

**ELECTRICAL IMPROVEMENTS
ELK CREEK ELEMENTARY
DESIGN DEVELOPMENT NARRATIVE**

E0.1 Water Treatment Building Engine/Generator

- Deficiency Report:
Need emergency stand-by generator for Well House. No TVSS for well pump power panel. Provide TVSS at main panel for the well house.
- Existing Conditions:
The Water Treatment Building power originates at the Main Electrical Distribution Center located in the main school building. It is rated 200Amps at 208Y/120V, is routed underground to the Water Treatment Building, and does not have any type of power backup to enable the facility to provide fresh water to the school during power outages. The Water Treatment panel does not have a Surge Protection device.
- Recommended Solution
Provide a means of backup power for the Water Treatment Building. Due to the recent installation of portable generator docking stations at Conifer High School as well as the Conifer High School Water Treatment Building, it was determined that with a portable generator docking station at the Elk Creek Water Treatment Building, a single portable generator (rated for the largest load of the three facilities, Conifer High School 400kW) backup power could be made available to any one of the three sites. All three sites are remote enough from one another (connected to different parts of the IREA primary electrical distribution system), that in most instances, power outages would be isolated to only one of the facilities simultaneously. A large area outage is rare, but could affect all three sites.

The proposed docking station at the Elk Creek Water Treatment Building is rated 200Amps, however the system voltage at Elk Creek is 208Y/120V, which is different than the system voltage (480Y/277V) at Conifer High School and at the Conifer High School Water Treatment Building. Therefore, we have added a stepdown transformer between the portable generator docking station and the associated backup power transfer switch so that a single generator with an output voltage of 480Y/277V could be utilized.

Also provide a Surge Protection device at the Water Treatment Building Electrical Panel. The device would be a minimum 80kA device by Current Technology or Emerson equivalent.

- See attached cut sheets of proposed equipment.

E0.2 Mechanical Equipment Replacement Electrical Support

- Deficiency Report:
Electrical deficiency not identified in the Deficiency report Summary. Support Mechanical deficiency replacement of the existing Roof Top Units and as well as Boilers, associated pumps, and equipment.

- Existing Conditions:
The existing Roof Top Unit for the main portion of the building (RTU-1) is fed from the Main Electrical Distribution Center with a 400A disconnect. The Roof Top Unit for the Addition portion of the building (RTU-2) is fed from a local Branch Panelboard with a 100A breaker. The Boiler room equipment is fed from a separate local Branch Panelboard.
- Recommended Solution
Provide new safety disconnects and electrical connections to all new mechanical equipment. RTU-1 is rated similar to the existing unit and can reuse the existing feeder from the MDC up to the new safety disconnect at the unit. RTU-2 is rated slightly larger than the existing unit and will require a new breaker in the panel, as well as a new feeder from the panel to the unit. The new boiler configuration is different than the existing and will require new branch circuits to all of the new equipment.

E0.3 Waste Water Building Electrical Support

- Deficiency Report:
Electrical deficiency not identified in the Deficiency report Summary. Support the Civil modifications constructing a new Waste Water Treatment Building.
- Existing Conditions:
Does Not Exist
- Recommended Solution
Provide a new 100A Feeder from one of the Spare 100A disconnects in the MDC to the new Waste Water Building. Provide a new Branch Circuit Panelboard, Grounding, Lighting, Convenience Receptacles, as well as power connections to the new electrical equipment (heater, pumps, controls etc...). Assumed new load less than 100A total.