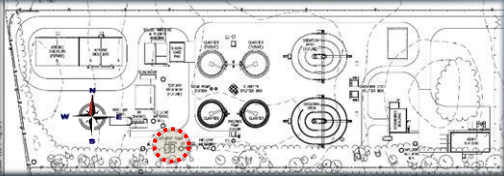


Ashville's WRRF Project

Construction in Photos

The Influent Pumping Station is where wastewater from the Village's collection system (influent) enters the processing plant and is pumped to the beginning of the treatment process. It receives flow from the "Force Main" and "Gravity Main". The "Force Main" is flow south of Station Street and the "Gravity Main" is flow north of Station Street.



Influent Pump Station

Ashville's WRRF Project

Construction in Photos

- March 2, 2017
- Installing anchor bolts and setting the pump bases in the Influent Pump Station wetwell.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

- March 3, 2017
- Installed bottom section of the pump guide rails and pipe wall brackets in the Influent Pump Station wetwell.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

- March 8, 2017
- Installed top sections of pump guide rails; the jib crane sockets and set the top slab on the Influent PS wetwell.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

- March 14, 2017
- Installed electrical conduit from MH#1 to the Influent Pump Station valve building.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

- March 15, 2017
- Encased the conduit run from MH#1 to the Influent PS valve Building with 7 yards of 4000 psi concrete and installed the 4" Sch-80 PVC pipe for the level transducer in the wetwell.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

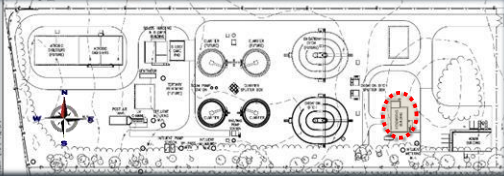
- March 15, 2017
- Working on installing the control panel in the Influent Pump Station valve building.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

The "Headworks Building" is the initial process after receiving flow from the "Influent Pump Station". Solid material is removed before going to the Oxidation Ditch. It is the building that houses influent trash screens and dewatering system.



Headworks Buildings

Ashville's WRRF Project



Construction in Photos



- March 3, 2017
- Mason crew stacking split face block at the Headworks Building.
- Job No: 60440011

Ashville's WRRF Project



Construction in Photos



- March 6, 2017
- Mason crew installing the cavity drainage material, 2" rigid insulation and split face block at the Headworks Building.
- Job No: 60440011

Ashville's WRRF Project



Construction in Photos



- March 7, 2017
- Mason crew installing some wall anchors for the 2" rigid insulation for the Headworks Building.
- Job No: 60440011

Ashville's WRRF Project



Construction in Photos



- March 8, 2017
- Mason crew installing 2" rigid insulation and laying split-face block at the Headworks Building.
- Job No: 60440011

Ashville's WRRF Project



Construction in Photos

- March 9, 2017
- Mason crew installing split-face block at the Headworks Building.
- Job No: 60440011

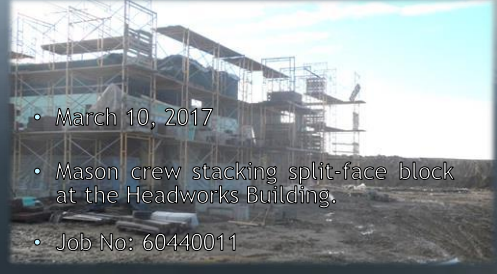


Ashville's WRRF Project



Construction in Photos

- March 10, 2017
- Mason crew stacking split-face block at the Headworks Building.
- Job No: 60440011

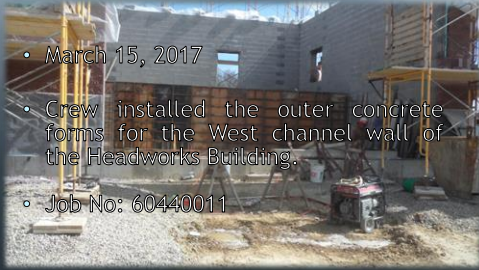


Ashville's WRRF Project



Construction in Photos

- March 15, 2017
- Crew installed the outer concrete forms for the West channel wall of the Headworks Building.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos

- March 17, 2017
- Mason crew installing 2" rigid insulation and split-face block at the Headworks Building.
- Job No: 60440011

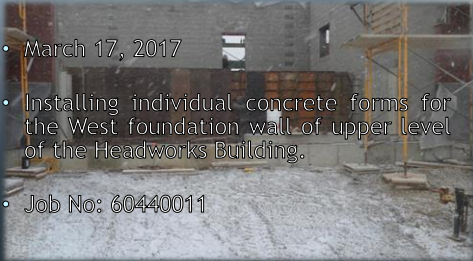


Ashville's WRRF Project



Construction in Photos

- March 17, 2017
- Installing individual concrete forms for the West foundation wall of upper level of the Headworks Building.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos

- March 20, 2017
- Mason crew installing 2" rigid insulation and split-face block at the Headworks Building.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos

- March 21, 2017
- Mason crew installing 2" rigid insulation and split-face block at the Headworks Building.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos

- March 22, 2017
- Mason crew installing 4 yards of 3000 psi grout for the bond beam and block wall sections with rebar at the Headworks Building.
- Job No: 60440011

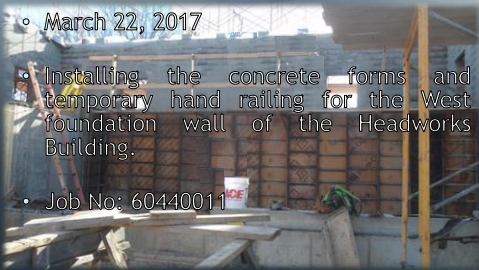


Ashville's WRRF Project



Construction in Photos

- March 22, 2017
- Installing the concrete forms and temporary hand railing for the West foundation wall of the Headworks Building.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos

- March 22, 2017
- Installed #57 gravel in the Slab on Grade areas of the Headworks Building.
- Job No: 60440011

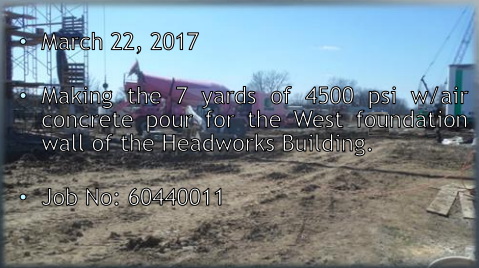


Ashville's WRRF Project



Construction in Photos

- March 22, 2017
- Making the 7 yards of 4500 psi w/air concrete pour for the West foundation wall of the Headworks Building.
- Job No: 60440011

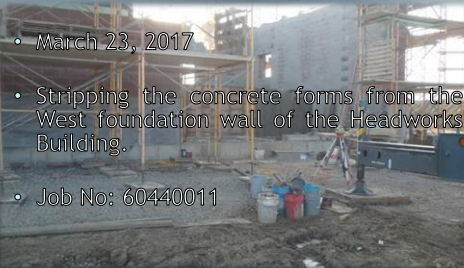


Ashville's WRRF Project



Construction in Photos

- March 23, 2017
- Stripping the concrete forms from the West foundation wall of the Headworks Building.
- Job No: 60440011

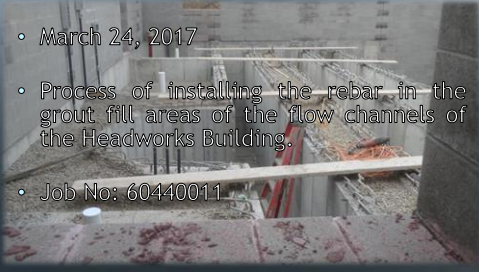


Ashville's WRRF Project



Construction in Photos

- March 24, 2017
- Process of installing the rebar in the grout fill areas of the flow channels of the Headworks Building.
- Job No: 60440011

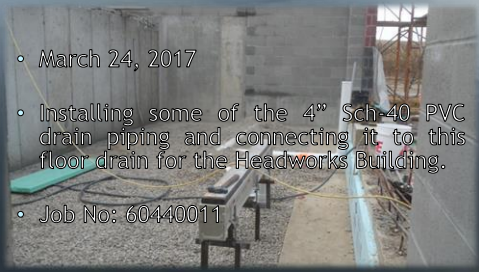


Ashville's WRRF Project



Construction in Photos

- March 24, 2017
- Installing some of the 4" Sch-40 PVC drain piping and connecting it to this floor drain for the Headworks Building.
- Job No: 60440011

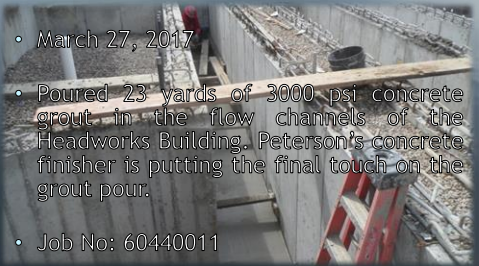


Ashville's WRRF Project



Construction in Photos

- March 27, 2017
- Poured 23 yards of 3000 psi concrete grout in the flow channels of the Headworks Building. Peterson's concrete finisher is putting the final touch on the grout pour.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos

- March 27, 2017
- Installing conduit and pulling control wiring in the Headworks Building electrical room.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos

- March 28, 2017
- Installed 2" rigid insulation, compressive filler and 6 mil vapor barrier for the Slab on Grade area of the Headworks Building Screen Room.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos

- March 28, 2017
- Continuing to install conduit and control wiring in the Headworks Building electrical room.
- Job No: 60440011

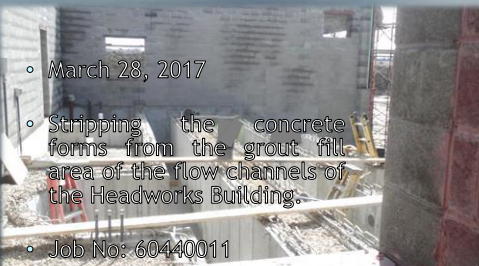


Ashville's WRRF Project



Construction in Photos

- March 28, 2017
- Stripping the concrete forms from the grout fill area of the flow channels of the Headworks Building.
- Job No: 60440011

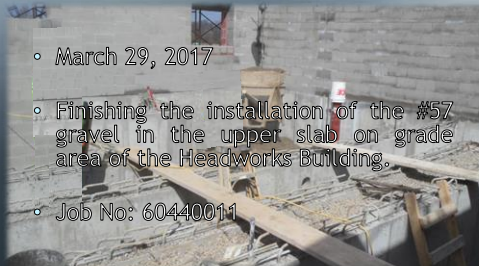


Ashville's WRRF Project



Construction in Photos

- March 29, 2017
- Finishing the installation of the #57 gravel in the upper slab on grade area of the Headworks Building.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

- March 30, 2017
- Poured 13 yards of 4000 psi no air concrete for the screen room slab on grade in the Headworks Building.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

- March 30, 2017
- Installing the floor drains in the slab on grade area of the upper level of the Headworks Building.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

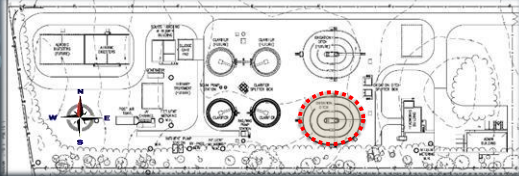
- March 30, 2017
- Installing the concrete forms and rebar for the concrete divider wall area of the flow channel and grit chamber of the Headworks Building.
- Job No: 60440011



Ashville's WRRF Project

Oxidation Ditch - Activated Sludge Treatment Process

An oxidation ditch is a modified activated sludge biological treatment process that utilizes long solids retention times (SRTs) to remove biodegradable organics. Oxidation ditches are typically complete mix systems, but they can be modified to approach plug flow conditions. (Note: as conditions approach plug flow, diffused air must be used to provide enough mixing. The system will also no longer operate as an oxidation ditch). Typical oxidation ditch treatment systems consist of a single or multichannel configuration within a ring, oval, or horseshoe-shaped basin. As a result, oxidation ditches are called "racetrack type" reactors. Horizontally or vertically mounted aerators provide circulation, oxygen transfer, and aeration in the ditch.



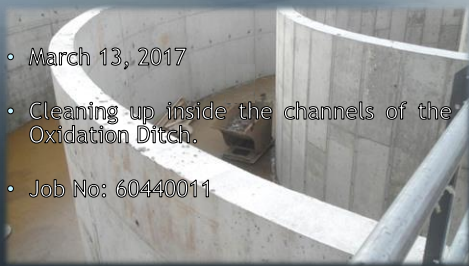
Oxidation Ditch

Ashville's WRRF Project



Construction in Photos

- March 13, 2017
- Cleaning up inside the channels of the Oxidation Ditch.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos

- March 13, 2017
- Installed 4" DI drain piping and compacted #57 gravel in the center island section of the Oxidation Ditch.
- Job No: 60440011

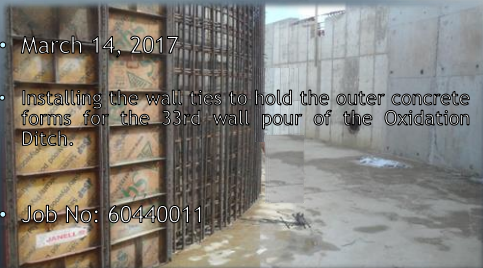


Ashville's WRRF Project



Construction in Photos

- March 14, 2017
- Installing the wall ties to hold the outer concrete forms for the 33rd wall pour of the Oxidation Ditch.
- Job No: 60440011

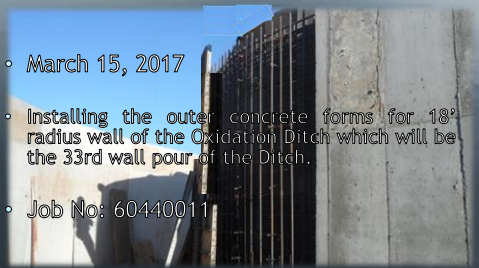


Ashville's WRRF Project



Construction in Photos

- March 15, 2017
- Installing the outer concrete forms for 18' radius wall of the Oxidation Ditch which will be the 33rd wall pour of the Ditch.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos



- March 16, 2017
- Crew installed the DBR's and now installing the individual concrete forms for the West effluent box of the Oxidation Ditch.
- Job No: 60440011

Ashville's WRRF Project



Construction in Photos

- March 16, 2017
- Peterson's crew poured 17 yards of 4000 psi w/air concrete for the 33rd wall pour of the Oxidation Ditch and 11 yards for the West channel wall of the Headworks Building.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos

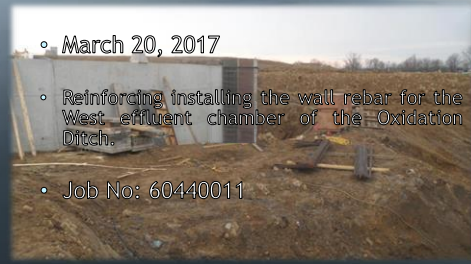


- March 17, 2017
- Installing individual concrete forms for the West effluent chamber of the Oxidation Ditch.
- Job No: 60440011

Ashville's WRRF Project



Construction in Photos



- March 20, 2017
- Reinforcing installing the wall rebar for the West effluent chamber of the Oxidation Ditch.
- Job No: 60440011

Ashville's WRRF Project



Construction in Photos

- March 21, 2017
- Reinforcing installing the wall rebar for the West effluent chamber of the Oxidation Ditch.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos

- March 21, 2017
- Stripping the concrete forms from the 33rd wall pour of the Oxidation Ditch.
- Job No: 60440011

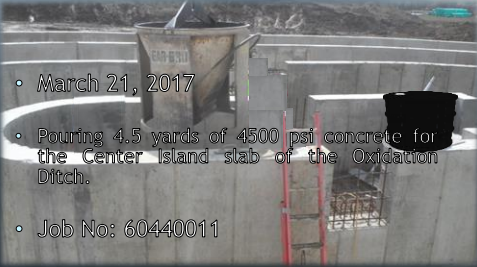


Ashville's WRRF Project



Construction in Photos

- March 21, 2017
- Pouring 4.5 yards of 4500 psi concrete for the Center Island slab of the Oxidation Ditch.
- Job No: 60440011

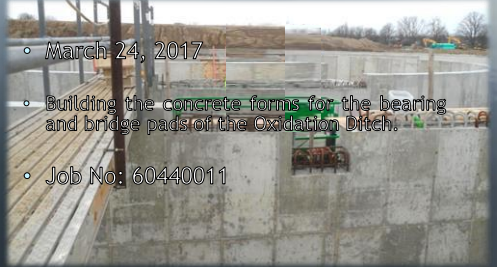


Ashville's WRRF Project



Construction in Photos

- March 24, 2017
- Building the concrete forms for the bearing and bridge pads of the Oxidation Ditch.
- Job No: 60440011

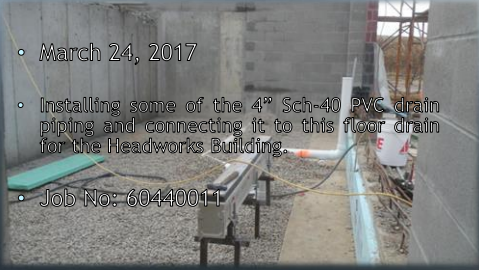


Ashville's WRRF Project



Construction in Photos

- March 24, 2017
- Installing some of the 4" Sch-40 PVC drain piping and connecting it to this floor drain for the Headworks Building.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos

- March 27, 2017
- Building the concrete forms for the bearing and bridge walk pads of the Oxidation Ditch.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos

- March 28, 2017
- Continuing to build the concrete forms for the bearing and bridge walk pads for the Oxidation Ditch.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos

- March 28, 2017
- Installing the rebar for the bearing and bridge walk pads of the Oxidation Ditch.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

- March 29, 2017
- Poured 5 yards of 4500 psi w/air concrete for the North bearing and bridge walk pads of the Oxidation Ditch.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

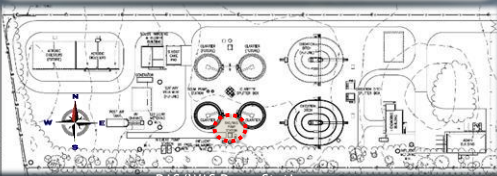
- March 30, 2017
- Installing the 4ft. wide aluminum walk bridge and temporary handrail over the East half of the Oxidation Ditch flow channels.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

Pumping of sludge from the secondary clarifiers to the aeration tanks maintains active biomass in the aeration tanks. The combination of wastewater and biological mass is commonly known as mixed liquor. In all activated sludge plants, once the wastewater has received sufficient treatment, excess mixed liquor is discharged into settling tanks and the treated **supernatant** is run off to undergo further treatment before discharge. Part of the settled material, the **sludge**, is returned to the head of the **aeration** system to re-seed the new wastewater entering the tank. This fraction of the floc is called **return activated sludge (R.A.S.)**. The waste cycle can be automated for a certain time period or volume on a timed basis, or can be performed according to operator preference. This is referred to as "waste activated sludge" (WAS).



RAS/WAS Pump Station

Ashville's WRRF Project

Construction in Photos

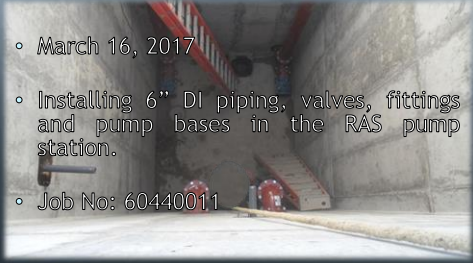
- March 6, 2017
- Moving dirt and backfilling around the RAS and WAS valve vaults.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

- March 16, 2017
- Installing 6" DI piping, valves, fittings and pump bases in the RAS pump station.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

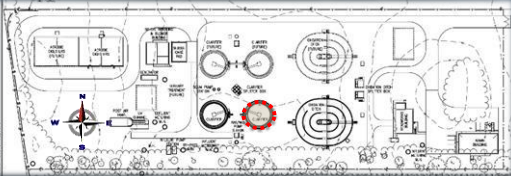
- March 16, 2017
- Installing the telescoping valves for the RAS pump station.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

Two Clarifiers are after the Oxidation Ditch. A clarifier is generally used to remove solid particulates or suspended solids from liquid for clarification and (or) thickening. Concentrated impurities, discharged from the bottom of the tank are known as sludge, while the particles that float to the surface of the liquid are called scum.



East Clarifier

Ashville's WRRF Project

Construction in Photos

- March 6, 2017
- Excavating the mud around the base slab of the East Clarifier.
- Job No: 60440011

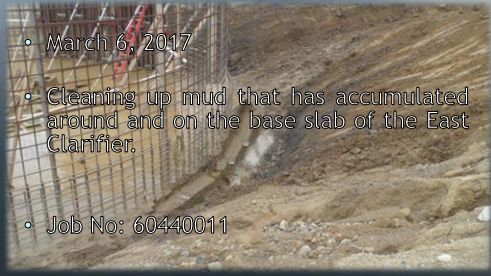


Ashville's WRRF Project



Construction in Photos

- March 6, 2017
- Cleaning up mud that has accumulated around and on the base slab of the East Clarifier.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos

- March 9, 2017
- Cleaning mud and debris from the base slab of the East Clarifier.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos

- March 10, 2017
- Continuing to clean the mud and debris from the base slab of the East Clarifier.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos

- March 10, 2017
- Starting to install the #2 limestone to make a road base for the 80-ton crane to use at the East Clarifier.
- Job No: 60440011

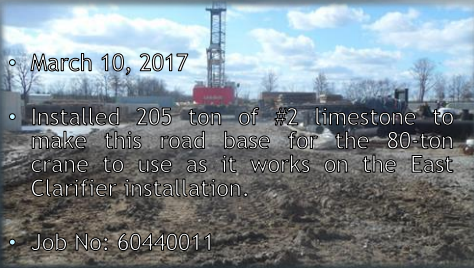


Ashville's WRRF Project



Construction in Photos

- March 10, 2017
- Installed 205 ton of #2 limestone to make this road base for the 80-ton crane to use as it works on the East Clarifier installation.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos

- March 14, 2017
- Reinforcing installing wall rebar for the East Clarifier.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos

- March 15, 2017
- Reinforcing completed the wall rebar for the East Clarifier and installed the rebar for the slab of the center island section of the Oxidation Ditch.
- Job No: 60440011

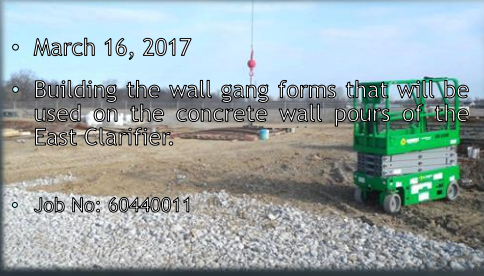


Ashville's WRRF Project



Construction in Photos

- March 16, 2017
- Building the wall gang forms that will be used on the concrete wall pours of the East Clarifier.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos

- March 17, 2017
- Installing DBR's and concrete gang forms on the 1st wall section of the East Clarifier.
- Job No: 60440011

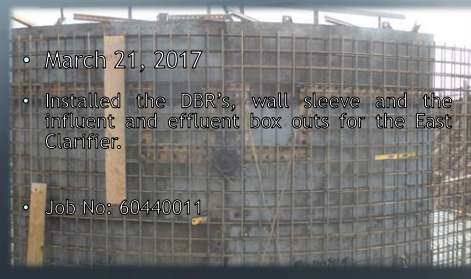


Ashville's WRRF Project



Construction in Photos

- March 21, 2017
- Installed the DBR's, wall sleeve and the influent and effluent box outs for the East Clarifier.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos

- March 23, 2017
- Moving the concrete forms from wall pour #2 to wall pour #4 of the East Clarifier.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos

- March 24, 2017
- Pouring 18 yards of 4500 psi w/air concrete for the #3 wall pour of the East Clarifier.
- Job No: 60440011

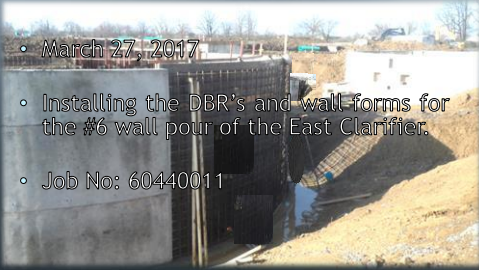


Ashville's WRRF Project



Construction in Photos

- March 27, 2017
- Installing the DBR's and wall-forms for the #6 wall pour of the East Clarifier.
- Job No: 60440011

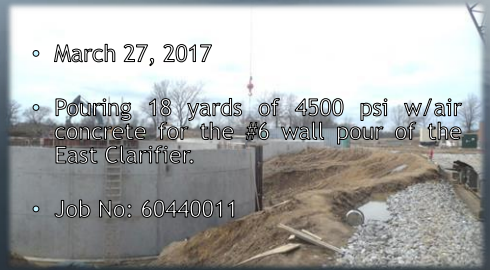


Ashville's WRRF Project



Construction in Photos

- March 27, 2017
- Pouring 18 yards of 4500 psi w/air concrete for the #6 wall pour of the East Clarifier.
- Job No: 60440011

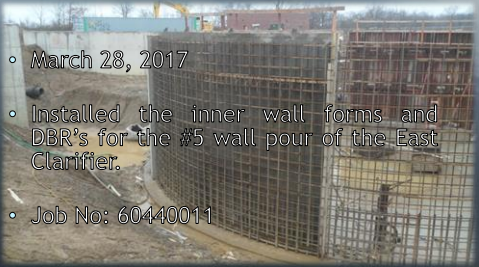


Ashville's WRRF Project



Construction in Photos

- March 28, 2017
- Installed the inner wall forms and DBR's for the #5 wall pour of the East Clarifier.
- Job No: 60440011

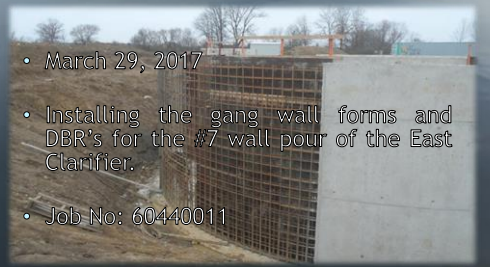


Ashville's WRRF Project



Construction in Photos

- March 29, 2017
- Installing the gang wall forms and DBR's for the #7 wall pour of the East Clarifier.
- Job No: 60440011






Ashville's WRRF Project

Construction in Photos



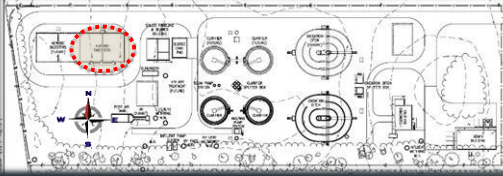
- March 29, 2017
- Pouring 18 yards of 4500 psi w/air concrete for the #7 wall pour of the East Clarifier.
- Job No: 60440011




Ashville's WRRF Project

Construction in Photos

An aerobic digester is a biological wastewater treatment. Once sediments and substances such as oil are removed from wastewater in this treatment stage, aerobic treatments are used to break down organic matter through the use of oxygen. Aerobic biological processes use natural microbial colonies and molecular oxygen to decompose organic substances in the wastewater. The microbes feed on undesired biological substances in the water, creating aggregates or "flocks" of organic substances and microorganisms that settle to the bottom of the containers. This sludge is stable and can be disposed of easily. Aerobic treatment is part of a multistage water treatment process.



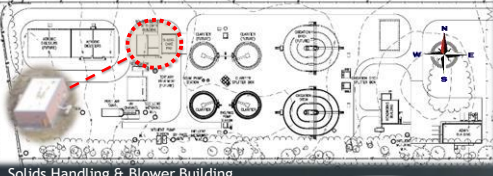
Aerobic Digesters



Ashville's WRRF Project

Construction in Photos

The Solid Handling Building houses a rotary press that provides a dewatering process, completed by sludge and polymer feed systems. Sludge is fed into a rectangular channel, and rotated between two parallel revolving stainless steel chrome plated screens. The filtrate passes through the screens as the flocculated sludge advances within the channel. The sludge continues to devater as it travels around the channel, eventually forming a cake near the outlet side of the press. The frictional force of the slow moving screens, coupled with the controlled outlet restriction, results in the extrusion of a very dry cake. This process allows: continuous operation, totally enclosed, low power usage, low noise level, high cake dryness, easy start-stop procedures, low wash water requirements, polymer feed systems, shaftless screw conveyors, sludge blenders. The blowers provide air for the Aerobic Digesters.



Solids Handling & Blower Building



Ashville's WRRF Project

Construction in Photos



- March 2, 2017
- Installing the control wiring for the Sludge Press in the Solids Handling Building.
- Job No: 60440011

Ashville's WRRF Project



Construction in Photos

- March 3, 2017
- Overhead Door Co. crew installed the overhead door in the sludge press room of the Solids Handling Building.
- Job No: 60440011

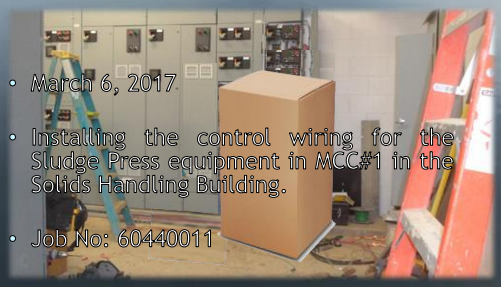


Ashville's WRRF Project



Construction in Photos

- March 6, 2017
- Installing the control wiring for the Sludge Press equipment in MCC#1 in the Solids Handling Building.
- Job No: 60440011



Ashville's WRRF Project



Construction in Photos

- March 7, 2017
- Starting to assemble some of the Rotary Sludge Press equipment in the Solids Handling Building.
- Job No: 60440011

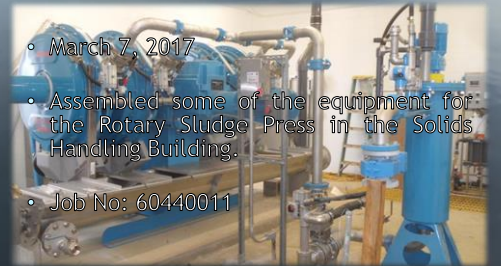


Ashville's WRRF Project



Construction in Photos

- March 7, 2017
- Assembled some of the equipment for the Rotary Sludge Press in the Solids Handling Building.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

- March 7, 2017
- Continuing to install control wiring for the Rotary Sludge Press and Emergency Generator in the Solids Handling Building.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

- March 8, 2017
- Installing conduit and motor wiring for the Sludge Press equipment in the Solids Handling Building.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

- March 9, 2017
- Continuing to install conduit and control wiring for the Rotary Sludge Press in the Solids Handling Building.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

- March 13, 2017
- Installing the electrical conductors from the Solids Handling Building to Electrical MH#1
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

- March 20, 2017
- Getting ready to install the SCADA control panel in the electrical room of the Solids Handling Building.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

- March 23, 2017
- Pulling the electrical wires from the Solids Handling Building electrical room to MH#1 and then from MH#1 to the Influent PS valve building.
- Job No: 60440011




Ashville's WRRF Project

Construction in Photos

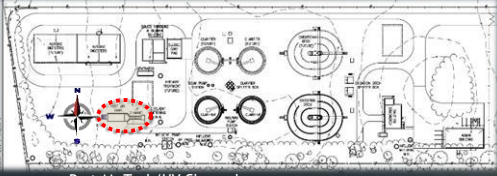
- March 24, 2017
- Mason crew installing the glass block window at the Solids Handling Building.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

Ultraviolet (UV) light quickly mutates and/or degrades DNA. DNA (or deoxyribonucleic acid) is the part of the cell that gives an organism its instructions on how to function and reproduce. When the DNA is damaged, the organism becomes unable to function because its "instructions" are garbled or missing. An organism that has no instructions cannot function and reproduce, and cannot cause infection. It is rendered harmless and eventually dies. In the UV disinfection process, water is purified as it runs through a chamber (also called a "reactor") that contains a special UV-producing lamp. As the water flows past the lamp, the microbes in the water receive a lethal dose of UV. Different organisms require different levels of UV energy to disrupt their DNA. This energy level is known as a UV dose.



Post Air Tank/UV Channel

Ashville's WRRF Project

Construction in Photos

- March 16, 2017
- Installed the electrical conduit runs from the Influent PS wetwell to the valve building and from the UV Post Air to electric MH#1.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

At various areas on the south side of the property Part A is working to prepare the site for the Part B connections.



Ashville's WRRF Project

Construction in Photos

- March 3, 2017
- Moving some of the stockpiled dirt so that the Part B contractor can install the 18" gravity sewer, MH#24, 25 and the 10" Forcemain on the WRRF site.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

- March 9, 2017
- Moving and stockpiling dirt so that the Part B contractor can install MH#24, #25, 18" gravity sewer and 10" forcemain on site.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

- March 13, 2017
- Moving dirt from the area where the Part B contractor will install MH#24, 25, 18" gravity sewer and 10" force main.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

- March 14, 2017
- Continuing to move dirt for the Part B contractor to install MH#24, 25, 18" gravity sewer and 10" force main.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

- March 21, 2017
- Pouring 11 yards of 4500 psi w/air concrete for the West effluent chamber of the Oxidation Ditch.
- Job No: 60440011

