Director’s Notes:

It is hard to believe that February is already in its second week! It still feels like it was only a few weeks ago that we rang in the year 2019. At the rate at which the days are fast moving, 2019 construction season will soon be upon us so new projects are being queued up through the bidding and award process and we will be ready to go. The projects will include multiple electric car charging stations under the sustainability realm. Of course, projects that are already under construction will continue as soon as the weather breaks.

One of the presentations I recently attended was the 52nd Mid Atlantic Quality Assurance Workshop. It was a presentation on Roller Compacted Concrete (RCC) by a pavement design engineer Andrew Johnson. We have been using RCC for both rehabilitation and maintenance of our dams. It was used in the rehabilitation of the Lyman Run dam and lately Chapman dam. Many of DCNR dam embankments are earthen. These dams were designed and constructed many decades ago. While the dams continue to serve their purpose of impoundment of water for flood control or recreation, a disadvantage of an earthen embankment is that faced with extreme flooding, there is always a danger of erosion and breaching of the embankment or seepage. So, roller compacted concrete is used to armor or overlay earthen embankments to make them more resistant to the effects of erosion. One of the adaptation measures DCNR has established and is geared towards adapting our infrastructure to the effects of climate change, is to armor our earthen dam embankments with roller compacted concrete. This will make them more resistant to flooding in the event of extreme storms and consequent flooding as well as more resistant to seepage and its concomitant effects.

Continued page -2-
Directors Notes

…Continued

Roller Compacted Concrete (RCC) shown here being compacted in multiple lifts

On January 9, 2019, Greg Czarnecki, Wayne Nguyen and I attended the National Council of Sciences and the Environment (NCSE) conference in Washington DC. We were presenters at the NCSE 2019 annual conference on Sustainable Infrastructure and Resilience. Greg kicked off the presentation with information about what DCNR is doing generally in the realm of climate change mitigation and adaptation. I followed with presentation of what we are doing with respect to adaptation of our buildings, dams, water and waste water treatment infrastructure to the effects of climate change. I also discussed our green initiative on solar array and electric vehicle charging stations installations and how that is tied to mitigation. Wayne took a deeper dive into our efforts to adapt our bridge and culvert structures to the effects of climate change. The presentation was well-received. We also had the opportunity to attend other presentations and hear what other agencies are doing with respect to climatic change adaptation and mitigation.

The Bureau of Facility Design and Construction held her annual holiday luncheon on December 19th. It was an opportunity to get our staff together in a non-work environment and break bread. Held at the ABC restaurant, we used the opportunity to recognize and honor those on our staff that have reached crucial milestones in their careers with the Commonwealth of Pennsylvania. I was joined by Deputy Secretary Norbeck and Secretary Cindy Dunn in presenting longevity awards to our staff. Congratulations to Teresa Allen (5), John Tovcimak (25), Shawn Beeler PE (25), Tim Bucci (20), Dick McKool (20) and Ben Cassidy (10).

Pictured (left to right) FDC Director, Alfred Uzokwe, PE, FDC Bridge and Roadway Management Section Chief, Wayne Nguyen, PE and Gregory Czarnecki, Wild Resource Conservation Program Director, Bureau of Forestry gave a presented at the NCSE Conference in Washington DC on January 9

Teresa Allen, Procurement Specialist
5-years Commonwealth Service
Director Alfred Uzokwe PE, Teresa Allen, Deputy Secretary John Norbeck, Division Chief Al Thomas PE

John Tovcimak, Environmental Engineer
25-years Commonwealth Service
Director Alfred Uzokwe PE, John Tovcimak, Secretary Cindy Adams Dunn, Deputy Secretary John Norbeck, Division Chief Al Thomas PE
On 17th of December 2018, Secretary Dunn hosted a DCNR holiday open house. The open house was kicked off with holiday songs rendered by the Earth Tones. This was followed by Mike and Mike who played several favorite songs, sometimes along with guest performers. Again, I had the opportunity to play some holiday songs with Mike and Mike. Other performers – Sarah Nicholas and Mike Walsh played the banjo at other times while Katie Woodbury sang. I had fun and hope others did.

Finally, FDC bureau-wide meeting will take place on March 20th, 2019, from 8:30 to 12:30PM. We use this meeting to discuss some of our past accomplishments with respect to projects as well as discuss project plans for the future. This year will feature presentations from Gene Strick and Anthony Giacobbe, both regional engineers for the North Central and Eastern regions as well as the architectural section manager – Mike Twigg and Bridge Section Manager – Wayne Nguyen. Other presenters include Teresa Allen – Contracts Section Manager and John Timbrell – Survey section manager. Secretary Dunn and Deputy Secretary Norbeck will be on hand for some remarks while some DCNR bureau directors will also make some remarks. Guest presenters will come from DEP and Fish & Boat Commission.
As a continuation of DCNR’s Sustainability Initiative, two recent solar array installations at Fort Washington and Moraine state parks have been completed achieving two more milestones in saving money and reducing DCNR’s carbon footprint. These ground mounted solar arrays are the first of its kind installed at any Pennsylvania state park providing “net metering” and “virtual net metering” schemes that will make an environmental and renewable energy impact for DCNR.

The widespread deployment of net metering in Pennsylvania has been profound in the renewable electricity generation market. Net metering measures the difference between the electricity supplied by the electric utility company and the electricity supplied by the customer-generator (solar array). Solar array production may offset part or all the customer’s annual electricity consumption requirements for a particular metered electric account. Pennsylvania’s electric utility companies, which are referred to as electric distribution companies (EDC’s), are required in Chapter 75 of The Pennsylvania Code (Alternative Energy Portfolio Standards) to provide net metering to customer generators, whereas the rural electric cooperatives (REC’s) are not required to provide net metering but may elect to develop rules of their own to allow it. Since net energy metering requires that the meter measure two quantities, energy delivered by the EDC to the customer and energy delivered by the customer to the EDC, the traditional dial or electronic type meter at the point of interconnection shall be upgraded to an electronic “bi-directional” meter that displays and records the “net” or difference in energy and thus fulfilling the net energy metering requirements.

An attractive option to net metering is “virtual” net metering (i.e. meter aggregation) which allows other metered accounts owned by the same customer on the same owned property, and under the same EDC, to be offset by the generator source. The EDC’s include a net metering rider allowing a meter aggregation system no larger than 3MW within a 2-mile radius of the solar generation source. The REC’s have different net metering rider policies where some permit a meter aggregation system up to 5MW and may include all metered accounts within the customer’s property regardless if the accounts extend beyond the 2-mile radius rule. Both Fort Washington and Moraine solar arrays are under an EDC, PECO and West Penn Power, respectively.

The 232.56kW ground mounted solar array at Moraine state park is located at the Wastewater Treatment Plant (WWTP) providing a “net metering” scheme, producing an average system output of 272,000 kWh/year, resulting in “net zero” annual electricity usage for the WWTP electric account, and saving approximately $30,000 of electric costs annually. This array is currently the largest DCNR solar array and may remain as the largest even after all future DCNR solar array installations. A “string inverter” method was used for this array where multiple DC circuits, or “strings”, consisting of multiple modules wired in series are interfaced with an inverter that converts all the DC string inputs into one overall AC output circuit. A total of four string inverters were installed for this array. The combined array consists of nine racking systems with each rack containing four rows of eighteen 72-cell modules installed in landscape orientation. The array tilt and azimuth are 30 and 180 degrees, respectively. The racking system foundation consists of metal vertical H-piles that are embedded directly into the ground at depths varying between
12’–11” and 13’–6” and installed near the center of the racking assembly. The length of each pile was a standard 18’–1” and was field cut above grade as required to accommodate any variance in grade resulting in a greater aesthetic that has each rack as being level and with each rack having the lowermost and uppermost sections at generally the same elevations. The piles were driven into the ground vertically underneath the hammer of a pile driving machine applying a constant downward force until the pile stops driving at which point the “push depth” was recorded. From that point on, the hammer was engaged, and the pile was driven the remaining distance to reach the “pile embedment depth” which was also recorded. PSI pressures recorded during this “hammering” process was static at 1,350 psi equating to a downward force of 8,750 ft–lbs.

The 25.5kW ground mounted solar array at Fort Washington state park is located in the open field adjacent to the Park Manager’s residence and Maintenance Complex providing a “virtual net metering” scheme, producing an average system output of 34,000 kWh/year, resulting in “net zero” electricity usage for the entire state park (i.e. 5 metered electric accounts), and saving approximately $4,000 of electric costs annually. A “microinverter” method was used for this array where each module has its own microinverter that performs the DC to AC conversion at the module and where multiple modules are wired in parallel in producing an AC circuit. The array consists of one overall racking system containing five rows of seventeen 60-cell modules installed in landscape orientation. The array tilt and azimuth are 30 and 180 degrees, respectively. The racking system foundation consists of metal vertical cylindrical posts that are embedded in concrete sonotube footer columns located in the front and rear of the racking assembly. A solar array site layout consisting of river stone, split rail wood fencing, and pressure treated timbers was designed by Ben Cassidy, FDC’s Landscape Designer, and installed as part of the solar project to maximize aesthetic appeal.

The FDC design development process for both solar array projects can be broken down into four (4) phases: Site Assessment, Solar Interconnection Application, Bid Document Development, and Solar Interconnection Agreement. The site assessment consists of site visits, shading analysis, calculations, life cycle cost...
Solar Arrays

...Continued

analysis, etc. in determining the most feasible and productive ground mounted solar array size and configuration based on available land area. The solar interconnection application process involves completion and submission of all required paperwork and supporting material (site plan & single line wiring diagram) to the EDC in determining whether utility upgrade work, such as utility transformer and/or primary line upgrades, is required for proper “grid–tied” solar interconnection. Upon approval of the solar interconnection application by the EDC, the bid documents (drawings and specifications) are developed and bid out to electrical contractors and solar installers. The last phase is initiated during bid document development and involves the development of the legal document (solar interconnection agreement) between DCNR and the EDC.

Clean, renewable solar energy is vital to economic growth, environmental protection, and electrical grid resiliency and the recent installation of solar arrays at Fort Washington and Moraine state parks will continue DCNR’s efforts in showcasing and raising awareness of energy use and promoting conservation for many years to come. DCNR will continue to strive and reach its planned goal of 50% renewable energy under the 2017–2019 statewide planning project titled “Finding Pennsylvania’s Solar Future” being led by the DEP Office of Pollution Prevention and Energy Assistance (OPPEA) to equip Pennsylvania in producing more solar energy by 2030.

Project Capsule (Fort Washington)
Project Number: FDC–405–102139
Project Coordinator: John M. Dubaich, P.E.
Project Designer: John M. Dubaich, P.E.
Construction Inspector: Jason Horst
Electrical Contractor: MVE Group, Inc.
Construction Cost: $87,872.64
Fund: 2016 Growing Greener

Project Capsule (Moraine)
Project Number: FDC–210–102161
Project Coordinator: John M. Dubaich, P.E.
Project Designer: John M. Dubaich, P.E.
Construction Inspector: Ronald Carney
Electrical Contractor: Spotts Brothers, Inc.
Construction Cost: $538,612.20

New Storage Building to Aid FD 18 Haldeman HQ Operations

Jim Kalp, LEED AP

FDI continues its support efforts with the Bureau of Forestry in the design, bidding and construction of Equipment Storage Buildings (ESB).

A 5–bay building was recently completed at the Haldeman Maintenance Headquarters in Weiser State Forest, District 18, Dauphin County. The 88–foot by 40–foot building offers 3,372 square feet of protected storage. The 14–foot high doors and floor to ceiling height of 16–feet will accommodate a variety of equipment and storage options. LED lighting fixtures and automated control systems provide energy efficiency and minimize maintenance. This facility provides forestry more operational efficiency in equipment, material and man–hour management.

The project’s site design, included drainage improvements, security fencing and master planning considerations for a new maintenance building complex currently in design.

The new 5–Bay Equipment Storage Building (ESB) provides 3,372 square feet of protected storage space

Project Capsule
Project Number: FDC–018–101676
Project Coordinator: James Kalp, LEED AP
Site Designer: Benjamin Cassidy, PLA, ASLA
Architectural Designer: James Kalp, LEED AP
Electrical Designer: John Dubaich, PE
Construction Manager: Victor Li, PE
Construction Inspector: Jason Horst
General Contractor: JS General Contracting, Inc.
Electrical Contractor: Mark Conner Electric, LLC
Construction Cost: $267,585.00
Elevator Rehabilitation Project
Complete at Washington Crossing

John Dubaich, P.E.

The 125-foot tall Bowman’s Hill Tower provides a scenic overlook of the Delaware River and surrounding countryside

By mid-December 2018, the elevator at Bowman’s Hill Tower was officially put back into service after completion of FDC’s elevator rehabilitation project. Bowman’s Hill Tower is a 125-foot–tall stone tower located in the Upper Section of Washington Crossing Historic Park, Bucks County, on the Upper Makefield Township side of the border between itself and Solebury Township. The base of the tower measures 24 feet on a side. The tower was constructed from native stone quarried from Bowman’s Hill and nearby stone fences.

The tower was erected as a memorial with construction beginning in 1929 and completion in 1931. The placard above the tower entrance reads “1776–1930” to commemorate the American Revolution and to honor the spot about five miles down–river where Washington’s troops crossed the Delaware on Christmas night in 1776, leading up to the Battle of Trenton. By 1934, the tower was struck many times by lightning which resulted in the installation of a lightning protection system.

The tower roof (observation point) boasts a commanding and truly legendary view of the Delaware River and surrounding countryside which can be reached by either climbing the open stone spiral staircase about the elevator approximately three–quarters of the way up followed by an additional narrow 23–step stone spiral staircase, or the elevator in the center of the tower can be used three–quarters of the way up followed by the additional 23–steps. The parapet over the narrow 23–step stone spiral staircase provides a distinctive look for the tower. As you would suspect, the elevator was not part of the original tower and was included in a major DGS rehabilitation project back in 1983. The tower is open seven days a week 10am to 4pm, March through December, weather permitting. The Friends of Washington Crossing Park raise funds to support the park in utilizing the building adjacent to the tower to operate a Visitors Center and gift shop, in addition to collecting admission fees for persons age 6 and older to gain access to the tower.

The elevator is a conventional in–ground hydraulic passenger type with two (2) landings, a weight capacity of 2,100 pounds, and travel length of approximately 60 feet. A small elevator machine room building downhill from the tower and Visitors Center houses the incoming 3–phase electrical service, meter, elevator controller, hydraulic pump unit, and all related electrical distribution equipment. All interconnecting electrical conduit and hydraulic oil lines are buried underground between the tower and the elevator machine room. The major scope of work for this rehab project was to replace the old and obsolete hard–wired relay logic type elevator controller with a new microprocessor–based controller that provides smooth, comfortable car acceleration, retardation, and dynamic braking. The old controller has become unreliable over the last several years causing frequent extended shutdowns of the elevator at considerable service costs.

Rehabilitation work in Bowman’s Hill Tower included hall call button stations, hall lantern, top of elevator car renovations, elevator car door motor operator, door protective and reopening device, elevator pit renovations, hoistway door alterations, hoistway shaft traveling cables, hoistway power and control wiring, heat detector in vestibules, and car operating panel. Firefighter’s Service Phase I, or referred to as “elevator recall”, was incorporated into the elevator control system.

Continued page -8-
Elevator Rehab

which, upon activation of either the upper level landing heat detector or the smoke detector in the elevator machine room building, will automatically return the elevator car to the lower level landing for passenger exit. The elevator will return to the upper level landing should the heat detector on the lower level landing activates. In addition, the Phase I feature is included in the hall call button station on the lower level by a three-position (on/off/reset) key-operated switch. Similarly, Firefighter’s Service Phase II is included in the car operating panel by a three-position (on/off/hold) Landing Fire Service key-operated switch for use by trained emergency service personnel.

Rehabilitation work in the elevator machine room building included a dedicated disconnect switch and circuit for the elevator car (lights & ventilation fan), fire rated/self-closing/self-locking machine room door, through-the-wall air conditioner, and the elevator controller.

The completion of this project will provide a safe, reliable, and enhanced passenger elevator system for many years to come and is a prime example of FDC’s ability to analyze the physical and operational challenges associated with a specialized elevator system, and develop a resolution in accordance with applicable elevator codes and Labor & Industry (Elevator Division) requirements in allowing the public to continue to experience this unique tower and all it has to offer.

**Project Capsule**

*Project Number: FDC-461-102125*
*Project Coordinator: John M. Dubaich, P.E.*
*Project Designer: John M. Dubaich, P.E.*
*Construction Manager: Tony Giacobbe, P.E.*
*Construction Inspector: Tim Bucci*
*Electrical Contractor: Donald E. Reisinger, Inc.*
*Elevator Service Company: Pincus Elevator Company*
*Construction Cost: $153,500.00*
Repair Work at Laurel Mountain’s Oak Pond Complete

John P. Jaskolka, P.E., Jim Kalp, LEED AP

High atop Laurel Ridge at close to 3,000 feet in elevation, Laurel Mountain State Park features downhill skiing area and beautiful views of the rolling countryside of the Ligonier Valley. The slopes and trails provide opportunities for skiers and snowboarders of all levels and the lodge is a cozy place to eat and enjoy the view. Opened in 1939, Laurel Mountain was one of the first ski areas in Pennsylvania. The resort is operated by Seven Springs with DCNR maintaining its role as steward of park resources.

A containment structure known as the oak pond, is one of several structures used to collect and store up to 24,000,000 gallons of water for snow making at the ski area. In February of 2018 erosion of the down slope embankment developed. Believed to be caused by overtopping from heavy rains and snowmelt, an erosion gulley formed in the embankment resulting in a safety concern. If not repaired quickly, the erosion could lead to a full failure of the embankment wall structure causing significant damage to the pond structure and down slope flooding.

The designed repairs included stepped benched excavations 8' wide by approximately 3.5' deep for a length of approximately 60' across the pond embankment with placed and compacted select backfill material. The embankment berm in which the overtopping occurred was also raised approximately 6 to 8 inches to match elevation of the surrounding berm.

Access to the pond which must be made by traversing down the mountainside became a hardship due to all the rain and ensuing mud. The project was slightly delayed until weather permitted stable enough ground to safely access the site. The repair work was successfully completed by the end of October ensuring the safety concerns of the compromised embankment would not negatively impact the water volume storage for snow making capacity.

Project Capsule
Project Number: FDC–218–102512
Project Coordinator: John P. Jaskolka, P.E.
Project Designer: John P. Jaskolka, P.E.
Construction Manager: Scott L. Schaffer
Construction Inspector: Jamie Pritts
General Contractor: G. Salandro Excavating, LLC
Construction Cost: $41,500.00
BoFDAC news

Works in Progress

The following photographs represent some of BoFDAC’s active construction efforts throughout DCNR.

**FDC-406-101151 – French Creek State Park**
- Repairs to Scotts Run & Hopewell Dams
- Repointing the stone masonry spillway base at Scotts Run Dam

**FDC-406-101151 – French Creek State Park**
- Repairs to Scotts Run & Hopewell Dams
- Repairs being made to the spillway fence at Hopewell Dam

**DGS 142-4 – Ryerson Station State Park**
- Improvements & Construction for Recreational & Educational Facilities
- New showerhouse construction
- A directional drilling machine is used to install utility piping

**DGS 134-3 – Chapman State Park**
- Dam Renovations Chapman Lake
- High water events have been a recurring issue on the site

**FDC-131-101931 – Shikellamy State Park**
- Rehabilitate Kury Point
- Asphalt paving work completed
**Works in Progress**
The following photographs represent some of BOFDAC’s active construction efforts throughout DCNR

**FDC-800-102187 (Design/Build) – Replace Four (4) Structures**
Forest District 6 – Babcock Creek Road over Babcock Creek
Contractors set a precast concrete bridge section

**FDC-304-1557 Colonel Denning State Park**
Replace Comfort Station and Bath House
Contractor installing siding and compacting subgrade

**FDC-450-7356 – Delaware Canal State Park**
Structure Replacement Phillips Mill Road Over Delaware Canal
A wood frame truss mimics historical aesthetics

**DGS 151-1 – Caledonia State Park**
Rehab Campground Restroom & Shower Houses
Interior tile and finish installation

**DGS 196-11 – Tuscarora State Forest**
Permanent Breach of the Gunter Valley Dam
The spillway is filled and graded

**FDC-213–101028– Racoon Creek State Park**
Structure Replacement Racoon Park Road Over Traverse Creek
Workers place and finish concrete for the new bridge deck
Emergency Road Repairs
Linn Run Road

John P. Jaskolka, P.E., Jim Kalp, LEED AP

Linn Run road is a paved access road that provides visitors access to many points of interest within the Linn Run Division of the 50,000-acre Forbes State Forest. The road also provides access to the popular Linn Run State Park. Points of interest within the Linn Run Division include: P.W. & S Grade is the remains of the Pittsburgh, Westmoreland and Somerset grade and bridges of an old logging railroad which is located along the Linn Run on Fish Run Trail. Grove Run Spring is a walled, much used, spring located along the Linn Run Road. Adams Falls is a miniature water fall located near the Adams Falls Picnic Area. Wolf Rocks provides a view of Linn Run Valley. It can be reached by hiking two miles on the Wolf Rock Trail, which begins at the Laurel Summit Picnic Area. Beam Rocks are located along the Ream Rocks Trail 1/2 mile from the Laurel Summit Road. Bluestone Quarry is located two miles south of Adams Falls along the Linn Run Road. Stone from this quarry was used to pave the streets of Pittsburgh.

On June 20, 2018, the area in/around Linn Run Road in Forbes State Forest were inundated with more than 3.45 inches of rain that caused devastating flash flooding. The culprit was two bands of thunderstorms that moved over the same spots. Damage assessments were conducted shortly thereafter and plans to repair the road began.

The flooding caused significant damage throughout the area. Some of the most significant included the washout and undermining of a section of the rock lined embankment that protected the road from past flooding events. Unfortunately, the volume and force developed from this rain event was far beyond prior events and the roadway sustained severe damage and needed to be closed to traffic. The force of the erosion relocated the stream channel to align with the road.

Upon securing emergency permit authorization through DEP, and issuing an emergency repair contract, work began in August of 2018. The design repair included removal of gravel bar debris to reestablish the location of the stream channel to its natural location. Significant excavation and construction of a dry, sand stone derrick wall using 2-foot thick, 1,000-pound minimum stones to reestablish the stream embankment and roadway alignment; placement and compaction of select aggregate fill material which included much of the gravel bar and embankment debris. The existing roadway surface was removed, and new subbase placed, followed by an asphalt base course and wearing course. To complete the repair work guide rail was installed.

The completion of this project once again provides a safe usable road for public access thru the State Forest and access to Linn Run State Park and all the recreational opportunities these places have to offer.

<table>
<thead>
<tr>
<th>Project Capsule</th>
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<tbody>
<tr>
<td><strong>Project Number:</strong></td>
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<td><strong>Project Coordinator:</strong></td>
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<td><strong>Project Designer:</strong></td>
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<td><strong>Construction Manager:</strong></td>
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<td><strong>Construction Inspector:</strong></td>
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<tr>
<td><strong>General Contractor:</strong></td>
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<tr>
<td><strong>Construction Cost:</strong></td>
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Since October 2018, a total of six (6) electric vehicles (EV) charging station projects were completed at Washington Crossing, Pine Grove Furnace, Codorus, Black Moshannon, Moraine, and Lackawanna state parks. These charging station sites add to the first two (2) EV charging station sites (Kinzua Bridge and Prince Gallitzin) that were completed at the end of May 2018 and highlighted in the August/October 2018 edition of the BOFDAC newsletter. The continued development of EV charging station infrastructure exemplifies DCNR’s mission to conserve and sustain natural resources through its green and sustainability initiative.

Lackawanna was the only site out of the six that was able to utilize an existing metered electric account and associated panel to provide the necessary power to the EV charging stations. The stations are located in the amphitheater parking lot and the outdoor electrical kiosk adjacent to the amphitheater supports the meter and panel. The remaining five (5) state park sites required a new metered electric account and a new electric utility service drop that required a new utility owned transformer or an upgrade to an existing utility owned transformer. The electric service requirement for the EV charging stations is single phase, 120/240 volts, 3-wire. The EV charging station parking lot locations at Washington Crossing, Pine Grove Furnace, Codorus, Black Moshannon, and Moraine are at the Visitors Center, Bendersville Road, Upper Marina, Route 504 Day Use, and North Shore Bike Concession, respectively.

The EV charging stations and pedestals are manufactured by ClipperCreek. The pedestals are mounted with concrete anchor bolts to sonotube concrete footers. Each EV charging station pedestal accommodates two (2) charging stations where each station operates at single phase, 240-volts AC, with a maximum power output rating of 11.5kW (48 amps). A 2-pole, 60-amp branch circuit breaker and associated single phase electrical circuit is required for each EV charging station and therefore, if there is enough space and capacity in the panel for increased load, a total of two (2) circuits in an underground ductbank is required between the panel and the pedestal. Otherwise, if the panel is limited in space or nearing load maximization, a factory installed “Share 2” communications is provided in each charging station allowing the pair of chargers on the pedestal to share power supplied by one (1) branch circuit breaker. Full (100%) charging capacity is available to a vehicle if it is the only vehicle being charged at a pedestal location. Each charging station will offer half (50%) charging capacity when two (2) vehicles are being charged simultaneously at a pedestal location, thus sharing the branch circuit breaker.

All the EV charging stations installed at DCNR site locations are categorized as Level 2 (L2) power level. L2 chargers can operate at either 208-volt or 240-volt AC and can either be wall or pedestal/free standing post type. L2 charging time takes between 4 to 6 hours equating to about 10 to 20 miles of electric range per hour of charging depending on the electric vehicle. Each station is provided with a 25-foot charging cable and LED status indicators for power, vehicle charging, power fault, and charging fault.

One of six recently installed EV charging stations, this one is located at Washington Crossing Historic Park

One of six recently installed EV charging stations, this one is located at Lackawanna State Park

Continued page -15-
### Bidding Summary - October 2018

<table>
<thead>
<tr>
<th>Project Code</th>
<th>Project Description</th>
<th>Bid Price</th>
<th>Apparent Low Bidder</th>
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<tbody>
<tr>
<td>FDC-216-7308.1</td>
<td>Yellow Creek State Park General Construction – Beach Area Rehabilitation</td>
<td>$954,277.50</td>
<td>Mid-State Construction</td>
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<tr>
<td>FDC-216-7308.2</td>
<td>Yellow Creek State Park Mechanical Construction – Beach Area Comfort Station</td>
<td>$17,150.00</td>
<td>Marc-Service Inc.</td>
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<td>FDC-216-7308.3</td>
<td>Yellow Creek State Park Plumbing Construction – Beach Area Comfort Station</td>
<td>$58,300.00</td>
<td>McRandal Plumbing &amp; Heating Co Inc.</td>
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<tr>
<td>FDC-216-7308.4</td>
<td>Yellow Creek State Park Electrical Construction – Beach Area Comfort Station</td>
<td>$69,833.00</td>
<td>Mashan Inc.</td>
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### Bidding Summary - November 2018

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<td>FDC-018-102371.2</td>
<td>Weiser State Forest Boiler Replacement - RMC</td>
<td>$57,900.00</td>
<td>Leibold Inc.</td>
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<tr>
<td>FDC-452-101711.1</td>
<td>Norristown Farm Park Structure Removal – Bridge No. 452-1502 / No. 452-1503</td>
<td>$370,000.00</td>
<td>Road-Con Inc.</td>
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<td>FDC-002-102327.4</td>
<td>Buchanan State Forest Roof Mounted Solar Array Installation</td>
<td>$98,699.00</td>
<td>Spotts Brothers Inc.</td>
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### Bidding Summary - December 2018

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<td>FDC-003-101770.1</td>
<td>Tuscarora State Forest Structure Replacement – Bridges 03-0029 and 03-0042</td>
<td>$531,600.17</td>
<td>Jay Fulkroad &amp; Sons Inc.</td>
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<td>FDC-020-102152.1</td>
<td>Forest District #20, Loyalsock St. Forest Flood Repairs DR – 4292 - Areas 1 &amp; 3</td>
<td>$282,174.00</td>
<td>Glenn O. Hawbaker Inc.</td>
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<td>FDC-316-102050.1</td>
<td>Codorus State Park Roof Replacement and Repair to Campground Wash House</td>
<td>$136,858.60</td>
<td>KLA Roofing &amp; Construction LLC</td>
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<td>FDC-532-101494.1</td>
<td>Nescopeck State Park 3 - Bay Storage Building - General</td>
<td>$306,022.00</td>
<td>Martin’s Construction LLC</td>
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<td>FDC-532-101494.1</td>
<td>Nescopeck State Park 3 - Bay Storage Building - Electrical</td>
<td>$29,995.00</td>
<td>TRA Electric Inc.</td>
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</tbody>
</table>

**INTERESTED IN DOING WORK FOR DCNR?**

For a list of current projects out for bid, visit the Bureau's current bid proposal page at:

[http://www.dcnr.pa.gov/Business/ConstructionBids/Pages/default.aspx](http://www.dcnr.pa.gov/Business/ConstructionBids/Pages/default.aspx)

Be sure to check back frequently for updates.

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**BOFDAC news**
The EV Charging Station initiative is actively incorporating “accessibility” into the design development process where parking lot modifications are required to address the accessibility issue. A total of three parking spaces will need to be utilized in lieu of two where the one space in the middle becomes the “No Parking Zone” or access aisle and the outer spaces are for EV charging. Although accessibility is not currently a mandated criterion, DCNR is being pro-active and exercising due diligence to provide exceptional service to all park visitors. To maintain consistency, a standard “Charging Station – Electric Vehicles Only” sign for each EV space is being furnished to the state parks by DCNR’s Central Office.

The total number of installed and operable EV charging station locations for public use at state parks is eight (8) with many more locations on the horizon which include Forest Districts as well. Stations at Bald Eagle park office, Hickory Run’s new visitors center, and Colonel Denning’s new comfort station are currently under construction as part of the change order process under FDC or DGS construction projects. As highlighted in the August/October 2017 edition of the BOFDAC newsletter, eight (8) non-public charging stations were installed in July 2017 at Harrisburg’s 5th Street Parking Garage adjacent to the Rachel Carson State Office Building for DCNR’s Central Office EV and Hybrid car pool vehicle fleet. An upcoming project to install an additional four (4) charging stations at this same parking garage location is imminent.

Regional consolidation of EV charging station projects is forthcoming commencing with Region 2 where a single construction project will include the installation of charging stations at Jennings, Keystone, McConnell’s Mill, Ohio Pyle, Oil Creek, Pymatuning, and Raccoon Creek. Region 1 consolidation includes Bald Eagle state park Nature Inn, Forest District #12 Tiadaghton (Pine Creek Rail Trail), and Forest District #16 Tioga (Pine Creek Rail Trail). Region 2 consolidation includes Caledonia, Gifford Pinchot, Kings Gap, Little Buffalo, and Shawnee. Northern Region 4 consolidation includes Promised Land, Ricketts Glen, and Worlds End. Southern Region 4 consolidation includes Delaware Canal, Fort Washington, Marsh Creek, Nockamaixon, Nolde Forest, and Ridley Creek. Three (3) EV charging station locations at Presque Isle state park will be consolidated into one project where the locations include TREC, Beach 8, and the Marina.

Continued page –17–
Generator Hook-Up Available at Park Region 2 Office

John Dubaich, P.E.

The project provides for a portable emergency generator hook-up at the Park Region 2 office

At the end of December 2018, a quick connect power panel was installed on the rear exterior wall of Park Region 2 Office on the grounds of Moraine State Park. The panel provides a reliable, convenient, and economical way to connect a portable standby generator in keeping the Park Region 2 Office operating during extended electric utility power outages.

A beneficial feature of the panel includes the use of standard cam lock receptacles for quick connections to the generator via cam lock flexible power cables. The panel is a wall-mounted Nema 3R weatherproof enclosure with lockable doors to prevent unauthorized entry and providing protection to the dead front panel, and also has a cable protect lock plate to reduce risk of cable tampering and theft.

A transfer switch was installed in conjunction with the quick connect power panel to allow switching between normal electric utility power source and standby generator power source. The switch is installed in the electrical/mechanical room and is electrically wired in between the existing building disconnect switch and the existing building main distribution panel. A non-automatic transfer switch was installed under this project in lieu of an automatic or manual transfer switch.

Automatic transfer switches are expensive and are used with permanent generator systems providing automatic switching from normal to generator power source upon loss of normal electric utility power. Upon re-energization of the normal power source, the switch will automatically retransfer from generator to normal source. Manual and non-automotive transfer switches are similar but operate under slightly different circumstances. Non-automatic transfer switches cannot transfer or operate if it doesn’t detect an acceptable back-up power source to transfer to. Push button controls are found on non-automatic transfer switches and offer fast switching similar to automatic transfer switches and thus reducing arc flash concerns within the switch. Manual transfer switches do not have any sort of source sensing and are strictly user operated via a handle or lever on the front of the switch allowing you to switch between dead sources or live sources. Due to the slower switch transfer speeds as a result of the manual process, arc flash concerns are elevated for manual transfer switches when switching from or to live sources.

Utilization of a non-automatic transfer switch for this project was determined to be the most feasible, safe, and economical option. Proper operation of the switch requires connection and start-up of the portable generator first before a transfer can occur since the switch will sense the availability of back-up power. Both the transfer switch and the quick connect power panel are rated for a 3-phase, 208Y/120 volt, 4-wire, 400-amp power distribution system matching the 400-amp rating of the building disconnect switch and main distribution panel.

Park Region 2 Office is prone to power outages throughout the year and completion of this project provides the means to connect a back-up/standby generator power source. In fact, a four (4) day power outage occurred this past November 2018 where this generator hook-up system would have been beneficial but unfortunately, this project was under construction at that time. A reliable supply of temporary power during any power outage at the Park Region 2 Office or if maintenance is required on any electric service equipment upstream of the non-automatic transfer switch has been achieved through this project providing a “peace of mind” to all the occupants in the building.

Project Capsule

Project Number: FDC–200–102205
Project Coordinator: John M. Dubaich, P.E.
Project Designer: John M. Dubaich, P.E.
Construction Manager: John Jaskolka, P.E.
Electrical Contractor: Wagner Electric and Construction, LLC
Construction Cost: $23,032.00
**Bidding Summary - January 2019**

<table>
<thead>
<tr>
<th>Project ID</th>
<th>Description</th>
<th>Bid Price</th>
<th>Apparent Low Bidder</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDC-451-101418.1</td>
<td>White Clay Creek Preserve New Roof on White Clay Office Building</td>
<td>$60,000.00</td>
<td>Ismail &amp; Sons Inc.</td>
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<tr>
<td>FDC-313-102584.1R</td>
<td>Shawnee State Park Repair Structure, Bridge No. 6313 - 1202</td>
<td>$439,660.45</td>
<td>Cottle’s Asphalt Maintenance</td>
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<tr>
<td>FDC-010-102221.1</td>
<td>Sproul State Forest Structure Replacement – Bridge No. 10 - 0024</td>
<td>$357,415.00</td>
<td>Lycoming Supply Inc.</td>
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<td>FDC-013-101808.1</td>
<td>Structure Replacement – Bridge No. 13 - 0069</td>
<td>$671,853.50</td>
<td>LTT Trucking LLC</td>
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<tr>
<td>FDC-009-100860.1</td>
<td>Forest District 9 – Moshannon St. Forest Beaver Run Dam Repairs</td>
<td>$198,954.99</td>
<td>Lycoming Supply Inc.</td>
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<td>FDC-002-101775.1</td>
<td>Buchanan State Forest Structure Replacement – Bridge No. 02 - 0007</td>
<td>$257,177.30</td>
<td>Wen-Brooke Contracting Inc.</td>
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<td>FDC210-2036.1</td>
<td>Moraine State Park-Rehabilitate 9 of 17 Miles of Watermain</td>
<td>$3,785,000.00</td>
<td>Horizon Construction Group Inc.</td>
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</table>

**Bid Summary Values:**
- October Total Bids/Value: 4/$1,099,560.50
- November Total Bids/Value: 7/$2,233,006.44
- December Total Bids/Value: 5/$1,286,649.77
- January Total Bids/Value: 7/$5,770,061.24

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**Bureau Activities & News**

- FDC’s annual bureau-wide meeting will take place on March 20th, 2019, from 8:30 to 12:30PM at the RCSOB auditorium.

**Questions – Comments?**
We value our reader’s feedback. Send your questions or comments to:

Chief Editor: Jim Kalp, [jakalp@pa.gov](mailto:jakalp@pa.gov)
Contributing Editor: Seeking Volunteers!
Administrative Support: Sharia Turner, [sharturner@pa.gov](mailto:sharturner@pa.gov)

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**Bureau Mission:**
To provide multi-disciplined technical support to the other bureaus in DCNR in the areas of project design, project inspections, construction management, contract administration, surveying and other technical advice and consultation.

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**EV Charging Station …Continued**

DCNR continues to lead the way among Commonwealth agencies to expand the opportunity for electric transportation by advancing this technology that uses far less energy, produces no tailpipe emissions, and lowers maintenance and fuel costs compared to gasoline-powered vehicles. The use of EV’s and the development of EV charging station infrastructure is on the rise due to growing consumer demand, zero-emission vehicle targets, and breakthroughs in battery technology. This EV technology is environmentally friendly, reduces carbon footprint, and will promote conservation, clean energy, and transportation goals in meeting DCNR’s green and sustainable mission and objectives.

**We’re on the Web!**
Visit us at: [http://www.dcnr.pa.gov/about/Pages/Facility-Design-and-Construction.aspx](http://www.dcnr.pa.gov/about/Pages/Facility-Design-and-Construction.aspx)