CAMPUS VOLTAGE UPGRADE PROJECT

Facilities Management – Energy Services
Craig Spencer, PE
Director of Energy Services
5/18/2018
Voltage Upgrade Background

- Required to retire and demolish the Power Plant and Poultry Substation.
- Much of existing underground infrastructure has exceeded lifespan by 30-40 years.
- Replaces old failing underground cable pathways (Ductbanks)
- Replaces aged transformers, switchgear and cable.
- Provides redundancy and reliability in the campus distribution system.
- More efficient distribution with the higher voltage of 12,470V versus 2,400V.
PROJECT-1 Morrill Courtyard Upgrade

THIS PROJECT CONSIST OF INSTALLING THE UNDERGROUND INFRASTRUCTURE AND CABLEING THAT WILL SUPPORT THE EXISTING BUILDINGS UPGRADE FROM 2.4KV TO 12.5KV.

Start Date: March 19, 2018
Project Length: 45 days
Area/BUILDINGS affected
Morrill Hall Expected Outage - 24 hours
Bartlett Center Expected Outage - 24 hours
Thatcher Hall Expected Outage - 24 hours
Parking Lot #16 - South Half
ALL OUTAGES WILL BE NEAR THE END OF THE PROJECT

COMPLETE

BORED SERVICE

SERVICE DUCTBANK
Project 2: Architecture Upgrade Project

This project consists of installing the underground infrastructure and cabling that will support the existing buildings upgrade from 2.4KV to 12.5KV.

**Complete**

Start Date: April 1, 2018
Project Length: 15 days

Area/Buildings affected:
- DW Reynolds Architecture Bldg - There will be 2 short outages. The first outage will be at the beginning of the project to change out the transformer. The second outage will be at the end of the project to energize the transformer from the new feed.
- CEAT Endeavor Lab - Short outage to connect to Arch transformer & short outage to disconnect Arch transformer.
- Parking Lot #6A - East Side
- Parking Lot #6 - Near NE corner of Arch Bldg
Project 3: Athletic/Hester Vault Upgrade Project

THIS PROJECT CONSIST OF INSTALLING THE UNDERGROUND INFRASTRUCTURE AND CABLING THAT WILL SUPPORT THE EXISTING BUILDINGS UPGRADE FROM 2.4KV TO 12.5KV.

Start Date: April 23, 2018 - DELAYED DUE TO UNFORSEEN UNDERGROUND OBSTACLES.
Project Length: 35 days - TO BE COMPLETED BY 6/1/18

Area/Buildings affected
Intersection at Athletic and Hester
DW Reynolds Architecture Bldg - No Outage
CEAT Endeavor Lab - No Outage
Civil Lab Annex (South End) - Estimated Outage 10 days
PROJECT-4 General Academic Bldg Upgrade

Project 4: General Academic Building Upgrade Project

THIS PROJECT CONSIST OF INSTALLING THE UNDERGROUND INFRASTRUCTURE AND CABLES THAT WILL SUPPORT THE EXISTING BUILDING UPGRADE FROM 2.4KV TO 12.5KV. THIS PROJECT ALSO INVOLVES DISMANTLING AND REMOVING THE EXISTING TRANSFORMER FROM THE BUILDING BASEMENT.

Start Date: April 1, 2018
Project Length: 15 days

Area/Buildings affected:
General Academic Building
Expected Outage - 5 Days at the end of the project
Parking Lot #16 - Southwest Corner

COMPLETE

SERVICE DUCTBANK
TRANSFORMER
PRIMARY DUCTBANK
Project 5: Monroe Street Infrastructure Upgrade Project

THIS PROJECT CONSIST OF INSTALLING THE UNDERGROUND INFRASTRUCTURE AND CABLING THAT WILL SUPPORT THE EXISTING BUILDINGS UPGRADE FROM 2.4KV TO 12.5KV.

Start Date: May 21, 2018
Project Length: 41 days - Estimated Completion Date is June 30, 2018.

Area/Buildings affected
Intersection at Monroe and Athletic
Parking Lot #34
Parking Lot #44
No Outages Required
PROJECT 6: INFRASTRUCTURE UPGRADE-1

THIS PROJECT CONSISTS OF INSTALLING THE UNDERGROUND INFRASTRUCTURE AND CABLING THAT WILL SUPPORT THE NEW FACILITIES UPGRADED FROM 2.4KV TO 12.5KV

Start Date: May 21, 2018
Project Length: 90 days

Area/Buildings affected
Athletic Avenue from Monroe to Hester
Physical Sciences
Parking Lot #46 – Near Kerr Hall
Parking Lot #45 – Near Agriculture Hall
Parking Lot #34 – Near Physical Sciences
Parking Lot #53 – University Health Center

ALL OUTAGES WILL OCCUR NEAR THE END OF THE PROJECT AND EACH BUILDINGS MANAGER WILL BE NOTIFIED PRIOR TO THE OUTAGE.

Edmon Low Library
- Estimated Outage - 48 Hours
Engineering North
- Estimated Outage - 24 Hours
Engineering South
- Estimated Outage - 48 Hours
Civil Lab Annex (North End)
- Estimated Outage - Tied to Engineering South

NEW CABLE PULL THROUGH EXISTING DUCTBANKS
NEW CABLE PULL THROUGH NEW DUCTBANK
PROJECT 7: INFRASTRUCTURE UPGRADE-2

This project consists of installing the underground infrastructure and cabling that will support the new facilities upgraded from 2.4kV to 12.5kV.

Start Date: May 21, 2018
Project Length: 90 days

Area/Buildings affected
Parking Lot #19
Hester Street from Athletic to Morrill

All outages will occur near the end of the project and each buildings manager will be notified prior to the outage.

Classroom Building - Estimated Outage - 24 Hours
Seretean Center for Performing Arts - Estimated Outage 24 Hours
Fire Station - Estimated Outage - 24 Hours
PROJECT 8: GUNDERSON SWITCH UPGRADE

This project consists of installing the underground infrastructure and cabling that will support the new facilities upgraded from 2.4kV to 12.5kV.

Start Date: June 30, 2018
Project Length: 5 days

Area/Buildings affected:
- Old Central - Expected Outage - 4 Days
- Gunderson Hall - Expected Outage - 4 Days
- Alumni Center - Expected Outage - 4 Days

All outages will occur near the end of the project and each buildings manager will be notified prior to the outage.
PROJECT 9: MATH SCIENCE UPGRADE

THIS PROJECT CONSISTS OF INSTALLING THE UNDERGROUND INFRASTRUCTURE AND CABLES THAT WILL SUPPORT THE NEW FACILITIES UPGRADED FROM 2.4KV TO 12.5KV

Start Date: December 17, 2018
Project Length: 20 days

Area/Buildings affected
PIO Building - Expected Outage - 48 Hours
Math Sciences - Expected Outage - 48 Hours
ITLE Building - Expected Outage - 48 Hours

ALL OUTAGES WILL OCCUR NEAR THE END OF THE PROJECT AND EACH BUILDINGS MANAGER WILL BE NOTIFIED PRIOR TO THE OUTAGE.
PROJECT 10: MURRAY UPGRADE PROJECT

This project consists of installing the underground infrastructure and cabling that will support the new facilities upgraded from 2.4kV to 12.5kV.

Start Date: Summer, 2018 ( contingent on equipment delivery)
Project Length: 20 days

Area/Buildings affected:
- Murray Hall - Expected Outage - 48 Hours
- North Murray Hall - Expected Outage - 48 Hours
- Stout Hall - Expected Outage - 48 Hours
- Wentz Parking Garage - Expected Outage - 48 Hours

All outages will occur near the end of the project and each buildings manager will be notified prior to the outage.
PROJECT 11: CITD/TENNIS UPGRADE PROJECT

This project consists of installing the underground infrastructure and cabling that will support the new facilities upgraded from 2.4kV to 12.5kV.

Start Date: June 15, 2018
Project Length: 3 days

Area/Buildings affected:
- Wes Watkins CITD Bldg - Expected Outage - 48 Hours
- Greenwood Tennis Center - Expected Outage - 48 Hours

All outages will occur near the end of the project and each buildings manager will be notified prior to the outage.

PULL NEW 15KV CABLE IN EXISTING BORED CONDUIT

REFEED EXISTING SWITCHGEAR WITH 12.470V SERVICE

NEW CABLE PULL THROUGH EXISTING DUCTBANKS
PROJECT 12: AGRICULTURE UPGRADE PROJECT

THIS PROJECT CONSISTS OF INSTALLING THE UNDERGROUND INFRASTRUCTURE AND CABLING THAT WILL SUPPORT THE NEW FACILITIES UPGRADED FROM 2.4KV TO 12.5KV

Start Date:
Infrastructure in East bldg - Summer 2018
South transformer upgrade - Summer 2018
(Contingent on transformer arrival)
East & North transformer upgrade - Fall Break or Thanksgiving
Project Length: Varies by area

ALL OUTAGES WILL OCCUR NEAR THE END OF THE PROJECT AND THE BUILDINGS MANAGER WILL BE NOTIFIED PRIOR TO THE OUTAGE.

Area/Buildings affected
Agriculture Building - Expected Outages -
South End - 48 Hours
Northwest - 24 Hours
Northeast - 3 Days
PROJECT 13: 4-H / AGRICULTURE NORTH UPGRADE PROJECT

THIS PROJECT CONSISTS OF INSTALLING THE UNDERGROUND INFRASTRUCTURE AND CABLING THAT WILL SUPPORT THE NEW FACILITIES UPGRADED FROM 2.4KV TO 12.5KV

Start Date: Summer 2018
Project Length: 15 days

Area/Buildings affected
4-H Youth Development Bldg - Expected Outage - 48 Hours
Agriculture North Bldg - Expected Outage - 48 Hours

ALL OUTAGES WILL OCCUR NEAR THE END OF THE PROJECT AND THE BUILDINGS MANAGER WILL BE NOTIFIED PRIOR TO THE OUTAGE.
PROJECT 14: PHYSICAL SCIENCE UPGRADE

THIS PROJECT CONSISTS OF INSTALLING THE UNDERGROUND INFRASTRUCTURE AND CABLING THAT WILL SUPPORT THE NEW FACILITIES UPGRADED FROM 2.4KV TO 12.5KV

Start Date: Install Conduits in Bldg - Summer 2018
Upgrade Switchgear and Transformers - December 2018
Project Length: Varies by Task

Area/Buildings affected
Physical Science 1 - Expected Outage - 24 Hours
Physical Science 2 - Expected Outage - 4 Days

ALL OUTAGES WILL OCCUR NEAR THE END OF THE PROJECT AND THE BUILDINGS MANAGER WILL BE NOTIFIED PRIOR TO THE OUTAGE.
Project 15: Life Sciences East & West Re-feed Project

This project consists of installing the underground infrastructure and cabling that will support the existing buildings upgrade from 2.4KV to 12.5KV.

Start Date: TBD - 2018
Project Length: 5 days
Area/Buildings affected
Life Sciences East
Life Sciences West
24 Hour or Less Outage Required for Each Building
POWER DISTRIBUTION CENTER PROJECT

THIS PROJECT CONSIST OF A NEW DISTRIBUTION SWITCHING CENTER FOR ALL THE CAMPUS POWER DISTRIBUTION. THE POWER DISTRIBUTION CENTER IS FED FROM THE OG&E MCELROY SUBSTATION AND THE NEW UNIVERSITY SUBSTATION LOCATED AT PIONEER AND VIRGINIA. THE NEW DISTRIBUTION CENTER IS REQUIRED TO RETIRE AND DEMOLISH THE OSU/POULTRY SUBSTATION ON HALL OF FAME.

Area/Buildings affected
Parking Lot #49E
Parking Lot #53
University Health Center
Lincoln Street

Start Date: May, 2018
Project Length: 8 Months
Phase II Overview

Phase II Outline:

- Prior to Phase II, Power Distribution Center is required to be constructed.
- Existing 2400V lines from poultry sub will be replaced with new feeds from power distribution center.
- Upon completion, poultry substation can be demolished.
- Will re-use existing underground infrastructure where practical and identified during design.
### Voltage Upgrade Phase 1 Schedule

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<th>Project Name</th>
<th>Start</th>
<th>Complete</th>
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These schedules will float
Questions