

**ALLIANT ENERGY
Interstate Power and Light Company
Lansing Generating Station**

CCR SURFACE IMPOUNDMENT

HISTORY OF CONSTRUCTION

Report Issued: September 2, 2016
Revision 0



EXECUTIVE SUMMARY

This History of Construction (Report) is prepared in accordance with the requirements of the United States Environmental Protection Agency (USEPA) published Final Rule for Hazardous and Solid Waste Management System – Disposal of Coal Combustion Residual (CCR) from Electric Utilities (40 CFR Parts 257 and 261, also known as the CCR Rule) published on April 17, 2015 and effective October 19, 2015.

This Report documents the construction history of each CCR unit at Lansing Generating Station in Lansing, Iowa in accordance with §257.73(c) of the CCR Rule. For purposes of this Report, the term “CCR unit” only refers to existing CCR surface impoundments.

Primarily, this Report is focused on providing history of construction information for each CCR surface impoundment to the extent feasible, provided that such information is reasonably and readily available.



Table of Contents

1	INTRODUCTION	1
1.1	CCR Rule Applicability	1
1.2	History of Construction Applicability	1
2	FACILITY DESCRIPTION	2
2.1	Name and Address - §257.73(c)(1)(i)	2
2.2	General Facility History	2
3	HISTORY OF CONSTRUCTION - §257.73(c)(1).....	6
3.1	LAN Upper Ash Pond.....	6
3.1.1	CCR Unit Location - §257.73(c)(1)(ii).....	6
3.1.2	Statement of Purpose - §257.73(c)(1)(iii).....	6
3.1.3	Physical Layout Information - §257.73(c)(1)(iv)	8
3.1.4	Foundation and Abutment Properties - §257.73(c)(1)(v)	8
3.1.5	Historical Construction and Use - §257.73(c)(1)(vi).....	10
3.1.6	Structures, Appurtenances, and Operations- §257.73(c)(1)(vii)	14
3.1.7	Instrumentation - §257.73(c)(1)(viii)	15
3.1.8	Area-Capacity Curve - §257.73(c)(1)(ix).....	16
3.1.9	Spillway and Diversion Features - §257.73(c)(1)(x).....	16
3.1.10	Construction Specifications, Surveillance, Maintenance, and Repair - §257.73(c)(1)(xi)...	16
3.1.11	Structural Instability Records - §257.73(c)(1)(xii).....	18
4	CHANGES TO THE HISTORY OF CONSTRUCTION.....	19

Figures

Figure 1: Site Location

Figure 2: Hydraulic Routing

Appendices

Appendix A: Site Development Drawings – 1974

Appendix B: EDR Historical Aerial Photograph Package

Appendix C: EDR Historical Topographic Map Report

Appendix D: Geoprobe Soil Borings – 1973

Appendix E: Geoprobe Soil Borings – 2015

Appendix F: Laboratory Testing on CCR Embankment Soils – 2015

Appendix G: LAN Upper Ash Pond Drawings



1 INTRODUCTION

The owner/operator of the CCR unit must provide a history of construction for the existing CCR surface impoundment at Lansing Generating Station (LAN) in Lansing, Iowa in accordance with §257.73(c)(1) of the CCR Rule. Hard Hat Services, on behalf of Interstate Power and Light Company, has provided history of construction information for the existing CCR surface impoundment to the extent feasible, provided that such information is reasonably and readily available.

1.1 CCR Rule Applicability

The CCR Rule requires that an owner/operator of the CCR unit must provide a history of construction for existing CCR surface impoundments with a height of 5 feet or more and a storage volume of 20 acre-feet or more (§257.73(b)(1)); or the existing CCR surface impoundment has a height of 20 feet or more (§257.73(b)(2)).

1.2 History of Construction Applicability

LAN has one existing CCR surface impoundment, which meets the requirements of §257.73(b)(1) and/or §257.73(b)(2), identified as the LAN Upper Ash Pond.



2 FACILITY DESCRIPTION

The following sub-sections provide a general facility description.

2.1 Name and Address - §257.73(c)(1)(i)

Included below is the name and address of the owner/operator of the CCR unit, name of the CCR unit, and state identification number for the CCR Unit (if one has been assigned by the state).

Owner/Operator Name and Address:

Interstate Power and Light Company (*an Alliant Energy Company*)
Lansing Generating Station
2320 Power Plant Drive
Lansing, IA 52151

The name of the CCR Unit located at LAN is the LAN Upper Ash Pond. The state identification number that has been assigned to the CCR unit at LAN, by the Iowa Department of Natural Resources (DNR), is 03-UDP-01-15.

2.2 General Facility History

LAN is located approximately three miles southeast of the City of Lansing, Iowa on the western shore of the Mississippi River in Allamakee County. Figure 1 provides both a topographic map and an aerial photograph of the LAN facility location, with the approximate property boundary of the facility identified.

LAN, originally owned/operated by the Interstate Power Company, initiated facility operations in 1948. At the time of initial operations LAN was a fossil-fueled electric generating station that consisted of one steam electric generating unit (Unit 1) which at the time used bituminous coal as its fuel source. The initial steam electric generating unit at LAN had a nameplate rating of 15 Megawatts (MW). The original CCR surface impoundment that was constructed at the time of initial facility operations was located west of the generating plant. The area of the original CCR surface impoundment was



constructed by the dredging of the sandy material that was present in the area. The dredged sand was used to construct the base for the area of the generating plant.

The CCR that was produced from the burning of coal included bottom ash and fly ash. The bottom ash that was produced was sluiced to the original CCR surface impoundment. The fly ash that was produced was collected in a hopper below the stack that was either transported off-site for beneficial reuse or sluiced to the original CCR surface impoundment.

In 1949, a second steam electric generating unit (Unit 2) was constructed and initiated operations. Unit 2 had a nameplate rating of 12 MW. In 1957, a third steam electric generating unit (Unit 3) was constructed and initiated operations. Unit 3 had a nameplate rating of 38 MW. Similar to Unit 1, the bottom ash that was produced from Unit 2 and Unit 3 was sluiced to the original CCR surface impoundment. The fly ash that was produced was collected in a hopper below the stack that was either transported off-site for beneficial reuse or sluiced to the original CCR surface impoundment. CCR was sluiced to the original CCR surface impoundment from 1948 to 1974.

In 1974, two new CCR surface impoundments were constructed southwest of the generating plant. The two CCR surface impoundments were identified as the Primary Ash Settling Basin and the Secondary Ash Settling Basin. The Primary Ash Settling Basin was constructed south of Power Plant Drive while the Secondary Ash Settling Basin was constructed north of Power Plant Drive. The original CCR surface impoundment ceased being a primary receiver of sluiced CCR after the two new CCR surface impoundments were constructed. The CCR that was previously sluiced to the original CCR surface impoundment was rerouted to the Primary Ash Settling Basin. Additionally, the CCR that had previously been deposited in the original CCR surface impoundment was dredged and transported to the Primary Ash Settling Basin for disposal. The original CCR surface impoundment was then backfilled with sand dredged from the Mississippi



River. The dredged sand was used to construct the base for the area that is currently identified as the coal pile storage area at LAN.

Also in 1974, the electrostatic precipitators for Unit 1, Unit 2, and Unit 3 were constructed. With the construction of the electrostatic precipitators, fly ash from Unit 1, Unit 2, and Unit 3 was collected and a hydroveyor system was used to sluice the fly ash to the LAN Upper Ash Pond.

In 1977, a fourth steam electric generating unit (Unit 4) was constructed and initiated operations. Unit 4 had a nameplate rating of 275 MW. The bottom ash that was produced from Unit 4 was sluiced to the Primary Ash Settling Basin. The fly ash was collected by the electrostatic precipitators associated with Unit 4. A hydroveyor system associated with Unit 4 was used to transport the fly ash to a storage silo. Additional discussions on historical operations and handling of the CCR at LAN is provided in further detail throughout Section 3.

From 1948 to 1998 the owner/operator of LAN was the Interstate Power Company. In 1998, a three-way merger was completed between IES Industries, Interstate Power Company, and Wisconsin Power and Light Company forming Interstate Energy Corporation. In 1999, Interstate Energy Corporation changed its name to Alliant Energy Corporation.

As LAN exists today, the generating plant consists of one steam electric generating unit (Unit 4). Unit 1 was retired in 2006, Unit 2 was retired in 2010, and Unit 3 was retired in 2013. Sub-bituminous coal is the primary fuel for producing steam. The burning of coal at LAN produces two types of CCR, which includes bottom ash and fly ash. Current CCR operations at LAN include bottom ash being sluiced to what is now identified as the LAN Upper Ash Pond (formerly identified as the Primary Ash Settling Basin), which is the only existing CCR surface impoundment present at LAN. The bottom ash is dredged from the LAN Upper Ash Pond on a regular basis and temporarily stockpiled adjacent to



the existing CCR surface impoundment for dewatering prior to transporting to the on-site active dry ash landfill for storage. The fly ash produced at LAN is either collected by the electrostatic precipitators and conveyed to the on-site fly ash storage silos, sluiced to the pond, or collected by a fabric filter bag house and automatically routed to an on-site byproduct storage silo. Approximately 90% of the fly ash produced at LAN is transported off-site for beneficial reuse while the remainder is transported to the on-site active dry ash landfill for storage.

As of September 2015, the CCR surface impoundment that was identified as the Lower Ash Pond (formerly identified as the Secondary Ash Settling Basin) no longer exists, as the CCR was removed, and the impoundment was permanently and properly closed prior to the effective date of the CCR Rule. The CCR that was present in the Lower Ash Pond was hydraulically dredged and transported to the LAN Upper Ash Pond for disposal. The Lower Ash Pond was then backfilled. Additional discussions on the closure of the Lower Ash Pond is provided in further detail throughout Section 3.



3 HISTORY OF CONSTRUCTION - §257.73(c)(1)

This Report documents the history of construction information for each existing CCR surface impoundment to the extent feasible, provided that such information is reasonably and readily available. The following activities were completed in order to reasonably collect and assemble the readily available history of construction information:

- File review at the local regulatory agency;
- Historical aerial photography review;
- Historical topography review;
- Onsite design drawing, specification, and report review;
- Electronic design drawing, specification, and report review; and
- Interview(s) with onsite personnel with historical knowledge of the existing CCR surface impoundment.

3.1 LAN Upper Ash Pond

The following subsections are intended to meet the requirements of the CCR Rule §257.73(c)(1) for the LAN Upper Ash Pond.

3.1.1 CCR Unit Location - §257.73(c)(1)(ii)

The LAN Upper Ash Pond is located southwest of the generating plant and south of Power Plant Drive. The location of the LAN Upper Ash Pond, in reference to the surrounding topography, is identified on both a USGS 7 ½ minute topographic quadrangle map and aerial photograph on Figure 1. The location of the LAN Upper Ash Pond, in reference to the immediate surroundings within the LAN property, is identified on Figure 2.

3.1.2 Statement of Purpose - §257.73(c)(1)(iii)

The LAN Upper Ash Pond is the primary receiver of sluiced bottom ash at LAN. The bottom ash is sluiced from the generating plant to the southeast corner of the LAN Upper Ash Pond where the majority of the bottom ash settles out. Ongoing maintenance dredging is conducted in the southern portion of the LAN Upper Ash Pond. The dredged bottom ash is stockpiled adjacent to the LAN Upper Ash Pond and dewatered prior to



being transported to the on-site active dry ash landfill located south of the existing CCR surface impoundment.

In addition to bottom ash, the LAN Upper Ash Pond also receives sluiced fly ash on occasion. Fly ash is occasionally sluiced to the LAN Upper Ash Pond during Unit 4 start up, Unit 4 shut down, as well as during periods where fly ash cannot be sold for beneficial reuse. Currently, approximately 90% of the fly ash produced at LAN is beneficially reused.

The LAN Upper Ash Pond is also a primary receiver of process water flows from the generating plant, which includes flows from the Unit 4 boiler floor sumps and water treatment sumps. The process water flows discharge into the northeast corner of the LAN Upper Ash Pond. Additionally, the LAN Upper Ash Pond is also a primary receiver of storm water runoff from the adjacent hillside and the on-site active dry ash landfill.

The water used to sluice bottom ash that is discharged into the southeast corner of the LAN Upper Ash Pond flows to the west prior to flowing north through a series of five interconnected settling ponds separated by intermediate dikes. The intermediate dikes consist of 30-inch diameter corrugated metal pipes (CMPs) on the west and east sides, which hydraulically connects the five settling ponds. The water from each settling pond flows north until it enters the large open settling pond area of the LAN Upper Ash Pond.

The hydraulic structure associated with the LAN Upper Ash Pond is located along the north embankment of the existing CCR surface impoundment. The hydraulic structure consists of a concrete water level control structure that controls the LAN Upper Ash Ponds water level, and is identified as Weir Box #1. The water in the LAN Upper Ash Pond flows through Weir Box #1, under Power Plant Drive through a 24-inch diameter CMP, and through a second water level control structure identified as Weir Box #2. The water then flows through a 24-inch diameter high density polyethylene (HDPE) pipe, which connects Weir Box #2 to Weir Box #3. The water flows through Weir Box #3 and



discharges to the west through a 24-inch diameter CMP into Unnamed Creek #1. Unnamed Creek #1 flows to the north and combines with the condenser discharge water. Unnamed Creek #2 is a short section of the condenser discharge channel, which then combines with Unnamed Creek #1 and discharges into the Mississippi River.

3.1.3 Physical Layout Information - §257.73(c)(1)(iv)

As identified in an Inflow Flood Control Plan¹ prepared for LAN in accordance with §257.82 of the CCR Rule, the LAN Upper Ash Pond has a watershed of approximately 87 acres. The drainage areas of the watershed include 54 acres of 19% slope hillside, 16 acres of the on-site active dry ash landfill, 11.5 acres of the LAN Upper Ash Pond surface area, and 5.5 acres of embankment.

As discussed in an Annual Inspection Report² prepared for LAN in accordance with §257.83 of the CCR Rule, the LAN Upper Ash Pond is incised along the east and south sides of the CCR unit. The west embankment of the LAN Upper Ash Pond has a height of approximately 20 feet from the crest to the toe of the downstream slope of the embankment at its greatest height. The interior storage depth of the LAN Upper Ash Pond is approximately 28 feet. The total volume of impounded CCR and water within the LAN Upper Ash Pond is approximately 587,000 cubic yards.

3.1.4 Foundation and Abutment Properties - §257.73(c)(1)(v)

As identified in a Safety Factor Assessment³ prepared for LAN in accordance with §257.73(e) of the CCR Rule, the LAN Upper Ash Pond is constructed in the valley of Unnamed Creek #1 located south of the generating plant. The Unnamed Creek #1 was rerouted from the east side of the valley to the west side of the valley in the northern half of the LAN Upper Ash Pond when the existing CCR surface impoundment was constructed in 1974. At the north end of the LAN Upper Ash Pond, Unnamed Creek #1 drops over a manmade riffle structure under the Power Plant Drive bridge losing

¹ Inflow Flood Control Plan, Lansing Generating Station, 2016, Hard Hat Environmental Services

² Annual Inspection Report, Lansing Generating Station, 2016, Hard Hat Environmental Services

³ Safety Factor Assessment, Lansing Generating Station, 2016, Hard Hat Environmental Services



approximately 14 feet of elevation to reach the elevation of Pool #9 of the Mississippi River. The drop structure prevents backwater flooding of the Mississippi River from encroaching on the toe of the west embankment of the LAN Upper Ash Pond.

In 1973, soil borings were installed in the area of the LAN Upper Ash Pond prior to construction of the existing CCR surface impoundment. The locations of the installed soil borings, as well as the soil boring logs, are enclosed in Appendix D.

In 2015, soil borings were advanced in the area of the LAN Upper Ash Pond along the north and west embankments (Appendix E) in order to determine the types of density and soil present in the embankments and foundation. The soil boring logs, including the penetration resistance measured by the Standard Split Spoon (SPT), are enclosed in Appendix E. The results of laboratory testing on selected soil samples for grain size, water content, and Atterberg limits are enclosed in Appendix F. Information on additional soil borings that were installed along the north and west embankments of the LAN Upper Ash Pond is provided in an Ash Pond Slope Stability and Hydraulic Analysis Report⁴ that was completed for LAN in 2015.

The laboratory test results indicate that below the embankments, the northern portion shows that a very loose to loose silt is present under the embankments overlying a medium dense gravel. In the southern portion of the west embankment the silt is thin and overlies the same medium dense gravel. The silt deposit in the northern portion is from backwater deposition by the Mississippi River prior to the construction of the LAN Upper Ash Pond and the thin silt layer to the south is natural deposition from flooding of the Unnamed Stream #1. The Iowa Bedrock Survey Map available from the Iowa Geology and Water Survey, July 2013 indicates that bedrock is at elevation 564 feet above mean sea level (depth of 90 feet below the top of embankment) in the northern portion of

⁴ Slope Stability & Hydraulic Analysis Report, Lansing Generating Station, May 29, 2015, Revision 1.1, Hard Hat Environmental Services
Interstate Power and Light Company – Lansing Generating Station
History of Construction
September 2, 2016



the LAN Upper Ash Pond. The bedrock rises in elevation moving south up the valley of the Unnamed Stream #1.

3.1.5 Historical Construction and Use - §257.73(c)(1)(vi)

The LAN Upper Ash Pond, formerly identified as the Primary Ash Settling Basin in site development drawings (Appendix A), was constructed in 1974 in an area located south of the generating plant and south of Power Plant Drive. Historical aerial photographs (Appendix B) confirm the LAN Upper Ash Pond was constructed within this time frame.

There are no known reasonably and readily available documents that detail the method of site preparation and construction of each zone of the LAN Upper Ash Pond. Site development drawings (Appendix A) provide details of the original design of the LAN Upper Ash Pond at the time of construction. In addition to the site development drawings, the in-situ soil properties of the CCR unit were identified in a Safety Factor Assessment⁵ prepared for LAN in accordance with §257.73(e) of the CCR Rule. As discussed in the Safety Factor Assessment, soil borings were advanced in the vicinity of the LAN Upper Ash Pond along the north and west embankments in 2015 (Appendix E). Soil samples were collected from the 2015 soil borings in order to determine grain size, water content, and Atterberg limits (Appendix F). The soil boring data, along with soil sample laboratory analytical results, indicated that the embankments were constructed of uniform fine to medium sand (SP). The sand was compacted to medium dense to dense consistency as shown by the SPT results.

Historical use of the LAN Upper Ash Pond since the existing CCR surface impoundment was constructed in 1974 has consisted of being the primary receiver of CCR. Following construction of the existing CCR surface impoundment LAN rerouted the sluiced bottom ash from the original CCR surface impoundment to the LAN Upper Ash Pond. In

⁵ Safety Factor Assessment, Lansing Generating Station, 2016, Hard Hat Environmental Services
Interstate Power and Light Company – Lansing Generating Station
History of Construction
September 2, 2016



addition to rerouting the sluiced bottom ash, the CCR that was dredged from the original CCR surface impoundment was also deposited into the LAN Upper Ash Pond.

In 1974, the electrostatic precipitators were constructed for Unit 1, Unit 2, and Unit 3. With the construction of the electrostatic precipitators, fly ash from Unit 1, Unit 2, and Unit 3 was collected and a hydroveyor system was used to sluice the fly ash to the LAN Upper Ash Pond.

In 1977, Unit 4 was constructed and the bottom ash that was produced was sluiced to the LAN Upper Ash Pond. The fly ash that was collected by the electrostatic precipitators was conveyed to a truck silo for storage. From the truck silo the fly ash was pneumatically conveyed to the LAN Upper Ash Pond for disposal. A dust suppressant was applied to the fly ash to prevent any fugitive dust. The fly ash was pneumatically conveyed to the LAN Upper Ash Pond until 1984.

The majority of the CCR sluiced to the LAN Upper Ash Pond discharged into the southern portion of the existing CCR surface impoundment. The water that was used to sluice the CCR flowed towards the northern portion of the existing CCR surface impoundment where a hydraulic structure was located along the north embankment. The original hydraulic structure, identified as Weir Box #1, consisted of a concrete water level control structure. The water would flow through Weir Box #1, through a 24-inch diameter CMP under Power Plant Drive, and through a second water level control structure identified as Weir Box #2. The water in Weir Box #2 would flow into the Secondary Ash Settling Basin. The water in the Secondary Ash Settling Basin would flow to the west through a third water level control structure identified as Weir Box #3. The water in Weir Box #3 would flow through a 24-inch diameter CMP into Unnamed Creek #1, which would discharge into the Mississippi River.

The following list provides a general overview of known modifications associated with the LAN Upper Ash Pond since construction of the existing CCR surface impoundment.



- The Primary Ash Settling Basin was re-identified as the LAN Upper Ash Pond. The timeframe of this modification has not been documented.
- The LAN Upper Ash Pond became a primary receiver of process water flows from the generating plant. The timeframe of this modification has not been documented.
- The hydraulic structure associated with the LAN Upper Ash Pond was listed with the State of Iowa in the facilities National Pollutant Discharge Elimination System (NPDES) Permit as NPDES Outfall 002. The timeframe of this modification has not been documented.
- Dredging activities have occurred within the LAN Upper Ash Pond three times. The CCR material that was dredged was transported to the on-site active dry ash landfill located south of the existing CCR surface impoundment.
- The intermediate dikes within the LAN Upper Ash Pond were constructed out of bottom ash dredged from the LAN Upper Ash Pond. The timeframe of this modification has not been documented.
- In 2015, LAN completed a seep investigation⁶ of the west embankment of the LAN Upper Ash Pond, as well as along the west embankment of the Lower Ash Pond. The seep investigation analyzed the conditions of the embankment by conducting soil borings, soil cataloging, soil sampling for grain size analysis, and temporary groundwater level monitoring. The seep investigation activities were conducted in order to determine whether the water in the LAN Upper Ash Pond and the Lower Ash Pond were hydraulically connected to potential seepage observed along the toe of the exterior slopes of the embankments. The investigation determined the source of seepage observed along the exterior slopes of the

⁶ Seep Investigation Report, Lansing Generating Station, May 18, 2015, Revision 3, Hard Hat Environmental Services
Interstate Power and Light Company – Lansing Generating Station
History of Construction
September 2, 2016



embankments was primarily from the LAN Upper Ash Pond and Lower Ash Pond.

In addition to the seep investigation, LAN completed an ash pond slope stability and hydraulic analysis⁷ in order to evaluate the LAN Upper Ash Pond and lower ash pond under a 100-year storm flow, as well as for static, and seismic, induced slope stability. The analysis determined the north embankment of the LAN Upper Ash Pond did not have an acceptable factor of safety of 1.5 for static stability. Additionally, the west embankment of the Lower Ash Pond did not meet the required minimum factor of safety of 1.5.

As a result of the seep investigation and slope stability and hydraulic analysis, LAN permanently closed the Lower Ash Pond and installed a low permeability cut off wall along the west embankment of the LAN Upper Ash Pond. The two modifications eliminated the identified seepage through the west embankments of the LAN Upper Ash Pond and the Lower Ash Pond, as well as increased the factor of safety for static stability along the north embankment of the LAN Upper Ash Pond.

The Lower Ash Pond closure⁸ was completed by dredging the CCR from the surface impoundment and hydraulically transporting it to the LAN Upper Ash Pond for disposal. The Lower Ash Pond was then backfilled with quarry shot rock, followed by general fill material from an on-site borrow material source. The hydraulic structures Weir Box #2 and Weir Box #3 were connected with a 24-inch HDPE pipe in order to route the water from the LAN Upper Ash Pond through all

⁷ Slope Stability & Hydraulic Analysis Report, Lansing Generating Station, May 29, 2015, Revision 1.1, Hard Hat Environmental Services

⁸ Lower Ash Pond Closure Construction Completion Report, Lansing Generating Station, January 2016, Hard Hat Environmental Services



of the hydraulic structures and into Unnamed Creek #1. The permanent closure of the Lower Ash Pond was completed prior to the effective date of the CCR Rule.

The LAN Upper Ash Pond cut off wall⁹ was installed along the west embankment using a blast furnace slag-cement bentonite (SCB) slurry. The purpose of the cut off wall was to construct a vertical barrier from the crest of the embankment into the silt layer below the base of the west embankment. The length of the installed cut off wall was approximately 1,500 linear feet. A total of six piezometers were installed along the west embankment in order to monitor the groundwater performance within the embankment on either side of the cut off wall. The installation of the cut off wall was completed in October 2015.

Historical aerial photographs (Appendix B) and historical topographic maps (Appendix C) identify the topographic changes to the LAN Upper Ash Pond that have occurred since the time of initial facility operations.

3.1.6 Structures, Appurtenances, and Operations- §257.73(c)(1)(vii)

Detailed dimensional drawings of the LAN Upper Ash Pond that were reasonably and readily available are identified below. The detailed dimensional drawings were obtained from various designs, plans, and reports that were assembled during the historical information review.

- Unit 4 Boring Location Plan (1973) - Drawings prepared by Sargent & Lundy provide historical soil boring locations and soil boring logs that were completed prior to construction of the LAN Upper Ash Pond (Appendix D).
- Site Development Drawings (1974) - Drawings prepared by Sargent & Lundy provide details of the original design of the LAN Upper Ash Pond prior to construction. Drawings identify foundation materials below the proposed LAN

⁹ Upper Ash Pond Cut Off Wall Construction Completion Report, Lansing Generating Station, January 2016, Hard Hat Environmental Services
Interstate Power and Light Company – Lansing Generating Station
History of Construction
September 2, 2016



Upper Ash Pond, the original topography in the area of the proposed LAN Upper Ash Pond, original design contours of the proposed LAN Upper Ash Pond, as well as detailed information of the original hydraulic structures associated with the LAN Upper Ash Pond (Appendix A).

- Lower Ash Pond Closure (2015) – As-built drawings identify the dredging and closure of the lower ash pond, as well as modification of the existing hydraulic structures that was completed in 2015 by Hard Hat Services. Included with the drawings are specifications detailing the closure requirements (Appendix G).
- LAN Upper Ash Pond Bathymetric Survey (2015) – Drawing provides bathymetric survey data of the LAN Upper Ash Pond that was completed in September 2015 by Brennan (Appendix G)
- Slurry Wall Construction and Seep Repair (2015) – As-built drawings identify the location of the low permeability cut off wall that was installed along the west embankment of the LAN Upper Ash Pond in 2015 by Hard Hat Services. Included with the drawings are specifications detailing the installation requirements (Appendix G).

3.1.7 Instrumentation - §257.73(c)(1)(viii)

Instrumentation used to support the operation of the LAN Upper Ash Pond consists of an ultrasonic transducer down look sensor mounted over Weir Box #1, which is located along the northern portion of the LAN Upper Ash Pond. The ultrasonic transducer down look sensor collects flow data in accordance with the requirements of the facility's NPDES permit for NPDES Outfall 002.

Prior to the closure of the Lower Ash Pond in 2015, the ultrasonic transducer down look sensor was located at Weir Box #3 along the western portion of the Lower Ash Pond. There is no known readily available information on when the ultrasonic transducer was initially installed, or what instrumentation was utilized prior to the ultrasonic transducer.



3.1.8 Area-Capacity Curve - §257.73(c)(1)(ix)

An area-capacity curve identifies the relationship between the surface area of the existing CCR surface impoundment and an elevation, which corresponds to an available storage capacity. After review of readily available historical documents, there is no readily available information regarding area-capacity curves for the LAN Upper Ash Pond.

3.1.9 Spillway and Diversion Features - §257.73(c)(1)(x)

The LAN Upper Ash Pond is equipped with three hydraulic structures. The first hydraulic structure is identified as Weir Box #1 and is located along the north embankment of the LAN Upper Ash Pond. The hydraulic structure consists of a concrete water level control structure that controls the LAN Upper Ash Ponds water level. The water in the LAN Upper Ash Pond flows through the Weir Box #1, under Power Plant Drive through a 24-inch diameter CMP, and through a second water level control structure identified as Weir Box #2. The water then flows through a 24-inch diameter HDPE pipe, which connects Weir Box #2 to Weir Box #3. The water flows through Weir Box #3 and discharges to the west through a 24-inch diameter CMP into Unnamed Creek #1. Unnamed Creek #1 flows to the north and combines with Unnamed Creek #2, which discharges into the Mississippi River.

The hydraulic structures are constructed of non-erodible material and designed to carry sustained flows. Additional information regarding the hydraulic capacity of the hydraulic structure associated with the LAN Upper Ash Pond is provided in the Inflow Flood Control Plan¹⁰.

3.1.10 Construction Specifications, Surveillance, Maintenance, and Repair - §257.73(c)(1)(xi)

LAN implements a Site-Specific Inspection and Maintenance (I&M) Plan¹¹, in accordance with an Alliant Energy I&M Plan¹². The Site-Specific I&M Plan has been implemented at LAN in order to identify the factors which may affect the long-term stability of the

¹⁰ Inflow Flood Control Plan, Lansing Generating Station, 2016, Hard Hat Environmental Services

¹¹ Inspection and Maintenance (I&M) Plan, Lansing Generating Station, October 2015, Version 2.0-Revision 0.0

¹² Inspection and Maintenance (I&M) Plan, Alliant Energy, September 2015, Version 2.0-Revision 0.0

Interstate Power and Light Company – Lansing Generating Station

History of Construction
September 2, 2016



existing CCR surface impoundment. The Site-Specific I&M Plan identifies existing operation and maintenance activities, and identifies the inspection, monitoring, maintenance, and recordkeeping requirements as outlined in the Alliant Energy I&M Plan in order to maintain the integrity of the existing CCR surface impoundment.

Visual inspections of the LAN Upper Ash Pond are completed in accordance with §257.83 of the CCR Rule. At intervals not exceeding seven days, the LAN Upper Ash Pond is visually inspected for any appearances of structural weakness or other conditions which are disrupting or have the potential to disrupt the operation or safety of the existing CCR surface impoundment. In addition to seven-day inspections, at intervals not exceeding thirty days, all instrumentation supporting the operation of the LAN Upper Ash Pond is monitored for detecting discernible or significant changes in the operation of the CCR unit.

LAN also conducts event-related inspections which may include inspections following storm events, seismic events, major maintenance activities, as well as other unusual events. Annual inspections are conducted by a qualified PE who is familiar with the requirements of the CCR Rule, the Alliant Energy I&M Plan, the LAN Site-Specific I&M Plan, and other facility specific information pertaining to the existing CCR surface impoundment.

Maintenance activities that are completed at LAN may include routine maintenance, event-related maintenance, and long-term maintenance. Routine maintenance activities may include management of vegetation (or other forms of slope protection), tree and sapling removal, reseeding of disturbed vegetated areas, removal of debris from collection and diversion channels, and repair of eroded areas. Event-related maintenance activities may include maintenance after unusual events such as heavy rainfall, periods of very high winds, or seismic activity. Maintenance may include repair of eroded areas or removal of damaged vegetation. Long-term maintenance activities are identified as



part of the ongoing inspection program, through the annual inspections, or through other engineering evaluations and may include larger remediation activities.

3.1.11 Structural Instability Records - §257.73(c)(1)(xii)

After review of readily available historical documents the following list identifies records of structural instability associated with the LAN Upper Ash Pond.

- In 2015, LAN completed an Ash Pond Slope Stability and Hydraulic Analysis¹³ in order to evaluate the LAN Upper Ash Pond and Lower Ash Pond for static, and seismic, induced slope stability. The analysis determined the north embankment of the LAN Upper Ash Pond had a safety factor less than 1.5 for static stability as required by the CCR Rule.

In order to achieve an acceptable safety factor that exceed the required minimum, LAN permanently closed the Lower Ash Pond. Additional details of the modifications that were completed are identified in Section 3.1.5 and 3.1.6.

¹³ Slope Stability & Hydraulic Analysis Report, Lansing Generating Station, May 29, 2015, Revision 1.1, Hard Hat Environmental Services
Interstate Power and Light Company – Lansing Generating Station
History of Construction
September 2, 2016



4 CHANGES TO THE HISTORY OF CONSTRUCTION

If there is a significant change to any information compiled within the Report, the owner or operator of the CCR unit must update the relevant information and place into the facility's operating record as required by §257.105(f)(g).



FIGURES

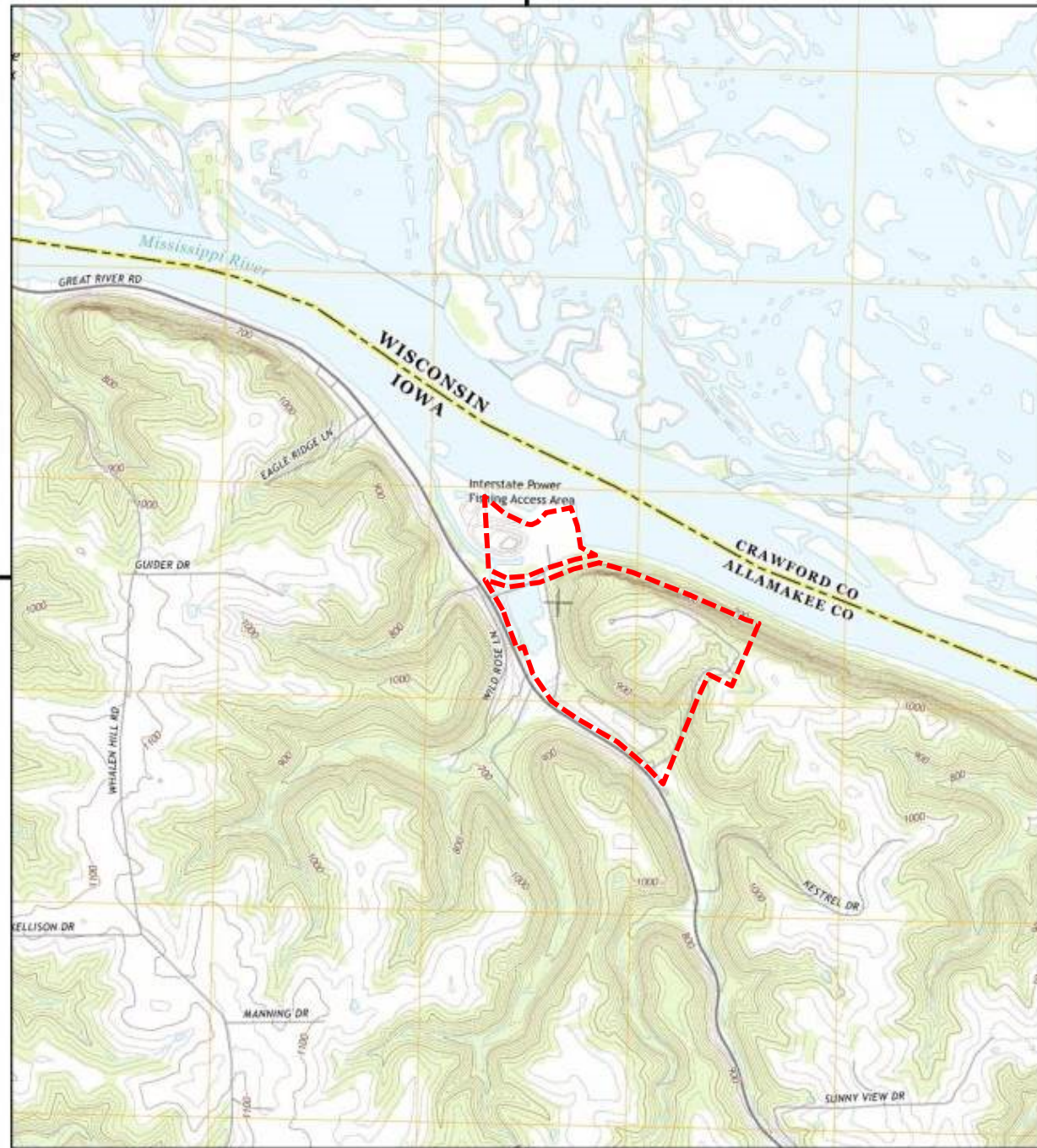
Alliant Energy
Interstate Power and Light Company
Lansing Generating Station
Lansing, Iowa

History of Construction

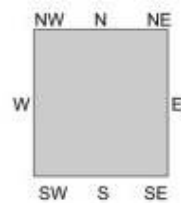


Historical Topo Map

2013



This report includes information from the following map sheet(s).



TP, Lansing, 2013, 7.5-minute

SITE NAME: Lansing Generating Station
 ADDRESS: 2364-2366 Power Plant Dr
 Lansing, IA 52151
 CLIENT: Environmental Site Assessors



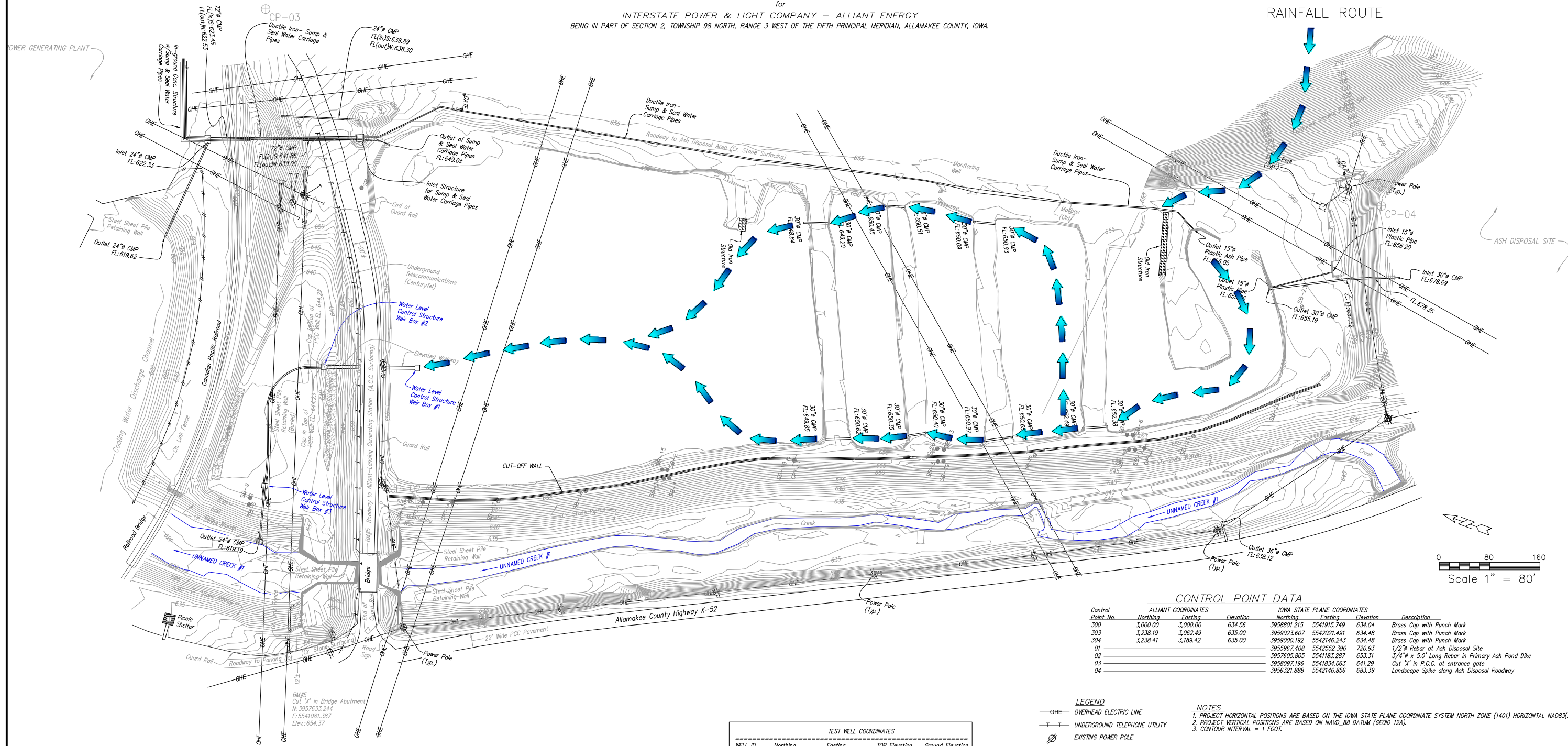
455570 - 1 page 5

Historical Aerial Photo



----- Approximate Property Boundary

UPPER AND LOWER CCR POND TOPOGRAPHIC SURVEY AND LOWER CCR POND BATHYMETRY
at
ALLIANT LANSING POWER GENERATING STATION
for
INTERSTATE POWER & LIGHT COMPANY - ALLIANT ENERGY
BEING IN PART OF SECTION 2, TOWNSHIP 98 NORTH, RANGE 3 WEST OF THE FIFTH PRINCIPAL MERIDIAN, ALLAMAKEE COUNTY, IOWA.



CONTROL POINT DATA

Control Point No.	ALLIANT COORDINATES		Elevation	IOWA STATE PLANE COORDINATES		Description	
	Northing	Easting		Northing	Easting		
300	3,000.00	3,000.00	634.56	3958801.215	5541915.749	634.04	Brass Cap with Punch Mark
303	3,238.19	3,062.49	635.00	3959023.607	5542021.491	634.48	Brass Cap with Punch Mark
304	3,238.41	3,189.42	635.00	3959000.192	5542146.243	634.48	Brass Cap with Punch Mark
01				3955967.408	5542552.396	720.93	1/2" Rebar at Ash Disposal Site
02				3957605.805	5541183.287	653.31	3/4" x 5.0' Long Rebar in Primary Ash Pond Dike
03				3958097.196	5541834.063	641.29	Cut 'X' in P.C.C. at entrance gate
04				3956321.888	5542146.856	683.39	Landscape Spike along Ash Disposal Roadway

LEGEND

- OHE— OVERHEAD ELECTRIC LINE
- - - UNDERGROUND TELEPHONE UTILITY
- ⊕ EXISTING POWER POLE
- SB ● TEMPORARY WELL LOCATION
- SB ● SOIL BORING LOCATION
- CPT ● CONE PENETROMETER TEST LOCATION
- ⊕ CONTROL POINT

NOTES

1. PROJECT HORIZONTAL POSITIONS ARE BASED ON THE IOWA STATE PLANE COORDINATE SYSTEM NORTH ZONE (1401) HORIZONTAL NAD83(2011).
2. PROJECT VERTICAL POSITIONS ARE BASED ON NAVD_88 DATUM (GEOID 12A).
3. CONTOUR INTERVAL = 1 FOOT.

NOTE:

1. SURVEY INFORMATION PROVIDED ABOVE WAS COMPILED BY MOHN SURVEYING, INC. 1890 GREAT RIVER ROAD LANSING, IOWA 52151, APRIL 2015.
2. ALLIANT ENERGY REQUIRES 20 FEET OVERHEAD SEPARATION DISTANCE FOR EQUIPMENT OPERATING UNDER POWERLINES.

WELL ID	TEST WELL COORDINATES		TOP Elevation	Ground Elevation
	Northing	Easting		
SB-1	3957238.28	5541352.23	653.36	653.26
SB-2	3957245.81	5541363.76	652.66	652.63
SB-3	3956845.82	5541523.57	656.39	655.37
SB-4	3956853.80	5541542.37	655.88	655.34
SB-5	3956557.49	5541648.53	656.70	655.80
SB-6	3956569.09	5541669.35	656.19	655.97
SB-7	3957856.52	5541618.95	653.45	653.33
SB-8	3957852.40	5541084.50	641.74	638.43
SB-9	3957854.40	5541094.88	640.63	638.52
SB-10	NS	NS	656.38	655.85
SB-11	NS	NS	656.38	656.17
SB-12	NS	NS	656.40	655.44
SB-13	NS	NS	656.43	655.27
SB-14	NS	NS	654.37	653.15
SB-15	NS	NS	652.75	652.67

NOTICE
THIS DRAWING IS THE PROPERTY OF HARD HAT SERVICES AND IS NOT TO BE REPRODUCED, CHANGED, OR COPIED IN ANY FORM OR MANNER WITHOUT PRIOR WRITTEN PERMISSION. ALL RIGHTS RESERVED.

REV	DATE	BY	APP	DESCRIPTION

SCALE: AS SHOWN DATE: 5-19-16
DRAWN BY: JFD CHECKED BY: CTS APPROVED BY: MWL



HARD HAT SERVICES[™]
Engineering, Construction and Management Solutions

CLIENT / LOCATION
INTERSTATE POWER AND LIGHT (IPL)
LANSING GENERATING STATION PROJECT
2320 POWER PLANT DR
LANSING, IA 52151

DRAWING DESCRIPTION
History of Construction
SITE PLAN

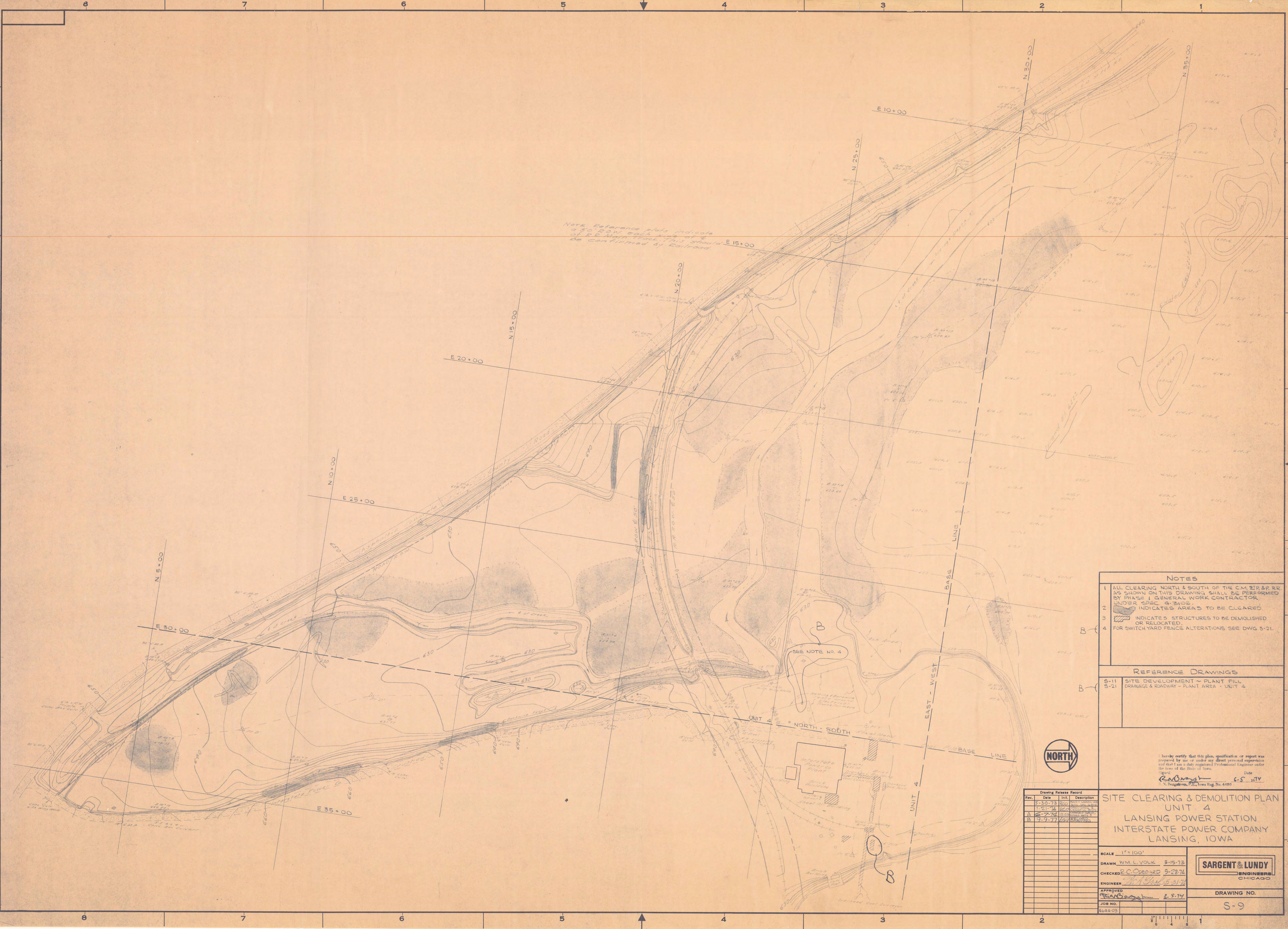
JOB 154.018.012.002
SHT. FIGURE 2
DWG. 154.018.012.002-D2

**APPENDIX A – Site Development
Drawings – 1974**

Alliant Energy
Interstate Power and Light Company
Lansing Generating Station
Lansing, Iowa

History of Construction





NOTE: Reference plots indicate a 50' E-W width of the main track. This should be confirmed by Railroad.

- NOTES**
- 1 ALL CLEARING NORTH & SOUTH OF THE C.M. SIP & RR. AS SHOWN ON THIS DRAWING SHALL BE PERFORMED BY PHASE I GENERAL WORK CONTRACTOR UNDER SPEC. G-310E.
 - 2 [Hatched area symbol] INDICATES AREAS TO BE CLEARED OR RELOCATED.
 - 3 [Hatched area symbol] INDICATES STRUCTURES TO BE DEMOLISHED OR RELOCATED.
 - 4 FOR SWITCH YARD FENCE ALTERATIONS SEE DWG. S-21.

- REFERENCE DRAWINGS**
- S-11 SITE DEVELOPMENT - PLANT FILL
 - S-21 DRAINAGE & ROADWAY - PLANT AREA - UNIT 4



I hereby certify that this plan, specification or report was prepared by me or under my direct personal supervision and that I am a duly registered Professional Engineer under the laws of the State of Iowa.

Date: 6-5-77
 S. R. [Signature]
 S. R. [Signature], P.E., Iowa Reg. No. 4480

Rev.	Date	Init.	Description
1	5-30-73	WLV	PRELIMINARY
2	1-21-74	WLV	REVISED
A	2-7-74	WLV	REVISED
B	9-9-77	WLV	REVISED

**SITE CLEARING & DEMOLITION PLAN
 UNIT 4
 LANSING POWER STATION
 INTERSTATE POWER COMPANY
 LANSING, IOWA**

SCALE: 1" = 100'

DRAWN: W.M. L. VOLK 3-15-73
 CHECKED: R.C. ODEGARD 5-28-74
 ENGINEER: [Signature] 5-31-74
 APPROVED: [Signature] 6-5-77
 JOB NO. 1644-03



DRAWING NO. S-9

ASH BASIN & MISC. SITE WORK POINTS					
WORK POINT	LOCATION	WORK POINT	LOCATION		
200	N 16 + 29.88	E 22 + 50.57	220	N 19 + 80.60	E 23 + 67.38
201	N 16 + 29.36	E 23 + 63.97	221	N 19 + 77.50	E 23 + 65.50
202	N 17 + 55.61	E 24 + 65.34	222	N 19 + 48.50	E 23 + 57.50
203	N 18 + 52.15	E 27 + 04.54	223	N 18 + 90.00	E 24 + 05.00
204	N 19 + 18.48	E 27 + 30.45	224		
205	N 19 + 55.71	E 27 + 47.68	225	N 20 + 28.00	E 29 + 58.03
206	N 20 + 28.00	E 28 + 59.97	226	N 19 + 70.31	E 30 + 52.72
207	N 20 + 68.03	E 29 + 00.18	227	N 17 + 35.00	E 23 + 57.80
208	N 21 + 13.59	E 29 + 21.34	228	N 19 + 09.00	E 22 + 64.00
209	N 23 + 10.00	E 30 + 12.92	229	N 19 + 90.00	E 22 + 80.00
210	N 23 + 10.00	E 27 + 25.24	230	N 20 + 22.36	E 22 + 50.00
211	N 23 + 19.05	E 26 + 53.04	231	N 21 + 30.67	E 23 + 08.00
212	N 16 + 10.79	E 25 + 51.95	232	N 21 + 70.67	E 25 + 15.00
213	N 13 + 43.60	E 25 + 59.59	233	N 23 + 70.38	E 26 + 27.58
214	N 14 + 88.57	E 26 + 35.73	234	N 17 + 90.81	E 26 + 30.31
215	N 12 + 31.64	E 28 + 60.12	235	N 19 + 08.40	E 24 + 02.00
216	N 11 + 04.85	E 29 + 21.27	236	N 30 + 56.68	E 13 + 34.81
217	N 7 + 54.17	E 31 + 23.81	237	N 24 + 40.00	E 24 + 32.00
218	N 5 + 18.18	E 33 + 39.28	238	N 26 + 92.84	E 34 + 30.91
219	N 6 + 00.12	E 35 + 43.82			

* COORDINATES SO NOTED FURNISHED BY FIELD 5-14-75.

SEE NOTE NO. 6

Note: Railroad Right of Way of RR No. 100 is shown as confirmed by Railroad.



DREDGE AS REQUIRED TO PROVIDE LIFT FOR COAL HANDLING AREA AND TO MAKE UP DEFICIT OF FILL FOR CONSTRUCTION OF ASH POND DIKES. MINIMUM ELEV. OF DREDGING REQUIRED FOR DOKK: EL. 607.

- NOTES**
- ALL EARTHWORK NORTH OF THE CHICAGO, MILWAUKEE & ST. PAUL PACIFIC RAILROAD, INCLUDING DREDGING, LAND FILL AND GRADING SHALL BE PERFORMED BY A GENERAL WORK CONTRACTOR UNDER OPERATIONAL CONTROL.
 - ALL SLOPES ARE 3:1 UNLESS NOTED.
 - THE ALLAMAKEE COUNTY, IOWA HIGHWAY DEPT. WILL PROVIDE A SURFACE COURSE MATERIAL CONSISTING OF 2" ASPHALTIC CONCRETE OVER A 4" CRUSHED STONE BASE COURSE. THIS ROADWAY MATERIAL WILL BE APPLIED FROM COUNTY ROAD NEAR W.P. 200 TO W.P. 207 AT THIS TIME.
 - PLACE ESTONITE IN STRICT ACCORDANCE WITH APPROVED MANUFACTURER'S INSTRUCTIONS AND ON ALL SURFACES OF DIKES IN THE PRIMARY AND SECONDARY ASH BASINS AND THE 200' WIDE ASH LASH. ONLY SOIL TESTING, PERFORMED BY A REGISTERED ENGINEER OVER DRY SPOTS ARE ALLOWED UNLESS NOTED.
 - TOP OF ASH BASIN DIKES EL. 654.0 UNLESS NOTED.
 - SEE DWG. S-10 FOR COFFERDAM & DREDGING COORDINATES WITH COAL PILE.

- REFERENCE DRAWINGS**
- PLAN - 50' TEST BORINGS & SOUNDINGS
 - PLAN - LOCATION PLAN
 - PLAN - SITE DEVELOPMENT PLAN
 - PLAN - SITE DEVELOPMENT - COFFERDAM & DREDGING PLAN
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - ONE
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - TWO
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - THREE
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - FOUR
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - FIVE
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - SIX
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - SEVEN
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - EIGHT
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - NINE
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - TEN
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - ELEVEN
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - TWELVE
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - THIRTEEN
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - FOURTEEN
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - FIFTEEN
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - SIXTEEN
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - SEVENTEEN
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - EIGHTEEN
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - NINETEEN
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - TWENTY
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - TWENTY ONE
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - TWENTY TWO
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - TWENTY THREE
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - TWENTY FOUR
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - TWENTY FIVE
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - TWENTY SIX
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - TWENTY SEVEN
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - TWENTY EIGHT
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - TWENTY NINE
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - THIRTY
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - THIRTY ONE
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - THIRTY TWO
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - THIRTY THREE
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - THIRTY FOUR
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - THIRTY FIVE
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - THIRTY SIX
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - THIRTY SEVEN
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - THIRTY EIGHT
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - THIRTY NINE
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - FORTY
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - FORTY ONE
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - FORTY TWO
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - FORTY THREE
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - FORTY FOUR
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - FORTY FIVE
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - FORTY SIX
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - FORTY SEVEN
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - FORTY EIGHT
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - FORTY NINE
 - PLAN - SITE DEVELOPMENT - ASH DIKE SECTION - FIFTY

I hereby certify that the above specifications were prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer in the State of Iowa.

Date: 6-5-75
 S. J. Bergstrom, P.E., Iowa Reg. No. 4480

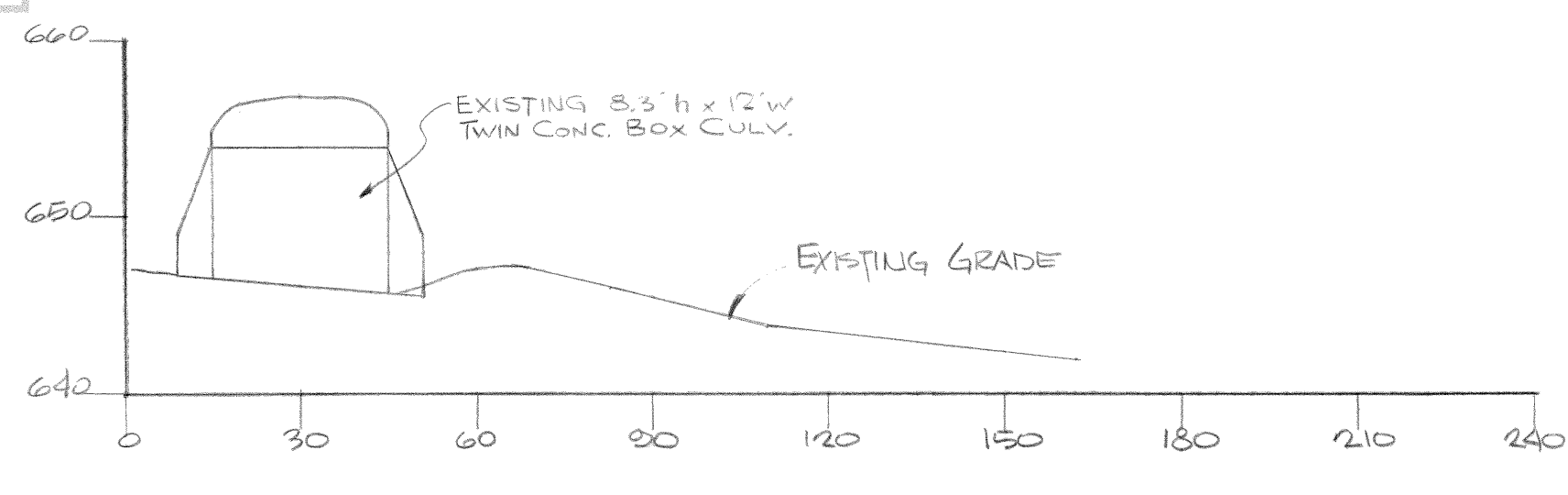
**SITE DEVELOPMENT
 PLANT FILL - UNIT A
 LANSING POWER STATION
 INTERSTATE POWER COMPANY
 LANSING, IOWA**

Rev.	Date	By	Description
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2	5-14-75	SHV	ISSUED FOR PERMIT
3	5-14-75	SHV	ISSUED FOR PERMIT
4	5-14-75	SHV	ISSUED FOR PERMIT
5	5-14-75	SHV	ISSUED FOR PERMIT
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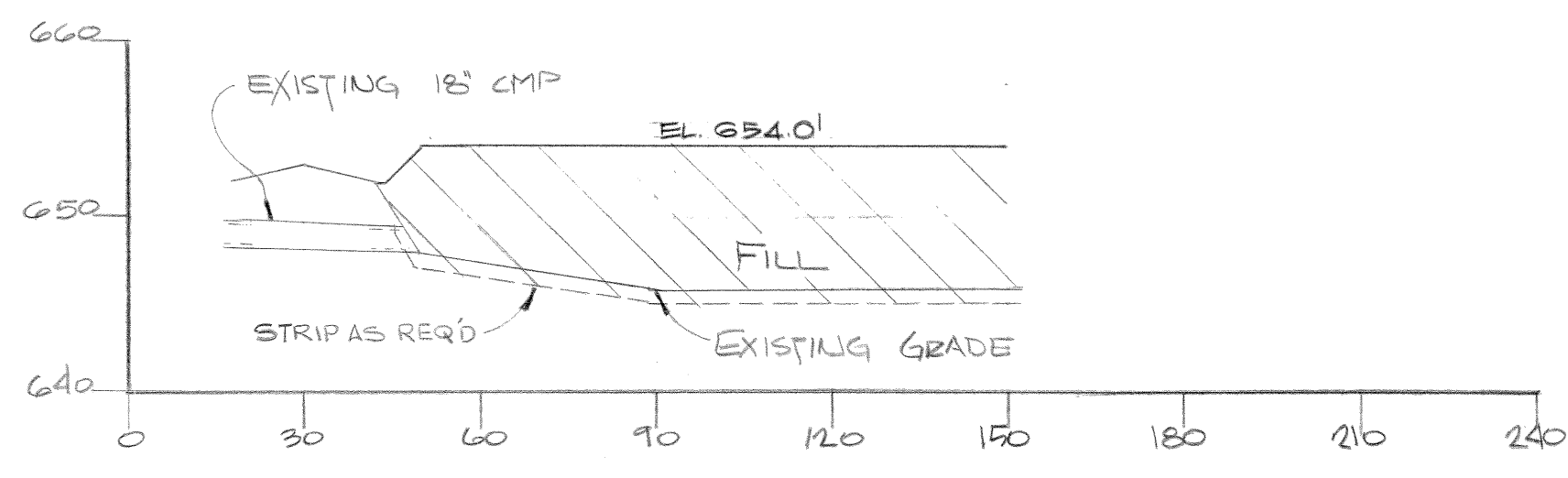
DRAWN: W. J. VOLK 5-14-75
 CHECKED: R. C. OGDEN 5-14-75
 ENGINEER: S. J. BERGSTROM 6-5-75

SARGENT & LUNDY
 ENGINEERS
 CHICAGO

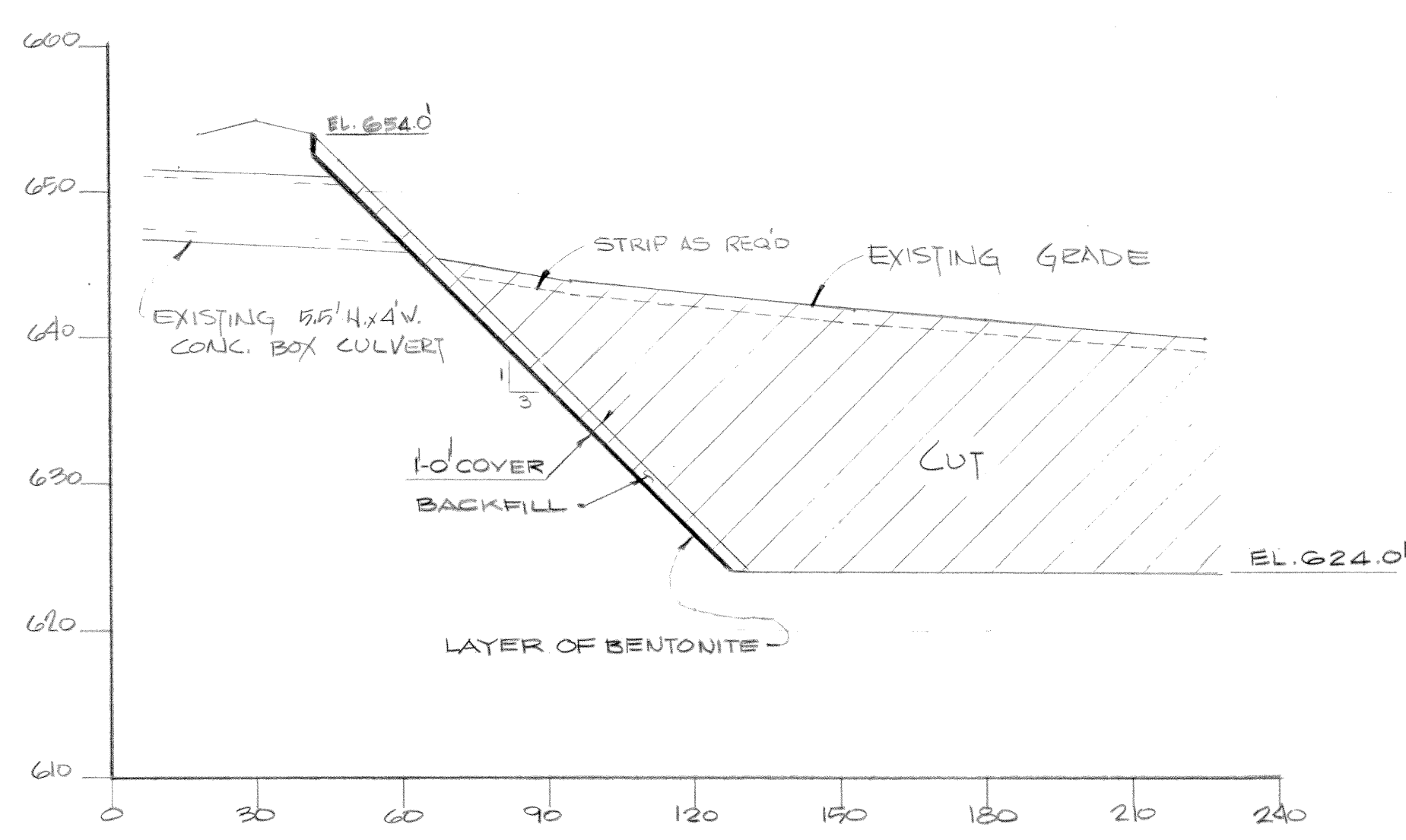
DRAWING NO. S-11



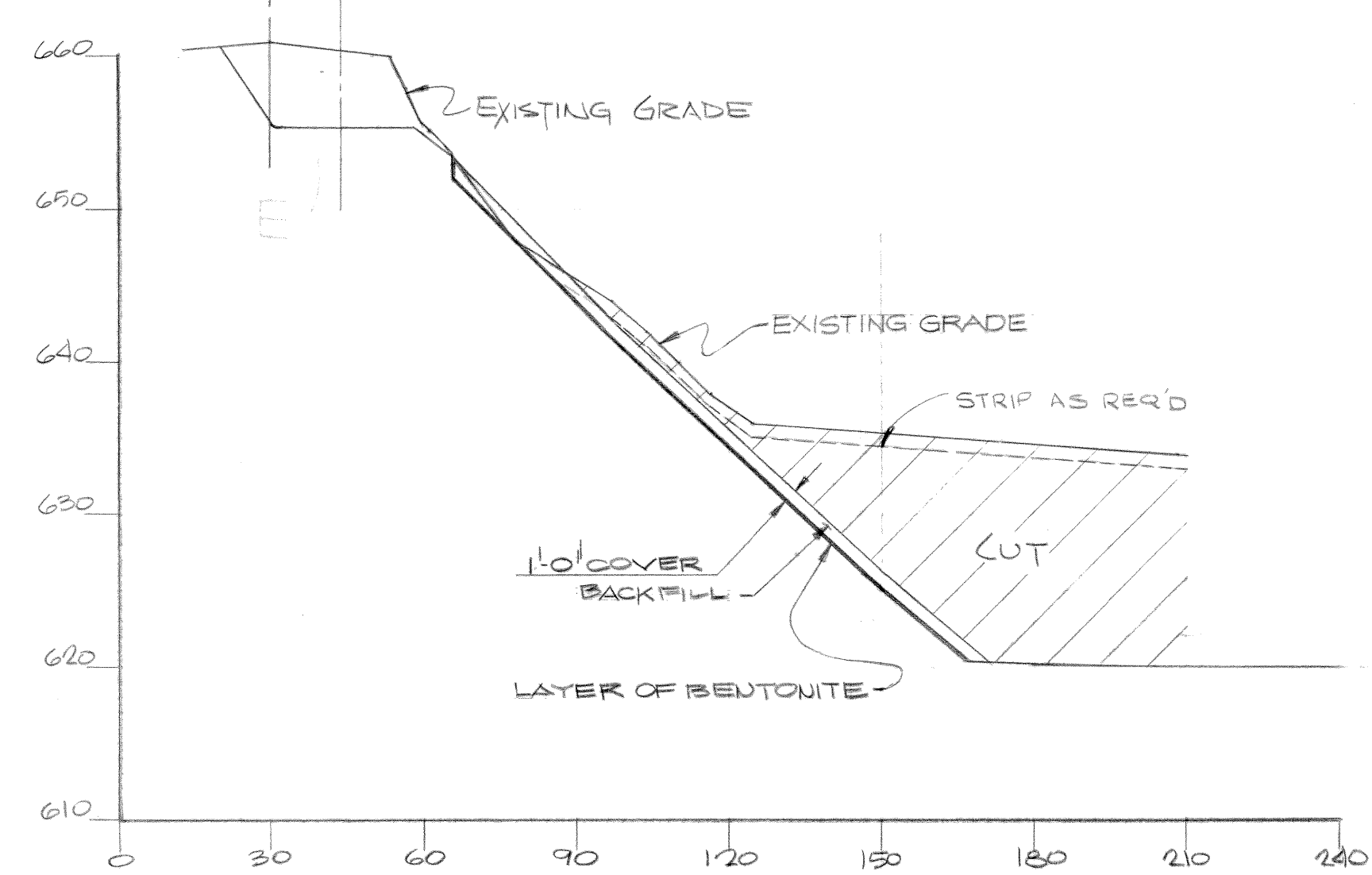
SECTION 1-1



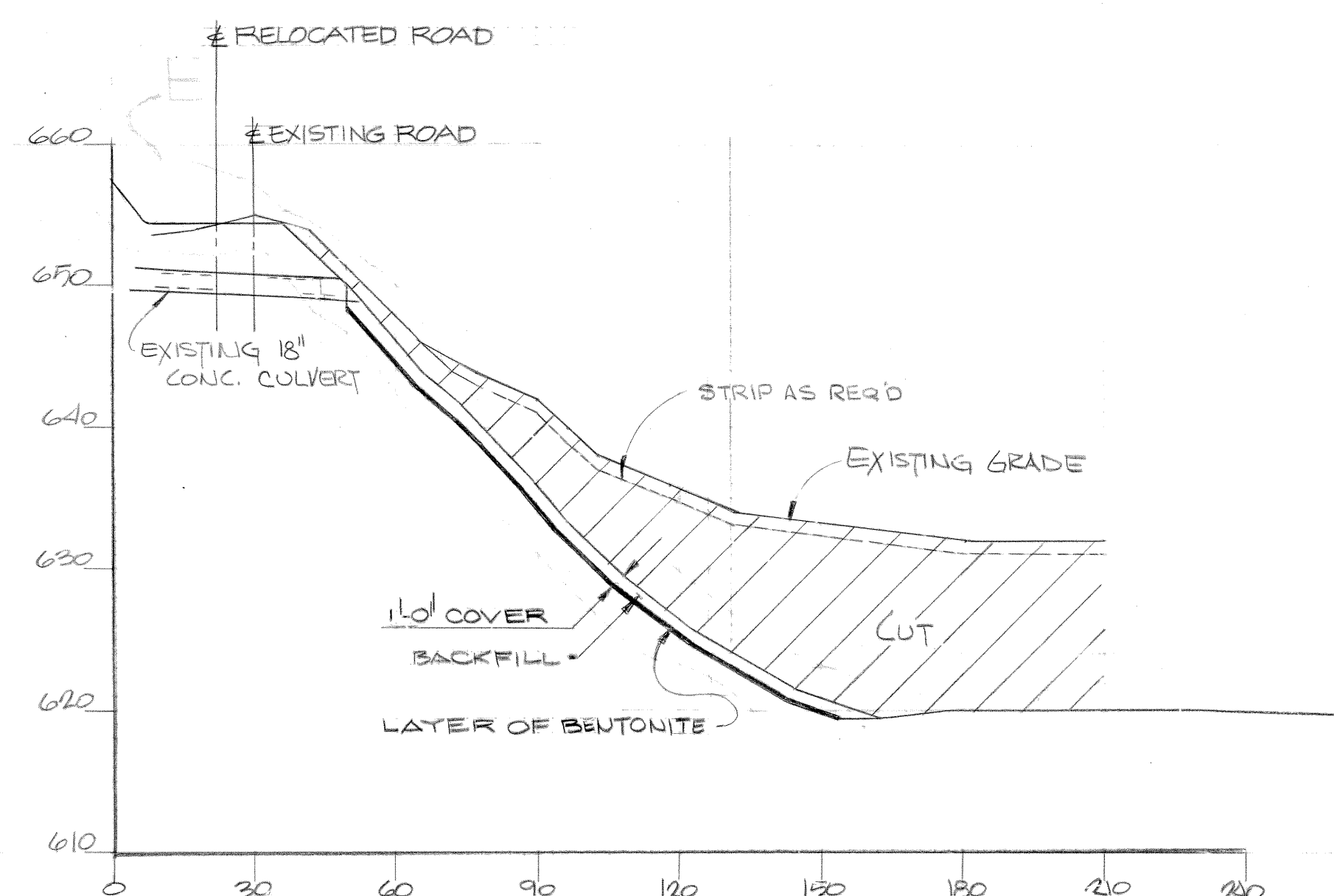
SECTION 2-2



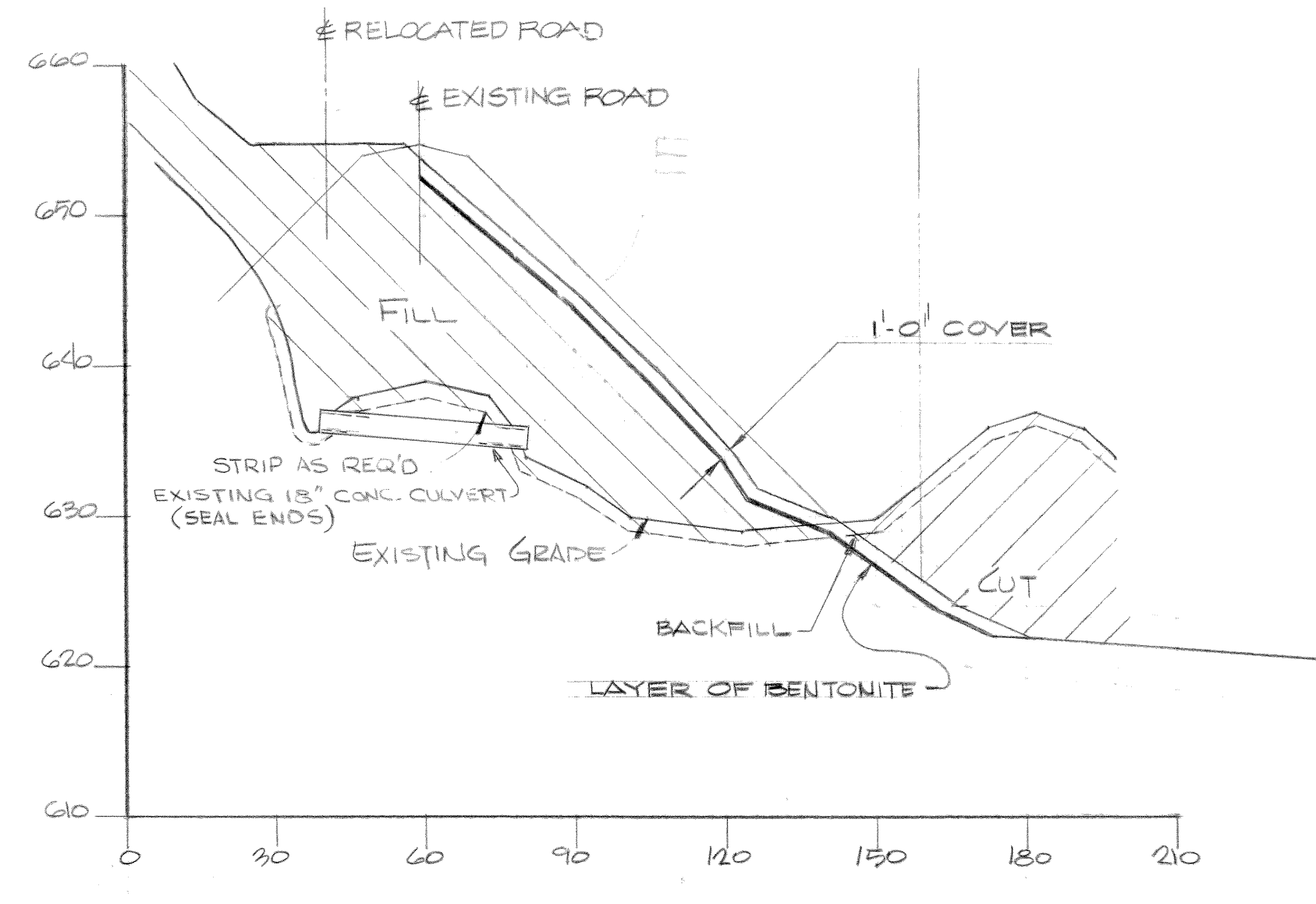
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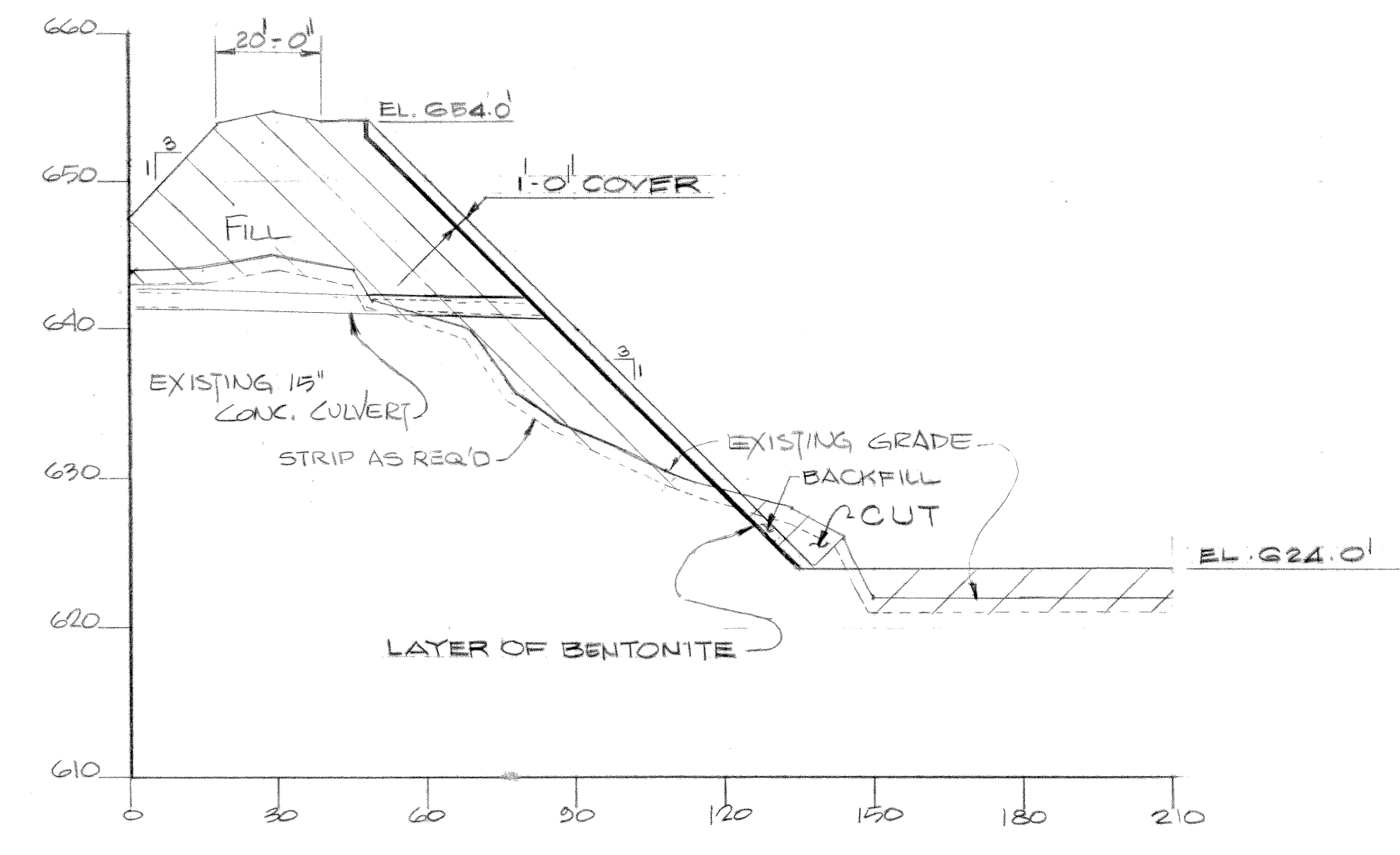
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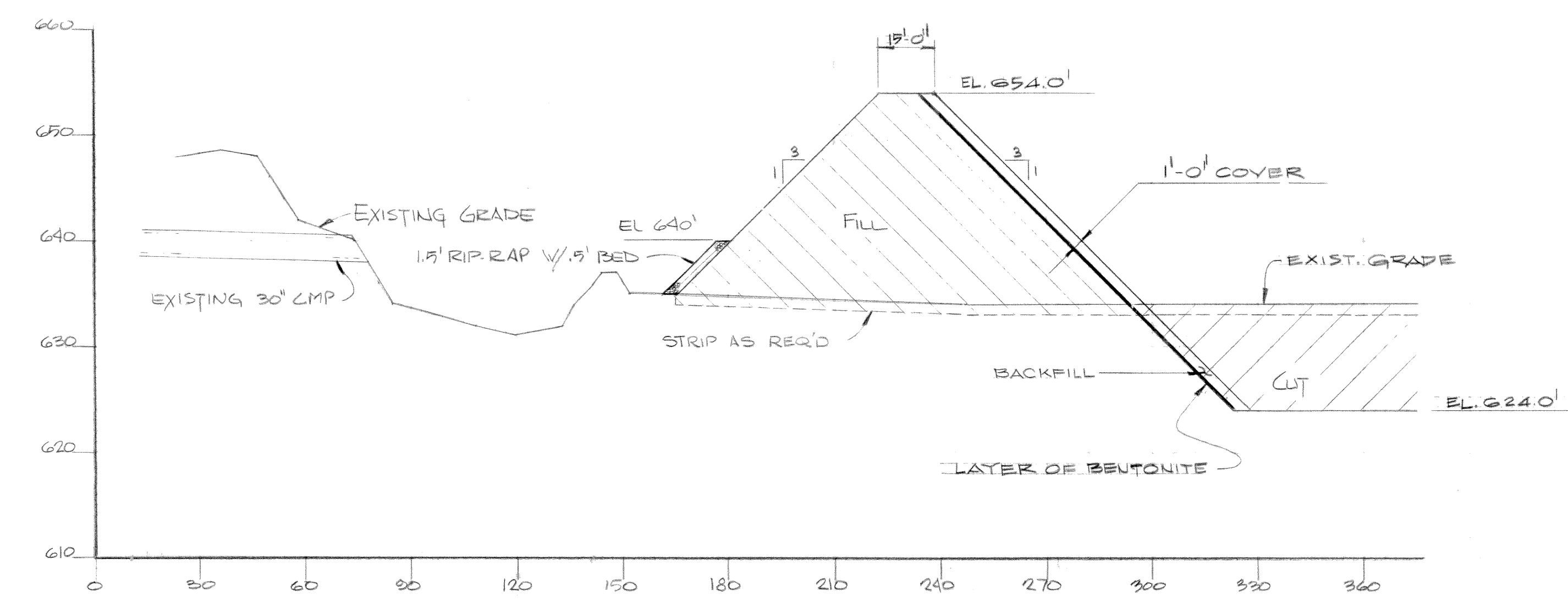
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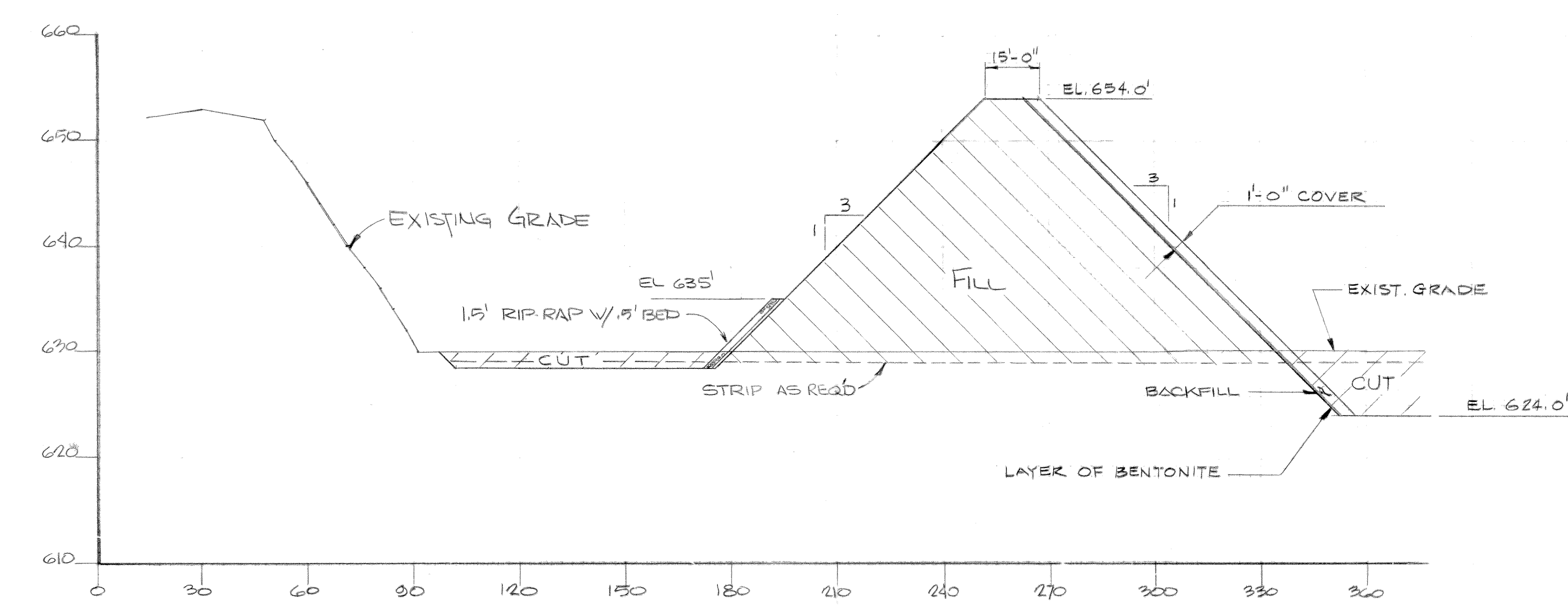
SECTION 6-6



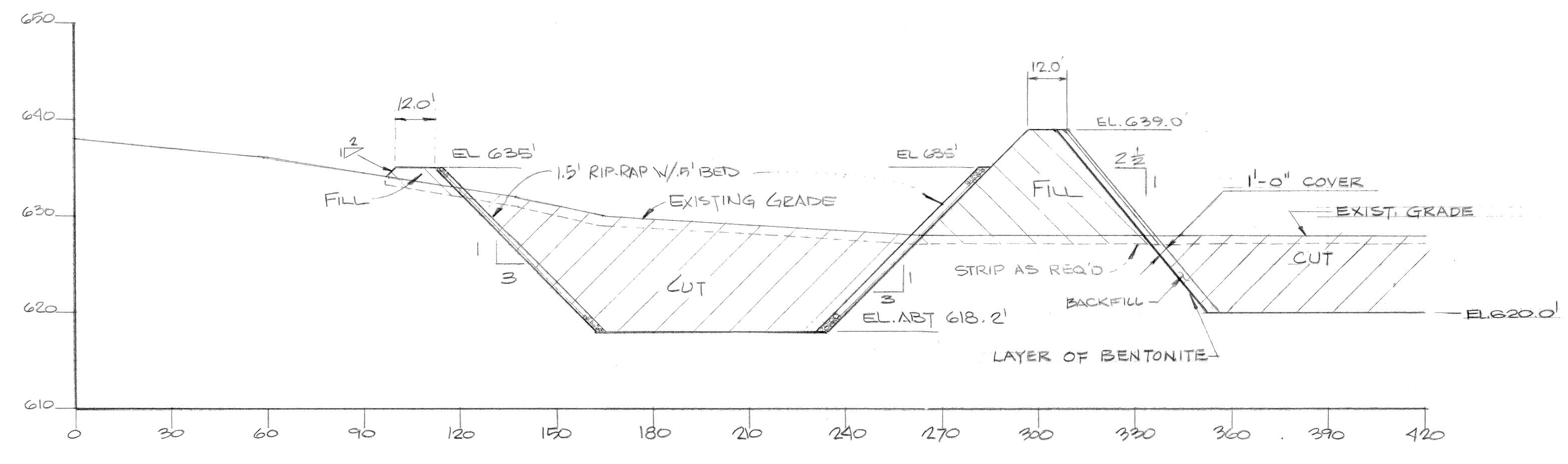
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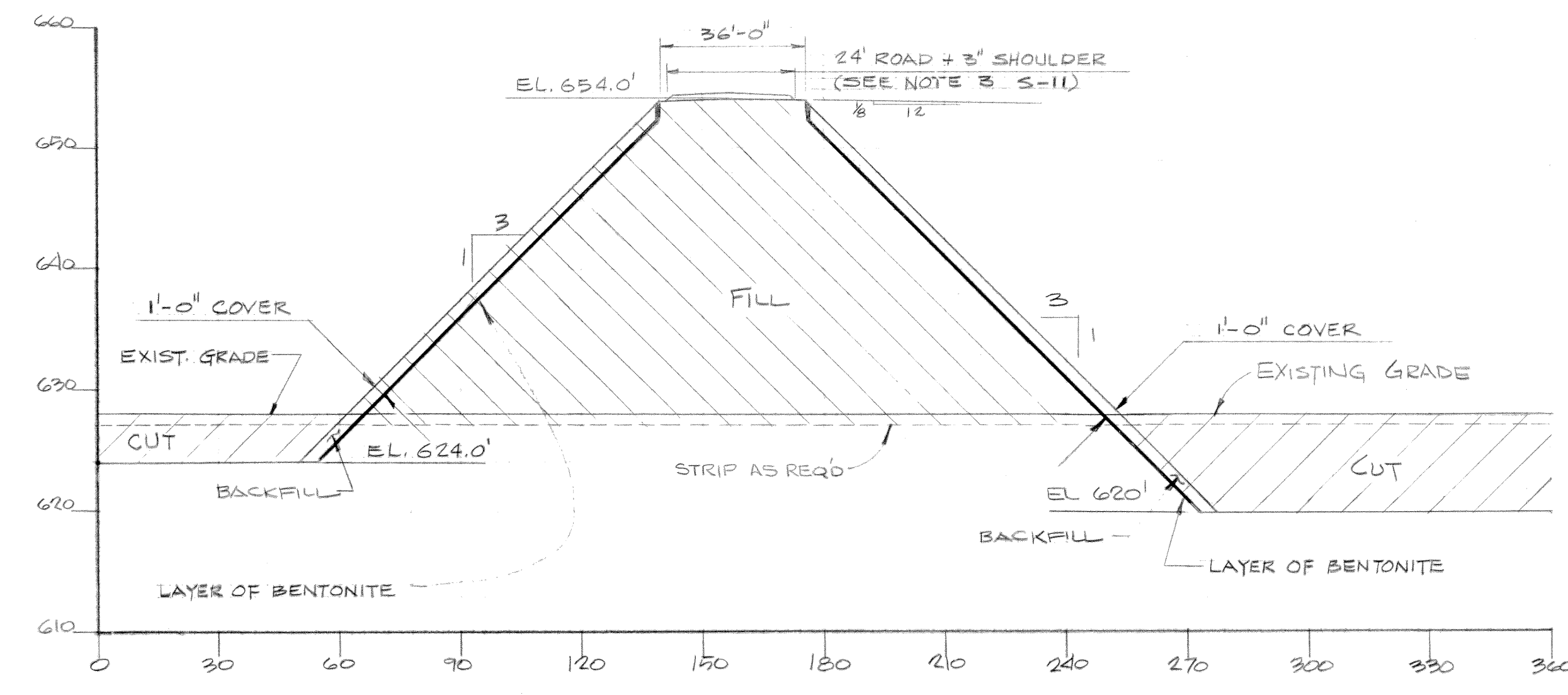
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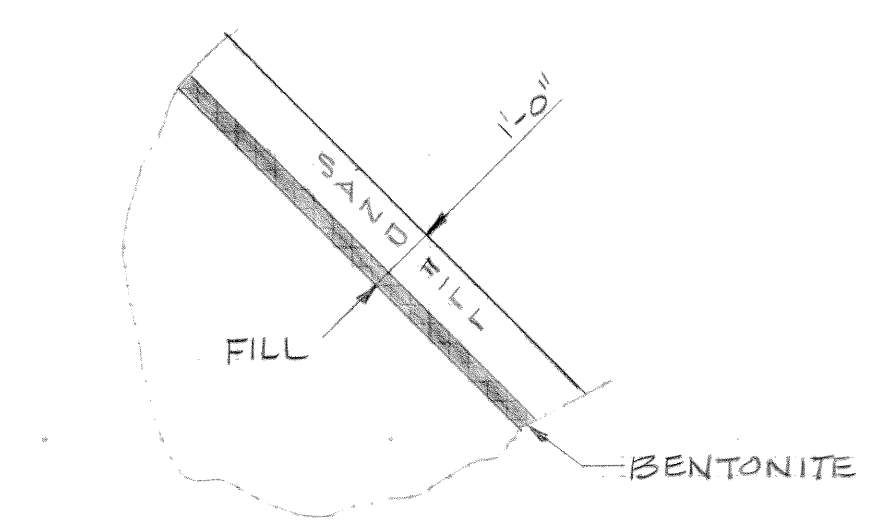
SECTION 9-9



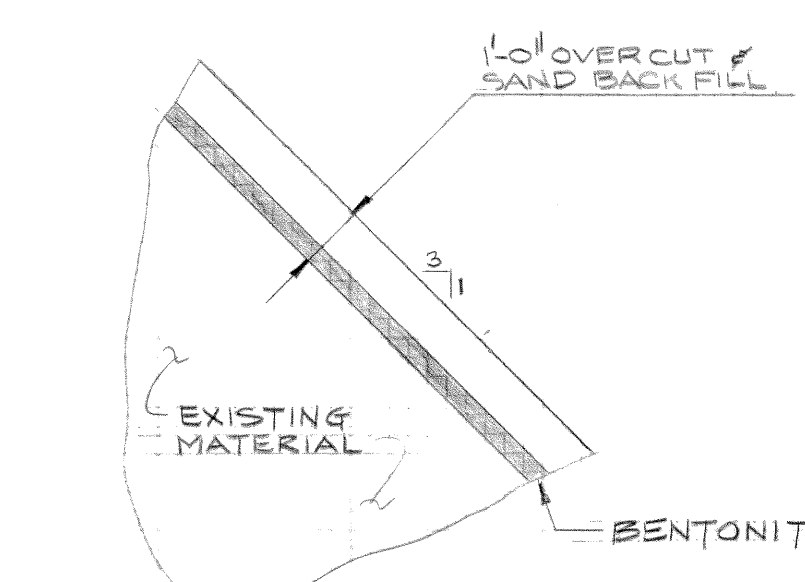
SECTION 10-10



SECTION 11-11



TYPICAL NEW SLOPED DIKE SECTION



TYPICAL EXISTING SLOPED DIKE SECTION

- NOTES
1. WORK THE DWG. WITH DWGS S-10 & S-11
 2. ALL FILL SHALL CONFORM TO SPSC G-3105.
 3. ASH DIKE SECTIONS 4, 5 & 6 REVISED AS PER FIELD INFORMATION DATED 7/30/76.

- REFERENCE DRAWINGS
- S-10 SITE DEVELOPMENT - COPPERDAM & DRAINING PLAN
 - S-11 SITE DEVELOPMENT - PLANT FILL - UNIT 4

I hereby certify that in preparation of this report was prepared by me or under my direct personal supervision and that I am a duly registered Professional Engineer under the laws of the State of Iowa.

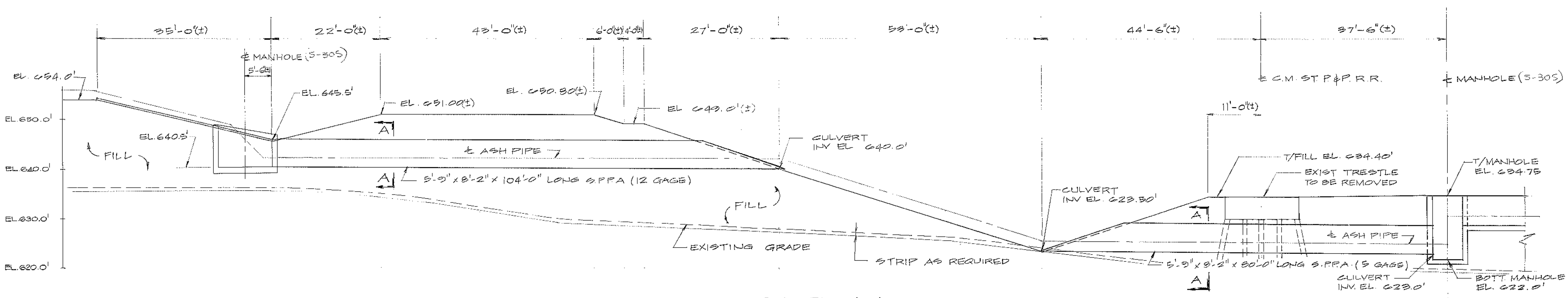
Date: 6-5-77

R. M. ...

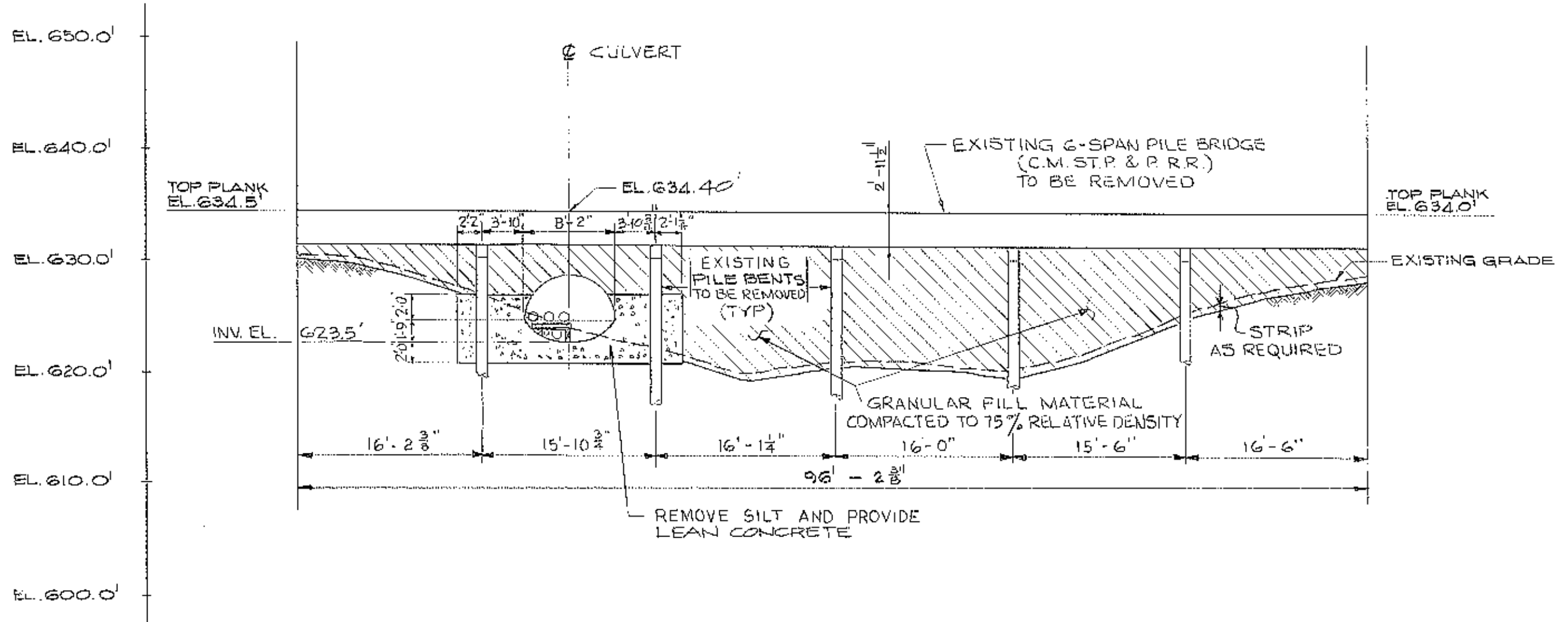
Rev.	Date	Init.	Description
6-7-74			
A	12-29-74		
B	2-28-75		
C	3-27-75		
D	7-20-75		
E	9-9-77		

SITE DEVELOPMENT
ASH DIKE SECTIONS - SHEET 1
LANSING POWER STATION
INTERSTATE POWER COMPANY
LANSING, IOWA

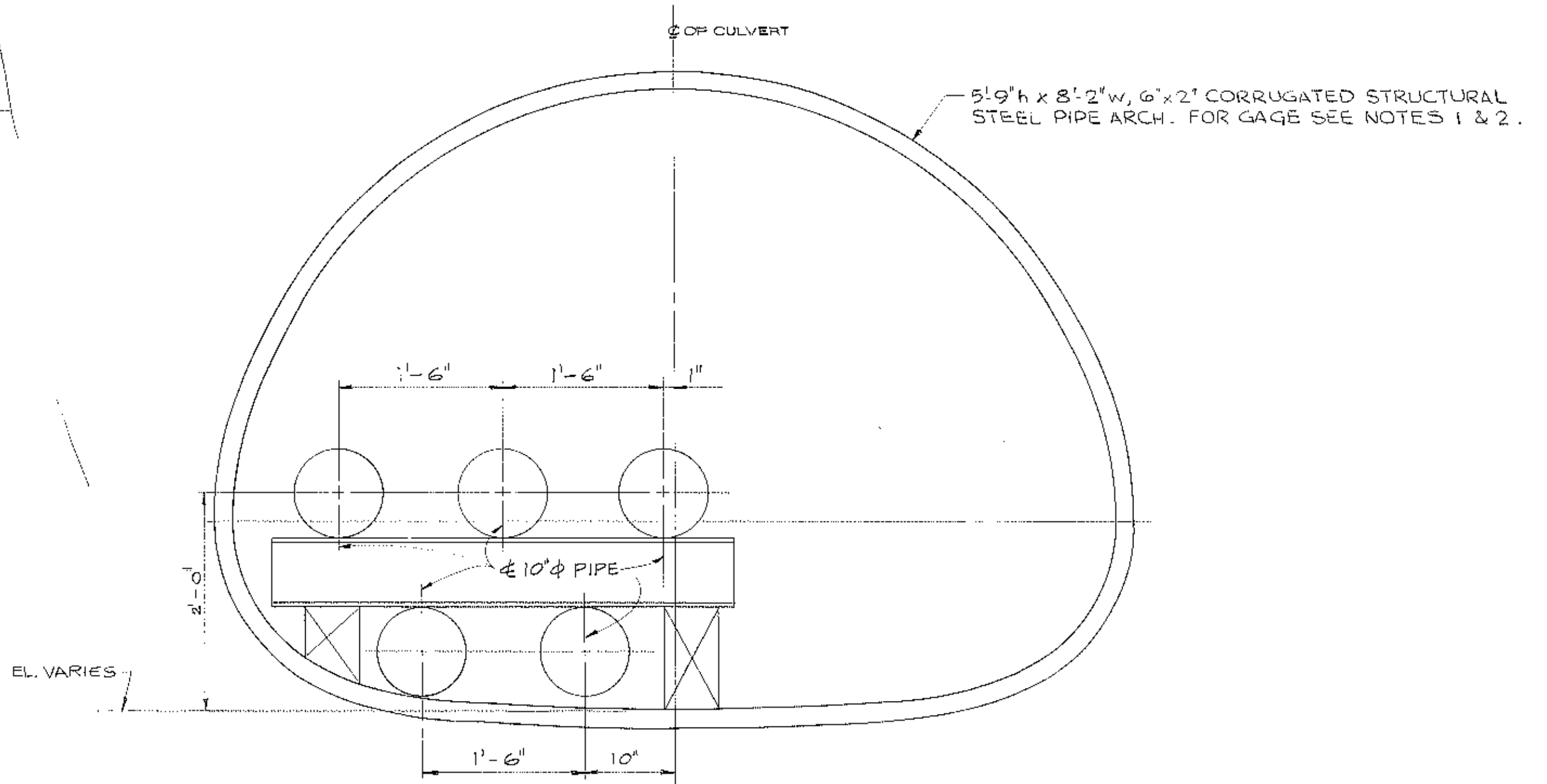
SCALE: VERT 1"=10' HORIZ 1"=50'	SARGENT & LUNDY ENGINEERS CHICAGO
DRAWN: G.R. BOWE 5-20-74	
CHECKED: R.C. ODEGAARD 5-22-74	DRAWING NO. S-14
ENGINEER: J.A. ... 5-21-74	
APPROVED: <i>R.M. ...</i> 6-5-77	JOB NO. A444-67



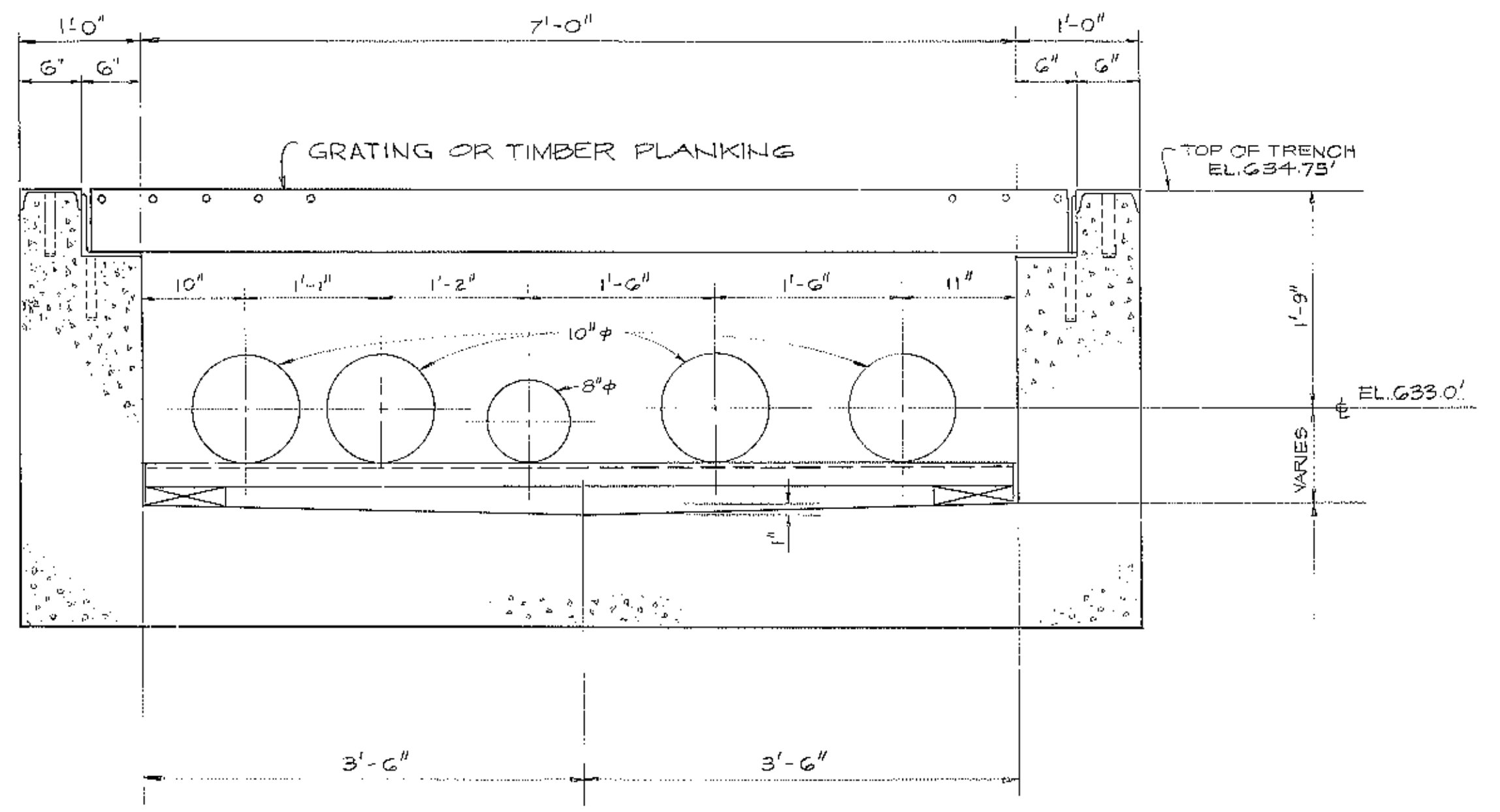
SECTION 4 (S-19)
SCALE 1" = 10'-0"



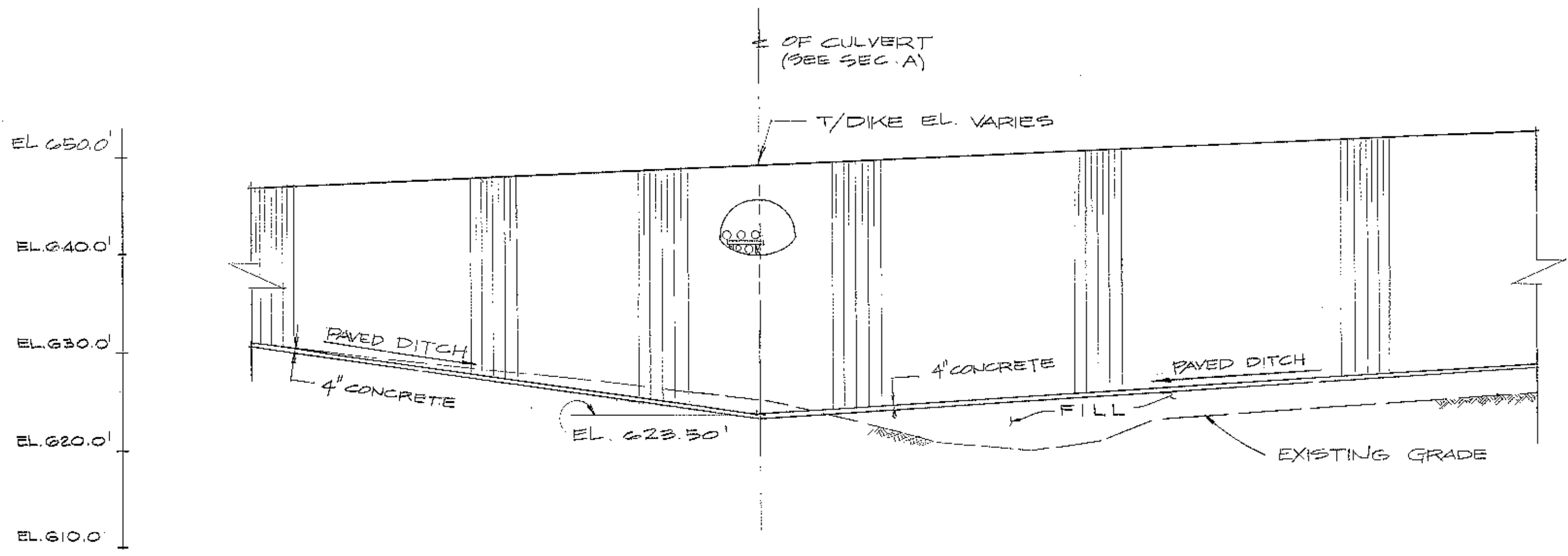
SECTION 1 (S-19)
SCALE 1" = 10'-0"



SECTION A
SCALE: 1" = 1'-0"



SECTION 3 (S-19)
SCALE 1" = 1'-0"



SECTION 2 (S-19)
SCALE: 1" = 10'-0"

NOTES

- 5'-9" x 8'-2" STEEL PIPE ARCH PASSING UNDER C.M. ST. P. & P. R.R. SHALL BE #8 GAGE.
- 5'-9" x 6'-2" STEEL PIPE ARCH PASSING UNDER ROADWAY SHALL BE #12 GAGE.

REFERENCE DRAWINGS

- S-11 SITE DEVELOPMENT - PLAN FILL - UNIT 4
- S-17 SITE DEVELOPMENT - DOCK COFFERDAM SECTIONS - SHEET 1
- S-21 ASH PIPE LINE CROSSING UNDER RAILROAD & FINAL GRADING PLAN
- S-305 DRAINAGE & ROADWAY - PLANT AREA - UNIT 4
- S-305 ASH PIPE TRENCH MANHOLE & CATCH BASIN DETAILS.

I hereby certify that this plan, specification or report was prepared by me or under my direct personal supervision and that I am a duly registered Professional Engineer under the laws of the State of Iowa.

R. W. Bergstrom, P.E. Iowa Reg. No. 4480

Date: 1-26-76



Rev.	Date	Init.	Description
0-13-75			INT. DESIGN
A	12-27-75	SHV	REV. SECT. 1 & SECT. 2

ASH PIPE LINE
SECTIONS & DETAILS
LANSING POWER STATION
INTERSTATE POWER COMPANY
LANSING, IOWA

SCALE AS SHOWN

DRAWN BY B. SANCHEZ 4-11-75

CHECKED BY S. B. SANCHEZ 6-2-75

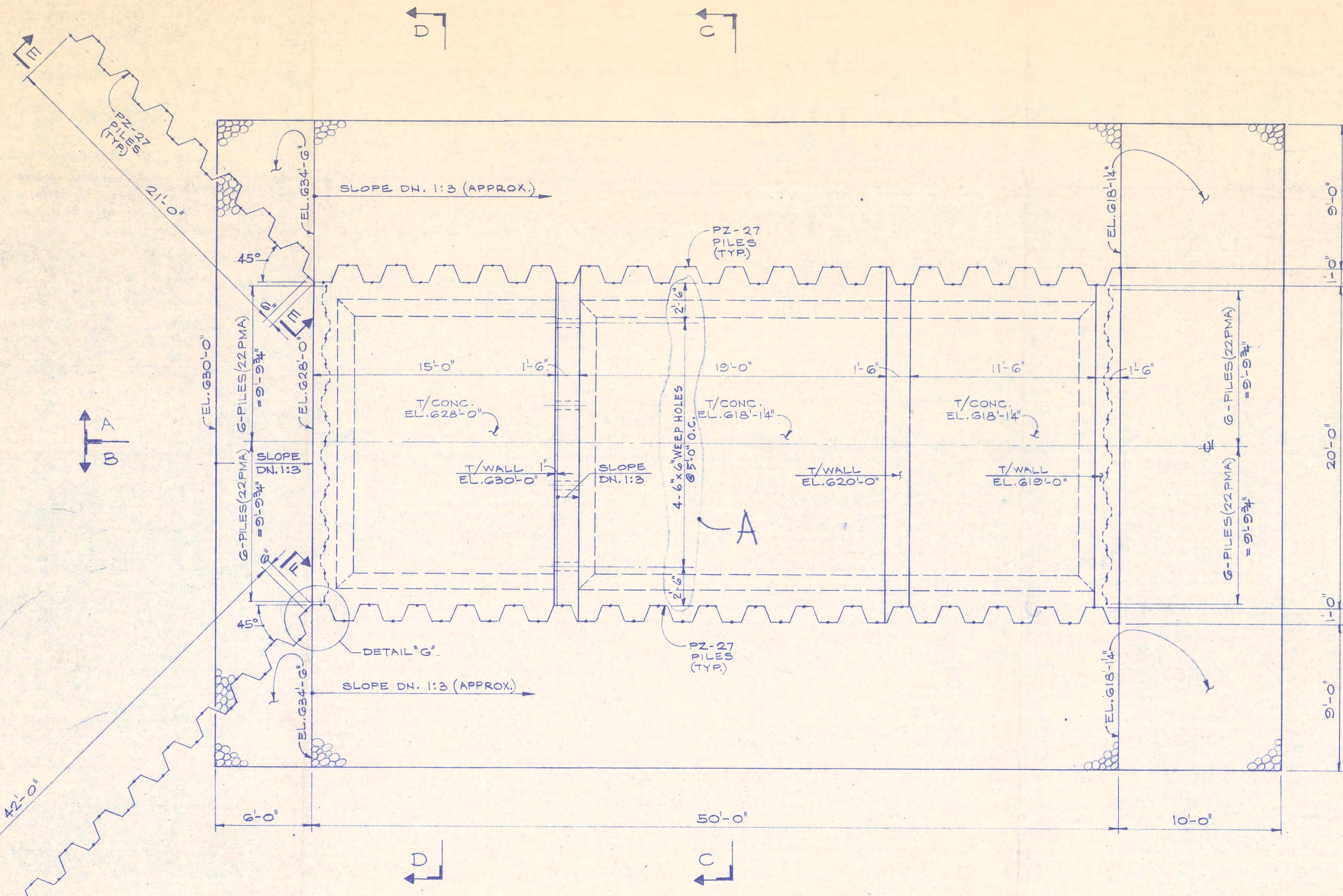
ENGINEER: [Signature] 6-2-75

APPROVED: [Signature] 6-2-75

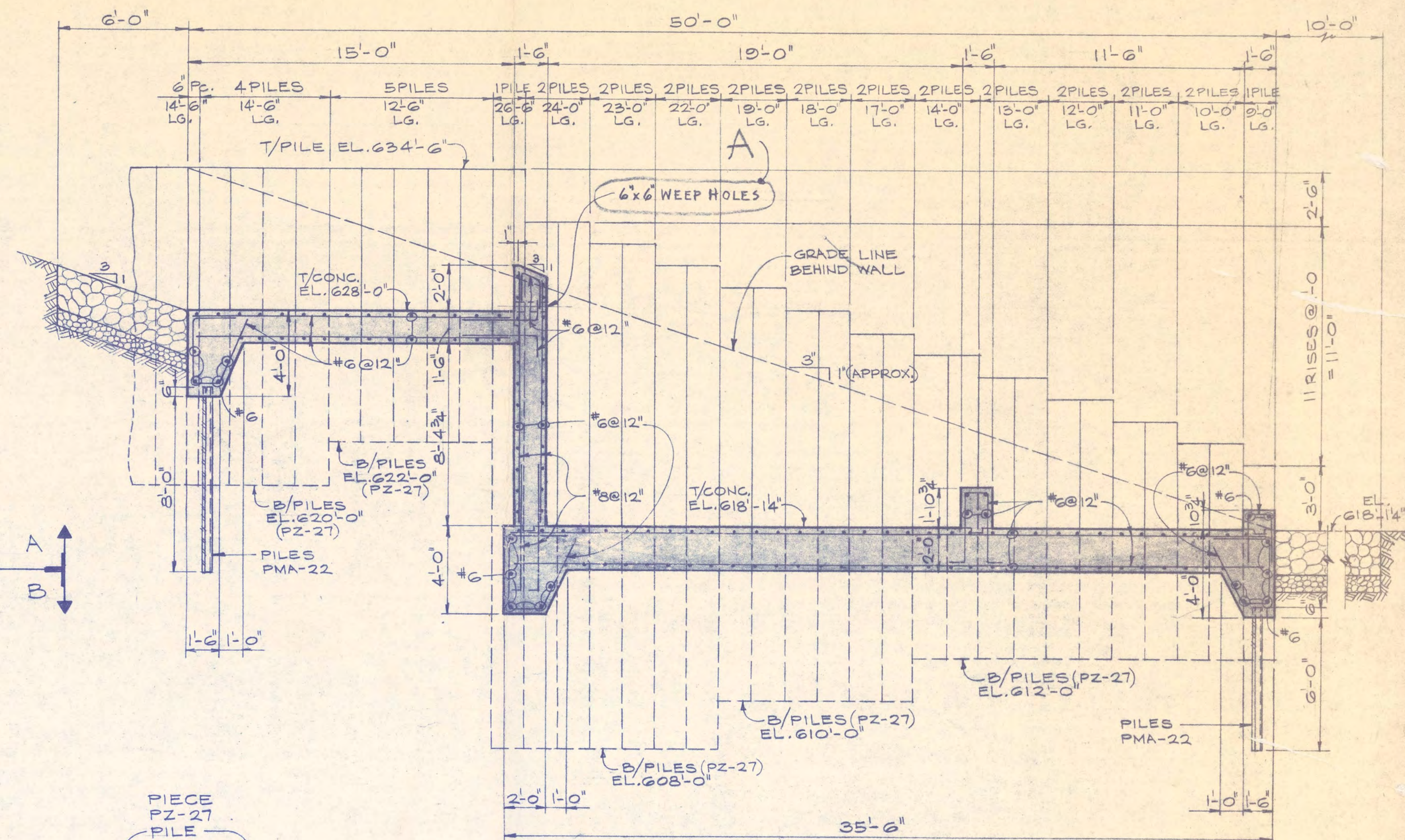
JOB NO. 4644-03

DRAWING NO. S-20

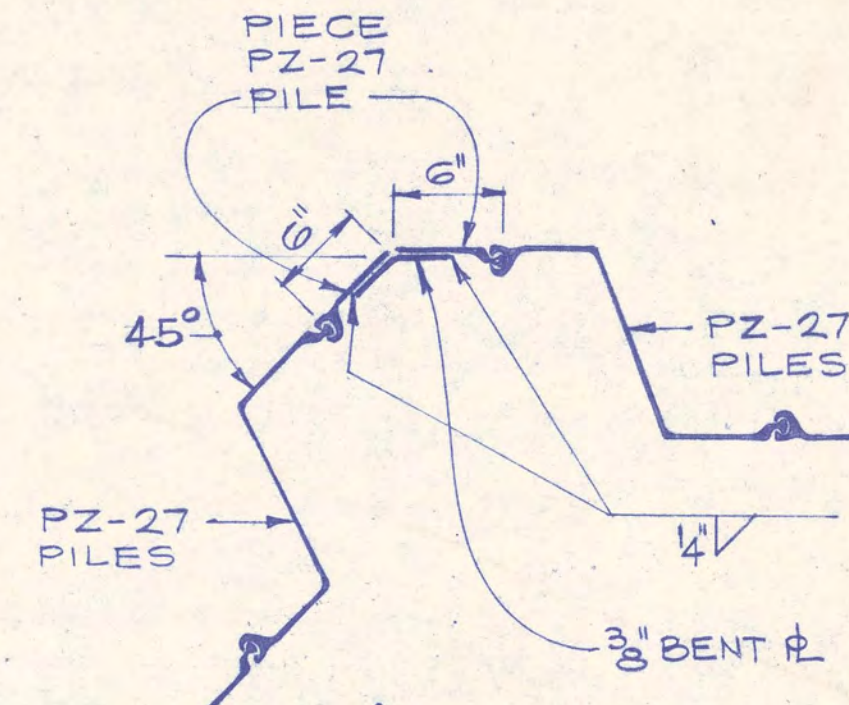
SARGENT & LUNDY
ENGINEERS
CHICAGO



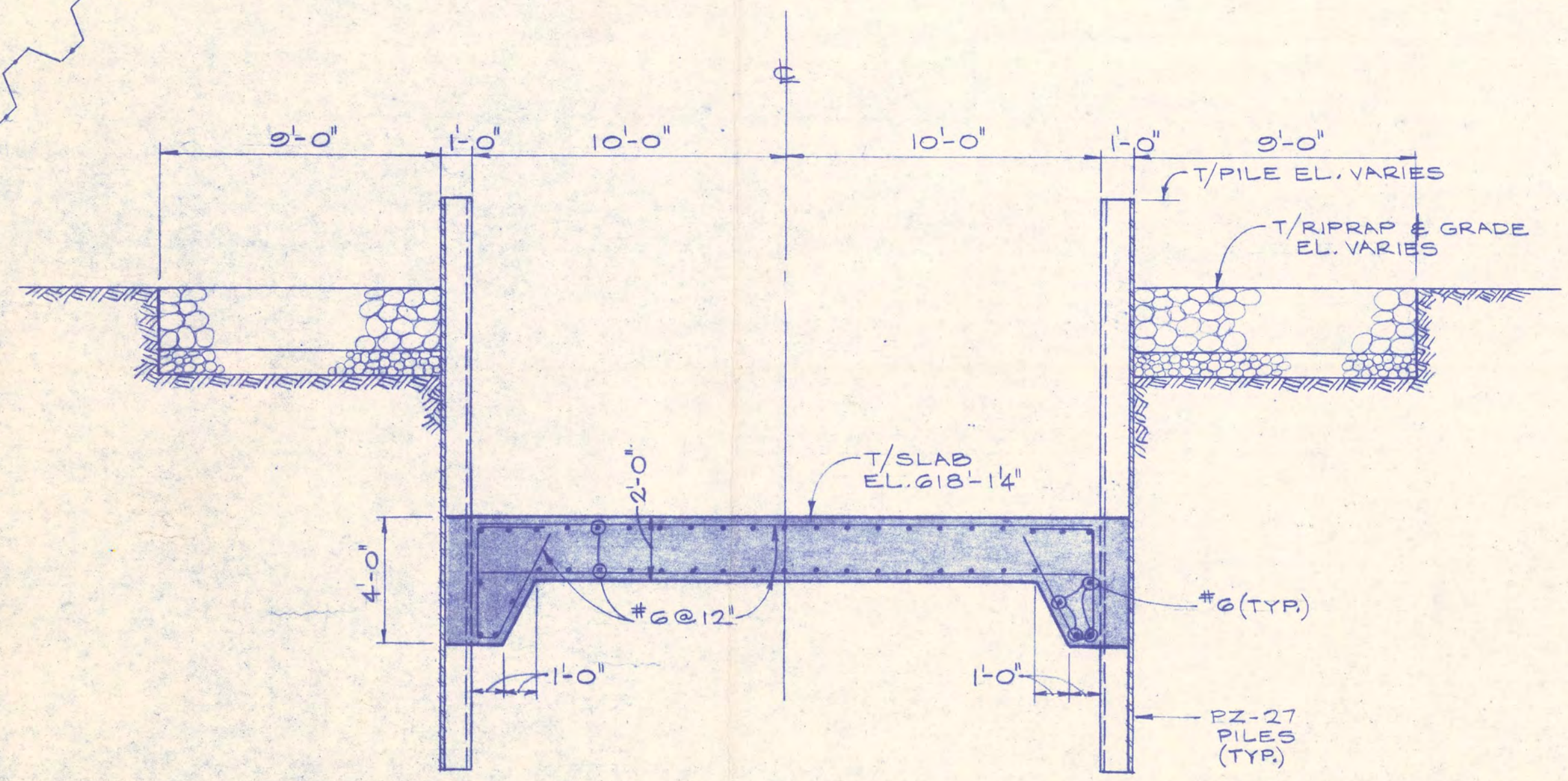
PLAN
NOTES FOR LOCATION
SEE DWG S-11



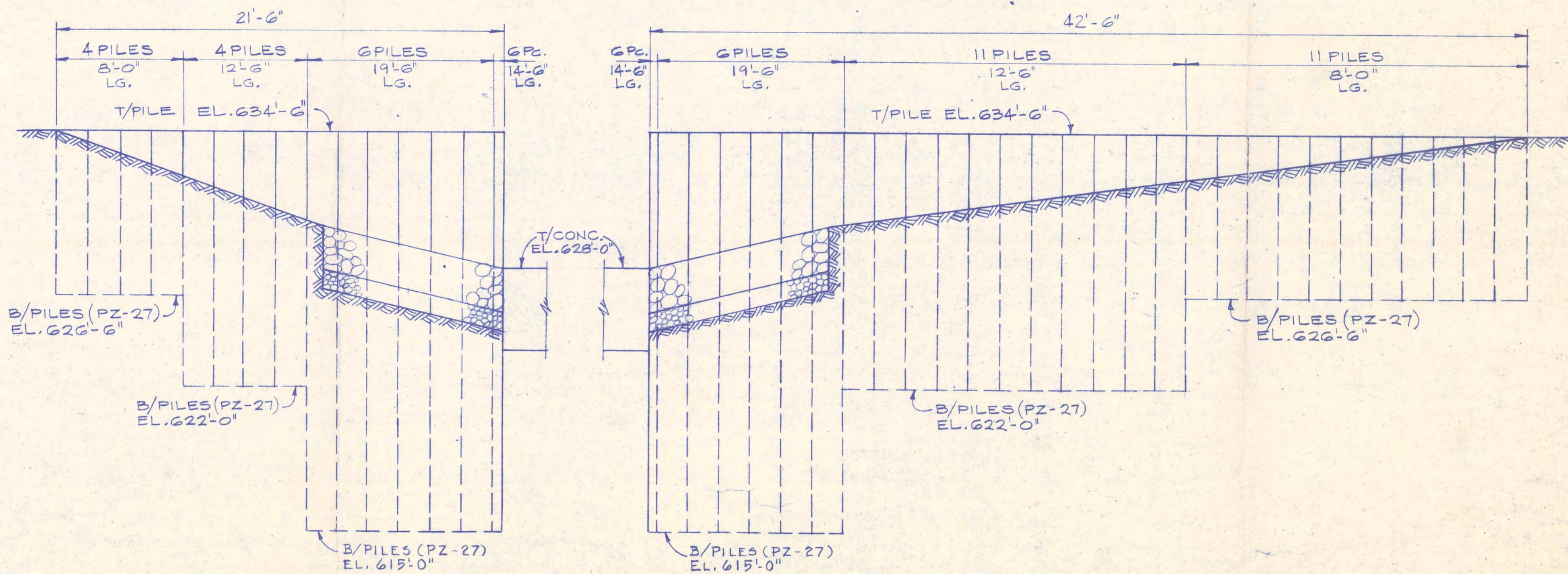
SECTION A-A (AS SHOWN)
SECTION B-B (OPP. HAND)



DETAIL 'G'
SCALE: 1"=1'-0"
2-REQD.

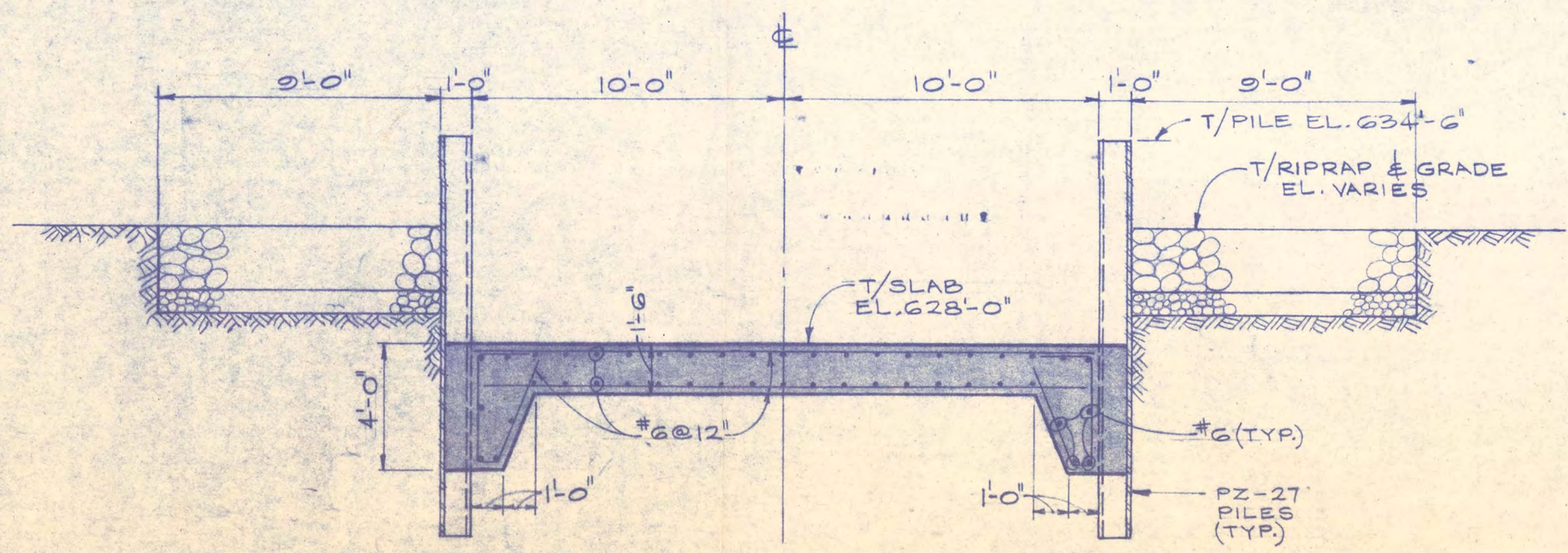


SECTION C-C



SECTION E-E

SECTION F-F



SECTION D-D

NOTES

1. FOR GENERAL NOTES SEE DWG. S-11

REFERENCE DRAWINGS

S-11 SITE DEVELOPMENT, PLANT FILL-UNIT 4

I hereby certify that this plan, specification or report was prepared by me or under my direct personal supervision and that I am a duly registered Professional Engineer under the laws of the State of Iowa.

Signature: *R. A. Bergstrom* Date: *8-14-74*

R. A. Bergstrom, P.E. Iowa Reg. No. 4480



**SPILLWAY STRUCTURE
PLAN, SECTIONS & DETAILS**

**LANSING POWER STATION UNIT 4
INTERSTATE POWER CO.
LANSING, IOWA**

SCALE: 1"=1'-0" AS SHOWN

DRAWN: R.R. LUTZ JR. 9-25-73

CHECKED: S.K. JUNG 8-12-74

ENGINEER: *[Signature]* 8-14-74

APPROVED: *[Signature]* 8-14-74

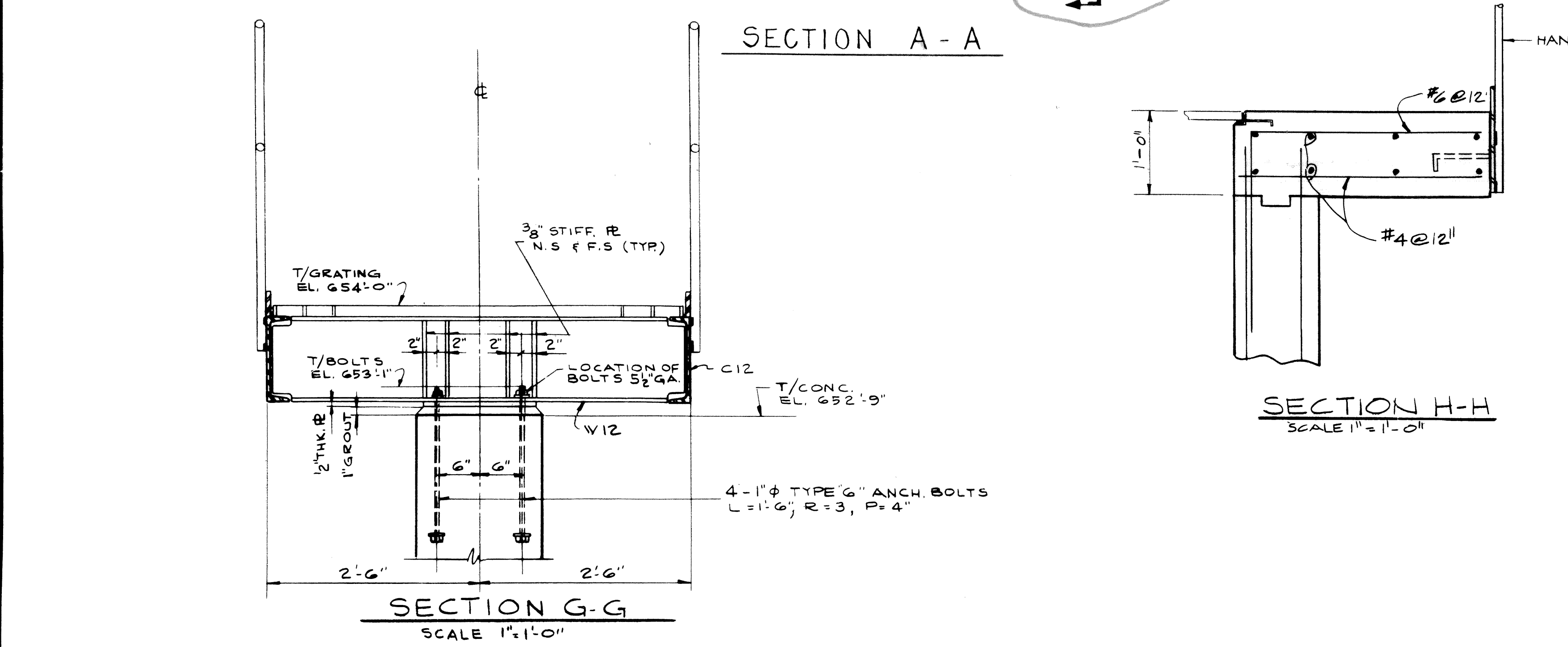
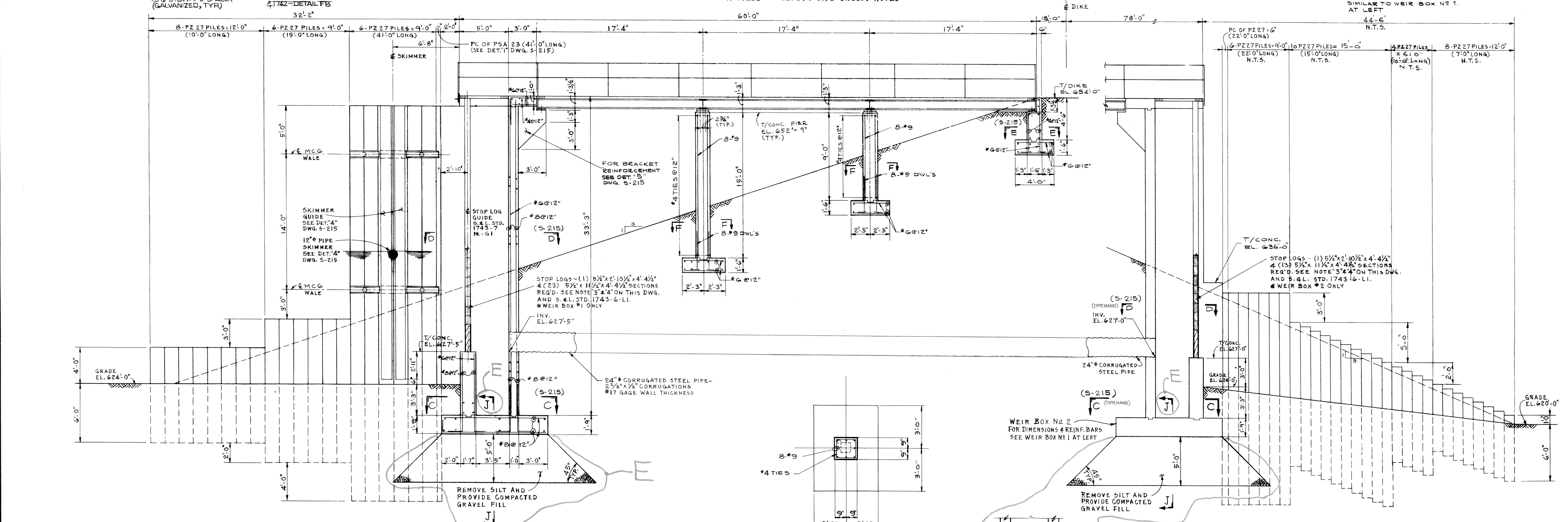
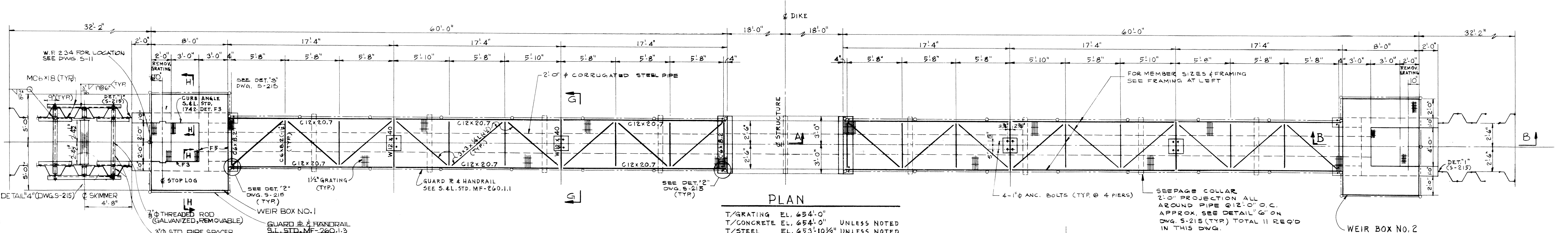
JOB NO. 4644

SARGENT & LUNDY
ENGINEERS
CHICAGO

DRAWING NO. **S-210**

Rev.	Date	Init.	Description
2-28-74	ISC	ISC	REVISION
6-21-74	ISC	ISC	REVISION
A 7-22-75	ISC	ISC	REVISION





NOTES		REFERENCE DRAWINGS	
1.	FOR GENERAL NOTES SEE DWG. S-	S-215	WEIR BOX NO.1, NO.2 (NOS. 1-3 - SECTIONS & DETAILS)
2.	ALL GRATINGS, CURB ANGLES, HANDRAIL & HANDRAIL POSTS SHALL BE GALVANIZED.		
3.	STOP LOG TIMBER SHALL BE - DENSE SELECTED STRUCTURAL GRADE DOUGLAS-FIR AND BE TREATED WITH CREOSOTE PRESERVATIVE, 1" MIN. PENETRATION & CREOSOTE RETENTION OF 8.0 LBS PER CUBIC FOOT.		
4.	FURNISH ONE "SECTION" OF STOP LOG WHICH CONSISTS OF 3-5/2"X11/2" WIDE TIMBERS FASTENED TOGETHER AS A UNIT AS INDICATED IN S.#L.STD. DWG. 1743-6 FOR BOTTOM PART OF EACH "SET", COAT HEAVILY WITH BITUMINOUS PAINT BETWEEN TIMBERS. FURNISH SINGLE 3/2"X11/2" WIDE STOP LOGS FOR ALL OTHERS.		

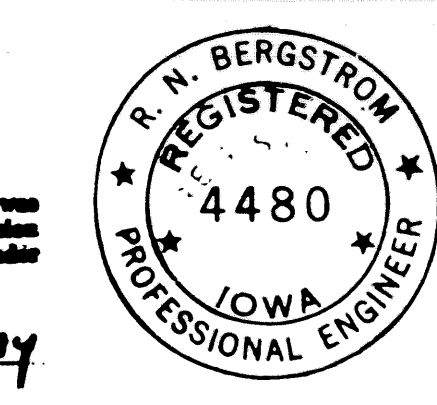
WEIR BOX NO.1 & NO.2-PLAN SECTIONS & DETAILS ASH SETTLING BASIN

LANSING POWER STATION UNIT 4 INTERSTATE POWER CO. LANSING, IOWA

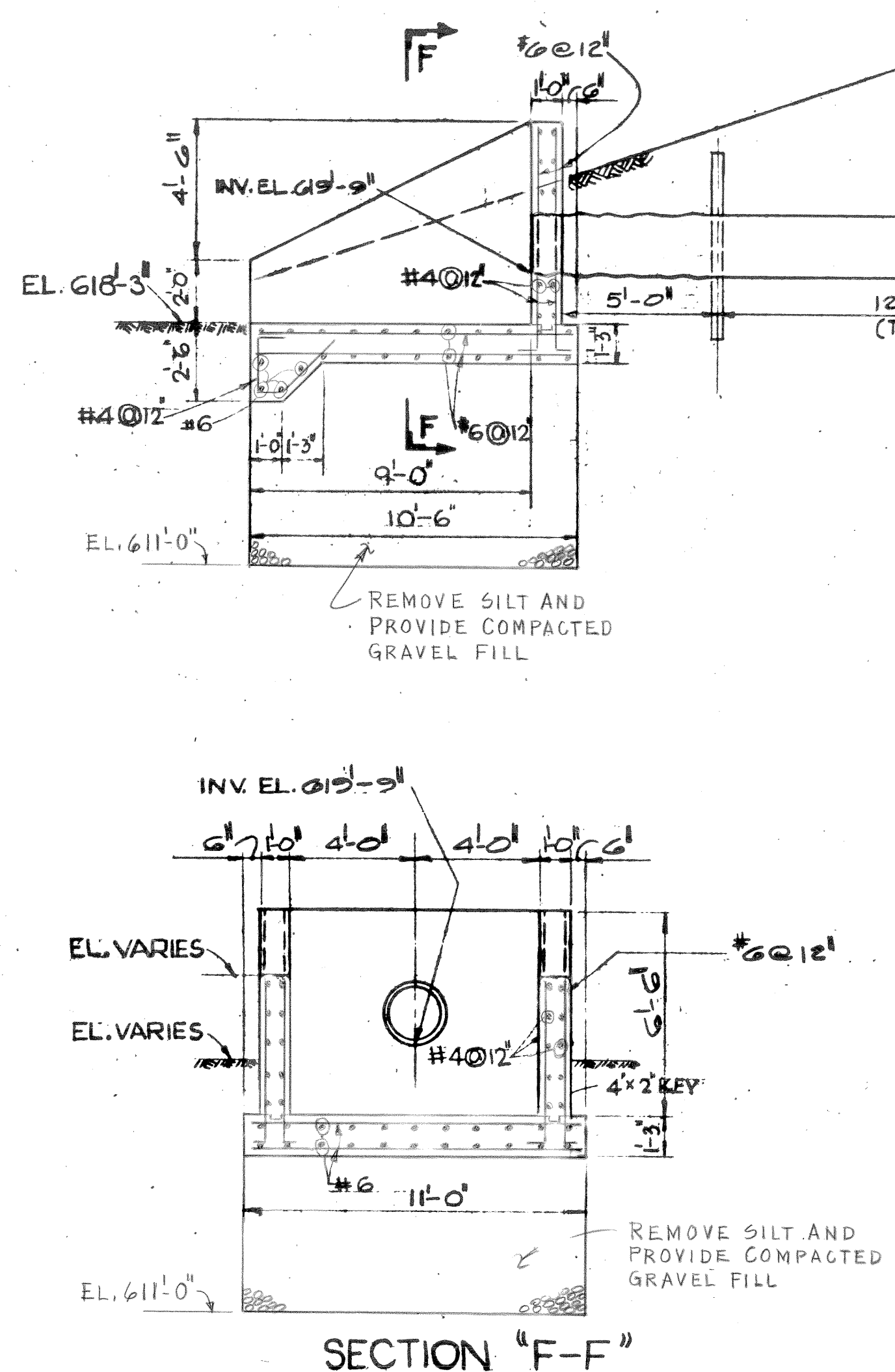
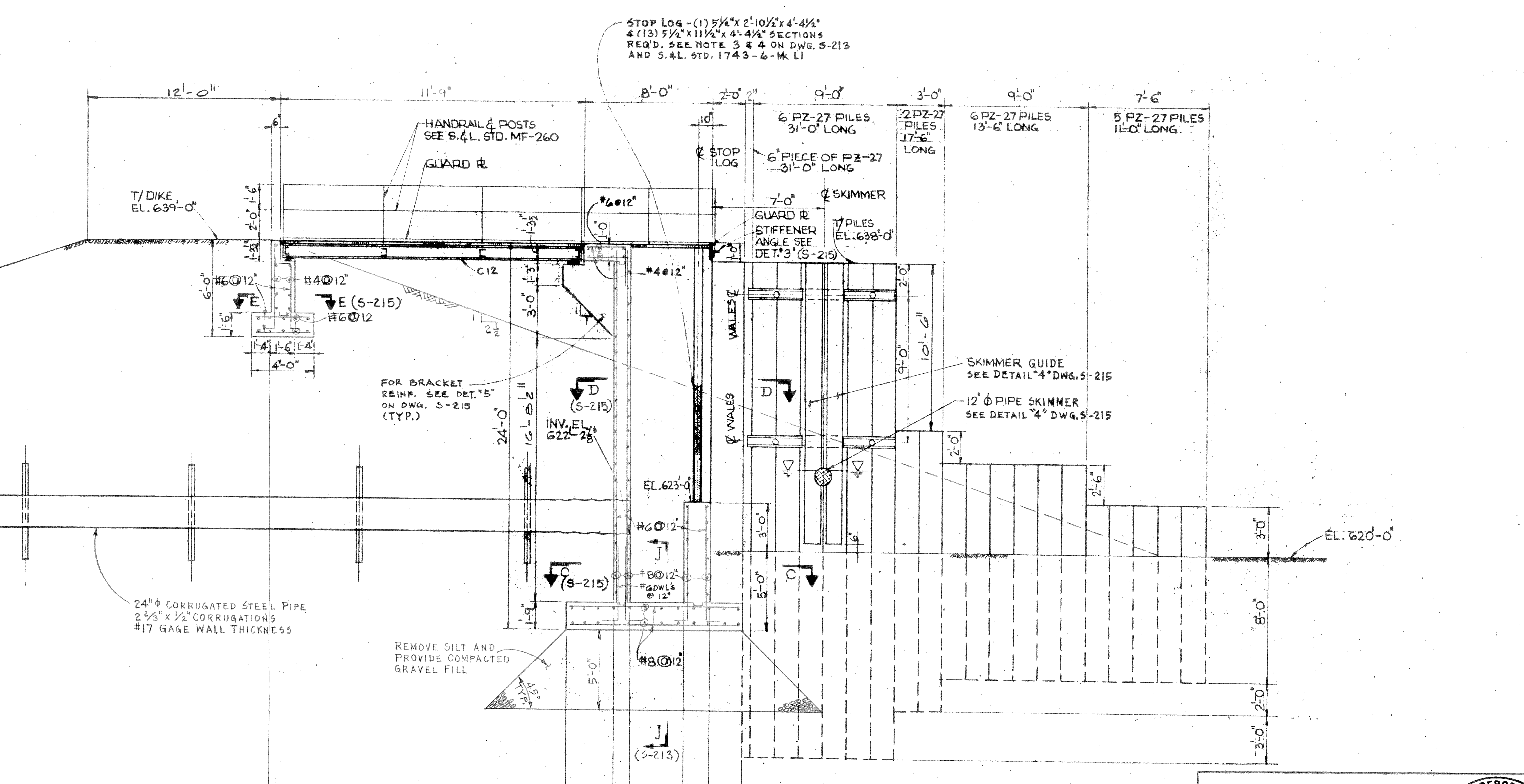
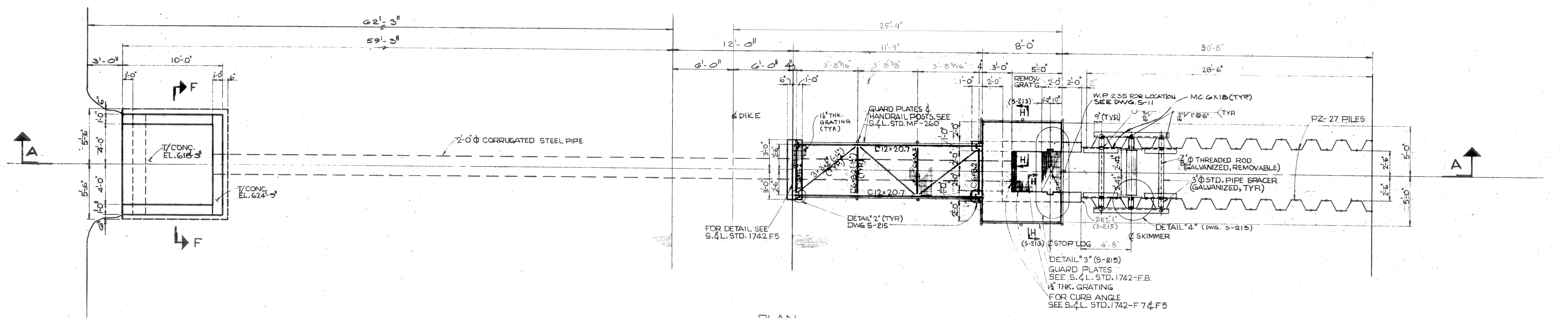
SCALE 1/4"=1'-0" UNLESS NOTED
 DRAWN S.J.C. 12-13-73
 CHECKED S.K. JUNG 8/12/74
 ENGINEER [Signature] 8/14/74
 APPROVED [Signature] 8/14/74
 JOB NO. 4644

SARGENT & LUNDY
 CHICAGO

DRAWING NO. **S-213**



I hereby certify that this plan, specification or report was prepared by me or under my direct personal supervision and that I am a duly registered Professional Engineer under the laws of the State of Iowa.
 Date 8-14-74
 R.A. Bergstrom, P.E. Reg. No. 4480



NOTES		REFERENCE DRAWINGS	
1.	FOR GENERAL NOTES SEE DWG. S-5	S-215	WEIR BOX NO. 1, NO. 2, & NO. 3 - SECTIONS & DETAILS
2.	ALL GRATINGS, CURB ANGLES, HANDRAILS & HANDRAIL POSTS SHALL BE GALVANIZED.	S-11	SITE DEVELOPMENT, PLANT FILL - UNIT 4

Drawing Release Record			
Rev.	Date	Init.	Description
1	3-22-74	ASC	FOR CONTRACT
2	4-11-74	ASC	FOR PERMITS
3	7-2-74	ASC	FOR CONSTRUCTION
4	8-25-74	ASC	FOR CHANGED
5	7-25-75	ASC	FOR CHANGED
6	11-30-75	ASC	FOR CHANGED

WEIR BOX NO. 3 - PLAN & SECTIONS
ASH SETTLING BASIN
LANSING POWER STATION UNIT 3
INTERSTATE POWER CO.
LANSING, IOWA

SCALE = 1" = 1'-0" UNLESS NOTED
DRAWN A. HUG 3-11-74
CHECKED S. K. JUN 9 6/12/74
ENGINEER J. K. Galt 8/19/74
APPROVED [Signature] 8/19/74

SARGENT & LUNDY
ENGINEERS
CHICAGO

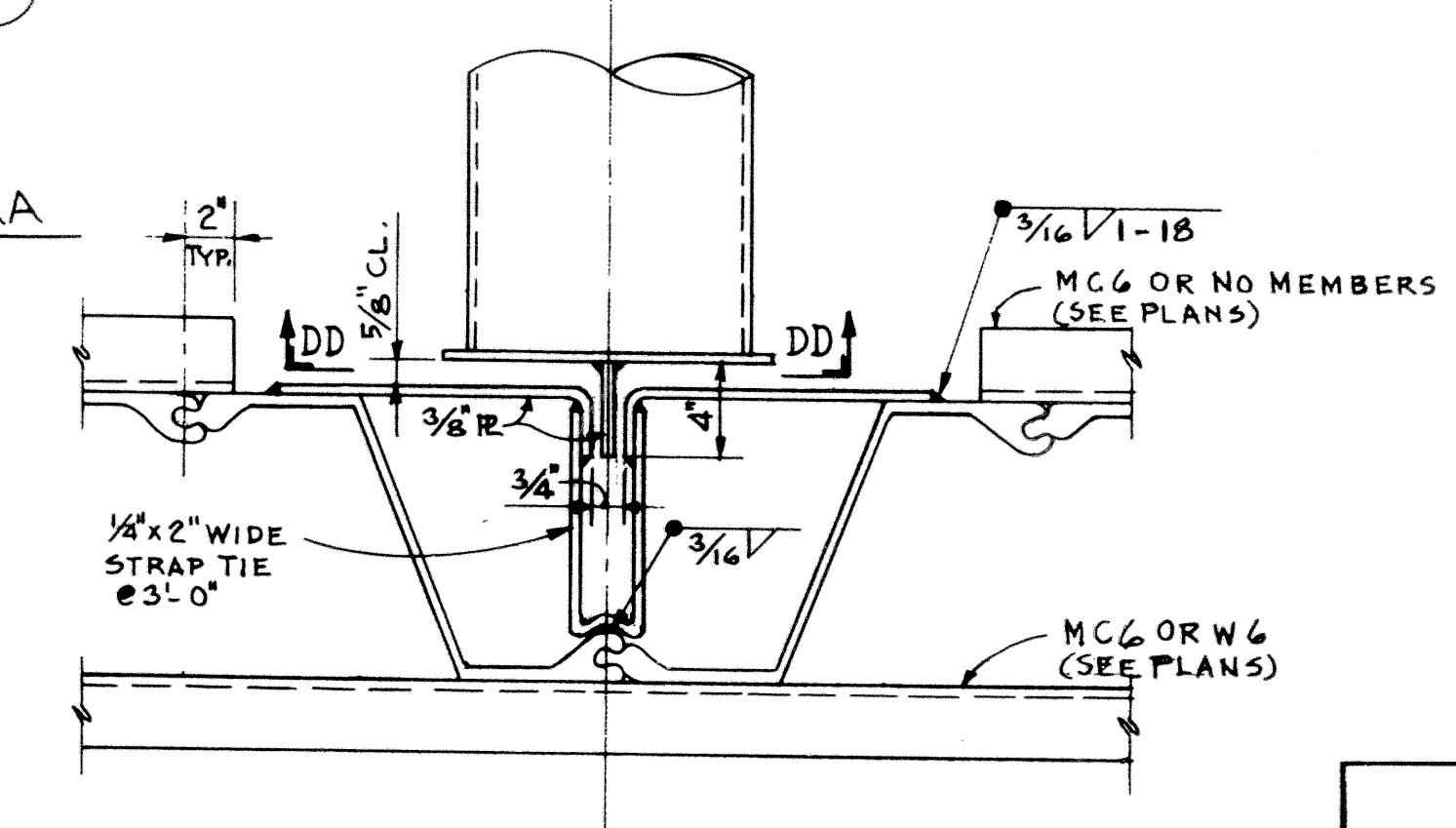
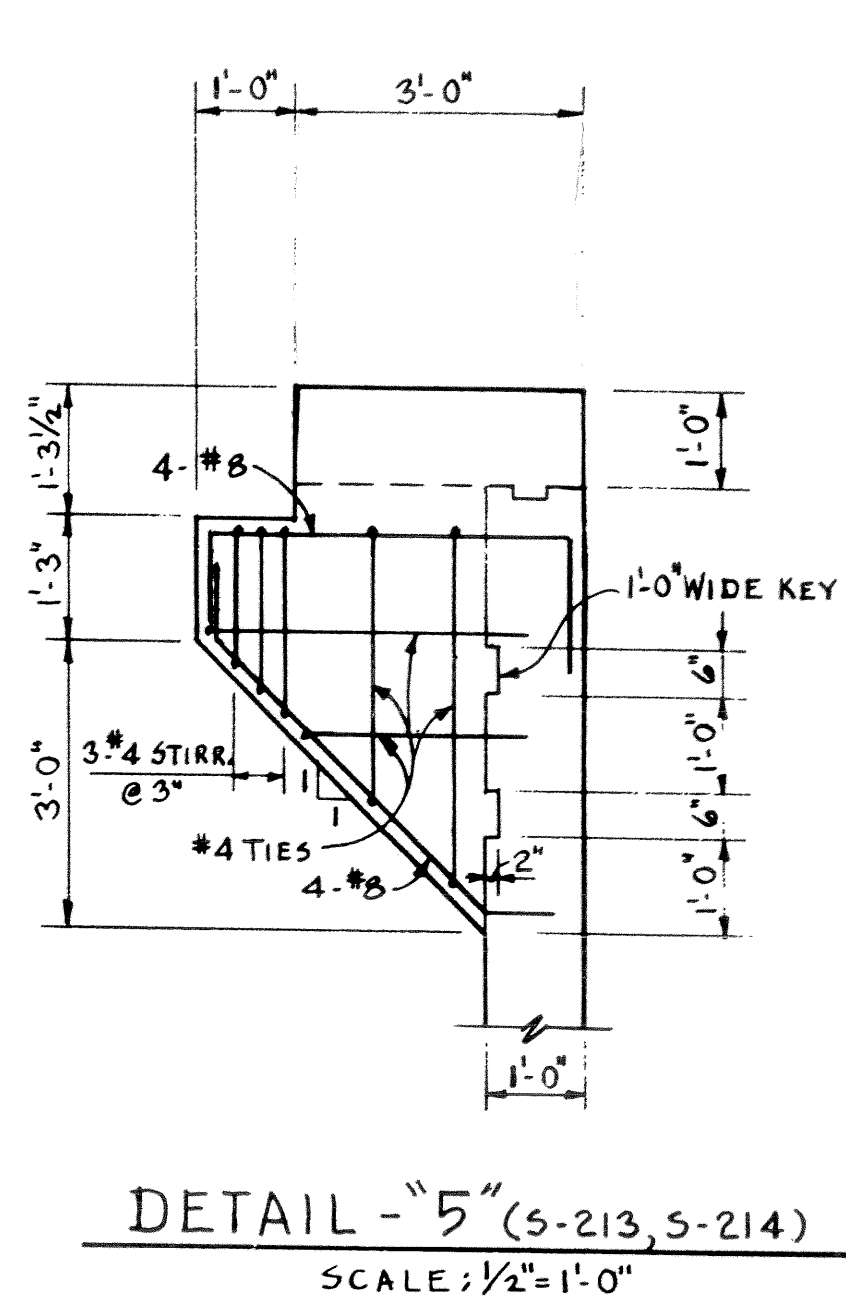
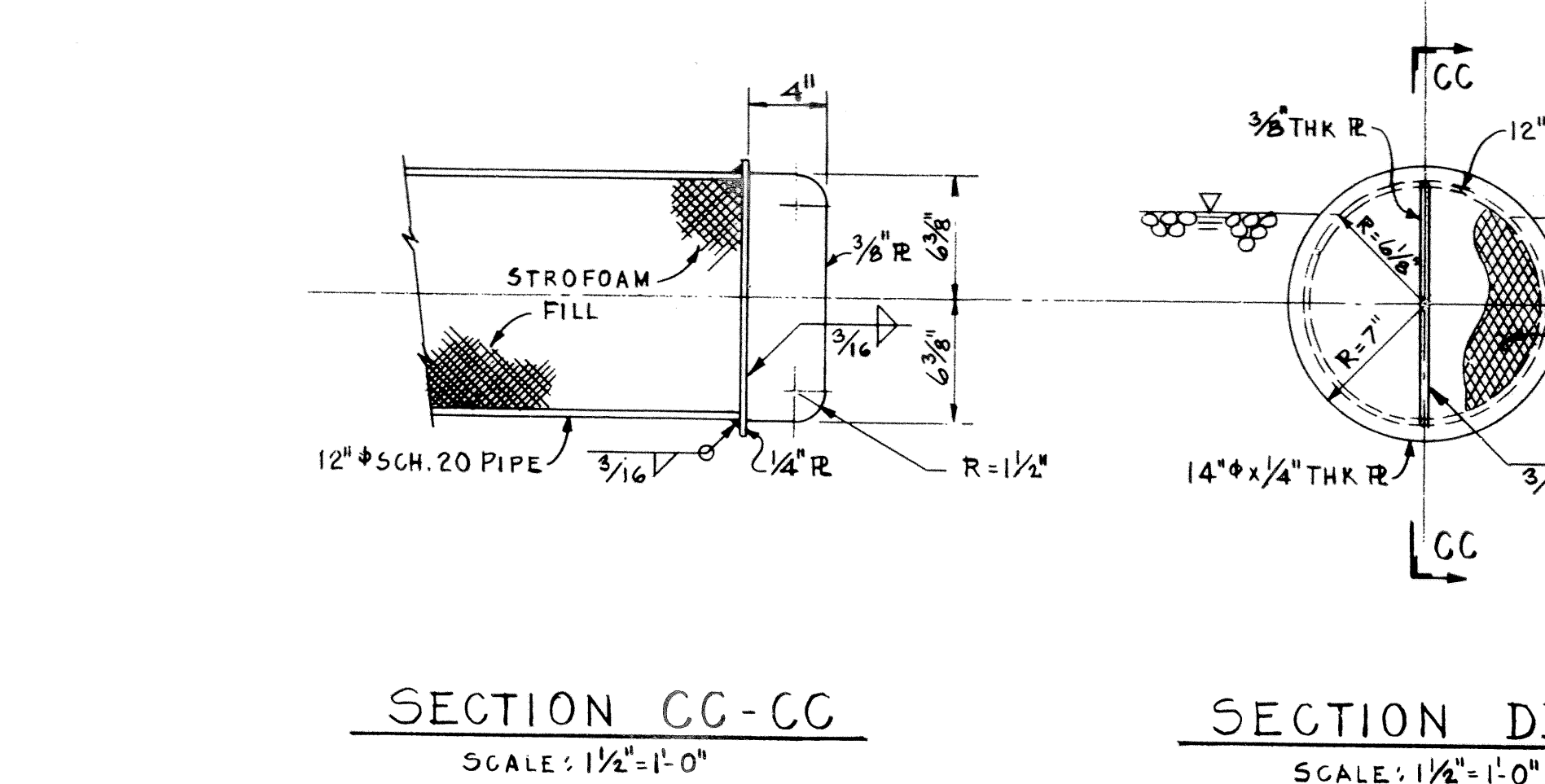
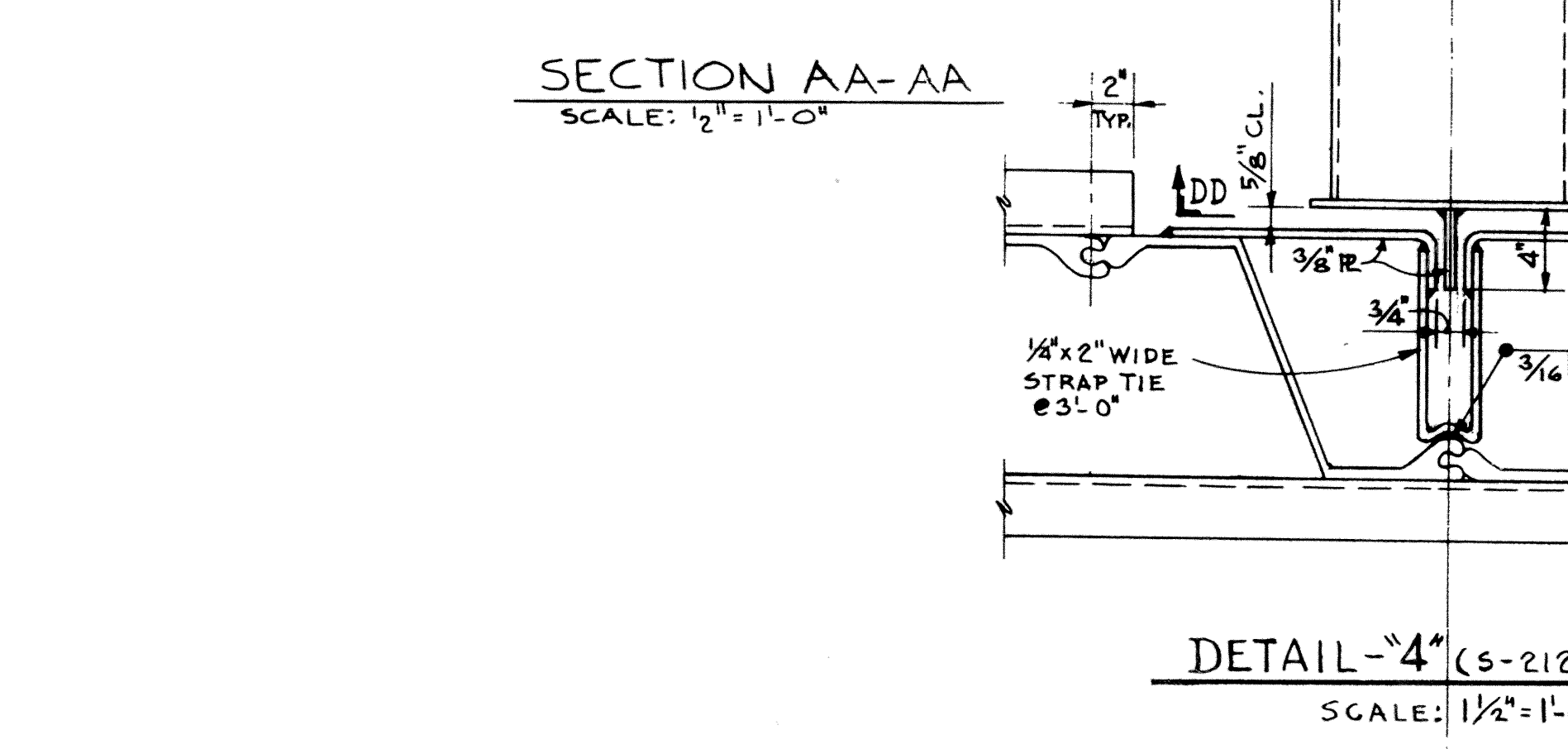
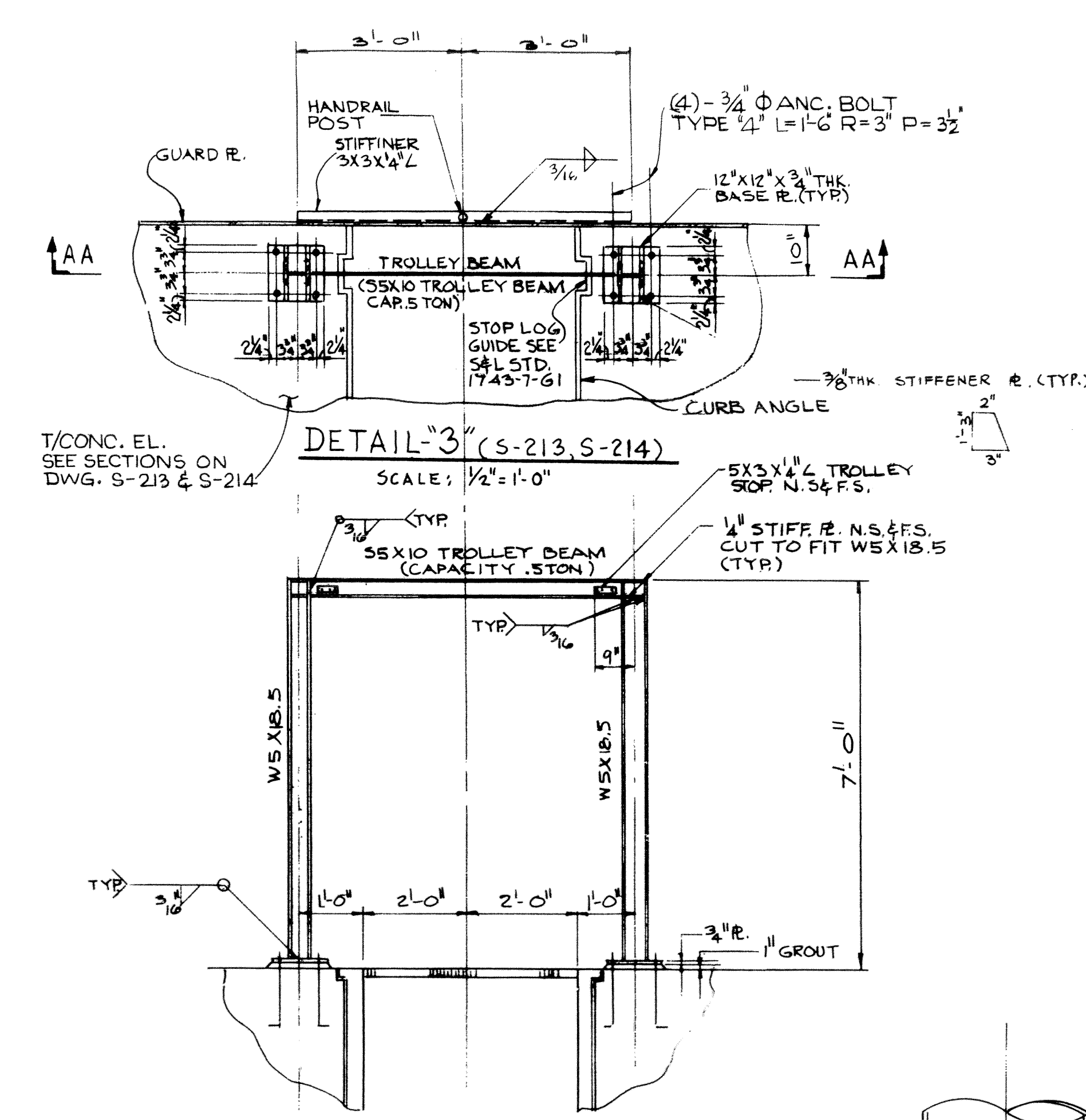
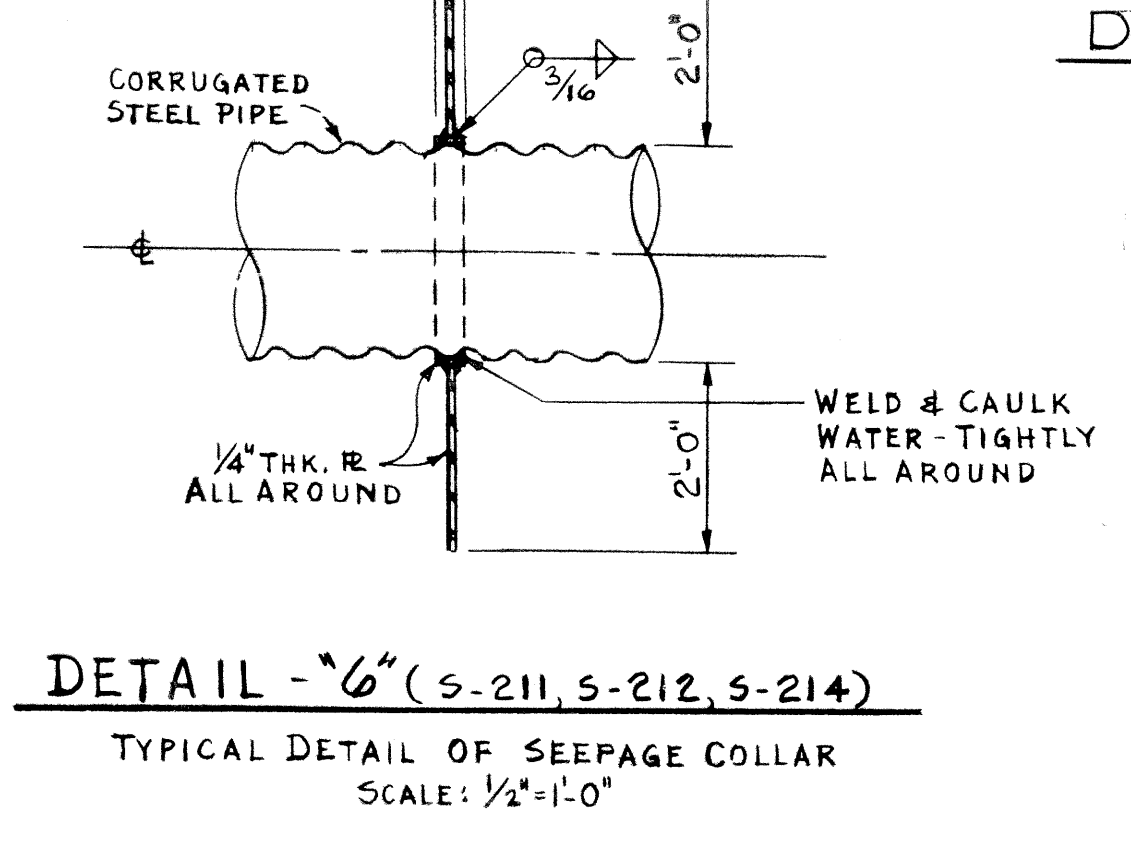
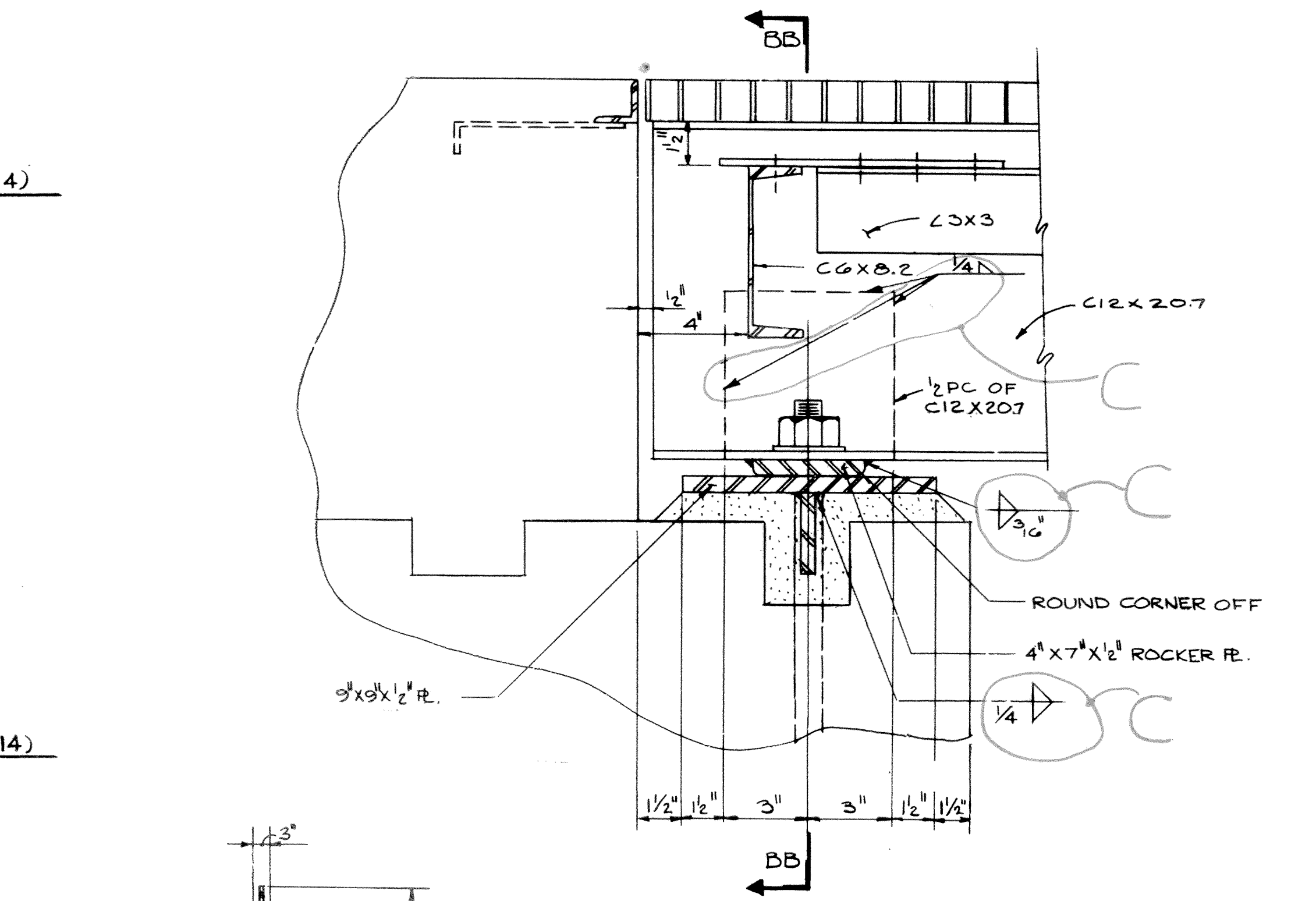
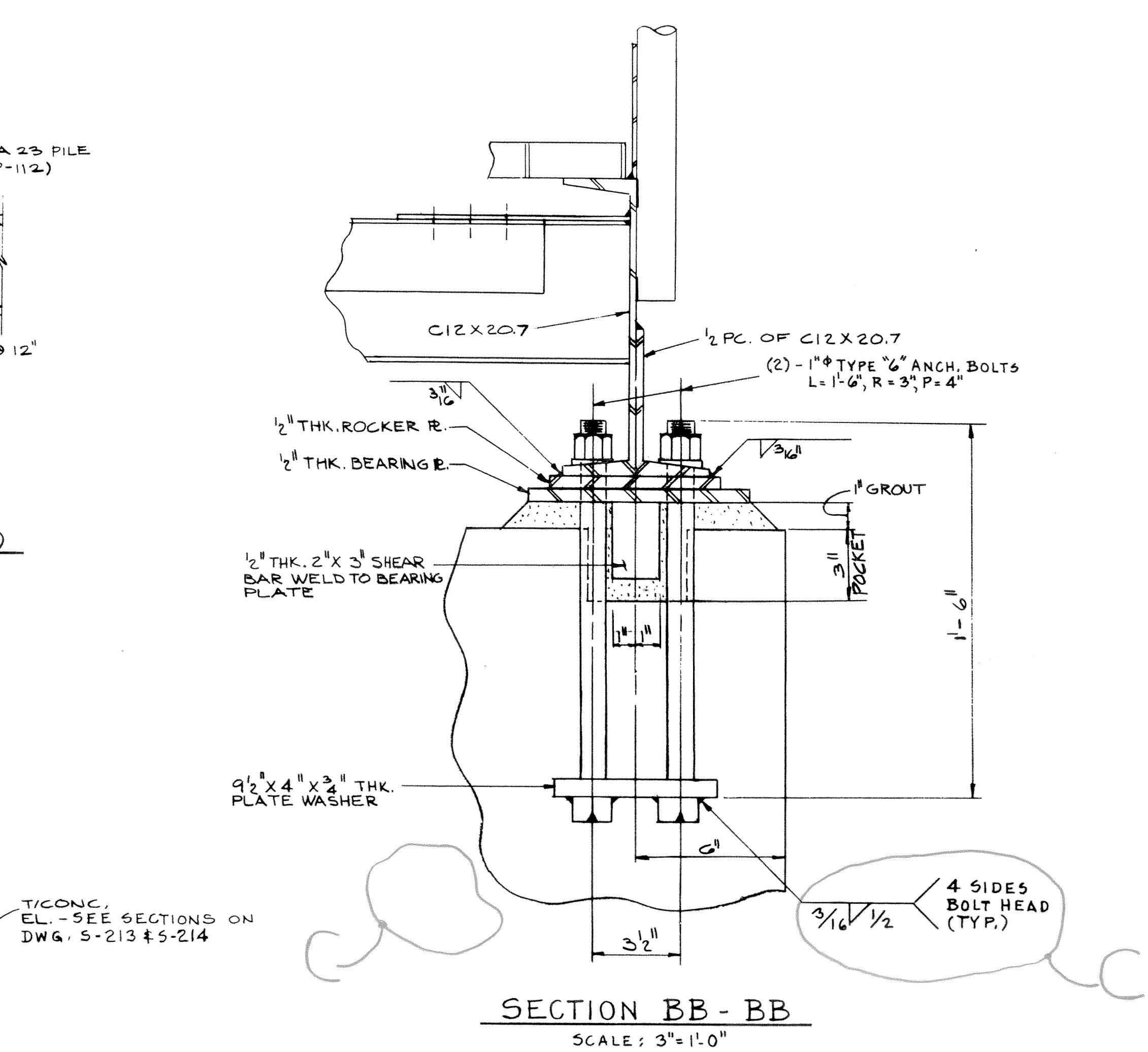
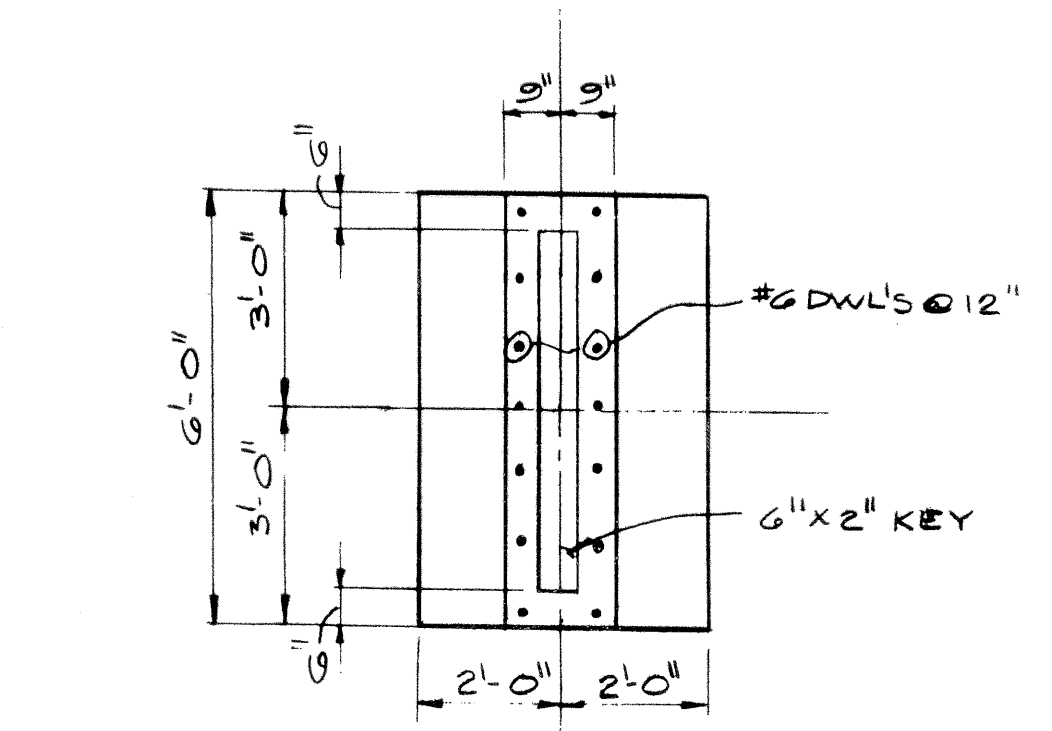
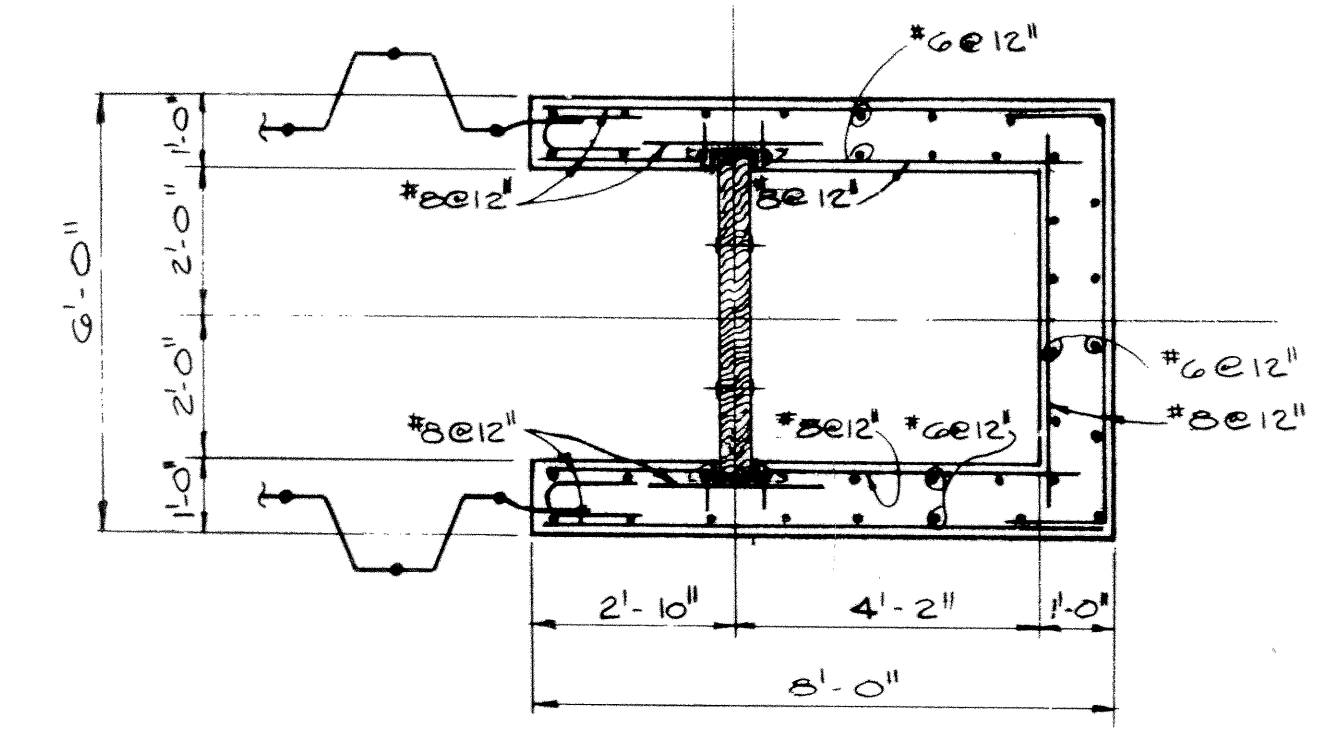
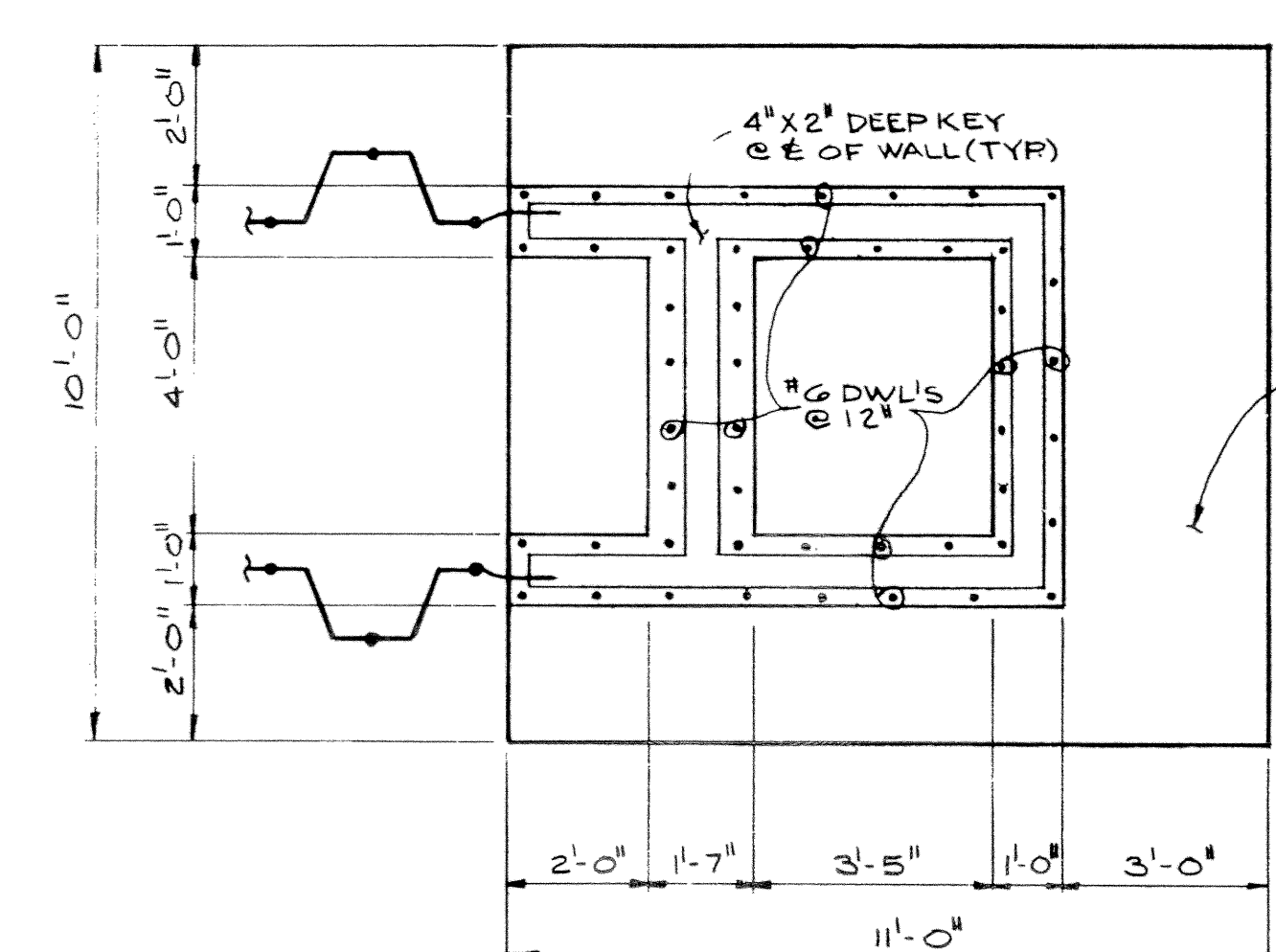
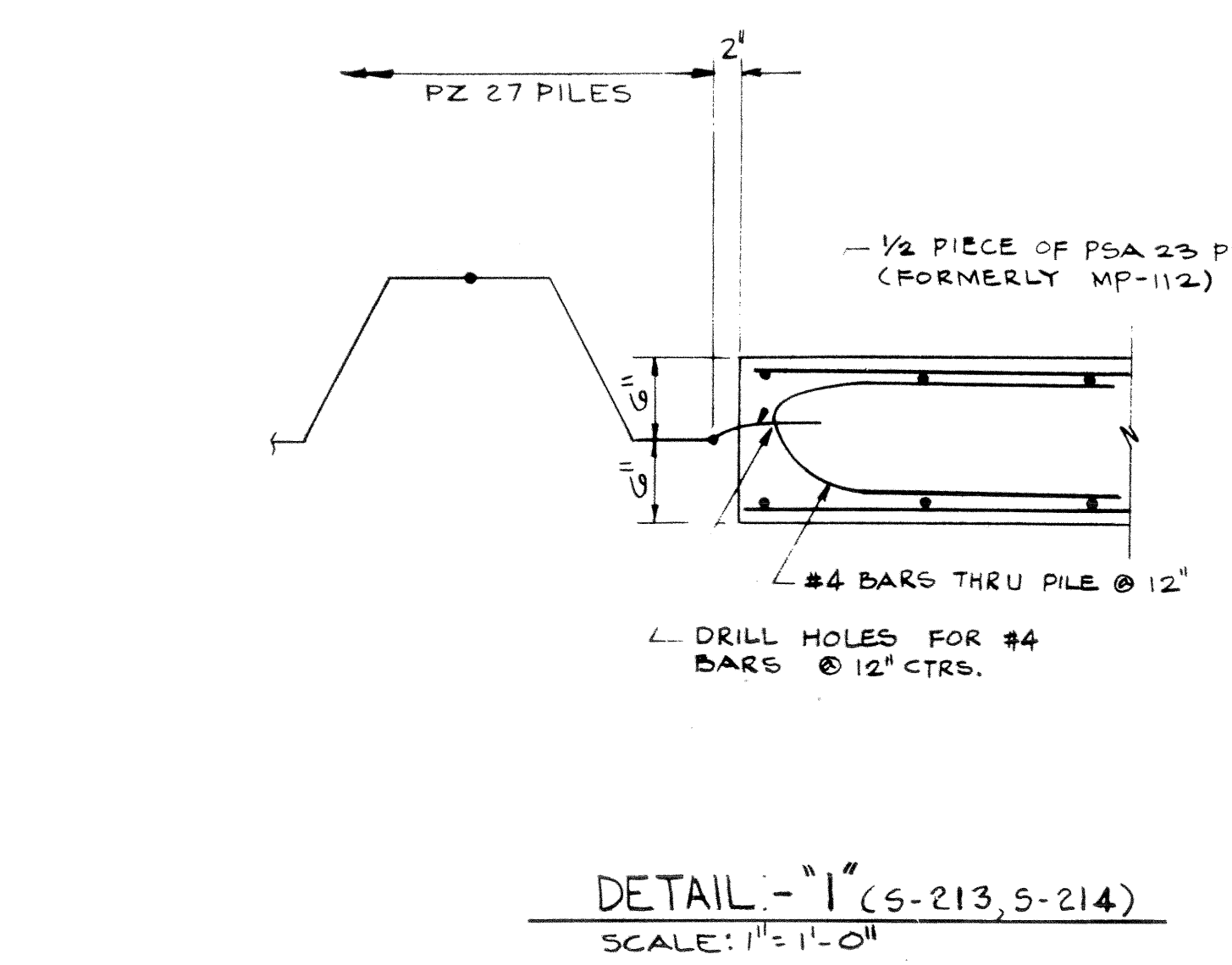
DRAWING NO.
S-214

JOB NO.
4644

I hereby certify that this plan, specification or report was prepared by me or under my direct personal supervision and that I am a duly registered Professional Engineer under the laws of the State of Iowa.

[Signature] Date 8-19-74
R. N. BERGSTROM, P.E., No. 4480

REGISTERED PROFESSIONAL ENGINEER
IOWA
4480



NOTES
1. FOR GENERAL NOTES SEE DWG. 5-

REFERENCE DRAWINGS
S-211 WEIR STRUCTURE - PLAN, SECTIONS & DETAILS @ COAL PILE AREA.
S-213 WEIR BOX NO. 1 & NO. 2 - PLAN, SECTIONS & DETAILS @ ASH SETTLING BASIN.
S-214 WEIR BOX NO. 3 - PLAN & SECTIONS @ ASH SETTLING BASIN.
S-11 SITE DEVELOPMENT, PLANT FILL - UNIT 4

I hereby certify that the plan, specifications or report was prepared by me or under my direct personal supervision and that I am a duly registered Professional Engineer under the laws of the State of Iowa.
Date: 2-14-77
Professional Engineer
R. N. BERGSTROM
REGISTERED
4480
IOWA
PROFESSIONAL ENGINEER

Rev.	Date	By	Description
1	2-27-74	KSC	ISSUE FOR PERMIT
2	2-27-74	KSC	ISSUE FOR PERMIT
3	2-27-74	KSC	ISSUE FOR PERMIT
4	2-27-74	KSC	ISSUE FOR PERMIT
5	2-27-74	KSC	ISSUE FOR PERMIT

WEIR BOX NO. 1, NO. 2 & NO. 3
SECT'S & DETS ASH SETTLING BASIN
LANSING POWER STATION UNIT 4
INTERSTATE POWER CO.
LANSING, IOWA

SCALE: AS NOTED
DRAWN: M. VENEGAS 3-15-74
CHECKED: S. K. LUNG 2-12-74
ENGINEER: D. A. JUNG 2-13-74
APPROVED: [Signature] 2-14-77
JOB NO. 4644

SARGENT & LUNDY
CHICAGO
DRAWING NO. S-215

**APPENDIX B – EDR Historical Aerial
Photograph Package**

Alliant Energy
Interstate Power and Light Company
Lansing Generating Station
Lansing, Iowa

History of Construction





Lasing Generating Station

2364-2366 Power Plant Dr
Lansing, IA 52151

Inquiry Number: 4555570.2

March 08, 2016

The EDR Aerial Photo Decade Package



6 Armstrong Road, 4th Floor
Shelton, Connecticut 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

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with any questions or comments.

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Date EDR Searched Historical Sources:

Aerial Photography March 08, 2016

Target Property:

2364-2366 Power Plant Dr

Lansing, IA 52151

<u>Year</u>	<u>Scale</u>	<u>Details</u>	<u>Source</u>
1940	Aerial Photograph. Scale: 1"=1200'	Flight Year: 1940	DOT
1952	Aerial Photograph. Scale: 1"=1200'	Flight Year: 1952	USDA
1957	Aerial Photograph. Scale: 1"=1200'	Flight Year: 1957	USDA
1965	Aerial Photograph. Scale: 1"=1000'	Flight Year: 1965	USGS
1971	Aerial Photograph. Scale: 1"=1200'	Flight Year: 1971	USDA
1982	Aerial Photograph. Scale: 1"=1200'	Flight Year: 1982	NHAP
1994	Aerial Photograph. Scale: 1"=500'	/DOQQ - acquisition dates: 1994	USGS/DOQQ
1994	Aerial Photograph. Scale: 1"=500'	/DOQQ - acquisition dates: 1994	USGS/DOQQ
1994	Aerial Photograph. Scale: 1"=500'	/DOQQ - acquisition dates: 1994	USGS/DOQQ
1994	Aerial Photograph. Scale: 1"=500'	/DOQQ - acquisition dates: 1994	USGS/DOQQ
2005	Aerial Photograph. Scale: 1"=500'	Flight Year: 2005	USDA/NAIP
2005	Aerial Photograph. Scale: 1"=500'	Flight Year: 2005	USDA/NAIP
2005	Aerial Photograph. Scale: 1"=500'	Flight Year: 2005	USDA/NAIP
2005	Aerial Photograph. Scale: 1"=500'	Flight Year: 2005	USDA/NAIP
2006	Aerial Photograph. Scale: 1"=500'	Flight Year: 2006	USDA/NAIP
2006	Aerial Photograph. Scale: 1"=500'	Flight Year: 2006	USDA/NAIP
2006	Aerial Photograph. Scale: 1"=500'	Flight Year: 2006	USDA/NAIP
2006	Aerial Photograph. Scale: 1"=500'	Flight Year: 2006	USDA/NAIP
2007	Aerial Photograph. Scale: 1"=500'	Flight Year: 2007	USDA/NAIP

<i>Year</i>	<i>Scale</i>	<i>Details</i>	<i>Source</i>
2007	Aerial Photograph. Scale: 1"=500'	Flight Year: 2007	USDA/NAIP
2007	Aerial Photograph. Scale: 1"=500'	Flight Year: 2007	USDA/NAIP
2007	Aerial Photograph. Scale: 1"=500'	Flight Year: 2007	USDA/NAIP
2008	Aerial Photograph. Scale: 1"=500'	Flight Year: 2008	USDA/NAIP
2008	Aerial Photograph. Scale: 1"=500'	Flight Year: 2008	USDA/NAIP
2008	Aerial Photograph. Scale: 1"=500'	Flight Year: 2008	USDA/NAIP
2008	Aerial Photograph. Scale: 1"=500'	Flight Year: 2008	USDA/NAIP
2009	Aerial Photograph. Scale: 1"=500'	Flight Year: 2009	USDA/NAIP
2009	Aerial Photograph. Scale: 1"=500'	Flight Year: 2009	USDA/NAIP
2009	Aerial Photograph. Scale: 1"=500'	Flight Year: 2009	USDA/NAIP
2009	Aerial Photograph. Scale: 1"=500'	Flight Year: 2009	USDA/NAIP
2010	Aerial Photograph. Scale: 1"=500'	Flight Year: 2010	USDA/NAIP
2010	Aerial Photograph. Scale: 1"=500'	Flight Year: 2010	USDA/NAIP
2010	Aerial Photograph. Scale: 1"=500'	Flight Year: 2010	USDA/NAIP
2011	Aerial Photograph. Scale: 1"=500'	Flight Year: 2011	USDA/NAIP
2011	Aerial Photograph. Scale: 1"=500'	Flight Year: 2011	USDA/NAIP
2011	Aerial Photograph. Scale: 1"=500'	Flight Year: 2011	USDA/NAIP
2011	Aerial Photograph. Scale: 1"=500'	Flight Year: 2011	USDA/NAIP



INQUIRY #: 455570.2

YEAR: 1940

| = 1200'





INQUIRY #: 455570.2

YEAR: 1952

| = 1200'





INQUIRY #: 455570.2

YEAR: 1957

| = 1200'





INQUIRY #: 455570.2

YEAR: 1965

| = 1000'





INQUIRY #: 455570.2

YEAR: 1971

| = 1200'





INQUIRY #: 455570.2

YEAR: 1982

| = 1200'





INQUIRY #: 455570.2

YEAR: 1994

| = 500'





INQUIRY #: 455570.2

YEAR: 1994

| = 500'





INQUIRY #: 4555570.2

YEAR: 1994

| = 500'





INQUIRY #: 455570.2

YEAR: 1994

| = 500'





INQUIRY #: 455570.2

YEAR: 2005

| = 500'





INQUIRY #: 455570.2

YEAR: 2005

 = 500'





INQUIRY #: 455570.2

YEAR: 2005

| = 500'





INQUIRY #: 455570.2

YEAR: 2005

| = 500'





INQUIRY #: 455570.2

YEAR: 2006

| = 500'





INQUIRY #: 455570.2

YEAR: 2006

| = 500'





INQUIRY #: 455570.2

YEAR: 2006

| = 500'





INQUIRY #: 455570.2

YEAR: 2006

| = 500'





INQUIRY #: 455570.2

YEAR: 2007

| = 500'





INQUIRY #: 455570.2

YEAR: 2007

| = 500'





INQUIRY #: 455570.2

YEAR: 2007

| = 500'





INQUIRY #: 4555570.2

YEAR: 2007

| = 500'





INQUIRY #: 455570.2

YEAR: 2008

| = 500'





INQUIRY #: 455570.2

YEAR: 2008

| = 500'





INQUIRY #: 4555570.2

YEAR: 2008

| = 500'





INQUIRY #: 455570.2

YEAR: 2008

| = 500'





INQUIRY #: 455570.2

YEAR: 2009

| = 500'





INQUIRY #: 4555570.2

YEAR: 2009

| = 500'





INQUIRY #: 4555570.2

YEAR: 2009

| = 500'





INQUIRY #: 4555570.2

YEAR: 2009

| = 500'





INQUIRY #: 4555570.2

YEAR: 2010

| = 500'



EDR

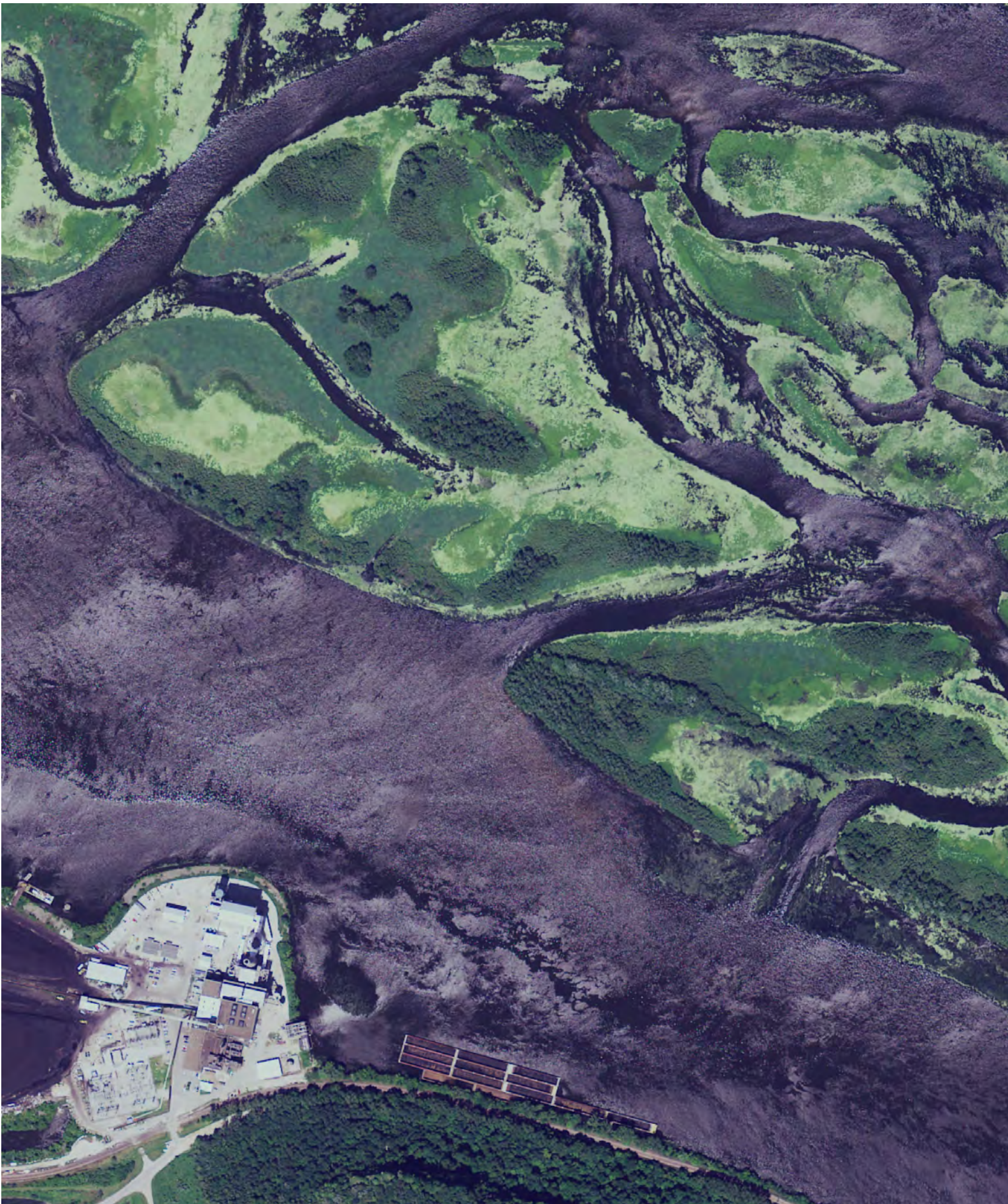


INQUIRY #: 4555570.2

YEAR: 2010

| = 500'





INQUIRY #: 455570.2

YEAR: 2010

| = 500'





INQUIRY #: 4555570.2

YEAR: 2011

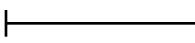
| = 500'





INQUIRY #: 455570.2

YEAR: 2011

 = 500'





INQUIRY #: 4555570.2

YEAR: 2011

| = 500'





INQUIRY #: 4555570.2

YEAR: 2011

| = 500'



**APPENDIX C – EDR Historical
Topographic Map Report**

Alliant Energy
Interstate Power and Light Company
Lansing Generating Station
Lansing, Iowa

History of Construction



Lasing Generating Station
2364-2366 Power Plant Dr
Lansing, IA 52151

Inquiry Number: 4555570.1

March 04, 2016

EDR Historical Topo Map Report

with QuadMatch™



6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

03/04/16

Site Name:

Lasing Generating Station
2364-2366 Power Plant Dr
Lansing, IA 52151
EDR Inquiry # 4555570.1

Client Name:

Environmental Site Assessors
932 North Wright Street, Suite 100
Naperville, IL 60563
Contact: Mark W Loerop



EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Environmental Site Assessors were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDR's Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:**Coordinates:**

Site Name:	Lasing Generating Station	Latitude:	43.3341 43° 20' 3" North
Address:	2364-2366 Power Plant Dr	Longitude:	-91.168831 -91° 10' 8" West
City,State,Zip:	Lansing, IA 52151	UTM Zone:	Zone 15 North
P.O.#	154.018.012.002	UTM X Meters:	648445.85
Project:	LGS Historical Docs	UTM Y Meters:	4799545.30
		Elevation:	625.36' above sea level

Maps Provided:

2013
1983
1966
1932
1929
1903

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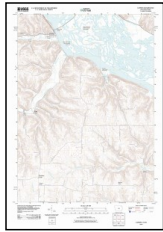
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Topo Sheet Thumbnails

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2013 Source Sheets



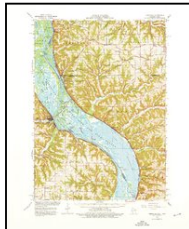
Lansing
2013
7.5-minute, 24000

1983 Source Sheets



Lansing
1983
7.5-minute, 24000
Aerial Photo Revised 1981
Edited 1983

1966 Source Sheets



Ferryville
1966
15-minute, 62500
Aerial Photo Revised 1965

1932 Source Sheets



Ferryville
1932
15-minute, 62500

Topo Sheet Thumbnails

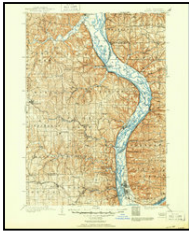
This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1929 Source Sheets

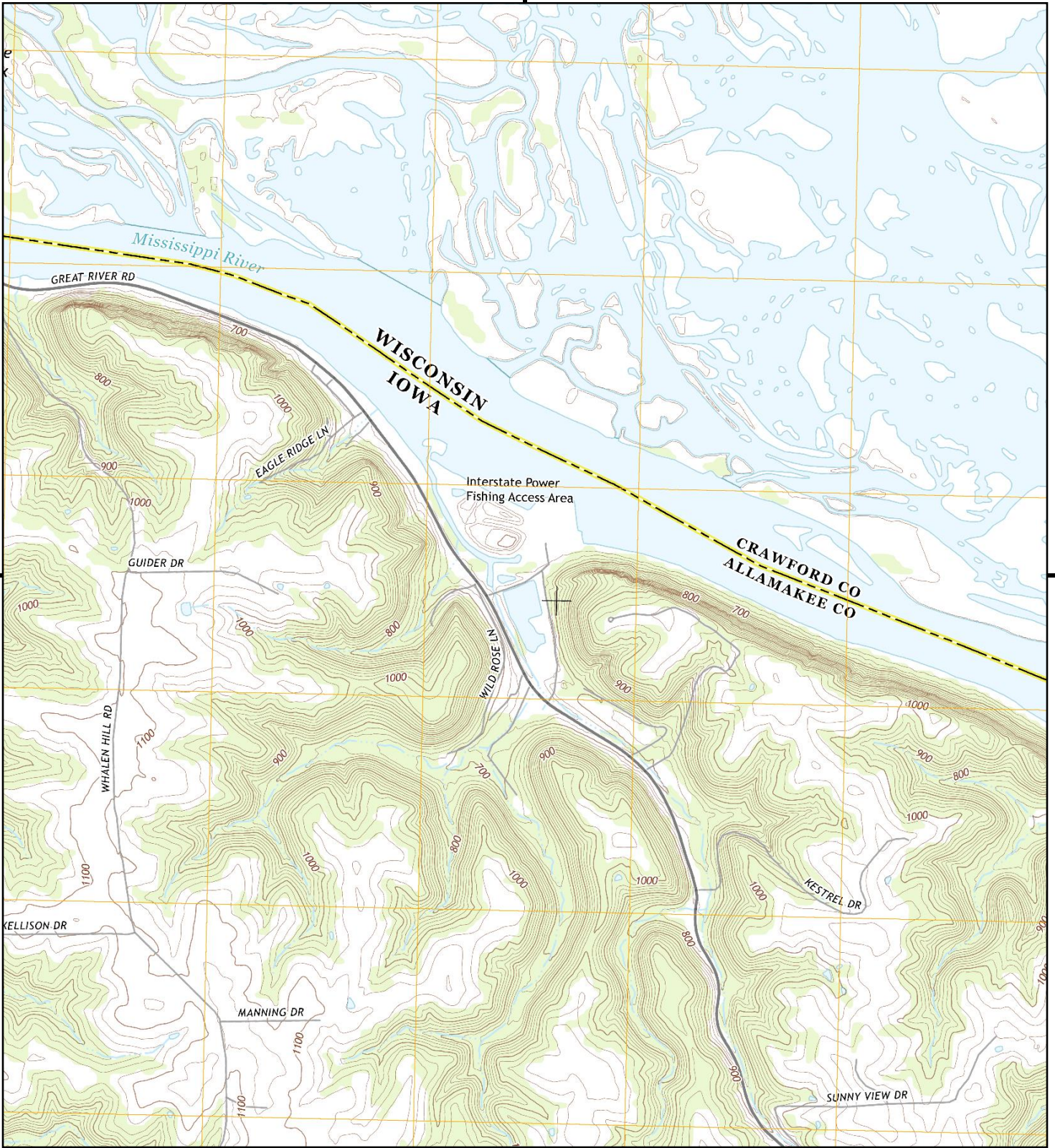


Ferryville
1929
15-minute, 62500

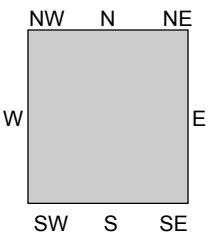
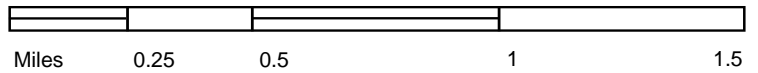
1903 Source Sheets



Waukon
1903
30-minute, 125000



This report includes information from the following map sheet(s).



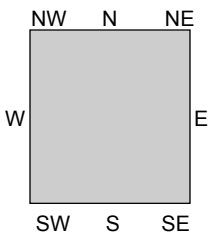
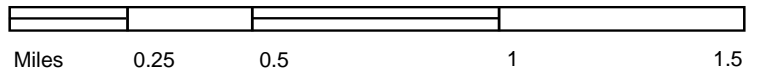
TP, Lansing, 2013, 7.5-minute

SITE NAME: Lasing Generating Station
ADDRESS: 2364-2366 Power Plant Dr
 Lansing, IA 52151
CLIENT: Environmental Site Assessors





This report includes information from the following map sheet(s).



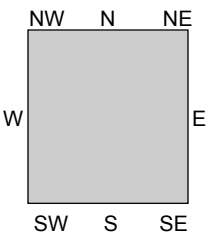
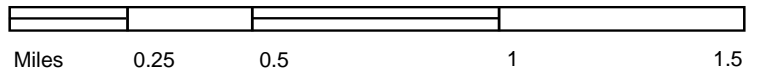
TP, Lansing, 1983, 7.5-minute

SITE NAME: Lasing Generating Station
 ADDRESS: 2364-2366 Power Plant Dr
 Lansing, IA 52151
 CLIENT: Environmental Site Assessors





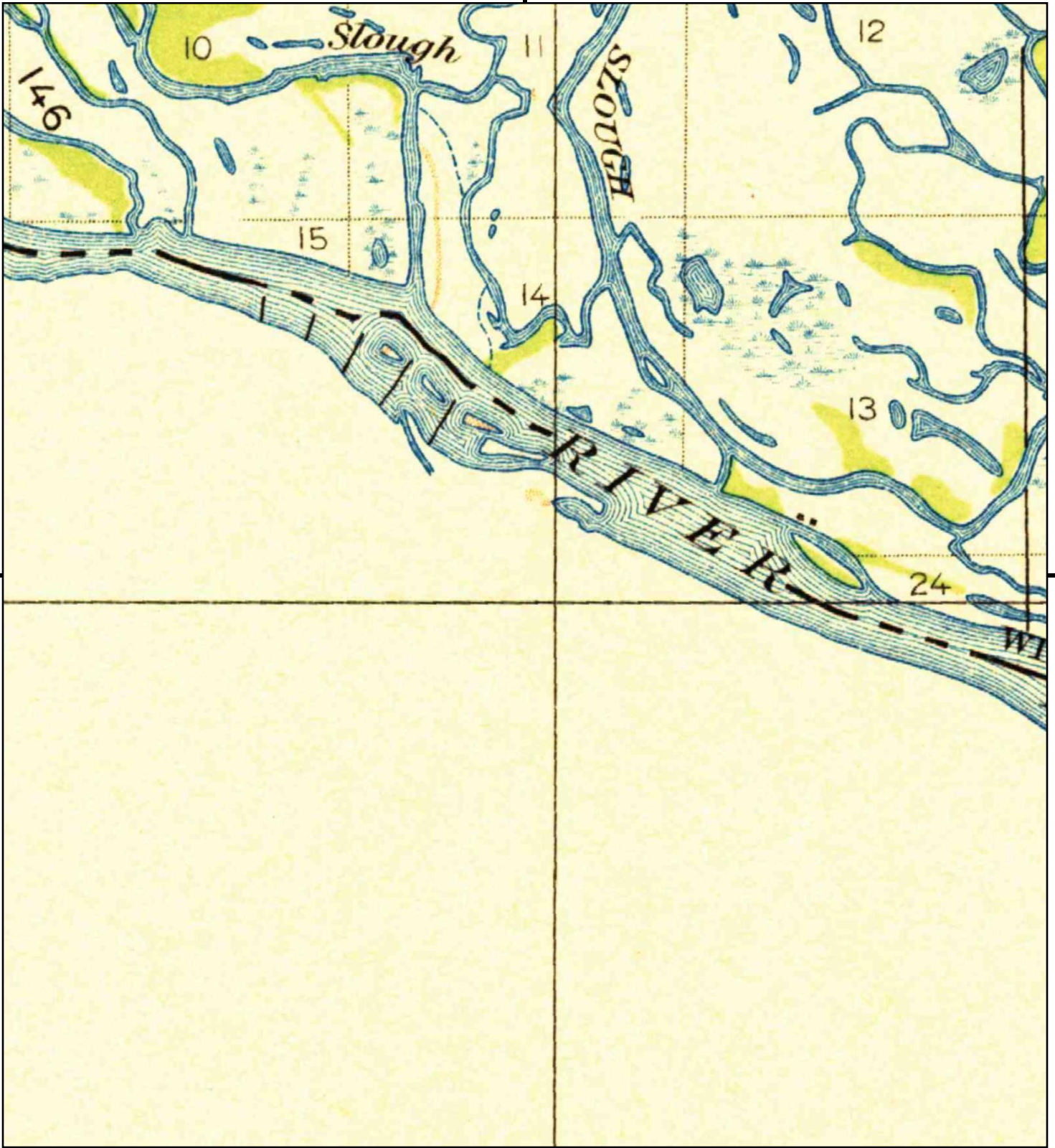
This report includes information from the following map sheet(s).



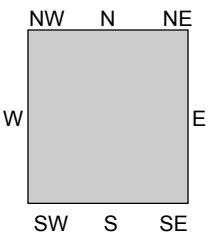
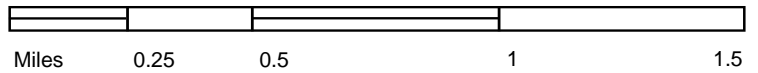
TP, Ferryville, 1966, 15-minute

SITE NAME: Lasing Generating Station
 ADDRESS: 2364-2366 Power Plant Dr
 Lansing, IA 52151
 CLIENT: Environmental Site Assessors





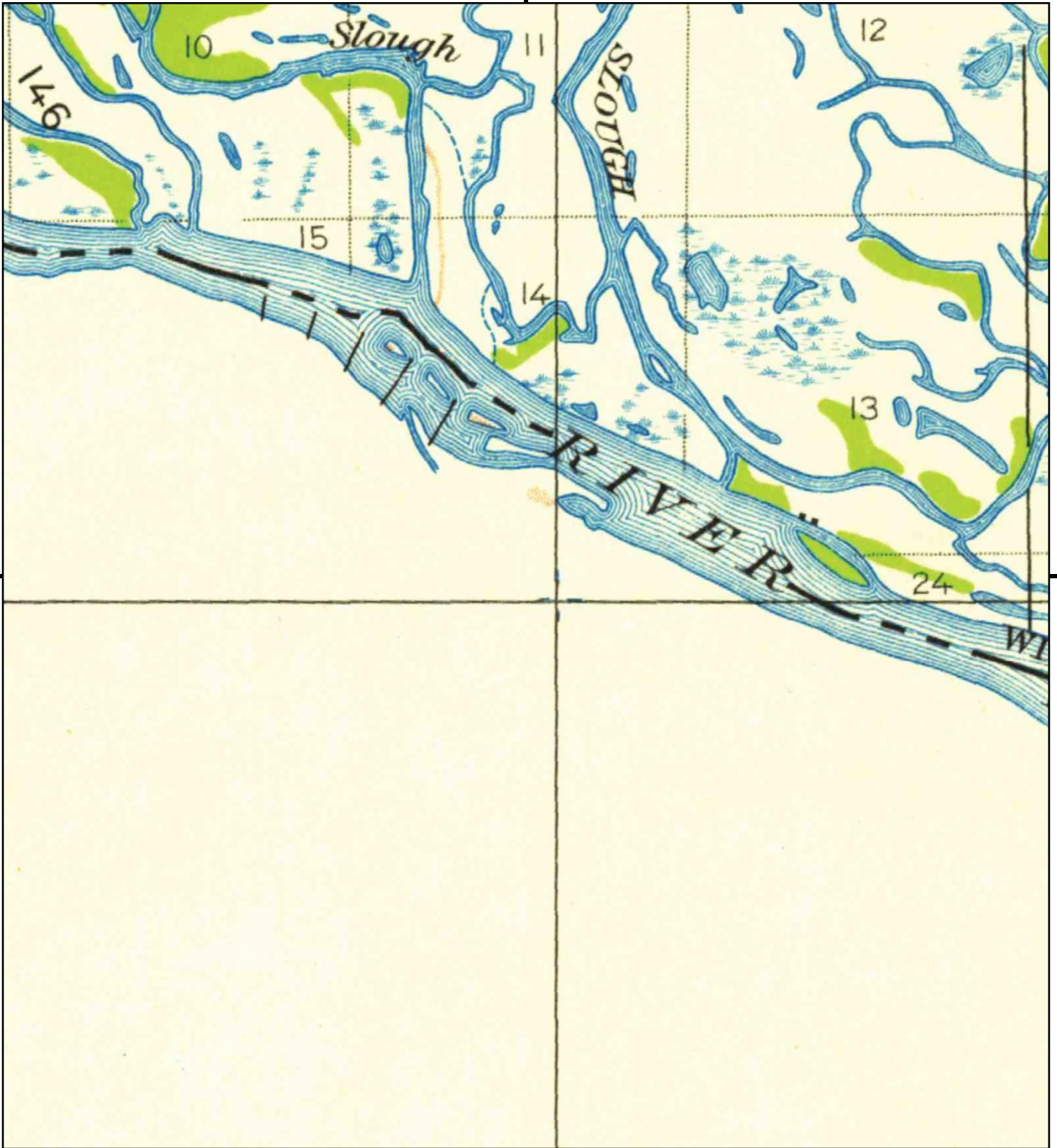
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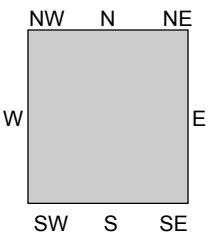
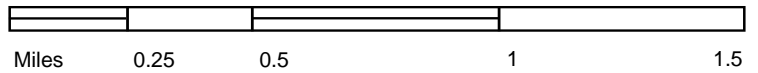
TP, Ferryville, 1932, 15-minute

SITE NAME: Lasing Generating Station
 ADDRESS: 2364-2366 Power Plant Dr
 Lansing, IA 52151
 CLIENT: Environmental Site Assessors





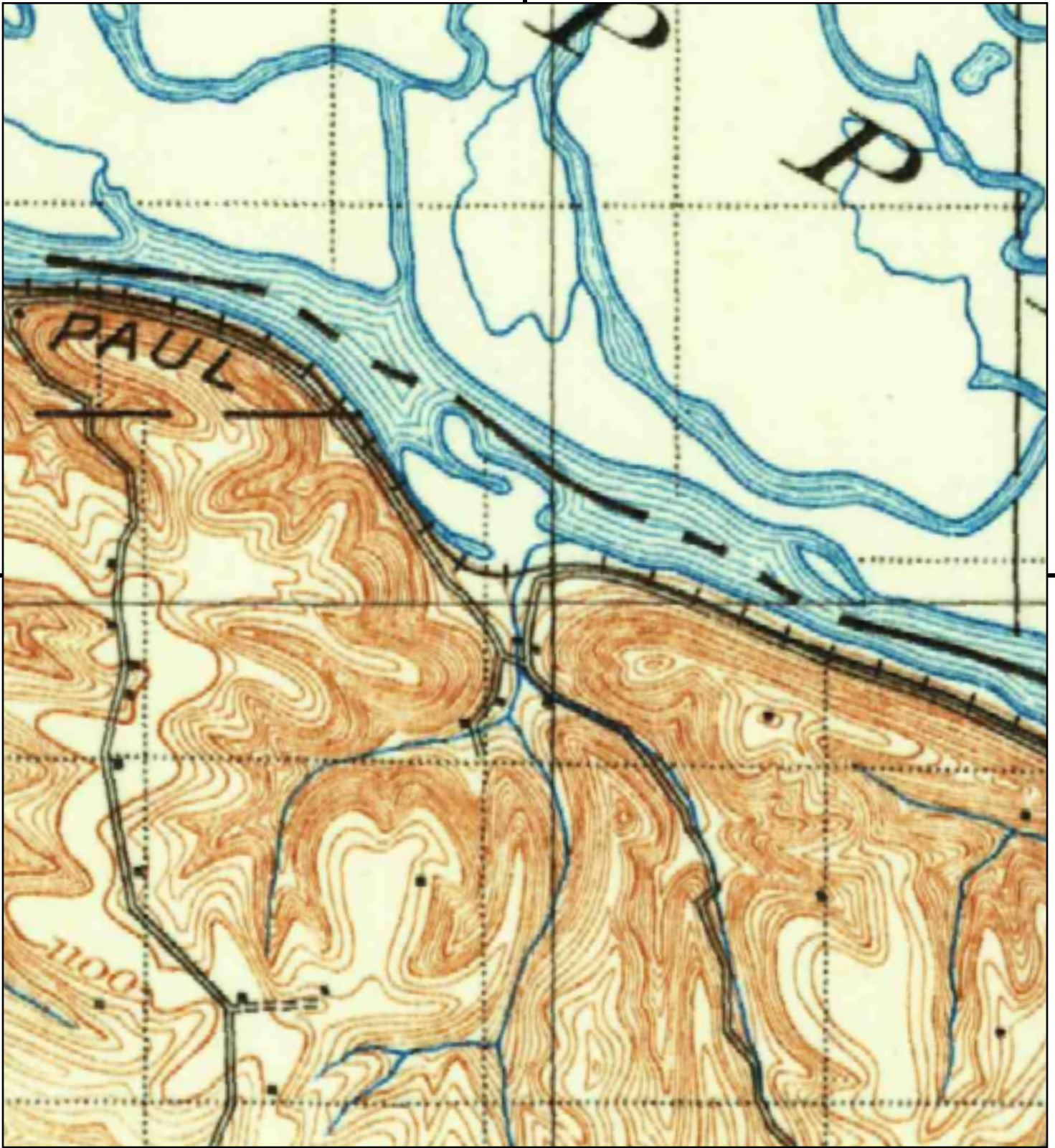
This report includes information from the following map sheet(s).



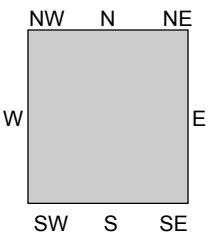
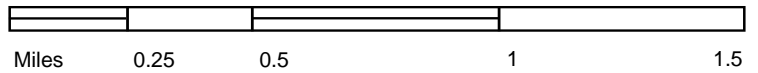
TP, Ferryville, 1929, 15-minute

SITE NAME: Lasing Generating Station
 ADDRESS: 2364-2366 Power Plant Dr
 Lansing, IA 52151
 CLIENT: Environmental Site Assessors





This report includes information from the following map sheet(s).



TP, Waukon, 1903, 30-minute

SITE NAME: Lasing Generating Station
 ADDRESS: 2364-2366 Power Plant Dr
 Lansing, IA 52151
 CLIENT: Environmental Site Assessors



**APPENDIX D – Geoprobe Soil Borings -
1973**

Alliant Energy
Interstate Power and Light Company
Lansing Generating Station
Lansing, Iowa

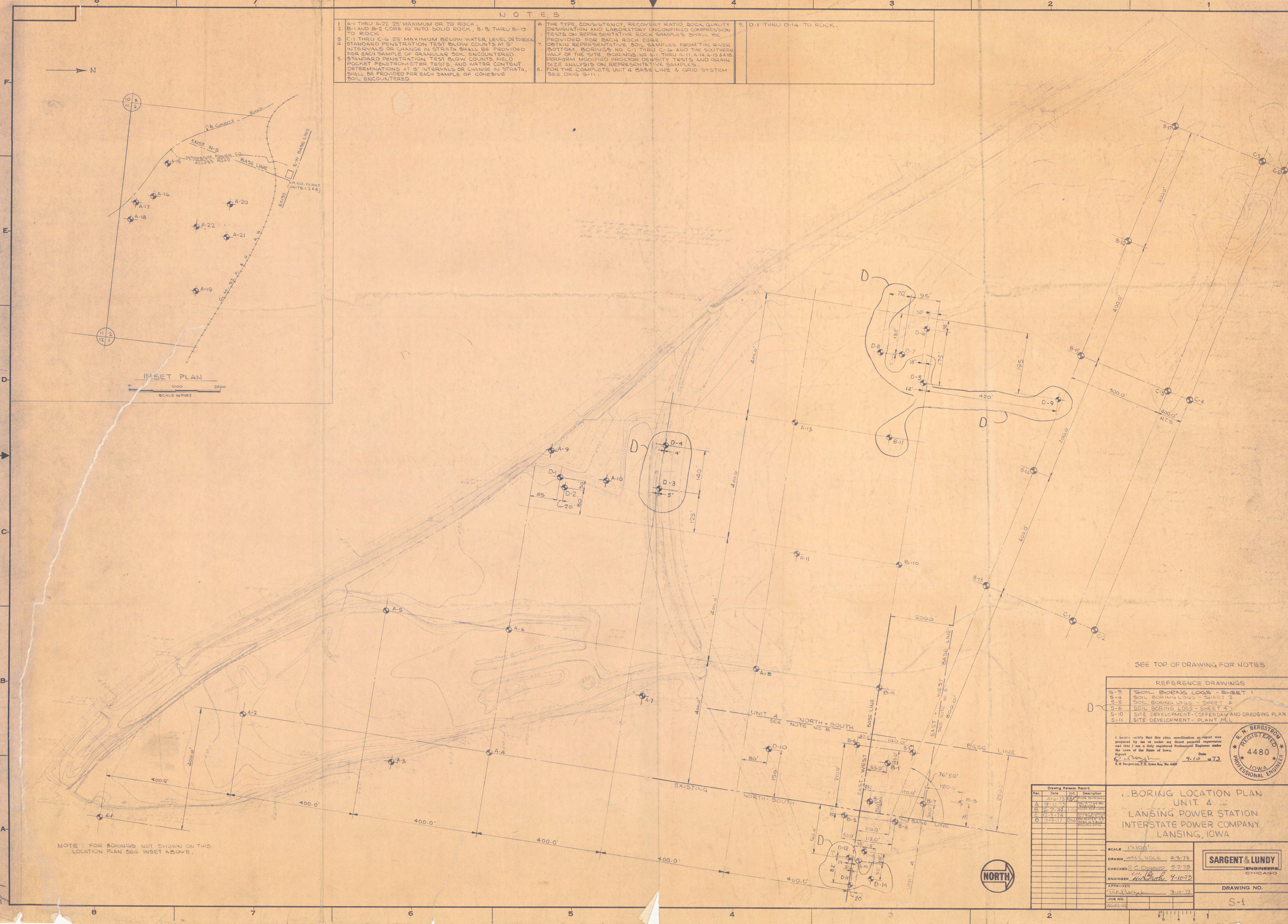
History of Construction



NOTES

1. A-1 THRU A-22 25' MAXIMUM OR TO ROCK.
2. B-1 AND B-2 CORE 10' INTO SOLID ROCK, B-3 THRU B-19 TO ROCK.
3. C-1 THRU C-6 25' MAXIMUM BELOW WATER LEVEL OR TO ROCK.
4. STANDARD PENETRATION TEST BLOW COUNTS AT 5' INTERVALS OR CHANGE IN STRATA SHALL BE PROVIDED FOR EACH SAMPLE OF GRANULAR SOIL ENCOUNTERED.
5. STANDARD PENETRATION TEST BLOW COUNTS, FIELD POCKET PENETROMETER TESTS, AND WATER CONTENT DETERMINATIONS AT 5' INTERVALS OR CHANGE IN STRATA, SHALL BE PROVIDED FOR EACH SAMPLE OF COHESIVE SOIL ENCOUNTERED.
6. THE TYPE, CONSISTENCY, RECOVERY RATIO, ROCK QUALITY DESIGNATION AND LABORATORY UNCONFINED COMPRESSION TESTS ON REPRESENTATIVE ROCK SAMPLES SHALL BE PROVIDED FOR EACH ROCK CORE.
7. OBTAIN REPRESENTATIVE SOIL SAMPLES FROM THE RIVER BOTTOM, BORINGS NO. C-1 THRU C-6 AND THE SOUTHERN HALF OF THE SITE. BORINGS NO. B-1 THRU B-11 AND B-15 & B-18. PERFORM MODIFIED PROCTOR DENSITY TESTS AND GRAIN SIZE ANALYSIS ON REPRESENTATIVE SAMPLES.
8. FOR THE COMPLETE UNIT 4 BASE LINE & GRID SYSTEM SEE DWG S-11.
9. D-1 THRU D-14 TO ROCK.

Note: Reference shall be made to the S.W. corner of the site of the proposed plant to be confirmed by survey.



NOTE: FOR BORINGS NOT SHOWN ON THIS LOCATION PLAN SEE INSET ABOVE.

SEE TOP OF DRAWING FOR NOTES

REFERENCE DRAWINGS	
S-2	SOIL BORING LOGS - SHEET 1
S-4	SOIL BORING LOGS - SHEET 2
S-5	SOIL BORING LOGS - SHEET 3
S-6	SOIL BORING LOGS - SHEET 4
S-10	SITE DEVELOPMENT - COFFERDAM AND DREDGING PLAN
S-11	SITE DEVELOPMENT - PLANT FILL

I hereby certify that this plan, specification or report was prepared by me or under my direct personal supervision and that I am a duly registered Professional Engineer under the laws of the State of Iowa.
 Date: 9-10-73
 S. M. Bergstrom, P.E. Iowa Reg. No. 4480



BORING LOCATION PLAN
 UNIT 4
 LANSING POWER STATION
 INTERSTATE POWER COMPANY
 LANSING, IOWA

Rev.	Date	Int.	Description
A	9-10-73	1	FOR SCHEMATIC
B	9-10-73	1	FOR SITE PLAN
C	12-3-74	1	FOR BORING LOGS
D	9-19-77	1	FOR BORING LOGS

SCALE	1"=100'
DRAWN	W.M. VOLK 4-3-73
CHECKED	R.C. OPPER 2-7-73
ENGINEER	W. H. B. 9-10-73
APPROVED	S. M. Bergstrom 9-10-73
JOB NO.	2664-03
DRAWING NO.	S-1



BORING A-1

Table for Boring A-1 with columns for depth, soil type, and test results. Includes notes like 'Light Brown Fine to Medium Sand, Silty, Some to Little Clay, Little Shell to Large Gravel'.

BORING A-2

Table for Boring A-2 with columns for depth, soil type, and test results. Includes notes like 'Gray Silty Sand, Clayey to Trace Clay'.

BORING A-3

Table for Boring A-3 with columns for depth, soil type, and test results. Includes notes like 'Gray Silty, Sandy, Clayey to Trace Clay'.

BORING A-4

Table for Boring A-4 with columns for depth, soil type, and test results. Includes notes like 'Light Brown Fine Sand, Silty, Some Shell to Large Gravel'.

BORING A-5

Table for Boring A-5 with columns for depth, soil type, and test results. Includes notes like 'Gray Silty, Sandy, Clayey to Trace Clay'.

BORING A-6

Table for Boring A-6 with columns for depth, soil type, and test results. Includes notes like 'Gray Silty, Sandy, Clayey to Trace Clay'.

BORING A-7

Table for Boring A-7 with columns for depth, soil type, and test results. Includes notes like 'Greenish-Brown Silty Sand, Some Clay, Occasional Sandstone Pieces'.

BORING A-8

Table for Boring A-8 with columns for depth, soil type, and test results. Includes notes like 'Light Brown Fine to Medium Sand, Silty, Some to Little Clay, Little Shell to Large Gravel'.

BORING A-9

Table for Boring A-9 with columns for depth, soil type, and test results. Includes notes like 'Light Brown Fine Sand, Trace Silty'.

BORING A-10

Table for Boring A-10 with columns for depth, soil type, and test results. Includes notes like 'Light Brown Fine to Medium Sand, Silty, Some to Little Clay, Little Shell to Large Gravel'.

BORING A-11

Table for Boring A-11 with columns for depth, soil type, and test results. Includes notes like 'Gray Silty, Sandy, Clayey to Trace Clay'.

BORING A-13

Table for Boring A-13 with columns for depth, soil type, and test results. Includes notes like 'Light Brown' and 'Reddish Brown Silty, Some Sand Little Clay'.

BORING A-15

Table for Boring A-15 with columns for depth, soil type, and test results. Includes notes like 'Gray Silty, Sandy, Clayey to Trace Clay'.

BORING A-16

Table for Boring A-16 with columns for depth, soil type, and test results. Includes notes like 'Brown to Gray Clay'.

BORING A-17

Table for Boring A-17 with columns for depth, soil type, and test results. Includes notes like 'Brown Sandy Clay' and 'Light Brown Fine Sand, Little to Trace Silty, Occasional Small Gravel'.

BORING A-18

Table for Boring A-18 with columns for depth, soil type, and test results. Includes notes like 'Brown Sandy Clay' and 'Light Brown Fine Sand, Little to Trace Silty, Occasional Small Gravel'.

BORING A-19

Table for Boring A-19 with columns for depth, soil type, and test results. Includes notes like 'Light Brown Very Silty Clay, Some to Little Sand' and 'Reddish Brown Silty Clay, Little to Trace Sand, Occasional Lenticular Pieces'.

BORING A-20

Table for Boring A-20 with columns for depth, soil type, and test results. Includes notes like 'Light Brown, Yellowish-Brown Fine Sand, Silty to Little Silty, Some Small to Large Lenticular Pieces'.

BORING A-21

Table for Boring A-21 with columns for depth, soil type, and test results. Includes notes like 'Light Brown Very Silty Clay, Some to Little Sand' and 'Light Brown, Yellowish-Brown Fine Sand, Silty to Little Silty, Some Small to Large Lenticular Pieces'.

BORING A-22

Table for Boring A-22 with columns for depth, soil type, and test results. Includes notes like 'Light Brown, Yellowish-Brown Fine Sand, Silty to Little Silty, Some Small to Large Lenticular Pieces'.

REFERENCE BID SPEC. G-3105 1-21-74

- NOTES
LEGEND FOR DRILLING METHODS
SS: Split-Spoon - 2" O.D., except where noted
DC: Drove Casing - 2 1/2" I.D., except where noted
WO: Washed Out
RC: Rock Coring
RQD: Rock Quality Designator
FA: Flight Auger
HA: Hand Auger

REFERENCE DRAWINGS
INTERSTATE POWER CO
LANSING PLANT
LANSING IA 52151
ARTHUR MEL BREESER

BORING C-1

Table for Boring C-1 with columns for depth, soil type, and test results. Includes notes like 'Water' and 'Gray Organic Silty, Silty, Little to Trace Brown Matter, and Wood, Little Sand - Occasional Gravel'.

BORING C-2

Table for Boring C-2 with columns for depth, soil type, and test results. Includes notes like 'Water' and 'Gray Organic Silty, Silty, Little to Trace Brown Matter and Wood, Little Sand - Occasional Gravel'.

BORING C-3

Table for Boring C-3 with columns for depth, soil type, and test results. Includes notes like 'Gray Organic Silty, Silty, Little to Trace Brown Matter and Wood, Little Sand - Occasional Gravel'.

BORING C-5

Table for Boring C-5 with columns for depth, soil type, and test results. Includes notes like 'Gray Fine to Medium Sand, Very Loose to Medium Dense, Little to No Silty, Trace Coarse Sand, Small Gravel and Shell'.

BORING C-6

Table for Boring C-6 with columns for depth, soil type, and test results. Includes notes like 'Water' and 'Elevation 616'.

BORING C-4

Table for Boring C-4 with columns for depth, soil type, and test results. Includes notes like 'Water' and 'Elevation 616'.

I hereby certify that this plan, specification or report was prepared by me or under my direct personal supervision and that I am a duly registered Professional Engineer under the laws of the State of Iowa.
R. N. Bergstrom, P. E., License No. 4480

SOIL BORING LOGS
SHEET 1
LANSING POWER STATION
INTERSTATE POWER COMPANY
LANSING, IOWA

SCALE NONE
DRAWN J. CASTRO 2-24-73
CHECKED R. C. ORLANDO 2-7-73
ENGINEER R. N. BERGSTROM 2-7-73
APPROVED R. N. BERGSTROM 2-7-73
JOB NO. 4644.03
DRAWING NO. 5-3

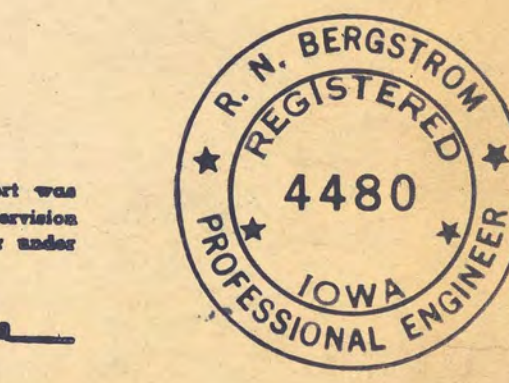


Table with columns for Rev., Date, Init., and Description. Contains one entry: 1, 9-10-73, S.M.S.T.

BORING B-1

Table for Boring B-1 showing soil logs, depths, and descriptions. Includes columns for depth, soil type, and notes.

BORING B-2

Table for Boring B-2 showing soil logs, depths, and descriptions. Includes columns for depth, soil type, and notes.

BORING B-3

Table for Boring B-3 showing soil logs, depths, and descriptions. Includes columns for depth, soil type, and notes.

BORING B-4

Table for Boring B-4 showing soil logs, depths, and descriptions. Includes columns for depth, soil type, and notes.

BORING B-5

Table for Boring B-5 showing soil logs, depths, and descriptions. Includes columns for depth, soil type, and notes.

BORING B-6

Table for Boring B-6 showing soil logs, depths, and descriptions. Includes columns for depth, soil type, and notes.

BORING B-7

Table for Boring B-7 showing soil logs, depths, and descriptions. Includes columns for depth, soil type, and notes.

BORING B-8

Table for Boring B-8 showing soil logs, depths, and descriptions. Includes columns for depth, soil type, and notes.

BORING B-9

Table for Boring B-9 showing soil logs, depths, and descriptions. Includes columns for depth, soil type, and notes.

BORING B-10

Table for Boring B-10 showing soil logs, depths, and descriptions. Includes columns for depth, soil type, and notes.

BORING B-11

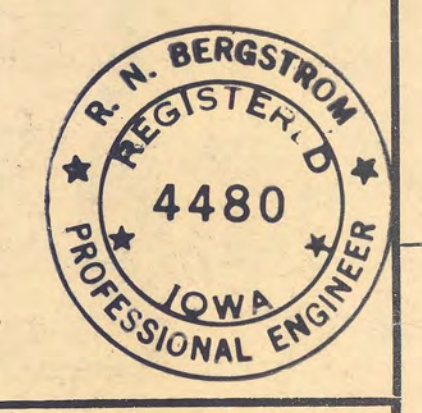
Table for Boring B-11 showing soil logs, depths, and descriptions. Includes columns for depth, soil type, and notes.

REFERENCE BID SPEC. G-3105 1-21-74

- NOTES
1 LEGEND FOR DRILLING METHODS
SS: Split-Spoon - 2" O.D.
DC: Drive Casing - 2 1/2" I.D., except where noted
WO: Washed Out
RC: Rock Coring
RQD: Rock Quality Designator
FA: Flight Auger
HA: Hand Auger

REFERENCE DRAWINGS

I hereby certify that this plan, specification or report was prepared by me or under my direct personal supervision and that I am a duly registered Professional Engineer under the laws of the State of Iowa.
R. N. Bergstrom, P. E. Iowa Reg. No. 4480



SOIL BORING LOGS SHEET 2
LANSING POWER STATION
INTERSTATE POWER COMPANY
LANSING, IOWA

SCALE NONE
DRAWN BY MONTGOMERY 2-7-73
CHECKED R. COOPER 2-7-73
ENGINEER J. A. GIBB 9-7-73
APPROVED R. N. Bergstrom 9-10-73
JOB NO. 4444-02
DRAWING NO. S-4

Table with 3 columns: Rev., Date, Description. Contains revision history for the drawing.

BORING D-1

LOG OF TEST BORING NO. D-1 (Sheet 1 of 2)
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 573.9
REFERENCE DATUM: MSL
Soil layers: Brown Silty Clay, 11'10" to 12'10"; Brown Silty Sand and Fine Gravel, 12'10" to 13'10"; Brown Silty Clay, Trace Silty Sand, Trace Silty Shale, 13'10" to 14'10"; Gray-Brown Silty Clay, Trace Silty Sand, Trace Silty Shale, 14'10" to 15'10"; Gray-Brown Silty Clay, Trace Silty Sand, Trace Silty Shale, 15'10" to 16'10"; Sandstone Bedrock, 16'10" to 17'10"; End of Boring, 17'10" to 18'10".

BORING D-1 CONT'D

LOG OF TEST BORING NO. D-1 (Sheet 2 of 2)
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 573.9
REFERENCE DATUM: MSL
Soil layers: Sandstone Bedrock, 16'10" to 17'10"; End of Boring, 17'10" to 18'10".

BORING D-2

LOG OF TEST BORING NO. D-2
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 575.8
REFERENCE DATUM: MSL
Soil layers: Dark Brown Fine Sand, 11'10" to 12'10"; Gray-Brown Silty Sand, Trace Silty Shale, 12'10" to 13'10"; Brown Silty Sand, Trace Silty Shale, 13'10" to 14'10"; Gray-Brown Silty Clay, Trace Silty Sand, Trace Silty Shale, 14'10" to 15'10"; Gray-Brown Silty Clay, Trace Silty Sand, Trace Silty Shale, 15'10" to 16'10"; Sandstone Bedrock, 16'10" to 17'10"; End of Boring, 17'10" to 18'10".

BORING D-2 CONT'D

LOG OF TEST BORING NO. D-2 (Sheet 2 of 2)
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 575.8
REFERENCE DATUM: MSL
Soil layers: Sandstone Bedrock, 16'10" to 17'10"; End of Boring, 17'10" to 18'10".

BORING D-3

LOG OF TEST BORING NO. D-3
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 578.8
REFERENCE DATUM: MSL
Soil layers: FILL: Fine to Medium Sand, Trace Silty Sand, Trace Silty Shale, Trace Gravel, Trace Silt, Trace Clay, 11'10" to 12'10"; Gray Fine to Coarse Sand, Trace Silty Sand, Trace Silty Shale, Trace Clay, 12'10" to 13'10"; Black Organic Silt, 13'10" to 14'10"; Sandy from 22'5" to 23'5", 14'10" to 15'10"; Brown Fine Sand, Trace Silty Sand, Trace Silty Shale, 15'10" to 16'10"; Brown Silty Clay, Trace Silty Sand, Trace Silty Shale, 16'10" to 17'10"; Sandstone Bedrock, 17'10" to 18'10"; End of Boring, 18'10" to 19'10".

BORING D-3 CONT'D

LOG OF TEST BORING NO. D-3 (Sheet 2 of 2)
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 578.8
REFERENCE DATUM: MSL
Soil layers: Sandstone Bedrock, 17'10" to 18'10"; End of Boring, 18'10" to 19'10".

BORING D-4

LOG OF TEST BORING NO. D-4
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 578.8
REFERENCE DATUM: MSL
Soil layers: Dark Gray Silty Clay, Trace Silty Sand, Trace Silty Shale, Trace Gravel and Silt, 11'10" to 12'10"; Brown Fine to Medium Sand, Trace Silty Sand, Trace Silty Shale, Trace Gravel and Silt, 12'10" to 13'10"; Brown Silty Clay, Trace Silty Sand, Trace Silty Shale, 13'10" to 14'10"; Gray Silty Sand, Trace Silty Shale, 14'10" to 15'10"; Brown Silty Clay, Trace Silty Sand, Trace Silty Shale, 15'10" to 16'10"; Sandstone Bedrock, 16'10" to 17'10"; End of Boring, 17'10" to 18'10".

BORING D-4 CONT'D

LOG OF TEST BORING NO. D-4 (Sheet 2 of 2)
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 578.8
REFERENCE DATUM: MSL
Soil layers: Sandstone Bedrock, 16'10" to 17'10"; End of Boring, 17'10" to 18'10".

BORING D-5

LOG OF TEST BORING NO. D-5
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 578.8
REFERENCE DATUM: MSL
Soil layers: Gray-Fine Fine to Medium Sand, Trace Silty Sand, Trace Silty Shale, 11'10" to 12'10"; Sandstone Bedrock, 12'10" to 13'10"; Sandstone Bedrock, 13'10" to 14'10"; Sandstone Bedrock, 14'10" to 15'10"; Sandstone Bedrock, 15'10" to 16'10"; Sandstone Bedrock, 16'10" to 17'10"; End of Boring, 17'10" to 18'10".

BORING D-5 CONT'D

LOG OF TEST BORING NO. D-5 (Sheet 2 of 2)
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 578.8
REFERENCE DATUM: MSL
Soil layers: Sandstone Bedrock, 16'10" to 17'10"; End of Boring, 17'10" to 18'10".

BORING D-6

LOG OF TEST BORING NO. D-6
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 578.8
REFERENCE DATUM: MSL
Soil layers: Gray-Fine Fine to Medium Sand, Trace Silty Sand, Trace Silty Shale, 11'10" to 12'10"; Sandstone Bedrock, 12'10" to 13'10"; Sandstone Bedrock, 13'10" to 14'10"; Sandstone Bedrock, 14'10" to 15'10"; Sandstone Bedrock, 15'10" to 16'10"; Sandstone Bedrock, 16'10" to 17'10"; End of Boring, 17'10" to 18'10".

BORING D-6 CONT'D

LOG OF TEST BORING NO. D-6 (Sheet 2 of 2)
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 578.8
REFERENCE DATUM: MSL
Soil layers: Sandstone Bedrock, 16'10" to 17'10"; End of Boring, 17'10" to 18'10".

BORING D-7

LOG OF TEST BORING NO. D-7
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 578.8
REFERENCE DATUM: MSL
Soil layers: Brown Fine to Medium Sand, Trace Silty Sand, Trace Silty Shale, Trace Gravel and Silt, 11'10" to 12'10"; Brown Fine to Medium Sand, Trace Silty Sand, Trace Silty Shale, Trace Gravel and Silt, 12'10" to 13'10"; Brown Silty Clay, Trace Silty Sand, Trace Silty Shale, 13'10" to 14'10"; Sandstone Bedrock, 14'10" to 15'10"; Sandstone Bedrock, 15'10" to 16'10"; Sandstone Bedrock, 16'10" to 17'10"; End of Boring, 17'10" to 18'10".

BORING D-7 CONT'D

LOG OF TEST BORING NO. D-7 (Sheet 2 of 2)
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 578.8
REFERENCE DATUM: MSL
Soil layers: Sandstone Bedrock, 16'10" to 17'10"; End of Boring, 17'10" to 18'10".

BORING D-8

LOG OF TEST BORING NO. D-8
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 578.8
REFERENCE DATUM: MSL
Soil layers: Gray Organic Silt, 11'10" to 12'10"; Brown Fine to Medium Sand, Trace Silty Sand, Trace Silty Shale, 12'10" to 13'10"; Brown Fine to Medium Sand, Trace Silty Sand, Trace Silty Shale, 13'10" to 14'10"; Last 1" from 14'10" to 14'11"; Sandstone Bedrock, 14'11" to 15'10"; End of Boring, 15'10" to 16'10".

BORING D-8 CONT'D

LOG OF TEST BORING NO. D-8 (Sheet 2 of 2)
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 578.8
REFERENCE DATUM: MSL
Soil layers: Sandstone Bedrock, 14'11" to 15'10"; End of Boring, 15'10" to 16'10".

BORING D-9

LOG OF TEST BORING NO. D-9
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 578.8
REFERENCE DATUM: MSL
Soil layers: Brown Silty Sand, Trace Silty Shale, Trace Gravel and Silt, 11'10" to 12'10"; Gray Silty Clay, Trace Silty Sand, Trace Silty Shale, 12'10" to 13'10"; Gray Silty Sand, Trace Silty Shale, 13'10" to 14'10"; Sandstone Bedrock, 14'10" to 15'10"; Sandstone Bedrock, 15'10" to 16'10"; Sandstone Bedrock, 16'10" to 17'10"; End of Boring, 17'10" to 18'10".

BORING D-9 CONT'D

LOG OF TEST BORING NO. D-9 (Sheet 2 of 2)
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 578.8
REFERENCE DATUM: MSL
Soil layers: Sandstone Bedrock, 16'10" to 17'10"; End of Boring, 17'10" to 18'10".

BORING D-9 CONT'D

LOG OF TEST BORING NO. D-9 (Sheet 3 of 2)
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 578.8
REFERENCE DATUM: MSL
Soil layers: Sandstone Bedrock, 16'10" to 17'10"; End of Boring, 17'10" to 18'10".

BORING D-10

LOG OF TEST BORING NO. D-10
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 578.8
REFERENCE DATUM: MSL
Soil layers: Brown Clayey Silt, 11'10" to 12'10"; Sandstone Bedrock, 12'10" to 13'10"; Sandstone Bedrock, 13'10" to 14'10"; Sandstone Bedrock, 14'10" to 15'10"; Sandstone Bedrock, 15'10" to 16'10"; Sandstone Bedrock, 16'10" to 17'10"; End of Boring, 17'10" to 18'10".

BORING D-11

LOG OF TEST BORING NO. D-11
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 578.8
REFERENCE DATUM: MSL
Soil layers: Gray-Fine Fine to Medium Sand, Trace Silty Sand, Trace Silty Shale, 11'10" to 12'10"; Clayey silt, 12'10" to 13'10"; Gray Organic Silt, 13'10" to 14'10"; Sandstone Bedrock, 14'10" to 15'10"; End of Boring, 15'10" to 16'10".

BORING D-12

LOG OF TEST BORING NO. D-12
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 578.8
REFERENCE DATUM: MSL
Soil layers: Gray-Fine Fine to Medium Sand, Trace Silty Sand, Trace Silty Shale, 11'10" to 12'10"; Sandstone Bedrock, 12'10" to 13'10"; Sandstone Bedrock, 13'10" to 14'10"; Sandstone Bedrock, 14'10" to 15'10"; Sandstone Bedrock, 15'10" to 16'10"; Sandstone Bedrock, 16'10" to 17'10"; End of Boring, 17'10" to 18'10".

BORING D-12 CONT'D

LOG OF TEST BORING NO. D-12 (Sheet 2 of 2)
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 578.8
REFERENCE DATUM: MSL
Soil layers: Sandstone Bedrock, 16'10" to 17'10"; End of Boring, 17'10" to 18'10".

BORING D-13

LOG OF TEST BORING NO. D-13
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 578.8
REFERENCE DATUM: MSL
Soil layers: Brown Fine to Medium Sand, Trace Silty Sand, Trace Silty Shale, 11'10" to 12'10"; Gray Organic Silt, 12'10" to 13'10"; Gray Organic Silt, 13'10" to 14'10"; Sandstone Bedrock, 14'10" to 15'10"; Sandstone Bedrock, 15'10" to 16'10"; Sandstone Bedrock, 16'10" to 17'10"; End of Boring, 17'10" to 18'10".

BORING D-13 CONT'D

LOG OF TEST BORING NO. D-13 (Sheet 2 of 2)
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 578.8
REFERENCE DATUM: MSL
Soil layers: Sandstone Bedrock, 16'10" to 17'10"; End of Boring, 17'10" to 18'10".

BORING D-14

LOG OF TEST BORING NO. D-14
PROJECT: Lansing Power Company
LOCATION: Lansing, Mich.
SURFACE ELEVATION: 578.8
REFERENCE DATUM: MSL
Soil layers: Gray-Fine Fine to Medium Sand, Trace Silty Sand, Trace Silty Shale, 11'10" to 12'10"; Sandstone Bedrock, 12'10" to 13'10"; Sandstone Bedrock, 13'10" to 14'10"; Sandstone Bedrock, 14'10" to 15'10"; Sandstone Bedrock, 15'10" to 16'10"; Sandstone Bedrock, 16'10" to 17'10"; End of Boring, 17'10" to 18'10".

GENERAL NOTES
1. DRILLING AND SAMPLING SYMBOLS
SS - 2" Diameter Split-Barrel Sample
2ST - 2" Diameter Thin-Walled Tube Sample
3ST - 3" Diameter Thin-Walled Tube Sample
PT - 3" Diameter Piston Tube Sample
AS - Auger Sample
WS - Wash Sample
PT5 - Piston Sample
FS - Proctor Sample
NR - No Recovery
S - Sounding
FAT - Borohole Pressuremeter Test
VS - Vane Shear Test
WPI - Water Pressure Test

REFERENCE DRAWINGS
S-1 BORING LOCATION PLAN - UNIT 4
I hereby certify that this plan, specification or report was prepared by me or under my direct personal supervision and that I am a duly registered Professional Engineer under the laws of the State of Iowa.
R.N. Bergstrom 9-9-77
Professional Engineer

DRAWING RELEASE RECORD
REV. SPEC. NO. DATE DRAWN CHECKED ENGR. APPROVAL DESCRIPTION
A G-3105 9-9-77 Wm. Volk J.R. Bergstrom RECORD DRAWING
PROJECT: Lansing Power Company
DRAWN: Wm. Volk
CHECKED: J.R. Bergstrom
ENGINNER: Wm. Volk
APPROVED: J.R. Bergstrom
DATE: 9-9-77
PROJECT NUMBER: 4644-03
SCALE: NONE
SHEET 4 OF 4
SOIL BORING LOGS
LANSING POWER STATION
INTERSTATE POWER COMPANY
LANSING, IOWA
SARGENT & LUNDY ENGINEERS CHICAGO
DRAWING NO. REV. SHEET OF

**APPENDIX E – Geoprobe Soil Borings -
2015**

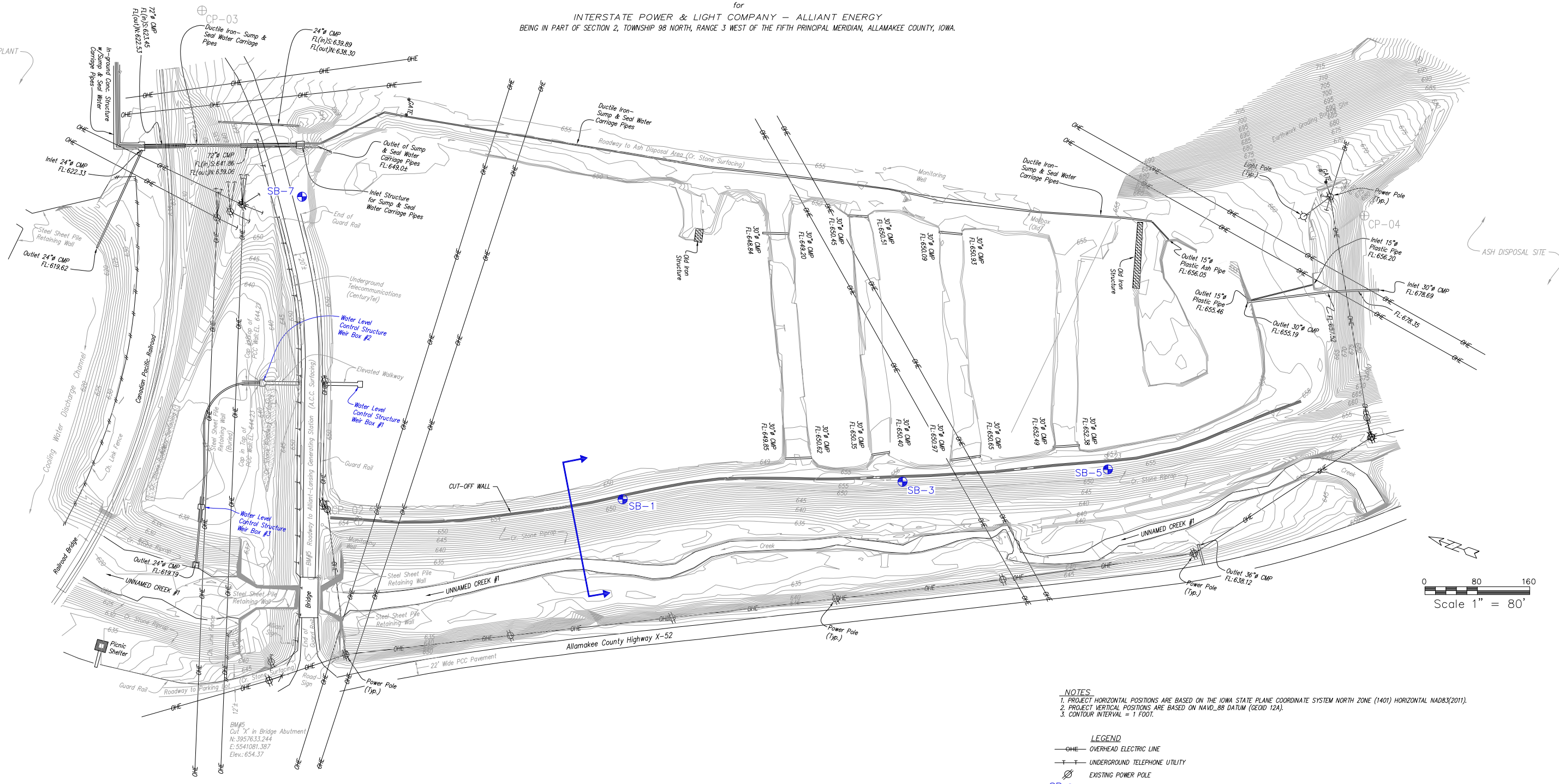
Alliant Energy
Interstate Power and Light Company
Lansing Generating Station
Lansing, Iowa

History of Construction



UPPER AND LOWER CCR POND TOPOGRAPHIC SURVEY AND LOWER CCR POND BATHYMETRY
 at
 ALLIANT LANSING POWER GENERATING STATION
 for
 INTERSTATE POWER & LIGHT COMPANY - ALLIANT ENERGY
 BEING IN PART OF SECTION 2, TOWNSHIP 98 NORTH, RANGE 3 WEST OF THE FIFTH PRINCIPAL MERIDIAN, ALLAMAKEE COUNTY, IOWA.

OWER GENERATING PLANT



- NOTES**
1. PROJECT HORIZONTAL POSITIONS ARE BASED ON THE IOWA STATE PLANE COORDINATE SYSTEM NORTH ZONE (1401) HORIZONTAL NAD83(2011).
 2. PROJECT VERTICAL POSITIONS ARE BASED ON NAVD_88 DATUM (GEOID 12A).
 3. CONTOUR INTERVAL = 1 FOOT.

- LEGEND**
- OHE OVERHEAD ELECTRIC LINE
 - T — UNDERGROUND TELEPHONE UTILITY
 - ⊙ EXISTING POWER POLE
 - SB ⊕ SOIL BORING LOCATION
 - ↔ ANALYSIS CROSS-SECTION

- NOTE:**
1. SURVEY INFORMATION PROVIDED ABOVE WAS COMPILED BY MOHN SURVEYING, INC. 1890 GREAT RIVER ROAD LANSING, IOWA 52151, APRIL 2015.
 2. ALLIANT ENERGY REQUIRES 20 FEET OVERHEAD SEPARATION DISTANCE FOR EQUIPMENT OPERATING UNDER POWERLINES.

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REV	DATE	BY	APP	DESCRIPTION

SCALE: AS SHOWN DATE: 5-19-16
 DRAWN BY: JFD CHECKED BY: CTS APPROVED BY: MWL

HARD HAT SERVICES[™]
 Engineering, Construction and Management Solutions

CLIENT / LOCATION
 INTERSTATE POWER AND LIGHT (IPL)
 LANSING GENERATING STATION PROJECT
 2320 POWER PLANT DR
 LANSING, IA 52151

DRAWING DESCRIPTION
 SOIL BORING AND
 SLOPE STABILITY CROSS-SECTION LOCATION

JOB
 154.018.012.002
 SHT.
 FIGURE 2
 DWG.
 154.018.012.002-D2

BORING LOG

CLIENT: Hard Hat

COORDINATES: *N NOT SURVEYED*
E NOT SURVEYED

PROJECT: Lansing, IA

BORING NO.: **SBI**

page 1 of 1

DEPTH TO WATER WHILE DRILLING	SAMPLE NO. AND TYPE	SAMPLE RECOVERY	SAMPLE INFORMATION BLOW COUNTS	N-VALUE	SOIL CONSISTENCY HISTOGRAM	DEPTH IN FEET	PROFILE	LOGGED BY: <i>John Noyes</i>	EDITED BY: <i>John Noyes</i>	CHECKED BY: <i>Mark Loerop</i>	DATE BEGAN: <i>1/22/15</i>	DATE FINISHED: <i>1/22/13/15</i>	GROUND SURFACE ELEVATION: <i>NOT MEASURED</i>	DESCRIPTION
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N	SS1	18"	4 4 5	9.0		0		SILT; brown; plastic; moist; trace clay
	SS2	18"	4 5 10	15.0		-2		SAND; brown; fine grained; poorly graded; well sorted; dry to moist
	SS3	18"	3 6 9	15.0		-4		1'-5' sample collected for geotech analysis
	SS4	18"	7 9 11	20.0		-6		@ 9'2" black stained with plant matter
	SS5	18"	7 10 13	23.0		-8		
	SS6	18"	7 11 18	29.0		-10		
	SS7	18"	8 11 14	25.0		-12		SAND; gray; fine to medium grained; moist; graded; trace gravel and snail shells
	SS8	18"	8 11 13	24.0		-14		@ 15' grades wet
	SS9	18"	8 11 11	22.0		-16		15'-20' sample collected for geotech analysis
	SS10	18"	4 7 7	14.0		-18		@17.5' grades brown
	SS11	18"	2 3 6	8.0		-20		@23.5' grades fine to coarse, well graded
	SS12	18"	0 0 0	0.0		-22		SILT; gray; non plastic; wet; trace clay
	SS13	18"	0 0 0	0.0		-24		28'-32' sample collected for geotech analysis
	SS14	18"	1 1 2	3.0		-26		@29' grades trace plant matter and snail shells
	SS15	18"	3 4 4	8.0		-28		
	SS16	18"	0 9 11	20.0		-30		GRAVEL; brown; coarse; poorly graded; wet; trace cobbles
	SS17	18"	5 11 10	21.0		-32		40'-50' sample collected for geotech analysis
	SS18	18"	4 5 7	12.0		-34		
	SS19	18"	3 4 8	12.0		-36		SAND; light gray; coarse grained; poorly graded; wet
						-38		
						-40		
						-42		
						-44		
						-46		
						-48		
						-50		
						-52		Bottom of boring @ 50'
						-54		1" PVC temp well installed @ 50'. 10' screen, natural sand pack

BORING LOG

CLIENT: Hard Hat

COORDINATES: *N NOT SURVEYED*
E NOT SURVEYED

PROJECT: Lansing, IA

BORING NO.: SB3

page 1 of 1

DEPTH TO WATER WHILE DRILLING	SAMPLE NO. AND TYPE	SAMPLE RECOVERY	SAMPLE INFORMATION BLOW COUNTS	N-VALUE	SOIL CONSISTENCY HISTOGRAM	DEPTH IN FEET	PROFILE	LOGGED BY: <i>John Noyes</i>	EDITED BY: <i>John Noyes</i>	CHECKED BY: <i>Mark Loerop</i>	DATE BEGAN: <i>1/22/15</i>	DATE FINISHED: <i>1/22/15</i>	GROUND SURFACE ELEVATION: <i>NOT MEASURED</i>
								DESCRIPTION					

N	SS1	18"	6 7 7	14.0		0		SILT; gray to black; non plastic; moist; some bottom ash
	SS2	18"	4 9 10	19.0		-2		SAND; brown; fine grained; poorly graded; moist 2'-5' sample collected for geotech analysis
	SS3	18"	5 10 19	29.0		-4		
	SS4	18"	7 13 16	29.0		-6		
	SS5	18"	6 12 17	29.0		-8		
	SS6	18"	6 12 16	28.0		-10		13'-20' sample collected for geotech analysis @13.5' grades wet and trace snail shells
	SS7	18"	12 21 21	42.0		-12		@16' grades fine to medium grained; graded
	SS8	18"	8 12 15	27.0		-14		
	SS9	18"	8 19 21	40.0		-16		
	SS10	18"	8 5 6	11.0		-18		24'-27' sample collected for geotech analysis
	SS11	18"	6 8 15	23.0		-20		SILT; gray; non plastic to low plasticity; wet; some clay; trace organic plant matter
	SS12	18"	5 5 10	15.0		-22		GRAVEL; gray; coarse to cobbles; poorly graded; wet; trace to some sand 27'-32' sample collected for geotech analysis
	SS13	18"	3 1 1	2.0		-24		SILT; gray to black; non plastic; wet; trace to some clay and organic plant matter
	SS14	18"	6 10 10	20.0		-26		
	SS15	18"	4 6 12	18.0		-28		GRAVEL; gray; coarse to cobbles; poorly graded; wet; trace to some sand
	SS16	18"	10 9 7	16.0		-30		
	SS17	18"	6 8 10	18.0		-32		
	SS18	18"	22 24 21	45.0		-34		
	SS19	18"	10 10 12	22.0		-36		
	SS20	18"	14 9 12	21.0		-38		
						-40		
						-42		
						-44		
						-46		
						-48		
						-50		Bottom of boring @ 50' 1" PVC temp well installed @ 50'. 10' screen, natural sand pack
						-52		
						-54		

BORING LOG

CLIENT: Hard Hat

COORDINATES: *N NOT SURVEYED*
E NOT SURVEYED

PROJECT: Lansing, IA

BORING NO.: SB5

page 1 of 1

DEPTH TO WATER WHILE DRILLING	SAMPLE NO. AND TYPE	SAMPLE RECOVERY	SAMPLE INFORMATION BLOW COUNTS	N-VALUE	SOIL CONSISTENCY HISTOGRAM	DEPTH IN FEET	PROFILE	LOGGED BY: <i>John Noyes</i>	EDITED BY: <i>John Noyes</i>	CHECKED BY: <i>Mark Loerop</i>	DATE BEGAN: <i>1/23/15</i>	DATE FINISHED: <i>1/23/15</i>	GROUND SURFACE ELEVATION: <i>NOT MEASURED</i>	DESCRIPTION
-------------------------------	---------------------	-----------------	--------------------------------	---------	----------------------------	---------------	---------	------------------------------	------------------------------	--------------------------------	----------------------------	-------------------------------	---	-------------

	SS1	18"	4 4 3	7.0		0		SILT; black; non plastic; dry to moist
	SS2	18"	5 7 12	19.0		-2		SAND; brown; fine grained; poorly graded; moist; trace to some bottom ash
	SS3	18"	5 13 19	32.0		-4		5' bottom ash grades out
	SS4	18"	5 13 15	28.0		-6		
∇	SS5	18"	5 11 13	24.0		-8		10'-16' sample collected for geotech analysis
	SS6	18"	6 12 16	28.0		-10		@12' grades wet and trace snail shells
	SS7	18"	12 14 17	31.0		-12		@ 16' grades gray to olive
	SS8	18"	3 2 2	4.0		-14		Silty CLAY; black to dark gray; low plasticity; moist; trace fine sand and organic plant matter
	SS9	18"	4 4 4	8.0		-16		18.5'-20' sample collected for geotech analysis
	SS10	18"	14 9 2	11.0		-18		SAND & GRAVEL; black; fine to coarse; well graded; wet; trace to some silt
	SS11	18"	2 2 4	6.0		-20		22'-27.5' sample collected for geotech analysis
	SS12	18"	6 7 8	15.0		-22		
	SS13	18"	9 10 10	20.0		-24		
	SS14	18"	10 36 8	44.0		-26		
	SS15	18"	15 12 9	21.0		-28		
	SS16	18"	20 14 14	28.0		-30		
	SS17	18"	11 12 18	30.0		-32		40'-45' sample collected for geotech analysis
	SS18	18"	17 14 15	29.0		-34		@43.5' grades brown
	SS19	18"	13 14 17	31.0		-36		
	SS20	18"	18 19 24	43.0		-38		
						-40		
						-42		
						-44		
						-46		
						-48		
						-50		
						-52		Bottom of boring @ 50'
						-54		1" PVC temp well installed @ 50'. 10' screen, natural sand pack

BORING LOG

CLIENT: Hard Hat

COORDINATES: *N NOT SURVEYED*
E NOT SURVEYED

PROJECT: Lansing, IA

BORING NO.: SB7

page 1 of 1

DEPTH TO WATER WHILE DRILLING	SAMPLE NO. AND TYPE	SAMPLE RECOVERY	SAMPLE INFORMATION BLOW COUNTS	N-VALUE	SOIL CONSISTENCY HISTOGRAM	DEPTH IN FEET	PROFILE	DESCRIPTION
								LOGGED BY: John Noyes EDITED BY: John Noyes CHECKED BY: Mark Loerop DATE BEGAN: 1/23/15 DATE FINISHED: 1/23/15 GROUND SURFACE ELEVATION: NOT MEASURED

N	SS1	18"	3 2 2	4.0		0	Bottom ASH; black; fine grained; poorly graded
	SS2	18"	9 11 19	20.0		-2	SAND; brown; fine grained; poorly graded; moist
	SS3	18"	4 5 13	18.0		-4	4'-10' sample collected for geotech analysis
	SS4	18"	7 14 18	32.0		-6	
	SS5	18"	5 11 20	31.0		-8	
	SS6	18"	8 15 20	35.0		-10	
	SS7	18"	7 12 14	26.0		-12	@16' grades wet
	SS8	18"	7 9 14	23.0		-14	19'-25' sample collected for geotech analysis
	SS9	18"	11 13 17	30.0		-16	@ 21' grades gray
	SS10	18"	8 12 14	26.0		-18	
	SS11	18"	2 3 3	6.0		-20	
	SS12	18"	1 1 1	2.0		-22	
	SS13	18"	3 3 6	9.0		-24	SILT; black to gray; no plasticity; moist to wet; trace clay
	SS14	18"	2 3 4	7.0		-26	29'-32.5' sample collected for geotech analysis
	SS15	18"	1 2 2	4.0		-28	36'-40' sample collected for geotech analysis
	SS16	18"	0 0 0	0.0		-30	
	SS17	18"	2 3 4	7.0		-32	@ 41' grading trace organic plant matter and trace intermittent 1/16" sand seams
	SS18	18"	3 2 2	4.0		-34	@ 44' is a thin, 1" gravel seam
	SS19	18"	8 4 7	11.0		-36	
	SS20	18"	2 8 9	17.0		-38	GRAVEL; brown; coarse; poorly graded; wet; trace to some silt and sand
					-40	46'-50' sample collected for geotech analysis last spoon blocked with large gravel	
					-42		
					-44		
					-46		
					-48		
					-50	Bottom of boring @ 50'	
					-52	1" PVC temp well installed @ 50'.	
					-54	10' screen, natural sand pack	

**APPENDIX F – Laboratory Testing on
CCR Embankment Soils - 2015**

Alliant Energy
Interstate Power and Light Company
Lansing Generating Station
Lansing, Iowa

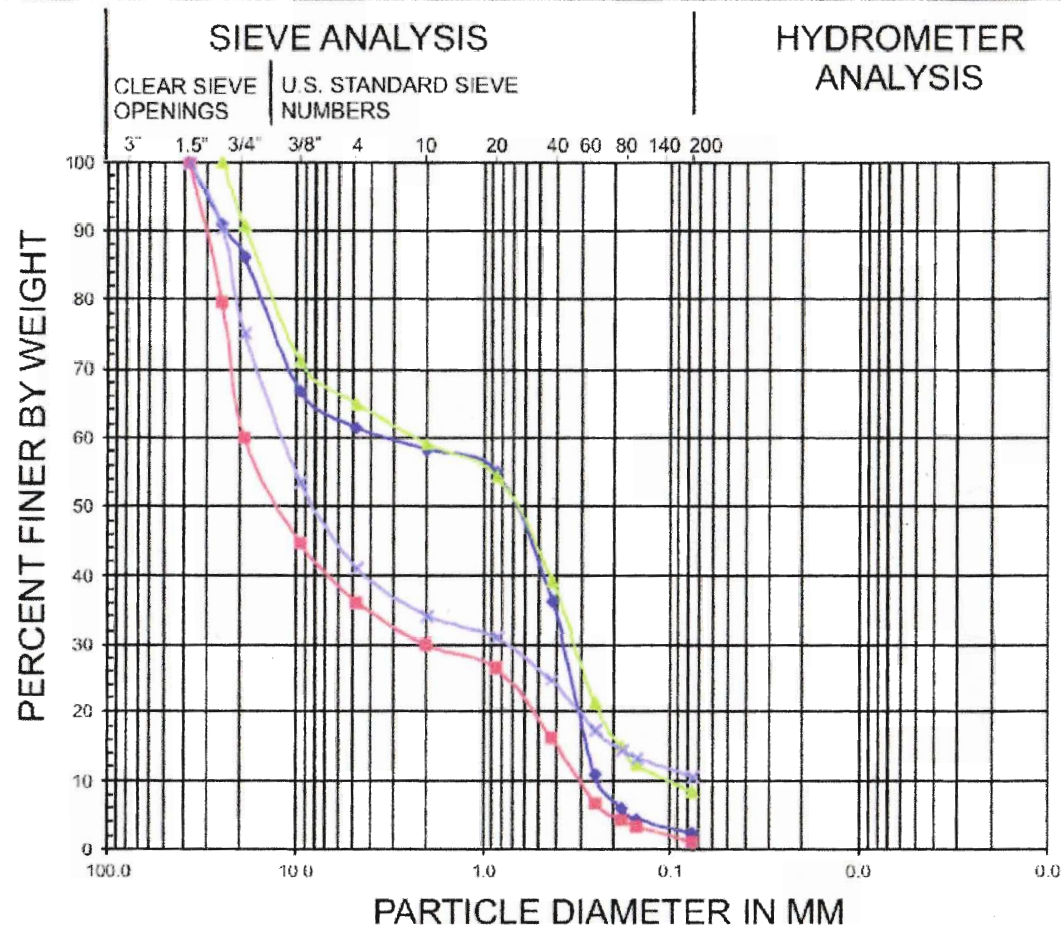
History of Construction





Particle Size Distribution

Project IPL - Lansing Generating Station Tested By Test America Date 2/3/2015
 Boring No. SB-1, SB-3 & SB-5 "SAND & GRAVEL"



COBBLES	GRAVEL		SAND			SILT AND CLAY FRACTION
	coarse	fine	coarse	medium	fine	

SYMBOL	BORING	DEPTH (FT.)	SOIL DESCRIPTION	U.S.C.S.	W %
▲	SB-1	40 - 50	SAND & GRAVEL	SW / GW	16.5
■	SB-3	27 - 32	SAND & GRAVEL	SW / GW	13.4
▲	SB-5	22 - 27.5	SAND & GRAVEL	SW / GW	32.1
▲	SB-5	44 - 45	SAND & GRAVEL	SW / GW	9.8

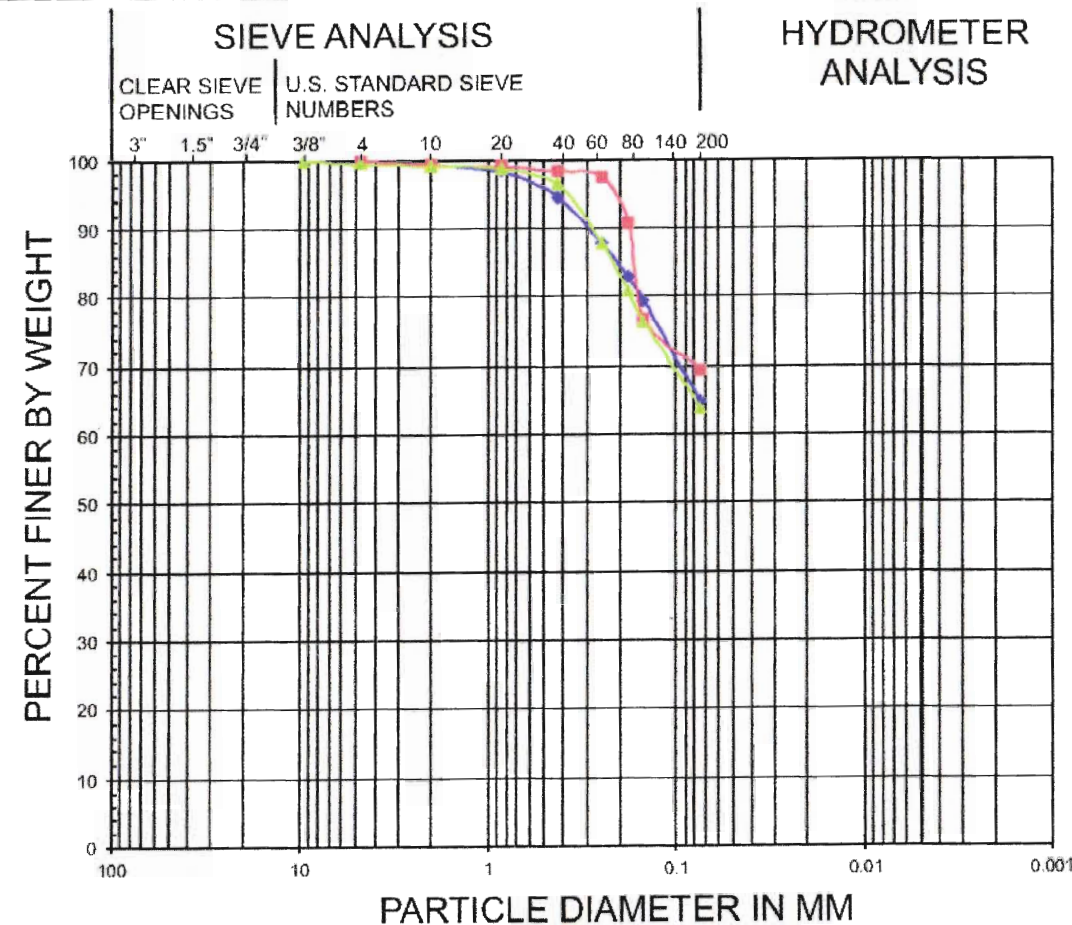
APPENDIX B

UPDATE TO ADD SB-7
SEPARATE 2 1/2 x 11



Particle Size Distribution

Project IPL - Lansing Generating Station Tested By Test America Date 2/3/2015
 Boring No. SB-1, SB-3 & SB-5 "SANDY SILT"



COBBLES	GRAVEL		SAND			SILT AND CLAY FRACTION
	coarse	fine	coarse	medium	fine	

SYMBOL	BORING	DEPTH (FT.)	SOIL DESCRIPTION	U.S.C.S.	L.L.	P.L.	W %
▲	SB-1	28 - 32	Sandy Silt	ML	28	26	36.1
■	SB-3	24.5 - 27	Sandy Silt	ML	27	23	25.4
▲	SB-5	18.5 - 20	Sandy Silt	ML	24	20	21.8

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▲																										
▲	6-15-15	TJH	MWL	INCORPORATE IPL COMMENTS																						
REV	DATE	BY	APP	DESCRIPTION																						

SCALE: NONE DATE: 5-14-15
 DRAWN BY: JFD CHECKED BY: TJH APPROVED BY: MWL

HARD HAT SERVICES
 Engineering, Construction and Management Solutions

CLIENT / LOCATION
 INTERSTATE POWER AND LIGHT (IPL)
 LANSING GENERATING STATION PROJECT
 2320 POWER PLANT DR
 LANSING, IA 52151

DRAWING DESCRIPTION
 SEEPAGE CONTROL CUT-OFF WALL
 PARTICLE SIZE DISTRIBUTION
 SB-1 & SB-3

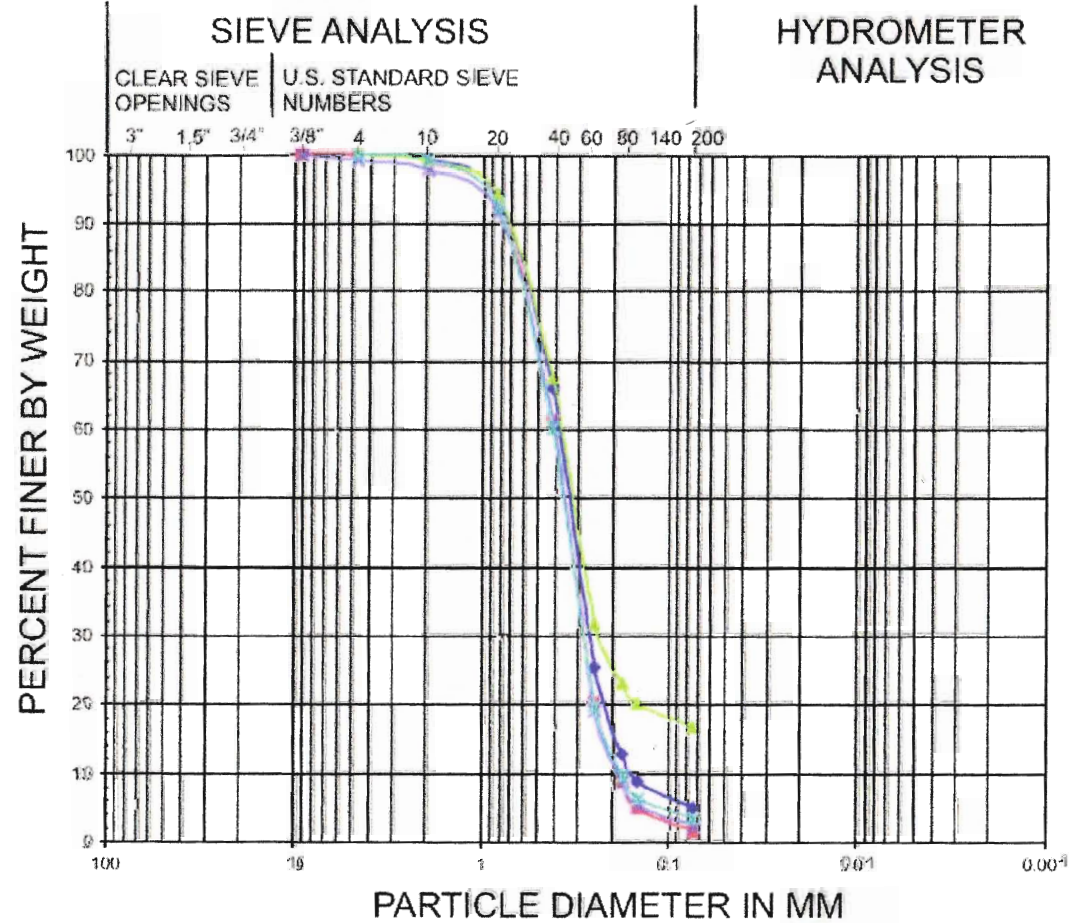
JOB 154.021.003
 SHT. 8
 DWG. 154021SW-08-12



HARD HAT SERVICES
Engineering, Construction and Management Solutions

Particle Size Distribution

Project IPL - Lansing Generating Station Tested By TestAmerica Date 2/3/2015
Boring No. SB-1, SB-3 & SB-5 "UPPER SAND"



COBBLES	GRAVEL		SAND			SILT AND CLAY FRACTION
	coarse	fine	coarse	medium	fine	

SYMBOL	BORING	DEPTH (FT.)	SOIL DESCRIPTION	U.S.C.S.	WV%
	SB-1	1-5	Medium - Fine Sand	SP	4.1
	SB-1	15-20	Medium - Fine Sand	SP	20.1
	SB-3	2-5	Silty Medium - Fine Sand	SM	3.1
	SB-3	13-20	Medium - Fine Sand	SP	19.0
	SB-5	10-16	Medium - Fine Sand	SP	13.3

APPENDIX B
UPDATE TO ADD SB-7
SEPARATE 2 1/2 x 11

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REV	DATE	BY	APP	DESCRIPTION
6-15-15	TJH	MWL		INCORPORATE IPL COMMENTS

SCALE: NONE DATE: 5-14-15
DRAWN BY: JFD CHECKED BY: TJH APPROVED BY: MWL

HARD HAT SERVICES
Engineering, Construction and Management Solutions

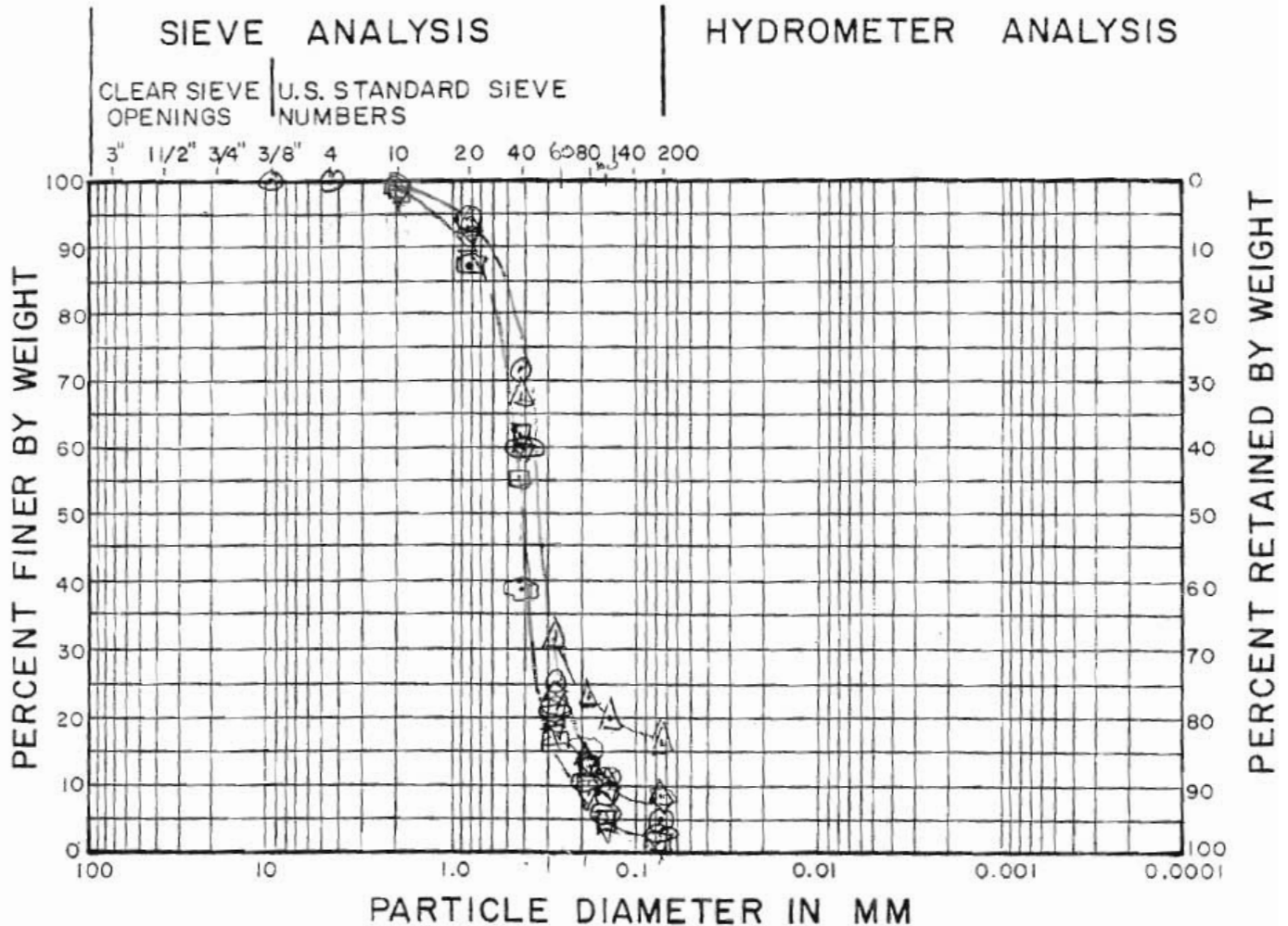
CLIENT / LOCATION
INTERSTATE POWER AND LIGHT (IPL)
LANSING GENERATING STATION PROJECT
2320 POWER PLANT DR
LANSING, IA 52151

DRAWING DESCRIPTION
SEEPAGE CONTROL CUT-OFF WALL
PARTICLE SIZE DISTRIBUTION
SB-5

JOB 154.021.003
SHT. 9
DWG. 154021SW-08-12

" UPPER SAND "

PROJECT _____ TESTED BY _____ DATE _____
 PROJECT NO. _____ CALC BY _____ DATE _____
 BORING NO. _____ CHKD BY _____ DATE _____

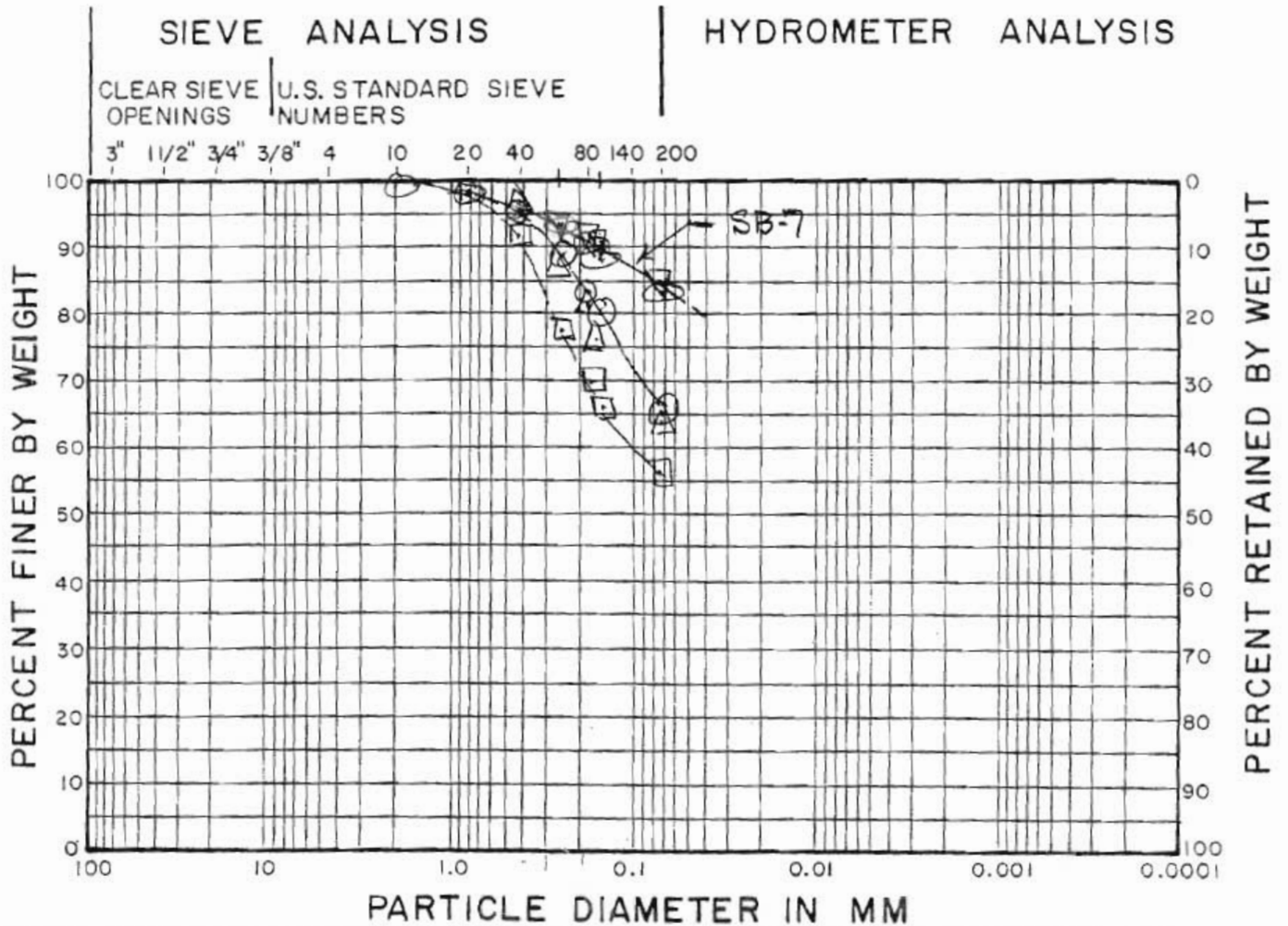


COBBLES	GRAVEL		SAND			SILT AND CLAY FRACTION
	coarse	fine	coarse	medium	fine	

SYMBOL	BORING	SAMPLE	DEPTH	SOIL DESCRIPTION	U.S.C.S.	L.L.	P.L.	W%
○	SB-1		1-5	MED-FINE SAND	SP			4.1
□	SB-1		15-20	"	SP			20.1
△	SB-3		2-5	SILTY MED-FINE SAND	SM			3.1
▽	SB-3		13-20	MED-FINE SAND	SP			19.0
⊙	SB-5		10-16	"	SP			13.3
◇	SB-7		4-10	"	SPSM			3.1
⊠	SB-7		19-25	"	SP			17.1

"SANDY SILT"

PROJECT _____ TESTED BY _____ DATE _____
 PROJECT NO. _____ CALC BY _____ DATE _____
 BORING NO. _____ CHKD BY _____ DATE _____

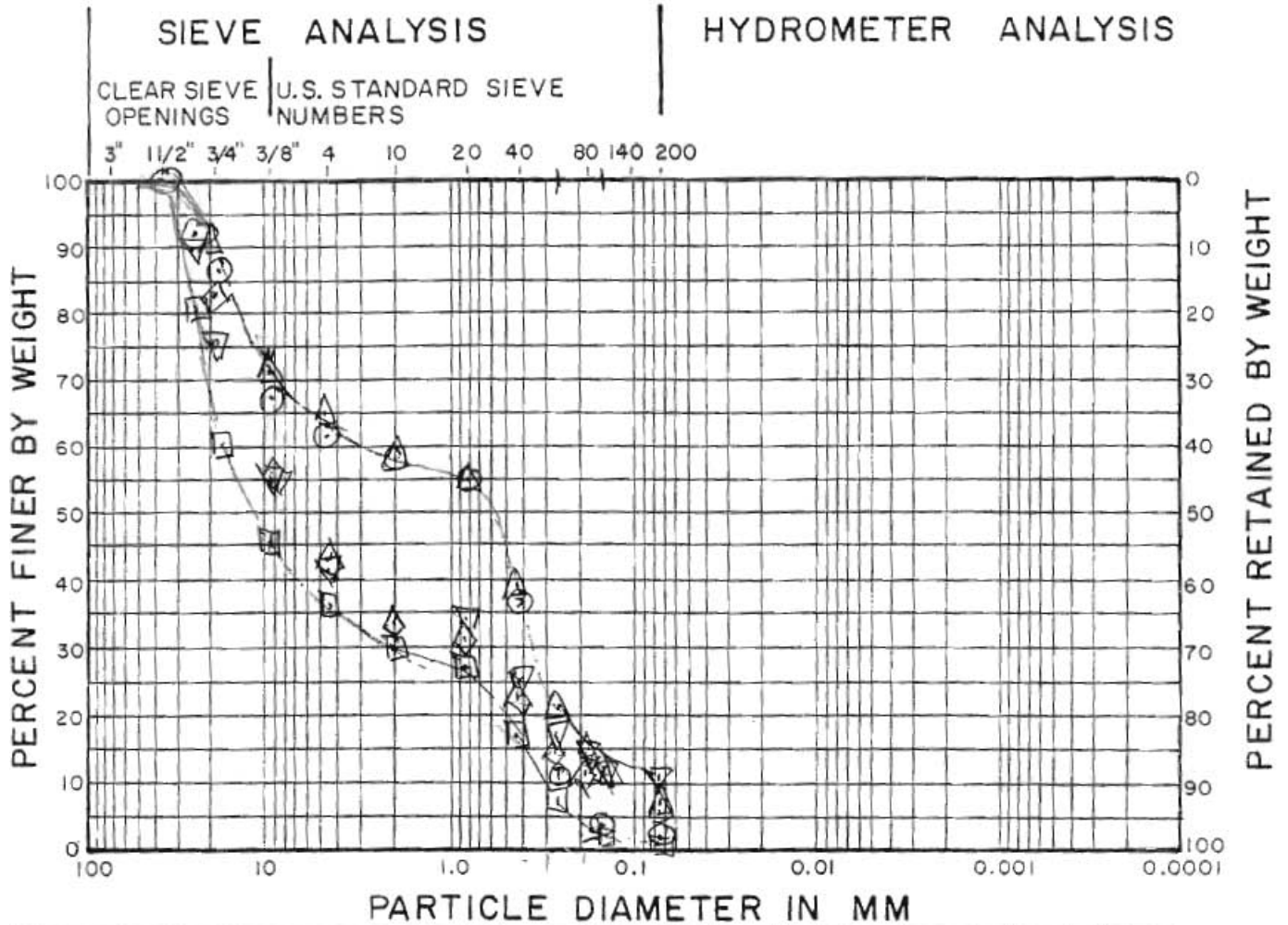


COBBLES	GRAVEL		SAND			SILT AND CLAY FRACTION
	coarse	fine	coarse	medium	fine	

SYMBOL	BORING	SAMPLE	DEPTH	SOIL DESCRIPTION	U.S.C.S.	L.L.	PL	W%
○	SB-1		28-32	SANDY SILT	ML	28	26	36.1
□	SB-3		24.5-27	SANDY SILT	ML	27	23	23.4
△	SB-5		18.5-20	SANDY SILT	ML	24	20	21.8
▽	SB-7		29-32.5	SANDY SILT	ML	29	25	27.0
⊙	SB-7		36-40	SANDY SILT	ML	31	26	35.7

"SANDY GRAVEL"

PROJECT _____ TESTED BY _____ DATE _____
 PROJECT NO. _____ CALC BY _____ DATE _____
 BORING NO. _____ CHKD BY _____ DATE _____



COBBLES	GRAVEL		SAND			SILT AND CLAY FRACTION
	coarse	fine	coarse	medium	fine	

SYMBOL	BORING	SAMPLE	DEPTH	SOIL DESCRIPTION	U.S.C.S.	L.L.	P.L.	W%
○	SB-1		40-50	SAND & GRAVEL	SW/GM			16.5
□	SB-3		27-32	"	"			13.4
△	SB-5		22-27.5	"	"			32.1
▽	SB-5		44-45	"	"			9.8
◇	SB-7		46-50	"	"			35.7

APPENDIX G – LAN Upper Ash Pond Drawings

Alliant Energy
Interstate Power and Light Company
Lansing Generating Station
Lansing, Iowa

History of Construction

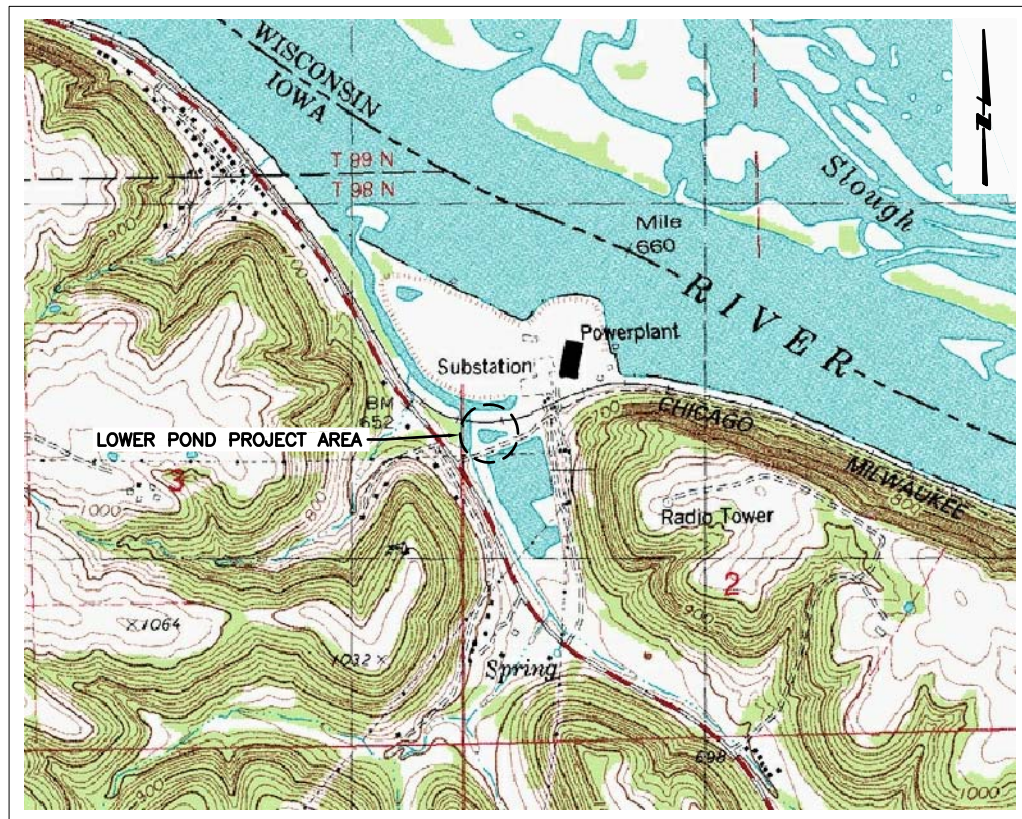


INTERSTATE POWER AND LIGHT (IPL) COMPANY

LANSING GENERATING STATION PROJECT

LOWER POND DREDGING AS-BUILT DRAWINGS

2320 POWER PLANT DR
 LANSING, IA 52151
 JANUARY 2016



LOCATION MAP
 NOT TO SCALE

1. COVER SHEET
2. APRIL 2015 SITE SURVEY (PRE-CONSTRUCTION)
3. POST-DREDGING SURVEY REVIEW
4. POST-DREDGING CROSS SECTIONS
5. BORING LOGS LP-1 & LP-2
6. BORING LOGS LP-3 & LP-4
7. BORING LOGS LP-5 & LP-6
8. BORING LOGS LP-7 & LP-8
9. BORING LOGS LP-9 & LP-10
10. BORING LOGS LP-11 & LP-12
11. BORING LOGS LP-13 & LP-14
12. BORING LOGS LP-15 & LP-16
13. BORING LOGS LP-17 & LP-18
14. BORING LOGS LP-19
15. POST-DREDGING CONFIRMATION CORE LOGS CC-1 & CC-2
16. POST-DREDGING CONFIRMATION CORE LOGS CC-3 & CC-4
17. POST-DREDGING CONFIRMATION CORE LOGS CC-5 & CC-6
18. POST-DREDGING CONFIRMATION CORE LOGS CC-7 & CC-8

SHEET INDEX



PRE-CONSTRUCTION AERIAL MAP
 NOT TO SCALE

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REV	DATE	BY	APP	DESCRIPTION
1-6-16	DLS	MWL		AS-BUILT DRAWINGS
6-15-15	TJH	MWL		INCORPORATE IPL COMMENTS

SCALE: AS SHOWN DATE: 5-14-15
 DRAWN BY: JFD CHECKED BY: TJH APPROVED BY: MWL



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 Engineering, Construction and Management Solutions

CLIENT / LOCATION
 INTERSTATE POWER AND LIGHT (IPL)
 LANSING GENERATING STATION PROJECT
 2320 POWER PLANT DR
 LANSING, IA 52151

DRAWING DESCRIPTION
 LOWER POND DREDGING AS-BUILT DRAWINGS
 COVER SHEET

JOB	154.021.003
SHT.	1
DWG.	154021DD-01

UPPER AND LOWER CCR POND TOPOGRAPHIC SURVEY AND LOWER CCR POND BATHYMETRY
 at
 ALLIANT LANSING POWER GENERATING STATION
 for
 INTERSTATE POWER & LIGHT COMPANY - ALLIANT ENERGY
 BEING IN PART OF SECTION 2, TOWNSHIP 98 NORTH, RANGE 3 WEST OF THE FIFTH PRINCIPAL MERIDIAN, ALLAMAKEE COUNTY, IOWA.

DREDGE PIPE ROUTE
 ALONG EXISTING ASH
 PIPES TO POND 2
 (NOTE 3)

POWERLINE
 OVERHEAD
 CLEARANCE
 OF 36 FT.
 (NOTE 2)

POWERLINE
 OVERHEAD
 CLEARANCE
 OF 79 FT.
 (NOTE 2)

POWERLINE
 OVERHEAD
 CLEARANCE
 OF 80 FT.
 (NOTE 2)

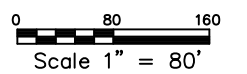
POWERLINE
 OVERHEAD
 CLEARANCE
 OF 21 FT.
 (NOTE 2)

POWERLINE
 OVERHEAD
 CLEARANCE
 OF 61 FT.
 (NOTE 2)

POWERLINE
 OVERHEAD
 CLEARANCE
 OF 48 FT.
 (NOTE 2)

DREDGE PIPE
 ROUTE TO POND 2
 (NOTE 3)

LOWER POND
 DREDGING AREA



CONTROL POINT DATA

Point No.	ALLIANT COORDINATES			IOWA STATE PLANE COORDINATES			Description
	Northing	Eastng	Elevation	Northing	Eastng	Elevation	
300	3,000.00	3,000.00	634.56	3958801.215	5541915.749	634.04	Brass Cap with Punch Mark
303	3,238.19	3,062.49	635.00	3959023.607	5542021.491	634.48	Brass Cap with Punch Mark
304	3,238.41	3,188.42	635.00	3959000.192	5542146.243	634.48	Brass Cap with Punch Mark
01				3955967.408	5542552.396	720.93	1/2" Rebar at Ash Disposal Site
02				3957805.805	5541833.287	653.31	3/4" x 5.0' Long Rebar in Primary Ash Pond Dike
03				3958097.196	5541834.063	641.29	Cut 'X' in P.C.C. at entrance gate
04				3956321.888	5542146.856	683.39	Landscape Spike along Ash Disposal Roadway

TEST WELL COORDINATES

WELL ID	Northing	Eastng	TOP Elevation	Ground Elevation
SB-1	3957238.28	5541352.23	653.36	653.26
SB-2	3957245.81	5541363.76	652.86	652.63
SB-3	3956945.82	5541523.57	656.39	655.37
SB-4	3956853.80	5541542.37	655.88	655.34
SB-5	3956557.49	5541648.53	656.70	655.80
SB-6	3956569.09	5541669.35	656.19	655.97
SB-7	3957856.52	5541818.95	653.45	653.33
SB-8	3957852.40	5541084.50	641.74	638.43
SB-9	3957854.40	5541094.88	640.63	638.52
SB-10	NS	NS	656.38	655.85
SB-11	NS	NS	656.38	656.17
SB-12	NS	NS	656.40	655.44
SB-13	NS	NS	656.43	655.27
SB-14	NS	NS	654.37	653.15
SB-15	NS	NS	652.75	652.67

- Legend**
- OHE Overhead Electric Line
 - T Undergroud Telephone Utility
 - Existing Power Pole
 - SB● Temporary Well Location
 - SB● Soil Boring Location
 - CPT● Cone Penitrometer Test Location
 - CP⊕ Control Point

- Notes**
1. Project horizontal positions are based on the Iowa State Plane Coordinate System North Zone (1401) Horizontal NAD83(2011).
 2. Project vertical positions are based on NAVD_88 datum (Geoid 12A).
 3. Contour Interval = 1 foot.

- NOTE:**
1. SURVEY INFORMATION PROVIDED ABOVE WAS COMPILED BY MOHN SURVEYING, INC. 1890 GREAT RIVER ROAD LANSING, IOWA 52151, APRIL 2015.
 2. ALLIANT ENERGY REQUIRES 20 FEET OVERHEAD SEPARATION DISTANCE FOR EQUIPMENT OPERATING UNDER POWERLINES.
 3. DREDGE PIPING AND EQUIPMENT REMOVED AFTER DREDGING ACTIVITIES COMPLETED.

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REV	DATE	BY	APP	DESCRIPTION
1-6-16	DLS	MWL		AS-BUILT DRAWINGS
6-24-15	TJH	MWL		INCORPORATE IPL COMMENTS
6-15-15	TJH	MWL		INCORPORATE IPL COMMENTS

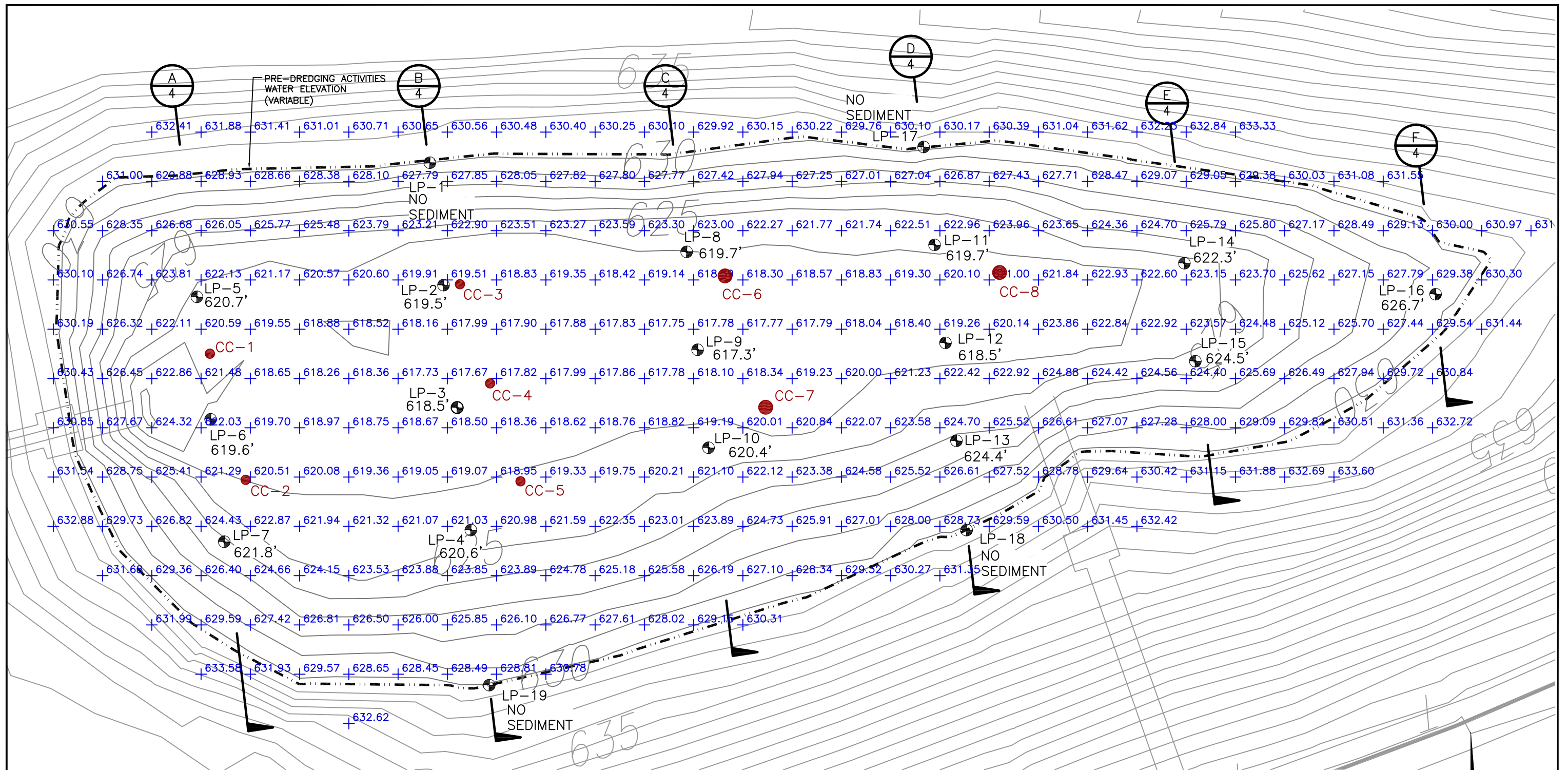
SCALE: AS SHOWN DATE: 5-14-15
 DRAWN BY: JFD CHECKED BY: TJH APPROVED BY: MWL

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 Engineering, Construction and Management Solutions

CLIENT / LOCATION
 INTERSTATE POWER AND LIGHT (IPL)
 LANSING GENERATING STATION PROJECT
 2320 POWER PLANT DR
 LANSING, IA 52151

DRAWING DESCRIPTION
 LOWER POND DREDGING AS-BUILT DRAWINGS
 APRIL 2015 SITE SURVEY
 (PRE-CONSTRUCTION)

JOB 154.021.003
 SHT. 2
 DWG. 154021DD-02



LEGEND:

- + ELEV POST-DREDGE SURVEY POINT (10'x10' GRID)
- CC-1 CONFIRMATION CORE LOCATION
- LP-1 PRE-DREDGING PROBE ID
- 620.7' (DESIGN) ELEVATION AT BOTTOM OF SEDIMENT REMOVAL
- 630— PRE-DREDGING CONTOURS

NOTES:

1. DURING DREDGING, WATER ELEVATION IN LOWER POND WAS NOT ALLOWED TO DROP BELOW ELEVATION 627 FEET. CONTRACTOR WAS RESPONSIBLE FOR RETURNING WATER TO MAINTAIN MINIMUM ELEVATION.
2. WATER IN LOWER POND WAS NOT ALLOWED TO OVERFLOW INTO WEIR BOX 3 WHEN DREDGE WAS OPERATING.
3. CONTRACTOR INSTALLED AND BEGAN OPERATING GRAVITY FLOW BYPASS PIPING FROM WEIR BOX 2 TO WEIR BOX 3 PRIOR TO BEGINNING DREDGING.

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REV	DATE	BY	APP	DESCRIPTION
1-6-16	DLS	MWL	AS-BUILT DRAWINGS	

SCALE: AS SHOWN DATE: 9-8-15
 DRAWN BY: JFD CHECKED BY: TJH APPROVED BY: MWL

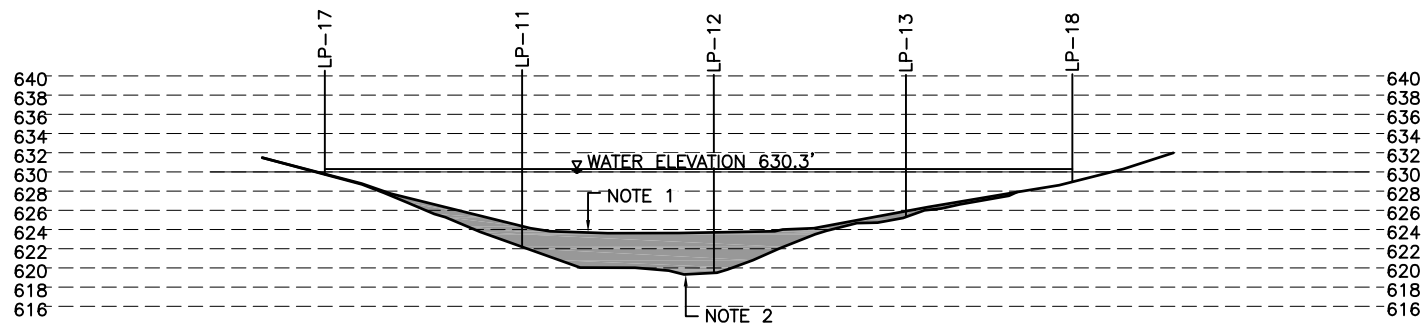


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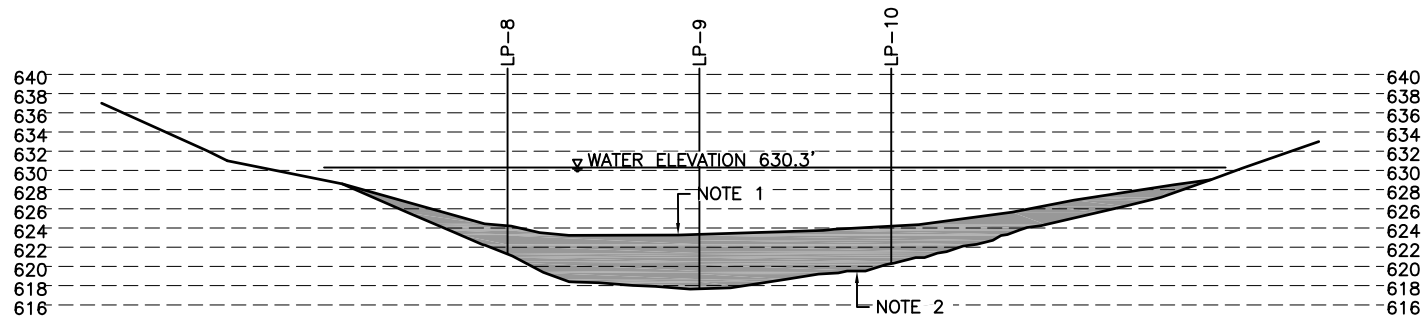
CLIENT / LOCATION
 INTERSTATE POWER AND LIGHT (IPL)
 LANSING GENERATING STATION PROJECT
 2320 POWER PLANT DR
 LANSING, IA 52151

DRAWING DESCRIPTION
 LOWER POND DREDGING AS-BUILT DRAWINGS
 POST-DREDGING SURVEY REVIEW

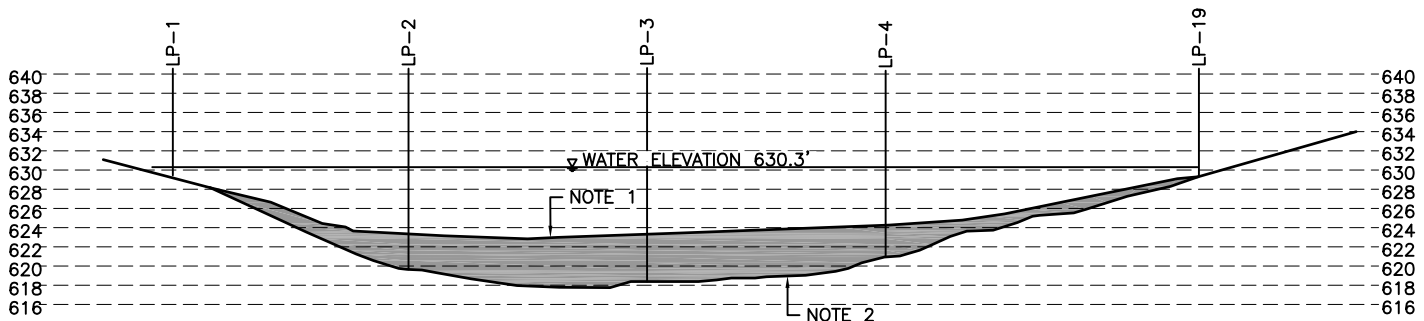
JOB 154.021.003
 SHT. 3
 DWG. 154021DD-03



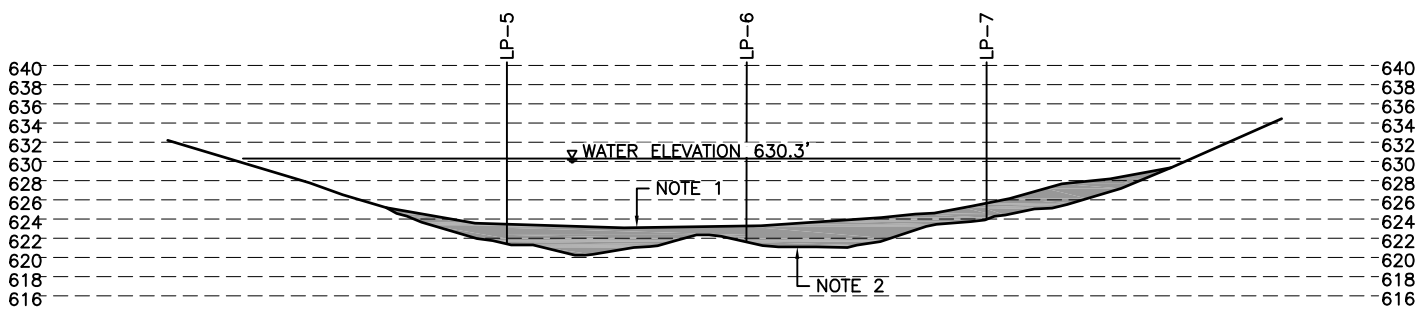
DREDGING SECTION **D**
3



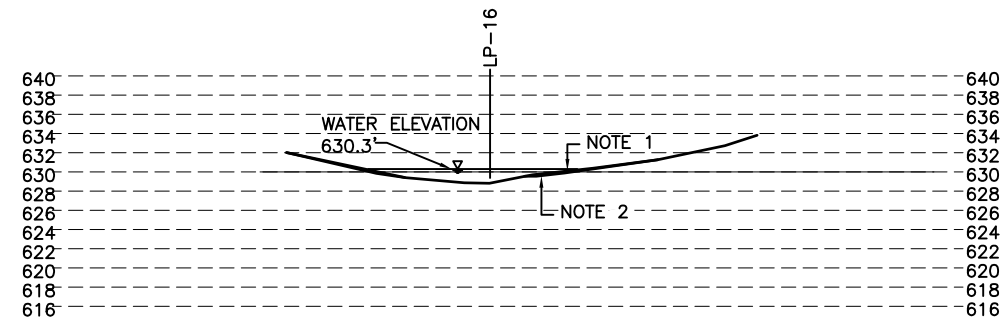
DREDGING SECTION **C**
3



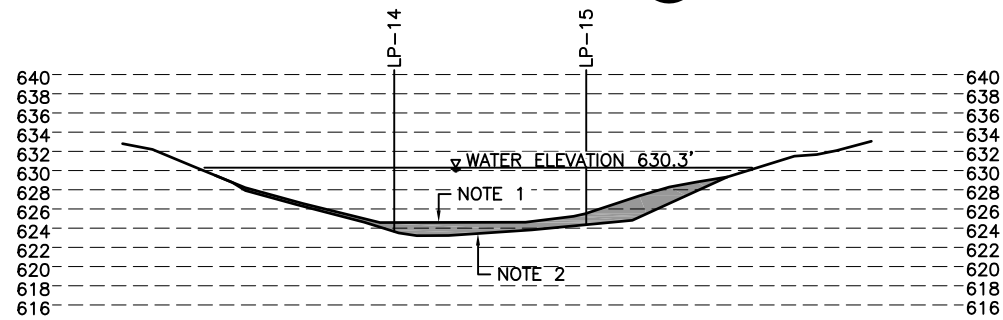
DREDGING SECTION **B**
3



DREDGING SECTION **A**
3



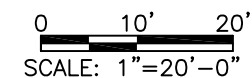
DREDGING SECTION **F**
3



DREDGING SECTION **E**
3

NOTES:

1. TOP OF SEDIMENT SURFACE OBTAINED FROM APRIL 2015 SURVEY AS SHOWN ON SHEETS 2.
2. DREDGE TO DEPTHS BASED ON POST - DREDGING BATHYMETRIC SURVEY GENERATED ON 9-08-15 AS SHOWN ON SHEET 3.
3. POND ELEVATION OF 630.3' WAS RECORDED WHEN THE FACILITY WAS NOT OPERATING (PRE-DREDGING ACTIVITIES).
4. SOLIDS CONTENT OF COAL COMBUSTION RESIDUE AND UNDERLYING SEDIMENT SHOWN ON SEDIMENT LOGS LP-9 & LP-12.



LEGEND:

POND SEDIMENT DREDEDGED (COAL COMBUSTION RESIDUE)

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REV	DATE	BY	APP	DESCRIPTION
1	1-6-16	DLS	MWL	AS-BUILT DRAWINGS
2	6-15-15	TJH	MWL	INCORPORATE IPL COMMENTS

SCALE: AS SHOWN DATE: 5-14-15
 DRAWN BY: JFD CHECKED BY: TJH APPROVED BY: MWL

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 Engineering, Construction and Management Solutions

CLIENT / LOCATION
 INTERSTATE POWER AND LIGHT (IPL)
 LANSING GENERATING STATION PROJECT
 2320 POWER PLANT DR
 LANSING, IA 52151

DRAWING DESCRIPTION
 LOWER POND DREDGING AS-BUILT DRAWINGS
 POND CROSS SECTIONS

JOB 154.021.003
 SHT. 4
 DWG. 154021DD-04



BORING LOG

PROJECT No. 154.021.003
 BORING No. LP-1
 LOGGED BY Mark Loerop
 PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Ash Pond Sediment Investigation
 BORING LOCATION Lansing Iowa WATER ELEVATION Pond @ 630.3
 DRILLER Hard Hat Services DATE: START 4/28/15 FINISH 4/28/15

ELEVATION	SAMPLE		BLOW COUNT			REC (%)	USCS SOIL TYPE	% SOLIDS	qu (TSF)	CORRECTION FACTOR	SOIL DESCRIPTION AND REMARKS	PIEZOMETER
	No.	TYPE	INTERVAL FROM TO	0"	6"							
630.7												
630.6						65	OL				Black, Moist, Medium Dense, Organic Silt (Surface Soil with Plant Materials)	
630.5												
630.4											Grey Wet, Medium Dense, Silty Sand	
630.3												
630.2												
630.1												
630.0						65	SM					
629.9												
629.8												
629.7												
629.6												
629.5												
629.4												
629.3												
629.2												
629.1						65	CH				Dark Grey, Wet, Medium Dense, High Plasticity	
629.0												
628.9												
628.8												
628.7												
628.6												
628.5												
628.4						65	SM				Grey Wet, Medium Dense, Silty Sand	
628.3												
628.2												

= Push only
 = Use of 10 lb slide hammer

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 65%.

LAN Lower Ash Pond Sediment Borings



BORING LOG

PROJECT No. 154.021.003
 BORING No. LP-2
 LOGGED BY Mark Loerop
 PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Ash Pond Sediment Investigation
 BORING LOCATION Lansing Iowa WATER ELEVATION Pond @ 630.3
 DRILLER Hard Hat Services DATE: START 4/28/15 FINISH 4/28/15

ELEVATION	SAMPLE		BLOW COUNT			REC (%)	USCS SOIL TYPE	% SOLIDS	qu (TSF)	CORRECTION FACTOR	SOIL DESCRIPTION AND REMARKS	PIEZOMETER
	No.	TYPE	INTERVAL FROM TO	0"	6"							
623.5												
623.4												
623.3												
623.2												
623.1												
623.0												
622.9												
622.8												
622.7												
622.6												
622.5												
622.4												
622.3												
622.2												
622.1												
622.0												
621.9												
621.8												
621.7												
621.6												
621.5						30	OL					
621.4												
621.3												
621.2												
621.1												
621.0												
620.9												
620.8												
620.7												
620.6												
620.5												
620.4												
620.3												
620.2												
620.1												
620.0												
619.9												
619.8												
619.7												
619.6												
619.5												
619.4												
619.3												
619.2												
619.1												
619.0												
618.9												
618.8						90	OL					
618.7												
618.6												
618.5												
618.4												
618.3												
618.2												
618.1												
618.0						90	SM					
617.9												

= Push only
 = Use of 10 lb slide hammer

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. An 8-inch diameter Secchi Disk was used to determine the top of sediment elevation. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 55%.

LAN Lower Ash Pond Sediment Borings

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△				
△				
△	1-6-16	DLS	MWL	AS-BUILT DRAWINGS
△	6-15-15	TJH	MWL	INCORPORATE IPL COMMENTS
REV	DATE	BY	APP	DESCRIPTION

SCALE: NONE DATE: 5-14-15
 DRAWN BY: JFD CHECKED BY: TJH APPROVED BY: MWL



CLIENT / LOCATION
 INTERSTATE POWER AND LIGHT (IPL)
 LANSING GENERATING STATION PROJECT
 2320 POWER PLANT DR
 LANSING, IA 52151

DRAWING DESCRIPTION
 LOWER POND DREDGING AS-BUILT DRAWINGS
 BORING LOGS
 LP-1 & LP-2

JOB 154.021.003
 SHT. 5
 DWG. 154021DD-05



BORING LOG

PROJECT No. 154.021.003
BORING No. LP-3
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Ash Pond Sediment Investigation
BORING LOCATION Lansing Iowa WATER ELEVATION Pond @ 630.3
DRILLER Hard Hat Services DATE: START 4/28/15 FINISH 4/28/15

Table with columns: ELEV, SAMPLE, BLOW COUNT, REC, USCS SOIL TYPE, % SOLIDS, qu, DEPTH, SOIL DESCRIPTION AND REMARKS, PIEZO. Includes soil data for elevations 623.4 down to 617.3.

LAN Lower Ash Pond Sediment Borings



BORING LOG

PROJECT No. 154.021.003
BORING No. LP-4
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Ash Pond Sediment Investigation
BORING LOCATION Lansing Iowa WATER ELEVATION Pond @ 630.3
DRILLER Hard Hat Services DATE: START 4/28/15 FINISH 4/28/15

Table with columns: ELEV, SAMPLE, BLOW COUNT, REC, USCS SOIL TYPE, % SOLIDS, qu, DEPTH, SOIL DESCRIPTION AND REMARKS, PIEZO. Includes soil data for elevations 624.5 down to 618.6.

LAN Lower Ash Pond Sediment Borings

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Revision table with columns: REV, DATE, BY, APP, DESCRIPTION. Includes revisions 1-6-16 and 6-15-15.

SCALE: NONE DATE: 5-14-15
DRAWN BY: JFD CHECKED BY: TJH APPROVED BY: MWL



CLIENT / LOCATION INTERSTATE POWER AND LIGHT (IPL)
LANSING GENERATING STATION PROJECT
2320 POWER PLANT DR
LANSING, IA 52151

DRAWING DESCRIPTION LOWER POND DREDGING AS-BUILT DRAWINGS
BORING LOGS
LP-3 & LP-4

JOB 154.021.003
SHT. 6
DWG. 154021DD-06



HARD HAT SERVICES™
Engineering, Construction and Management Solutions

BORING LOG

PROJECT No. 154.021.003
BORING No. LP-5
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Ash Pond Sediment Investigation
BORING LOCATION Lansing Iowa WATER ELEVATION Pond @ 630.3
DRILLER Hard Hat Services DATE: START 4/28/15 FINISH 4/28/15

E L E V	SAMPLE			BLOW COUNT			REC (%)	USCS SOIL TYPE	% SOLIDS	qu (TSF)	C O N T A C T	SOIL DESCRIPTION AND REMARKS	P I E Z O	
	No.	TYPE	INTERVAL		0" 6"	6" 12"								12" 18"
			FROM	TO										
623.6												Top of Sediment at Elev. 623.6		
623.5												Black, Wet, Very Loose, Organic Silt		
623.4														
623.3														
623.2														
623.1														
623.0														
622.9														
622.8														
622.7														
622.6														
622.5														
622.4														
622.3														
622.2														
622.1														
622.0														
621.9														
621.8														
621.7														
621.6														
621.5														
621.4														
621.3														
621.2														
621.1														
621.0														
620.9														
620.8														
620.7														
620.6														
620.5														
620.4														
620.3														
620.2														
620.1														
620.0														

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. An 8-inch diameter Secchi Disk was used to determine the top of sediment elevation. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 50%.

LAN Lower Ash Pond Sediment Borings



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Engineering, Construction and Management Solutions

BORING LOG

PROJECT No. 154.021.003
BORING No. LP-6
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Ash Pond Sediment Investigation
BORING LOCATION Lansing Iowa WATER ELEVATION Pond @ 630.3
DRILLER Hard Hat Services DATE: START 4/28/15 FINISH 4/28/15

E L E V	SAMPLE			BLOW COUNT			REC (%)	USCS SOIL TYPE	% SOLIDS	qu (TSF)	C O N T A C T	SOIL DESCRIPTION AND REMARKS	P I E Z O	
	No.	TYPE	INTERVAL		0" 6"	6" 12"								12" 18"
			FROM	TO										
623.4												Top of Sediment at Elev. 623.4		
623.3												Black, Wet, Very Loose, Organic Silt (Trace amounts of small cemented layers)		
623.2														
623.1														
623.0														
622.9														
622.8														
622.7														
622.6														
622.5														
622.4														
622.3														
622.2														
622.1														
622.0														
621.9														
621.8														
621.7														
621.6														
621.5														
621.4														
621.3														
621.2														
621.1														
621.0														
620.9														
620.8														
620.7														
620.6														
620.5														
620.4														
620.3														
620.2														
620.1														
620.0														
619.9														
619.8														
619.7														
619.6														
619.5														
619.4														
619.3														
619.2														
619.1														
619.0														
618.9														
618.8														

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. An 8-inch diameter Secchi Disk was used to determine the top of sediment elevation. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 60%.

LAN Lower Ash Pond Sediment Borings

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1-6-16	DLS	MWL	AS-BUILT DRAWINGS
6-15-15	TJH	MWL	INCORPORATE IPL COMMENTS
REV	DATE	BY	APP
			DESCRIPTION

SCALE: NONE DATE: 5-14-15
DRAWN BY: JFD CHECKED BY: TJH APPROVED BY: MWL



CLIENT / LOCATION
INTERSTATE POWER AND LIGHT (IPL)
LANSING GENERATING STATION PROJECT
2320 POWER PLANT DR
LANSING, IA 52151

DRAWING DESCRIPTION
LOWER POND DREDGING AS-BUILT DRAWINGS
BORING LOGS
LP-5 & LP-6

JOB 154.021.003
SHT. 7
DWG. 154021DD-07



HARD HAT SERVICES™
Engineering, Construction and Management Solutions

BORING LOG

PROJECT No. 154.021.003
BORING No. LP-7
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Ash Pond Sediment Investigation
BORING LOCATION Lansing Iowa WATER ELEVATION Pond @ 630.3
DRILLER Hard Hat Services DATE: START 4/28/15 FINISH 4/28/15

E L E V	SAMPLE				BLOW COUNT			REC (%)	USCS SOIL TYPE	SD TOS %	qu (TSF)	C O N T A C T	SOIL DESCRIPTION AND REMARKS	P I E Z O
	No.	TYPE	INTERVAL											
			FROM	TO										
624.7														
624.6														
624.5														
624.4														
624.3														
624.2														
624.1														
624.0														
623.9														
623.8														
623.7														
623.6														
623.5														
623.4														
623.3								30	OL					
623.2														
623.1														
623.0														
622.9														
622.8														
622.7														
622.6														
622.5														
622.4														
622.3														
622.2														
622.1														
622.0														
621.9														
621.8														
621.7														
621.6								90	SM					
621.5														
621.4								100	CH					
621.3														
621.2														
621.1														
621.0														
620.9														
620.8								90	SP					
620.7														
620.6														
620.5														
620.4														
620.3														
620.2														
620.1								90	OL					
620.0														

= Push only
= Use of 10 lb slide hammer

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. An 8-inch diameter Secchi Disk was used to determine the top of sediment elevation. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 55%.

LAN Lower Ash Pond Sediment Borings



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BORING LOG

PROJECT No. 154.021.003
BORING No. LP-8
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Ash Pond Sediment Investigation
BORING LOCATION Lansing Iowa WATER ELEVATION Pond @ 630.3
DRILLER Hard Hat Services DATE: START 4/28/15 FINISH 4/28/15

E L E V	SAMPLE				BLOW COUNT			REC (%)	USCS SOIL TYPE	% SOLIDS	qu (TSF)	C O N T A C T	SOIL DESCRIPTION AND REMARKS	P I E Z O
	No.	TYPE	INTERVAL											
			FROM	TO										
623.6														
623.5														
623.4														
623.3														
623.2														
623.1														
623.0														
622.9														
622.8														
622.7														
622.6														
622.5														
622.4														
622.3														
622.2														
622.1														
622.0														
621.9														
621.8														
621.7														
621.6								45	OL					
621.5														
621.4														
621.3														
621.2														
621.1														
621.0														
620.9														
620.8														
620.7														
620.6														
620.5														
620.4														
620.3														
620.2														
620.1														
620.0														
619.9														
619.8														
619.7														
619.6								100	CH					
619.5														
619.4														
619.3														
619.2														
619.1														
619.0														
618.9														
618.8								90	OL					
618.7														
618.6														
618.5														
618.4														
618.3														
618.2														
618.1														
618.0														
617.9								90	OL					
617.8														

= Push only
= Use of 10 lb slide hammer

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. An 8-inch diameter Secchi Disk was used to determine the top of sediment elevation. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 60%.

LAN Lower Ash Pond Sediment Borings

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△				
△				
△	1-6-16	DLS	MWL	AS-BUILT DRAWINGS
△	6-15-15	TJH	MWL	INCORPORATE IPL COMMENTS
REV	DATE	BY	APP	DESCRIPTION

SCALE: NONE DATE: 5-14-15
DRAWN BY: JFD CHECKED BY: TJH APPROVED BY: MWL



CLIENT / LOCATION
INTERSTATE POWER AND LIGHT (IPL)
LANSING GENERATING STATION PROJECT
2320 POWER PLANT DR
LANSING, IA 52151

DRAWING DESCRIPTION
LOWER POND DREDGING AS-BUILT DRAWINGS
BORING LOGS
LP-7 & LP-8

JOB 154.021.003
SHT. 8
DWG. 154021DD-08



BORING LOG

PROJECT No. 154.021.003
BORING No. LP-9
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Ash Pond Sediment Investigation
BORING LOCATION Lansing Iowa WATER ELEVATION Pond @ 630.3
DRILLER Hard Hat Services DATE: START 4/28/15 FINISH 4/28/15

Table with columns: ELEV, SAMPLE No, TYPE, INTERVAL, BLOW COUNT (0-18"), REC (%), USCS SOIL TYPE, SCPTOS (%), qu (TSF), SOIL DESCRIPTION AND REMARKS, PIEZO. Includes soil data from 623.4 to 616.3.

= Push only
= Use of 10 lb slide hammer

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. An 8-inch diameter Secchi Disk was used to determine the top of sediment elevation. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 55%.

LAN Lower Ash Pond Sediment Borings



BORING LOG

PROJECT No. 154.021.003
BORING No. LP-10
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Ash Pond Sediment Investigation
BORING LOCATION Lansing Iowa WATER ELEVATION Pond @ 630.3
DRILLER Hard Hat Services DATE: START 4/28/15 FINISH 4/28/15

Table with columns: ELEV, SAMPLE No, TYPE, INTERVAL, BLOW COUNT (0-18"), REC (%), USCS SOIL TYPE, SCPTOS (%), qu (TSF), SOIL DESCRIPTION AND REMARKS, PIEZO. Includes soil data from 624.3 to 619.5.

= Push only
= Use of 10 lb slide hammer

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. An 8-inch diameter Secchi Disk was used to determine the top of sediment elevation. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 60%.

LAN Lower Ash Pond Sediment Borings

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Revision table with columns: REV, DATE, BY, APP, DESCRIPTION. Includes revisions 1-6-16, 6-15-15.

SCALE: NONE DATE: 5-14-15
DRAWN BY: JFD CHECKED BY: TJH APPROVED BY: MWL



CLIENT / LOCATION INTERSTATE POWER AND LIGHT (IPL)
LANSING GENERATING STATION PROJECT
2320 POWER PLANT DR
LANSING, IA 52151

DRAWING DESCRIPTION LOWER POND DREDGING AS-BUILT DRAWINGS
BORING LOGS
LP-9 & LP-10

JOB 154.021.003
SHT. 9
DWG. 154021DD-09



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BORING LOG

PROJECT No. 154.021.003
BORING No. LP-11
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Ash Pond Sediment Investigation
BORING LOCATION Lansing Iowa WATER ELEVATION Pond @ 630.3
DRILLER Hard Hat Services DATE: START 4/28/15 FINISH 4/29/15

E L E V	SAMPLE		BLOW COUNT			REC (%)	USCS SOIL TYPE	qu (TSF)	C O E F F I C I E N T	SOIL DESCRIPTION AND REMARKS	P I E Z O
	No.	TYPE	INTERVAL								
			FROM	TO	6" 12" 18"						
623.8									Top of Sediment at Elev. 623.8		
623.7									Black, Wet, Very Loose, Organic Silt, Trace Sand (thin cemented layers)		
623.6											
623.5											
623.4											
623.3											
623.2											
623.1											
623.0											
622.9											
622.8											
622.7											
622.6											
622.5											
622.4											
622.3											
622.2											
622.1											
622.0											
621.9											
621.8											
621.7											
621.6											
621.5											
621.4											
621.3											
621.2											
621.1											
621.0											
620.9											
620.8											
620.7											
620.6											
620.5											
620.4											
620.3											
620.2											
620.1											
620.0											
619.9											
619.8											
619.7											
619.6											
619.5											
619.4											
619.3											
619.2											
619.1											
619.0											

= Push only
= Use of 10 lb slide hammer

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. An 8-inch diameter Secchi Disk was used to determine the top of sediment elevation. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 50%.

LAN Lower Ash Pond Sediment Borings



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BORING LOG

PROJECT No. 154.021.003
BORING No. LP-12
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Ash Pond Sediment Investigation
BORING LOCATION Lansing Iowa WATER ELEVATION Pond @ 630.3
DRILLER Hard Hat Services DATE: START 4/28/15 FINISH 4/29/15

E L E V	SAMPLE		BLOW COUNT			REC (%)	USCS SOIL TYPE	qu (TSF)	C O E F F I C I E N T	SOIL DESCRIPTION AND REMARKS	P I E Z O
	No.	TYPE	INTERVAL								
			FROM	TO	6" 12" 18"						
623.5									Top of Sediment at Elev. 623.5		
623.4									Black, Wet, Very Loose, Organic Silt, Trace Sand (thin cemented layers)		
623.3											
623.2											
623.1											
623.0											
622.9											
622.8											
622.7											
622.6											
622.5											
622.4											
622.3											
622.2											
622.1											
622.0											
621.9											
621.8											
621.7											
621.6											
621.5											
621.4											
621.3											
621.2											
621.1											
621.0											
620.9											
620.8											
620.7											
620.6											
620.5											
620.4											
620.3											
620.2											
620.1											
620.0											
619.9											
619.8											
619.7											
619.6											
619.5											
619.4											
619.3											
619.2											
619.1											
619.0											

= Push only
= Use of 10 lb slide hammer

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. An 8-inch diameter Secchi Disk was used to determine the top of sediment elevation. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 60%.

LAN Lower Ash Pond Sediment Borings

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1-6-16	DLS	MWL	AS-BUILT DRAWINGS
6-15-15	TJH	MWL	INCORPORATE IPL COMMENTS
REV	DATE	BY	APP
			DESCRIPTION

SCALE: NONE DATE: 5-14-15
DRAWN BY: JFD CHECKED BY: TJH APPROVED BY: MWL



CLIENT / LOCATION
INTERSTATE POWER AND LIGHT (IPL)
LANSING GENERATING STATION PROJECT
2320 POWER PLANT DR
LANSING, IA 52151

DRAWING DESCRIPTION
LOWER POND DREDGING AS-BUILT DRAWINGS
BORING LOGS
LP-11 & LP-12

JOB 154.021.003
SHT. 10
DWG. 154021DD-10



HARD HAT SERVICES™
Engineering, Construction and Management Solutions

BORING LOG

PROJECT No. 154.021.003
BORING No. LP-13
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Ash Pond Sediment Investigation
BORING LOCATION Lansing Iowa WATER ELEVATION Pond @ 630.3
DRILLER Hard Hat Services DATE: START 4/28/15 FINISH 4/29/15

ELEV	SAMPLE		BLOW COUNT			REC (%)	USCS SOIL TYPE	SOLIDS %	qu (TSF)	DEPTH (FT)	SOIL DESCRIPTION AND REMARKS	PIEZO
	No.	TYPE	INTERVAL FROM TO	0" 6"	6" 12"							
626.0											Top of Sediment at Elev. 626.0	
625.9											Black, Wet, Very Loose, Organic Silt (No recovery, but likely silts are present)	
625.8												
625.7												
625.6												
625.5												
625.4												
625.3												
625.2												
625.1												
625.0												
624.9												
624.8												
624.7												
624.6												
624.5												
624.4												
624.3												
624.2												
624.1												
624.0												
623.9												
623.8												
623.7												
623.6												
623.5												
623.4												
623.3												
623.2												
623.1												
623.0												

= Push only
= Use of 10 lb slide hammer

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. An 8-inch diameter Secchi Disk was used to determine the top of sediment elevation. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 40%.

LAN Lower Ash Pond Sediment Borings



HARD HAT SERVICES™
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BORING LOG

PROJECT No. 154.021.003
BORING No. LP-14
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Ash Pond Sediment Investigation
BORING LOCATION Lansing Iowa WATER ELEVATION Pond @ 630.3
DRILLER Hard Hat Services DATE: START 4/28/15 FINISH 4/29/15

ELEV	SAMPLE		BLOW COUNT			REC (%)	USCS SOIL TYPE	SOLIDS %	qu (TSF)	DEPTH (FT)	SOIL DESCRIPTION AND REMARKS	PIEZO
	No.	TYPE	INTERVAL FROM TO	0" 6"	6" 12"							
624.3											Top of Sediment at Elev. 624.3	
624.2											Black, Wet, Very Loose, Organic Silt (cemented layers)	
624.1												
624.0												
623.9												
623.8												
623.7												
623.6												
623.5												
623.4												
623.3												
623.2												
623.1												
623.0												
622.9												
622.8												
622.7												
622.6												
622.5												
622.4												
622.3												
622.2												
622.1												
622.0												
621.9												
621.8												
621.7												
621.6												
621.5												
621.4												
621.3												

= Push only
= Use of 10 lb slide hammer

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. An 8-inch diameter Secchi Disk was used to determine the top of sediment elevation. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 45%.

LAN Lower Ash Pond Sediment Borings

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1-6-16	DLS	MWL	AS-BUILT DRAWINGS
6-15-15	TJH	MWL	INCORPORATE IPL COMMENTS
REV	DATE	BY	APP
			DESCRIPTION

SCALE: NONE DATE: 5-14-15
DRAWN BY: JFD CHECKED BY: TJH APPROVED BY: MWL

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CLIENT / LOCATION
INTERSTATE POWER AND LIGHT (IPL)
LANSING GENERATING STATION PROJECT
2320 POWER PLANT DR
LANSING, IA 52151

DRAWING DESCRIPTION
LOWER POND DREDGING AS-BUILT DRAWINGS
BORING LOGS
LP-13 & LP-14

JOB 154.021.003
SHT. 11
DWG. 154021DD-11



HARD HAT SERVICES™
Engineering, Construction and Management Solutions

BORING LOG

PROJECT No. 154.021.003
BORING No. LP-15
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Ash Pond Sediment Investigation
BORING LOCATION Lansing Iowa WATER ELEVATION Pond @ 630.3
DRILLER Hard Hat Services DATE: START 4/28/15 FINISH 4/29/15

E L E V	SAMPLE			BLOW COUNT			REC (%)	USCS SOIL TYPE	% SOLIDS	qu (TSF)	C O E P T T A H C T	SOIL DESCRIPTION AND REMARKS	P I E Z O
	No.	TYPE	INTERVAL										
			FROM	TO	0" 6"	12" 18"							
625.0												Top of Sediment at Elev. 625.0	
624.9							65	OL				Black, Wet, Very Loose, Organic Silt (cemented layers)	
624.8													
624.7													
624.6												Dark Grey, Wet, Medium Dense, Silty Sand	
624.5													
624.4							90	SM					
624.3													
624.2													
624.1													
624.0													
623.9							100	CH				Grey, Wet, Clay, High Plasticity (Bentonite)	
623.8												Brown, Wet, Medium Dense, Sand	
623.7													
623.6													
623.5							90	SP					
623.4													
623.3													

= Push only
= Use of 10 lb slide hammer

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. An 8-inch diameter Secchi Disk was used to determine the top of sediment elevation. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 90%.

LAN Lower Ash Pond Sediment Borings



HARD HAT SERVICES™
Engineering, Construction and Management Solutions

BORING LOG

PROJECT No. 154.021.003
BORING No. LP-16
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Ash Pond Sediment Investigation
BORING LOCATION Lansing Iowa WATER ELEVATION Pond @ 630.3
DRILLER Hard Hat Services DATE: START 4/28/15 FINISH 4/29/15

E L E V	SAMPLE			BLOW COUNT			REC (%)	USCS SOIL TYPE	% SOLIDS	qu (TSF)	C O E P T T A H C T	SOIL DESCRIPTION AND REMARKS	P I E Z O
	No.	TYPE	INTERVAL										
			FROM	TO	0" 6"	12" 18"							
628.2												Top of Sediment at Elev. 628.2	
628.1												Black, Wet, Very Loose, Organic Silt (No recovery, but likely silts are present)	
628.0													
627.9													
627.8													
627.7													
627.6							0	OL					
627.5													
627.4													
627.3													
627.2													
627.1													
627.0													
626.9													
626.8													
626.7													
626.6												Black, Wet, Loose, Silty Sand (with leaves and twigs)	
626.5							90	SM					
626.4													
626.3													
626.2							90	SM				Black, Wet, Loose Silty Sand	
626.1													
626.0													
625.9												Black, Wet, Very Loose, Organic Silt, Trace Sand	
625.8													
625.7													
625.6													
625.5							90	OL					
625.4													
625.3													
625.2													
625.1													
625.0													
624.9												Dark Grey, Wet, Medium Dense, Silty Sand	
624.8													
624.7													
624.6							90	SM					
624.5													
624.4													
624.3													

= Push only
= Use of 10 lb slide hammer

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. An 8-inch diameter Secchi Disk was used to determine the top of sediment elevation. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 55%.

LAN Lower Ash Pond Sediment Borings

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△	1-6-16	DLS	MWL	AS-BUILT DRAWINGS
△	6-15-15	TJH	MWL	INCORPORATE IPL COMMENTS
REV	DATE	BY	APP	DESCRIPTION

SCALE: NONE DATE: 5-14-15
DRAWN BY: JFD CHECKED BY: TJH APPROVED BY: MWL

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Engineering, Construction and Management Solutions

CLIENT / LOCATION
INTERSTATE POWER AND LIGHT (IPL)
LANSING GENERATING STATION PROJECT
2320 POWER PLANT DR
LANSING, IA 52151

DRAWING DESCRIPTION
LOWER POND DREDGING AS-BUILT DRAWINGS
BORING LOGS
LP-15 & LP-16

JOB 154.021.003
SHT. 12
DWG. 154021DD-12



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BORING LOG

PROJECT No. 154.021.003
BORING No. LP-17
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Ash Pond Sediment Investigation
BORING LOCATION Lansing Iowa WATER ELEVATION Pond @ 630.3
DRILLER Hard Hat Services DATE: START 4/28/15 FINISH 4/29/15

E L E V	SAMPLE		BLOW COUNT			REC (%)	USCS SOIL TYPE	% SOLIDS	qu (TSF)	C O N T A C T	SOIL DESCRIPTION AND REMARKS	P I E Z O	
	No.	TYPE	INTERVAL FROM TO	0" 6"	6" 12"								12" 18"
630.7											Black, Moist, Medium Dense, Organic Silt (Surface Soil with Plant Materials)		
630.6													
630.5													
630.4						75	OL						
630.3													
630.2													
630.1													
630.0													
629.9											Brown, Wet, Medium Dense, Sand, Trace Silts		
629.8						75	SP						
629.7													
629.6													
629.5											Grey, Wet, Medium Dense, Sand, Trace Silts		
629.4													
629.3													
629.2						75	SP						
629.1													
629.0													
628.9													

= Push only
= Use of 10 lb slide hammer

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 75%.

LAN Lower Ash Pond Sediment Borings



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BORING LOG

PROJECT No. 154.021.003
BORING No. LP-18
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Ash Pond Sediment Investigation
BORING LOCATION Lansing Iowa WATER ELEVATION Pond @ 630.3
DRILLER Hard Hat Services DATE: START 4/28/15 FINISH 4/29/15

E L E V	SAMPLE		BLOW COUNT			REC (%)	USCS SOIL TYPE	% SOLIDS	qu (TSF)	C O N T A C T	SOIL DESCRIPTION AND REMARKS	P I E Z O	
	No.	TYPE	INTERVAL FROM TO	0" 6"	6" 12"								12" 18"
630.7											Tan, Dry, Medium Dense, Silt (Fly Ash on Ground Surface)		
630.6						75	OL						
630.5													
630.4											Grey, Wet, Clay, High Plasticity (Bentonite Layer)		
630.3						100	CH						
630.2													
630.1											Brown, Wet, Medium Dense, Sand (Sample fell out from the core barrel)		
630.0													
629.9													
629.8													
629.7													
629.6													
629.5													
629.4													
629.3													
629.2													
629.1													
629.0													
628.9													
628.8													
628.7													
628.6													
628.5													
628.4													
628.3													
628.2													
628.1													
628.0													
627.9													
627.8													
627.7													

= Push only
= Use of 10 lb slide hammer

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 45%.

LAN Lower Ash Pond Sediment Borings

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△	1-6-16	DLS	MWL	AS-BUILT DRAWINGS	
△	6-15-15	TJH	MWL	INCORPORATE IPL COMMENTS	
REV	DATE	BY	APP	DESCRIPTION	

SCALE: NONE DATE: 5-14-15
DRAWN BY: JFD CHECKED BY: TJH APPROVED BY: MWL

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CLIENT / LOCATION
INTERSTATE POWER AND LIGHT (IPL)
LANSING GENERATING STATION PROJECT
2320 POWER PLANT DR
LANSING, IA 52151

DRAWING DESCRIPTION
LOWER POND DREDGING AS-BUILT DRAWINGS
BORING LOGS
LP-17 & LP-18

JOB 154.021.003
SHT. 13
DWG. 154021DD-13



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BORING LOG

PROJECT No. 154.021.003
BORING No. LP-19
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Ash Pond Sediment Investigation
BORING LOCATION Lansing Iowa WATER ELEVATION Pond @ 630.3
DRILLER Hard Hat Services DATE: START 4/28/15 FINISH 4/29/15

E L E V	SAMPLE		BLOW COUNT			REC (%)	USCS SOIL TYPE	% SOLIDS	qu (TSF)	C O N T A C T	SOIL DESCRIPTION AND REMARKS	P I E Z O
			INTERVAL		0"							
	No.	TYPE	FROM	TO	6"							
630.7												
630.6						50	OL					
630.5												
630.4												
630.3												
630.2												
630.1						90	SP					
630.0												
629.9												
629.8												
629.7												
629.6												
629.5						100	CH					
629.4												
629.3												
629.2												
629.1												
629.0												
628.9												
628.8												
628.7												
628.6												
628.5						35	SP					
628.4												
628.3												
628.2												
628.1												
628.0												
627.9												
627.8												
627.7												

= Push only
= Use of 10 lb slide hammer

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 55%.

LAN Lower Ash Pond Sediment Borings

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△				
△	1-6-16	DLS	MWL	AS-BUILT DRAWINGS
△	6-15-15	TJH	MWL	INCORPORATE IPL COMMENTS
REV	DATE	BY	APP	DESCRIPTION

SCALE: NONE DATE: 5-14-15
DRAWN BY: JFD CHECKED BY: TJH APPROVED BY: MWL

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CLIENT / LOCATION
INTERSTATE POWER AND LIGHT (IPL)
LANSING GENERATING STATION PROJECT
2320 POWER PLANT DR
LANSING, IA 52151

DRAWING DESCRIPTION
LOWER POND DREDGING AS-BUILT DRAWINGS
BORING LOGS
LP-19

JOB 154.021.003
SHT. 14
DWG. 154021DD-14



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BORING LOG

PROJECT No. 300.021.001
BORING No. CC-1
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Pond Post Dredging Confirmation Cores
BORING LOCATION Lansing Iowa WATER ELEVATION 630.1
DRILLER Hard Hat Services DATE: START 9/3/15 FINISH 9/3/15

E L E V	SAMPLE		BLOW COUNT			REC (%)	USCS SOIL TYPE	% SOLIDS	qu (TSF)	C O M P T H A C T	SOIL DESCRIPTION AND REMARKS	P I E Z O
			INTERVAL		0" 6" 12" 18"							
			No.	TYPE								
619.1												
619.0						55	OL					
618.9												
618.8												
618.7												
618.6												
618.5												
618.4												
618.3												
618.2												
618.1						55	OL					
618.0												
617.9												
617.8												
617.7												
617.6												
617.5												
617.4												
617.3												
617.2												
617.1												
617.0												
616.9												
616.8						55	OL					
616.7												
616.6												
616.5												
616.4												
616.3												
616.2												

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. An 8-inch diameter Secchi Disk was used to determine the top of sediment elevation. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 55%.

LAN Lower Ash Pond Confirmation Cores



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BORING LOG

PROJECT No. 300.021.001
BORING No. CC-2
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Pond Post Dredging Confirmation Cores
BORING LOCATION Lansing Iowa WATER ELEVATION 630.1
DRILLER Hard Hat Services DATE: START 9/3/15 FINISH 9/3/15

E L E V	SAMPLE		BLOW COUNT			REC (%)	USCS SOIL TYPE	% SOLIDS	qu (TSF)	C O M P T H A C T	SOIL DESCRIPTION AND REMARKS	P I E Z O
			INTERVAL		0" 6" 12" 18"							
			No.	TYPE								
618.9						100	CH					
618.8												
618.7												
618.6												
618.5												
618.4												
618.3												
618.2						80	SP					
618.1												
618.0												
617.9												
617.8												
617.7												
617.6												
617.5												
617.4												
617.3												
617.2												
617.1												
617.0						80	OL					
616.9												
616.8												
616.7												
616.6												

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. An 8-inch diameter Secchi Disk was used to determine the top of sediment elevation. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 80%.

LAN Lower Ash Pond Confirmation Cores

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1-6-16	DLS	MWL	AS-BUILT DRAWINGS
REV	DATE	BY	APP
			DESCRIPTION

SCALE: NONE DATE: 1-6-16
DRAWN BY: JFD CHECKED BY: TJH APPROVED BY: MWL

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CLIENT / LOCATION
INTERSTATE POWER AND LIGHT (IPL)
LANSING GENERATING STATION PROJECT
2320 POWER PLANT DR
LANSING, IA 52151

DRAWING DESCRIPTION
LOWER POND DREDGING AS-BUILT DRAWINGS
POST-DREDGING CONFIRMATION CORE LOGS
CC-1 & CC-2

JOB 154.021.003
SHT. 15
DWG. 154021DD-15



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BORING LOG

PROJECT No. 300.021.001
BORING No. CC-3
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Pond Post Dredging Confirmation Cores
BORING LOCATION Lansing Iowa WATER ELEVATION 630.1
DRILLER Hard Hat Services DATE: START 9/3/15 FINISH 9/3/15

E L E V	SAMPLE		BLOW COUNT			REC (%)	USCS SOIL TYPE	% SOLIDS	qu (TSF)	C O E P N T H A C T	SOIL DESCRIPTION AND REMARKS	P I E Z O
	No.	TYPE	INTERVAL									
			FROM	TO								
618.3												
618.2						55	SM				Top of Sediment at Elev. 618.3 Black, Wet, Loose, Silty Sand	
618.1												
618.0												
617.9												
617.8											Grey, Wet, Medium Stiff Organic Silt (plant materials intermixed within silt)	
617.7												
617.6												
617.5						55	OL					
617.4												
617.3												
617.2												
617.1												
617.0						55	OL				Black, Wet, Soft, Sandy Silt Grey, Wet, Medium Stiff Organic Silt (plant materials intermixed within silt)	
616.9												
616.8												
616.7												
616.6						55	OL					
616.5												
616.4												
616.3												

= Push only
= Use of 10 lb slide hammer

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. An 8-inch diameter Secchi Disk was used to determine the top of sediment elevation. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 55%.

LAN Lower Ash Pond Confirmation Cores



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BORING LOG

PROJECT No. 300.021.001
BORING No. CC-4
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Pond Post Dredging Confirmation Cores
BORING LOCATION Lansing Iowa WATER ELEVATION 630.1
DRILLER Hard Hat Services DATE: START 9/3/15 FINISH 9/3/15

E L E V	SAMPLE		BLOW COUNT			REC (%)	USCS SOIL TYPE	% SOLIDS	qu (TSF)	C O E P N T H A C T	SOIL DESCRIPTION AND REMARKS	P I E Z O
	No.	TYPE	INTERVAL									
			FROM	TO								
617.7												
617.6						75	SM				Top of Sediment at Elev. 617.7 Gray, Wet, Soft, Silt with trace Sand	
617.5												
617.4											Grey, Wet, Medium Stiff Organic Silt (plant materials intermixed within silt)	
617.3												
617.2												
617.1												
617.0												
616.9												
616.8												
616.7												
616.6												
616.5						75	OL					
616.4												
616.3												
616.2												
616.1												
616.0												
615.9												
615.8												
615.7												
615.6												

= Push only
= Use of 10 lb slide hammer

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. An 8-inch diameter Secchi Disk was used to determine the top of sediment elevation. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 75%.

LAN Lower Ash Pond Confirmation Cores

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1-6-16	DLS	MWL	AS-BUILT DRAWINGS
REV	DATE	BY	APP
			DESCRIPTION

SCALE: NONE DATE: 1-6-16
DRAWN BY: JFD CHECKED BY: TJH APPROVED BY: MWL

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CLIENT / LOCATION
INTERSTATE POWER AND LIGHT (IPL)
LANSING GENERATING STATION PROJECT
2320 POWER PLANT DR
LANSING, IA 52151

DRAWING DESCRIPTION
LOWER POND DREDGING AS-BUILT DRAWINGS
POST-DREDGING CONFIRMATION CORE LOGS
CC-3 & CC-4

JOB 154.021.003
SHT. 16
DWG. 154021DD-16



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BORING LOG

PROJECT No. 300.021.001
BORING No. CC-5
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Pond Post Dredging Confirmation Cores
BORING LOCATION Lansing Iowa WATER ELEVATION 630.1
DRILLER Hard Hat Services DATE: START 9/3/15 FINISH 9/3/15

E L E V	SAMPLE		BLOW COUNT			REC (%)	USCS SOIL TYPE	% SOLIDS	qu (TSF)	C O N C E P T A C H	SOIL DESCRIPTION AND REMARKS	P I E Z O
			INTERVAL		0" 6" 12" 18"							
			No.	TYPE								
619.4						90	SM					
619.3						90	CH				Brown, Wet, Loose, Sand with trace Silt	
619.2											Grey, Wet, Clay, High Plasticity (Bentonite)	
619.1											Gray, Wet, Medium Dense, Sand with trace Silt	
619.0						90	SM					
618.9												
618.8												
618.7												
618.6											Gray, Wet, Medium Stiff, Silt with trace Sand	
618.5												
618.4						90	OL					
618.3												
618.2												
618.1												

= Push only
= Use of 10 lb slide hammer

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. An 8-inch diameter Secchi Disk was used to determine the top of sediment elevation. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 90%.

LAN Lower Ash Pond Confirmation Cores



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BORING LOG

PROJECT No. 300.021.001
BORING No. CC-6
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Pond Post Dredging Confirmation Cores
BORING LOCATION Lansing Iowa WATER ELEVATION 630.1
DRILLER Hard Hat Services DATE: START 9/3/15 FINISH 9/3/15

E L E V	SAMPLE		BLOW COUNT			REC (%)	USCS SOIL TYPE	% SOLIDS	qu (TSF)	C O N C E P T A C H	SOIL DESCRIPTION AND REMARKS	P I E Z O
			INTERVAL		0" 6" 12" 18"							
			No.	TYPE								
618.9												
618.8												
618.7						60	SM					
618.6												
618.5												
618.4												
618.3												
618.2												
618.1												
618.0												
617.9						60	SM					
617.8												
617.7												
617.6												
617.5												
617.4												
617.3												
617.2						60	OL					
617.1												
617.0												
616.9						90	CH					
616.8												
616.7												
616.6												
616.5												
616.4												
616.3												
616.2												
616.1						60	OL					
616.0												
615.9												
615.8												
615.7												
615.6												

= Push only
= Use of 10 lb slide hammer

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. An 8-inch diameter Secchi Disk was used to determine the top of sediment elevation. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 60%.

LAN Lower Ash Pond Confirmation Cores

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1-6-16	DLS	MWL	AS-BUILT DRAWINGS
REV	DATE	BY	APP
			DESCRIPTION

SCALE: NONE DATE: 1-6-16
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Engineering, Construction and Management Solutions

CLIENT / LOCATION
INTERSTATE POWER AND LIGHT (IPL)
LANSING GENERATING STATION PROJECT
2320 POWER PLANT DR
LANSING, IA 52151

DRAWING DESCRIPTION
LOWER POND DREDGING AS-BUILT DRAWINGS
POST-DREDGING CONFIRMATION CORE LOGS
CC-5 & CC-6

JOB 154.021.003
SHT. 17
DWG. 154021DD-17



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BORING LOG

PROJECT No. 300.021.001
BORING No. CC-7
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Pond Post Dredging Confirmation Cores
BORING LOCATION Lansing Iowa WATER ELEVATION 630.1
DRILLER Hard Hat Services DATE: START 9/3/15 FINISH 9/3/15

E L E V	SAMPLE		BLOW COUNT			REC (%)	USCS SOIL TYPE	SCPTOS %	q _u (TSF)	C O N T A C T	SOIL DESCRIPTION AND REMARKS	P I E Z O		
			INTERVAL		0" 6"								6" 12"	12" 18"
			No.	TYPE										
622.0										Gray, Wet, Soft, Silt				
621.9						80								
621.8														
621.7														
621.6														
621.5														
621.4										Brown, Wet, Medium Dense, Sand				
621.3														
621.2														
621.1														
621.0														
620.9						80								
620.8														
620.7														
620.6														
620.5														
620.4														
620.3														
620.2														
620.1														

= Push only
= Use of 10 lb slide hammer

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. An 8-inch diameter Secchi Disk was used to determine the top of sediment elevation. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 80%.

LAN Lower Ash Pond Confirmation Cores



HARD HAT SERVICES™
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BORING LOG

PROJECT No. 300.021.001
BORING No. CC-8
LOGGED BY Mark Loerop
PAGE No. 1 of 1

PROJECT NAME Lansing Generating Station Lower Pond Post Dredging Confirmation Cores
BORING LOCATION Lansing Iowa WATER ELEVATION 630.1
DRILLER Hard Hat Services DATE: START 9/3/15 FINISH 9/3/15

E L E V	SAMPLE		BLOW COUNT			REC (%)	USCS SOIL TYPE	SCPTOS %	q _u (TSF)	C O N T A C T	SOIL DESCRIPTION AND REMARKS	P I E Z O		
			INTERVAL		0" 6"								6" 12"	12" 18"
			No.	TYPE										
622.3										Black, Wet, Loose, Silt (Trace CCR ~ 1/4 inch)				
622.2										Brown, Wet, Loose to Medium Dense, Sand				
622.1														
622.0														
621.9														
621.8														
621.7														
621.6														
621.5														
621.4														
621.3														
621.2														
621.1														
621.0														
620.9														
620.8														
620.7														
620.6														
620.5														
620.4														
620.3														

= Push only
= Use of 10 lb slide hammer

General Notes: Sampled with 4 foot core, 10 lb. slide hammer. An 8-inch diameter Secchi Disk was used to determine the top of sediment elevation. USCS was based on visual appearance only. Percent Recovery was estimated along the length of the core by material type. Total recovery is 65%.

LAN Lower Ash Pond Confirmation Cores

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△				
△				
△	1-6-16	DLS	MWL	AS-BUILT DRAWINGS
REV	DATE	BY	APP	DESCRIPTION

SCALE: NONE DATE: 1-6-16
DRAWN BY: JFD CHECKED BY: TJH APPROVED BY: MWL

HARD HAT SERVICES™
Engineering, Construction and Management Solutions

CLIENT / LOCATION
INTERSTATE POWER AND LIGHT (IPL)
LANSING GENERATING STATION PROJECT
2320 POWER PLANT DR
LANSING, IA 52151

DRAWING DESCRIPTION
LOWER POND DREDGING AS-BUILT DRAWINGS
POST-DREDGING CONFIRMATION CORE LOGS
CC-7 & CC-8

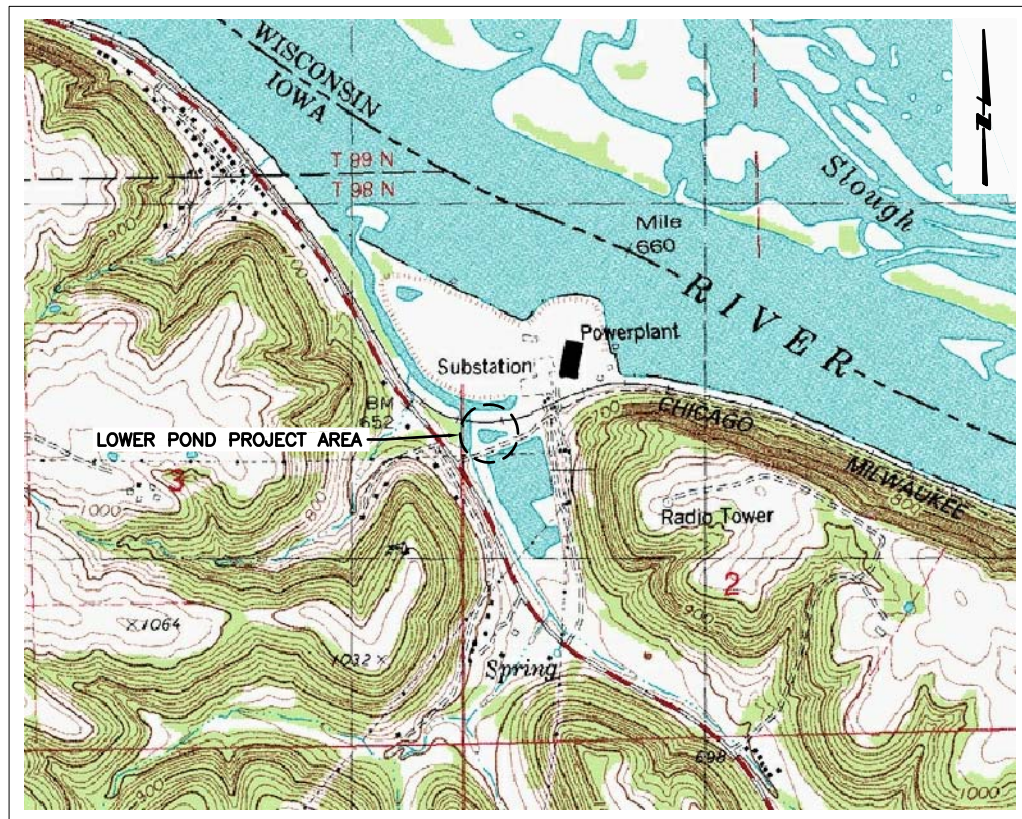
JOB 154.021.003
SHT. 18
DWG. 154021DD-18

INTERSTATE POWER AND LIGHT (IPL) COMPANY

LANSING GENERATING STATION PROJECT

LOWER POND CLOSURE AS-BUILT DRAWINGS

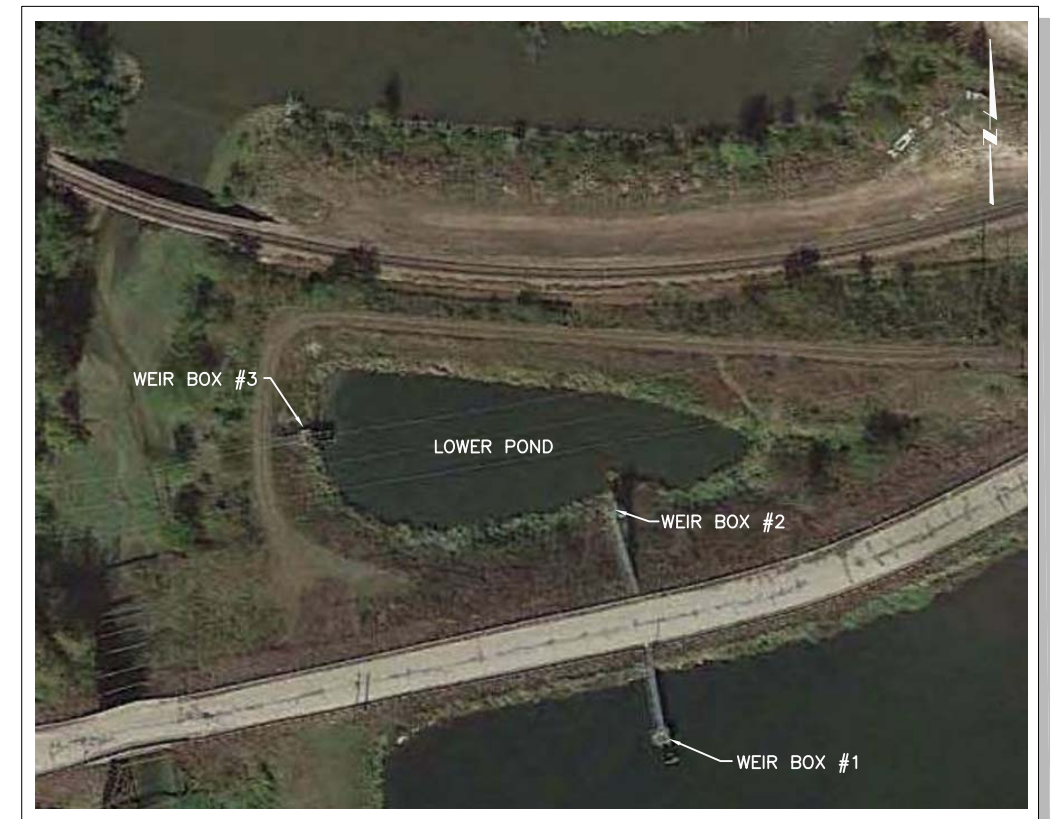
2320 POWER PLANT DR
LANSING, IA 52151
JANUARY 2016



LOCATION MAP
NOT TO SCALE

1. COVER SHEET
2. APRIL 2015 SITE SURVEY PRE-CONSTRUCTION
3. PIPE CONNECTION AND WEIR MODIFICATIONS - PLAN VIEW
4. FINAL GRADING PLAN
5. POND CLOSURE BACKFILL - GENERAL SECTION
6. WEIRS #2 AND #3 WALL ADDITIONS - DETAIL PAGE 1
7. WEIRS #2 AND #3 WALL ADDITIONS - DETAIL PAGE 2
8. PIPING SECTIONS AND DETAILS - PAGE 1
9. PIPING SECTIONS AND DETAILS - PAGE 2

SHEET INDEX



AERIAL MAP
NOT TO SCALE

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△				
△	1-28-16	DLS	MWL	AS-BUILT DRAWINGS
△	6-15-15	TJH	MWL	INCORPORATE IPL COMMENTS
REV	DATE	BY	APP	DESCRIPTION

SCALE: AS SHOWN DATE: 5-14-15
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INTERSTATE POWER AND LIGHT (IPL)
LANSING GENERATING STATION PROJECT
2320 POWER PLANT DR
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DRAWING DESCRIPTION
LOWER POND CLOSURE AS-BUILT DRAWINGS
COVER SHEET

JOB	154.021.003
SHT.	1
DWG.	154021PC-01

ARCH CULVERT FOR DEWATERING PIPE CROSSING (NO HOSE CONNECTIONS ALLOWED INSIDE CULVERT)

POWERLINE OVERHEAD CLEARANCE OF 36 FT. (NOTE 2)

LOWER POND CLOSURE AREA

POWERLINE OVERHEAD CLEARANCE OF 48 FT. (NOTE 2)

POWERLINE OVERHEAD CLEARANCE OF 47 FT. (NOTE 2)

UPPER AND LOWER CCR POND TOPOGRAPHIC SURVEY AND LOWER CCR POND BATHYMETRY at ALLIANT LANSING POWER GENERATING STATION for INTERSTATE POWER & LIGHT COMPANY - ALLIANT ENERGY BEING IN PART OF SECTION 2, TOWNSHIP 98 NORTH, RANGE 3 WEST OF THE FIFTH PRINCIPAL MERIDIAN, ALLAMAKEE COUNTY, IOWA.

POWERLINE OVERHEAD CLEARANCE OF 79 FT. (NOTE 2)

DEWATERING WATER DISPOSAL AREA

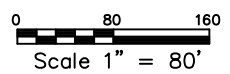
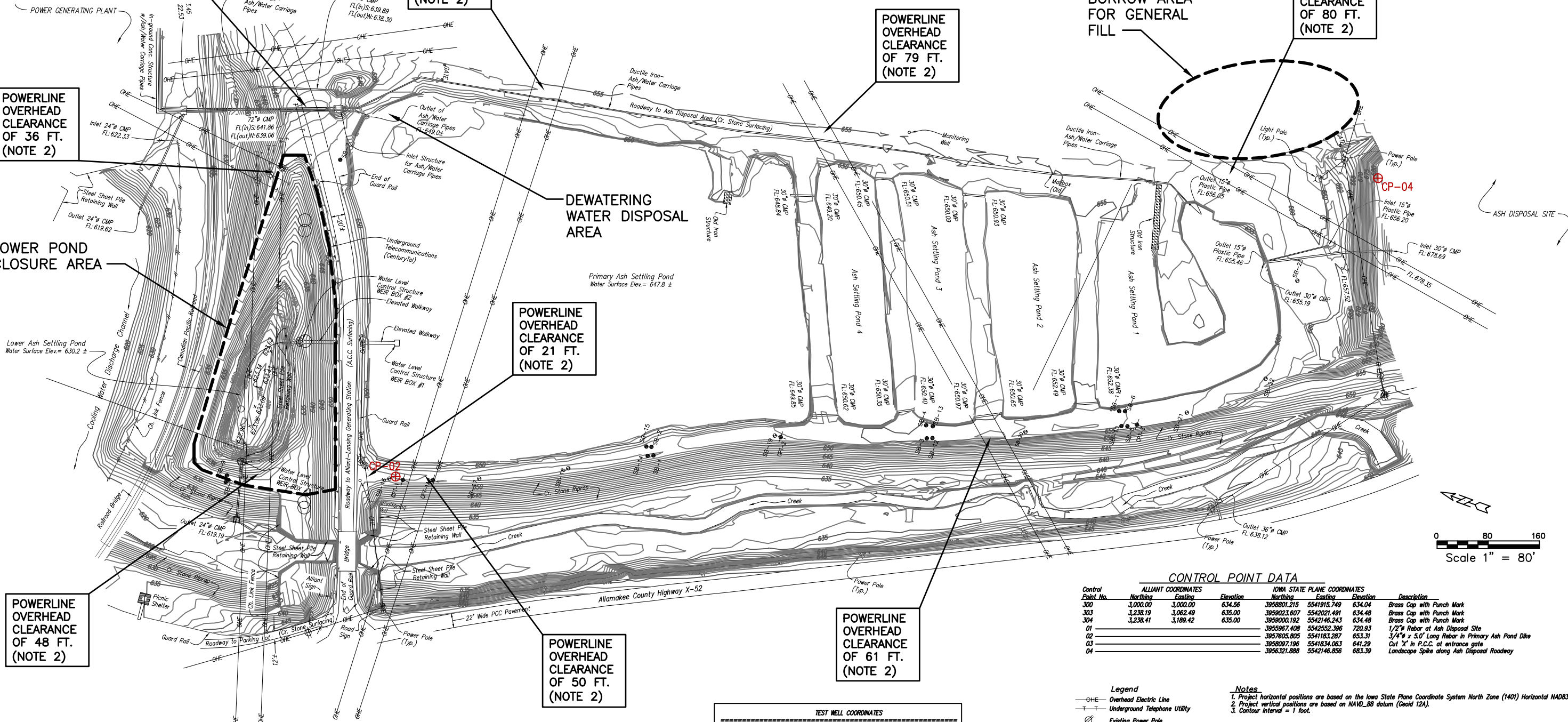
POWERLINE OVERHEAD CLEARANCE OF 21 FT. (NOTE 2)

POWERLINE OVERHEAD CLEARANCE OF 50 FT. (NOTE 2)

POWERLINE OVERHEAD CLEARANCE OF 61 FT. (NOTE 2)

BORROW AREA FOR GENERAL FILL

POWERLINE OVERHEAD CLEARANCE OF 80 FT. (NOTE 2)



CONTROL POINT DATA

Point No.	ALLIANT COORDINATES			IOWA STATE PLANE COORDINATES			Description
	Northing	Easting	Elevation	Northing	Easting	Elevation	
300	3,000.00	3,000.00	634.56	3958091.215	5541915.749	634.04	Brass Cap with Punch Mark
303	3,238.19	3,062.49	635.00	3959023.607	5542021.491	634.48	Brass Cap with Punch Mark
304	3,238.41	3,188.42	635.00	3959000.192	5542146.243	634.48	Brass Cap with Punch Mark
01				3955967.408	5542552.396	720.93	1/2" Rebar at Ash Disposal Site
02				3957805.805	5541833.287	653.31	3/4" x 5.0' Long Rebar in Primary Ash Pond Dike
03				3958097.196	5541834.063	641.29	Cut 'X' in P.C.C. at entrance gate
04				3956321.888	5542146.856	683.39	Landscape Spike along Ash Disposal Roadway

- Legend**
- OHE Overhead Electric Line
 - T Undergroud Telephone Utility
 - Existing Power Pole
 - SB Temporary Well Location
 - SB Soil Boring Location
 - CPT Cone Penitrometer Test Location
 - CP Control Point

- Notes**
- Project horizontal positions are based on the Iowa State Plane Coordinate System North Zone (1401) Horizontal NAD83(2011).
 - Project vertical positions are based on NAVD_88 datum (Geoid 12A).
 - Contour Interval = 1 foot.

TEST WELL COORDINATES

WELL ID	Northing	Easting	TOP Elevation	Ground Elevation
SB-1	3957238.28	5541352.23	653.36	653.26
SB-2	3957245.81	5541363.78	652.86	652.63
SB-3	3956945.82	5541523.57	656.39	655.37
SB-4	3956853.80	5541542.37	655.88	655.34
SB-5	3956557.49	5541648.53	656.70	655.80
SB-6	3956569.09	5541669.35	656.19	655.97
SB-7	3957856.52	5541818.95	653.45	653.33
SB-8	3957852.40	5541084.50	641.74	638.43
SB-9	3957854.40	5541094.88	640.63	638.52
SB-10	NS	NS	656.38	655.85
SB-11	NS	NS	656.38	656.17
SB-12	NS	NS	656.40	655.44
SB-13	NS	NS	656.43	655.27
SB-14	NS	NS	654.37	653.15
SB-15	NS	NS	652.75	652.67

- NOTE:**
- SURVEY INFORMATION PROVIDED ABOVE WAS COMPILED BY MOHN SURVEYING, INC. 1890 GREAT RIVER ROAD LANSING, IOWA 52151, APRIL 2015.
 - ALLIANT ENERGY REQUIRES 20 FEET OVERHEAD SEPARATION DISTANCE FOR EQUIPMENT OPERATING UNDER POWERLINES.

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REV	DATE	BY	APP	DESCRIPTION
1-18-16	DLS	MWL		AS-BUILT DRAWINGS
6-24-15	TJH	MWL		INCORPORATE IPL COMMENTS
6-15-15	TJH	MWL		INCORPORATE IPL COMMENTS

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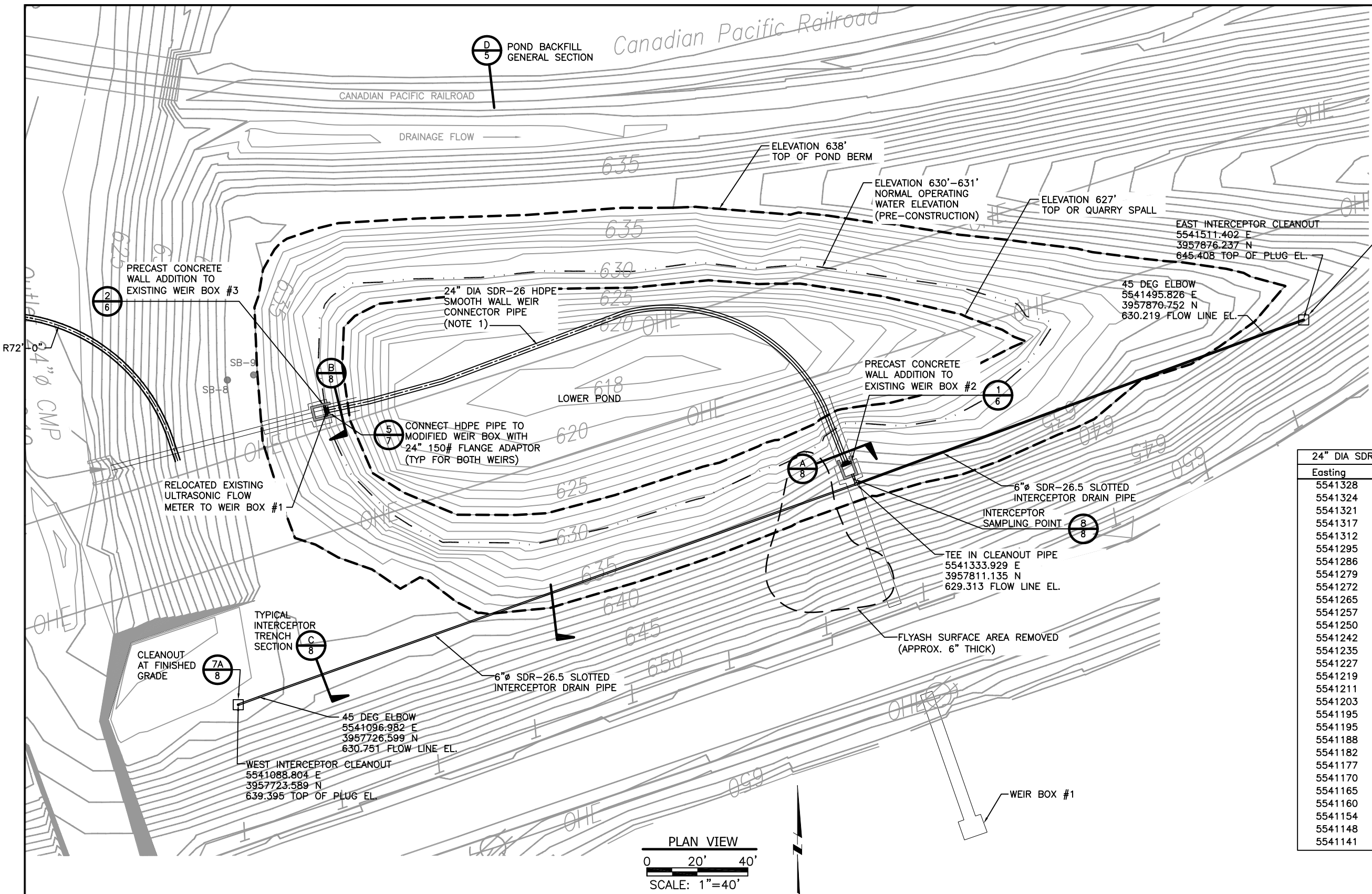
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 2320 POWER PLANT DR
 LANSING, IA 52151

DRAWING DESCRIPTION
 LOWER POND CLOSURE DESIGN
 APRIL 2015 SITE SURVEY
 PRE-CONSTRUCTION

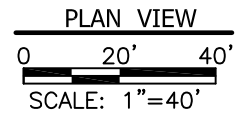
JOB 154.021.003
 SHT. 2
 DWG. 154021PC-02

Canadian Pacific Railroad

NOTE:
 1. 24" WEIR CONNECTOR PIPE WAS ROUTED TO ACCOMMODATE A MINIMUM BEND RADIUS OF 72'. APPROXIMATE LENGTH OF PIPE RUN IS 240' WITH A CONSTANT PIPE SLOPE.



24" DIA SDR-26 HDPE PIPE AS-BUILT SURVEY DATA		
Easting	Northing	Pipe Invert Elev.
5541328	3957824	627.378
5541324	3957834	
5541321	3957842	
5541317	3957849	
5541312	3957856	627.154
5541295	3957871	
5541286	3957876	
5541279	3957878	626.680
5541272	3957880	
5541265	3957881	
5541257	3957881	
5541250	3957880	
5541242	3957879	626.065
5541235	3957876	
5541227	3957873	
5541219	3957870	625.845
5541211	3957867	
5541203	3957864	
5541195	3957861	
5541195	3957861	625.789
5541188	3957858	
5541182	3957856	
5541177	3957854	
5541170	3957852	625.800
5541165	3957851	
5541160	3957849	
5541154	3957848	
5541148	3957846	
5541141	3957844	625.337



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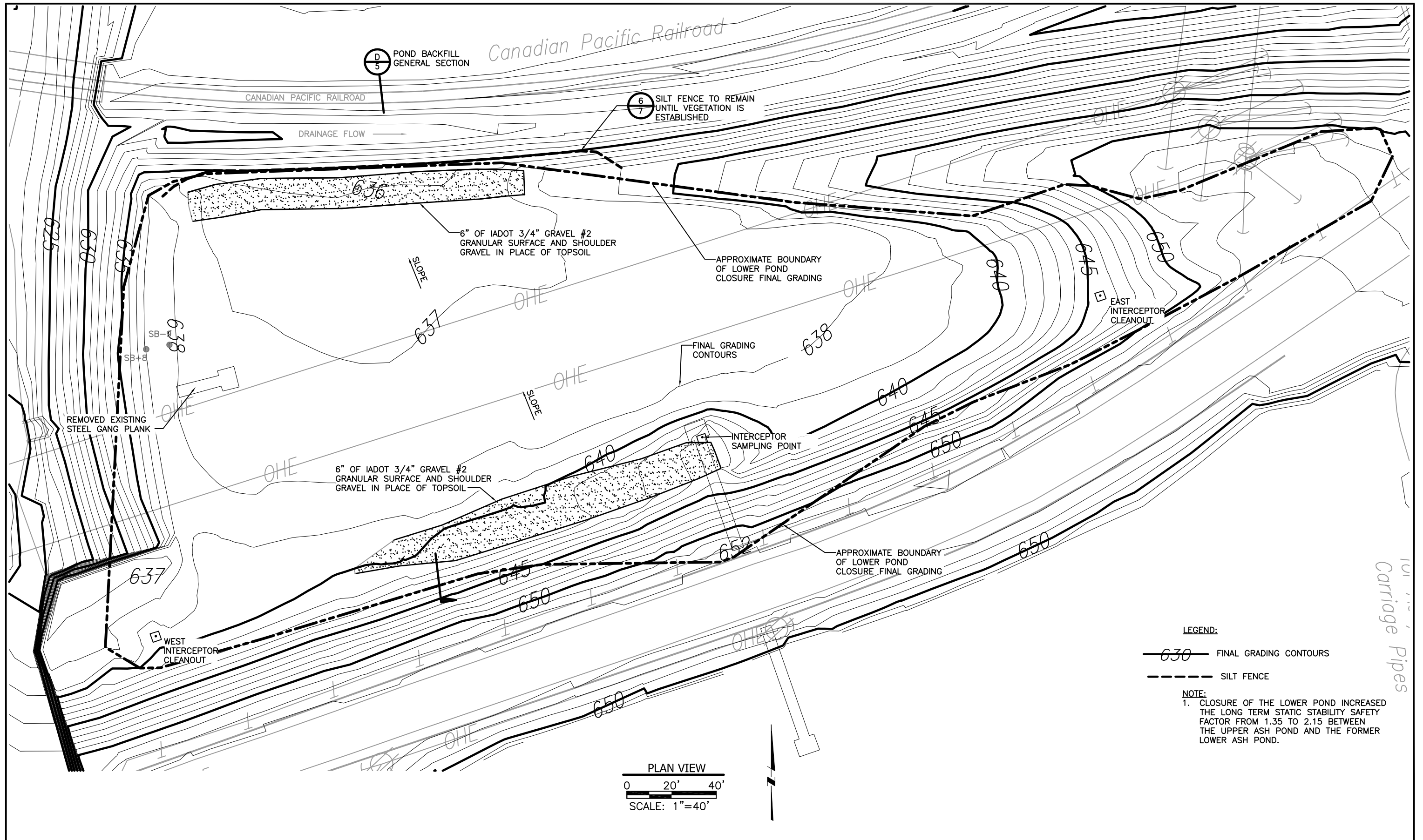
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DRAWING DESCRIPTION
 LOWER POND CLOSURE AS-BUILT DRAWINGS
 PIPE CONNECTION AND WEIR MODIFICATIONS
 PLAN VIEW

JOB 154.021.003
 SHT. 3
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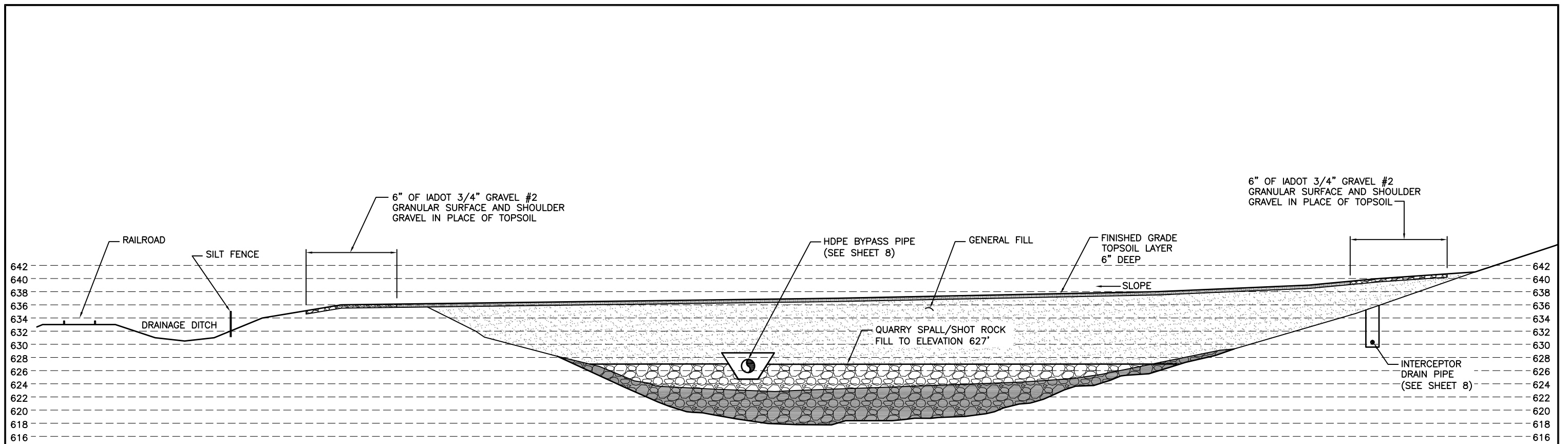
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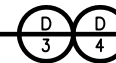
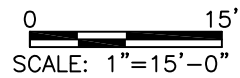
DRAWING DESCRIPTION

LOWER POND CLOSURE AS-BUILT DRAWINGS
FINAL GRADING PLAN





JOB	154.021.003
SHT.	4
DWG.	154021PC-04



POND BACKFILL GENERAL SECTION



LEGEND:

-  TOPSOIL
-  GENERAL FILL
-  QUARRY SPALL/SHOT ROCK FILL
-  POND SEDIMENT DREDGED PRIOR TO POND BACKFILL

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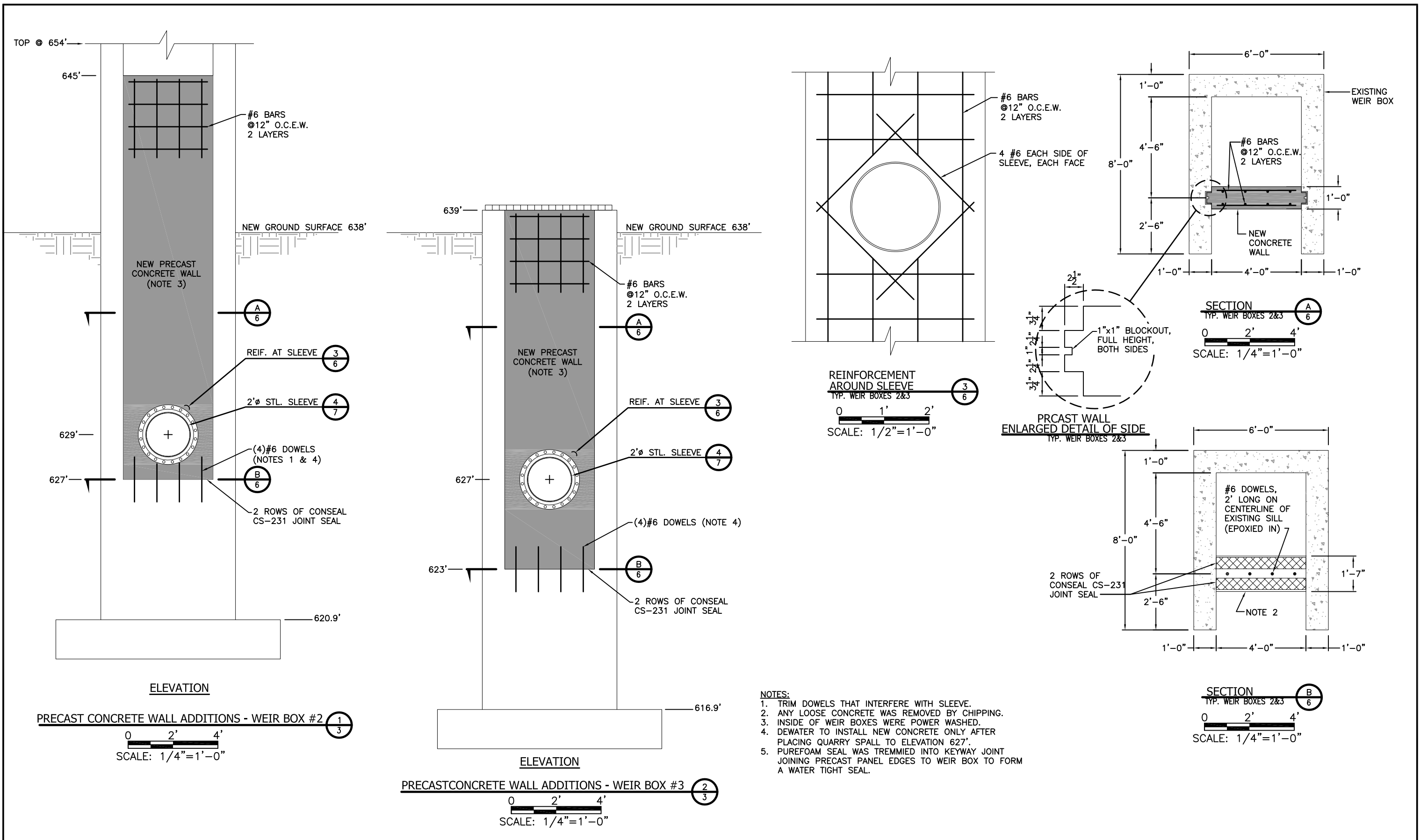


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LOWER POND CLOSURE AS-BUILT DRAWINGS
POND CLOSURE BACKFILL
GENERAL SECTION

JOB 154.021.003
SHT. 5
DWG. 154021PC-05



- NOTES:**
1. TRIM DOWELS THAT INTERFERE WITH SLEEVE.
 2. ANY LOOSE CONCRETE WAS REMOVED BY CHIPPING.
 3. INSIDE OF WEIR BOXES WERE POWER WASHED.
 4. DEWATER TO INSTALL NEW CONCRETE ONLY AFTER PLACING QUARRY SPALL TO ELEVATION 627'.
 5. PUREFOAM SEAL WAS TREMMIED INTO KEYWAY JOINT JOINING PRECAST PANEL EDGES TO WEIR BOX TO FORM A WATER TIGHT SEAL.

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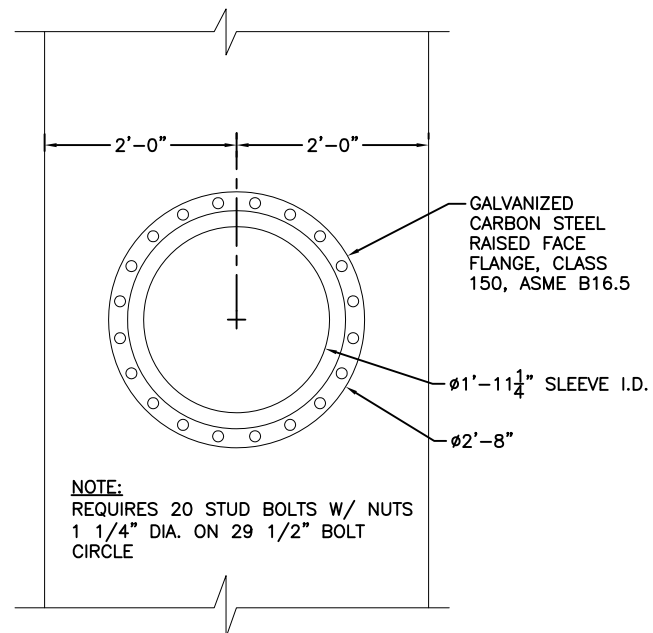
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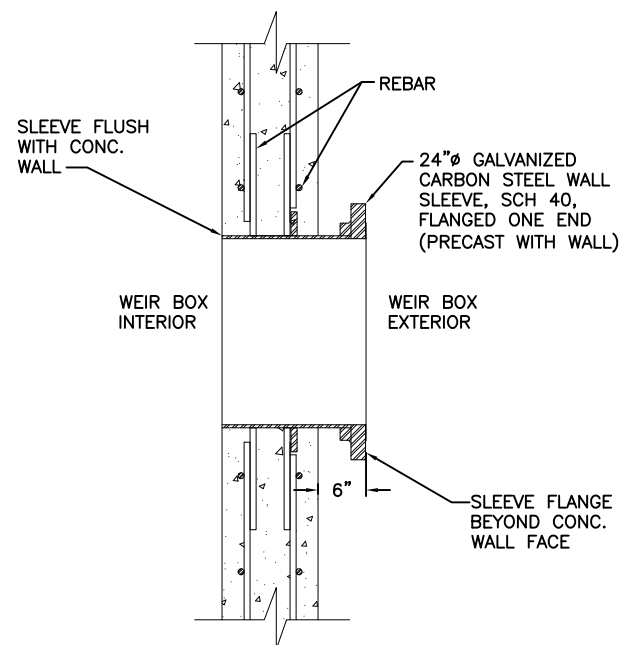
DRAWING DESCRIPTION
 LOWER POND CLOSURE AS-BUILT DRAWINGS
 WEIRS #2 & #3 WALL ADDITIONS
 DETAILS PAGE 1

JOB 154.021.003
 SHT. 6
 DWG. 154021PC-06-09

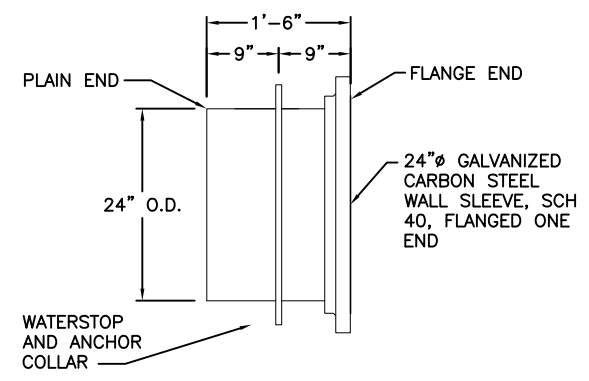


NOTE:
REQUIRES 20 STUD BOLTS W/ NUTS
1 1/4" DIA. ON 29 1/2" BOLT
CIRCLE

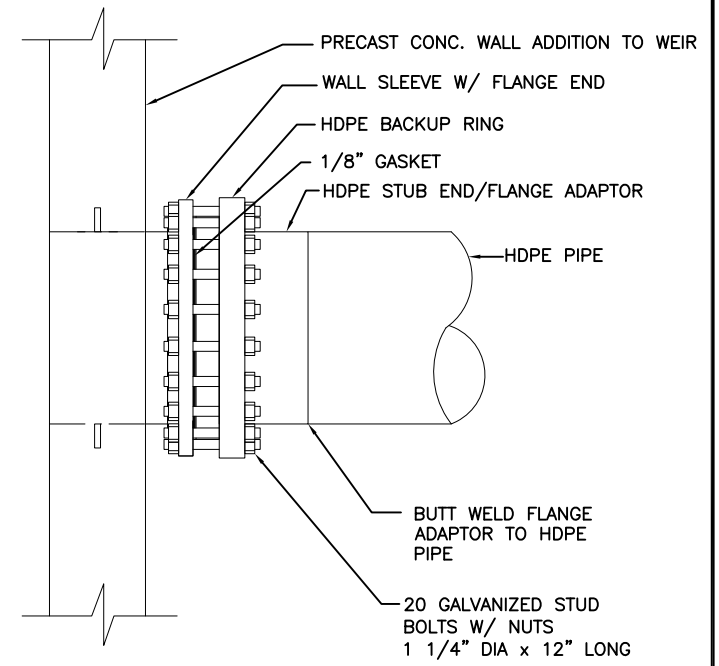
ELEVATION



SECTION THROUGH SLEEVE



SLEEVE DIMENSIONS

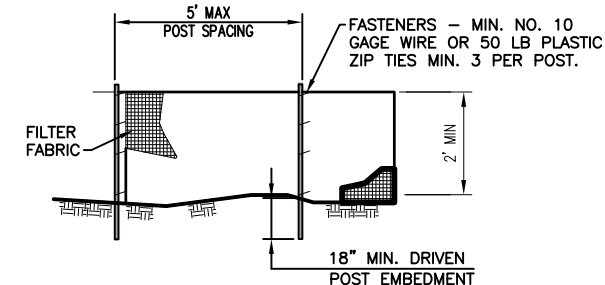


FLANGE CONNECTION DETAIL 5/3

SCALE: 1/2"=1'-0"

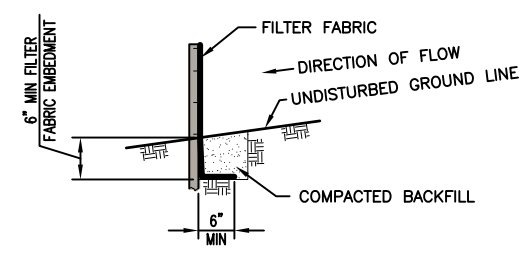
CAST-IN WALL SLEEVE INSERT 4/6

SCALE: 1/2"=1'-0"

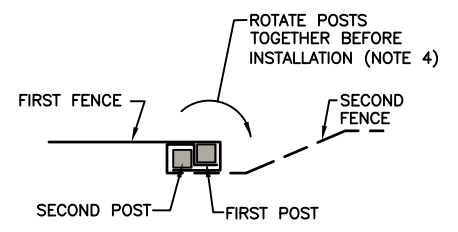


ELEVATION

- NOTES:
1. TEMPORARY SILT FENCE WAS INSTALLED PRIOR TO ANY GRADING WORK IN THE AREA TO BE PROTECTED. FENCE WAS MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD AND REMOVED IN CONJUNCTION WHEN VEGETATION IS WELL ESTABLISHED.
 2. FILTER FABRIC SHALL MET THE REQUIREMENTS OF SPECIFICATIONS WITH EQUIVALENT OPENING SIZE OF AT LEAST 30 FOR NONWOVEN AND 50 FOR WOVEN.
 3. FENCE POSTS SWERE WOOD POST WITH A MINIMUM CROSS-SECTIONAL AREA OF 1.5" X 1.5".
 4. WHEN SPLICES ARE NECESSARY MAKE SPLICE AT POST ACCORDING TO SPLICE DETAIL. PLACE THE END POST OF THE SECOND FENCE INSIDE THE END POST OF THE FIRST FENCE. ROTATE BOTH POSTS TOGETHER AT LEAST 180 DEGREES TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL. CUT THE FABRIC NEAR THE BOTTOM OF THE POSTS TO ACCOMMODATE THE 6 INCH FLAP. THEN DRIVE BOTH POSTS AND BURY THE FLAP. COMPACT BACKFILL WELL.



FABRIC ANCHOR DETAIL



SPLICE DETAIL-PLAN VIEW

SILT FENCE DETAIL 6/4

SCALE: NONE

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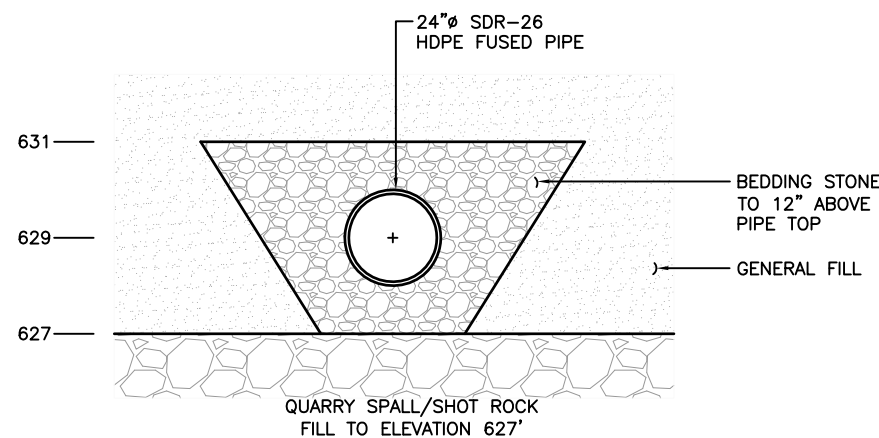
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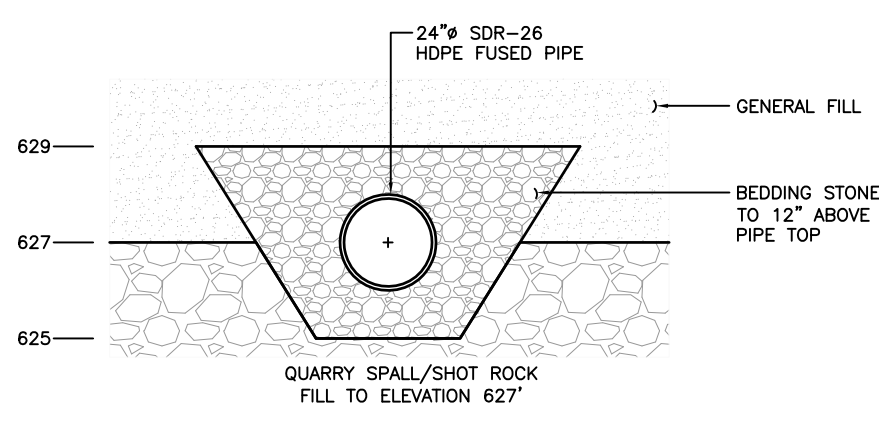
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DRAWING DESCRIPTION
LOWER POND CLOSURE AS-BUILT DRAWINGS
WEIRS #2 & #3 WALL ADDITIONS
DETAILS PAGE 2

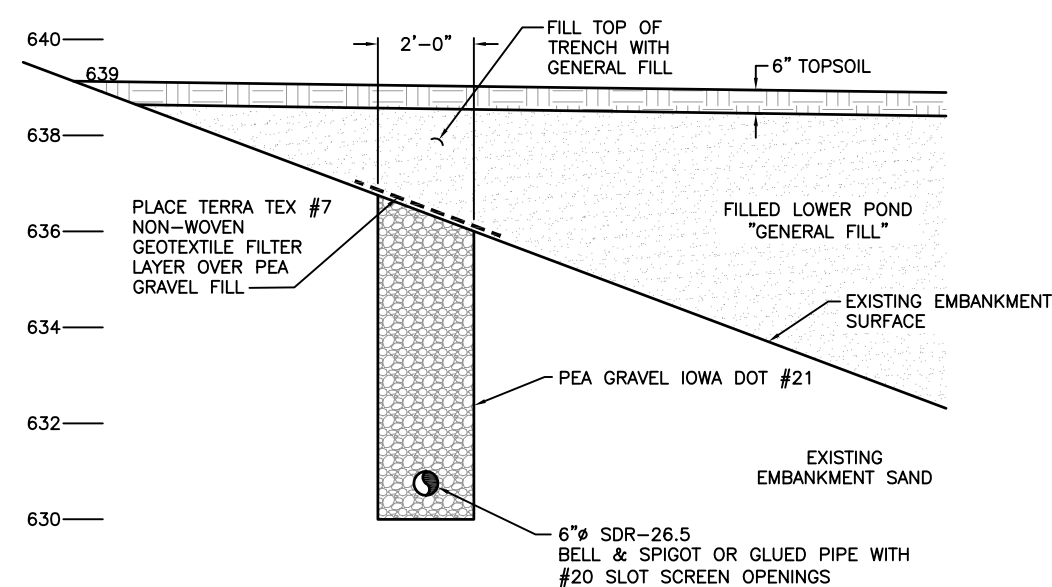
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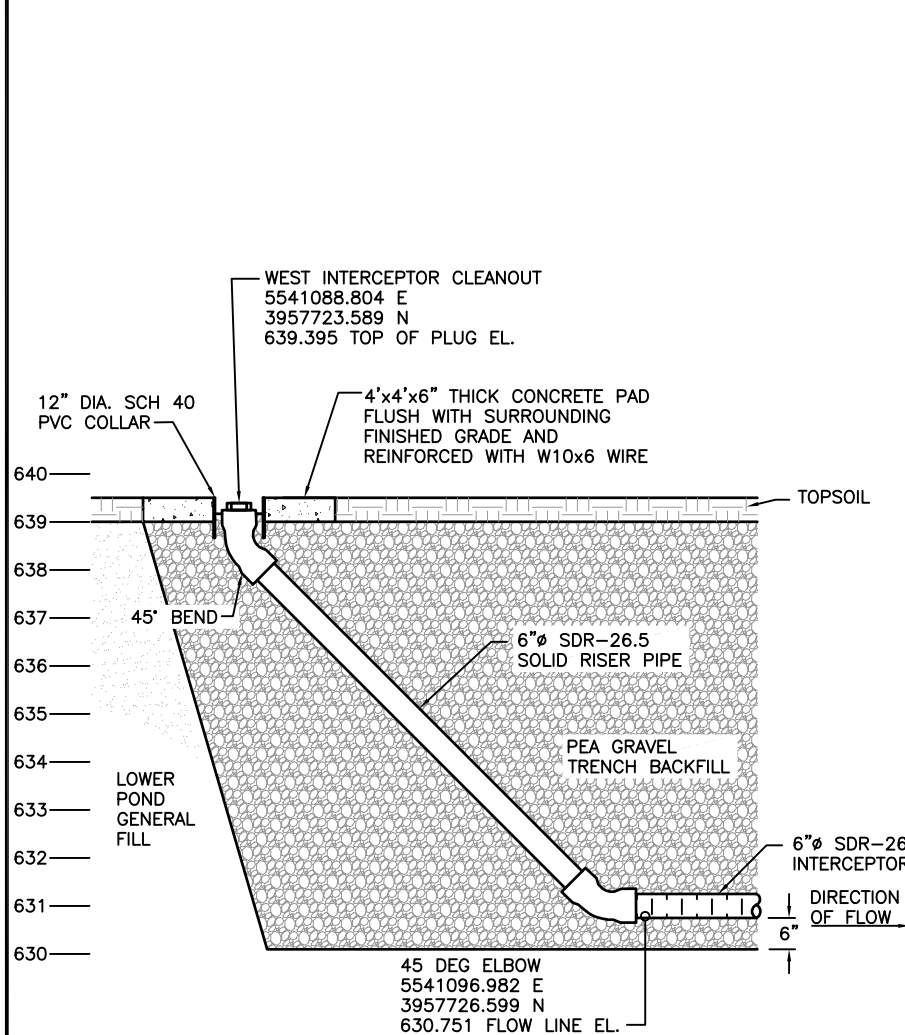
SECTION AT WEIR BOX #2 (A)
 SCALE: 1/4"=1'-0"



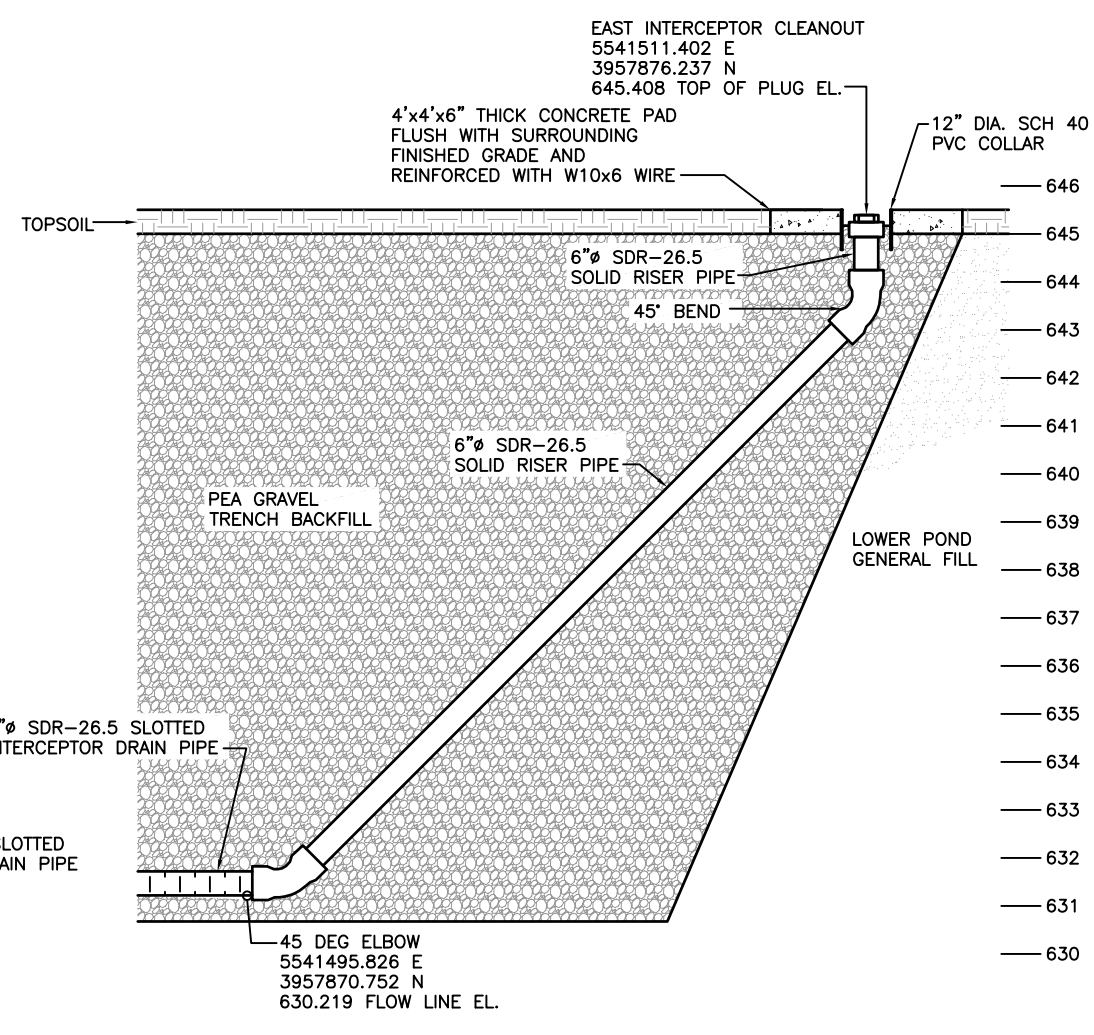
SECTION AT WEIR BOX #3 (B)
 SCALE: 1/4"=1'-0"



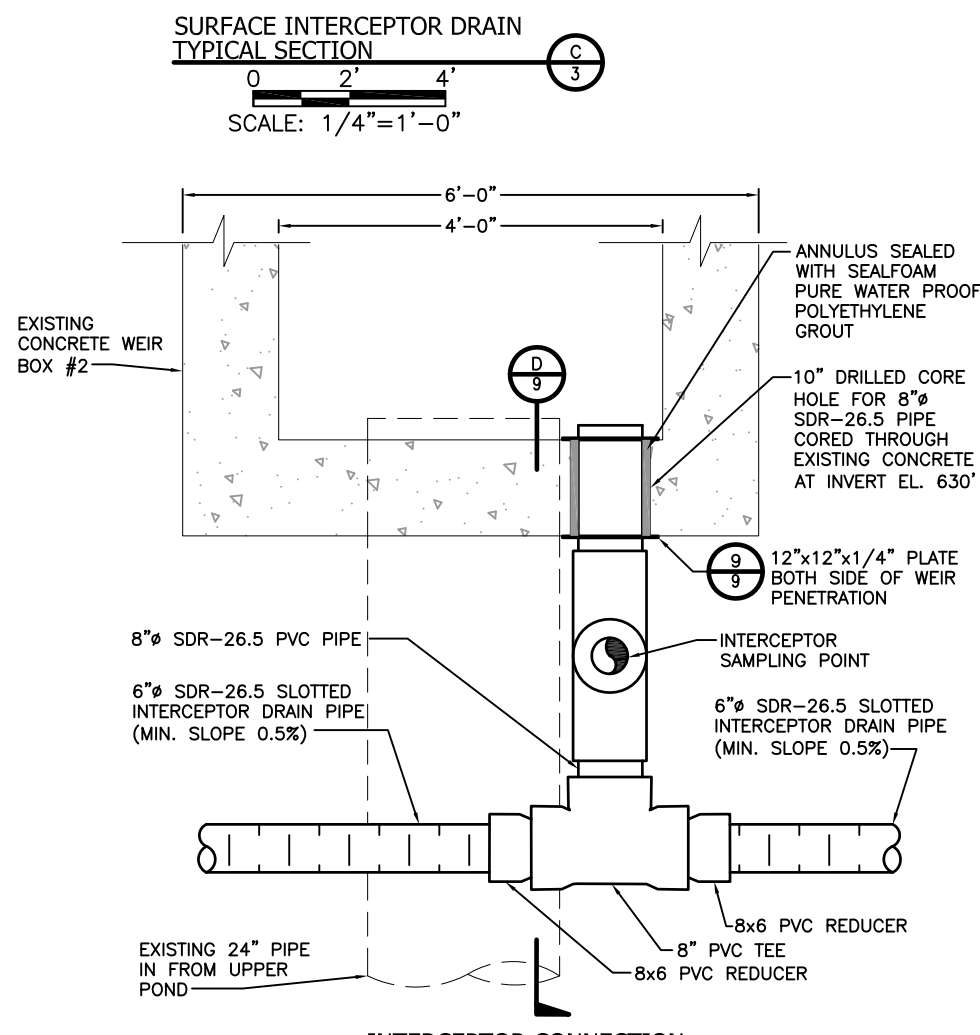
SURFACE INTERCEPTOR DRAIN TYPICAL SECTION (C)
 SCALE: 1/4"=1'-0"



WEST INTERCEPTOR CLEAN OUT DETAIL (7A)
 SCALE: 1/4"=1'-0"



EAST INTERCEPTOR CLEAN OUT DETAIL (7B)
 SCALE: 1/4"=1'-0"



INTERCEPTOR CONNECTION TO WEIR BOX (8)
 SCALE: 1/2"=1'-0"

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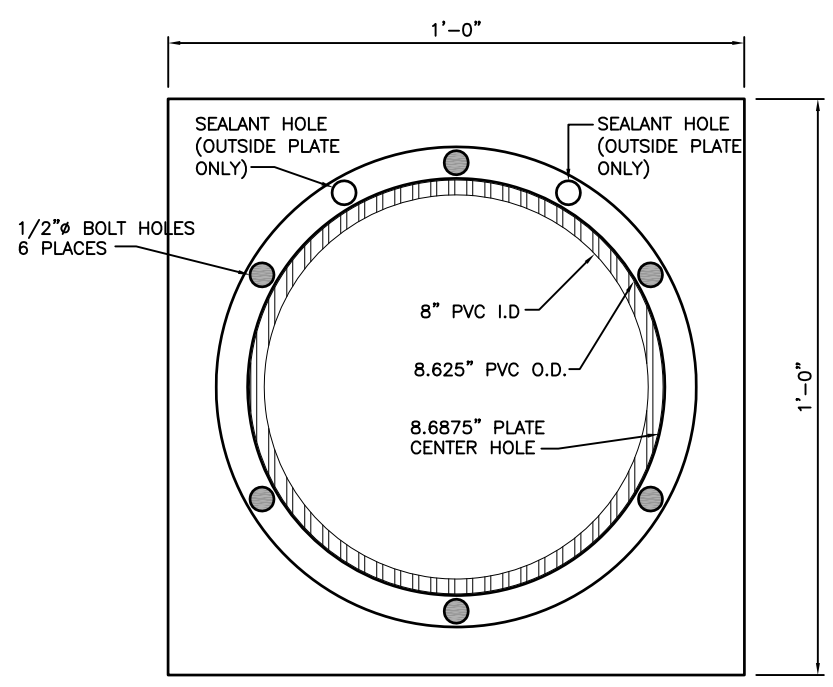
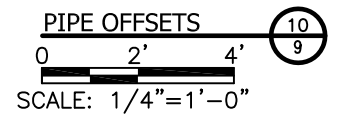
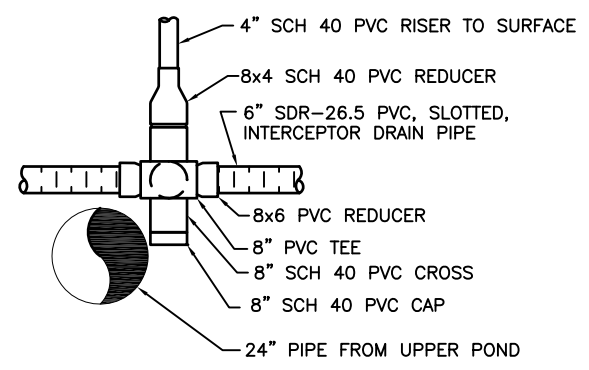
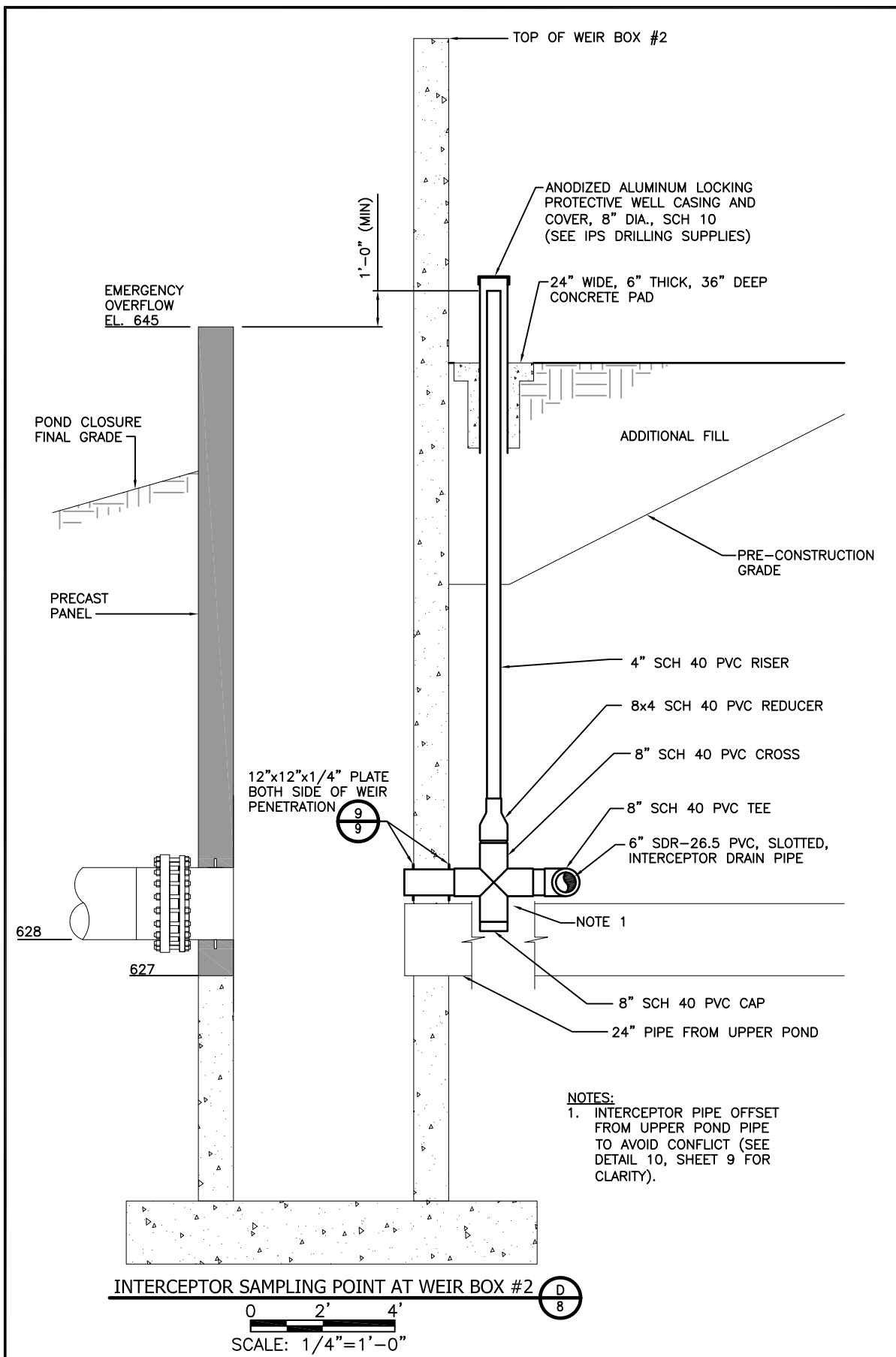
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DRAWING DESCRIPTION
 LOWER POND CLOSURE AS-BUILT DRAWINGS
 PIPING SECTIONS AND DETAILS
 PAGE 1

JOB 154.021.003
 SHT. 8
 DWG. 154021PC-06-09



- NOTES:**
1. 2 PLATES 12"x12"x1/4" INSIDE AND OUTSIDE.
 2. USED 3/8" BOLTS x 14" LONG. BOLT HEADS AT INSIDE PLATE.
 3. SEALANT HOLES ON OUTSIDE PLATE ONLY. SEAL WITH SEALFOAM PURE WATER PROOF POLYETHYLENE GROUT.

8" PVC PIPE CONNECTION PLATES TO WEIR 9/8 9/9
SCALE: NOT TO SCALE

INTERCEPTOR SAMPLING POINT AT WEIR BOX #2 D 8
SCALE: 1/4"=1'-0"

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 PIPING SECTIONS AND DETAILS
 PAGE 2

JOB	154.021.003
SHT.	9
DWG.	154021PC-06-09

INTERSTATE POWER AND LIGHT (IPL) COMPANY

LANSING GENERATING STATION PROJECT

SEEPAGE CONTROL CUT-OFF WALL AS-BUILT DRAWINGS

2320 POWER PLANT DR
LANSING, IA 52151
FEBRUARY 2016



LOCATION MAP
NOT TO SCALE

1. COVER SHEET
2. APRIL 2015 SITE SURVEY (PRE-CONSTRUCTION)
3. ALIGNMENT PLAN
4. PROFILE ALONG ALIGNMENT
5. CUT-OFF WALL GENERAL SECTION AND DETAILS
6. PERFORMANCE MONITOR DETAILS STA 4+53 & 8+21
7. PERFORMANCE MONITOR DETAILS STA 10+91
8. PIEZOMETER BORING LOGS PZ-1 & PZ-2
9. PIEZOMETER BORING LOGS PZ-3 & PZ-4
10. PIEZOMETER BORING LOGS PZ-5 & PZ-6
11. PIEZOMETER CONSTRUCTION LOGS PZ-1 & PZ-2
12. PIEZOMETER CONSTRUCTION LOGS PZ-3 & PZ-4
13. PIEZOMETER CONSTRUCTION LOGS PZ-5 & PZ-6

SHEET INDEX



AERIAL MAP
NOT TO SCALE

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REV	DATE	BY	APP	DESCRIPTION

SCALE: AS SHOWN DATE: 5-14-15
DRAWN BY: JFD CHECKED BY: TJH APPROVED BY: MWL

HARD HAT SERVICES[™]
Engineering, Construction and Management Solutions

CLIENT / LOCATION
INTERSTATE POWER AND LIGHT (IPL)
LANSING GENERATING STATION PROJECT
2320 POWER PLANT DR
LANSING, IA 52151

DRAWING DESCRIPTION
SEEPAGE CONTROL CUT-OFF WALL
AS-BUILT DRAWINGS
COVER SHEET

JOB	154.021.003
SHT.	1
DWG.	154021SW-01

UPPER AND LOWER CCR POND TOPOGRAPHIC SURVEY AND LOWER CCR POND BATHYMETRY
 at
 ALLIANT LANSING POWER GENERATING STATION
 for
 INTERSTATE POWER & LIGHT COMPANY - ALLIANT ENERGY
 BEING IN PART OF SECTION 2, TOWNSHIP 98 NORTH, RANGE 3 WEST OF THE FIFTH PRINCIPAL MERIDIAN, ALLAMAKEE COUNTY, IOWA.

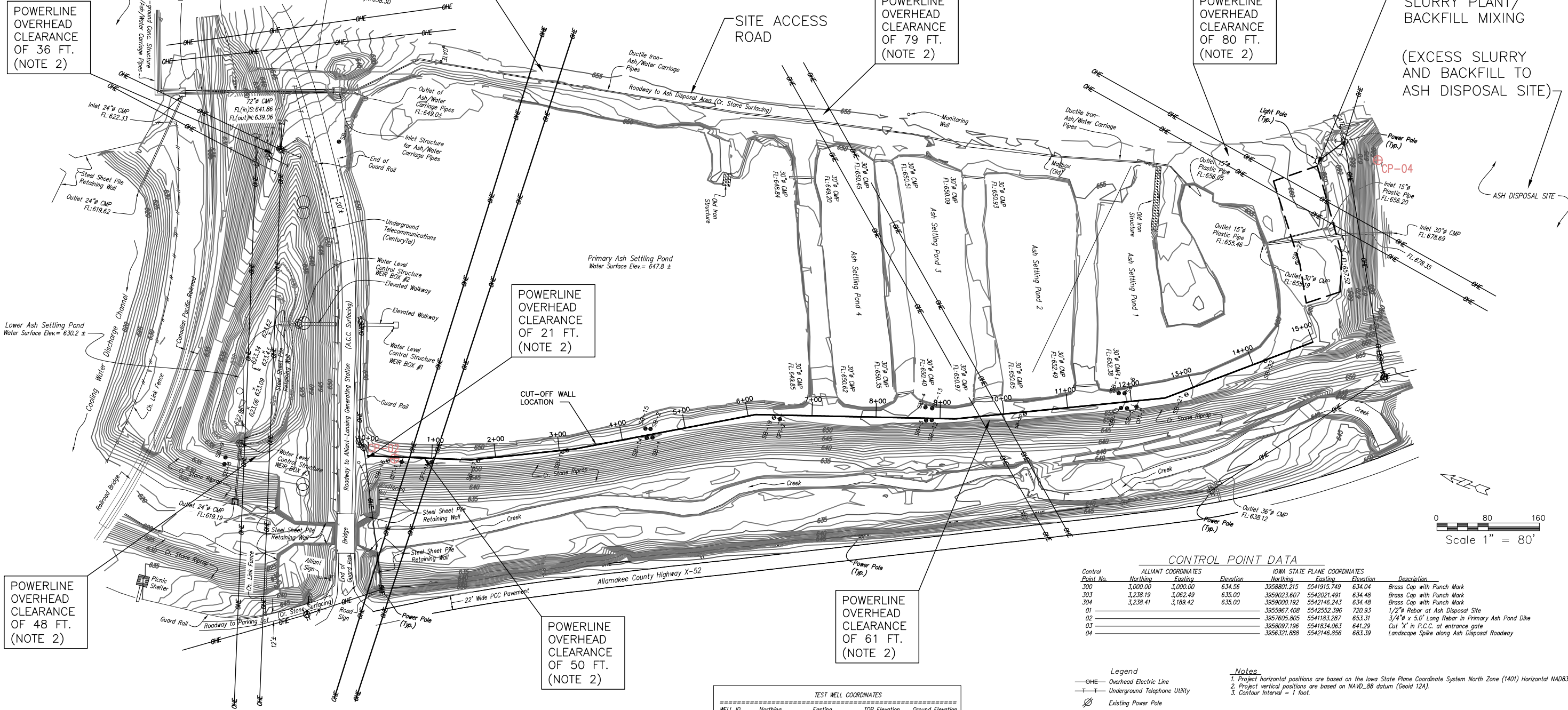
POWERLINE OVERHEAD CLEARANCE OF 36 FT. (NOTE 2)

POWERLINE OVERHEAD CLEARANCE OF 47 FT. (NOTE 2)

POWERLINE OVERHEAD CLEARANCE OF 79 FT. (NOTE 2)

POWERLINE OVERHEAD CLEARANCE OF 80 FT. (NOTE 2)

AREA AVAILABLE FOR SLURRY PLANT/BACKFILL MIXING (EXCESS SLURRY AND BACKFILL TO ASH DISPOSAL SITE)



POWERLINE OVERHEAD CLEARANCE OF 21 FT. (NOTE 2)

POWERLINE OVERHEAD CLEARANCE OF 48 FT. (NOTE 2)

POWERLINE OVERHEAD CLEARANCE OF 50 FT. (NOTE 2)

POWERLINE OVERHEAD CLEARANCE OF 61 FT. (NOTE 2)

CONTROL POINT DATA

Control Point No.	ALLIANT COORDINATES		Elevation	IOWA STATE PLANE COORDINATES		Description	
	Northing	Easting		Northing	Easting		
300	3,000.00	3,000.00	634.56	3958801.215	5541915.749	634.04	Brass Cap with Punch Mark
303	3,238.19	3,062.49	635.00	3959023.607	5542021.491	634.48	Brass Cap with Punch Mark
304	3,238.41	3,189.42	635.00	3959000.192	5542146.243	634.48	Brass Cap with Punch Mark
01				3955967.408	5542552.396	720.93	1/2" Rebar at Ash Disposal Site
02				3957805.805	5541183.287	653.31	3/4" x 5.0' Long Rebar in Primary Ash Pond Dike
03				3958097.196	5541834.063	641.29	Cut 'X' in P.C.C. at entrance gate
04				3956321.888	5542146.856	683.39	Landscape Spike along Ash Disposal Roadway

TEST WELL COORDINATES

WELL ID	Northing	Easting	TOP Elevation	Ground Elevation
SB-1	3957238.28	5541352.23	653.36	653.26
SB-2	3957245.81	5541363.76	652.66	652.63
SB-3	3956945.82	5541523.57	656.39	655.37
SB-4	3956853.80	5541542.37	655.88	655.34
SB-5	3956557.49	5541648.53	656.70	655.80
SB-6	3956569.09	5541669.35	656.19	655.97
SB-7	3957856.52	5541618.95	653.45	653.33
SB-8	3957852.40	5541084.50	641.74	638.43
SB-9	3957854.40	5541094.88	640.63	638.52
SB-10	NS	NS	656.38	655.85
SB-11	NS	NS	656.38	656.17
SB-12	NS	NS	656.40	655.44
SB-13	NS	NS	656.43	655.27
SB-14	NS	NS	654.37	653.15
SB-15	NS	NS	652.75	652.67

- Legend**
- OHE Overhead Electric Line
 - UT Underground Telephone Utility
 - EP Existing Power Pole
 - SB Temporary Well Location
 - SB Soil Boring Location
 - CPT Cone Penitrometer Test Location
 - CP Control Point
- Notes**
- Project horizontal positions are based on the Iowa State Plane Coordinate System North Zone (1401) Horizontal NAD83(2011).
 - Project vertical positions are based on NAVD_88 datum (Geoid 12A).
 - Contour Interval = 1 foot.

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REV	DATE	BY	APP	DESCRIPTION
2-29-16	DLS	MWL		AS-BUILT DRAWINGS
6-15-15	TJH	MWL		INCORPORATE IPL COMMENTS

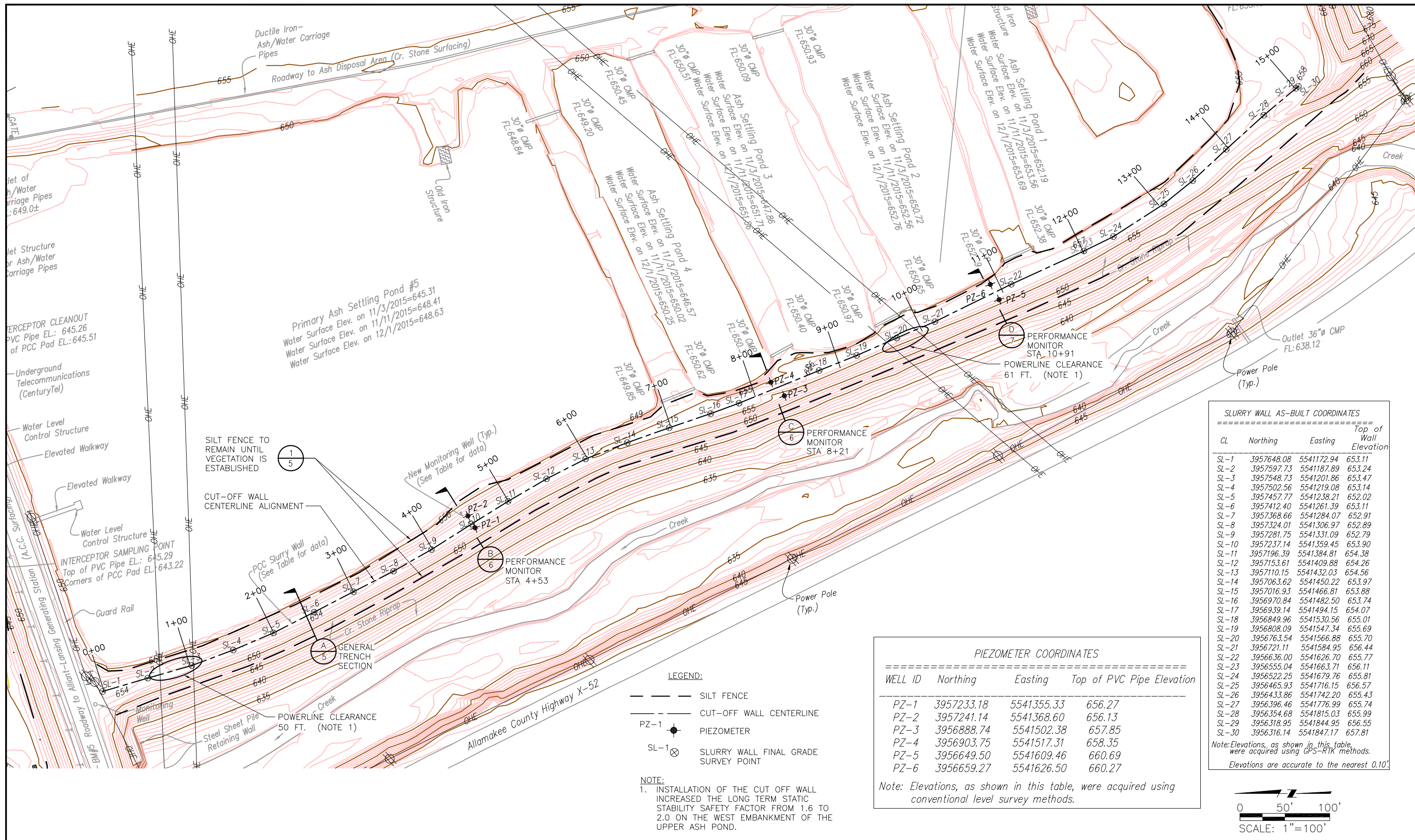
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HARD HAT SERVICES
 Engineering, Construction and Management Solutions

CLIENT / LOCATION
 INTERSTATE POWER AND LIGHT (IPL)
 LANSING GENERATING STATION PROJECT
 2320 POWER PLANT DR
 LANSING, IA 52151

DRAWING DESCRIPTION
 SEEPAGE CONTROL CUT-OFF WALL
 AS-BUILT DRAWINGS
 APRIL 2015 SITE SURVEY (PRE-CONSTRUCTION)

JOB 154.021.003
 SHT. 2
 DWG. 154021SW-02



SLURRY WALL AS-BUILT COORDINATES			
CL	Northing	Easting	Top of Wall Elevation
SL-1	3957648.08	5541172.94	653.11
SL-2	3957597.73	5541187.89	653.24
SL-3	3957548.73	5541201.86	653.47
SL-4	3957502.56	5541219.08	653.14
SL-5	3957457.77	5541238.21	652.02
SL-6	3957412.40	5541261.39	653.11
SL-7	3957368.66	5541284.07	652.91
SL-8	3957324.01	5541306.97	652.89
SL-9	3957281.75	5541331.09	652.79
SL-10	3957237.14	5541359.45	653.90
SL-11	3957196.39	5541384.81	654.38
SL-12	3957153.61	5541409.88	654.26
SL-13	3957110.15	5541432.03	654.56
SL-14	3957063.62	5541450.22	653.97
SL-15	3957016.93	5541466.81	653.88
SL-16	3956970.84	5541482.50	653.74
SL-17	3956939.14	5541494.15	654.07
SL-18	3956849.96	5541530.56	655.01
SL-19	3956808.09	5541547.34	655.69
SL-20	3956763.54	5541566.88	655.70
SL-21	3956721.11	5541584.95	656.44
SL-22	3956636.00	5541626.70	655.77
SL-23	3956555.04	5541663.71	656.11
SL-24	3956522.25	5541679.76	655.81
SL-25	3956465.93	5541716.15	656.57
SL-26	3956433.86	5541742.20	655.43
SL-27	3956396.46	5541776.99	655.74
SL-28	3956354.68	5541815.03	655.99
SL-29	3956318.95	5541844.95	656.55
SL-30	3956316.14	5541847.17	657.81

Note: Elevations, as shown in this table, were acquired using GPS-RTK methods.
Elevations are accurate to the nearest 0.10'

PIEZOMETER COORDINATES			
WELL ID	Northing	Easting	Top of PVC Pipe Elevation
PZ-1	3957233.18	5541355.33	656.27
PZ-2	3957241.14	5541368.60	656.13
PZ-3	3956888.74	5541502.38	657.85
PZ-4	3956903.75	5541517.31	658.35
PZ-5	3956649.50	5541609.46	660.69
PZ-6	3956659.27	5541626.50	660.27

Note: Elevations, as shown in this table, were acquired using conventional level survey methods.

LEGEND:

- SILT FENCE
- CUT-OFF WALL CENTERLINE
- PZ-1 ● PIEZOMETER
- SL-1 ⊗ SLURRY WALL FINAL GRADE SURVEY POINT

NOTE:

1. INSTALLATION OF THE CUT OFF WALL INCREASED THE LONG TERM STATIC STABILITY SAFETY FACTOR FROM 1.6 TO 2.0 ON THE WEST EMBANKMENT OF THE UPPER ASH POND.

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1	2-29-16	DLS	MWL	AS-BUILT DRAWINGS
2	6-15-15	TJH	MWL	INCORPORATE IPL COMMENTS

SCALE: AS SHOWN DATE: 5-14-15

DRAWN BY: JFD CHECKED BY: TJH APPROVED BY: MWL

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CLIENT / LOCATION

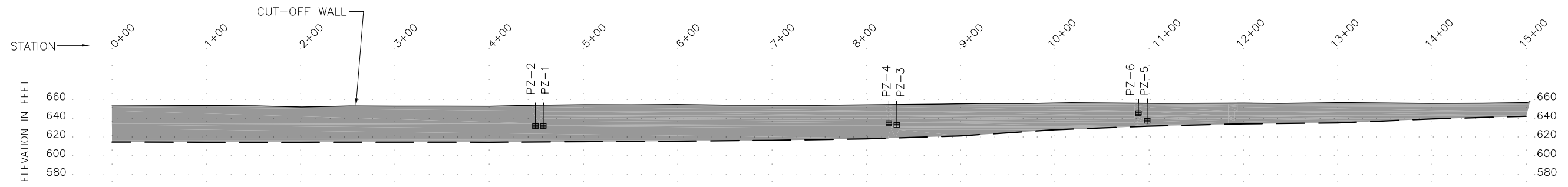
INTERSTATE POWER AND LIGHT (IPL)
LANSING GENERATING STATION PROJECT
2320 POWER PLANT DR
LANSING, IA 52151

DRAWING DESCRIPTION

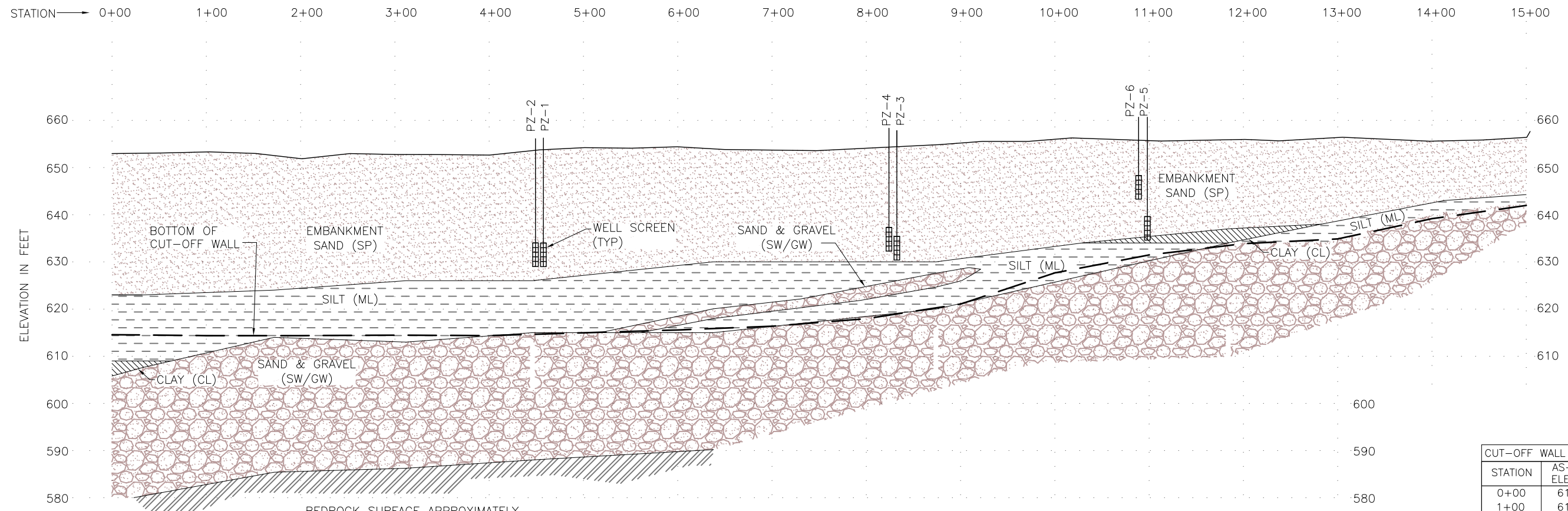
SEEPAGE CONTROL CUT-OFF WALL
AS-BUILT DRAWINGS

ALIGNMENT PLAN

JOB	154.021.003
SHT.	3
DWG.	154021SW-03



CUT-OFF WALL ALIGNMENT PROFILE
 0 60 120 180
 SCALE IN FEET



BEDROCK SURFACE APPROXIMATELY
 580-590 FEET AT SB16 - SB19
 (IOWA GEOLOGICAL SURVEY)

**CUT-OFF WALL ALIGNMENT PROFILE
 SHOWING EXISTING GEOLOGY**
 VERTICALLY EXAGGERATED 5x
 0 60 120 180
 HORIZONTAL SCALE IN FEET

NOTES:
 1. ELEVATIONS IN FEET NAVD (1988) DATUM.

BLAST FURNACE SLAG, CEMENT,
 BENTONITE WALL MIX DESIGN
 GROUND BLAST FURNACE SLAG = 7.0%
 PORTLAND CEMENT = 0.3%
 PREMIUM GEL BENTONITE = 4.4%
 WATER = 88.2%
 POLYMAX ADDITIVE = 0.1%

CUT-OFF WALL STATION	BOTTOM AS-BUILT ELEVATION	DEPTH BGS
0+00	614.6'	39'
1+00	614.4'	38.5'
2+00	614.4'	38.5'
3+00	614.5'	38.5'
4+00	614.4'	38.5'
5+00	615.0'	38'
6+00	615.6'	38'
7+00	616.4'	38'
8+00	618.0'	37'
9+00	621.1'	34.5'
10+00	627.7'	28'
11+00	631.5'	24.5'
12+00	633.9'	25'
13+00	634.9'	21.5'
14+00	639.2'	17.5'
15+00	642.0'	14.5'

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△	6-15-15	TJH	MWL	INCORPORATE IPL COMMENTS

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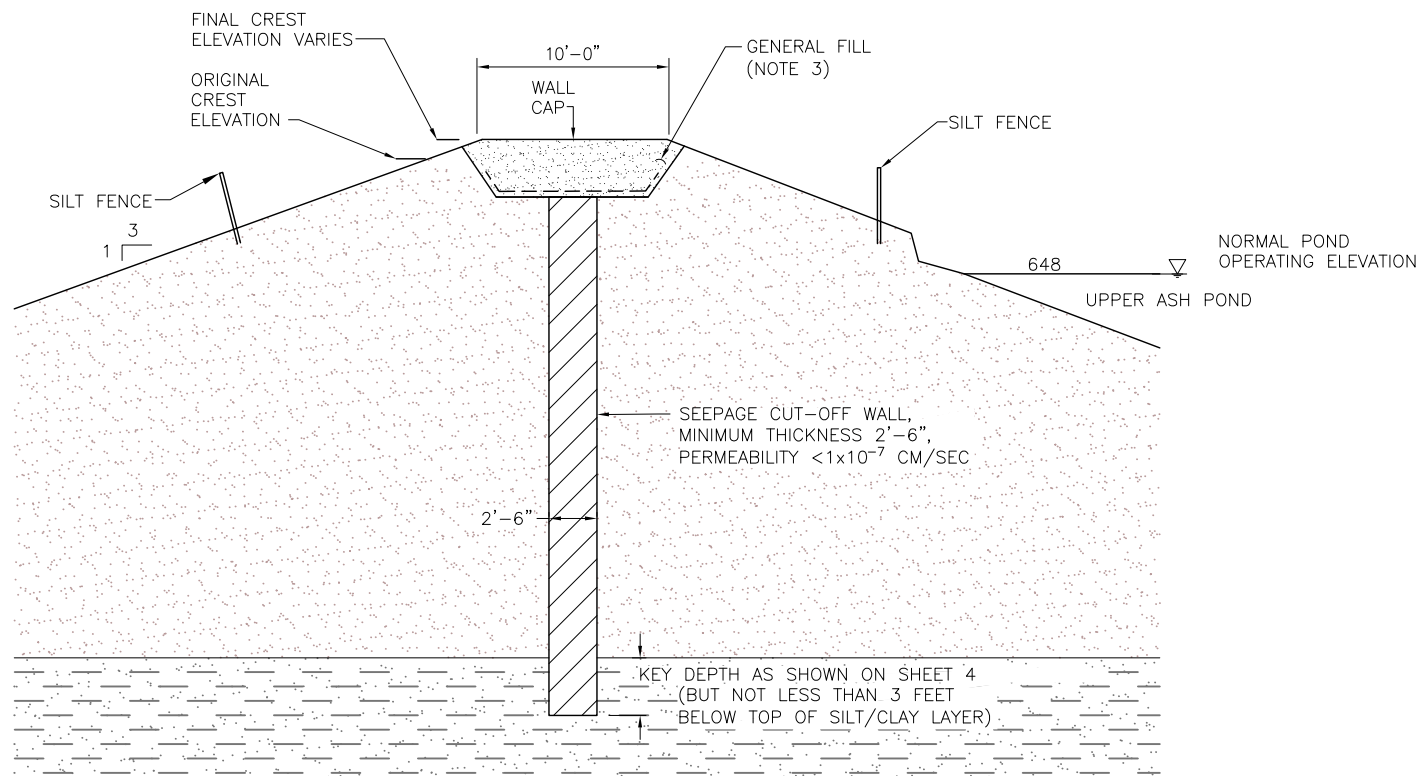


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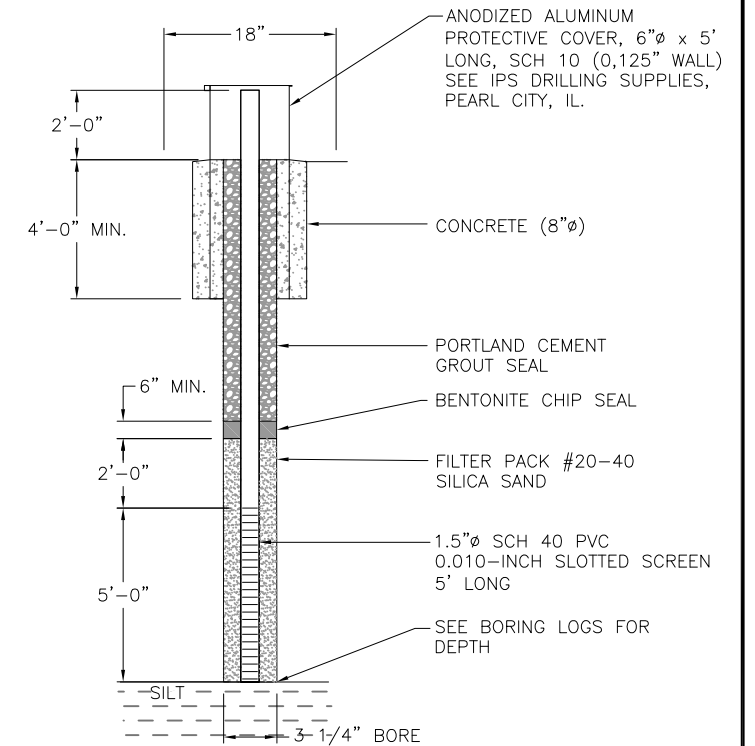
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 INTERSTATE POWER AND LIGHT (IPL)
 LANSING GENERATING STATION PROJECT
 2320 POWER PLANT DR
 LANSING, IA 52151

DRAWING DESCRIPTION
 SEEPAGE CONTROL CUT-OFF WALL
 AS-BUILT DRAWINGS
 PROFILE ALONG ALIGNMENT

JOB	154.021.003
SHT.	4
DWG.	154021SW-04



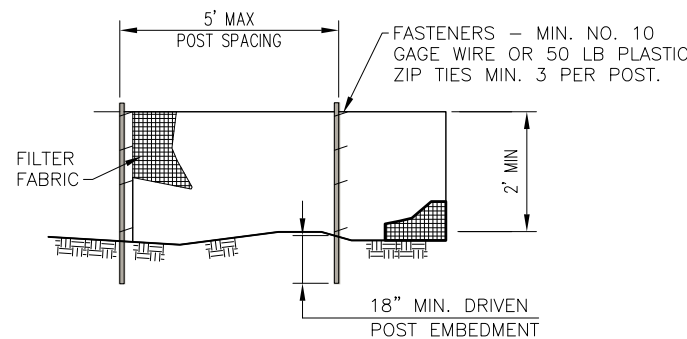
CUT-OFF WALL GENERAL SECTION (A/3)



NOTE:

- REFER TO WELL CONSTRUCTION LOGS, SHEETS 11, 12, 13 FOR FURTHER CONSTRUCTION DETAILS.

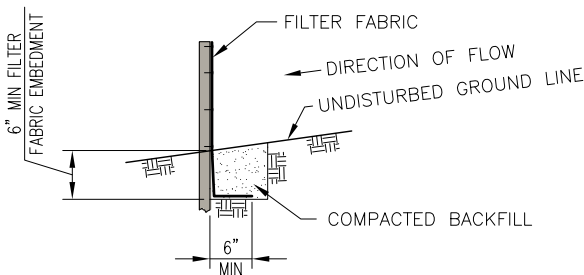
PIEZOMETER DETAIL (2/6, 2/7)
(TYPICAL OF 6)



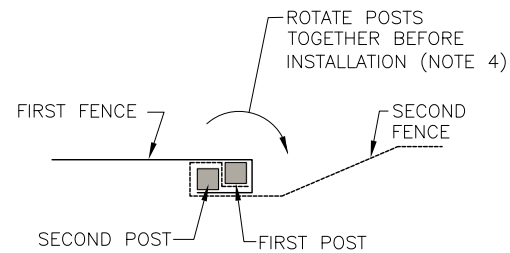
ELEVATION

NOTES:

- TEMPORARY SILT FENCE WAS INSTALLED PRIOR TO ANY GRADING WORK IN THE AREA TO BE PROTECTED. FENCE WAS MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD AND REMOVED IN CONJUNCTION WHEN VEGETATION IS WELL ESTABLISHED.
- FILTER FABRIC MET THE REQUIREMENTS OF SPECIFICATIONS WITH EQUIVALENT OPENING SIZE OF AT LEAST 30 FOR NONWOVEN AND 50 FOR WOVEN.
- FENCE POSTS WERE BOTH WOOD POST WITH A MINIMUM CROSS-SECTIONAL AREA OF 1.5" X 1.5" AND A STANDARD STEEL POST.
- ALL SPLICES WERE COMPLETED AT A POST ACCORDING TO SPLICE DETAIL. PLACE THE END POST OF THE SECOND FENCE INSIDE THE END POST OF THE FIRST FENCE. ROTATE BOTH POSTS TOGETHER AT LEAST 180 DEGREES TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL. CUT THE FABRIC NEAR THE BOTTOM OF THE POSTS TO ACCOMMODATE THE 6 INCH FLAP. THEN DRIVE BOTH POSTS AND BURY THE FLAP. COMPACT BACKFILL WELL.



FABRIC ANCHOR DETAIL



SPLICE DETAIL-PLAN VIEW

SILT FENCE DETAIL (1/3)

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	△	2-29-16	DLS	MWL	AS-BUILT DRAWINGS
	△	6-15-15	TJH	MWL	INCORPORATE IPL COMMENTS
	REV	DATE	BY	APP	DESCRIPTION

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DRAWN BY: JFD | CHECKED BY: TJH | APPROVED BY: MWL



CLIENT / LOCATION
INTERSTATE POWER AND LIGHT (IPL)
LANSING GENERATING STATION PROJECT
2320 POWER PLANT DR
LANSING, IA 52151

DRAWING DESCRIPTION
SEEPAGE CONTROL CUT-OFF WALL AS-BUILT DRAWINGS
CUT-OFF WALL GENERAL SECTION AND DETAILS

JOB 154.021.003
SHT. 5
DWG. 154021SW-05-07

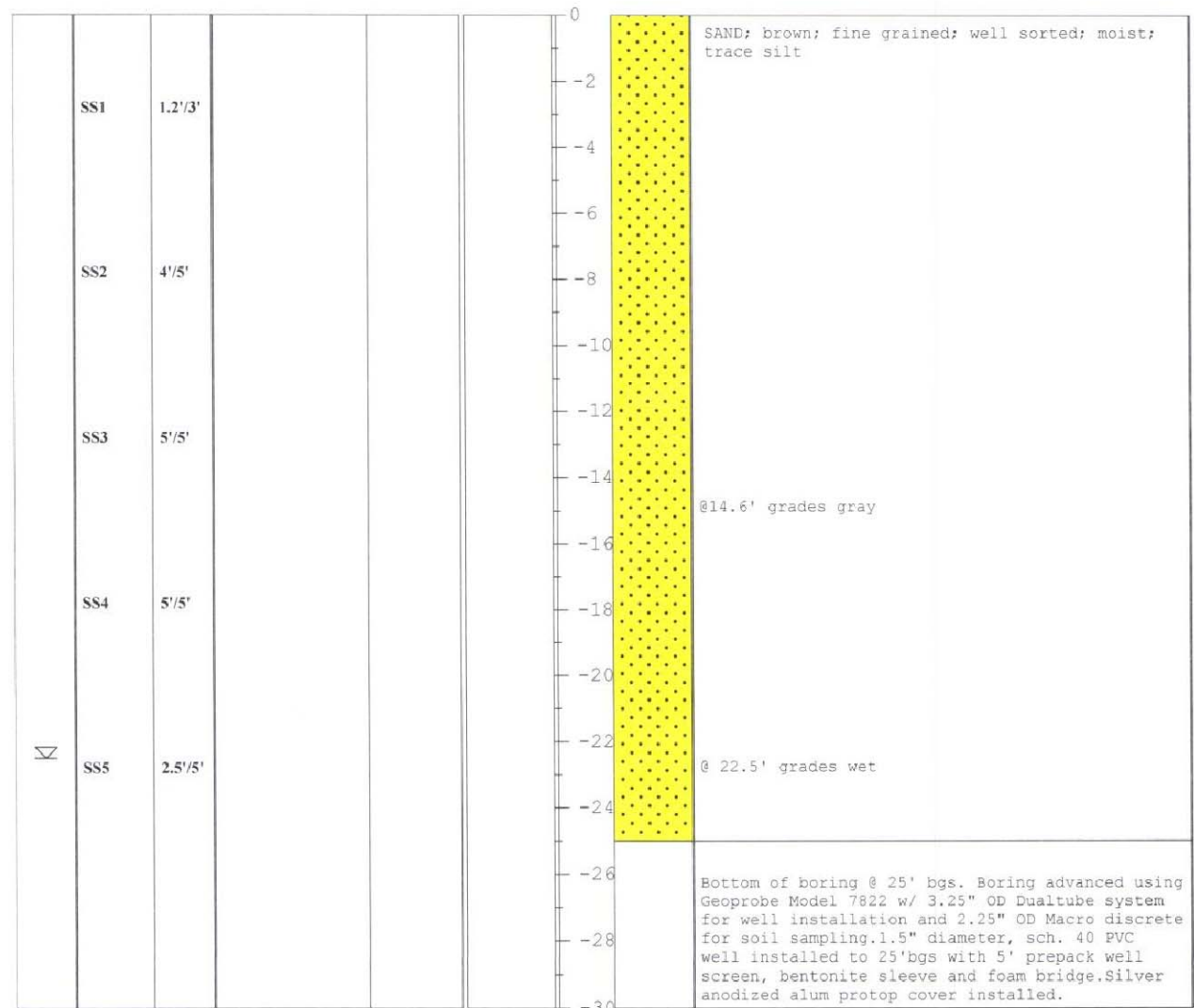


BORING LOG

CLIENT: Alliant Energy COORDINATES: *N NOT SURVEYED*
E NOT SURVEYED

PROJECT: Lansing Cutoff Wall BORING NO.: **PZ-1**
 page 1 of 1

DEPTH TO WATER WHILE DRILLING	SAMPLE NO. AND TYPE	SAMPLE RECOVERY	SAMPLE INFORMATION	PID READINGS	PID GRAPH	DEPTH IN FEET	PROFILE	DESCRIPTION
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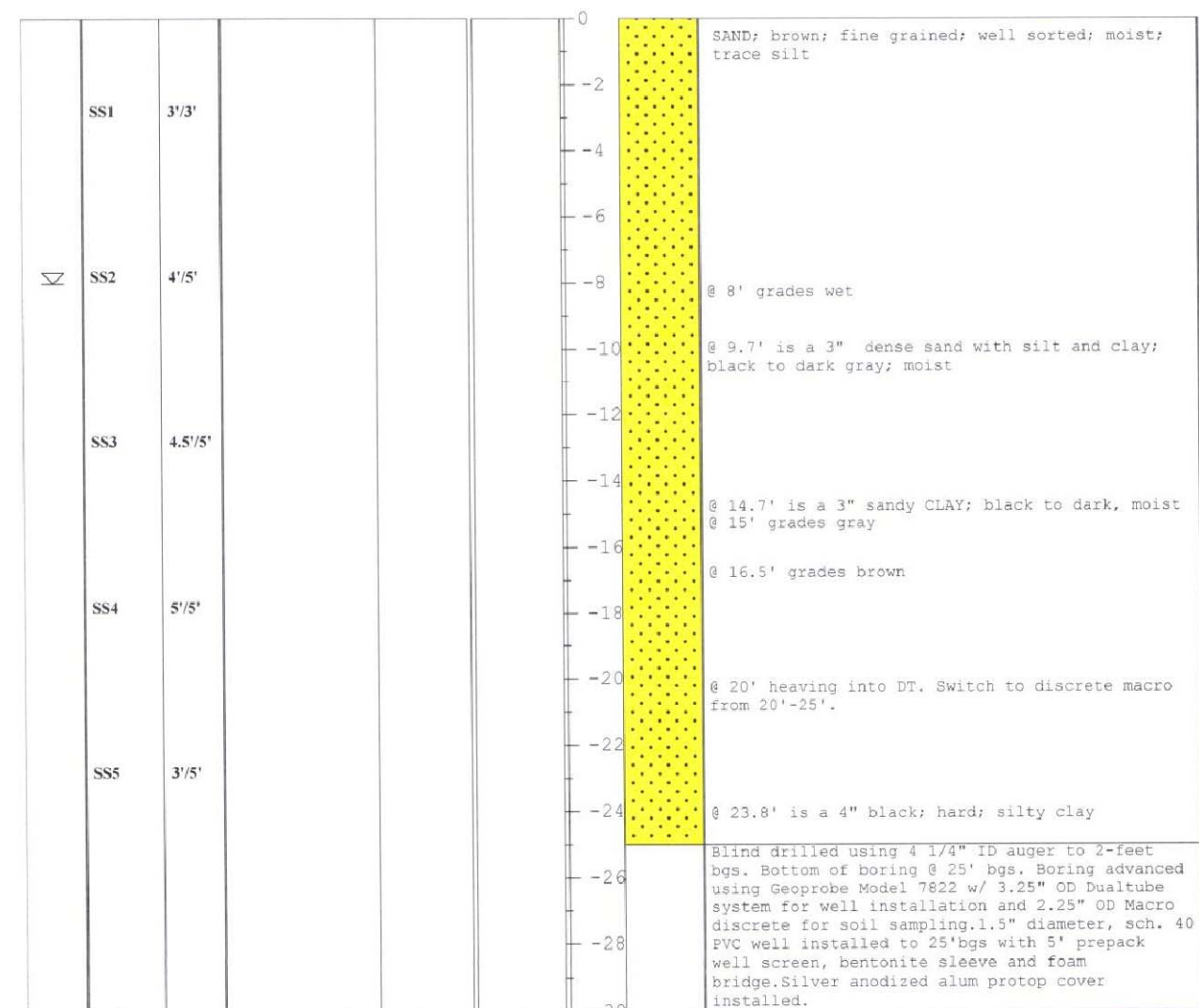


BORING LOG

CLIENT: Alliant Energy COORDINATES: *N NOT SURVEYED*
E NOT SURVEYED

PROJECT: Lansing Cutoff Wall BORING NO.: **PZ-2**
 page 1 of 1

DEPTH TO WATER WHILE DRILLING	SAMPLE NO. AND TYPE	SAMPLE RECOVERY	SAMPLE INFORMATION	PID READINGS	PID GRAPH	DEPTH IN FEET	PROFILE	DESCRIPTION
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△	2-29-16	DLS	MWL	AS-BUILT DRAWINGS
REV	DATE	BY	APP	DESCRIPTION

SCALE: NONE DATE: 2-29-16

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CLIENT / LOCATION

INTERSTATE POWER AND LIGHT (IPL)
 LANSING GENERATING STATION PROJECT
 2320 POWER PLANT DR
 LANSING, IA 52151

DRAWING DESCRIPTION

SEEPAGE CONTROL CUT-OFF WALL
 AS-BUILT DRAWINGS
 PIEZOMETER BORING LOGS
 PZ-1 & PZ-2

JOB	154.021.003
SHT.	8
DWG.	154021SW-08-13



BORING LOG

CLIENT: Alliant Energy

COORDINATES: N NOT SURVEYED
E NOT SURVEYED

PROJECT: Lansing Cutoff Wall

BORING NO.: PZ-3

page 1 of 1

DEPTH TO WATER WHILE DRILLING	SAMPLE NO. AND TYPE	SAMPLE RECOVERY	SAMPLE INFORMATION	PID READINGS	PID GRAPH	DEPTH IN FEET	PROFILE	DESCRIPTION
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						0		SAND; black to gray; fine to coarse; poorly sorted; moist; trace to some silt & bottom ash.
	SS1	3.8'/5'				-2		SAND; brown; fine grained; well sorted; moist; trace silt
	SS2	4.5'/5'				-8		
	SS3	4.7'/5'				-12		@ 12' grades wet (?) @ 12.5'-13.8' is gray
	SS4	5'/5'				-18		
∇	SS5	4'/5'				-22		@ 22' grades gray @ 23' grades wet
						-26		Bottom of boring @ 25' bgs. Boring advanced using Geoprobe Model 7822. 2.25" OD Macro discrete for soil sampling and 4.25" ID augers blind drilled to depth for well installation. 1.5" diameter, sch. 40 PVC well installed to 25'bgs with 5' prepack well screen, bentonite sleeve and foam bridge. Silver anodized alum protop cover installed.
						-30		



BORING LOG

CLIENT: Alliant Energy

COORDINATES: N NOT SURVEYED
E NOT SURVEYED

PROJECT: Lansing Cutoff Wall

BORING NO.: PZ-4

page 1 of 1

DEPTH TO WATER WHILE DRILLING	SAMPLE NO. AND TYPE	SAMPLE RECOVERY	SAMPLE INFORMATION	PID READINGS	PID GRAPH	DEPTH IN FEET	PROFILE	DESCRIPTION
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						0		SAND; brown to black; fine to coarse grained; poorly sorted; moist; trace to some silt and bottom ash.
	SS1	3.2'/5'				-2		
	SS2	4'/5'				-8		SAND; brown; fine grained; well sorted; wet; trace silt
	SS3	5'/5'				-12		
	SS4	5'/5'				-18		
	SS5	5'/5'				-22		@ 20' grades light gray
						-26		Blind drilled using 4 1/4" ID auger to 2-feet bgs. Bottom of boring @ 25' bgs. Boring advanced using Geoprobe Model 7822 w/ 3.25" OD Dualtube system for well installation and 2.25" OD Macro discrete for soil sampling. 1.5" diameter, sch. 40 PVC well installed to 25'bgs with 5' prepack well screen, bentonite sleeve and foam bridge. Silver anodized alum protop cover installed.
						-30		

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1	2-29-16	DLS	MWL	AS-BUILT DRAWINGS

SCALE: NONE DATE: 2-29-16
 DRAWN BY: JFD CHECKED BY: TJH APPROVED BY: MWL

HARD HAT SERVICESTM
 Engineering, Construction and Management Solutions

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 LANSING, IA 52151

DRAWING DESCRIPTION
 SEEPAGE CONTROL CUT-OFF WALL
 AS-BUILT DRAWINGS
 PIEZOMETER BORING LOGS
 PZ-3 & PZ-4

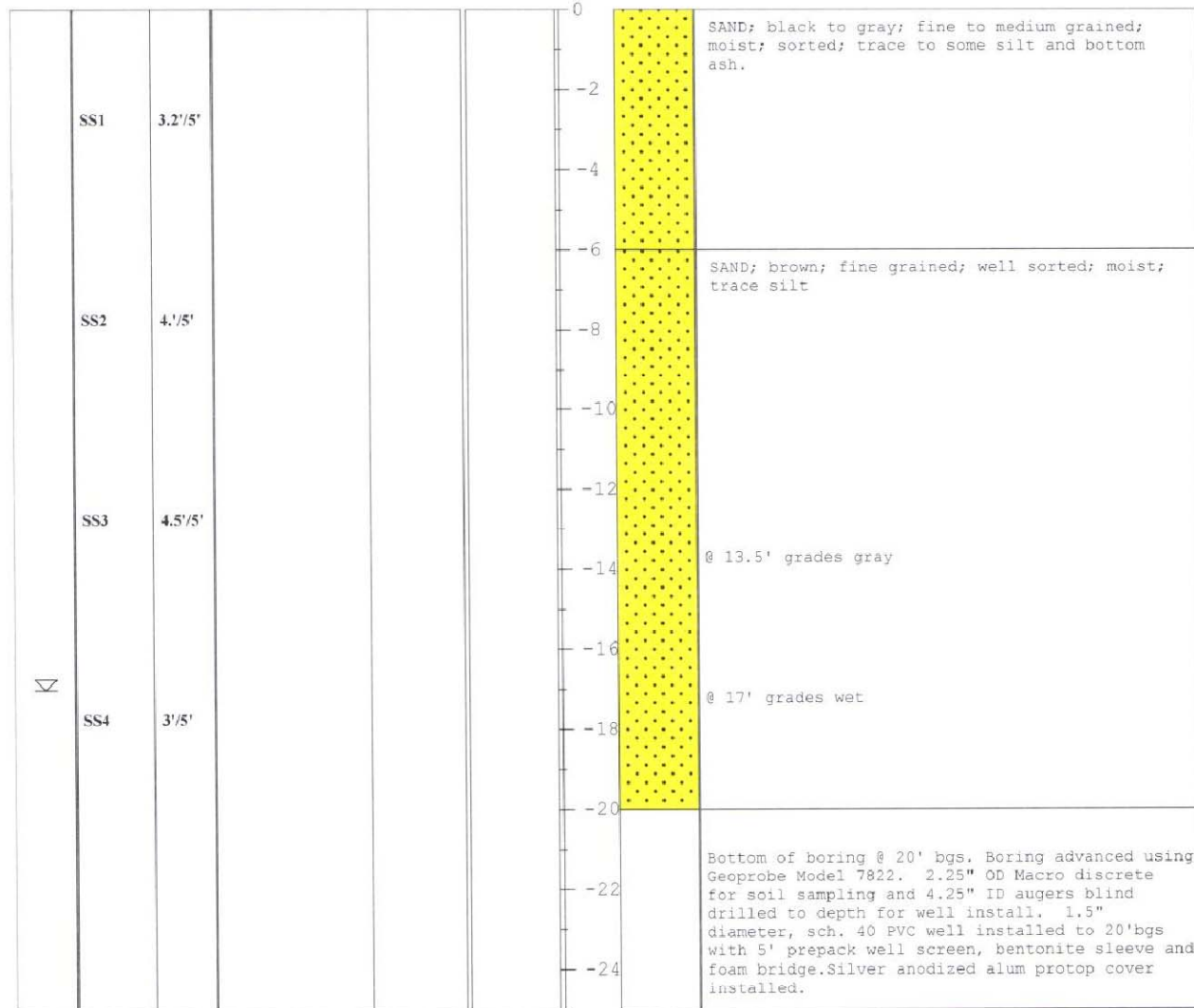
JOB	154.021.003
SHT.	9
DWG.	154021SW-08-13



BORING LOG

CLIENT: Alliant Energy
 COORDINATES: *N NOT SURVEYED*
E NOT SURVEYED
 PROJECT: Lansing Cutoff Wall BORING NO.: PZ-5
 page 1 of 1

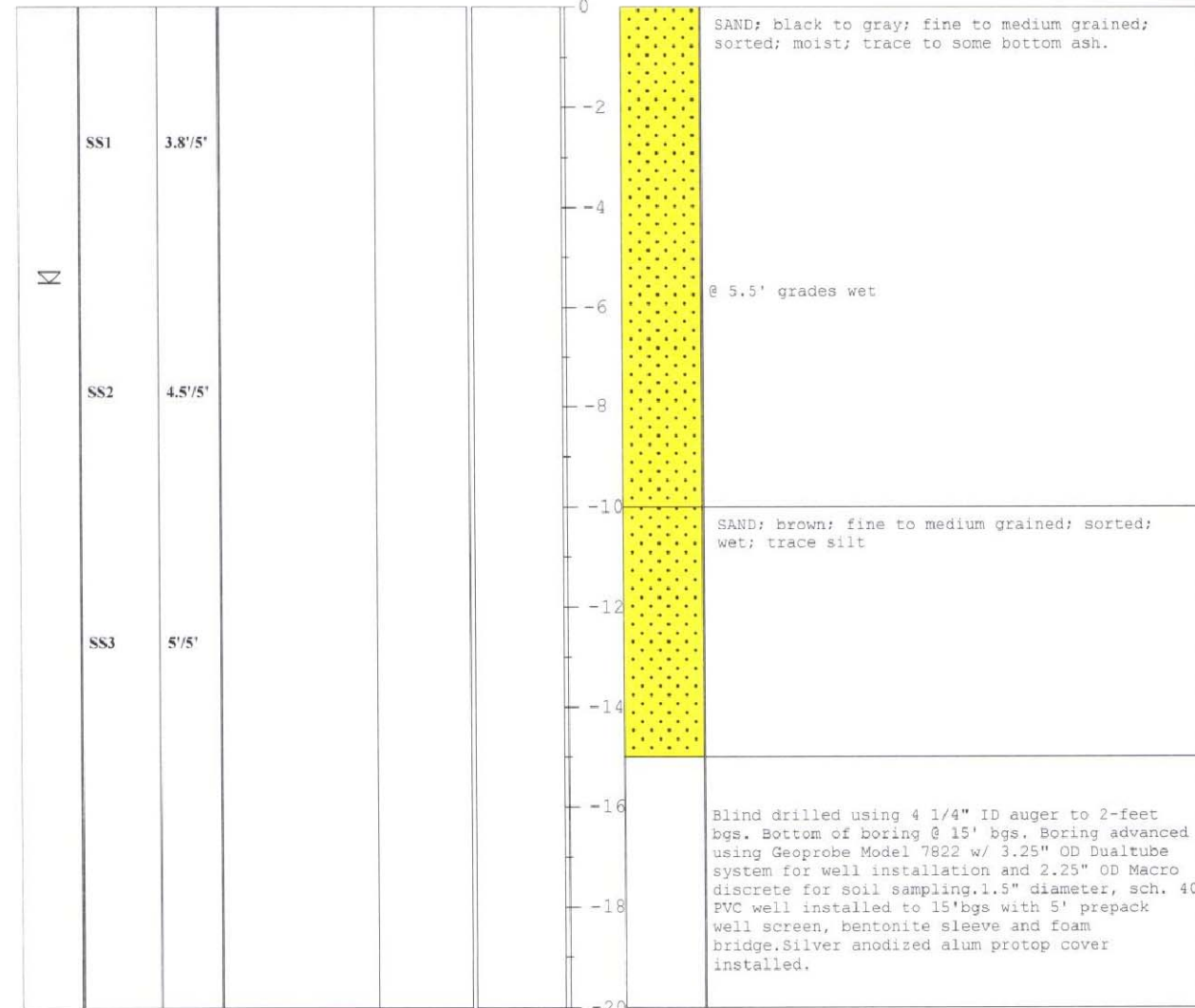
DEPTH TO WATER WHILE DRILLING	SAMPLE NO. AND TYPE	SAMPLE RECOVERY	SAMPLE INFORMATION	PID READINGS	PID GRAPH	DEPTH IN FEET	PROFILE	DESCRIPTION
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BORING LOG

CLIENT: Alliant Energy
 COORDINATES: *N NOT SURVEYED*
E NOT SURVEYED
 PROJECT: Lansing Cutoff Wall BORING NO.: PZ-6
 page 1 of 1

DEPTH TO WATER WHILE DRILLING	SAMPLE NO. AND TYPE	SAMPLE RECOVERY	SAMPLE INFORMATION	PID READINGS	PID GRAPH	DEPTH IN FEET	PROFILE	DESCRIPTION
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△	2-9-16	DLS	MWL	AS-BUILT DRAWINGS
REV	DATE	BY	APP	DESCRIPTION

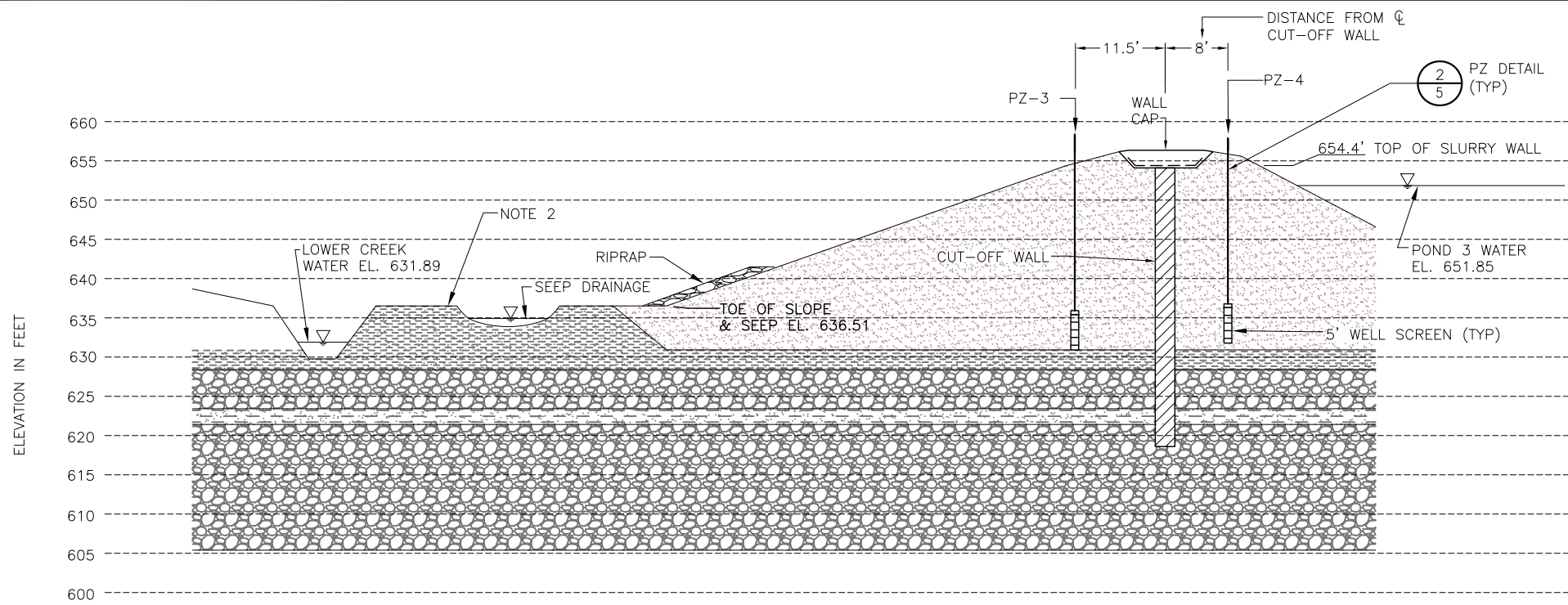
SCALE: NONE DATE: 2-29-16
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Engineering, Construction and Management Solutions

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 INTERSTATE POWER AND LIGHT (IPL)
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 2320 POWER PLANT DR
 LANSING, IA 52151

DRAWING DESCRIPTION
 SEEPAGE CONTROL CUT-OFF WALL
 AS-BUILT DRAWINGS
 PIEZOMETER BORING LOGS
 PZ-5 & PZ-6

JOB	154.021.003
SHT.	10
DWG.	154021SW-08-13

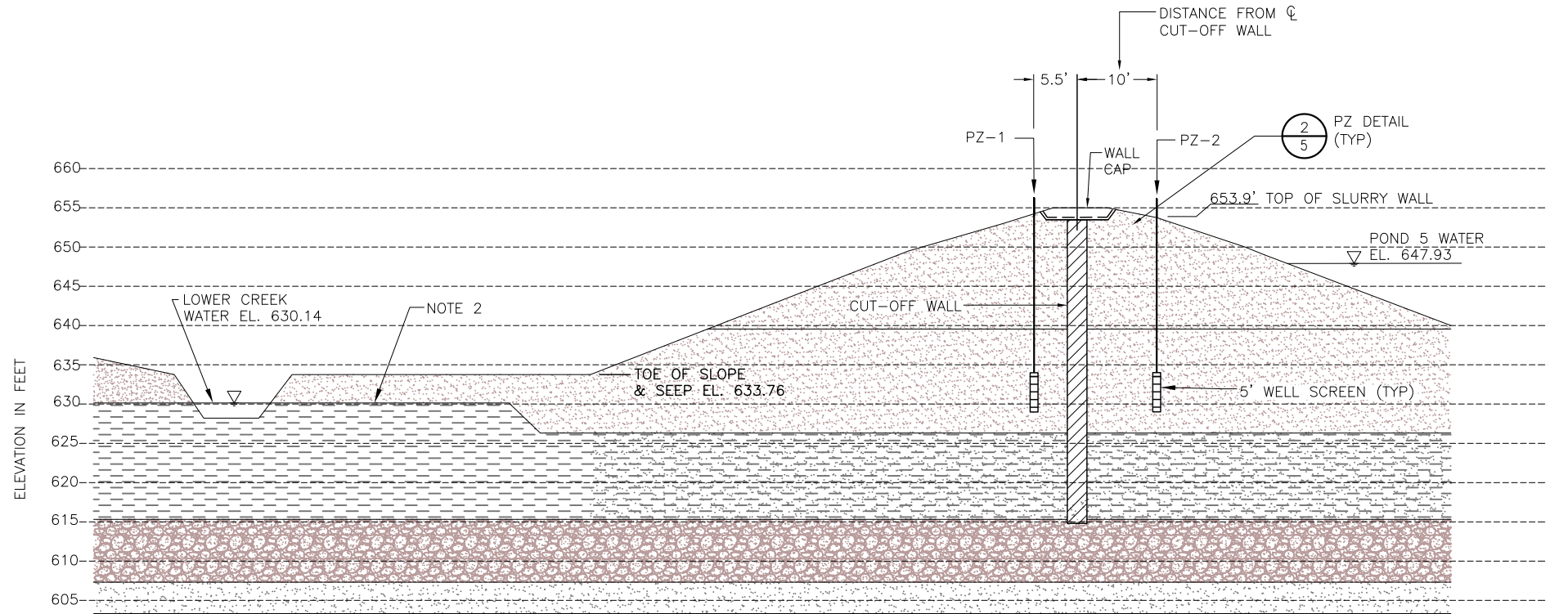


PERFORMANCE MONITOR (STA 8+21) C
3

0 10 20
SCALE IN FEET

- LEGEND:
- MEDIUM DENSE BROWN FINE TO MEDIUM SAND (SP)
 - MEDIUM DENSE GRAY SANDY SILT (ML)
 - MEDIUM DENSE GRAY GRAVEL (GW)
 - VERY LOOSE GRAY SANDY SILT (ML)
 - SURFACE WATER ELEVATION
 - GROUND WATER ELEVATION

- NOTES:
1. SEE SOIL BORING LOGS FOR ADDITIONAL DETAILS REGARDING SOIL PROPERTIES.
 2. ORIGINAL GRADE SARGENT & LUNDY S-1.



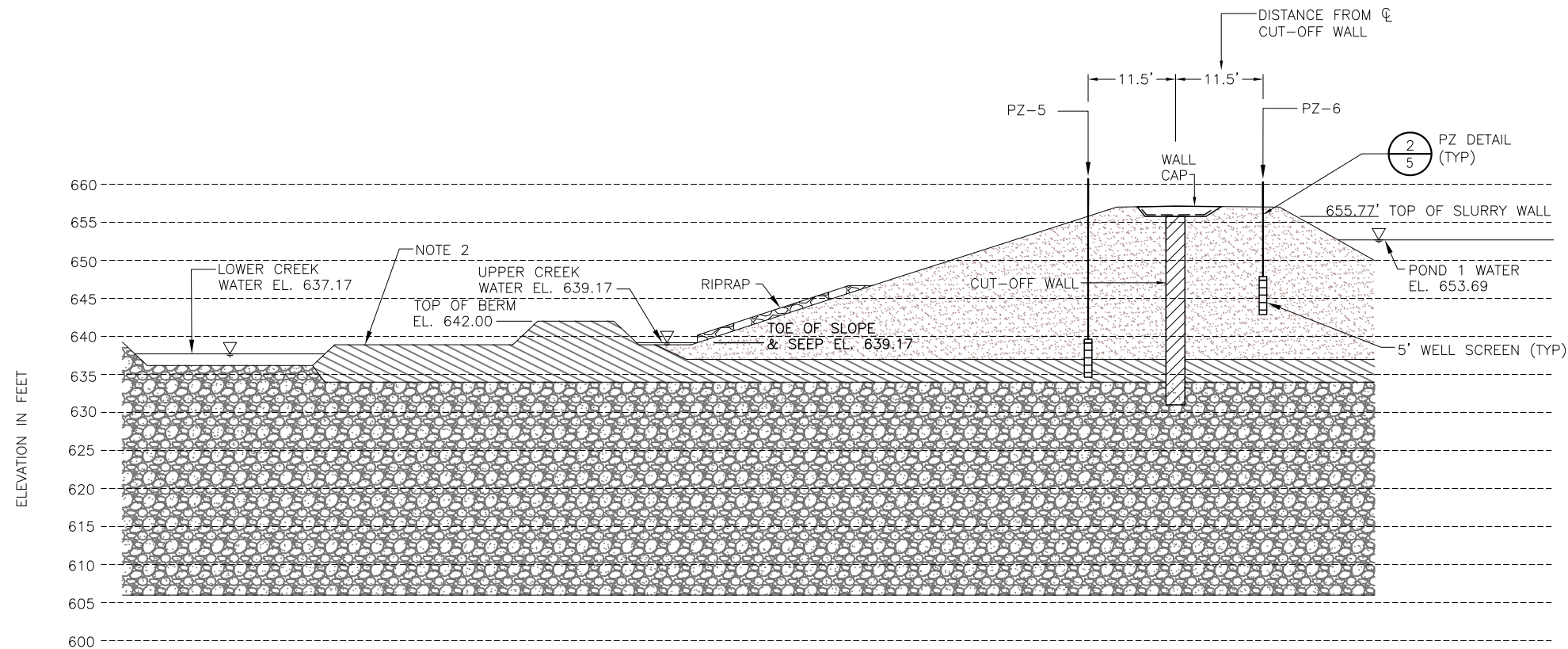
PERFORMANCE MONITOR (STA 4+53) B
3

0 10 20
SCALE IN FEET

- LEGEND:
- MEDIUM DENSE BROWN FINE TO MEDIUM SAND (SP)
 - LOOSE BROWN FINE TO MEDIUM SAND (SP)
 - VERY LOOSE GRAY SANDY SILT (ML)
 - MEDIUM DENSE BROWN SAND AND GRAVEL (SW/GW)
 - MEDIUM DENSE LIGHT GRAY COARSE GRAINED SAND

- NOTES:
1. ORIGINAL GRADE SARGENT & LUNDY S-1.

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	▲					DRAWN BY: JFD	CHECKED BY: TJH	INTERSTATE POWER AND LIGHT (IPL)	SEEPAGE CONTROL CUT-OFF WALL	154.021.003
	▲	2-29-16	DLS	MWL	AS-BUILT DRAWINGS	APPROVED BY: MWL	LANSING GENERATING STATION PROJECT	AS-BUILT DRAWINGS	SHT.	6
	▲	6-15-15	TJH	MWL	INCORPORATE IPL COMMENTS		2320 POWER PLANT DR	PERFORMANCE MONITOR DETAILS	DWG.	154021SW-05-07
	REV	DATE	BY	APP	DESCRIPTION	HARD HAT SERVICES™ Engineering, Construction and Management Solutions		LANSING, IA 52151		



NOTES:
 1. ORIGINAL GRADE SARGENT & LUNDY S-1.


LEGEND:
 [Pattern] MEDIUM DENSE BROWN FINE TO MEDIUM SAND (SP)
 [Pattern] SOFT BLACK SILTY CLAY (CL)
 [Pattern] MEDIUM DENSE SAND AND GRAVEL (SW/GW)

PERFORMANCE MONITOR (STA 10+91) D
3
 0 10 20
 SCALE IN FEET

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SCALE: AS SHOWN | DATE: 5-14-15
 DRAWN BY: JFD | CHECKED BY: TJH | APPROVED BY: MWL



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DRAWING DESCRIPTION
 SEEPAGE CONTROL CUT-OFF WALL
 AS-BUILT DRAWINGS
 PERFORMANCE MONITOR DETAILS
 STA 10+91

JOB	154.021.003
SHT.	7
DWG.	154021SW-05-07



BORING LOG

CLIENT: Alliant Energy

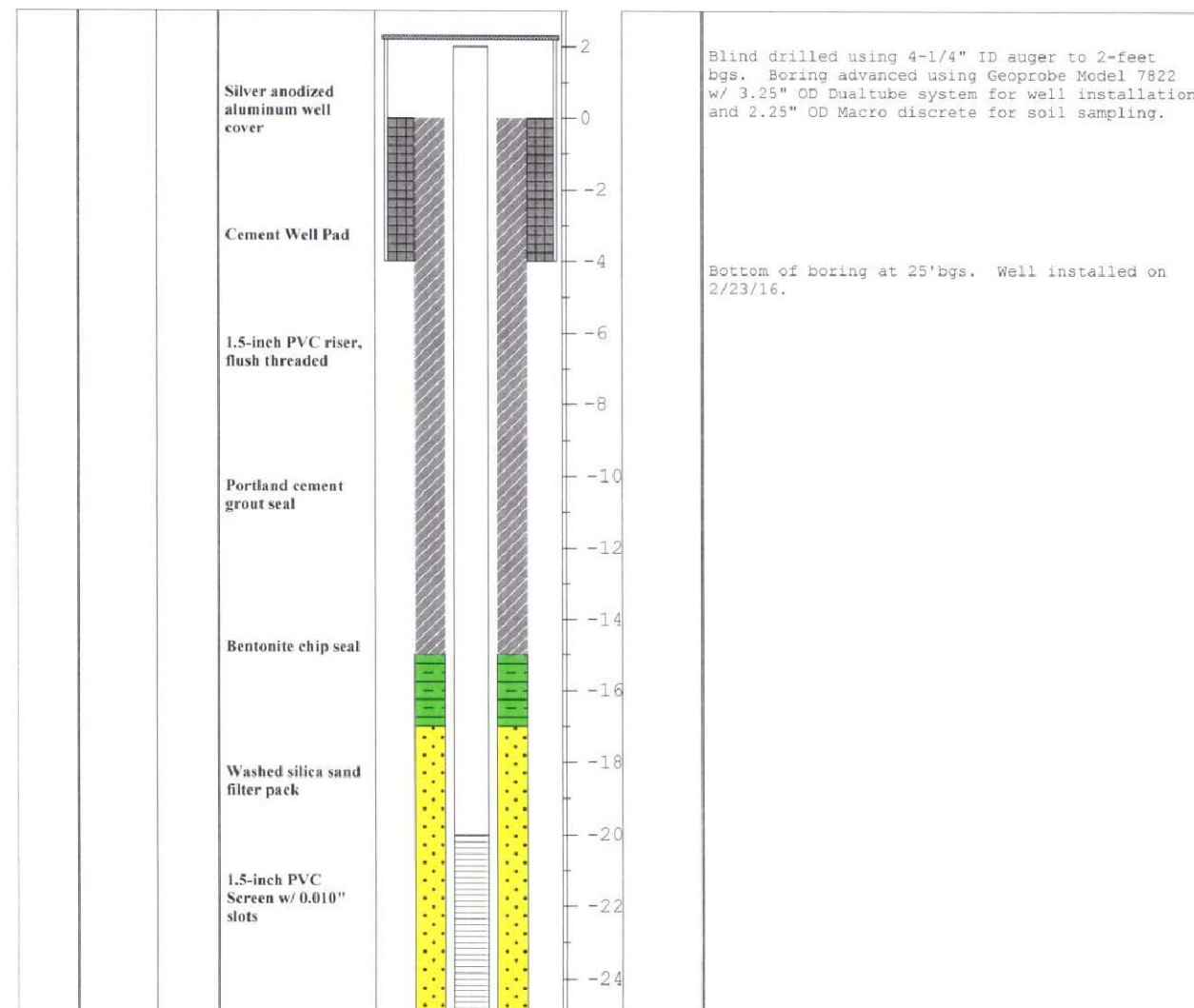
COORDINATES: *N NOT SURVEYED*
E NOT SURVEYED

PROJECT: Lansing Cutoff Wall

BORING NO.: PZ-1

page 1 of 1

DEPTH TO WATER WHILE DRILLING	SAMPLE NO. AND TYPE	SAMPLE RECOVERY	WELL CONSTRUCTION	WELL CONSTRUCTION	DEPTH IN FEET	PROFILE	LOGGED BY: <i>John Noyes</i>	EDITED BY: <i>John Noyes</i>	CHECKED BY: <i>Bob Solak</i>	DATE BEGAN: <i>02/23/16</i>	DATE FINISHED: <i>02/23/16</i>	GROUND SURFACE ELEVATION:	DESCRIPTION
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BORING LOG

CLIENT: Alliant Energy

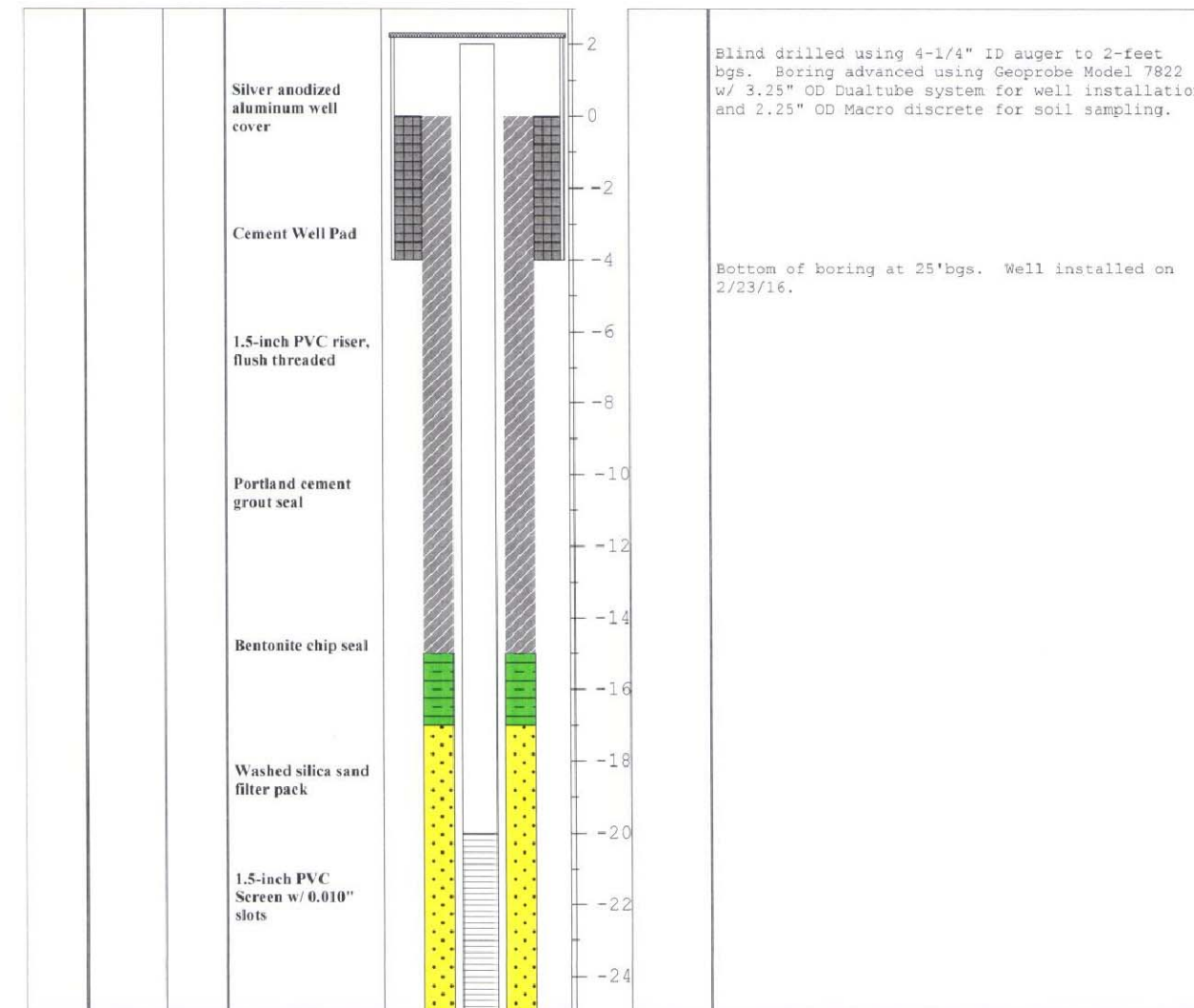
COORDINATES: *N NOT SURVEYED*
E NOT SURVEYED

PROJECT: Lansing Cutoff Wall

BORING NO.: PZ-2

page 1 of 1

DEPTH TO WATER WHILE DRILLING	SAMPLE NO. AND TYPE	SAMPLE RECOVERY	WELL CONSTRUCTION	WELL CONSTRUCTION	DEPTH IN FEET	PROFILE	LOGGED BY: <i>John Noyes</i>	EDITED BY: <i>John Noyes</i>	CHECKED BY: <i>Bob Solak</i>	DATE BEGAN: <i>02/23/16</i>	DATE FINISHED: <i>02/23/16</i>	GROUND SURFACE ELEVATION:	DESCRIPTION
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REV	DATE	BY	APP	DESCRIPTION
2-29-16	DLS	MWL		AS-BUILT DRAWINGS

SCALE: NONE | DATE: 6-29-16
 DRAWN BY: JFD | CHECKED BY: TJH | APPROVED BY: MWL

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Engineering, Construction and Management Solutions

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 LANSING, IA 52151

DRAWING DESCRIPTION
 SEEPAGE CONTROL CUT-OFF WALL
 AS-BUILT DRAWINGS
 PIEZOMETER CONSTRUCTION LOGS
 PZ-1 & PZ-2

JOB 154.021.003
 SHT. 11
 DWG. 154021SW-08-13



BORING LOG

CLIENT: Alliant Energy

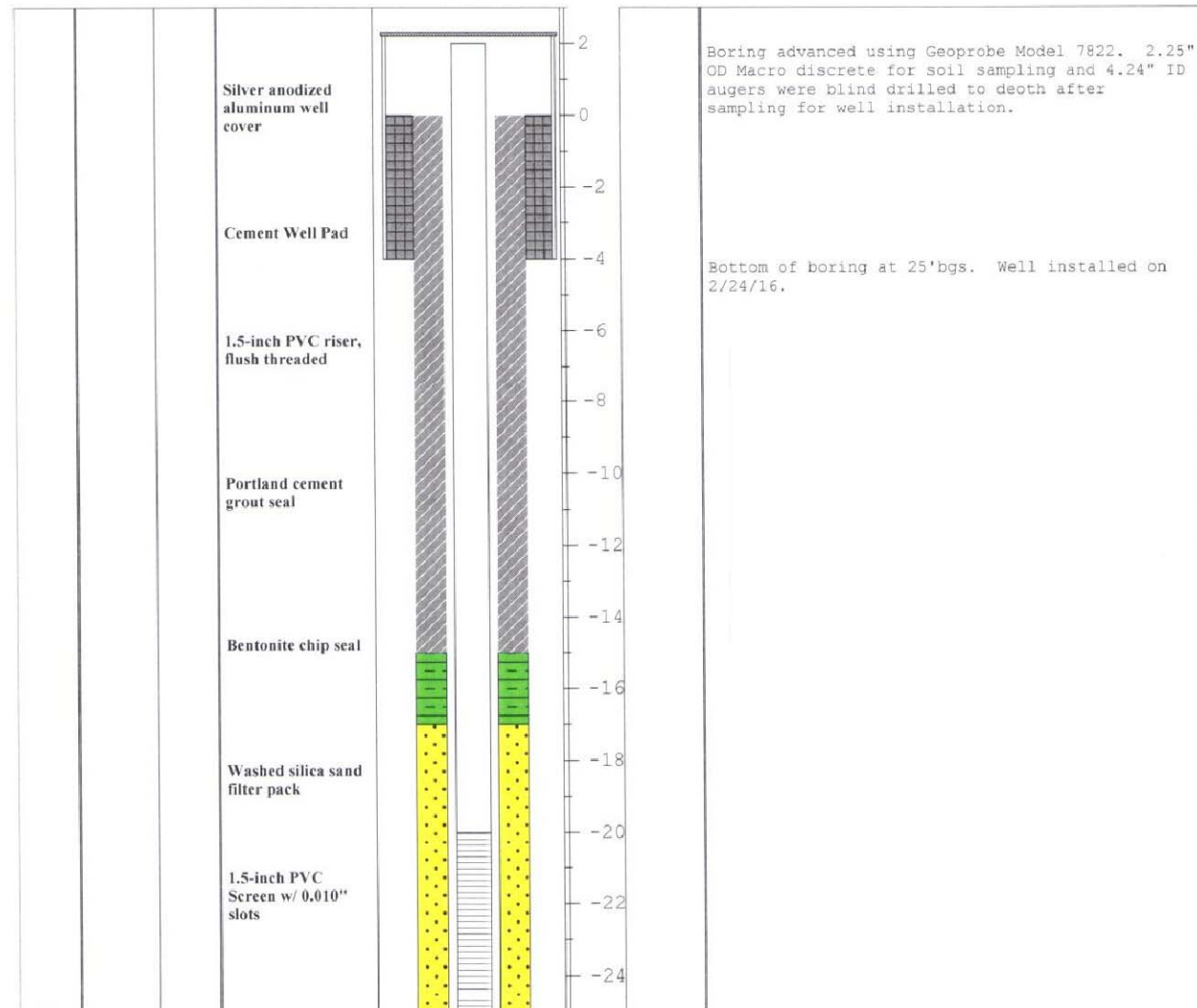
COORDINATES: *N NOT SURVEYED*
E NOT SURVEYED

PROJECT: Lansing Cutoff Wall

BORING NO.: PZ-3

page 1 of 1

DEPTH TO WATER WHILE DRILLING	SAMPLE NO. AND TYPE	SAMPLE RECOVERY	WELL CONSTRUCTION	WELL CONSTRUCTION	DEPTH IN FEET	PROFILE	LOGGED BY: <i>John Noyes</i>	EDITED BY: <i>John Noyes</i>	CHECKED BY: <i>Bob Solak</i>	DATE BEGAN: <i>02/24/16</i>	DATE FINISHED: <i>02/24/16</i>	GROUND SURFACE ELEVATION:	DESCRIPTION
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BORING LOG

CLIENT: Alliant Energy

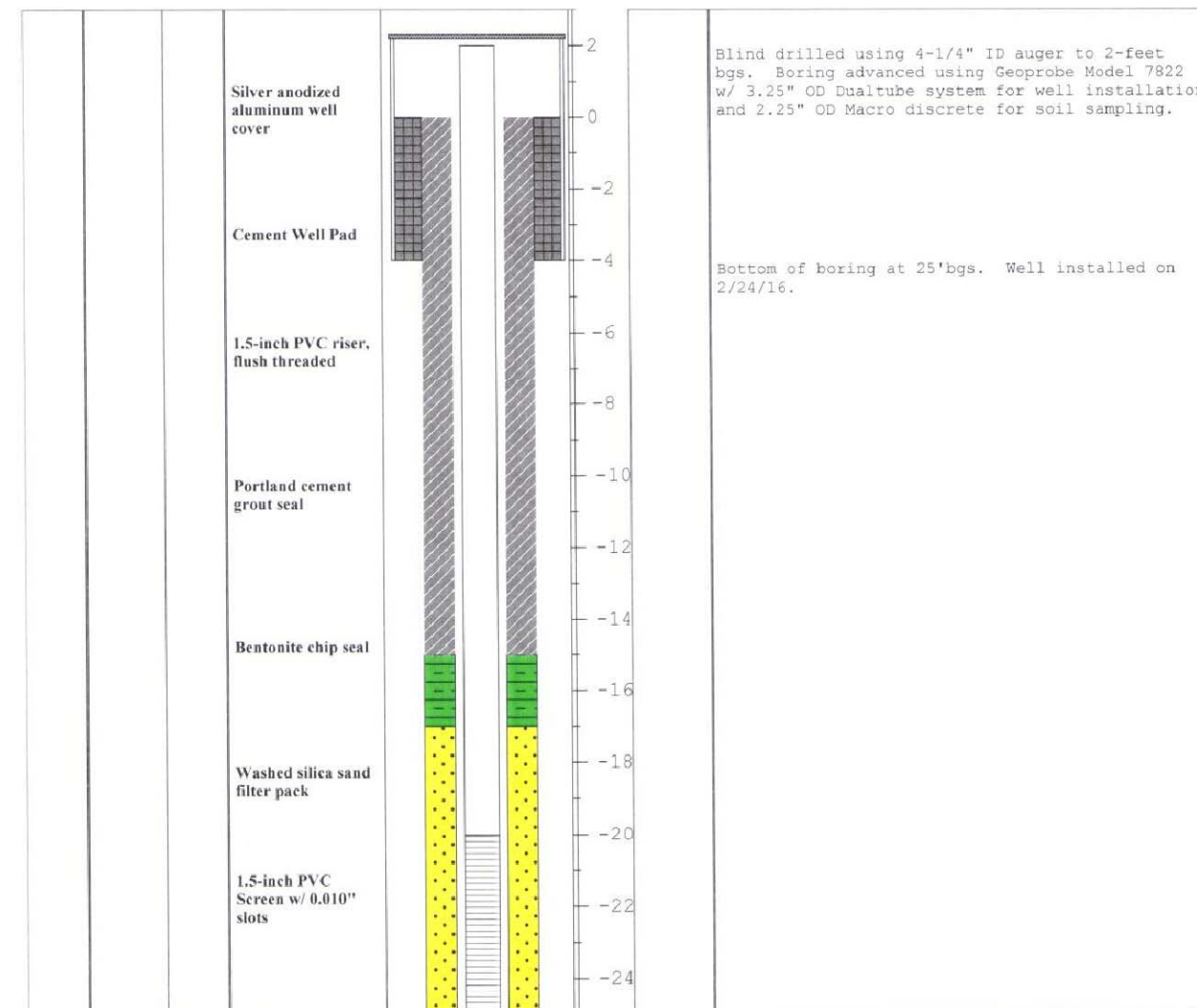
COORDINATES: *N NOT SURVEYED*
E NOT SURVEYED

PROJECT: Lansing Cutoff Wall

BORING NO.: PZ-4

page 1 of 1

DEPTH TO WATER WHILE DRILLING	SAMPLE NO. AND TYPE	SAMPLE RECOVERY	WELL CONSTRUCTION	WELL CONSTRUCTION	DEPTH IN FEET	PROFILE	LOGGED BY: <i>John Noyes</i>	EDITED BY: <i>John Noyes</i>	CHECKED BY: <i>Bob Solak</i>	DATE BEGAN: <i>02/24/16</i>	DATE FINISHED: <i>02/24/16</i>	GROUND SURFACE ELEVATION:	DESCRIPTION
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REV	DATE	BY	APP	DESCRIPTION
2-29-16	DLS	MWL	AS-BUILT DRAWINGS	

SCALE: NONE DATE: 6-29-16
 DRAWN BY: JFD CHECKED BY: TJH APPROVED BY: MWL

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CLIENT / LOCATION
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 LANSING, IA 52151

DRAWING DESCRIPTION
 SEEPAGE CONTROL CUT-OFF WALL
 AS-BUILT DRAWINGS
 PIEZOMETER CONSTRUCTION LOGS
 PZ-3 & PZ-4

JOB	154.021.003
SHT.	12
DWG.	154021SW-08-13



BORING LOG

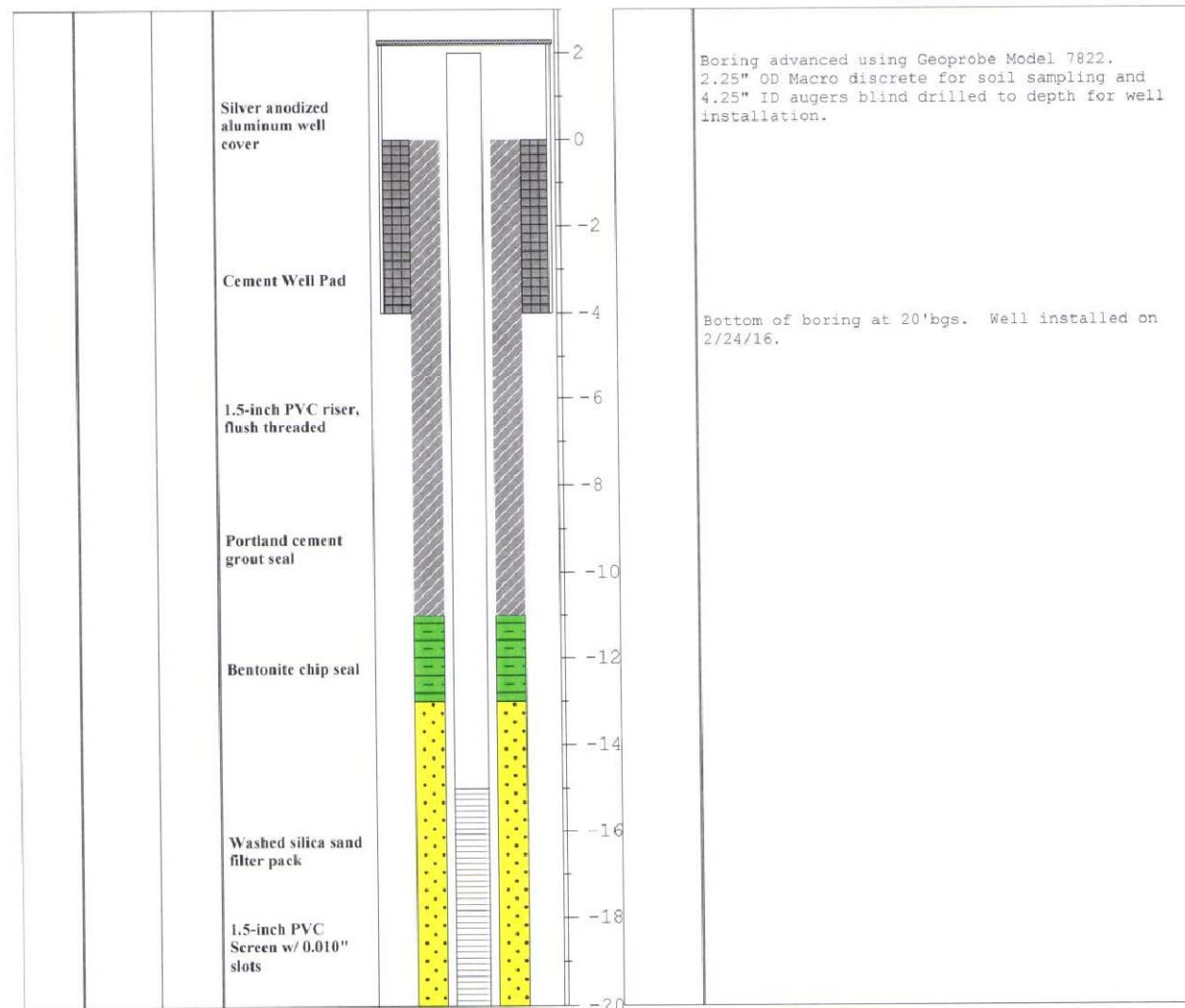
CLIENT: Alliant Energy

COORDINATES: N NOT SURVEYED
E NOT SURVEYED

PROJECT: Lansing Cutoff Wall

BORING NO.: PZ-5
page 1 of 1

DEPTH TO WATER WHILE DRILLING	SAMPLE NO. AND TYPE	SAMPLE RECOVERY	WELL CONSTRUCTION	WELL CONSTRUCTION	DEPTH IN FEET	PROFILE	LOGGED BY: <i>John Noyes</i>	EDITED BY: <i>John Noyes</i>	CHECKED BY: <i>Bob Solak</i>	DATE BEGAN: <i>02/24/16</i>	DATE FINISHED: <i>02/24/16</i>	GROUND SURFACE ELEVATION:	DESCRIPTION
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BORING LOG

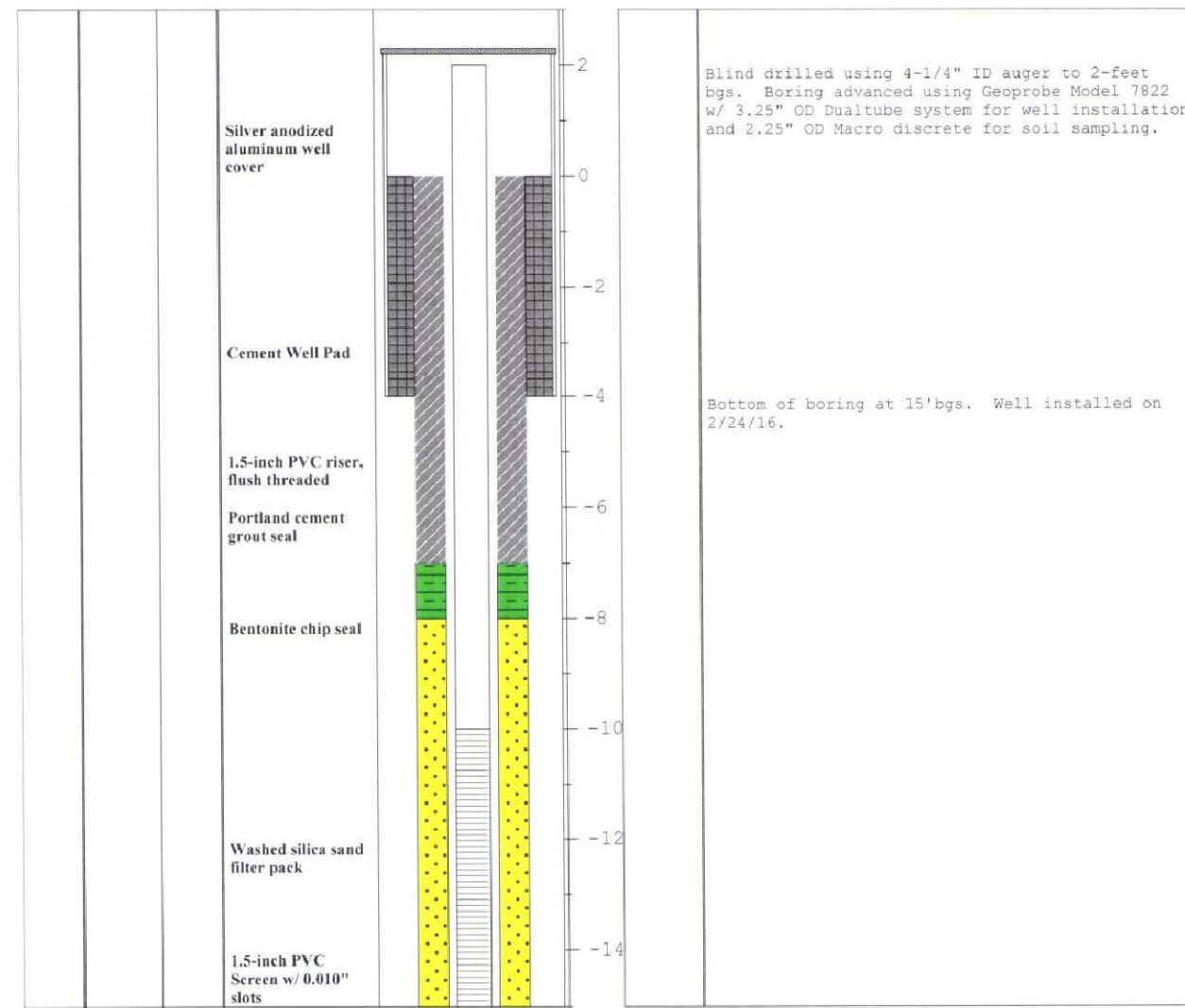
CLIENT: Alliant Energy

COORDINATES: N NOT SURVEYED
E NOT SURVEYED

PROJECT: Lansing Cutoff Wall

BORING NO.: PZ-6
page 1 of 1

DEPTH TO WATER WHILE DRILLING	SAMPLE NO. AND TYPE	SAMPLE RECOVERY	WELL CONSTRUCTION	WELL CONSTRUCTION	DEPTH IN FEET	PROFILE	LOGGED BY: <i>John Noyes</i>	EDITED BY: <i>John Noyes</i>	CHECKED BY: <i>Bob Solak</i>	DATE BEGAN: <i>02/24/16</i>	DATE FINISHED: <i>02/24/16</i>	GROUND SURFACE ELEVATION:	DESCRIPTION
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△	2-29-16	DLS	MWL	AS-BUILT DRAWINGS
REV	DATE	BY	APP	DESCRIPTION

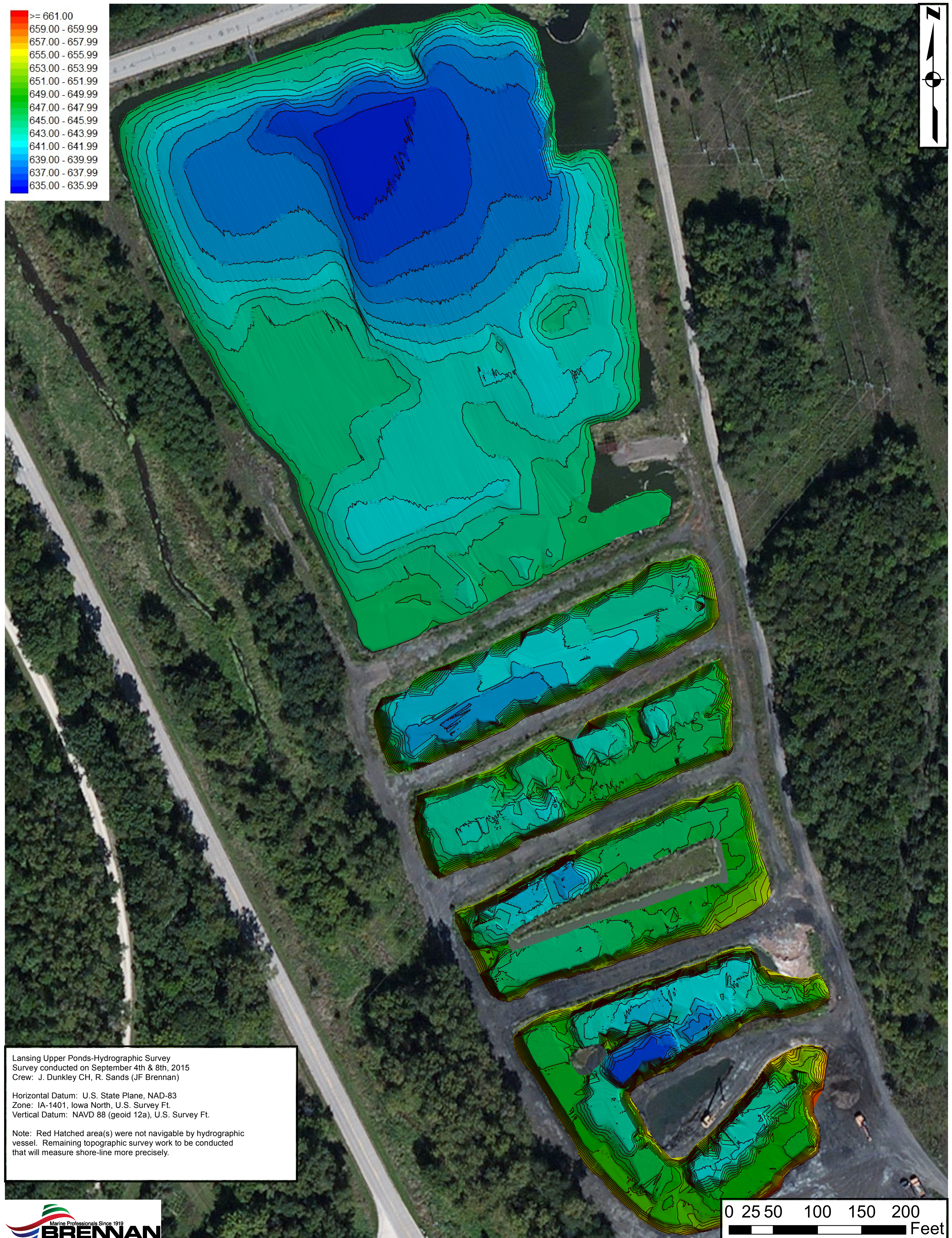
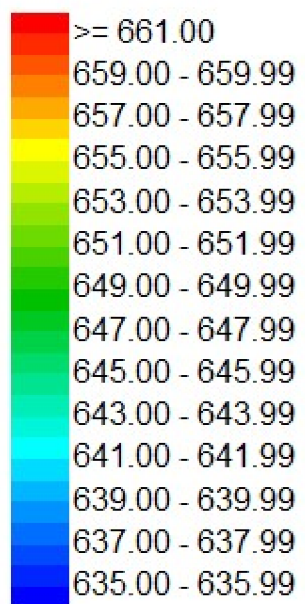
SCALE: NONE | DATE: 6-29-16
 DRAWN BY: JFD | CHECKED BY: TJH | APPROVED BY: MWL

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DRAWING DESCRIPTION
 SEEPAGE CONTROL CUT-OFF WALL
 AS-BUILT DRAWINGS
 PIEZOMETER CONSTRUCTION LOGS
 PZ-5 & PZ-6

JOB	154.021.003
SHT.	13
DWG.	154021SW-08-13



Lansing Upper Ponds-Hydrographic Survey
 Survey conducted on September 4th & 8th, 2015
 Crew: J. Dunkley CH, R. Sands (JF Brennan)

Horizontal Datum: U.S. State Plane, NAD-83
 Zone: IA-1401, Iowa North, U.S. Survey Ft.
 Vertical Datum: NAVD 88 (geoid 12a), U.S. Survey Ft.

Note: Red Hatched area(s) were not navigable by hydrographic vessel. Remaining topographic survey work to be conducted that will measure shore-line more precisely.

