# Conference Report

DEKKER PERICH SABATINI | ARCHITECTURE DESIGN INSPIRATION

Project No.: 14-0071.001
Project: **Artesia Public Schools On-Call**
Date: August 28, 2014
Place: Various schools

Attending: Crit Caton, Thad Phipps, Scott Simer, APS; Hartwell Briggs, Benjamin Gardner, Jess Holmes, Shannon Parks, D/P/S; Abbas Shirian, Scott Surdahl, Lawrence Adkins, B&P

By: Shannon Parks

Copies To: All parties present, John Ross Null, Pearl Lopez, Janet Grice, APS;
Issue Date: September 8, 2014

**Site Observations/Discussion Items:**

**General**

1. District is not fond of exposed ductwork.
2. On new projects the District does not want internal roof drains installed; scuppers and downspouts are acceptable.
3. District does not want cast iron piping below grade.
4. District does not want a water softening system.
5. District coordinates the install of CCTV, fire alarm, and intercom systems between ECI and their IT department.
6. District uses Stoven Construction and are pleased with their performance.
7. Local Fire Marshal is James Abner who will need to approve drawings. District advised submitting drawings to him for review at the same time we submit to CID, and to keep him in the loop during the design process.
8. Security doors at the vestibules will be unlocked during student arrival period and then will go into lock mode after they have entered the school.
9. The site where the Natatorium was demolished has been re-graded with compacted, engineered fill.
10. The District does not want mag locks.
11. The District stated that the vestibule system that works the best is at Roselawn ES. When the interior vestibule doors are locked visitors are directed through the office.

**Bulldog Pit**

1. District wants refrigerated air packaged rooftop units.
2. D/P/S will verify the number of seats to determine occupant load.
3. Building was constructed in 1997.
4. Existing HVAC units are to be salvaged to Owner.
5. Demolition and removal of existing equipment in main mechanical room should be identified as a bid lot. If within budget, space should be repurposed.
6. The use of duct socks was discussed; the District does not want to use them and B&P recommended not using them.
7. District wants construction work done during the winter months to have the facility ready for spring performances.
8. District has used Crouch Plumbing and Heating as their HVAC Contractor.
9. District will check on status of roof warranty and furnish copy to D/P/S for review.
10. APS does not want to replace the existing ceiling when the new system is installed.

11. New sound system was recently installed and will need to be protected during construction.
12. Existing ducts can be reused when possible.
13. Condensate lines can be drained and abandoned in place.
14. See additional observations in attached report from Bridgers & Paxton.

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**Auditorium**

1. Extent of architectural patch and repair work will be minimal and decided during construction.
2. Building name will be changed. D/P/S will coordinate with District for verbiage and appearance of new exterior sign.
3. Building was originally constructed in 1967 and was recently renovated with new seating and lighting. The number of seats decreased to accommodate accessibility requirements and a sound/light control station at the back of the seating area.
4. Existing cooling system does not cool the auditorium sufficiently during full occupancy.
5. Existing equipment locations could potentially be used for new equipment. Another possible location is the mezzanine behind the stage.
6. See additional observations in attached report from Bridgers & Paxton.

**High School**

1. The School would like to add four offices and space for six to eight student computer stations within the space of the corridor west of the administration area.
2. Lockers in the area are to remain.
3. The existing large work room adjacent to the counselor offices should be converted into faculty lounge. Exposed masonry walls shall be furred out with gypsum board and textured.
4. All counselor offices should be removed except for one. The remaining area should be turned into a faculty work room. Copiers will be located here.
5. The existing faculty lounge should be converted to a conference space.
6. The District would like to cover existing CMU walls with gypsum board finish at areas of the administration area.
7. The administration and entry sequence will need to be reconfigured to create a secure entry vestibule.
8. The reception area needs additional power and data.
9. D/P/S will explore options for creating a more open office area at the administration.
10. Built in storage should be added to the existing work room.
11. District wants exhaust fans located in the two Chemistry Rooms where the fume hoods are located.

**Central ES**

1. Existing interior vestibule wall will be removed and new secure wall/door system will be installed aligned with the east wall of the Library.
2. Access will be monitored and controlled through CCTV, intercom, and electronic lock security systems.

**Hermosa ES**

1. The District requested double doors between the Cafeteria and corridor.
2. Locksets at new work will be Best with Brushed Nickel finish.

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**Yeso ES**

1. **1.** A secure entry vestibule will be created by adding a wall from the exterior glazed wall to the solid wall of the administration. Receptacles may need to be relocated for the new entry.
2. **2.** The full height wall by the existing reception counter should be made more open either by cutting an opening into it or making it partial height. The existing fire alarm and receptacle will need to be avoided.
3. **3.** A new wall should be added to inhibit visitors from seeing into the principal's office.

**Yucca ES**

1. The existing trophy case will need to be removed to create an opening into the new reception area.
2. The Reception area will be relocated in the existing Conference room.
3. The Principal's Office will relocate to the existing Reception area.
4. The Conference Room will relocate to the existing Principal's Office.
5. An opening will be created in the back wall of the new reception area.

# MECHANICAL, ELECTRICAL & PLUMBING SYSTEMS ASSESSMENT NARRATIVE

## Artesia Public Schools
## Artesia, New Mexico

*Prepared for*

DEKKER
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*Prepared by*

BRIDGERS & PAXTON

September 2014

7291

**INTRODUCTION**

The following are our preliminary findings of the Artesia Public Schools (APS) mechanical, electrical and plumbing (MEP) existing conditions. The information is based on our August 28, 2014 site visit, review of existing drawings, and conversations with the facility maintenance personnel. This narrative presents existing mechanical, electrical, and plumbing systems on the campus and intent along with assumptions used for the programming of future design for following buildings:

1. High School Auditorium and Gymnasium (Pit). These two facilities need of HVAC upgrades.
1. High School administration and entry additions and renovations.
2. Yucca, Hermosa, Central, Yeso Elementary Schools require a new secure vestibule and administration area.

**References:**

The mechanical, plumbing and electrical systems design will adhere to the following codes to ensure safe and proper installation of the system.

- Uniform Mechanical Code (UMC - Latest Edition)
- Uniform Plumbing Code (UPC - Latest Edition)
- International Building Code (IBC - Latest Edition)
- International Existing Building Code (IBC – Latest Edition)
- National Fire Protection Association (NFPA - Latest Edition)
- American Society of Heating, Refrigeration, Air Conditioning Engineers (ASHRAE)
- Americans with Disabilities Act (ADA)
- National Fire Protection Code & Life Safety NFPA
- State of New Mexico Electrical Code

**Design Conditions:**

Climatic:

Location: Artesia, New Mexico

Elevation: 3620 feet above sea level

Winter 99.6% Design Dry-bulb: 16.3 degrees F

Summer 0.4% Design Dry-bulb/Wet-bulb: 99.8 degrees F/65.3 degrees F

Indoor Design Conditions:

| Space | Winter (Degrees F) | Summer (Degrees F) | Relative Humidity (RH%) |
|---|---|---|---|
| General | 72 | 75 | N/A |
| Classrooms | 72 | 75 | N/A |
| Mech/Elec Room | 55 | 95 | N/A |
| IT/Comp Room | 68 | 72 | N/A |

**Envelope Construction:**

Interior Loads:

- People: 250 British thermal units per hour (Btu/hr) (sensible), 200 Btu/hr (latent). Space occupancy will be based on architectural furniture plans and ASHRAE standards where no information is available.
- Lights: 1.2 Watts per ft2 average
- Equipment: 0.35 Watts per ft2 average

**Ventilating and Indoor Air Quality Strategies:**

The ventilation air rate to each space will be based on ASHRAE Standard 62.1-2007.

**Noise Requirements:**

Standard design per ASHRAE for normally occupied areas.

**Exhaust Requirements:**

All toilet rooms and chemical storage rooms will be exhausted at a minimum rate of 16 air changes per hour. Janitor, and copy rooms will be exhausted at 1 cfm/sq.ft.

## MECHANICAL & PLUMBING SYSTEMS

**High School Auditorium HVAC System Upgrade**

Existing HVAC System: The current heating, ventilation and air conditioning (HVAC) system consists of six (6) constant volume airflow indoor units with chilled water for cooling, and hot water heating systems. There are four built-up air handling units located in the two lower level mechanical rooms. Also there are two large fan coil units serving the stage and other supporting areas. The units consists of supply fan, heating coil, chilled water coil, filter banks. The mezzanine mechanical room houses a single hot water boiler, heating water pumps, chilled

water pumps and expansion tanks. An air cooled chiller is located on the ground next to mezzanine. Low velocity ducts extend to diffusers and registers. HVAC system control is the original pneumatic control or manual control. Main utilities including heating water and chilled water from boiler room and chiller extended to two mechanical rooms and fan coil units.
It appears that the existing air handling systems generally provide adequate zone's temperature control and comfort for main auditorium. There is a thermal comfort and cooling issue in the lobby and main entry area with high occupancy. High inside humidity, missing insulation and vapor barrier on the existing chilled water piping causes major condensation issue inside the building and in the mechanical room.

Proposed HVAC System: The new HVAC system will consist of constant air volume indoor air handling units with DX (Direct Expansion) cooling coil, hot water heating coil, economizer and filters. Each unit will distribute conditioned air through the existing low velocity single duct and air distribution.
At the inlet side of the air handler, the re-circulated air (or return air) is mixed with the outside air with modulating dampers located at each airstream. Depending on the mixed air temperature of these two airstreams, cooling or heating may be needed to maintain the constant 55°F air temperature discharged from the unit.
When outside temperature conditions range from 52°F to 75°F higher concentrations of outside air are delivered through the air handler unit as an energy saving means. At this temperature range, the need for mechanical cooling or heating at the air handler unit is greatly reduced. This is typically defined as an economizer cycle. When the outside air conditions are less than ideal (less than 52°F or greater than 75°F) the concentration of outside air is reduced and more air is re-circulated from the building and through the air handling unit. Minimum levels of outside air are always maintained for ventilation purposes.

The mechanical cooling plant consists of large remote outdoor condensing units (one per air handling unit). Each unit consists of multiple compressors, condenser coils and condenser fans. The condensing units will be installed on the roof near the mechanical rooms or on the ground.

The mechanical heating plant consists of two hot water boilers and heating coils served by two constant volume pumps.

Few new single-zone constant volume rooftop units will be provided to improve the thermal comfort in Lobby and other supporting spaces.

Each air handling unit will be provided with a packaged control system and programmable thermostat and DDC electronic controller for future DDC control system monitoring.

Proposed Plumbing Modifications: The new equipment will be served with condensate drainage and natural gas systems that will be extended from the existing building services. The drainage piping will discharge into the nearest code-approved receptor. The natural gas piping will connect to a point on the existing system that possesses sufficient capacity to support the new load.

**High School Gymnasium (Pit) HVAC System Upgrade**

Existing HVAC System: The current heating, ventilation and air conditioning (HVAC) system consists of two (2) large constant volume airflow packaged rooftop units with chilled water for cooling, and hot water heating systems. These units consists of supply fan, heating coil, chilled water coil, filter banks. There are few single-zone, constant volume rooftop units with DX cooling and gas fired heating serving the supporting areas, Also, there are few rooftop evaporative cooling system serving the lockers. The mechanical room houses two hot water boilers, heating water pumps, chilled water pumps and expansion tanks. An air cooled chiller is located on the ground next to mechanical room. Low velocity ducts from air handling units and rooftop units extend to diffusers and registers. It appears that the existing air handling systems generally provide adequate zone's temperature control and comfort. HVAC system control is the original pneumatic control or manual control. Main utilities including heating water and chilled water from boiler room and chiller extended to two rooftop air handling units. High inside humidity, missing insulation and vapor barrier on the existing chilled water piping causes major condensation issue inside the building and in the mechanical room.

Proposed HVAC System: The new HVAC system consists of packaged single zone, constant volume rooftop air handler (RTU) with a full outside air dry bulb economizer, "free cooling", a direct expansion (DX) cooling coil, and a natural gas fired furnace heating section. Each RTU will provide heating and cooling in each space. Each unit will provide a minimum amount of outside air at all times as required for the number of occupants in each space. When outdoor ambient conditions are favorable, the use of outside air for free cooling is available for energy reduction.

The mechanical heating plant consists of a high efficiency natural gas fired furnace section.

The mechanical cooling plant consists of direct expansion (DX) cooling packaged.

Each RTU will be provided with a programmable thermostat and DDC electronic controller for future DDC control system monitoring.

Proposed Plumbing/FP Modifications: The new equipment will be served with condensate drainage and natural gas systems that will be extended from the existing building services. The drainage piping will discharge into the nearest code-approved receptor. The natural gas piping will connect to a point on the existing system that possesses sufficient capacity to support the new load. The fire sprinkler system will be modified to the extent required by the placement of new equipment, ductwork, etc. No additional sprinkler upgrades are envisioned.

**High School Administration & Entry Additions/Renovations**

Existing HVAC systems will be modified in renovation areas including admin area and vestibule area. New HVAC system consists of packaged single zone, constant volume rooftop air handler (RTU) with a full outside air dry bulb economizer, "free cooling", a direct expansion (DX) cooling coil, and a natural gas fired furnace heating section will be provided for new additions.

Provide new general exhaust system for two existing Chemistry Labs chemical storage rooms.

Existing MDF & IDF Room: A split system DX cooling computer room air conditioning unit will be provided for this area, allowing for space conditioning independent operations.

Proposed Plumbing Modifications: The new equipment will be served with condensate drainage and natural gas systems that will be extended from the existing building services. The drainage piping will discharge into the nearest code-approved receptor. The natural gas piping will connect to a point on the existing system that possesses sufficient capacity to support the new load. A lone double compartment sink in the staff break room will be relocated—or replaced with a similar fixture—to a new location very near the original. Piping modifications are expected to be minimal.

**Yucca, Hermosa, Central, Yeso Elementary Schools New Vestibule**

Existing HVAC systems will be modified in renovation areas including admin area and vestibule area.

Proposed FP Modifications: Where existing fire sprinkler systems exist, the head locations will be adjusted to account for new partitioning, grilles, diffusers, lighting, etc. Minimal changes to the piping networks are anticipated.

**ELECTRICAL SYSTEMS**

**High School Auditorium HVAC System Upgrade**

Existing Electrical System: The service voltage appears to be 480/277V, 3-phase, 4 wire. Total capacity of the system needs verification. There is a large disconnect switch serving each condensing unit outside.

Proposed Electrical Modifications: It is anticipated that adequate capacity exists in the panels serving the air handling units to be able to change the circuit breakers and feeders serving the new air handling units as necessary.

**High School Gymnasium (Pit) HVAC System Upgrade**

Existing Electrical System: The service capacity is 480/277V, 3-phase, 4 wire. There appears to be a second feeder from the utility transformer to the disconnect switch serving the chiller.

Proposed Electrical Modifications: The distribution panel inside is in good condition, and has space available for circuit breakers to serve new rooftop HVAC units. If the capacity is deemed insufficient for the new HVAC mods, the panel, main disconnect switch, and feeder to the transformer could be replaced fairly quickly since they are close to the main electrical room.

**High School Administration & Entry Additions/Renovations**

Existing Electrical items: The service capacity is 480/277V, 3-phase, 4 wire, with dry type transformers providing 208/120V, 3-phase, 4 wire to existing panels serving the area.

The dry-type transformer in the Administrative office area needs to be re-configured to meet NEC clearance requirements. The shape of the room it is in will need to be changed. Panels in this room appear to be original equipment, and have no additional spare capacity to accommodate new branch circuits.

Wireless cypher locks are utilized for particular pairs of entry doors.

Proposed Electrical Modifications: A new 120/208V panel will be necessary to accommodate the new offices requested by the district. This may be able to be located in the re-configured electrical room in the Administrative area.

Where new lighting is necessary, a fluorescent source with T8 or T5 lamps is preferred by the district. Occupancy sensors will be provided in the new offices to comply with the energy code.

**Yucca, Hermosa, Central, Yeso Elementary Schools New Vestibule**

Existing Electrical items: Wireless cypher locks are utilized for particular pairs of entry doors. In most cases, the exit sign and fire alarm pull station will need to be relocated to accommodate the new door configuration. Lighting in the entries appears to be adequate.

Proposed Electrical Modifications: A new branch circuit will be provided for the zigbee wireless controller above the ceiling. Emergency egress lighting may need to be updated in the renovated area. This will be provided as deemed necessary.

*This report is assumed to be a true and accurate account of this communication unless notice to the contrary is received within 10 calendar days of issue.*

End of Report

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