Construction in Photos

October 3 – 31, 2016

Water Resource Recovery Department

Village of Ashville

Ashville's Water Resource Recovery Facility

Part A

Presentation Available on Line at:
www.ashvilleohio.gov

Ashville's WRRF Project

Vision Statement

- Remembering our rural heritage, Ashville will be a vibrant and friendly community, offering an enhanced quality of life achieved through planning, progress and collaboration.

  It will be a welcoming place where people want to live and businesses prosper.

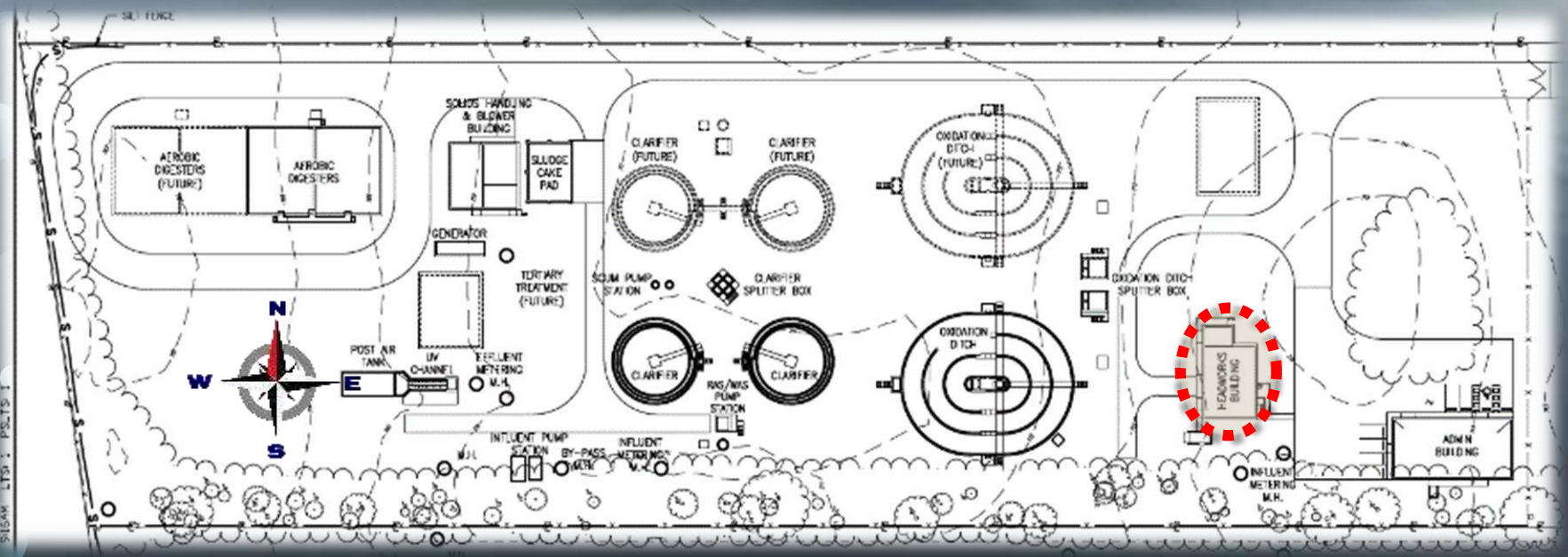
Ashville's WRRF Project

Construction Aerial Photo

From October 12, 2016

Ashville's WRRF Project

Construction in Photos



Headworks Buildings

Ashville's WRRF Project

Construction in Photos

- October 5, 2016
- Midwest Reinforcing installing rebar for the wall footings of the Headworks Building.
- Job No: 60440011

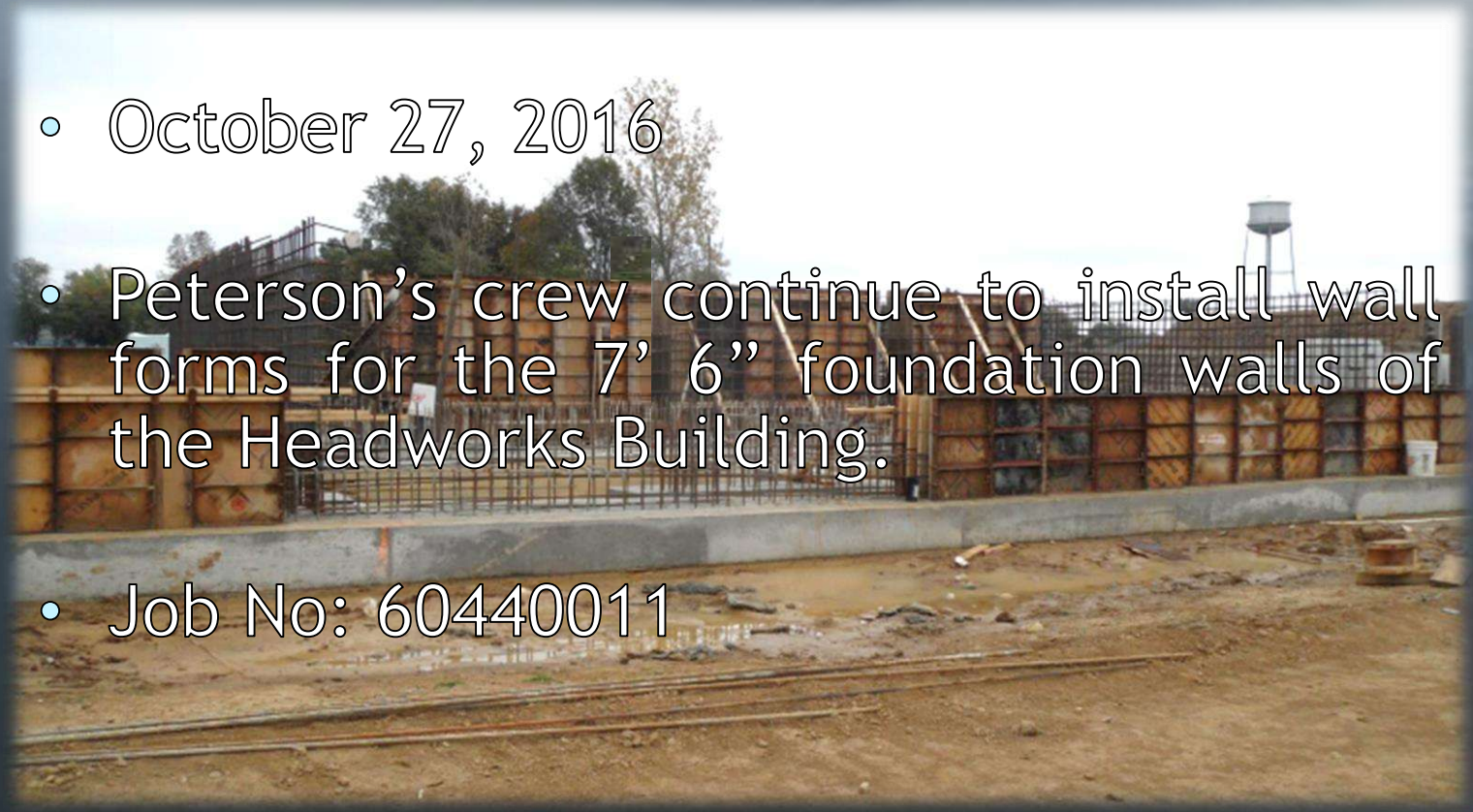
Ashville's WRRF Project

Construction in Photos

- October 7, 2016
- Peterson's crew finishing the 28 cubic yard 3000 psi concrete pour for the wall footings of the Headworks Building.
- Job No: 60440011

Ashville's WRRF Project

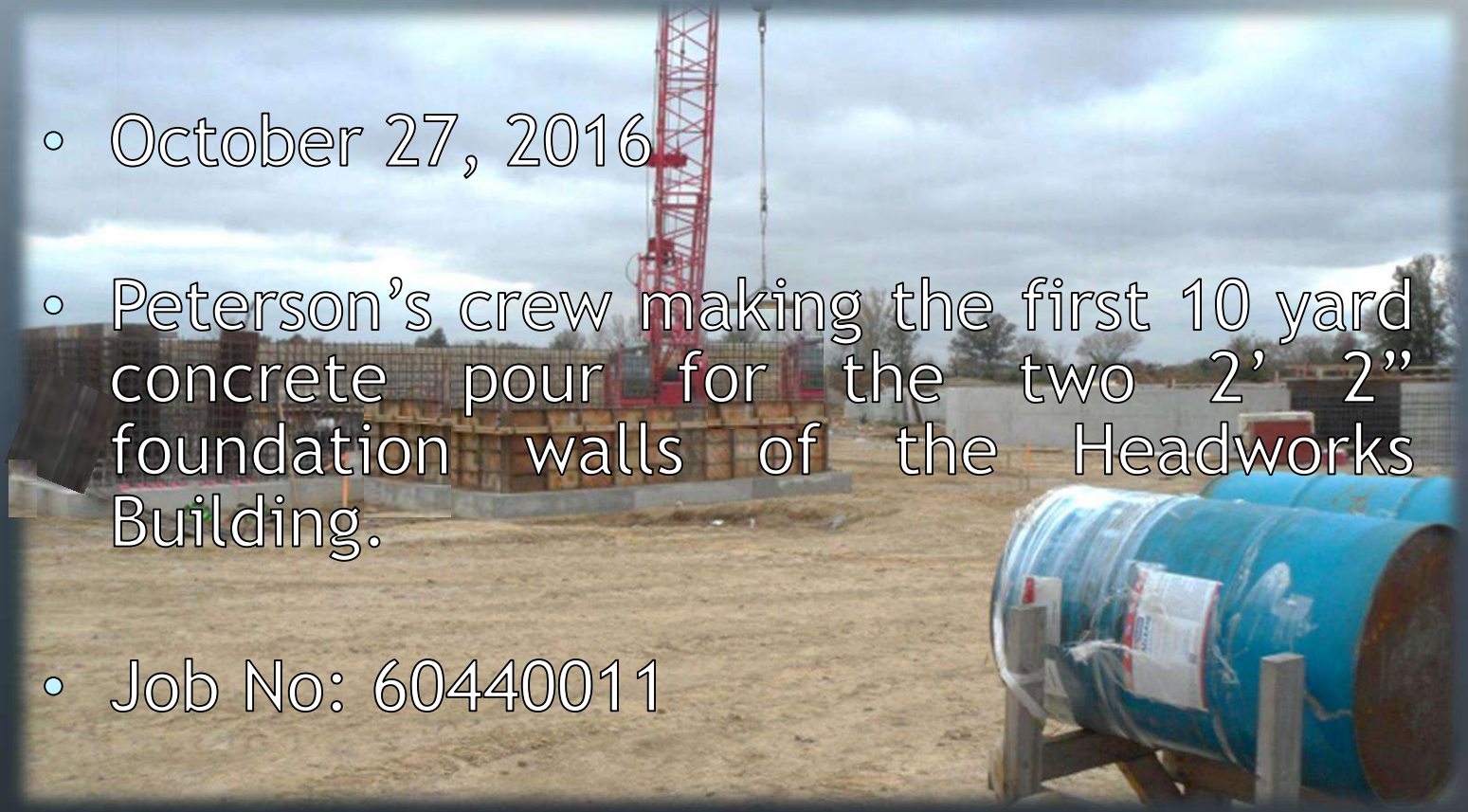
Construction in Photos



- October 27, 2016
- Peterson's crew continue to install wall forms for the 7' 6" foundation walls of the Headworks Building.
- Job No: 60440011

Ashville's WRRF Project

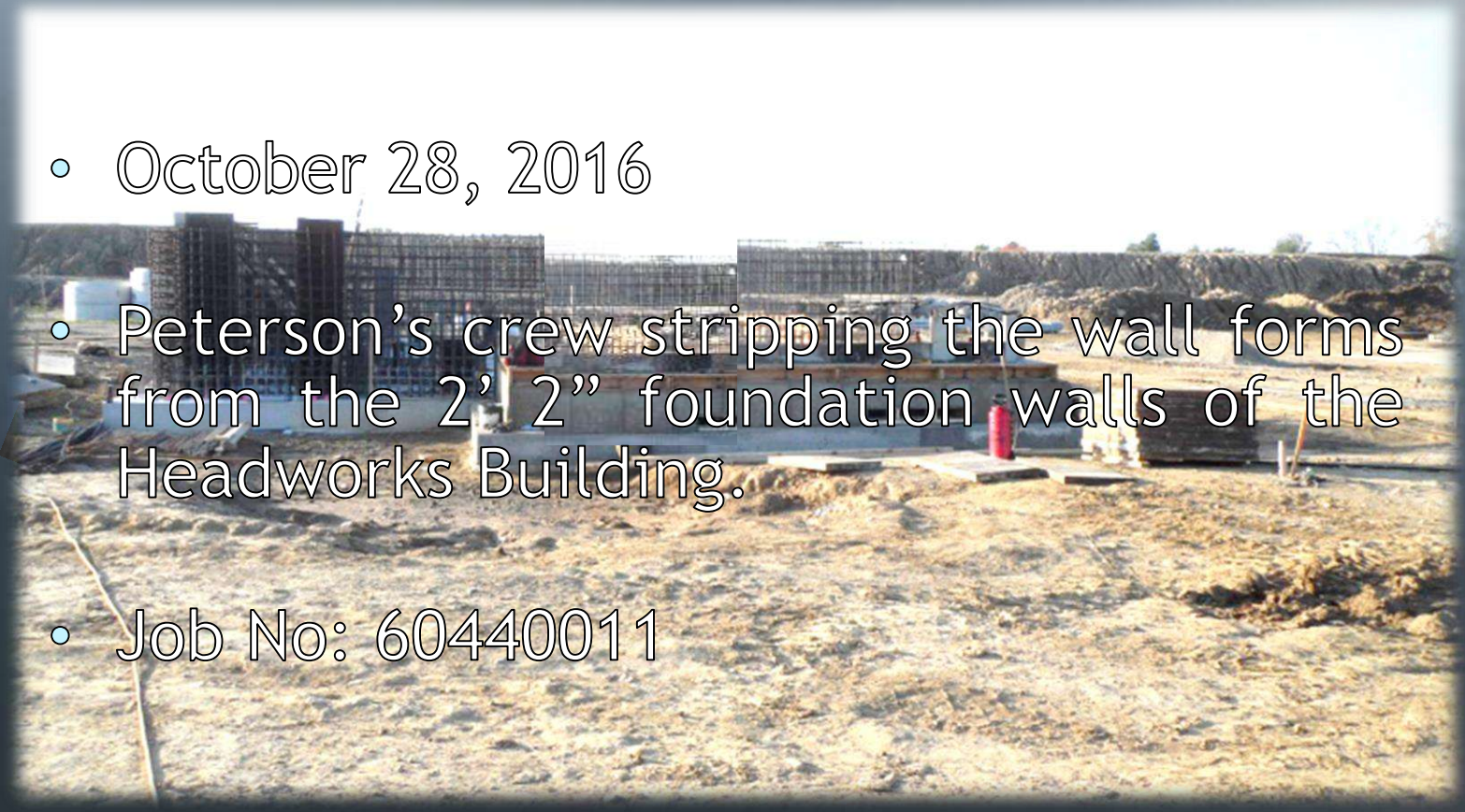
Construction in Photos



- October 27, 2016
- Peterson's crew making the first 10 yard concrete pour for the two 2' 2" foundation walls of the Headworks Building.
- Job No: 60440011

Ashville's WRRF Project

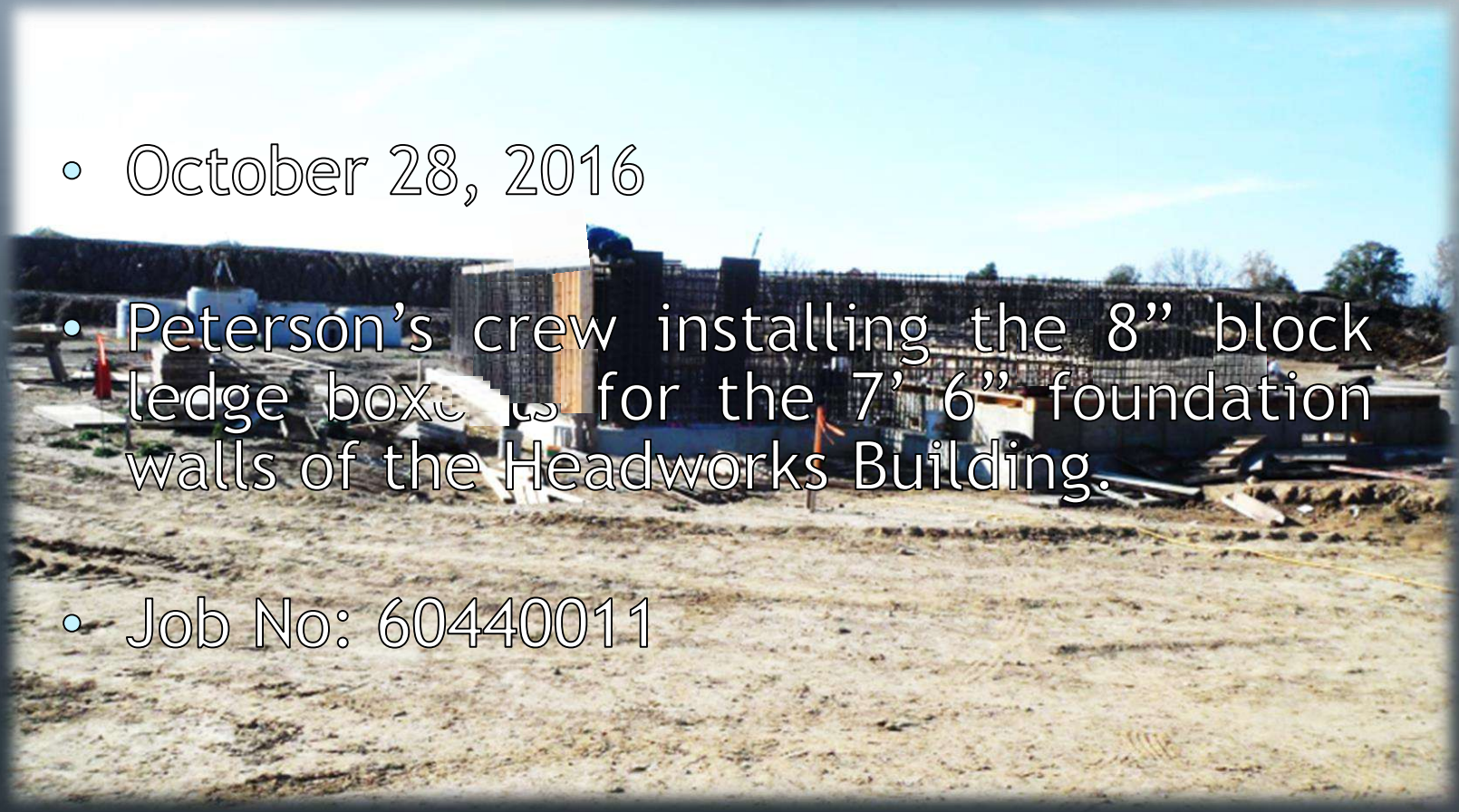
Construction in Photos



- October 28, 2016
- Peterson's crew stripping the wall forms from the 2' 2" foundation walls of the Headworks Building.
- Job No: 60440011

Ashville's WRRF Project

Construction in Photos

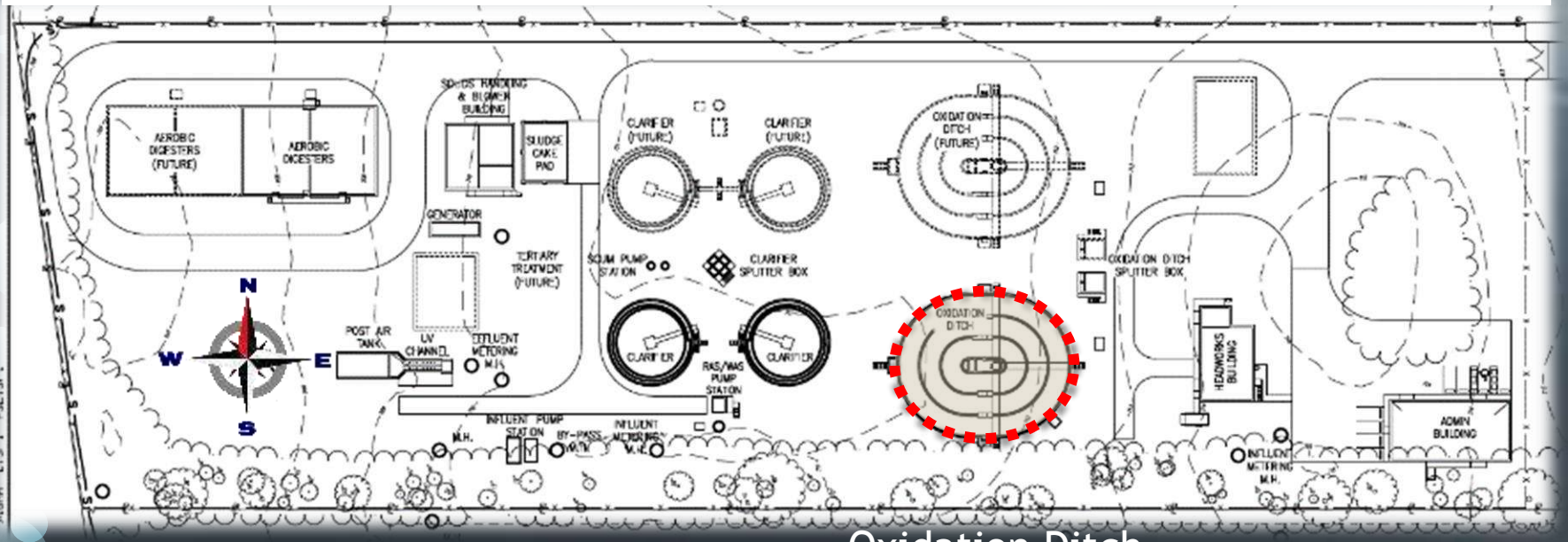


- October 28, 2016
- Peterson's crew installing the 8" block ledge boxouts for the 7' 6" foundation walls of the Headworks Building.
- Job No: 60440011

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

Oxidation Ditch – Activated Sludge Treatment Process

The treatment of wastewater by suspended growth biological treatment is known as the activated sludge process. In the activated sludge process, microorganisms are mixed thoroughly with organic material in the wastewater so that the microorganisms grow by using the organics as food. As the microorganisms grow and are mixed by the agitation of the air, the individual organisms clump together (flocculate) to form an active mass of microbes called "activated sludge". The wastewater flows continuously into the aeration tanks where air is injected to mix the activated sludge with the wastewater forming "mixed liquor" and to supply the oxygen needed for the microbes to break down the organics. The mixed liquor in the aeration tank flows to the final clarifiers where the activated sludge is settled out. Most of the settled sludge is returned to the aeration tank to maintain a high population of microbes to permit rapid breakdown of the organic material. Biological Phosphorus Description Biological phosphorus removal is a process where phosphorus is removed from the wastewater through an excess uptake of phosphorus into the activated sludge microbial population and the subsequent wasting of the sludge from the process. The main difference between typical activated sludge processes and biological nutrient removal (BNR) processes is the sequencing of anaerobic and aerobic conditions, which selects for the phosphorus-storing microorganisms. If sufficient volatile fatty acids are present, and the microorganisms are subject to anaerobic conditions, the microorganisms will release phosphorus to provide energy in order to store organics (BOD). When the microorganisms are reintroduced into an aerobic environment, the microorganisms will uptake phosphorus in excess amounts (greater than required for cell synthesis) as they breakdown the BOD for food. The wastewater plant uses enhanced biological phosphorus removal (EBPR) by the wastewater microorganisms to remove phosphorus from the wastewater 100% of the time. The WWTP utilizes the anaerobic/oxic (A/O) process for EBPR. The A/O process is a simple process that utilizes an anaerobic zone followed by an aerobic (oxic) zone. If it is determined that the biological phosphorus removal system alone will not meet our effluent Phosphorus limit, then chemical addition will be used to help remove phosphorus to achieve the WPDES permit limit.

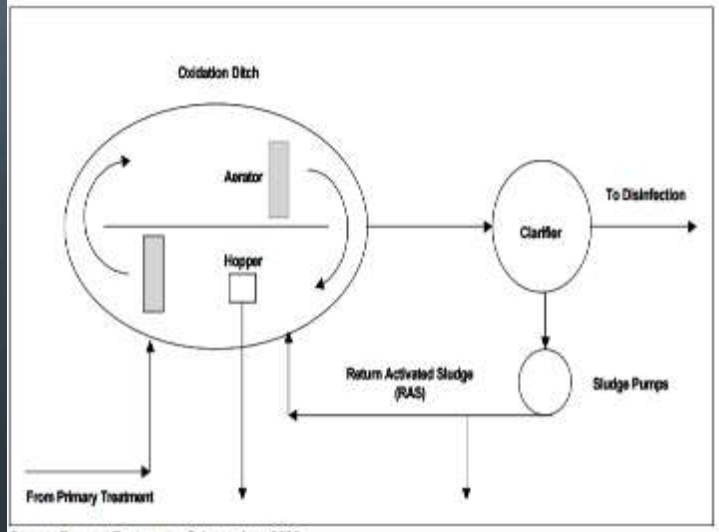
Ashville's WRRF Project

Oxidation Ditch – Activated Sludge Treatment Process

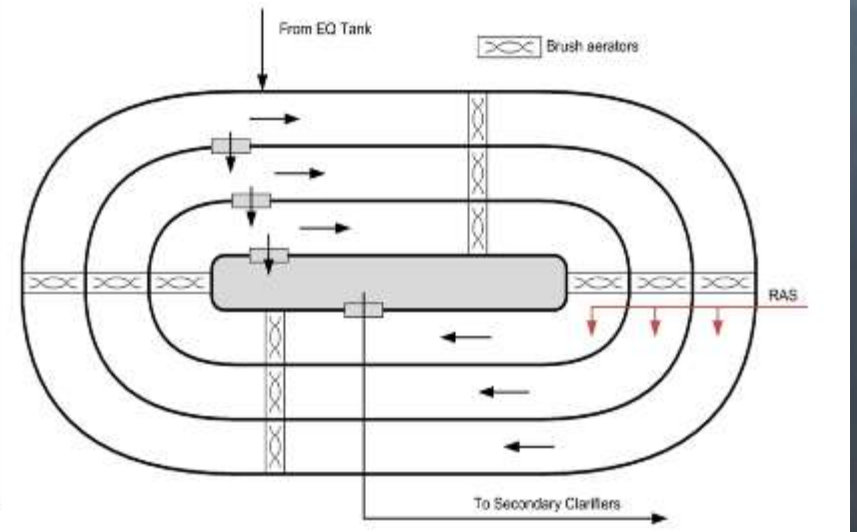
A typical process flow diagram for an activated sludge plant using an oxidation ditch is shown in Figure 1. are most often used to treat municipal wastewater. Oxidation ditches are intended for use in treating "low-strength" wastewaters. Oxidation ditches require operator monitoring of wastewater that enters and combines with return activated sludge. Flow to the oxidation ditch is aerated and mixed with return sludge from a secondary clarifier.

A simple schematic of a 3-pass oxidation ditch is portrayed in Figure 1. Oxidation ditches can be simple, oval, one-pass systems, two-pass, or three-pass.

Figure 1: Oxidation Ditch Schematic

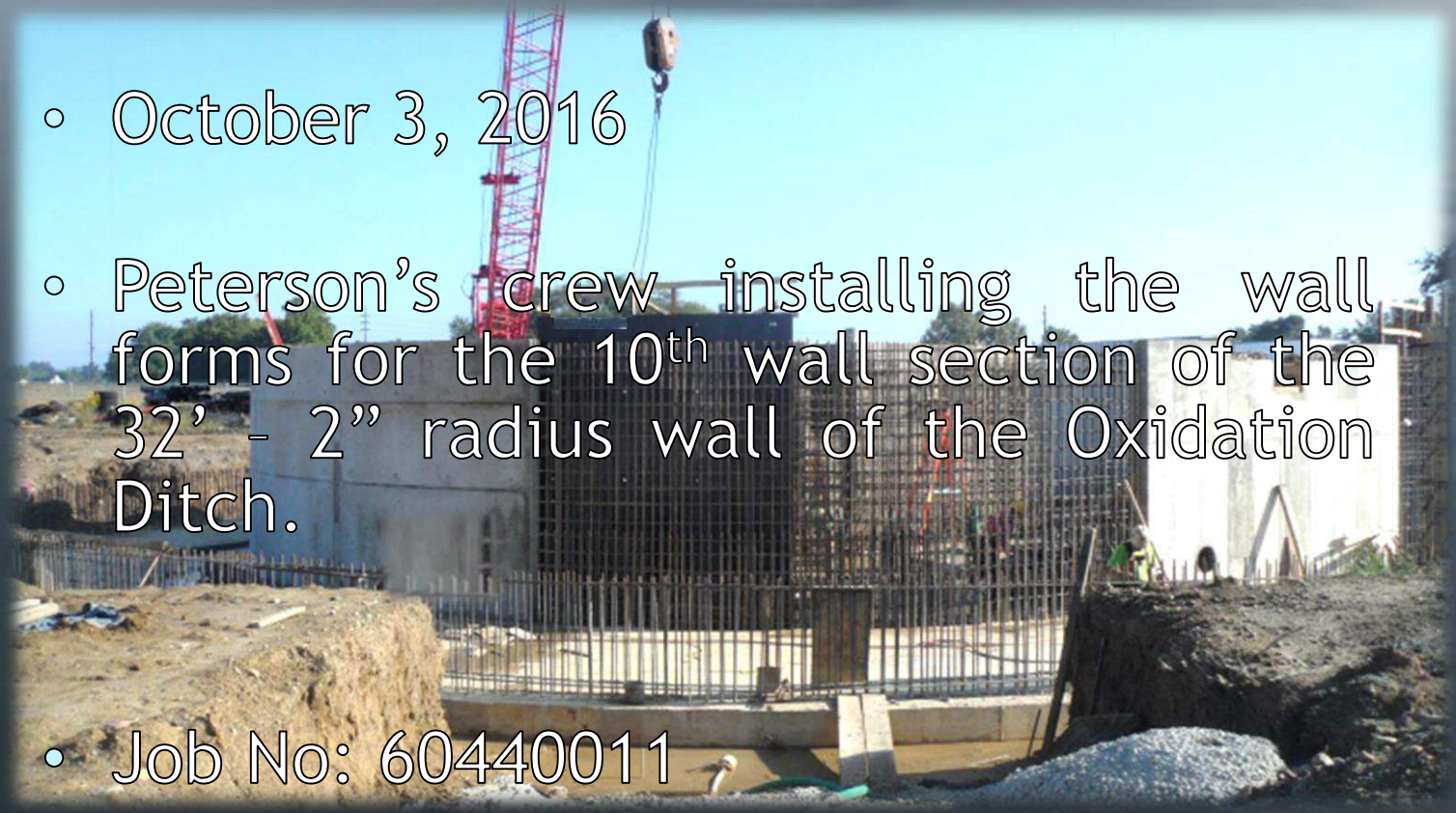


Source: Parsons Engineering Science, Inc., 2000.



Ashville's WRRF Project

Construction in Photos



- October 3, 2016
- Peterson's crew installing the wall forms for the 10th wall section of the 32' – 2" radius wall of the Oxidation Ditch.
- Job No: 60440011

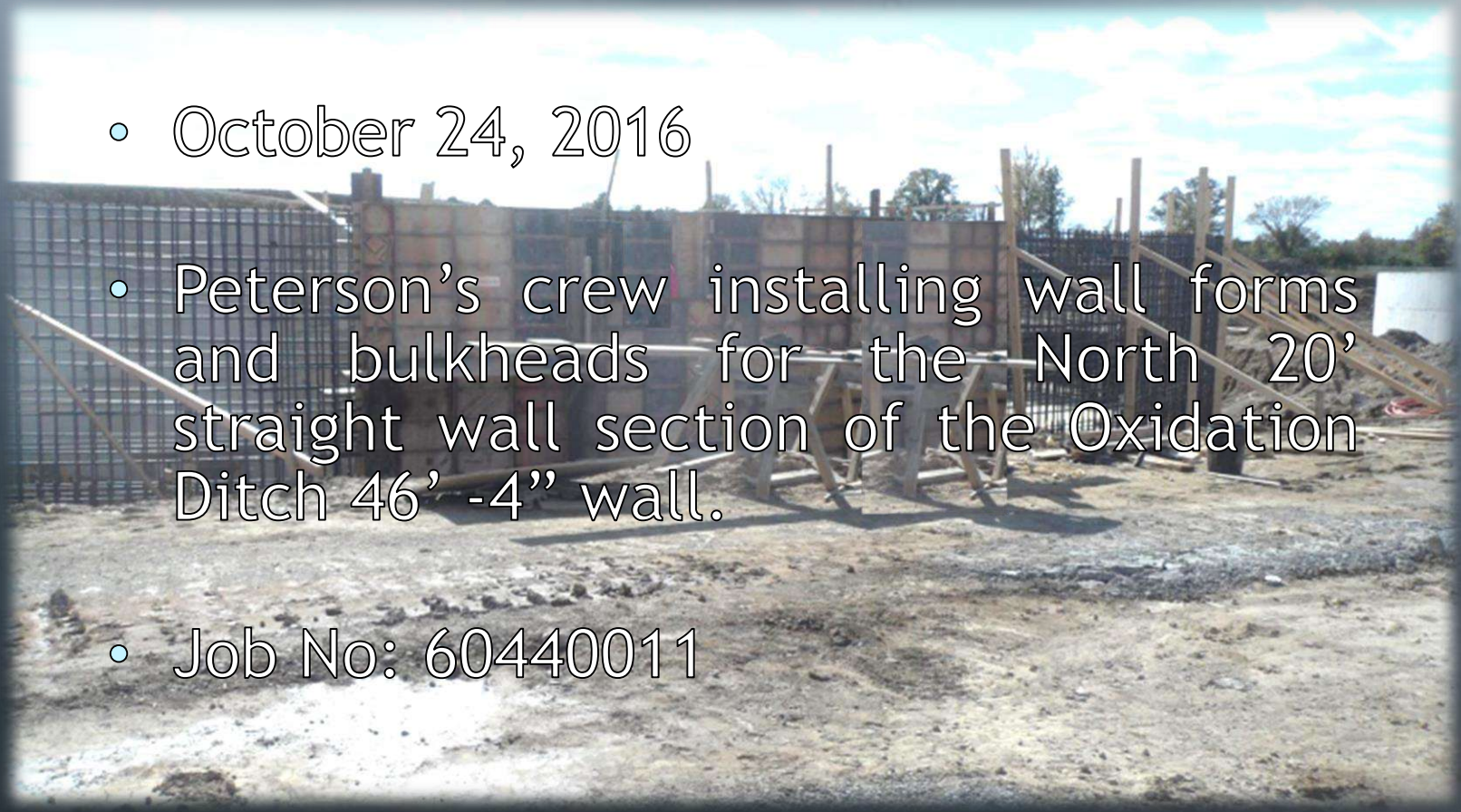
Ashville's WRRF Project

Construction in Photos

- October 19, 2016
- Peterson's crew installing wall forms and bulkheads for the North 20' straight wall section of the 46' - 4" wall of the Oxidation Ditch.
- Job No: 60440011

Ashville's WRRF Project

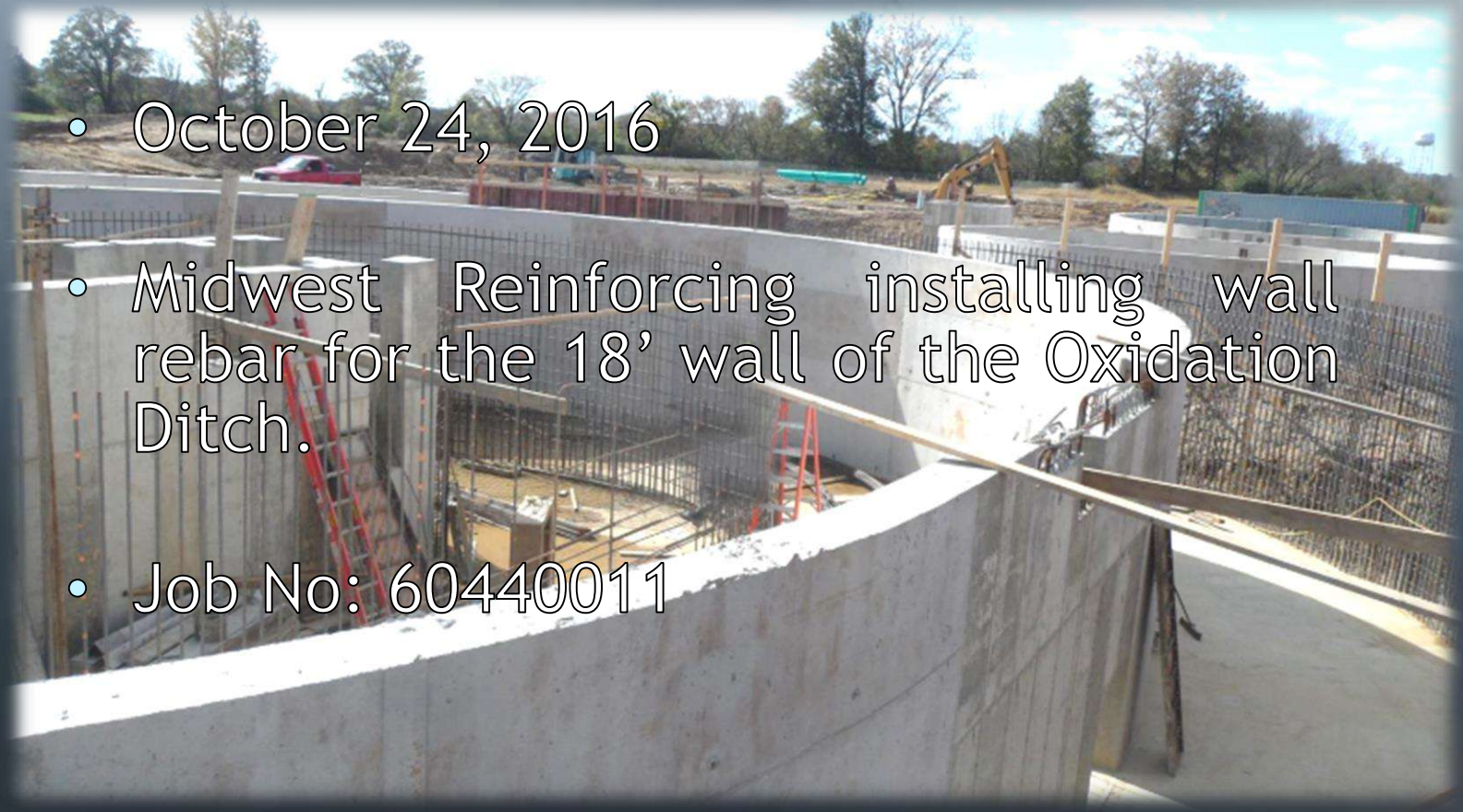
Construction in Photos



- October 24, 2016
- Peterson's crew installing wall forms and bulkheads for the North 20' straight wall section of the Oxidation Ditch 46' -4" wall.
- Job No: 60440011

Ashville's WRRF Project

Construction in Photos



- October 24, 2016
- Midwest Reinforcing installing wall rebar for the 18' wall of the Oxidation Ditch.
- Job No: 60440011

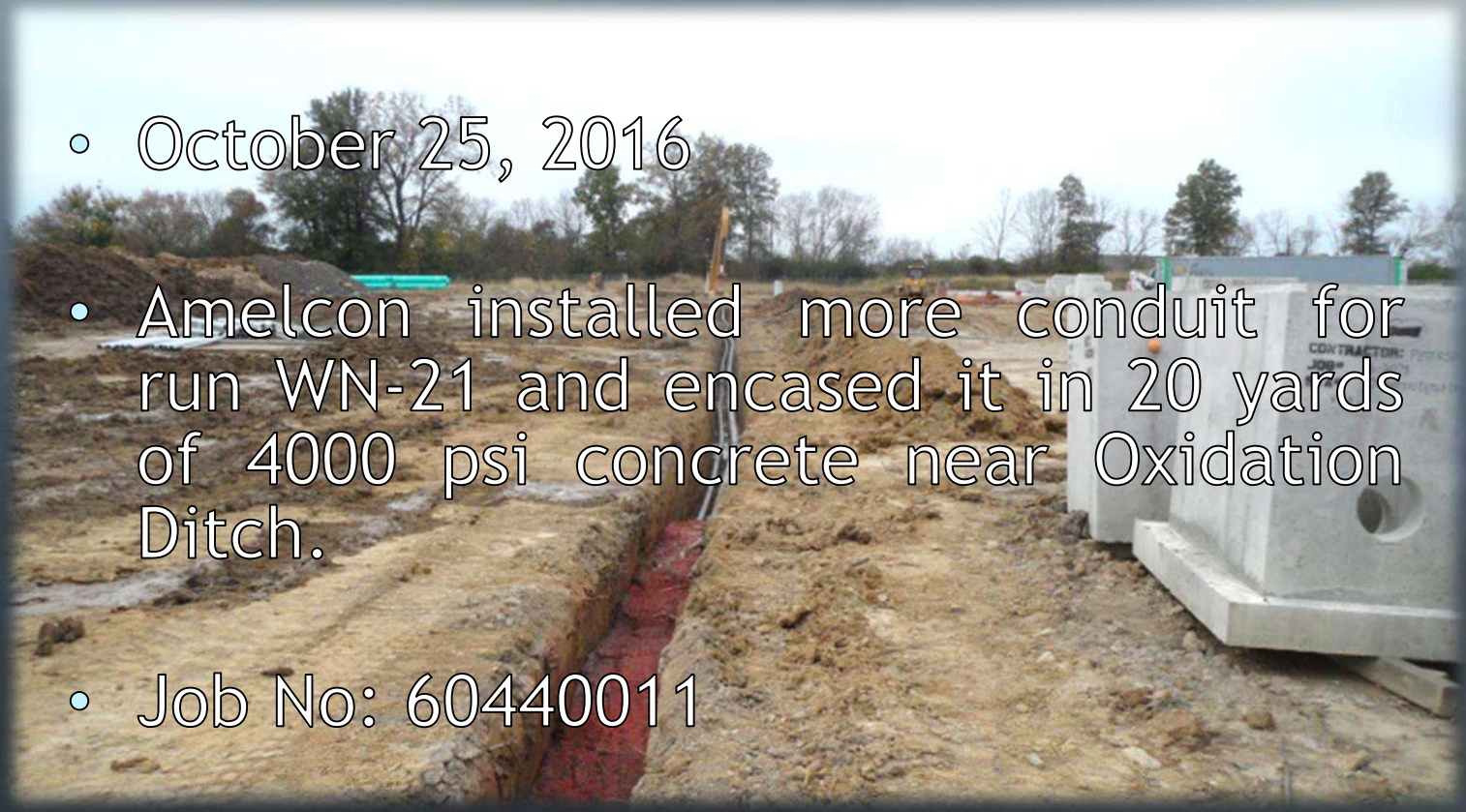
Ashville's WRRF Project

Construction in Photos

- October 24, 2016
- Amelcon Electric installing conduit run WN-21 for the Fiber Optic cables and Fire Alarm System near Oxidation Ditch.
- Job No: 60440011

Ashville's WRRF Project

Construction in Photos



- October 25, 2016
- Amelcon installed more conduit for run WN-21 and encased it in 20 yards of 4000 psi concrete near Oxidation Ditch.
- Job No: 60440011

Ashville's WRRF Project

Construction in Photos

- October 25, 2016
- Peterson's crew making room in the rebar to install the plywood boxout for the West weir opening for Channel #1 of the Oxidation Ditch.
- Job No: 60440011

Ashville's WRRF Project

Construction in Photos

- October 26, 2016
- Midwest Reinforcing continuing to install wall rebar for the 18' wall of the Oxidation Ditch.
- Job No: 60440011

Ashville's WRRF Project

Construction in Photos

- October 26, 2016
- Peterson's crew installing the boxout for the West weir opening in Channel #1 (46'- 4" wall) of the Oxidation Ditch.
- Job No: 60440011

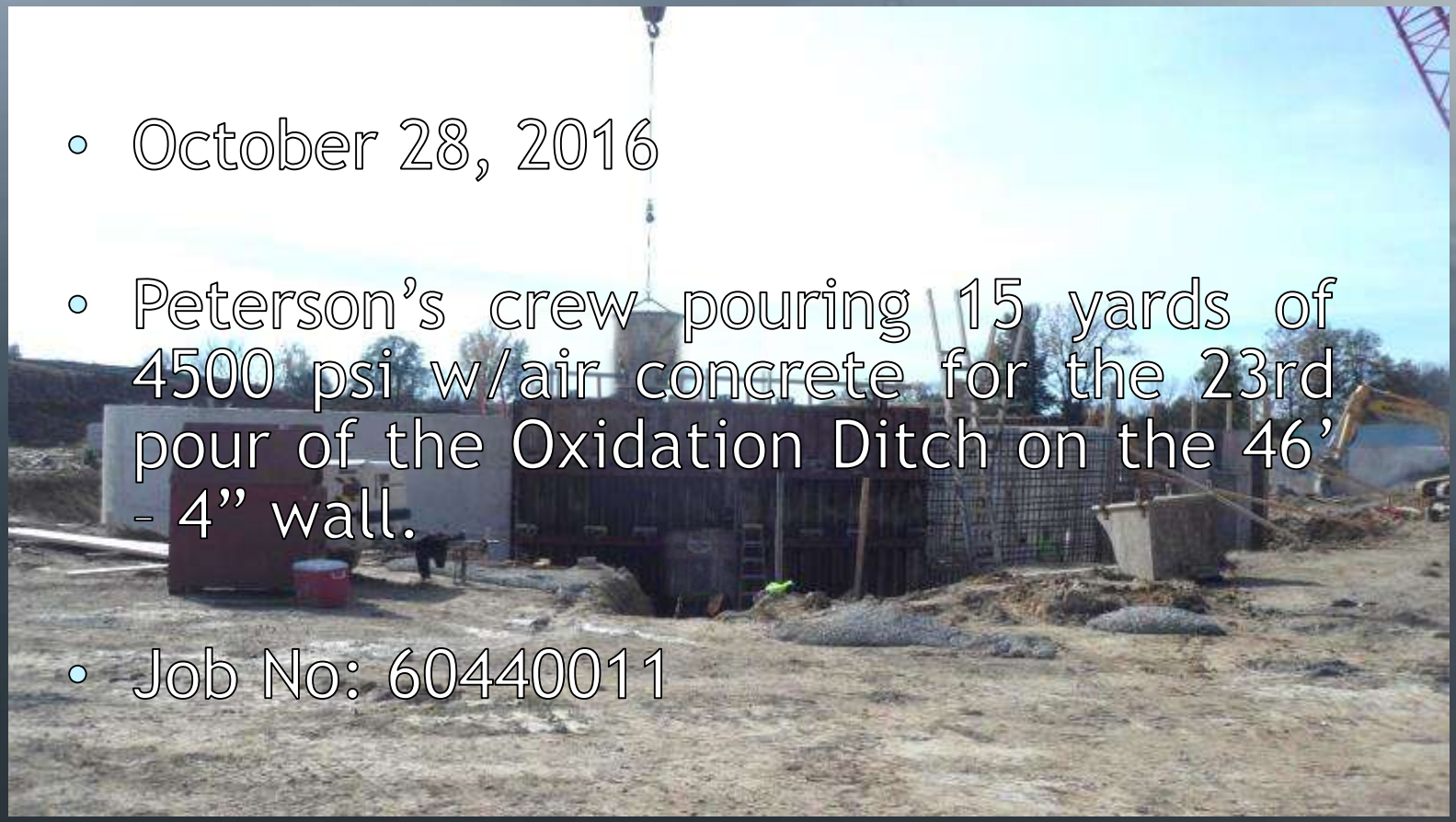
Ashville's WRRF Project

Construction in Photos

- October 27, 2016
- Peterson's crew installing the outer wall forms for the West weir opening in Channel #1, wall pour 22 of the Oxidation Ditch.
- Job No: 60440011

Ashville's WRRF Project

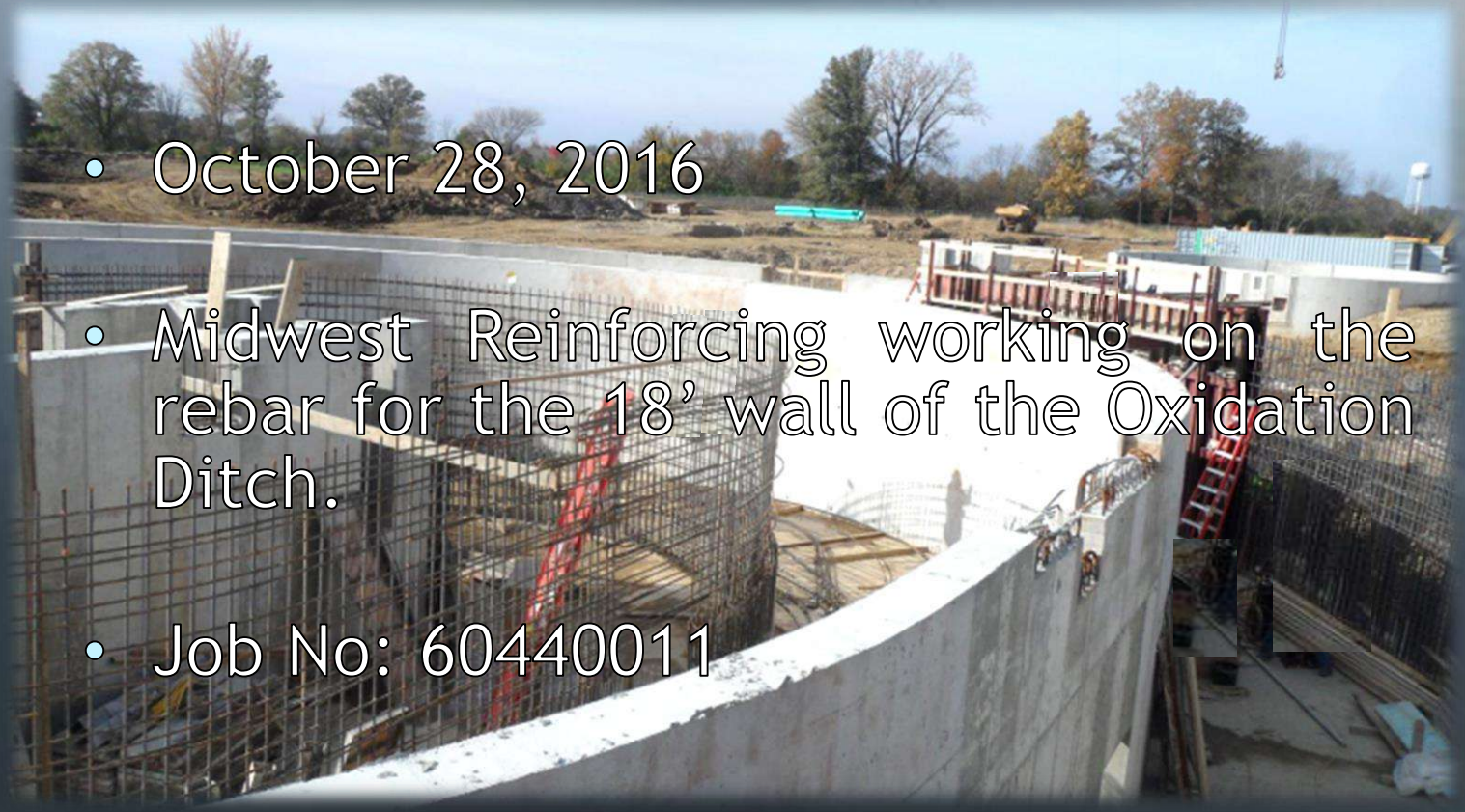
Construction in Photos



- October 28, 2016
- Peterson's crew pouring 15 yards of 4500 psi w/air concrete for the 23rd pour of the Oxidation Ditch on the 46' - 4" wall.
- Job No: 60440011

Ashville's WRRF Project

Construction in Photos



- October 28, 2016
- Midwest Reinforcing working on the rebar for the 18' wall of the Oxidation Ditch.
- Job No: 60440011

Ashville's WRRF Project

Construction Aerial Photo

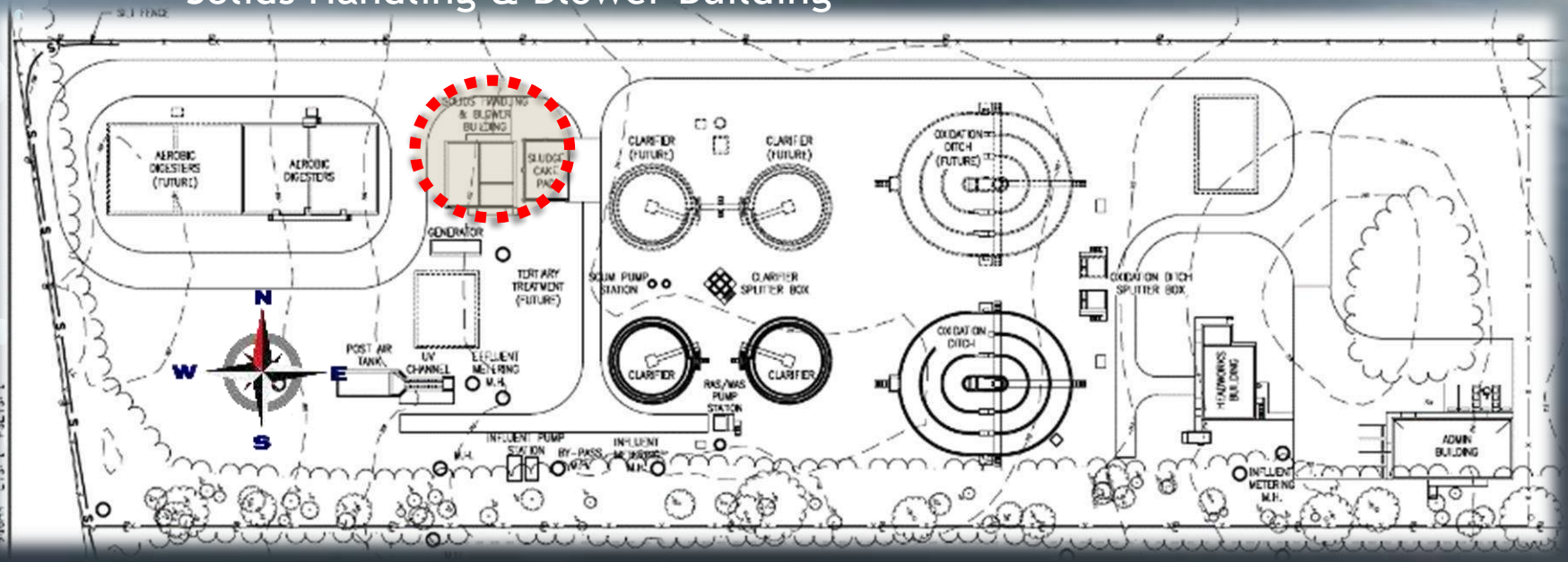
From September 8 to October 13, 2016

Oxidation Ditch

Ashville's WRRF Project

Construction in Photos

Solids Handling & Blower Building



Ashville's WRRF Project

Construction in Photos

- October 7, 2016
- Peterson's crew installing wall forms for the foundation walls of the Solids Handling Building.
- Job No: 60440011

Ashville's WRRF Project

Construction in Photos

- October 17, 2016
- Amelcon Electric working on the installation of conduit for the Solids Handling Building electrical room
- Job No: 60440011

Ashville's WRRF Project

Construction in Photos

- October 25, 2016
- Peterson's crew installing the 2" rigid perimeter insulation on the interior foundation walls of the Solids Handling Building.
- Job No: 60440011

Ashville's WRRF Project

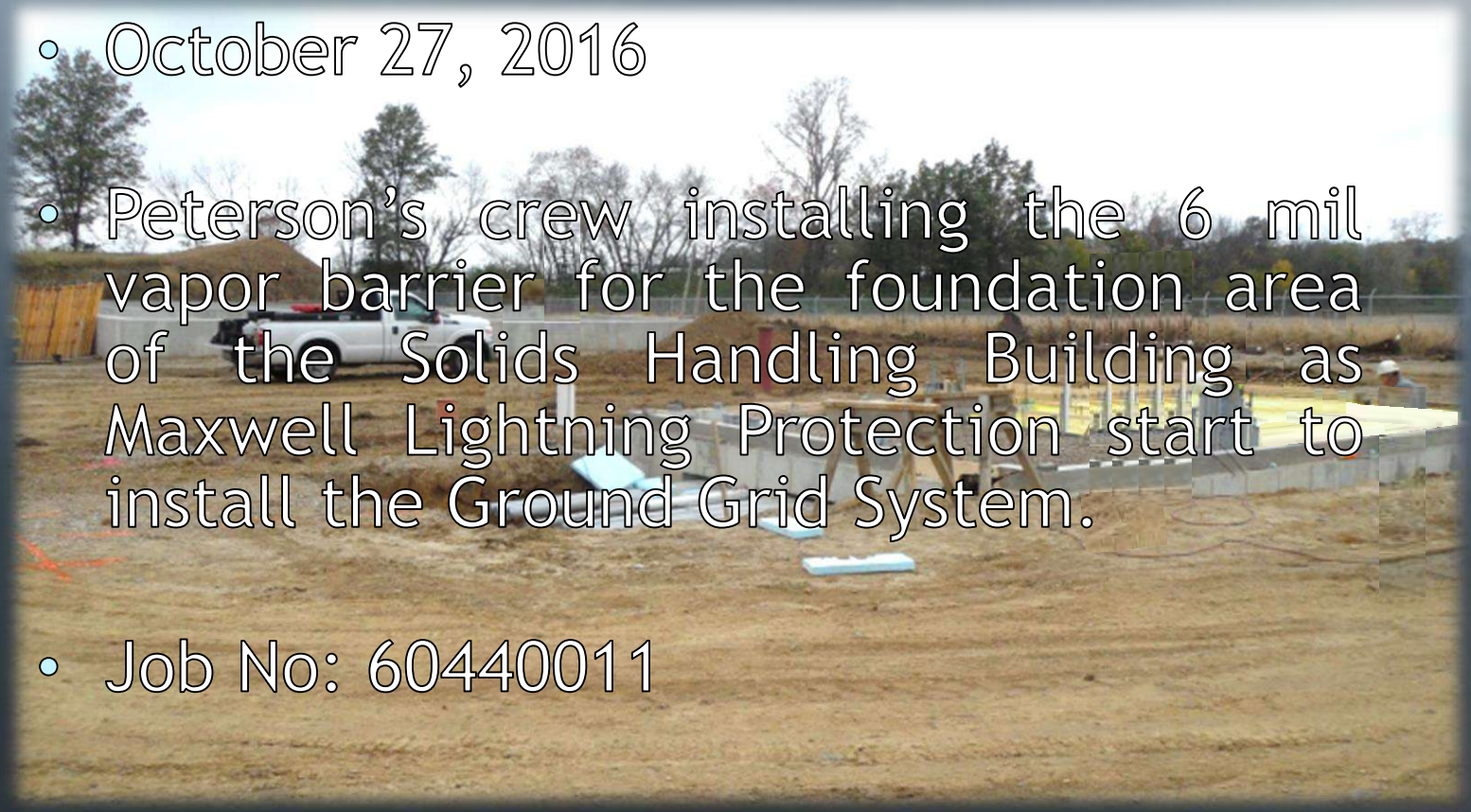
Construction in Photos

- October 26, 2016
- Peterson's crew installing #57 gravel in the interior of the Solids Handling Building foundation walls.
- Job No: 60440011

Ashville's WRRF Project

Construction in Photos

- October 27, 2016
- Peterson's crew installing the 6 mil vapor barrier for the foundation area of the Solids Handling Building as Maxwell Lightning Protection start to install the Ground Grid System.
- Job No: 60440011



Ashville's WRRF Project

Construction in Photos

- October 27, 2016
- Peterson's crew excavating to install a Manhole Trench Box and set Manhole #17.
- Job No: 60440011

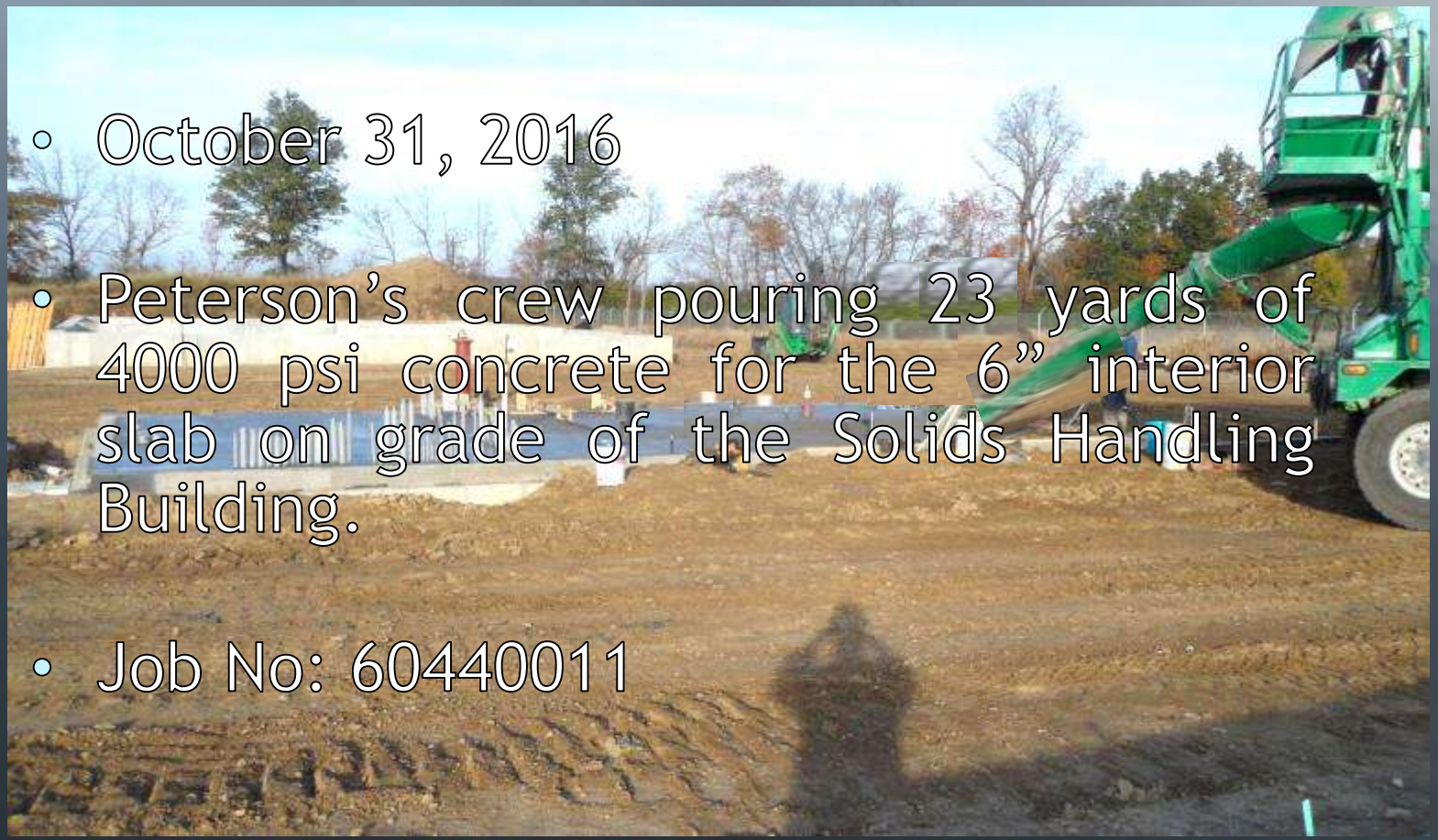
Ashville's WRRF Project

Construction in Photos

- October 28, 2016
- Midwest Reinforcing installing rebar for the Solids handling Building 6" Slab on Grade.
- Job No: 60440011

Ashville's WRRF Project

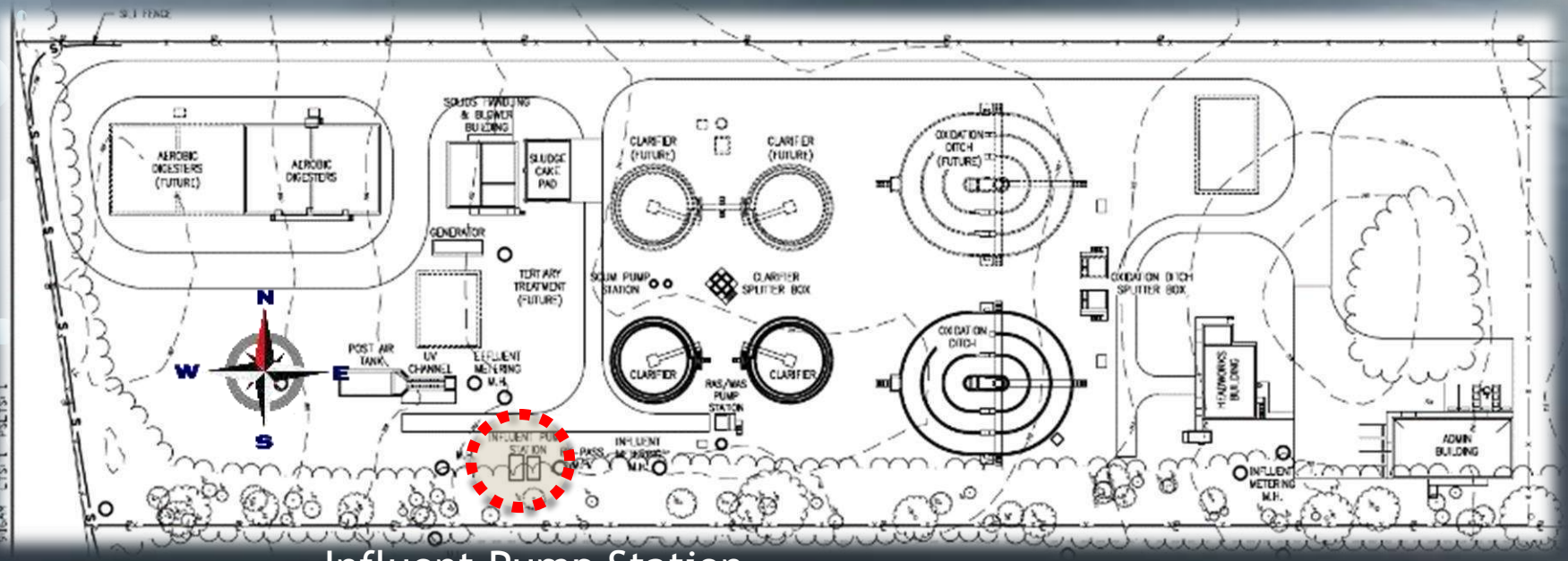
Construction in Photos



- October 31, 2016
- Peterson's crew pouring 23 yards of 4000 psi concrete for the 6" interior slab on grade of the Solids Handling Building.
- Job No: 60440011

Ashville's WRRF Project

Construction in Photos



Influent Pump Station

Ashville's WRRF Project

Construction in Photos

- October 17, 2016
- Peterson's crew continuing to excavate for the installation of the Influent Pump Station.
- Job No: 60440011

Ashville's WRRF Project

Construction in Photos

- October 17, 2016
- Peterson's crew continuing to excavate for the installation of the Influent Pump Station.
- Job No: 60440011

Ashville's WRRF Project

Construction in Photos

- October 24, 2016
- Peterson's crew installing the 24' x 16' slide-rail trench box at the Influent Pump Station site.
- Job No: 60440011

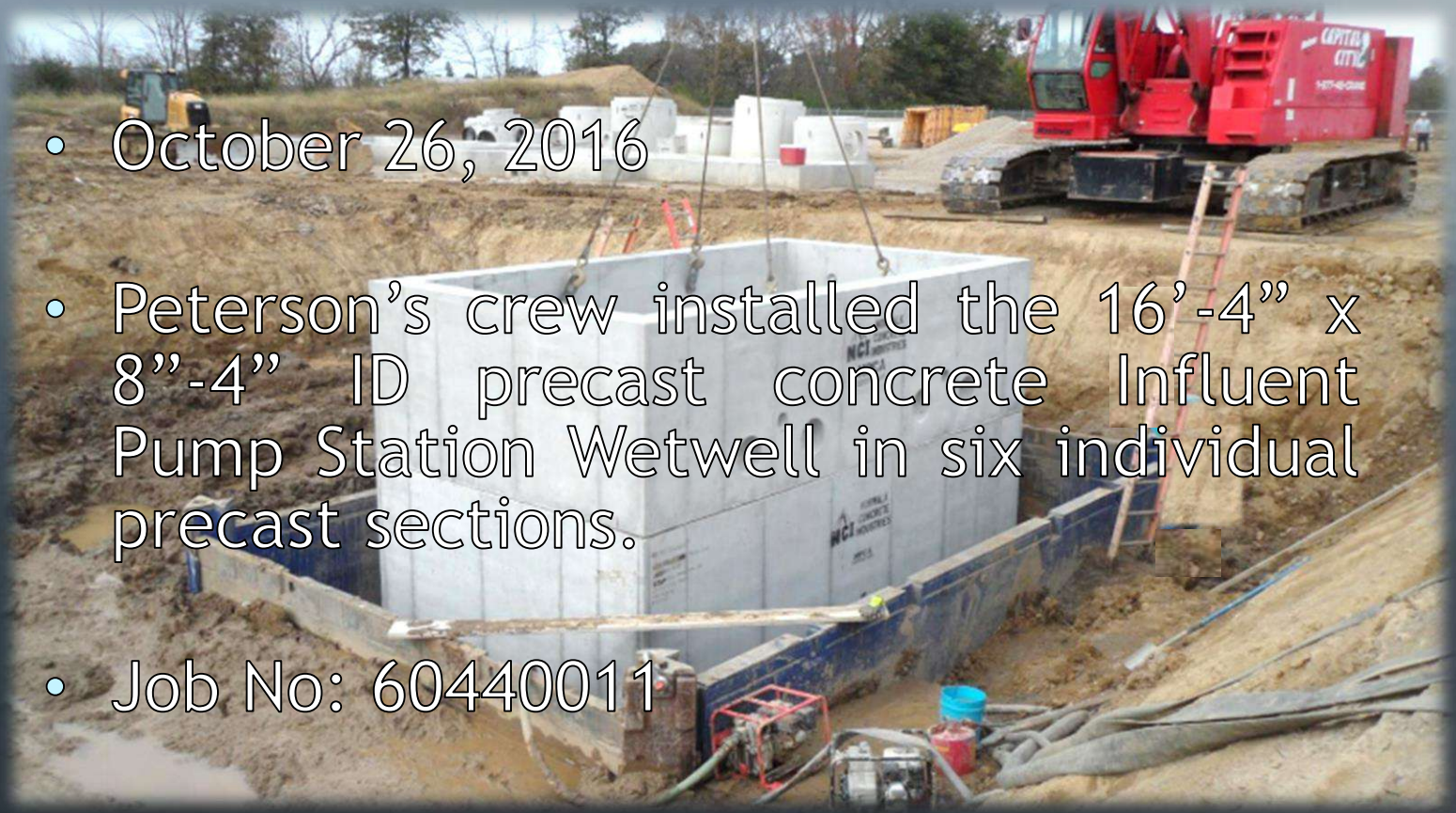
Ashville's WRRF Project

Construction in Photos

- October 25, 2016
- Peterson's crew working inside the 24' x 16" slide-rail trench box in preparation to set the precast concrete Influent Pump Station Wetwell.
- Job No: 60440011

Ashville's WRRF Project

Construction in Photos



- October 26, 2016
- Peterson's crew installed the 16'-4" x 8"-4" ID precast concrete Influent Pump Station Wetwell in six individual precast sections.
- Job No: 60440011

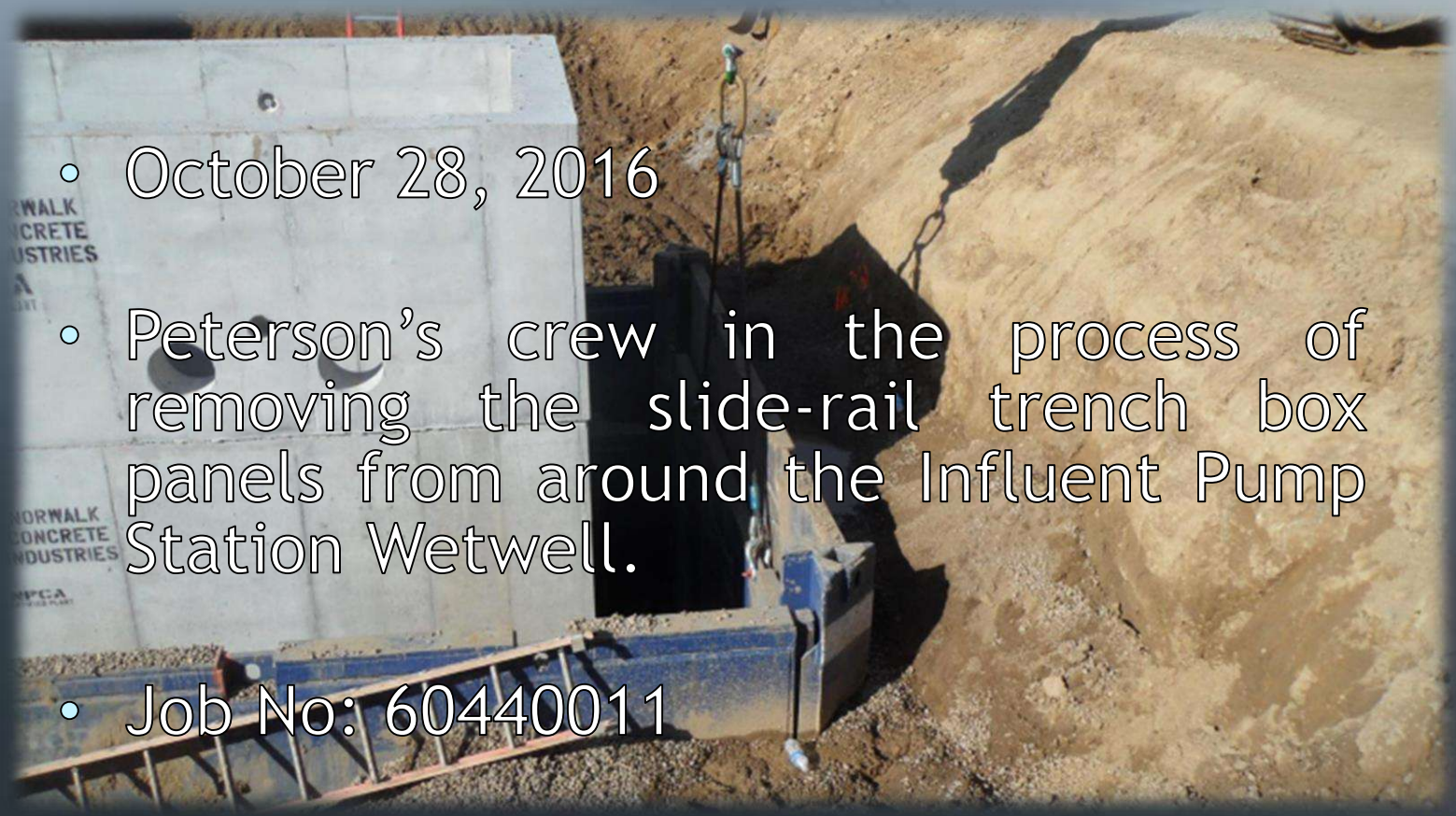
Ashville's WRRF Project

Construction in Photos

- October 26, 2016
- Amelcon Electric backfilling and installing making tape for conduit run WN-21 near Influent Pump Station Wetwell.
- Job No: 60440011

Ashville's WRRF Project

Construction in Photos



- October 28, 2016
- Peterson's crew in the process of removing the slide-rail trench box panels from around the Influent Pump Station Wetwell.
- Job No: 60440011

Ashville's Water Resource Recover Facility Project Planning Timeline 2015 - 17

3½ Year or 42 Months

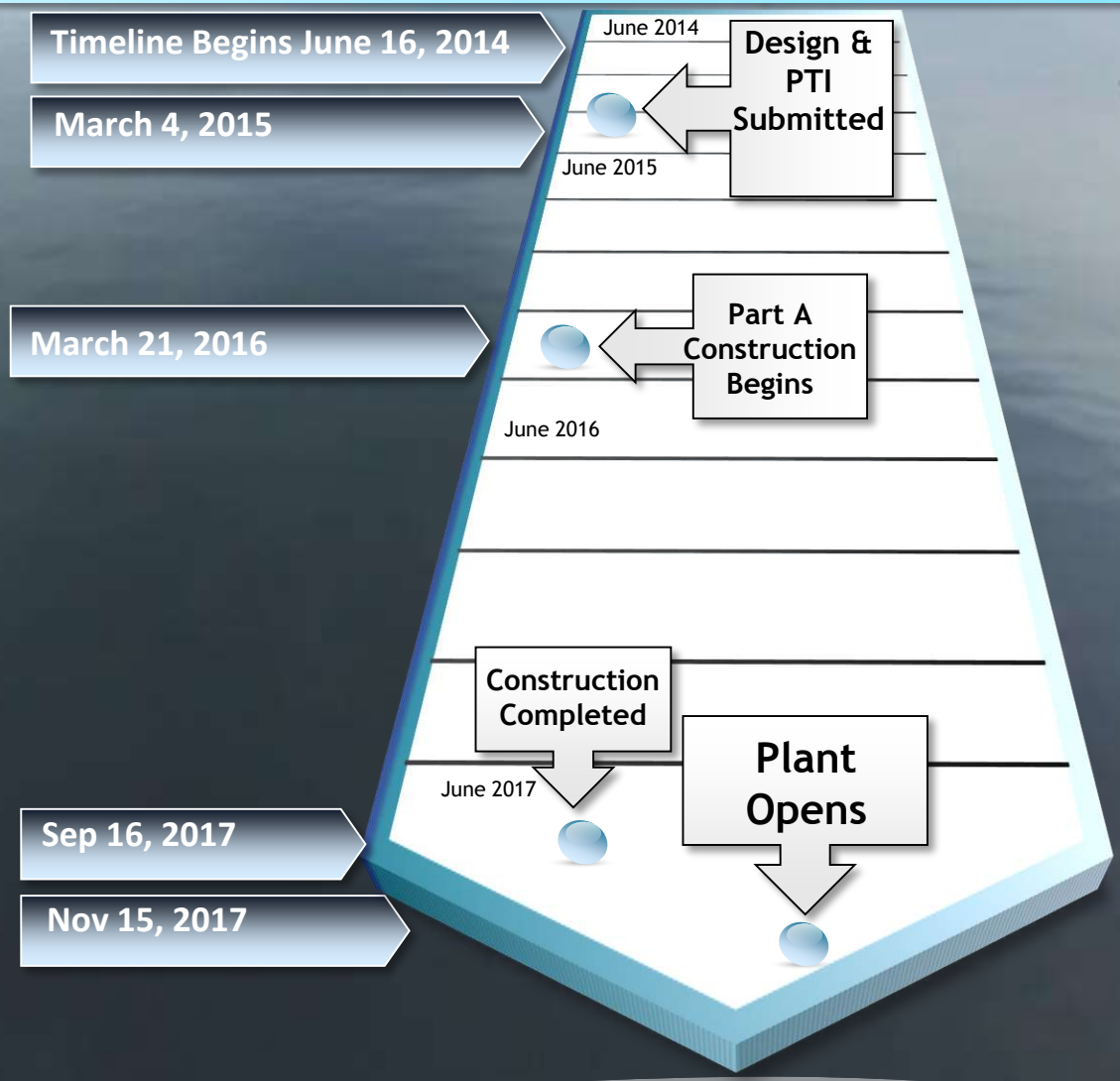
WRRF Plan Implementation

a. 9 months submit detailed design plan (s) and a complete and approvable Permit to Install (PTI) application for the new WWTP, an application for an NPDES permit, and an anti-degradation addendum
   - Correct any deficiencies within 30 days of notification by letter from Ohio EPA

b. 16 months commence construction of the new WWTP in accordance with the approved PTI
   - Within 7 days of commencing construction notify the CDO

c. 40 months of the effective date of these Orders, Respondent shall complete construction of the new WWTP in accordance with the approved PTI;
   - Within 7 days of completing construction notify the CDO

b. 60 days of completion of construction of the new WWTP, the WWTP shall attain operational level and shall meet the final effluent limitations in Respondent's NPDES permit;
   - Within 7 days of attain operational level and meet final effluent limitations notify the CDO



Next Step Part B

THANK YOU

ASHVILLE
Vision Statement