems are beyond their service life and are recommended to be replaced, in their entirety.
- A fire protection system, preferably wet sprinkler system, should be provided as required by CBC Chapter 9.
- Should this building be modernized, the plumbing and fire protection systems would need major modernization.
2.5.9 Figures:

Figure 1
Electric Water Heater Installation
2.6 INFORMATION TECHNOLOGY ASSESSMENT

2.6.1 Overview for the Administration Services (AS) Building Cluster

This report summarizes our assessment of information technology (IT) systems infrastructure for
the Administration Services (AS) building cluster. The Administration Services cluster consists of
buildings 8, 9, 10, 11, 12. Building 11 contains the COM server room. This server room supports
IVC as well as the Kentfield campus.

The existing Indian Valley Campus (IVC) structured cabling system and network has been in
operation for approximately five years. The network operates at 10/100 megabit over an optical
fiber backbone cabling medium. Local IDF (Intermediate distribution frame) cabinets are located in
many of the campus buildings to support local workstation outlets.

2.6.2 Terms and Definitions:

MPOE -- Main Point of Entry
MDF -- Main Distribution Frame
IDF -- Intermediate Distribution Frame
VoIP -- Voice over Internet Protocol
EIA/TIA -- Electronic Industries Alliance/Telecommunications Industry Association
WAP -- Wireless Access Point
UPS -- Uninterruptible Power Supply
MAN -- Metropolitan Area Network
CBC -- California Building Code
PoE -- Power over Ethernet
VLAN -- Virtual Local Area Network

2.6.3 Building 8 - Student Services

2.6.3.1 IDF:

- IDF is located in the mallroom 138. See Figure 1.
- Assumed (typical) electronics:
  - Data Cabling Patch Panel
  - HP ProCurve 4000M 10/100 Ethernet Switch
  - Fiber optic termination panel
- Grounding: no apparent compliance with EIA/TIA 607 for separate grounding busbar (TGB)
- Power to IDF: local 120 VAC branch circuit
- There is no UPS installed in this IDF -- Network equipments susceptible to power failures
- Seismic support of cabinet required for compliance with CBC 1632.1
- Backbone cable: Cat. 5e from building 9

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ADMINISTRATIVE CLUSTER AND POWER PLANT 3
2.6.3.2 Workstation outlets:

- Voice outlets consist of any one of the following: original wiring of copper conductor pairs to analog voice outlets (approximately 50% campus wide); digital phones (approximately 30% campus wide); new phones are VoIP (approximately 20% campus wide) and connected via Cat. 5e cable. VoIP currently requires local wall power converter since network switched do not support PoE.

- Data outlets: Category 5e cables are extended from a Category 5e Patch Panel in the IDF to RJ-45 jack inserts at each workstation data outlet.

2.6.3.3 Wireless access: none.

2.6.3.4 Horizontal cabling:

- Category 5e cables are installed from the IDF patch panel to workstation data outlets.

- Maximum distance from IDF to workstation is within the 90 meter EIA/TIA distance limitation.

2.6.3.5 Pathways:

- Surface raceway is typically used in conjunction with concealed conduit and wiring for vertical and horizontal pathways within finished spaces.

- Firestopping and sealing of conduit and cable penetrations: required for compliance with EIA/TIA 569A.

- Seismic support of pathways: required for compliance with CBC 1632.1.

2.6.3.6 Identification

- Identification of cables is incomplete and not fully compliant with EIA/TIA 608.

- Workstation outlet connectors and the related IDF patch panel in most cases properly indicate network connections.

2.6.3.7 There are no drawings to document existing conditions or cable records.
EXISTING FACILITIES ASSESSMENT

2.6.4 Building 9 - Administration Services

2.6.4.1 IDF:

- Located in common electrical/IT room 109. See Figure 2.
- Ventilation: Inadequate. Accomplished with cutout in floor to crawl space below. Vulnerable to posts entering through slits in floor diffuser.
- The cable terminations and active network equipment is installed directly wall mounted on a plywood backboard. This includes the following items:
  - All Station cable is terminated on M66 style blocks. For data connectivity there is a cross-connect from the 66 block to a 110 style block (not secured to the wall). Then there is a 110 style patch cord connected to the network switch. This limits connectivity to Category 3 and is not compliant with EIA/TIA termination standards and methods.
  - HP ProCurve 4000M 10/100Mb Ethernet Switch
  - Slexor fiber optic termination panel – Mounted in a 19" wall mounted equipment rack
- Grounding: no apparent compliance with EIA/TIA 607 for separate grounding busbar (TGB)
- Cable management at the IDF not compliant with EIA/TIA 669
- Power to IDF: local 120 VAC branch circuit receptacle
- There is no UPS installed in this IDF – Network equipments susceptible to power failures
- Backbone cable:
  - 12 strand multi-mode (MM) 62.5 um fiber from MDF.

2.6.4.2 Workstation outlets:

- Voice outlets consist of any one of the following: original wiring of copper conductor pairs to analog voice outlets (approximately 50% campus wide); digital phones (approximately 30% campus wide); new phones are VoIP (approximately 20% campus wide) and connected via Cat. 5e cable. VoIP currently requires local wall power converter since network switch does not support PoE.
- Data outlets: Category 5e cables are extended from a Category 5e Patch Panel in the IDF to RJ-45 jack inserts at each workstation data outlet.

2.6.4.3 Wireless access: none.

2.6.4.4 Horizontal cabling:

- Category 5e cables are installed from the IDF patch panel to workstation data outlets.
- Maximum distance from IDF to workstation is within the 90 meter EIA/TIA distance limitation.

2.6.4.5 Pathways:

- Surface raceway is typically used in conjunction with concealed conduit and wiring for vertical and horizontal pathways within finished spaces.
- Firestopping and sealing of conduit and cable penetrations: required for compliance with EIA/TIA 568A.
EXISTING FACILITIES ASSESSMENT

- Seismic support of pathways: required for compliance with CBC 1632.1.

2.6.4.6 Identification

- Identification of cables is incomplete and not fully compliant with EIA/TIA 606.
- Workstation outlet connectors and the related IDF patch panel in most cases properly indicate network connections.

2.6.4.7 There are no drawings to document existing conditions or cable records.
EXISTING FACILITIES ASSESSMENT

2.6.5 Building 10 - Associated Students/Office Space

2.6.5.1 IDF:
- Enclosed cabinet located in office space currently occupied by Swinerton.
- Probable electronics:
  - Panduit patch panel
  - HP ProCurve 4000M switch (limited to 100 Mb). Switch is marginally suitable for 1 Gb backbone operation and would provide only a limited number of VLAN’s.
  - Slecoc fiber optic termination panel
- Power to IDF: local 120 VAC branch circuit receptacle
- There is no UPS installed in this IDF – Network equipments susceptible to power failures
- Backbone cable: Cat. 5e from building 91DF

2.6.5.2 Workstation outlets:
- Voice outlets consist of any one of the following: original wiring of copper conductor pairs to analog voice outlets (approximately 60% campus wide); digital phones (approximately 30% campus wide); new phones are VoIP (approximately 20% campus wide) and connected via Cat. 5e cable. VoIP currently requires local wall power converter since network switched do not support PoE.
- Data outlets: Category 5e cables are extended from a Category 5e Patch Panel in the IDF to RUI-45 Jack Inserts at each workstation data outlet.

2.6.5.3 Wireless access:
- There is One (1) WAP in space occupied by Swinerton.
- Power to the WAP is derived from an adjacent wall receptacle (not PoE).

2.6.5.4 Horizontal cabling:
- Category 5e cables are installed from the IDF patch panel to workstation data outlets.
- Maximum distance from IDF to workstation is within the 90 meter EIA/TIA distance limitation.

2.6.5.5 Pathways:
- Surface raceway is typically used in conjunction with concealed conduit and wiring for vertical and horizontal pathways within finished spaces.
- Firestopping and sealing of conduit and cable penetrations: required for compliance with EIA/TIA 509A.
- Seismic support of pathways: required for compliance with CBC 1632.1.

2.6.5.6 Identification
- Identification of cables is incomplete and not fully compliant with EIA/TIA 506.
- Workstation outlet connectors and the related IDF patch panel lacks proper identification.
2.6.5.7 There are no drawings to document existing conditions or cable records

2.6.6 Building 11 – Information Systems Center

2.6.6.1 IDF

- IDF is located in server room 101. See Figure 3
- The cable terminations and active network equipment is installed in a 19" Equipment Rack. The Equipment Rack includes the following items:
  - Panduit patch panel for data cable terminations
  - HP ProCurve 4000M 10/100Mb Ethernet Switch
  - Slec fiber optic termination panel
- Ventilation: appears adequate
- Cable management appears adequate
- Grounding: compliance required with EIA/TIA 607 for separate grounding busbar (TGB)
- Power to IDF’s: local 120 VAC branch circuit receptacle
- There is a UPS system installed
- Conduit entry is not sealed

2.6.6.2 Workstation outlets:

- Voice outlets consist of any one of the following: original wiring of copper conductor pairs to analog voice outlets (approximately 50% campus wide); digital phones (approximately 30% campus wide); new phones are VoIP (approximately 20% campus wide) and connected via Cat. 5e cable. VoIP currently requires local wall power converter since network switched do not support PoE.
- Data outlets: Category 5e cables are extended from a Category 5e Patch Panel in the IDF to RJ-45 jack inserts at each workstation data outlet.

2.6.6.3 Wireless access: none.

2.6.6.4 Horizontal cabling:

- Category 5e cables are installed from the IDF patch panel to workstation data outlets.
- Maximum distance from IDF to workstation is within the 90 meter EIA/TIA distance limitation.

2.6.6.5 Pathways:

- Surface raceway is typically used in conjunction with concealed conduit and wiring for vertical and horizontal pathways within finished spaces.
- Firestopping and sealing of conduit and cable penetrations: required for compliance with EIA/TIA 569A.
- Seismic support of pathways: required for compliance with CBC 1632.1.
2.6.6.6 Identification

- Identification of cables is incomplete and not fully compliant with EIA/TIA 606.
- Workstation outlet connectors and the related IDF patch panel in most cases properly indicate network connections.

2.6.6.7 There are no drawings to document existing conditions or cable records

2.6.6.8 Server room

- The campus server room is located in Building 11. A depressed slab provides an 8 inch raised floor for wiring management and distribution below the floor.
- A 17 kVA UPS (uninterruptible power supply) system is located in the room and provides approximate 100 minutes of backup to the servers and related equipment. The batteries appear to be original equipment. UPS batteries should be replaced every 3-5 years.
- There was no evidence of an telecommunications grounding bus (TGB). This should be provided for local equipment grounding and should be connected to the MDF/IMPOE ground bus.
EXISTING FACILITIES ASSESSMENT

2.6.7 Building 12 – College Conference Center and Child Care

2.6.7.1 IDF:
- Located in common electrical/IT room 314. See Figure 2.
- Ventilation: Adequate.
- Cable terminations and Network Switch mounted on plywood backboard.
- Grounding: no apparent compliance with EIA/TIA 607 for separate grounding busbar (TGB).
- Cable management at the IDF not compliant with EIA/TIA 569.
- Power to IDF: local 120 VAC branch circuit receptacle.
- There is no UPS installed in this IDF – Network equipments susceptible to power failures.
- Workstation connections: Minimal number in use.
- Backbone cable: Backbone cable Cat. 5E from MDF.

2.6.7.2 Workstation outlets:
- Voice outlets consist of any one of the following: original wiring of copper conductor pairs to analog voice outlets (approximately 50% campus wide); digital phones (approximately 30% campus wide); new phones are VoIP (approximately 20% campus wide) and connected via Cat. 5e cable. VoIP currently requires local wall power converter since network switch does not support PoE.
- Data outlets: Category 5e cables are extended from a Category 5e Patch Panel in the IDF to RJ-45 jack inserts at each workstation data outlet.

2.6.7.3 Wireless access: Located in open auditorium, HP wireless hub.

2.6.7.4 Horizontal cabling:
- Category 5e cables are installed from the IDF patch panel to workstation data outlets.
- Maximum distance from IDF to workstation is within the 90 meter EIA/TIA distance limitation.

2.6.7.5 Pathways:
- Surface raceway and open wiring is typically used for vertical and horizontal pathways within finished space.
- Firestopping and sealing of conduit and cable penetrations: required for compliance with EIA/TIA 569A.
- Seismic support of pathways: required for compliance with CBC 1632.1.

2.6.7.6 Identification:
- Identification of cables is incomplete and not fully compliant with EIA/TIA 606.
- Workstation outlet connectors and the related IDF patch panel lacks proper identification.

2.6.7.7 There are no drawings to document existing conditions or cable records.
EXISTING FACILITIES ASSESSMENT

2.6.8 Figures:

Figure 1
Student Services, Building 8, IDF - room 138

Figure 2
Administration Building 9, IDF - room 109

Figure 3
Information Services, Building 11, IDF - room 101

Figure 4
Campus Bookstore, Building 12, IDF - room 114
3.3 MECHANICAL ASSESSMENT

3.3.1 Overview

This report summarizes our mechanical assessment for the following buildings: Miwok Cluster and Library.

The Miwok cluster of 4 buildings contains class rooms (mostly fine arts), academic offices and Cafeteria (no onsite cooking). The library contains staff offices, class rooms and study rooms as well as book stacks and related areas.

3.3.2 Art and Music Building 13

3.3.2.1 Equipment: Water Source Heat Pumps (HP)
Make and Year: CommandAir, Model SWPH, ~1974

Observations:
- Three single zone heat pumps are mounted above the ceilings within the class rooms, study rooms, break rooms and offices they serve. They are 30 years old and are beyond their service life.
- These units are noisy and maintenance in the limited ceiling clearance available is very difficult to perform. See Figure 5.
- The units are inefficient by today’s energy standards with no 100% outside air “free cooling” capabilities. The analog electric controls cannot provide full building automation energy management capabilities.
- HP thermostats do not have lockable covers and are mounted over 5 feet above floor.
- The HP seismic bracing and condenser water and condensate drain piping support does not conform to current code.
- No secondary drain pans have been installed below units to protect ceilings and space occupants from water leakage from units. See Figure 6.
- The HP air distribution duct is rigid fiberglass board type (lower quality than stronger standard sheet metal duct). Evidence of field patches to tears and cracks in ductwork was observed.
- Three perimeter offices and three interior offices in the South building corner are served by a single heat pump unit located in the ceiling space above with thermostat located in one of the offices. If unit is turned off at the thermostat, all of the other offices served by this heat pump will have no ventilation.

3.3.3 MSAT Building 14

3.3.3.1 Equipment: Water Source Heat Pumps (HP)
Make and Year: CommandAir, Model SWPH, ~1974

Observations:
- The conditions and equipment installation for this building (MSAT Building 14) are very comparable with those Art and Music Building 13. See the first seven items on section 3.3.2.1 for more details.
- Ceiling stains in Room 153 indicate heat pump in ceiling space above has condenser water leak. (Room occupant has placed a trash can on the floor under leak to collect water dripping from ceiling.)
3.3.4 Cafeteria Building 16

3.3.4.1 Equipment: Water Source Heat Pumps (HP)
Make and Year: CommandAire, Model SWPH 1974

Observations:
- The conditions and equipment installation for this building (MSAT Building 14) are very comparable to those of the Art and Music Building 13. See the first seven items on section 3.3.2.1, for more details.
- The Theater sound/lighting control booth 198 does not have any mechanical ventilation. See Figure 5. Heat is vented to the surrounding back stage area from a hole in the booth ceiling. The operators leave the door open when using the control booth.

3.3.4.2 Equipment: Rooftop Kitchen Exhaust fans

Observations:
- There are two up blast kitchen exhaust fans on the roof that appear to be abandoned. These units appear to have formerly served kitchen cooking hoods which have since been removed.

3.3.5 MSAT Building 16

3.3.5.1 Equipment: Water Source Heat Pumps (HP)
Make and Year: CommandAire, Model SWPH 1974

Observations:
- The conditions and equipment installation for this building (MSAT Building 16) are very comparable to those of the Art and Music Building 13. See the first seven items on section 3.3.2.1, for more details.
- There is no exhaust in the Janitor's Closet, Room 105.
- The NW corner Office 208 has no separate zone heat pump control. A portable electric heater was found in this office which indicates that there is temperature problem in this area.
- Although Room 209 contains computer server, has a heat pump control thermostat, room temperature appeared overly warm.
- Room 205 has water stains on ceiling tiles due to previous heat pump water leak. See Figure 6.
- At the time of visit, Room 203 was fully occupied and was excessively warm. The unit serving this room has been rendered inoperable due to a fire.
- Groups of two individual perimeter offices and two interior offices in the east building corner are each served by a single heat pump unit located in the ceiling space with thermostat located in one of the offices.
- South corner office 110 was excessively warm at the time of this visit. The thermostat is located in the adjacent room.
- Class Room 215 thermostat cover has a broken hinge and is thus dangling from thermostat.
- The 2nd floor Electrical Room 203 directly above the MDF Room 103 has no exhaust and appears excessively warm.

3.3.5.2 Equipment: Fume Hood in Room 115

Observations:
- The fume exhaust hood in Room 115 is not operational and used for storage (Room 115 appears to have previously been a chemistry wet lab but now is used as staff lounge).
3.3.6  Library Building 17

3.3.6.1 Equipment: Multiple, Water Source Heat Pumps (HP)
Make and Year: CommandAlte Model SWPH, ~1974

Observations:
- The conditions and equipment installation for this building (Library Building 17) are very comparable with those of the Art and Music Building 13. See the first seven items on section 3.3.2.1, for more details.
- There is no heat pump thermostat for the 1st floor North perimeter library staff offices. According to the Head Librarian, her office space gets too cold that she purposely leaves the library outside doors open on warm days.
- The Library 2nd floor appears to have originally been an open plan area but was subsequently partitioned into several separate classroom/study room areas. This has resulted in poor temperature control in many of the private rooms.

3.3.7 Recommendations

- The mechanical systems are beyond their service life and are recommended to be replaced in their entirety.
- Should this building be modernized, the mechanical systems would need major modernization.
3.3.8 Figures

Figure 1
G.S.M. Boxes

Figure 2
Patched cracks on rigid fiberglass duct

Figure 4
HP installed with limited ceiling space

Figure 5
Theater sound/lighting control booth 196 lacks ventilation

Figure 6
Ceiling Heat Pump water leak
3.4 ELECTRICAL ASSESSMENT

3.4.1 Overview

This report summarizes our electrical assessment for the following clusters: Miwok

Electrical Systems:
- Power Distribution System
- Lighting System
- Wiring Devices
- Fire Alarm System

3.4.2 Observations:

Power Distribution System:

- The cluster is served by the campus 12kV underground primary feeder from the 12kV campus distribution system. The 12kV system feeds the 12kV switchgear at Substation "B", located within the Miwok cluster behind Building 15. The 12kV system consists of a subsurface 12kV primary Selector Switch and 12kV Unit Substation.

- The secondary distribution section of the unit substation is rated 1200 amp, 480/277 volt, 3-phase, 4-wire and serves all the buildings within the Miwok cluster. 480Volts to 120/208 volts transformers and branch circuit panels/boards are utilized to provide power to 208/120 volts devices/equipment in the buildings within the cluster.

- Doors for panels are flush mounted in corridors do not close lock properly or are missing covers. Therefore, exposing panels to tampering. See Figure 8.

- Electrical equipment in Building 13 Janitor's Closet is corroded and past its useful life. See Figure 1.

- The electrical equipment is manufactured by Square D and is approximately 30 years old. Based on a visual inspection, the electrical equipment appears to be in proper working condition. However, the dependability of the power distribution system is questionable due to the age of the electrical equipment.

Lighting System:

- Majority of the Classrooms and Corridors utilize recessed, 2x4 lens light fixtures with two non-energy efficient T12F40 fluorescent lamps. The light fixtures in these buildings appear to be in working condition with slight discoloration of the lens.

- Classrooms in Building 14 utilize a combination of surface mounted, 2x4 lens light fixtures with two non-energy efficient T12F40 fluorescent lamps and incandescent track lighting.

- The Theatre in Building 15 uses a combination of recessed, T12 fixtures and Incandescent fixtures. Both sources are non-energy efficient. Fixtures are old and provide limited coverage. Several of the Incandescent fixtures are damaged. See Figure 9.

- The Second Floor Classrooms in Building 16 utilize pendant mounted metal halide light fixtures.

- The Library main entrance uses pendant mounted light fixtures with an HID lamp source. The Entry Canopy uses incandescent fixtures that are non-operational.
EXISTING FACILITIES ASSESSMENT

- There are no occupancy sensors in any of the buildings.
- Emergency egress lighting is achieved via wall mounted emergency battery units with two lamp heads mounted on the unit. The emergency battery units are located in Stairways, Corridors, Hallways, and Lobby area as a means of illuminating the egress pathway.
- Some of the Exit signs are non-illuminated. See Figure 4.
- There are also exit signage fixtures with two fluorescent lamps to provide egress illumination. There is a mismatch of stencil colors being used in different buildings within the cluster.
- There is no bi-level switching.
- Exterior building and canopy mounted fixtures are dirty and appear corroded. Some fixtures may require re-lempling.

Wiring Devices:

- Light switches are mounted +54 inches above finished floor throughout. See Figure 4.
- Receptacle outlets are mounted less than +15 inches above finished floor throughout.
- There is a 120 volt receptacle within 25 feet of all mechanical equipment.
- Visual Arts Room in Building 14 does not have adequate receptacle outlets. As a result, the space is congested with power strips, multiple cords wrapping around work tables, and power and data wiring running all along floors. Additionally, there are spot lights connected to power strips taped to wood joist. See Figures 5, 6, and 7.
- Junction boxes in Building 13, Second Floor, and Building 16 that appear to have been installed for either a clock or paging system have exposed 120 volt wiring. See Figure 3 and 16.
- Theatre in Building 15 has power cords and conduits running along walkways creating a tripping hazard. See Figure 12.
- Library has power cords running along walkway in Reception Area and Classroom creating a tripping hazard. See Figure 13.
- Audiovisual setup in Library Room 100 is congested with power strips and loose wiring creating tripping hazards and safety concerns. Additionally, the interconnection of power strips could potentially be overloading the 120 volt circuit. See Figure 16.
- Majority of the wiring devices in the building are old and have reached the end of useful life due to age and deterioration. Due to age and use, receptacle outlet contacts lose tension to securely hold Inserted plugs and wiring terminations loosen.

Fire Alarm System:

- Each building is served by a stand-alone, non-addressable Simplex Fire Alarm Terminal Cabinet. All Terminal Cabinets are tied back to a local, exterior, pole mounted annunciator. Additionally, the entire cluster is tied back to the Main Fire Alarm System Control Panel located in Building 33.
- There are horn devices in Corridor and Lobby, but audible range is limited.
- Pull stations are located within close proximity of main entrance and exit doors and are mounted at +66" above finish floor. See Figure 4.
EXISTING FACILITIES ASSESSMENT

- Visual coverage is limited to the Theatre in Building 15. There are no fire alarm strobes located anywhere else.
- There is no heat or smoke detection in Elevator Machine Room.

3.4.3 Code Deficiencies:

Power Distribution System:
- Panelboard in Building 13 Janitor's Closet does not have the code required minimum working clearance per NEC Article 110-15. The working clearance is obstructed by storage items. See Figure 2.
- Conduits in Building 15 are lacking proper structural support as required by NEC 358. See Figure 10 and 11.

Lighting System:
- Light fixtures utilizing T12F40 lamps are not energy efficient and no longer comply with the requirements of the California Energy Commission Title 24.
- Emergency egress lighting illumination appears to be inadequate in many areas of the buildings. The current California Building Code (CBC 1003.2.9.1) requires a minimum 1 foot-candle egress pathway illumination.
- Exit signs are non-illuminated and have lower case lettering. See Figure 4.

Wiring Devices:
- Majority of light switches are mounted 54 inches above finished floor. The ADA requirement for a switch mounting height is 48 inches maximum (ADA 4.27.3) above finished floor. See Figure 4.
- Most receptacle outlets are mounted less than 15 inches above finished floor and therefore are non ADA compliant. The current ADA requirement for 120 volt receptacle mounting height is 15 inches minimum (ADA 4.27.3) above finished floor.
- There are many locations where a GFCI receptacle outlet is required but not present. The current National Electrical Code (NEC210.8) requires outlets installed within 6 feet of a sink to be GFCI type. See Figure 15.
- Several junction boxes throughout the buildings have exposed wiring and require cover plates. Refer to Figure 3 and 16.

Fire Alarm System:
- Pull Stations are mounted 66 inches above finished floor. The ADA required mounting height is 48 inches maximum (ADA 4.27.3) above finished floor. See Figure 4.
- There are no smoke detectors in electrical and mechanical rooms.
- There are no visual notification devices.

3.4.4 Recommendations:

- The electrical systems are beyond their service life and are recommended to be replaced, in their entirety.
EXISTING FACILITIES ASSESSMENT

- Should this building be modernized, the following systems would require upgrading or replacing:
  - Power Distribution System: Replace all original equipment.
  - Lighting System: Provide fixtures with energy efficient T8 or T5 lamps throughout. Install occupancy sensors throughout.
  - Fire Alarm System: Provide campus wide addressable system compliant with ADA.
- Code deficiencies have been noted and would require remediation. Code deficiencies are from visual inspections and additional code deficiencies will most likely be observed during construction.
3.4.5 Figures:

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6
3.5 PLUMBING ASSESSMENT

3.5.1 Overview

This report summarizes our plumbing / fire protection assessment for the following buildings:
Miwok Cluster and Library

The Miwok cluster of 4 buildings contains class rooms (mostly fine arts) and academic offices. The library contains staff offices, class rooms and study rooms as well as book stacks and related areas.

3.5.2 Art and Music Building 13

3.5.2.1 Equipment: Electric Water Heater (WH-1)
Make and Model: A.O. Smith

Observations:
- There is no hot water system for existing toilet lavatories.
- Toilet lavatory faucets are not ADA accessible.
- There is fire sprinkler system in exit corridors/lobbies. There is no sprinkler in all other areas including the wood-constructed ceiling plenum.
- Interior and exterior drinking fountains are not ADA accessible.
- The sink in Room 224 is not ADA accessible, has no hot water and was leaky.
- Hot water is supplied to the Art Studio wash up sinks. There is an electric water heater serving the Art Studio, see Figure 1.
- The hot water heater unit installation is not in compliance with current codes and standards.
- Unit (WH-1) and piping not adequately seismically braced and HW piping not insulated. No drain containment pan under unit. See Figure 2.

3.5.3 MSAT Building 14

Observations:
- Existing staff break room sink is not ADA accessible.
- Drinking fountains not ADA accessible
- No fire sprinkler system (single story building)
- Toilet Lavatory faucets are not ADA accessible.

3.5.4 Cafeteria Building 15

3.5.4.1 Equipment: Electric Water Heater (WH-2)
Make and Model: A.O. Smith, DSE

Observations:
- There is no hot water system for the existing toilet lavatories
- The drinking fountains are not ADA accessible.
- This single story building with theater is generally not protected by fire sprinkler system. (A building fire sprinkler riser exists which was apparently originally installed to serve the kitchen cooking area ONLY. However, there are now no onsite cooking operations as cooking equipment has been removed.) See Figure 3.
- Toilet lavatory faucets and Cafeteria/staff Sinks not ADA accessible
EXISTING FACILITIES ASSESSMENT

- There is an electric water heater serving the Cafeteria, staff and Janitor’s sinks from an electric water heater.
- The Hot Water Heater unit installation not in compliance with current codes and standards: Unit and piping not adequately seismically braced and HW piping not insulated, no drain containment pan under unit. See Figure 4.
- There is a disconnected gas service riser with regulator inside the Electrical Closet 136, see Figure 5.

3.5.5 MSAT Building 16

3.5.5.1 Equipment: Electric Water Heater (WH)
Make and Model: A.O. Smith DSE

Observations:
- There is an electric water heater serving the staff lounge sinks.
- Drinking fountains not ADA accessible
- Staff lounge sinks not ADA accessible
- There is a fire sprinkler system in exit corridors/lobbies. There is no sprinkler in all other areas including the wood-constructed ceiling plenum.
- Compressed air and gas outlets and kiln in Room 113 are not operational and kiln used for table (Room 115 appears to have previously been a chemistry lab but now is used as staff lounge.)
- The Electric Hot Water Heater unit installation is not in compliance with current codes and standards.
- The WH and piping are not adequately seismically braced while HW piping is not insulated.

3.5.6 Library Building 17

3.5.6.1 Equipment: Electric Water Heater (WH-3)

Observations:
- Sinks not ADA accessible
- Hot water is available to existing staff sinks, toilet lavatories and mop sinks from an electric water heater
- Drinking fountains not ADA accessible
- This 2 story building is fully protected by a fire sprinkler system.
- Toilet lavatory faucets not ADA accessible
- Hot water heater unit installation not in compliance with current codes and standards.
- Unit (WH-3) and piping not adequately seismically braced and HW piping not insulated. No drain containment pan under unit.

3.5.7 Recommendations

- The plumbing and fire protection systems are beyond their service life and are recommended to be replaced, in their entirety.
- A fire protection system, preferably wet sprinkler system, should be provided as required by CBC Chapter 9.
- Should this building be modernized, the plumbing and fire protection systems would need major modernization.
EXISTING FACILITIES ASSESSMENT

3.6 INFORMATION TECHNOLOGY ASSESSMENT

3.6.1 Overview for the Miwok Building Cluster

This report summarizes our assessment of Information technology (IT) systems infrastructure for the Miwok (MW) cluster. The Miwok cluster consists of buildings 13, 14, 15, 16, 17 and includes general academic class rooms, multimedia, art and music labs and teachers' offices and Library building. These buildings have been leased to a high school for use. Voice and data systems are under the ownership and management of others.

3.6.2 Terms and Definitions:

COM – College of Marin
MPOE – Main point of entry
MDF – Main Distribution Frame
IDF – Intermediate Distribution Frame
VoIP – Voice over Internet Protocol
EIA/TIA – Electronic Industries Alliance / Telecommunications Industry Association
WAP – Wireless Access Point
UPS – Uninterruptible Power Supply
MAN – Metropolitan Area Network
CBC – California Building Code
PoE – Power over Ethernet
VLAN – Virtual Local Area Network

3.6.3 Building 13 – MSAT

• IDF: room 103. Voice and data services originate in building 14 and are under separate ownership and management. Figure 2.
• Workstation outlets: not COM. Separate ownership and management
• Wireless access: not COM. Separate ownership and management
• Horizontal cabling: not COM. Separate ownership and management
• Pathways: not COM. Separate ownership and management
• Identification: not COM. Separate ownership and management
• There are no drawings to document existing conditions or cable records

3.6.4 Building 14 – MSAT

• IDF room 164, Figure 1: Voice and data services are under separate ownership and management.
• This IDF serves as the cross connect to SBC. COM delivers copper pairs (voice) and dark fiber optic cabling (data) from the MDF with direct connection to SBC services.
• Workstation outlets: not COM. Separate ownership and management.
• Wireless access: not COM. Separate ownership and management.
• Horizontal cabling: not COM. Separate ownership and management.
• Pathways: not COM. Separate ownership and management
EXISTING FACILITIES ASSESSMENT

- Identification: not COM. Separate ownership and management
- There are no drawings to document existing conditions or cable records

3.6.5 Building 15 - Cafeteria
- IDF: none in this building. Voice and data services originate in building 14 and are under separate ownership and management.
- Workstation outlets: not COM. Separate ownership and management
- Wireless access: not COM. Separate ownership and management
- Horizontal cabling: not COM. Separate ownership and management
- Pathways: not COM. Separate ownership and management
- Identification: not COM. Separate ownership and management
- There are no drawings to document existing conditions or cable records

3.6.6 Building 16 - MSAT First and Second Floors
- IDF: Open, wall mounted equipment in common 1st floor; Electrical/IT room 103 accessible from the building interior. Figure 2. CAT 5E from building 14, room 164.
- Workstation outlets: not COM. Separate ownership and management
- Wireless access: not COM. Separate ownership and management
- Horizontal cabling: not COM. Separate ownership and management
- Pathways: not COM. Separate ownership and management
- Identification: not COM. Separate ownership and management
- There are no drawings to document existing conditions or cable records

3.6.7 Building 17 - Library

3.6.7.1 IDF:
- Open, wall mounted equipment in common Electrical/IT room 118 accessible from the building exterior. COM delivers copper pairs (voice) and dark fiber optic cabling from the Ohlone Building 18 IDF. Figure 3.
- Workstation outlets: not COM. Separate ownership and management
- Wireless access: not COM. Separate ownership and management
- Horizontal cabling: not COM. Separate ownership and management
- Pathways: not COM. Separate ownership and management
- Identification: not COM. Separate ownership and management
- There are no drawings to document existing conditions or cable records
3.6.8 Figures:

Figure 1
IMSAT, Building 14, IDF - room 154

Figure 2
IMSAT, Building 16, IDF - room 103

Figure 3
Library Building 17, IDF - room 118
4.3 MECHANICAL ASSESSMENT

4.3.2 Overview

This report summarizes our mechanical assessment for the following building: Ohlone Cluster

The Ohlone Cluster is comprised of three buildings that serve as general academic class rooms and offices.

4.3.3 Classroom Building 19

4.3.3.1 Equipment: Water Source Heat Pumps (HP)
Make and Year: Commandaire - Model SWPH, ~1974

Observations:
- These single zone heat pumps are mounted above the ceilings within the class rooms, study rooms, break rooms and offices they serve. They are 30 years old and are beyond their service life.
- These units are noisy and maintenance in the limited ceiling clearance available is very difficult to perform. See Figure 1.
- The units are inefficient by today's energy standards with no 100% outside fresh air “free cooling” capabilities. The analog electric controls cannot provide full building automation energy management capabilities.
- HP thermostats do not have lockable covers and are mounted over 5 feet above floor.
- The HP seismic bracing and condenser water and condensate drain piping support does not conform to current code.
- No secondary drain pans have been installed below units to protect ceilings and space occupants from water leakage from units. See Figure 2.
- The HP distribution duct is rigid fiberglass board type (lower quality than stronger standard sheet metal duct). Evidence of field patches to tears and cracks ductwork was observed.
- Several offices along the SW building perimeter are served by a single heat pump unit located in the ceiling space above with thermostat located in one of the offices. If unit is turned off at the thermostat, all of the other offices served by this heat pump will have no ventilation.
- Heat Pump operation appeared excessively noisy.
- Heat pump serving north side of second interior Study Area 224 has been removed (apparently for servicing). There is no HVAC currently in this area.
- Roof top toilet room exhaust fan is noisy (fan may be rattling against housing)
- There are two upblast roof top fans but they are not operational nor connected to duct work. Per HVAC control panel, there are 2 switches labeled “Fume Hood” which indicate that these exhaust fans used to serve the already removed fume hoods.

4.3.4 Core Building 18

4.3.4.1 Equipment: Water Source Heat Pumps (HP)
Make and Year: Commandaire SWPH, ~1974

Observations:
- The conditions and equipment installation for this building (Core Building 18) are very comparable with those Core Building 19. Please see the first seven items on section 4.3.3.1 for more details.
- Heat Pump operation appeared excessively noisy in Rooms 127 and 132
EXISTING FACILITIES ASSESSMENT

- Heat pump serving West corner of the building has been removed (apparently for servicing). There is no HVAC currently in this area.

4.3.5 Café (old) Building 20

4.3.5.1 Equipment: Water Source Heat Pumps (HP)
Make and Year: *Commerical SWPH, 1974*
Observations:
- The conditions and equipment installation for this building (Café Building 20) are very comparable with those Core Building 19 and Core Building 18. Please see the first seven items on section 4.3.3.1. for more details.
- Exposed wall mounted fiberglass ductwork at 9 ft. elevation in Room 106 appears potentially vulnerable to damage. See Figure 3.
- The roof top Toilet exhaust fan is noisy.

4.3.5.2 Equipment: Roof top Kitchen Exhaust fans
Observations:
- There are two upblast kitchen exhaust fans on the roof. These units used to serve the kitchen cooking hood and oven which have been shut down and abandoned in place.

4.3.6 Recommendations

- The mechanical systems are beyond their service life and are recommended to be replaced, in their entirety.
- Code deficiencies have been noted and would require remediation. Code deficiencies are from visual inspections and additional code deficiencies will most likely be noticed during construction.
- Should this building be modernized, the mechanical systems would need major modernization.
4.3.7 Figures

Figure 1
Limited ceiling clearance around Heat Pump (typical)

Figure 2
Water leak from one of the heat pumps

Figure 3
Fiberglass ductwork at 9' high
4.4 ELECTRICAL ASSESSMENT

4.4.2 Overview:

This report summarizes our electrical assessment for the following building: Ohlone Cluster

Electrical Systems:
- Power Distribution System
- Lighting System
- Wiring Devices
- Fire Alarm System

4.4.3 Observations:

Power Distribution System:

- The cluster is served by the campus 12kV underground primary feeder from the 12kV campus distribution system. The 12kV system feeds the 12kV switchgear at Substation "A", located in Power Plant 1, adjacent to the Pool, west of the Ohlone cluster. The 12kV system consists of a subsurface 12kV primary Selector Switch and a 12kV Unit Substation.
- The secondary distribution section of the unit Substation is rated 1200 amp, 480/277 volt 3-phase, 4-wire and serves all the buildings within the Ohlone cluster and also serves the Swimming Pool Complex, Building 21. 480 volts to 120/208 volts transformers and branch circuit panels-boards are utilized to provide power to 208/120 volts devices/equipment in all the buildings served by this unit substation.
- Mechanical Control Panel in Building 18 Electrical Room is missing door latch. See Figure 1.
- The 75kVA Transformer in Building 18 is inaccessible via 5feet, 1 inch high door opening. Additionally, closet is very hot due to lack of ventilation. See Figure 2.
- Several panels in Building 20 Electrical Room have broken door latches.
- The electrical equipment is manufactured by Square D and is approximately 30 years old. Based on a visual inspection, the electrical equipment appears to be in proper working condition. However, the dependability of the power distribution system is questionable due to the age of the electrical equipment.

Lighting System:

- Office spaces and Corridors utilize recessed, 2x4 lens light fixtures with two non-energy efficient T12F40 fluorescent lamps.
- High ceiling areas with exposed beams use surface mounted 1x4 lens light fixtures with two non-energy efficient T12F40 fluorescent lamps.
- Classrooms in Building 20 utilize recessed, 2x4 lens lighting fixtures with two non-energy efficient T12F40 fluorescent lamps. Additionally, there are recessed downlights in the ceiling soffit with non-energy incandescent lamps.
- Music area in Building 20 uses a combination of recessed Incandescent downlights and pendant globe fixtures. Lighting is controlled via dimmers. Dimmer is exposed and has loud "hum" sound. See Figure 13.
EXISTING FACILITIES ASSESSMENT

- Exterior building and canopy mounted light fixtures within Ohlone cluster are dirty and appear corroded. Some fixtures may require re-lamping.
- 2x4 recessed light fixtures in Building 19 are supported above the ceiling from mechanical duct support. Lighting fixtures should have their own support system. See Figure 10.
- There are no occupancy sensors in any of the buildings.
- There is no bi-level switching.
- Exit Signage fixtures uses two fluorescent fixtures to provide egress illumination.
- Some of the Exit signs are non-illuminated. See Figure 4.
- Emergency egress lighting is achieved via wall mounted emergency battery unit with two lamp heads mounted on the unit. The emergency battery units are located in Stairways, Corridors, Hallways, and Lobby area as a means of illuminating the egress pathway.

Wiring Devices:

- Light switches are mounted +54 inches above finished floor throughout. See Figure 4.
- Receptacle outlets are mounted at +15 inches above finished floor minimum throughout.
- There is a 120 volt receptacle within 25 feet of all mechanical equipment.
- There is exposed wiring outside of Transformer Closet in Building 18. See Figure 3.
- MC cable located above ceiling space in Building 18 has loose end with exposed wiring. See Figure 5.
- Computer Lab 123 in Building 18 appears to have inadequate amount of receptacle outlets. There are numerous power strips under all workstations and in some cases power strips are plugged into other power strips or extension cord. Cords are running along aisle ways causing potential tripping hazard. See Figures 6 and 7.
- Office spaces have power cords running along aisle ways causing potential tripping hazards.
- Local switches for Offices in Building 19 are in corridors and not inside the space it's controlling.
- Conduits located above ceiling spaces in Building 19 have insufficient supports. See Figure 11.
- There is flexible conduit with exposed wiring at about +60 inches above finished floor in Building 20. See Figure 14.
- Exterior 120 volt receptacle within Ohlone cluster is not weatherproof nor GFCI type. See Figure 12.
- Majority of the wiring devices in the building are old and have reached the end of useful life due to age and deterioration. Due to age and use, receptacle outlet contacts lose tension to securely hold inserted plugs and wiring terminations loosen.

Fire Alarm System:

- Each building is served by a stand-alone, non-addressable Simplex Fire Alarm Terminal Cabinet. All Terminal Cabinets are tied back to a local, exterior, pole mounted annunciator.
EXISTING FACILITIES ASSESSMENT

Additionally, the entire cluster is tied back to the Main Fire Alarm System Control Panel located in Building 33.

- Buildings 20 and 21 have Keberus System terminal cabinet tied to Simplex System.
- There are horn devices in corridor and lobby but audible range is limited.
- Pull Stations are located within close proximity of main entrance and exit doors and are mounted at +66 inches above finished floor. See Figure 4.
- There are no fire alarm strobes present.
- There is no smoke detection.

4.4.4 Code Deficiencies:

Power Distribution System:
- Conduits in many areas located above accessible ceiling space are lacking proper structural support as required by California Building Code (CBC 1632A).

Lighting System:
- Light fixtures utilizing T12F40 lamps are not energy efficient and no longer comply with the requirements of the California Energy Commission Title 24.
- Emergency egress lighting illumination appears to be inadequate in many areas of the buildings. The current California Building Code (CBC-1003.2.9.1) requires a minimum 1 foot-candle egress pathway illumination.
- Exit signs are non-illuminated and have lower case lettering. See Figure 4.

Wiring Devices:
- Majority of light switches are mounted 54 inches above finished floor. The ADA requirement for a switch mounting height is 48 inches maximum (ADA 4.27.3) above finished floor. See Figure 4.
- There are many locations where a GFCI receptacle outlet is required but not present. The current National Electrical Code (NEC210.8) requires outlets installed within 6 feet of a sink to be GFCI type. See Figures 8 and 9.

Fire Alarm System:
- Pull Stations are mounted 66 inches above finished floor. The ADA required mounting height is 48 inches maximum (ADA 4.27.3) above finished floor. See Figure 4.
- There are no smoke detectors in Electrical and Mechanical Rooms.
- There are no visual notification devices.
4.4.5 Recommendations:

- The electrical systems are beyond their service life and are recommended to be replaced, in their entirety.

- Should this building be modernized, the following systems would require upgrading or replacing:
  - Power Distribution System: Replace all original equipment.
  - Lighting System: Provide fixtures with energy efficient T8 or T5 lamps throughout. Install occupancy sensors throughout.
  - Fire Alarm System: Provide campus wide addressable system compliant with ADA.

- Code deficiencies have been noted and would require remediation. Code deficiencies are from visual inspections and additional code deficiencies will most likely be observed during construction.
4.4.6 Figures:

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6
4.4.6 Figures: (continued)

Figure 13

Figure 14
4.5 PLUMBING ASSESSMENT

4.5.1 Overview

This report summarizes our mechanical assessment for the following building: Ohlone Cluster

The Ohlone Cluster is comprised of three buildings that serve as general academic class rooms and offices.

4.5.2 Classroom Building 19

Observations:
- There is no hot water supply to existing classroom sinks, toilet, lavatories or mop sinks.
- Toilet, drinking fountains and sink lavatory faucets are not ADA accessible.
- Staff room sink is not operational.

4.5.3 Core Building 18

Observations:
- There was no hot water supply to the existing sinks and lavatories.
- The following plumbing fixtures are not ADA accessible; Sinks, lavatory faucets and drinking fountains.

4.5.4 Café (old) Building 20

4.5.4.1 Equipment: Electric Water Heater
Make: A.O. Smith DEN 80 8KW

Observations:
- There is no hot water supply to existing staff sinks, snack bar sinks, toilets, lavatories or mop sinks. (The hot water heater was shut down.)
- The plumbing fixtures are not ADA accessible.
- In room 106, a sink has been removed but water and waste connections remain protruding from wall.
- According to Staff personnel, the water supply to the faucets and toilets in the Women's Toilet 1124 is report that insufficient water flow to sink faucets and for toilet flushing in.
- The hot water heater installation and hot water piping bracing is not in compliance with current codes and standards.
- The hot water piping is not insulated and there is no drain containment pan under unit.
- Several cooking equipment items of the former kitchen have been disconnected from utilities (gas/water) and abandoned in place. See Figure 3.
- The gas supply was capped off.

4.5.5 Fire Protection

Observation

All of the buildings at Ohlone Cluster are not protected by a wet fire sprinkler system as required by code, with exception of the Corporation Yard. The shop areas are equipped with a fire sprinkler system.
4.5.6 Recommendations

- The Plumbing and Fire Protection systems are beyond their service life and are recommended to be replaced, in their entirety.
- A fire protection system, preferably wet sprinkler system, should be provided as required by CBC Chapter 9.
Figures:

Figure 1
Corroded floor drain

Figure 2
Corroded Eye Wash Station

Figure 3
Abandoned Kitchen Equipment
EXISTING FACILITIES ASSESSMENT

4.6 INFORMATION TECHNOLOGY ASSESSMENT


This report summarizes our assessment of Information Technology (IT) systems infrastructure for the Ohlone (OL) building cluster, Pool/Shower building, and Corporation Yard. The Ohlone cluster consists of buildings 18, 19, 20 and includes computer labs/offices/court reporting labs, general-classroom, multi-media. The Pool/Shower building consists of building 21 and includes shower/locker/restroom and storage rooms. The Corporation Yard consists of building 22 and includes the carpentry shop, maintenance shop, and police services.

The existing Indian Valley Campus (IVC) structured cabling system and network has been in operation for approximately five years. The network operates at 10/100 megabit over an optical fiber backbone cabling medium. Local IDF (Intermediate distribution frame) cabinets are located in many of the campus buildings to support local workstation outlets.

4.6.2 Terms and Definitions:

MPOE – Main point of entry
MDF – Main Distribution Frame
IDF – Intermediate Distribution Frame
VoIP – Voice over Internet Protocol
EIA/TIA – Electronic Industries Alliance/Telecommunications Industry Association
WAP – Wireless Access Point
UPS – Uninterruptible Power Supply
MAN – Metropolitan Area Network
CBC – California Building Code
PoE – Power over Ethernet
VLAN – Virtual Local Area Network

4.6.3 Building 18 - Computer labs/offices/court reporting

4.6.3.1 IDF:

• IDF located in room #134 shares space with storage and electrical panels. See Figure 1.
• The cable terminations and active network equipment is installed in a wall mounted 19” Equipment Rack. The Equipment Rack includes the following items:
  o Panduit patch panel
  o Three (3) HP ProCurve network switch(s); legacy equipment; switch is marginally suitable for 1 Gb backbone operation and would provide only a limited number of VLAN’s.
  o Slecor LAN fiber optic termination panel
• Grounding: no apparent compliance with EIA/TIA 607 for separate grounding busbar (TGB)
• Ventilation: appears marginal
• Cable management at the IDF is limited, missing vertical wire managers
• Underground conduit entry is not sealed
• Power to IDF: local 120 VAC branch circuit
existinG FaciLities assessmenT

- There is no UPS installed in this IDF -- Network equipment susceptible to power failures.
- Backbone cable:
  - 12 strand multi-mode (MM) fiber from MDF.

4.6.3.2 Workstation outlets:
- Voice outlets consist of any one of the following: original wiring of copper conductor pairs to analog voice outlets (approximately 50% campus wide); digital phones (approximately 30% campus wide); new phones are VoIP (approximately 20% campus wide) and connected via Cat. 5e cable. VoIP currently requires local wall power converter since network switched do not support PoE.
- Data outlets: Category 5e cables are extended from a Category 5e Patch Panel in the IDF to RJ-45 jack inserts at each workstation data outlet.

4.6.3.3 Wireless access: none.

4.6.3.4 Horizontal cabling:
- Category 5e cables are installed from the IDF patch panel to workstation data outlets.
- Maximum distance from IDF to workstation is within the 90 meter EIA/TIA distance limitation.

4.6.3.5 Pathways:
- Surface raceway is typically used in conjunction with concealed conduit and wiring for vertical and horizontal pathways within finished spaces.
- Firestopping and sealing of conduit and cable penetrations: required for compliance with EIA/TIA 569A.
- Seismic support of pathways: required for compliance with CBC 1632.1.

4.6.3.6 Identification
- Identification of cables is incomplete and not fully compliant with EIA/TIA 606.
- Workstation outlet connectors and the related IDF patch panel in most cases properly indicate network connections.

4.6.3.7 There are no drawings to document existing conditions or cable records.
EXISTING FACILITIES ASSESSMENT

4.6.4 Building 19 – General classrooms/labs/offices

4.6.4.1 IDF:

- IDF located in shallow closet in room 168. See Figure 2.
- The cable terminations and active network equipment is mounted directly on a plywood backboard. The items include:
  - Copper patch panel
  - HP ProCurve Ethernet switch
  - Fiber optic splice tray
- Grounding: no apparent compliance with EIA/TIA 607 for separate grounding busbar (TGB).
- Ventilation: Marginal.
- Cable management at the IDF not compliant with EIA/TIA 569
- Power to IDF: local 120 VAC branch circuit
- There is no UPS installed in this IDF – Network equipments susceptible to power failures
- Backbone cable:
  - 12 strand multimode (MM) fiber from building 18.

4.6.4.2 Workstation outlets:

- Voice outlets consist of any one of the following: original wiring of copper conductor pairs to analog voice outlets (approximately 50% campus wide); digital phones (approximately 30% campus wide); new phones are VoIP (approximately 20% campus wide) and connected via Cat. 5e cable. VoIP currently requires local wall power converter since network switch does not support PoE.
- Data outlets: Category 5e cables are extended from a Category 5e Patch Panel in the IDF to RJ-45 jack inserts at each workstation data outlet.

4.6.4.3 Wireless access: none.

4.6.4.4 Horizontal cabling:

- Category 5e cables are installed from the IDF patch panel to workstation data outlets.
- Maximum distance from IDF to workstation is within the 90 meter EIA/TIA distance limitation.

4.6.4.5 Pathways:

- Surface raceway is typically used in conjunction with concealed conduit and wiring for vertical and horizontal pathways within finished spaces.
- Firestopping and sealing of conduit and cable penetrations: required for compliance with EIA/TIA 559A.
- Seismic support of pathways: required for compliance with CBC 1632.1.
4.6.4.6 Identification

- Identification of cables is incomplete and not fully compliant with EIA/TIA 606.
- Workstation outlet connectors and the related IDF patch panel in most cases properly indicate network connections.

4.6.4.7 There are no drawings to document existing conditions or cable records.
4.6.5 Building 20 – Food vending/P.E./Classrooms/multi-media:

4.6.5.1 IDF:
- No IDF. Local termination of CAT 5e from building 18 is in room 103. See Figure 4.

4.6.5.2 Workstation outlets:
- N/A

4.6.5.3 Wireless access: none.

4.6.5.4 Horizontal cabling:
- N/A

4.6.5.5 Pathways:
- Surface raceway in conjunction with concealed conduit systems are typically used for vertical and horizontal pathways within finished space.

4.6.5.6 Identification
- Identification of cables is incomplete and not fully compliant with EIA/TIA 568.
- Workstation outlet connectors and the related IDF patch panel in most cases properly indicate network connections.

4.6.5.7 There are no drawings to document existing conditions or cable records.
4.6.6 Figures:

Figure 1
Core Building 18, IDF - Room 134

Figure 2
Classroom Building 19, IDF - Room 169

Figure 3
Classroom Building 19, - Room 216

Figure 4
Cafe Building 20, Local Terminations - room 103
5.3 MECHANICAL ASSESSMENT

5.3.1 Overview

This report summarizes our mechanical assessment for the following building: Building 21 (Swimming Pool Complex)

The Swimming Pool complex includes the Pool shower/locker, Office Building and Power Plant 1

5.3.2 Power Plant 1 (Heat pump condenser water systems and Cogen system-exposed to outdoor environment, Swimming Pool heating, treatment and filtration systems in enclosed structure)

General:

The campus condenser water system (serving building water source heat pumps) and pool heating system were originally designed to be interconnected with the Cogen system so both systems could be heated by waste heat produced by the "Cogen" system while it generated electricity for campus use. However, due to the lack of automatic controls for these interconnected systems, the campus experienced a loss of condenser water system heating capability during times of Cogen unit failure. Consequently, the condenser water system was disconnected from the Cogen and pool systems. The result has been that there is not enough heat loads by pool heating requirements alone to satisfy Cogen operational requirements and a fan/cool unit has been installed to dissipate the excess heat produced by the Cogen unit into the atmosphere.

5.3.2.1 Equipment: 850 MBH Hot Water Boiler (2 typical units)
Make and Year: Ajax WGX – 850, 1974

Observations:
There are two identical Hot Water Boilers. The following observations apply to both units.
• The hot water piping and threaded valve connections were corroded. HW piping does not have insulation. See Figure 1.
• The face and top of this boiler is corroded.
• The pipe supports/hangers do not comply with code required pipe support. See Figure 1.
• Corrosion has set in at the threaded boiler connection.
• Although the boiler operates normally, it was not operating at the time of visit due to a lack of demand for heating hot water.
• The unit is beyond its service life and is deteriorated. Repairs are required constantly.
• Connected to heat pump condenser water system only.

5.3.2.2 Equipment: 4050 MBH Hot Water Boiler (2 typical units)
Make and Year: Teledyne Laars Mighty Thermo AP-4050

Observations:
These are two identical Hot Water Boilers. The following observations apply to both units.
• The hot water boilers appear to be in good condition.
• The boilers were not operating at the time of visit.
• Connected to pool heating/filtration system
EXISTING FACILITIES ASSESSMENT

5.3.2.3 Equipment: 20 HP Condenser Water Pump (3 typical units)
Make and Year: Bell and Gossett 4C-11-6F, 1974, with motor more recently replaced.
Observations:
- Pumps did not have vibration isolators. The pump frames are directly bolted to the concrete pad. See Figure 2.
- The pumps and associated piping are corroded.
- Connecting condenser water piping did not have adequate seismic bracing supports per current standards.
- The pumps were not operating at time of visit.

5.3.2.4 Equipment: Cooling Tower (and condenser water piping)
Make and Year: BAC V1-75-1
Observations:
- Cooling tower was not operating at the time of this visit.
- This cooling tower appears to be in fair condition.
- Condenser water piping and valving are very corroded.
- IVC O&M personnel indicated major leaks in underground condenser water distribution system piping.
- The motorized valve operators are located outside and not protected in weatherproof enclosures and thus have deteriorated to inoperable condition.

5.3.2.5 Equipment: Cooling Tower (and condenser water piping)
Make and Year: BAC V1-36-1
Observations:
- Cooling tower was not operating at the time of this visit.
- Fan drive shaft and fan housings were very corroded.
- Condenser water piping and valves are corroded (duct tape patch on tower water recirculation piping.

5.3.2.6 Equipment: Expansion and Chemical Feed Tanks
Observations:
- The expansion tank appears to be in fair condition.
- The chemical feed tank is badly corroded.

5.3.2.7 Equipment: 3 HP Swimming Pool HP (2 units)
Make and Year: B&G 4x7x6 1/8 BF
Observations:
- These units were installed without vibration isolators.

5.3.2.8 Equipment: Cogeneration Unit
Make and Year: Thermo-Electric Model CM-60
Observations:
- 60KW/4.4 Thermo per hour
- Operating conditions at time of visit to heat pool water (145 degree return water temperature/210 degree supply water temperature.
- Inlet and outlet water piping connected to fan/coil heat dissipation unit mounted above Cogen unit.
EXISTING FACILITIES ASSESSMENT

- There is oil leak that appears to be puddled at the base of unit.
- Hot water piping does not have code required pipe support. See Figure 3.

5.3.3 Pool Locker Shower Building 21

5.3.3.1 Equipment: Gas Fired Forced Air Furnaces F3 and F5
Make and Year: Peerless 7-13FD-WU, SR# 7FD3714

Observations:
- These are single zone, floor mounted units in the SW corner of the mechanical room. They serve the West side (men’s) offices, supply rooms etc. through an exposed ducted air distribution system. The units have outside air intake connection. It appears that make up air for the shower exhaust is transferred through locker room from propped open exterior doors.
- These units appear to be of advanced age but in fair, operating condition.
- There is no supply duct smoke detector in the units.
- The ductwork does not have the code required bracing and support.
- There is no heating and ventilation in room 120.
- Inactive shower room 144 has an exhaust grill but no door grille to allow transfer of make up air for exhaust.

5.3.3.2 Equipment: Gas Fired Forced Air Furnaces F4 and F6

Observations:
- These are single zone, floor mounted units in the SE corner of the mechanical room. They serve East side (women’s) offices, supply rooms etc. through an exposed ducted air distribution system. The units have outside air intake connection. It appears that make up air for shower exhaust is transferred through locker room from propped open exterior doors.
- These units appear to be of advanced age but in fair, operating condition.
- There is no supply duct smoke detector in the units.
- Seismic bracing for ductwork does not appear to fully meet current codes and standards.
- Insulation is detached and disintegrating on supply air ducts. See Figure 4.

5.3.4 Recommendations

- The mechanical systems are beyond their service life and are recommended to be replaced, in their entirety.
- Code deficiencies have been noted and would require remediation. Code deficiencies are from visual inspections and additional code deficiencies will most likely be noticed during construction.
- Should this building be modernized, the mechanical systems would need major modernization.
EXISTING FACILITIES ASSESSMENT

5.3.5 Figures

Figure 1
Hot Water Boilers

Figure 2
No vibration isolators on pumps

Figure 3
HW piping support not code compliant

Figure 4
Deteriorating duct insulation
5.4 ELECTRICAL ASSESSMENT

5.4.1 Overview:

This report summarizes our mechanical assessment for the following building: Building 21 (Swimming Pool Complex).

Electrical Systems:
- Power Distribution System
- Lighting System
- Wiring Devices
- Fire Alarm System

5.4.2 Observations:

Power Distribution System:
- The cluster is served by the campus 12kV underground primary feeder from the 12kV campus distribution system. The 12kV system feeds the 12kV switchgear at Substation "A", located in Power Plant 1, adjacent to the Pool, west of the Chione cluster. The 12kV system consists of a subsurface 12kV primary Switchgear and a 12kV Unit Substation.
- The secondary distribution section of the unit substation is rated 1200 amp, 480/277 volt, 3-phase, 4-wire and serves all the buildings within the Chione cluster and also serves the Swimming Pool Complex, Building 21. 480 volts to 120/208 volts transformers and branch circuit panel-boards are utilized to provide power to 208/120 volts devices/equipment in all the buildings served by this unit substation.
- The electrical equipment is manufactured by Square D and is approximately 30 years old. Based on a visual inspection, the electrical equipment appears to be in proper working condition. However, the dependability of the power distribution system is questionable due to the age of the electrical equipment.

Lighting System:
- Office spaces and corridors utilize recessed, 2x4-lens light fixtures with two non-energy efficient T12F40 fluorescent lamps.
- Exterior building and canopy mounted light fixtures within Chione cluster are dirty and appear corroded. Some fixtures may require re-lamping.
- Based on information received from the Facility Engineering, the electrical cords at the underwater lights in the Pool are becoming increasingly brittle. Since the cords are part of the fixture, the fixtures should be replaced as soon as possible.
- Lighting fixtures in Locker Room, Building 21 are surface mount fixture with acrylic lens and uses non-energy efficient T12F40 lamps. The light fixtures in these rooms appear to be in proper working condition with slight discolorization of the lenses.
- There are no occupancy sensors.
- There is no bi-level switching.
- Exit signs are non-illuminated.
EXISTING FACILITIES ASSESSMENT

- Emergency egress lighting is achieved via wall mounted emergency battery unit with one or two lamp heads mounted on the unit.

Wiring Devices:
- Light switches are mounted +54 inches above finished floor throughout.
- Receptacle outlets are mounted at +15 inches above finished floor minimum throughout.
- There is a 120 volt receptacle within 25 feet of all mechanical equipment.
- There is a non-GFCI type receptacle within close proximity of sink in Building 21.
- Junction box for Water pump in Building 21 is missing cover plate. See Figure 1.
- The outlets in the underwater viewing room at the diving end of the swimming pool are corroded due to pool water seeping through the wall. See Figure 2.
- A wiring device is also missing in the underwater viewing room. There is box with exposed wiring in the room. See Figure 3.
- The Swimming Pool deck does not have adequate receptacles to accommodate devices during swimming meets.
- Majority of the wiring devices in the building are old and have reached the end of useful life due to age and deterioration. Due to age and use, receptacle outlet contacts lose tension to securely hold inserted plugs and wiring terminations loosen.

Fire Alarm System:
- The building is served by a stand-alone, non-addressable Simplex Fire Alarm Terminal Cabinet. All Terminal Cabinets are tied back to a local, exterior, pole mounted annunciator. Additionally, the entire cluster is tied back to the Main Fire Alarm System Control Panel located in Building 33.
- There is a Cerberus System terminal cabinet tied to Simplex System.
- There are horn devices in corridor and lobby but audible range is limited.
- Puff Stations are located within close proximity of main entrance and exit doors and are mounted at +66 inches above finished floor.
- There are no fire alarm strobes present.
- There is no smoke detection.

5.4.3 Code Deficiencies:

Power Distribution System:
- Conduits in many areas located above accessible ceiling space are lacking proper structural support as required by California Building Code (CBC 1632A).

Lighting System:
- Light fixtures utilizing T12F40 lamps are not energy efficient and no longer comply with the requirements of the California Energy Commission Title 24.
EXISTING FACILITIES ASSESSMENT

- Emergency egress lighting illumination appears to be inadequate in many areas of the buildings. The current California Building Code (CBC 1003.2.9.1) requires a minimum 1 foot-candle egress pathway illumination.

- Exit signs are non-illuminated and have lower case lettering.

**Wiring Devices:**

- Majority of light switches are mounted 54 inches above finished floor. The ADA requirement for a switch mounting height is 48 inches maximum (ADA 4.27.3) above finished floor.

- There are many locations where a GFCI receptacle outlet is required but not present. The current National Electrical Code (NEC 210.8) requires outlets installed within 6 feet of a sink to be GFCI type.

**Fire Alarm System:**

- Pull Stations are mounted 68 inches above finished floor. The ADA required mounting height is 48 inches maximum (ADA 4.27.3) above finished floor.

- There are no smoke detectors in Electrical and Mechanical Rooms.

- There are no visual notification devices.

5.4.4 **Recommendations:**

- The electrical systems are beyond their service life and are recommended to be replaced, in their entirety.

- Should this building be modernized, the following systems would require upgrading or replacing:
  - Power Distribution System: Replace all original equipment.
  - Lighting System: Provide fixtures with energy efficient T8 or T5 lamps throughout. Install occupancy sensors throughout.
  - Fire Alarm System: Provide campus wide addressable system compliant with ADA.

- Code deficiencies have been noted and would require remediation. Code deficiencies are from visual inspections and additional code deficiencies will most likely be observed during construction.
5.4.5 Figures:

Figure 1

Figure 2

Figure 3
5.5 PLUMBING ASSESSMENT

5.5.1 Overview

This report summarizes our mechanical assessment for the following building: Building 21
(Swimming Pool Complex)

The Swimming Pool complex includes the Pool, shower/locker, Office Building and Power Plant 1

5.5.2 Power Plant 1

5.5.2.1 Equipment: Gas Meter

Observations:
- Gas meter is not seismically anchored to support base.

5.5.2.2 Service: Domestic Cold Water

Observations:
- The RPBP and pressure regulator assembly does not have code compliant pipe support.

5.5.2.3 Equipment: 50 HP Pool Water Circulation Pump
Make: PACO 1950 GPM

Observations:
- Pump is operational
- Floor drain below pump is extremely corroded. See Figure 1.
- Emergency eye wash/shower station next to pump is corroded, not seismically braced and appears to be leaking. See Figure 2.
- The Pool Water piping does not meet the current seismic bracing codes and standards.
- Circulating pumps do not have vibration isolators. The pump frame is directly bolted to the concrete pad.
- Connecting piping and fittings are extremely corroded.
- The pressure reducing valve also shows signs of corrosion.

5.5.3 Pool Locker Shower - Building 21

5.5.3.1 Equipment: Water Heater, 1200 MBH input (2 units, Men's & Women's Locker Room)
Make: Bryan CL120WT

Observations:
- The water heaters are in good operating condition and operating adequately. It has a 1,940 gallon storage tank. According to a facility staff member, the unit shut down recently resulting in a temporary loss of hot water supply.
- The Men's Locker Room showers display cold water only despite the hot water supply connection, due to a malfunctioning mixing valve. This may be due to the adjustment/condition of the shower mixing valves located in rooms 149 and 151.
- Water heater connection and piping do not have code required bracing and support. Some of the piping insulation is starting to separate from the pipes.
EXISTING FACILITIES ASSESSMENT

- Toilet, latory faucets, drinking fountains and shower are not ADA accessible.
- Showers in room 144 (containing potentially ADA accessible shower stall if slide bar added for spray) are inactive and room is used for storage.

5.5.4 Fire Protection

Observation
- All the buildings at Ohtone Cluster are not protected by a wet fire sprinkler system as required by code, with exception of the Corporation Yard. The shop areas are equipped with a fire sprinkler system.

5.5.5 Recommendations
- The Plumbing and Fire Protection systems are beyond their service life and are recommended to be replaced, in their entirety.
- A fire protection system, preferably wet sprinkler system, should be provided as required by CBC Chapter 9.
5.5.6 Figures

Figure 1
Corroded floor drain

Figure 2
Corroded Eye Wash Station
5.6 INFORMATION TECHNOLOGY ASSESSMENT

5.6.1 Overview of Building Twenty One (Swimming Pool Complex).

This report summarizes our Information Technology (IT) systems infrastructure assessment for Building Twenty One, also known as the Swimming Pool Complex.

The existing Indian Valley Campus (IVC) structured cabling system and network has been in operation for approximately five years. The network operates at 10/100 megabit over an optical fiber backbone cabling medium. Local IDF (Intermediate distribution frame) cabinets are located in many of the campus buildings to support local workstation outlets.

5.6.2 Terms and Definitions:

MPOE — Main point of entry
MDF — Main Distribution Frame
IDF — Intermediate Distribution Frame
VoIP — Voice over Internet Protocol
EIA/TIA — Electronic Industries Alliance/Telecommunications Industry Association
WAP — Wireless Access Point
UPS — Uninterruptible Power Supply
MAN — Metropolitan Area Network
CBC — California Building Code
PoE — Power over Ethernet
VLAN — Virtual Local Area Network

5.6.3 Building 21 - Locker rooms/showers/restrooms and storage rooms

5.6.3.1 IDF: None.

5.6.3.2 Workstation outlets:
  • Voice: original wiring of copper conductor pairs to analog voice outlets
  • Wall mounted phones in some areas.
  • Data outlets: None

5.6.3.3 Wireless access: none.

5.6.3.4 Horizontal cabling: limited to support local voice connections.

5.6.3.5 Pathways:
  • Conduit entry is not sealed.

5.6.3.6 Identification
  • Identification of cables is incomplete and not fully compliant with EIA/TIA 606.
  • There are no drawings to document existing conditions or cable records
6.3 MECHANICAL ASSESSMENT

6.3.1 Overview

This report summarizes our mechanical assessment for the following building: Building 22 (Corporation Yard)

6.3.2 Building 22 - Corporation Yard

6.3.2.1 Equipment: Industrial Exhaust Fan/Duct System (with an outside saw dust collector)

Observations:
- The wood shop exhaust system appears to be inoperable.
- The dust collector body is severely corroded.

6.3.2.2 Equipment: Packaged Rooftop AC with Gas Heating
Make: Lennox

Observations:
- This system appears to be operating adequately.
- Ductwork does NOT appear to fully meet current seismic bracing codes and standards.
- The unit appears to serve 6 O&M and Campus police offices with thermostat in SE corner office.
- The maintenance shop areas do not have any HVAC systems.

6.3.3 Recommendations

- The mechanical systems are beyond their service life and are recommended to be replaced, in their entirety.
- Code deficiencies have been noted and would require remediation. Code deficiencies are from visual inspections and additional code deficiencies will most likely be noticed during construction.
- Should this building be modernized, the mechanical systems would need major modernization.
6.4 ELECTRICAL ASSESSMENT

6.4.1 Overview:

This report summarizes our electrical assessment for the following building: Building 22 (Corporation Yard)

Electrical Systems:
1. Power Distribution System
2. Lighting System
3. Wiring Devices
4. Fire Alarm System

6.4.2 Observations:

Power Distribution System:

- The Corporation Yard is served by the campus 12kV distribution system via Substation "CY," located at the Corporation Yard. The 12kV system consists of a subsurface 12kV primary Saelector Switch and a 12kV Unit Substation. The secondary distribution section of the unit substation is rated 600 amp, 480/277 volt, 3-phase, 4-wire and serves the Corporation Yard and the Tennis Courts. Transformer "T9" located in the Electrical Room provides power to receptacle outlets, and other 120/208 volt devices and motor loads in the building. It also serves one other 120/208 volt branch circuit panel board, Panel "SP1".

- Tennis courts lighting is fed directly from Substation "CY" Distribution Section.

- The electrical equipment is manufactured by Square D and is approximately 30 years old. Based on a visual inspection, the electrical equipment appears to be in proper working condition. However, the dependability of the power distribution system is questionable due to the age of the electrical equipment.

Lighting System:

- Corporation Yard Office and support spaces have recessed 2x4 lens light fixtures with two non-energy efficient T12F40 lamps.

- Corporation Yard Paint Booth uses explosion proof metal halide light fixtures that appears inadequate.

- Several canopy light fixtures at the Corporation Yard are missing lenses.

- There are no occupancy sensors in any of the buildings.

- There is no bi-level switching.

- Emergency egress lighting is achieved via wall mounted emergency battery unit with two lamp heads mounted on the unit. The emergency battery units are located in Stairways, Corridors, Hallways, and Lobby area as a means of illuminating the egress pathway.
EXISTING FACILITIES ASSESSMENT

Wiring Devices:
- Exterior twistlock receptacle at Corporation Yard is not weatherproof nor GFCI type. See Figure 1.
- Majority of the wiring devices in the building are old and have reached the end of useful life due to age and deterioration. Due to age and use, receptacle outlet contacts lose tension to securely hold inserted plugs and wiring terminations loosen.

Fire Alarm System:
- Each building is served by a stand-alone, non-addressable Simplex Fire Alarm Terminal Cabinet. All Terminal Cabinets are tied back to a local, exterior, pole mounted annunciator. Additionally, the entire cluster is tied back to the Main Fire Alarm System Control Panel located in Building 33.
- Pull Stations are located within close proximity of main entrance and exit doors and are mounted at +66 inches above finished floor.
- Mounting height of pull station in Corporation Yard is non-ADA compliant and blocked by storage items. See Figure 2.
- There are no fire alarm strobes present.
- There is no smoke detection.

6.4.3 Code Deficiencies:

Power Distribution System:
- Conduit in many areas located above accessible ceiling space are lacking proper structural support as required by California Building Code (CBC 1632A).

Lighting System:
- Light fixtures utilizing T12F40 lamps are not energy efficient and no longer comply with the requirements of the California Energy Commission Title 24.
- Emergency egress lighting illumination appears to be inadequate in many areas of the buildings. The current California Building Code (CBC 1003.2.8.1) requires a minimum 1 foot-candle egress pathway illumination.
- Exit signs are non-illuminated and have lower case lettering.

Wiring Devices:
- Majority of light switches are mounted 54 inches above finished floor. The ADA requirement for a switch mounting height is 48 inches maximum (ADA 4.27.3) above finished floor.
- There are many locations where a GFCI receptacle outlet is required but not present. The current National Electric Code (NEC210.8) requires outlets installed within 6 feet of a sink to be GFCI type.
EXISTING FACILITIES ASSESSMENT

Fire Alarm System:

- Pull Stations are mounted 66 inches above finished floor. The ADA required mounting height is 48 inches maximum (ADA 4.27.3) above finished floor.
- There are no smoke detectors in Electrical and Mechanical Rooms.
- There are no visual notification devices.
- Corporation Yard pull stations are randomly placed and not located at exit points as required.

6.4.4 Recommendations:

- The electrical systems are beyond their service life and are recommended to be replaced, in their entirety.
- Should this building be modernized, the following systems would require upgrading or replacing:
  - Power Distribution System: Replace all original equipment.
  - Lighting System: Provide fixtures with energy efficient T8 or T5 lamps throughout. Install occupancy sensors throughout.
  - Fire Alarm System: Provide campus wide addressable system compliant with ADA.
- Code deficiencies have been noted and would require remediation. Code deficiencies are from visual inspections and additional code deficiencies will most likely be observed during construction.
6.4.5 Figures:

Figure 1

Figure 2
6.5 PLUMBING ASSESSMENT

6.5.1 Overview
- This report summarizes our mechanical assessment for the following building: Building 22, Corporation Yard.

6.5.2 Building 22 - Corporation Yard

6.5.2.1 Equipment: A.O. Smith gas fired water heater
   Make: A.O. Smith DEN 80.6KW

   Observations:
   - Hot water is available to existing sinks, toilets and shower
   - The drinking fountains and the shower are not ADA accessible
   - Toilet lavatory faucets not ADA accessible
   - Hot water heater unit installation not in compliance with current codes and standards:
   - Unit and piping not adequately seismically braced and piping not insulated, no drain containment pan under unit

6.5.3 Fire Protection

   Observation
   - All of the buildings at Ohlone Cluster are not protected by a wet fire sprinkler system as required by code, with exception of the Corporation Yard. The shop areas are equipped with a fire sprinkler system.

6.5.4 Recommendations

   - The Plumbing and Fire Protection systems are beyond their service life and are recommended to be replaced, in their entirety.
   - A fire protection system, preferably wet sprinkler system, should be provided as required by CBC Chapter 9.
6.6 INFORMATION TECHNOLOGY ASSESSMENT

6.6.1 Overview for the Corporation Yard Building 22.

This report summarizes our assessment of information technology (IT) systems infrastructure for the Corporation Yard. It consists of building 22 and includes the carpentry shop, maintenance shop, and police services.

The existing Indian Valley Campus (IVC) structured cabling system and network has been in operation for approximately five years. The network operates at 10/100 megabit over an optical fiber backbone cabling medium. Local IDF (Intermediate distribution frame) cabinets are located in many of the campus buildings to support local workstation outlets.

6.6.2 Terms and Definitions:

- MPOE – Main point of entry
- MDF – Main Distribution Frame
- IDF – Intermediate Distribution Frame
- VoIP – Voice over Internet Protocol
- EIA/TIA – Electronic Industries Alliance/Telecommunications Industry Association
- WAP – Wireless Access Point
- UPS – Uninterruptible Power Supply
- MAN – Metropolitan Area Network
- CBC – California Building Code
- PoE – Power over Ethernet
- VLAN – Virtual Local Area Network

6.6.3 Building 22 – Campus police/offices/welding shop/machine shops/equipment storage rooms

6.6.3.1 IDF:

- IDF located in common electrical/IT room 120; Figure 1.
- The cable terminations and active network equipment is installed wall mounted 19" Equipment Rack. The Equipment Rack includes the following items:
  - Panduit patch panel for data cable terminations
  - HP ProCurve 4000M 10/100Mb Ethernet Switch
  - Corning LAN fiber optic termination panel
- Grounding: no apparent compliance with EIA/TIA 607 for separate grounding busbar (TGB)
- Ventilation: none
- Underground conduit entry is not sealed.
- Power to IDF: local 120 VAC branch circuit
- There is no UPS installed in this IDF – Network equipments susceptible to power failures
- Cable management at the IDF not compliant with EIA/TIA 669
- Backbone cable:
  - 6 strand multi-mode (MM) fiber from MDF via building 11.
6.6.3.2 Workstation outlets:

- Voice outlets consist of any one of the following: original wiring of copper conductor pairs to analog voice outlets (approximately 50% campus wide); digital phones (approximately 30% campus wide); new phones are VoIP (approximately 20% campus wide) and connected via Cat. 5e cable. VoIP currently requires local wall power converter since network switch does not support PoE.

- Data outlets: Category 5e cables are extended from a Category 5e Patch Panel in the IDF to RJ-45 jack inserts at each workstation data outlet.

6.6.3.3 Wireless access: none.

6.6.3.4 Horizontal cabling:

- Category 5e cables are installed from the IDF patch panel to workstation data outlets.

- Maximum distance from IDF to workstation is within the 90 meter EIA/TIA distance limitation.

6.6.3.5 Pathways:

- Surface raceway is typically used in conjunction with concealed conduit and wiring for vertical and horizontal pathways within finished spaces.

- Firestopping and sealing of conduit and cable penetrations; required for compliance with EIA/TIA 569A.

- Seismic support of pathways: required for compliance with CBC 1632.1.

6.6.3.6 Identification

- Identification of cables is incomplete and not fully compliant with EIA/TIA 606.

- Workstation outlet connectors and the related IDF patch panel in most cases properly indicate network connections.

6.6.3.7 There are no drawings to document existing conditions or cable records.
6.6.4 Figures:

Figure 1
Corporate Yard Building 22, IDF - Room 120