Document No.: 143993-ASA-DW0-WPK-1000 Revision: B Date: 04/02/2021



Flue Gas Desulfurization Retrofit Project D.B. Wilson Station, Centertown, Ky

Phase 1 – Civil Works, Electrical Undergrounds, Structural Foundations



Prepared and Engineered by Amec Foster Wheeler Industrial Power Company, Inc 437 Grant Street – Suite 918 Pittsburgh, Pennsylvania 15219

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1.0 Scope of Work

Big River Electric Corporation (BREC) is in the process of relocating the absorber vessel, recycle pumps, oxidation blowers and other support equipment from the Coleman Station in Hawesville, KY to the D.B. Wilson Station in Centertown, KY. This package provides early foundation, civil, and electrical support work to support early relocation of major equipment, including but not limited to the absorber and five (5) recycle pumps.

The deconstruction of the existing absorber and supporting equipment, as well as the relocation and installation of the equipment, is outside the scope of this package.

Address:

D. B. WILSON STATION 5663 State Route 85 West Centertown, KY 42328

The Contractor shall propose a team of qualified and experienced professionals to execute this project with a construction/installation-based effort in accordance with the requirements of the project contract. The scope shall include scheduling, procurement, and construction, for this project. This scope is schedule driven with focus on personnel safety, quality, maintainability, and operability. Tie-ins, relocations, or demolition of existing underground lines contained within the civil scope of work will need to be coordinated with BREC outage periods to not impact the ongoing operations.

At the onset of the execution phase, upon receiving the Notice to Proceed, the Contractor will immediately and concurrently commence the following essential activities:

- Review the project specific geotechnical, survey and subsurface utility investigation studies as needed to initiate activities.
- Visit the plant site to perform detailed field investigation to confirm design assumptions, existing site conditions, tie-in locations, and constructability aspects of the execution plan.
- Finalize the project execution plan including scope, schedule, and performance guarantees in line with the agreed to project contract.
- Attend meetings and coordinate with BREC and the Engineer.
- Develop and submit a schedule of the Work for approval.

2.0 Summary Description of Tasks

The tasks are described in detail in the task specification and appendices. In general, the scope of work includes:

- Project and activity scheduling.
- Attend meetings as necessary.
- Adhere to applicable codes and standards.
- Site Preparation and excavation for the foundations.
- Demolition of the existing potable water line beneath the future Absorber Area Pile-Cap.
- Relocation of the existing Stormwater system beneath the future Absorber Area Pile-Cap.
- Design, supply, and installation of any temporary shoring and formwork for foundations.
- Installation of auger-cast piles, poured concrete sump, structural steel embeds, structural steel checkered plate support, and checkered plate.
- Installation of drilled piers and Absorber Area Pile-Cap.
- Installation of the equipment pads, curbing, and trench drains as noted on the structural foundation drawings.
- All anchor bolts and embeds for future absorber area access steel and equipment, unless noted otherwise in the drawings. Post installed anchor bolts shall not be supplied by the Contractor.
- Installation of embedded conduits and "phase 1" duct bank and pull boxes.
- Installation of the grounding grid.
- The Contractor shall supply all commodities for underground/subsurface installation including pipe and specialty items, structural steel, concrete, rebar, and electrical components (grounding, conduit, pull boxes, etc.).
- Contractor is responsible for maintaining and leaving the site in a safe condition. Any
 dangerous areas shall be appropriately roped, taped off, or barricaded. OSHA and Industry
 standard safe work practices shall be maintained, especially when working in and around
 deep excavations.
- All discarded debris shall be disposed offsite by Contractor.

The following items are not included within this scope of work:

- Installation of the electrical cabling or any other electrical or instrumentation interconnection work.
- Demolition or relocation of any of the existing equipment for which this foundation is intended.

- Supply of post-installed anchor bolts.
- Supply or Installation of equipment, piping, or mechanical systems.
- Proposed asphalt paving.
- Final Site grading.
- Special inspections and tests.
- Where "HOLD" is shown on drawings, all work shown within the "HOLD" boundary shall be included in this scope of work. Drawings will be reissued for Construction with holds removed. Work denoted by clouds and notated as "HOLD (NOT PART OF EARLY WORKS PACKAGE)" or "HOLD FOR PHASE 2 INSTALLATION" is to be excluded from this scope of work.

3.0 General Requirements

Contractor is responsible for all means and methods. Contractor shall include all costs associated with complete performance of the work including, but not limited to: labour, equipment, communications, equipment rental, small tools and commodities, housekeeping of work area, safety management, and quality management.

- 1. Contractor is responsible for providing all scaffolding, trucks, cranes, pile equipment, cutting tools, lifting devices, cribbing, temporary lifting lugs (if required), welding equipment and welding rods, concrete tools and equipment, rebar, jigs, braces, temporary supports, braces, shoring, spreader bars, etc.
- 2. Contractor is responsible for providing all temporary facilities required to perform the work including, but not limited to office trailers, on Site warehousing, temporary construction power facilities, temporary fencing, and laydown/temporary craft parking areas/craft gates.
- 3. Contractor shall cap and protect all open conduits in accordance with the electrical specifications provided as part of this work package. A pull wire shall be installed in each empty conduit for future use.
- 4. Templates shall be fabricated based on anchor bolt locations shown on the structural drawings and shall be used where feasible to ensure anchor bolts are placed in accordance with tolerances specified in the structural specifications. If anchor bolts are not placed per the locations specified in the structural drawings and structural specifications, it will be the Contractor's responsibility to "make it right". Costs associated with delays in the work of others, demolition, re-installation, or in extreme cases re-engineering will be the responsibility of the Contractor.
- 5. A temporary barricade shall be placed at the perimeter of the sump to alert personnel to the fall hazard until the structural steel and checkered plate are in place.

4.0 Applicable Codes and Governing Authorities

Contractor is responsible for ensuring all work is performed in accordance with the following governing codes and authorities:

- 2015 International Building Code (2015 IBC) and 2018 Kentucky Building Code (Second Edition April 2019)
- Occupational Safety and Health Act (OSHA) of 1970: OSHA 29 CFR Part 1910, Latest Edition, and Part 1926, Latest Edition
- ACI 318-14 "Building Code Requirements For Structural Concrete".
- ASTM A615-12 "Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement"
- ACI 350-06 "Code Requirements for Environmental Engineering Concrete Structures and Commentary" (for water, wastewater, and liquid containing structures only)
- AISC American Institute of Steel Construction "Manual of Steel Construction", 14th Edition
- AISC 360-10 "Specification for Structural Steel Buildings" June 22, 2010
- AISC 303-10 "Code of Standard Practice for Steel Buildings and Bridges" April 14, 2010
- RCSC "Specification for Structural Joints Using High-Strength Bolts" December 31, 2009
- AWS D1.1-10 "Structural Welding Code Steel"
- AISI S100-12 "Specification for the Design of Cold-Formed Steel Structural Members"
- "The Design of Products to be Hot-Dip Galvanized after Fabrication", American Galvanizers Association (AGA)
- NAAMM MBG 531-09 "Metal Bar Grating Manual for Steel, Stainless Steel, and Aluminum Gratings and Stair Treads", National Association of Architectural Metal Manufacturers.
- NAAMM MBG 533-09 "Welding Standards for Fabrication of Steel, Stainless Steel and Aluminum Bar Grating", National Associated of Architectural Metal Manufacturers.
- American Association of State Highway and Transportation Officials (AASHTO) Design Standards
- Environmental Protection Agency (EPA)
- American Water Works Association (AWWA)
- Federal Highway Administration (FHWA)
- Manual on Uniform Traffic Control Devices (MUTCD)
- Kentucky Transportation Cabinet (KYTC)
- Kentucky Energy and Environment Cabinet
- National Electrical Code (NEC)
- National Electrical Safety Code (NESC)
- National Electrical Manufacturers Association (NEMA)
- National Fire Protection Association (NFPA)
- American National Standards Institute (ANSI)
- Illuminating Engineering Society (IES)
- Insulated Cable Engineers Association (ICEA)

5.0 Detailed Scope of Work

Work to be performed under this package shall be as shown on the drawings, written in the specifications, and as described herein. The Specifications are written for both current and future scopes of work. The Drawings and the scope descriptions contained within the document shall be used to determine the work to be performed.

5.1 Installation of Civil Scope of Work

- Contractor shall complete utility location services, "Call Before You Dig" per the Kentucky Underground Facilities Protection Act (KRS 367.4901 through KRS367.4917), prior to beginning any excavations. Refer to survey as noted in Section 6.0 for known underground obstructions.
- Contractor is responsible for performing construction survey layout work. Contractor must confirm coordinates using at least two survey control monuments (CM), as shown on page 2 of the survey.
- Contractor shall furnish, install, and maintain stabilized construction entrance into construction site area as shown on the Drawings.
- Contractor shall furnish, install, and maintain perimeter erosion and sedimentation control best management practices (BMPs), as shown on the Drawings.
- Contractor shall furnish and install mobile concrete washout or otherwise denote a location on the site for this work to occur. Denote location of the concrete washout as a redline on the site civil Drawings. At the end of the job, it is the Contractor's responsibility to remove all washout material and restore the site to its prior state per civil details.
- Contractor shall furnish, install, and maintain inlet protection except where noted as "HOLD (NOT PART OF EARLY WORKS PACKAGE)".
- Contractor shall perform demolition of existing pavements, underground potable water line, and other items as shown on the Drawings. Remove demolition waste materials from project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.
- Contractor shall prepare subgrade as specified on the Drawings, in the Specifications, and the site-specific Geotechnical Report.
- For grading the site, contractor shall remove existing gravel cover only where needed to accommodate grading activities. Gravel cover may be retained for re-use, provided material meets the requirements defined in the construction specifications.
- Contractor shall furnish and install storm drainage as specified on the Drawings and Specifications.

- For the duration of the construction activities, Contractor shall temporarily stabilize any disturbed areas which are likely to remain inactive for 14 days or more. Temporary stabilization shall be implemented immediately following completion of the most recent land disturbance/grading activity.
- Contractor shall be responsible for dewatering of any area filled by rainwater or groundwater during the work of this Contract. All prepared areas that are softened by water or that are disturbed by construction activity shall be re-worked, re-compacted, or appropriately repaired to the required bearing capacity and density.
- Contractor shall perform inspections and maintenance of all erosion and sedimentation control per best management practices (BMPs) to prevent damaging erosion onsite and sediment migration offsite for the duration of land disturbance construction activities as required by the site-specific storm water pollution prevention plan (SWPPP).
- Contractor shall furnish, install, and test potable water line valve, valve box, and end cap.
- Contractor shall retain all fill for final site grading. The location of the fill shall be redlined on the Civil Plan Drawings.

5.2 Installation of Grounding Grid

- Contractor shall install the portion of the grounding grid that is beneath the foundation after the piles are set and before the concrete is poured.
- Contractor shall follow Electrical grounding drawings 143993-ASA-DF0-BSL-1701 through 143993-ASA-DF0-BSL-1706 for grounding scope of supply.
- Contractor shall reference the underground drawings 143993-ASA-DF0-UGD-1701 and 143993-ASA-DF0-UGD-1703 through 143993-ASA-DF0-UGD-1708 for underground ductbanks; contractor should note that the ductbank grounds are not installed below the conduits they are installed on top of the conduits in the ductbanks. Contractor shall reference the standard installation detail drawings 143993-ASA-DF0-STD-1701 through 143993-ASA-DF0-STD-1728 as noted in the drawing list in Section 6.0, these drawings show information regarding the ground connections and how the conduit sleeve must be installed on equipment grounds in the foundations.
- Contractor shall ensure that all the grounding is installed and inspected for quality assurance before the concrete is poured.

5.3 Installation of Electrical Undergrounds

• Contractor shall install the conduits and ductbanks per drawings 143993-ASA-DF0-UGD-1701, 143993-ASA-DF0-UGD-1703 through 143993-ASA-DF0-UGD-1708, and 143993-ASA-DF0-STD-1710.

- Contractor shall note that "PHASE 2" is not being completed as part of this package but is provided as reference for tie ins and spacing coordination.
- Contractor shall dye the concrete at the top of the duct bank red per drawing 143993-ASA-DF0-STD-1710.
- Contractor shall follow Electrical grounding drawings 143993-ASA-DF0-BSL-1701 through 143993-ASA-DF0-BSL-1706 for the ductbank ground connections.
- Contractor shall reference the standard installation detail drawings 143993-ASA-DF0-STD-1701 through 143993-ASA-DF0-STD-1728 (standard installation drawings that are not applicable to this scope of work have been omitted from this package, see Section 6.0 for applicable drawing numbers).
- The ductbanks that are to be installed in the foundations will require coordination to
 ensure that the conduits are installed and inspected for quality assurance before the
 concrete is poured. Separate concrete "ductbank" encasement is not required where
 conduits will be encased in the structural foundations. Contractor will be responsible for
 ensuring that conduits are fully encased in concrete either as a ductbank or within a
 foundation. Contractor is responsible for ensuring that conduits are not damaged in the
 Installation process of the rebar, embedments, grout pocket blocking, or concrete
 placement. Conduits shall not be deformed (the full diameter shall be available for
 conduit installation) and shall be left free of lips or other snag points.
- Contractor shall coordinate the installation of the ductbanks that are outside and inside of the foundation to ensure that all of the ductbanks are installed per drawings 143993-ASA-DF0-UGD-1701 and 143993-ASA-DF0-UGD-1703 through 143993-ASA-DF0-UGD-1708.

5.4 Installation of Structural Scope of Work

- Contractor shall install sheet piling as shown on drawing 143993-ASA-DD2-RCD-1327, prior to beginning construction of sump. See 'Sump Pit Construction Sequence' on drawing 143993-ASA-DD2-RCD-1327.
- Contractor shall excavate as required to install wales as shown on drawing 143993-ASA-DD2-RCD-1327;
- Install auger cast piles per drawings 143993-ASA-DD2-PLD-1300, 1301, and 1302;
- Prepare subgrade as specified on the drawings and per Earth Moving Specification 143993-ASA-DD1-SPC-1411, the site-specific Geotechnical Report, and as described in Section 5.1 of this document;
- Construct sump base slab and lower portion of sump walls per drawing 143993-ASA-DD2-RCD-1327.
- After installed concrete has reached a compressive strength of 4,000 psi, backfill up to top of lower portion of sump wall;

- Remove wales;
- Complete construction of upper portion of sump walls, ensuring embedded plates for checkered plate support steel are placed;
- After sump wall concrete has reached a compressive strength of 4,000 psi, backfill and cut off sheet piling a minimum of 3'-0" below grade (6'-0" at Absorber pile cap), then complete backfill.
- Install structural steel checkered plate support and checkered plate per drawing 1439933-ASA-DD2-SSD-1327.
- Install drilled piers for Absorber area foundation per drawings 143993-ASA-DD2-PLD-1300 and 1301;
- Prepare subgrade as specified on the drawings and per Earth Moving Specification 143993-ASA-DD1-SPC-1411, the site-specific Geotechnical Report, and as described in Section 5.1 of this document;
- Construct Absorber Area pile cap per drawings 143993-ASA-DD2-RCD-1300 and 1301. Prior to placing concrete, the following items shall be installed: A) foundation reinforcement; B) anchor bolts for Absorber shall be placed with templates at top and bottom of anchor bolts to ensure anchors are accurately and precisely placed; C) anchor bolts for the five (5) Recycle Pumps shall be placed with templates to ensure anchors are accurately and precisely placed; D) anchor bolts and shear key pockets for the Absorber access structure columns shall be placed; E) trench drains and embeds will be formed and placed; F) grounding as described in Section 5.2 of this document and conduit as described in Section 5.3 of this document will be placed and inspected.
- Contractor shall install trench-drain grating.
- Contractor shall construct concrete pads for equipment per drawings 143993-ASA-DD2-RCD-1300 and 1303.

6.0 Summary List of Applicable Documents

Appendix	Document Number	Document Title
А	143993-ASA-DD1-SPC-1411	EARTH MOVING - CONSTRUCTION SPECIFICATIONS
А	143993-ASA-DD1-SPC-1415	STORMWATER CONVEYANCE - CONSTRUCTION SPECIFICATIONS
В	143993-ASA-DD2-SPC-1300	AUGER-GROUTED PILES - CONSTRUCTION SPECIFICATION
В	143993-ASA-DD2-SPC-1301	DRILLED PIERS - CONSTRUCTION SPECIFICATION
В	143993-ASA-DD2-SPC-1302	CAST-IN-PLACE CONCRETE - CONSTRUCTION SPECIFICATION
В	143993-ASA-DD2-SPC-1303	GROUT - CONSTRUCTION SPECIFICATION
В	143993-ASA-DD2-SPC-1304	STRUCTURAL STEEL FRAMING - CONSTRUCTION SPECIFICATION
В	143993-ASA-DD2-SPC-1305	SPECIAL INSPECTIONS AND TESTS - CONSTRUCTION SPECIFICATION
С	143993-ASA-DF0-SPC-1701	ELECTRICAL WORK - CONSTRUCTION SPECIFICATION
D	7382-20-9000	REPORT OF GEOTECHNICAL ENGINEERING STUDY
D	305-236-0001	SURVEYING AND SUBSURFACE UTILITY ENGINEERING
D	143993-ASA-DD1-CAL-1450	STORMWATER POLLUTION PREVENTION PLAN (SWPP)
E	143993-ASA-DD1-PLN-1401	CIVIL COVER SHEET
E	143993-ASA-DD1-PLN-1402	CIVIL GENERAL NOTES, LEGEND AND ABBREVIATIONS
E	143993-ASA-DD1-PLN-1403	CIVIL CONDITIONS AND DEMOLITION PLAN
E	143993-ASA-DD1-PLN-1405	CIVIL GRADING AND DRAINAGE PLAN
E	143993-ASA-DD1-PLN-1406	CIVIL UNDERGROUND UTILITY PLAN
E	143993-ASA-DD1-PLN-1407	CIVIL EROSION AND SEDIMENTATION CONTROL PLAN - INITIAL
E	143993-ASA-DD1-PLN-1408	CIVIL EROSION AND SEDIMENTATION CONTROL PLAN - INTERMEDIATE
E	143993-ASA-DD1-DTL-1411	CIVIL EROSION AND SEDIMENTATION CONTROL DETAILS – SHEET 1 OF 2
E	143993-ASA-DD1-DTL-1412	CIVIL EROSION AND SEDIMENTATION CONTROL DETAILS – SHEET 2 OF 2
E	143993-ASA-DD1-DTL-1413	CIVIL FINISH GRADING AND DRAINAGE DETAILS
E	143993-ASA-DD1-DTL-1414	UNDERGROUND UTILITY DETAILS
F	143993-ASA-DD2-PLD-1300	STRUCTURAL CONCRETE ABSORBER DRILLED PIERS & SUMP AUGER CAST PILES PLAN
F	143993-ASA-DD2-PLD-1301	STRUCTURAL CONCRETE ABSORBER DRILLED PIER DETAIL – NOTES & SECTIONS
F	143993-ASA-DD2-PLD-1302	STRUCTURAL CONCRETE AUGER CAST PILES – NOTES, SECTIONS & DETAILS
F	143993-ASA-DD2-RCD-1300	STRUCTURAL CONCRETE ABSORBER FOUNDATION - PLAN
F	143993-ASA-DD2-RCD-1301	STRUCTURAL CONCRETE ABSORBER FOUNDATION SECTIONS AND DETAILS - SHEET 1
F	143993-ASA-DD2-RCD-1302	STRUCTURAL CONCRETE ABSORBER FOUNDATION SECTIONS AND DETAILS - SHEET 2
F	143993-ASA-DD2-RCD-1303	STRUCTURAL CONCRETE ABSORBER FOUNDATION SECTIONS AND DETAILS - SHEET 3
F	143993-ASA-DD2-RCD-1327	STRUCTURAL CONCRETE ABSORBER SUMP FOUNDATION & SHORING - PLAN
F	143993-ASA-DD2-SSD-1327	STRUCTURAL STEEL ABSORBER SUMP FRAMING PLAN – SECTIONS & DETAILS
F	143993-ASA-DD2-STD-1300	STRUCTURAL CONCRETE NOTES AND TYPICAL DETAILS - SHEET 1 OF 5
F	143993-ASA-DD2-STD-1301	STRUCTURAL CONCRETE TYPICAL DETAILS - SHEET 2 OF 5
F	143993-ASA-DD2-STD-1302	STRUCTURAL CONCRETE TYPICAL DETAILS - SHEET 3 OF 5
F	143993-ASA-DD2-STD-1303	STRUCTURAL CONCRETE TYPICAL DETAILS - SHEET 4 OF 5

Appendix	Document Number	Document Title
F	143993-ASA-DD2-STD-1304	STRUCTURAL CONCRETE TYPICAL DETAILS - SHEET 5 OF 5
F	143993-ASA-DD2-STD-1305	STRUCTURAL STEEL GENERAL NOTES AND TYPICAL DETAILS - SHEET 1 OF 5
F	143993-ASA-DD2-STD-1306	STRUCTURAL STEEL TYPICAL DETAILS - SHEET 2 OF 5
F	143993-ASA-DD2-STD-1307	STRUCTURAL STEEL TYPICAL DETAILS - SHEET 3 OF 5
F	143993-ASA-DD2-STD-1308	STRUCTURAL STEEL TYPICAL DETAILS - SHEET 4 OF 5
F	143993-ASA-DD2-STD-1309	STRUCTURAL STEEL TYPICAL DETAILS - SHEET 5 OF 5
G	143993-ASA-DF0-BSL-1701	ELECTRICAL UG GROUNDING LAYOUT AREA 01
G	143993-ASA-DF0-BSL-1702	ELECTRICAL UG GROUNDING LAYOUT AREA 02
G	143993-ASA-DF0-BSL-1703	ELECTRICAL UG GROUNDING LAYOUT AREA 03
G	143993-ASA-DF0-BSL-1704	ELECTRICAL UG GROUNDING LAYOUT AREA 04
G	143993-ASA-DF0-BSL-1705	ELECTRICAL UG GROUNDING LAYOUT AREA 05
G	143993-ASA-DF0-BSL-1706	ELECTRICAL UG GROUNDING LAYOUT AREA 06
G	143993-ASA-DF0-UGD-1701	ELECTRICAL UNDERGROUND LAYOUT AREA 01
G	143993-ASA-DF0-UGD-1703	ELECTRICAL UNDERGROUND LAYOUT AREA 03
G	143993-ASA-DF0-UGD-1704	ELECTRICAL UNDERGROUND LAYOUT AREA 04
G	143993-ASA-DF0-UGD-1705	ELECTRICAL UNDERGROUND LAYOUT AREA 05
G	143993-ASA-DF0-UGD-1706	ELECTRICAL UNDERGROUND LAYOUT AREA 06
G	143993-ASA-DF0-UGD-1707	ELECTRICAL UNDERGROUND SECTIONS AND DETAILS SHEET 1
G	143993-ASA-DF0-UGD-1708	ELECTRICAL UNDERGROUND SECTIONS AND DETAILS SHEET 2
G	143993-ASA-DF0-STD-1701	ELECTRICAL STANDARD INSTALLATION DETAILS LEGEND SHEET 1 OF 2
G	143993-ASA-DF0-STD-1702	ELECTRICAL STANDARD INSTALLATION DETAILS LEGEND SHEET 2 OF 2
G	143993-ASA-DF0-STD-1703	ELECTRICAL STANDARD INSTALLATION DETAILS DRAFTING SYMBOLOGY TABLES
G	143993-ASA-DF0-STD-1704	ELECTRICAL STANDARD INSTALLATION DETAILS GROUNDING
G	143993-ASA-DF0-STD-1705	ELECTRICAL STANDARD INSTALLATION DETAILS GROUNDING
G	143993-ASA-DF0-STD-1706	ELECTRICAL STANDARD INSTALLATION DETAILS GROUNDING
G	143993-ASA-DF0-STD-1707	ELECTRICAL STANDARD INSTALLATION DETAILS GROUNDING
G	143993-ASA-DF0-STD-1708	ELECTRICAL STANDARD INSTALLATION DETAILS GROUNDING
G	143993-ASA-DF0-STD-1709	ELECTRICAL STANDARD INSTALLATION DETAILS GROUNDING
G	143993-ASA-DF0-STD-1710	ELECTRICAL STANDARD INSTALLATION DETAILS UNDERGROUND
G	143993-ASA-DF0-STD-1721	ELECTRICAL STANDARD INSTALLATION DETAILS - MOTOR
G	143993-ASA-DF0-STD-1728	ELECTRICAL STANDARD INSTALLATION DETAILS - CABLE



In the Matter of:

ELECTRONIC APPLICATION OF) **BIG RIVERS ELECTRIC CORPORATION**) FOR APPROVAL OF ITS 2020 ENVIRONMENTAL) **COMPLIANCE PLAN, AUTHORITY TO RECOVER COSTS** THROUGH A REVISED ENVIRONMENTAL SURCHARGE) AND TARIFF, THE ISSUANCE OF A CERTIFICATE OF) PUBLIC CONVENIENCE AND NECESSITY FOR CERTAIN) **PROJECTS, AND APPROPRIATE ACCOUNTING**) AND OTHER RELIEF)

Case No. 2019-00435

Project 12 Wilson Station FGD Replacement and Upgrade

Scope of Work Document dated April 2, 2021 Appendix A – Civil Specifications

Filed pursuant to Ordering Paragraph No. 18 of Commission's August 6, 2020 Order FILED: June 18, 2021



In the Matter of:

ELECTRONIC APPLICATION OF) **BIG RIVERS ELECTRIC CORPORATION**) FOR APPROVAL OF ITS 2020 ENVIRONMENTAL) **COMPLIANCE PLAN, AUTHORITY TO RECOVER COSTS** THROUGH A REVISED ENVIRONMENTAL SURCHARGE) AND TARIFF, THE ISSUANCE OF A CERTIFICATE OF) PUBLIC CONVENIENCE AND NECESSITY FOR CERTAIN) PROJECTS, AND APPROPRIATE ACCOUNTING) AND OTHER RELIEF)

Case No. 2019-00435

Project 12 Wilson Station FGD Replacement and Upgrade

Appendix A – Civil Specifications Document Index

Filed pursuant to Ordering Paragraph No. 18 of Commission's August 6, 2020 Order FILED: June 18, 2021

Document Number

Document Title

143993-ASA-DD1-SPC-1411

143993-ASA-DD1-SPC-1415

Earth Moving – Construction Specifications Stormwater Conveyance – Construction Specifications



-

TITLE: Earth Moving	143993-ASA-DD1-SPC-1411
PROJECT: D.B. Wilson FGD Replacement	REV: 1
LOCATION: Centertown, KY	PROJECT NO. 245891

CLIENT:

Big Rivers Electric Corporation

AREA NO.:

APPROVAL STATUS								
PREPAR	RED BY:	LJN	DATE	15FEB21	APPROVED B	Y: BTH	DATE	05MAR21
CHECK	ED BY:		DATE		APPROVED B	Y: NDH	DATE	05MAR21
REVISION STATUS								
REV		ISSUED FOR		REVISED BY	CHECKED BY	APPROVAL	APPROVAI	. DATE
А		APPROVAL	-	KAV		BTH	NDH	05MAR21
В		BID		KAV	BTH	BTH	NDH	01APR21
0	CC	ONSTRUCTI	ON	KAV	JTW	SJS	NDH	07MAY21
1	CC (RE	ONSTRUCTI MOVE HOL	ON .DS)	KAV	BTH	SJS	NDH	14MAY21





TITLE: Earth Moving	143993-ASA-DD1-SPC-1411
PROJECT: D.B. Wilson FGD Replacement	REV: 1
LOCATION: Centertown, KY	PROJECT NO. 245891

SECTION 1411 - EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Site Grading
 - 2. Preparing subgrades for slabs-on-grade and pavements.
 - 3. Excavating and backfilling for buildings and structures.
 - 4. Graded Aggregate Base Course for asphalt.
 - 5. Excavating and backfilling trenches for utilities.
 - 6. Construction dewatering.
- B. Related Requirements:
 - 1. 143993-ASA-DD2-SPC-1302 Cast-in-Place Concrete
 - 2. 143993-ASA-DD1-SPC-1410 Facility Water Distribution Piping
 - 3. 143993-ASA-DD1-SPC-1416 Facility Sanitary Sewer
 - 4. 143993-ASA-DD1-SPC-1415 Stormwater Conveyance
 - 5. Geotechnical Report titled Report of Geotechnical Engineering Study Proposed Addition to D.B. Wilson Station, by Wood E&IS, Inc., dated November 30, 2020.
 - 6. American Society for Testing and Materials (ASTM) Standards, latest revision.
 - 7. American Association of State Highway and Transportation Officials (AASHTO) Standards, latest revision.
 - 8. Occupational Safety and Health Administration (OSHA) Standards, latest revision.
 - 9. Kentucky Transportation Cabinet (KYTC) Standard Specifications for Road and Bridges, latest edition.



TITLE: Earth Moving	143993-	ASA-DD1-SPC-1411
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1.3 DEFINITIONS

A. Engineer:

Wood. (Doing business as Wood Group USA, Inc.) 30 Patewood Dr., Suite 200 Greenville, SC 29615

B. Geotechnical:

Wood Environment & Infrastructure Solutions, Inc. 3800 Ezell Road, Suite 100 Nashville, TN 37211

C. Owner:

Big Rivers Electric Corporation D.B. Wilson Station 5663 KY-85 Centertown, KY 42328

- D. Backfill: Soil material or controlled low-strength material used to fill an excavation.
 - 1. Initial Backfill: Backfill placed beside and over pipe in a utility trench, including haunches to support sides of pipe.
 - 2. Final Backfill: Backfill placed over Initial Backfill to fill a utility trench.
- E. Base Course: Aggregate layer placed between the prepared and approved subgrade and hot-mix asphalt paving.
- F. Bedding Course: Aggregate layer placed over the excavated and approved subgrade in a trench before laying pipe.
- G. Borrow Soil: Satisfactory soil imported from off-site for use as Engineered Fill.
- H. Engineered Fill: Soil materials used to raise existing grades in structural areas, as approved by the Geotechnical Engineer.
- I. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
- J. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.



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- K. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below Base Course, bedding, topsoil materials, or geotextiles where specified.
- L. Utilities: On-site underground pipes, conduits, ducts, cables, and associated structures, as well as underground services within buildings.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of the following manufactured products required:
 - 1. Engineered Fill
 - 2. Base Course
 - 3. Bedding Course

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified testing agency.
- B. Material Test Reports: For each on-site and borrow soil material proposed for Engineered Fill as follows:
 - 1. Classification according to ASTM D2487.
 - 2. Laboratory compaction curve according to ASTM D698 for Engineered Fill and D1557 for Aggregate Base Course.
- C. Pre-excavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by earth moving operations. Submit before earth moving begins.
- D. Base Course shall be from a KYTC approved source.

1.6 QUALITY ASSURANCE

A. Geotechnical Testing Agency Qualifications: Qualified according to ASTM E329 and ASTM D3740 for testing indicated.



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1.7 FIELD CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth-moving operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
- B. Utility Locator Service: Notify Kentucky 811 for the project area two (2) full days prior to starting earth moving operations.
- C. Do not commence site clearing and earth moving operations until erosion and sedimentation control measures are in place.
- D. Soil Stripping, Handling, and Stockpiling: Perform only when the soil is dry or slightly moist.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: Soil material from excavations or borrow soil for use as Engineered Fill, free of debris, waste, frozen materials, vegetation, and other deleterious matter as approved by Geotechnical Engineer.
- C. Base Course: Consists of crushed aggregate base course, plant mixed as specified by KYTC for the respective pavement section. See section 302 and 805 of KYTC Standard Specifications for Road and Bridges, latest edition.
- D. Engineered Fill: Engineered Fill shall consist of clean (free of organics and debris) nonplastic soils with maximum dry density as determined by the Standard Proctor compaction test (ASTM D698) and approved by the Geotechnical Engineer. Maximum Grain Size should not exceed 4 inches. Soils should generally classify as GW, SW, SP or SM in accordance with the USCS as approved by the Geotechnical Engineer.



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- E. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.
- F. Sand: ASTM C33; fine aggregate.

2.2 GEOTEXTILES

- A. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications, made from polyolefins or polyesters; with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
 - 1. Survivability: Class 2; AASHTO M 288.
 - 2. Survivability: As follows:
 - a. Grab Tensile Strength: 247 lbf; ASTM D4632.
 - b. Sewn Seam Strength: 222 lbf; ASTM D1683.
 - c. Tear Strength: 90 lbf; ASTM D4533.
 - d. Puncture Strength: 90 lbf; ASTM D4833.
 - 3. Apparent Opening Size: No. 60 sieve, maximum; ASTM D4751.
 - 4. Permittivity: 0.02 per second, minimum; ASTM D4491.
 - 5. UV Stability: 50 percent after 500 hours exposure; ASTM D4355.

2.3 ACCESSORIES

- A. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:
 - 1. Red: Electric.
 - 2. Yellow: Gas, oil, steam, and dangerous materials.
 - 3. Orange: Telephone and other communications.
 - 4. Blue: Water systems.
 - 5. Green: Sewer systems.



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PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by site clearing, earth moving or dewatering operations.
- B. Protect and maintain benchmarks and survey control points from disturbance during clearing and earth-moving operations.
- C. Protect and maintain erosion and sedimentation controls during clearing and earth moving operations.
- D. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 DEWATERING

- A. Provide dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.
- B. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- C. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
 - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
- D. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water and sediment in a manner that avoids inconvenience to others.



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3.3 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered.
 - 1. If excavated materials intended for Engineered Fill include unsatisfactory soil materials and rock, replace with Satisfactory Soil materials.
 - 2. Any excess Satisfactory Soil, unsatisfactory soil, excavated rock, landfill waste, or any other construction generated waste from earthwork operations shall be disposed of at an Owner and Authorities Having Jurisdiction (AHJ) approved off-site location.
 - 3. The uppermost fine-grained soils shall not be used as Engineered Fill, and these soils shall be left exposed for the least possible amount of time during construction operations and remediated as directed by the Geotechnical Engineer in areas to receive proposed structures and pavements.

3.4 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
 - 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
 - 2. Pile Foundations: Stop excavations 6 to 12 inches above bottom of pile cap before piles are placed. After piles have been placed, remove loose and displaced material. Excavate to final grade, leaving solid base to receive concrete pile caps.
 - 3. Excavation for Underground Tanks, Basins, and Drainage, Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated. Do not disturb bottom of excavations intended as bearing surfaces.
- B. Over-excavate and replace any localized zones of excessively wet, unstable, organic, yielding, or low bearing capacity materials as determined by the Geotechnical Engineer. Restore bottom of excavation to proper elevation with compacted Engineered Fill in areas over-excavated.



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3.5 EXCAVATION FOR PAVEMENTS

- A. Excavate surfaces under walks, pavements, and areas to receive aggregate surfacing to indicated lines, cross sections, elevations, and subgrades.
 - 1. Extend soil removal to a minimum of 5 feet laterally beyond edge of pavement, walk, and aggregate surfacing except where indicated.
- B. Over-excavate and replace any localized zones of excessively wet, unstable, organic, yielding, or low bearing capacity materials as determined by the Geotechnical Engineer. Restore bottom of excavation to proper elevation with compacted Engineered Fill in areas over-excavated.

3.6 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
- B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit unless otherwise indicated.
 - 1. Excavate trench to a width which will permit satisfactory jointing of pipe and thorough tamping of bedding and backfill.
 - 2. Maintain the following trench widths for single pipe installation:
 - a. Minimum trench widths below a plane 12 inches above top of pipe shall be the greater of:
 - 1) The pipe outside diameter plus 16 inches; and
 - 2) The pipe outside diameter times 1.25, plus 12 inches.
 - b. Maximum trench widths below a plane 12 inches above top of pipe shall be as follows:
 - 1) For pipes less than or equal to 24", the pipe outside diameter + 2 feet; and
 - 2) For pipes $25^{\circ} 60^{\circ}$, the pipe outside diameter + 4 feet.
 - 3. Above plane defined in 3.6.B.2, no maximum limit.
 - 4. Maximum trench width limitations shall apply in areas more than 3 feet from catch basin or structure walls. Where within 3 feet from catch basin or structure walls, maximum width shall be as near the minimum specified as can be controlled by construction equipment and methods used.



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- C. Trench Bottoms: Excavate trenches 6 inches deeper than bottom of pipe and conduit elevations to allow for Bedding Course, except as otherwise indicated. Hand-excavate deeper for bells of pipe.
 - 1. Where unstable or unsuitable soil conditions are encountered, over-excavate trenches as recommended by the Geotechnical Engineer. Restore bottom of trench to proper elevation with compacted Engineered Fill in areas over-excavated.

3.7 EXCAVATION SAFETY

A. Excavations shall be adequate for construction and inspection of all work under the contract. All excavation work shall be maintained and protected against earth collapse from natural causes or subsequent construction work and shall be in accordance with OSHA requirements and local regulatory requirements. Water shall be controlled in accordance with Section 3.2.

3.8 SUBGRADE PREPARATION AND INSPECTION

- A. Notify Geotechnical Engineer when excavations have reached required subgrade.
- B. All subgrades shall be compacted to a minimum of 98 percent of Standard Proctor maximum dry density per ASTM D698. Follow testing frequency requirements defined in Section 3.17.
- C. If Geotechnical Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
- D. Prepare subgrades in areas to support foundations, floor slabs, Engineered Fill, asphalt pavement, crushed aggregate pavement, and crushed aggregate surfacing as follows:
 - 1. Perform proof-roll testing of subgrade materials by making four passes (with two of the passes being in a direction perpendicular to the preceding ones) with a fully loaded dump truck with a minimum gross weight of 20 tons in the presence of the Geotechnical Engineer. Do not proof-roll wet or saturated subgrades.
 - 2. Limit vehicle speed to 3 mph for proof-rolling.
 - 3. Identify soft areas to be undercut. Undercut zones shall extend 5 feet beyond the limit of the identified soft zones.
 - 4. Excavate 1-foot horizontally (on all sides) for every 2-feet of undercut depth.



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3.9 STORAGE OF SOIL MATERIALS

- A. Stockpile Borrow Soil materials and excavated Satisfactory Soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover, install perimeter silt fence, or provide other approved methods to prevent windblown dust and erosion as detailed in the SWPPP.
 - 1. Do not place material stockpiles, equipment, surcharges etc., within 15 feet of the crest of any excavated slope.
- 3.10 BACKFILL
 - A. Place and compact backfill in excavations promptly, but not before completing the following:
 - 1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
 - 2. Surveying locations of underground utilities for Record Documents.
 - 3. Testing and inspecting underground utilities.
 - 4. Removing concrete formwork.
 - 5. Removing trash and debris.
 - 6. Removing temporary shoring, bracing, and sheeting.
 - 7. Installing permanent or temporary horizontal bracing on horizontally supported walls.
 - B. Place backfill on subgrades free of mud, frost, snow, or ice.
 - C. Where shallow perched water or saturated soils are encountered during required excavation, the initial lifts of fill shall consist of clean sand with less than 12 percent of the soil particles by weight passing the No. 200 mesh sieve. This material should be placed to at least 2 feet about the perched water or saturated soil level or as needed to bridge over saturated in-situ soils.
 - 1. Samples of fill material shall be submitted to the Geotechnical Engineer prior to backfill for approval.
 - D. Place backfill by spreading Engineered Fill, as specified, in maximum 8-inch-thick loose lifts, except where otherwise indicated.
 - E. Slopes shall be no steeper than 3:1 (horizontal: vertical).
 - F. Place Engineered Fill materials evenly on all sides of structures to required elevations and uniformly along the full length of each structure.



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- G. Compact backfill, aggregate pavement, and utility trench Initial and Final Backfills to at least 98 percent of the Standard Proctor (ASTM D698) maximum dry density within structural areas and non-structural areas, except where otherwise indicated.
- H. Compact aggregate base course beneath asphalt pavement to 100 percent of the Modified Proctor maximum dry density (ASTM D1557).

3.11 UTILITY TRENCH BACKFILL

- A. Place Bedding Course on prepared subgrades approved by the Geotechnical Engineer and free of mud, frost, snow, or ice.
- B. Place and compact Bedding Course on trench bottoms to a minimum of 98 percent of Standard Proctor maximum dry density per ASTM D698. Shape Bedding Course to provide continuous support for bells, joints, and barrels of pipes and for fittings and bodies of conduits.
- C. Trenches under Footings: Backfill trenches excavated under footings to within 18 inches of bottom of footings with Engineered Fill; fill with concrete to elevation of bottom of footings. For concrete, see Specification 143993-ASA-DD2-SPC-1302, Cast-in-Place Concrete.
- D. Backfill voids while removing shoring and bracing.
- E. Initial Backfill:
 - 1. For HDPE pipe, place and compact Initial Backfill to a height of 6 inches over pipe or conduit. Initial Backfill shall be placed in maximum 8-inch lifts (loose measure). Coordinate backfilling with utilities testing.
- F. Final Backfill:
 - 1. Place and compact Final Backfill to final subgrade elevation. Coordinate backfilling with utilities testing.

3.12 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 3 horizontal so fill material will bond with existing material.
- B. Place and compact Engineered Fill material in layers to required elevations as follows:



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- 1. Under grass areas.
- 2. Under pavements.
- 3. Under laydown areas and areas subject to construction traffic.
- 4. Under steps and ramps.
- 5. Under building slabs.
- 6. Under footings and foundations.
- C. Place soil fill on prepared subgrades approved by the Geotechnical Engineer and free of mud, frost, snow, or ice.

3.13 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent Engineered Fill layer before compaction to within 3 percent of optimum moisture content as determined by ASTM D698 (Standard Proctor) except as otherwise indicated.
 - 1. Do not place Engineered Fill on surfaces that are muddy, frozen, or contain frost or ice.
 - 2. Remove and replace, or scarify and air dry, otherwise Satisfactory Soil material that exceeds optimum moisture content by 3 percent (except as otherwise indicated) and is too wet to compact to specified dry density.
 - 3. Each day, the surface of the compacted fill shall be shaped to drain and sealed with a smooth roller to prevent accumulation of standing water and absorption of excess moisture.

3.14 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations and uniformly along the full length of each structure.
- C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D698:
 - 1. Under structures, building slabs, and steps, scarify and recompact the upper 24 inches of fill soil material compacted to at least 98 percent.
 - 2. Under flexible, rigid, and aggregate pavements, scarify and recompact each layer of backfill or fill soil material at 98 percent with the final lift of fill soil material compacted to at least 100 percent.



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- 3. For utility trenches, compact each layer of Initial and Final Backfill soil material at 98 percent.
- 4. Under turf or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil materials to 98 percent.

3.15 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - 1. Provide a smooth transition between adjacent existing grades and new grades.
 - 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Grading: Slope grades to direct water to defined outfalls. Slope grades to direct water away from buildings and excavations, and to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following subgrade tolerances:
 - 1. Grassed or Unpaved Areas: Plus or minus 1 inch.
 - 2. Asphalt and Aggregate Pavements and Walks: Plus or minus 1/2 inch.
- C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch.
- 3.16 BASE COURSE PREPARATION AND INSPECTION UNDER PAVEMENTS AND WALKS
 - A. Place Base Course on subgrades free of mud, frost, snow, or ice.
 - B. Base Course layer under hot mix asphalt shall be installed per section 302 of KYTC Standard Specifications for Road and Bridges, latest edition.
 - C. Base Course inspection refer to section 302 of KYTC Standard Specifications for Road and Bridges, latest edition.
 - D. On prepared and approved subgrade, place Base Course under pavements and walks as follows:
 - 1. Install separation geotextile on prepared and approved subgrade according to manufacturer's written instructions, overlapping sides and ends.
 - 2. Place Base Course over separation geotextile.
 - 3. Shape Base Course to required crown elevations and cross-slope grades.



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- 4. Place Base Course in layers of equal thickness, with no compacted layer more than 8 inches thick or less than 4 inches thick.
- 5. Compact Base Course to within 3 percent of optimum moisture content to required grades, lines, cross sections, thickness and 100% maximum modified proctor according to ASTM D1557.
- 3.17 FIELD QUALITY CONTROL
 - A. Testing Agency: Owner will engage a qualified Geotechnical Engineer to perform required tests and inspections.
 - B. Allow testing agency to inspect and test subgrades, aggregate pavements/surfacing, utility trench bedding and Initial/Final Backfills, and Engineered Fills. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
 - C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Geotechnical Engineer.
 - D. Utility Excavation Bedding and Backfills: Perform at least one in-place moisture content and one density test per lift for every 100 linear foot of fill (including bedding) placed in utility trenches or areas surrounding utility structures. As a minimum, one in-place moisture content and one density test shall be performed on every lift (including bedding).
 - E. Soil Density Testing Frequency for Foundations: Perform one in-place moisture content and one density test for every 2,500 square feet per lift. As a minimum, one in-place moisture content and one density test shall be performed on every lift of fill, with a minimum of four density test per building.
 - F. Soil Density Testing Frequency for Pavement: Perform one in-place moisture content and one density test for every 10,000 square feet per lift. As a minimum, one in-place moisture content and one density test shall be performed on every lift of fill.
 - G. Soil Density Testing for Crushed Aggregate/Surfacing: Perform one in-place moisture content and one density test for every 10,000 square feet per lift. As a minimum, one in-place moisture content and one density test shall be performed on every lift of fill.



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- H. Soil Density Testing Frequency for Non-Structural Areas: Perform one in-place moisture content and one density test for every 5,000 square feet per lift. As a minimum, one in-place moisture content and one density test shall be performed on every lift of fill.
- I. When testing agency reports that subgrades, aggregate pavements/surfacing, utility trench bedding, Initial/Final Backfills, or Engineered Fills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; re-compact and retest until specified compaction is obtained.

3.18 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic except indicated construction phase traffic routes. Protect areas from freezing, saturation, and erosion as applicable. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
 - 1. Scarify or remove and replace soil material to depth as directed by Geotechnical Engineer; reshape and re-compact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.19 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Transport surplus Satisfactory Soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Geotechnical Engineer and Owner.
 - 1. Remove waste materials, including unsatisfactory soil, trash, and debris, and legally dispose them off Owner's property.

END OF SECTION 1411



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TITLE: Stormwater Conveyance	143993-ASA-DD1-SPC-1415
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Big Rivers Electric Corporation

AREA NO.:

APPROVAL STATUS											
PREPAR	RED BY:	KAV	DATE	15FEB21	APPROVED B	APPROVED BY: BTH		DATE	05MAR21		
CHECK	ED BY:	BTH	DATE	13MAY21	APPROVED B	APPROVED BY: NDH		APPROVED BY: NDH DATE		DATE	05MAR21
				REVISIO	N STATUS						
REV		ISSUED FOR		REVISED BY	CHECKED BY APPROVAL APPROVAL		DATE				
А		APPROVAL	-	KAV	BTH NDF		NDH	05MAR21			
В		BID		KAV	BTH SJS NDH 0		01APR21				
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TITLE: Stormwater Conveyance	143993-ASA-DD1-SPC-1415
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SECTION 1415 - STORMWATER CONVEYANCE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Pipe and fittings.
 - 2. Catch basins.
- B. Related Requirements:
 - 1. 143993-ASA-DD1-SPC-1411, Earth Moving
 - 2. 143993-ASA-DD1-SPC-1410, Facility Water Distribution Piping
 - 3. 143993-ASA-DD1-SPC-1416, Facility Sanitary Sewer
 - 4. 143993-ASA-DD2-SPC-1302, Cast-in-Place Concrete
 - 5. American Society for Testing and Materials (ASTM) Standards, latest revision
 - 6. American Concrete Pipe Association (ACPA) Standards, latest revision
 - 7. American Association of State Highway and Transportation Officials (AASHTO) Standards, latest revision

1.3 DEFINITIONS

A. Engineer:

Wood. (Doing business as Wood Group USA, Inc.) 30 Patewood Dr., Suite 200 Greenville, SC 29615

B. Owner:

Big Rivers Electric Corporation D.B. Wilson Station 5663 KY-85 Centertown, KY 42328



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1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings:
 - 1. Catch Basins Include plans, elevations, sections, details, frames, and grates;
 - 2. Pipe and Fittings;
 - 3. Pipe-to-Catch Basin Connections.

1.5 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Show pipe sizes, locations, and elevations. Indicate interface and spatial relationship between catch basins, piping, and proximate structures.
- B. Product Certificates: For each type of pipe and fitting, from manufacturer.
- C. Field quality-control reports.
- 1.6 DELIVERY, STORAGE, AND HANDLING
 - A. Do not store plastic pipe and fittings in direct sunlight.
 - B. Protect pipe, pipe fittings, and seals from dirt and damage.
 - C. Handle catch basins in accordance with manufacturer's written rigging instructions.

PART 2 - PRODUCTS

2.1 POLYETHYLENE (PE) PIPE AND FITTINGS

- A. High Density Polyethylene (HDPE) Pipe NPS 4 to NPS 10: AASHTO M252, Type S watertight according to the requirements of ASTM D3212. Pipe joints shall have watertight gaskets in accordance with ASTM F477. Fittings shall be watertight and conform to AASHTO M252.
- B. All HDPE pipe shall be made from virgin material. HDPE pipe and fittings shall not be made from reprocessed material.



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2.2 CATCH BASINS

- A. Standard Precast Concrete Catch Basins:
 - 1. Description: ASTM C478, precast, reinforced concrete, of depth indicated, with provision for sealant joints.
 - 2. Diameter: As indicated on drawings.
 - 3. Base Section: 8-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section, and separate base slab or base section with integral floor.
 - 4. Riser Sections: As needed for manhole depths indicated on drawings.
 - 5. Top Section: Eccentric-cone type unless concentric-cone or flat-slab-top type is indicated, and top of cone of size that matches grade rings. Flat-slab-top in areas of limited elevation.
 - 6. Joint Sealant: ASTM C443, bitumen or butyl rubber.
 - 7. Adjusting Rings: Interlocking HDPE rings with level or sloped edge in thickness and shape matching catch basin frame and grate. Include sealant recommended by ring manufacturer.
 - 8. Grade Rings: Reinforced-concrete rings, of 6- to 9-inch total thickness, to match diameter of manhole frame and cover, and height as required to adjust frame and cover/grate to indicated elevation and slope.
 - 9. Sump: 12" sump depth. Sump depth measured from invert of outlet pipe to floor of manhole.
 - 10. Steps: Steps shall not be installed in catch basins.
 - 11. Pipe Connectors: ASTM C923, resilient, of size required, for each pipe connecting to base section.
- B. Frames and Covers:
 - 1. As specified on the drawings
 - 2. Load rating shall be HS-20.

2.3 CONCRETE

1. General: Cast-in-place concrete according to 143993-ASA-DD2-SPC-1302, Castin-Place Concrete.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Excavation, trenching, and backfilling are specified in specification 143993-ASA-DD1-SPC-1411, Earth Moving.



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3.2 PIPING INSTALLATION

- A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.
- B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.
- C. Install catch basins for changes in direction as indicated in Section 3.4 unless fittings are indicated.
- D. When installing pipe under streets or other obstructions that cannot be disturbed, use pipe-jacking process of microtunneling or horizontal directional drilling as approved by Owner or Engineer.
- E. Install gravity-flow, non-pressure drainage piping according to the following:
 - 1. Install piping pitched down in direction of flow.
 - 2. Install piping with 24-in minimum cover.
 - 3. Install PE piping according to ASTM D2321.
 - 4. Any unknown underground utilities encountered during piping installation shall be reviewed for impacts with the Engineer prior to proceeding with construction.

3.3 PIPE JOINT CONSTRUCTION

A. Join gravity-flow, nonpressure drainage piping according to the following:
 1. Join PE piping according to ASTM D3212 for push-on joints.

3.4 CATCH BASIN INSTALLATION

- A. General: Install catch basins, complete with appurtenances and accessories indicated.
- B. Install precast concrete catch basin sections according to ASTM C478, Standard Specification for Circular Precast Reinforced Concrete Manhole Sections.
- C. Where specific catch basin construction is not indicated, follow manufacturer's written instructions.


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D. Set catch basin frames and grates to elevations as indicated on drawings.

3.5 CONCRETE PLACEMENT

A. Place cast-in-place concrete according to 143993-ASA-DD2-SPC-1302, Cast-in-Place Concrete.

3.6 IDENTIFICATION

- A. Materials and their installation are specified in 143993-ASA-DD1-SPC-1411, Earth Moving. Arrange for installation of green warning tape directly over piping and at outside edge of underground structures.
 - 1. Use detectable warning tape over all piping and over edges of underground structures.

3.7 FIELD QUALITY CONTROL

- A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place and again at completion of project.
 - 1. Submit separate reports for each system inspection.
 - 2. Defects requiring correction include the following:
 - a. Alignment: Less than full diameter of inside of pipe is visible between structures.
 - b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
 - c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
 - d. Infiltration: Water leakage into piping.
 - e. Exfiltration: Water leakage from or around piping.
 - 3. Replace defective piping using new materials and repeat inspections until defects are removed.
 - 4. Reinspect and repeat procedure until results are satisfactory.
- B. Following completion of inspections and any required repairs per section 3.7.A, test new piping systems including catch basin and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.
 - 1. Do not put into service before successful completion of testing outlined in this section.



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- 2. Test completed piping systems in accordance with requirements listed below or as otherwise required by authorities having jurisdiction.
- 3. Schedule tests with Engineer and authorities having jurisdiction with at least 24 hours advance notice.
- 4. Submit separate report for each test, including any required corrective actions.
- 5. Test storm drainage systems according to the following:
 - a. Hydrostatic tests shall be conducted by applying pressure to the test section through a static water column in an open standpipe or storm water structure. Minimum water column height shall be 10'. Other test methods shall be reviewed and approved by the Engineer.
 - b. Contractor shall coordinate with Engineer on required test pressure/elevation for each test section.
 - c. Install temporary plug at downstream end of test section. Temporary plug shall have a minimum pressure rating greater than the system test pressure.
 - d. Contractor shall make appropriate provisions to restrict access to test section and maintain safe work conditions during the testing procedure.
 - e. Use only clear water for filling of the test section. Fill the test section slowly to test elevation. Purge all air. Take all appropriate precautions to ensure that no air is trapped in the test section.
 - f. Maintain test pressure/elevation for at least 15 minutes.
 - g. No visible leakage over 15-minute test period shall indicate a passing test.
 - h. If leakage is observed, safely drain test section to a suitable stabilized outfall approved by engineer, make necessary repairs or corrections using new materials, and repeat test.
 - i. Upon successful test completion, safely drain test section to a suitable stabilized outfall approved by engineer prior to removal of the temporary plug.
- 6. Underdrain piping system shall be excluded from testing requirements.
- C. Leaks and loss in test pressure constitute defects that must be repaired.
- D. Replace leaking piping using new materials, repair leaking structures and other system components as applicable, and repeat testing until a passing test is achieved.
- 3.8 CLEANING
 - A. Clean interior of piping, structures, and other system components as applicable of dirt and superfluous materials. Flush with water.

END OF SECTION 1415



In the Matter of:

ELECTRONIC APPLICATION OF) **BIG RIVERS ELECTRIC CORPORATION**) FOR APPROVAL OF ITS 2020 ENVIRONMENTAL) **COMPLIANCE PLAN, AUTHORITY TO RECOVER COSTS** THROUGH A REVISED ENVIRONMENTAL SURCHARGE) AND TARIFF, THE ISSUANCE OF A CERTIFICATE OF) PUBLIC CONVENIENCE AND NECESSITY FOR CERTAIN) **PROJECTS, AND APPROPRIATE ACCOUNTING**) AND OTHER RELIEF)

Case No. 2019-00435

Project 12 Wilson Station FGD Replacement and Upgrade

Scope of Work Document dated April 2, 2021 Appendix B – Structural Specifications

Filed pursuant to Ordering Paragraph No. 18 of Commission's August 6, 2020 Order FILED: June 18, 2021



In the Matter of:

ELECTRONIC APPLICATION OF) **BIG RIVERS ELECTRIC CORPORATION**) FOR APPROVAL OF ITS 2020 ENVIRONMENTAL) COMPLIANCE PLAN, AUTHORITY TO RECOVER COSTS Case No. THROUGH A REVISED ENVIRONMENTAL SURCHARGE) 2019-00435 AND TARIFF, THE ISSUANCE OF A CERTIFICATE OF) PUBLIC CONVENIENCE AND NECESSITY FOR CERTAIN) PROJECTS, AND APPROPRIATE ACCOUNTING) AND OTHER RELIEF)

> Project 12 Wilson Station FGD Replacement and Upgrade

Appendix B – Structural Specifications Document Index

Filed pursuant to Ordering Paragraph No. 18 of Commission's August 6, 2020 Order FILED: June 18, 2021

Document Number

Document Title

143993-ASA-DD2-SPC-1300 143993-ASA-DD2-SPC-1301 143993-ASA-DD2-SPC-1302 143993-ASA-DD2-SPC-1303 143993-ASA-DD2-SPC-1304 143993-ASA-DD2-SPC-1305 Auger-Grouted Piles – Construction Specification Drilled Piers – Construction Specification Cast–In–Place Concrete – Construction Specification Grout – Construction Specification Structural Steel Framing – Construction Specification Special Inspections and Tests –

Construction Specification

TITLE: AUGER-GROUTED PILES		PROJEC DOC. NC	T 143993-AS	A-DD2-SPC-1300	REV.	0		
PROJECT NAME:	D.B. W Retrofit	/ilson Project	Station	FGD	PROJECT NO.:	245891		
CLIENT: Big River Electric Corpora		ration	AREA NO.:					

	APPROVAL STATUS											
PREPA	RED BY:	DRF	DATE	10FEB21	CHECKED E	BY: SCK	DATE	23FEB21				
APPROVED BY: JDW DATE		12FEB21	APPROVED	BY: CLF	DATE	DATE 01APR21						
REVISION STATUS												
REV	ISSUED FOR		REVISED BY	CHECKED BY	APPROVAL	APPROVAL	DATE					
А	APPRO	OVAL		DRF	JDW			12FEB21				
В	BID			SCK	JDW	CLF	NDH	01APR21				
0	CONS	TRUCTIO	N	SCK	JDW	CLF	NDH	20MAY21				

Permit Stamp



Engineer's Seal



wood.

TITLE: AUGER-GROUTED PILES

PROJECT DOC. NO.: 1

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SECTION 316316

AUGER-GROUTED PILES

1.0 GENERAL

- 1.1 SCOPE
- 1.1.1 This Specification includes the furnishing of all materials, labor, equipment, and supplies, and the performance of all operations necessary to install auger-grouted piles. The piles shall be the kind and quality specified herein and shall be placed as shown on the Drawings and installed as specified herein.
- 1.1.2 Site Conditions: The Contractor shall examine the areas and conditions under which piles are to be installed and notify the Owner's Representative in writing, two weeks before beginning pile installation, of conditions detrimental to the proper and timely completion of the work.
- 1.1.3 Existing Utilities: If utilities are to remain in place, provide protection from damage during operations. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, consult the Owner's Representative immediately for directions as to procedures. Cooperate with the Owner's Representative and the public or private utility companies, in keeping their respective service and facilities in operation. Repair damaged utilities by methods approved by the utility owner.
- 1.2 OTHER PROJECT SPECIFICATION SECTIONS REFERENCED HEREIN
 - Special Inspections and Testing SECTION 014533
- 1.3 PUBLICATIONS REFERENCED HEREIN (Latest edition unless noted)
 - American Society for Testing and Materials (ASTM), Standards as indicated
 - OSHA Regulations 29 CFR Part 1910 Occupational Safety and Health Standards
 - OSHA Regulations 29 CFR Part 1926 Safety and Health Regulations for Construction
 - 2015 International Building Code, Chapter 17 Special Inspections and Tests
- 1.4 DEFINITIONS
- 1.4.1 Contractor. Company, partnership or corporation responsible for providing the piling and all scope of work defined herein.
- 1.4.2 Owner. Big River Electric Corporation.
- 1.4.3 Owner's Representative. The authorized representative of the Owner.
- 1.4.4 Engineer. Wood, doing business as AMEC Foster Wheeler Industrial Power Company, Inc.

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- 1.4.5 Geotechnical Engineer. An independent soils engineering consultant, engaged by the Owner, who shall determine installation criteria in consultation with the Engineer and shall perform inspection services as required. The Geotechnical Engineer shall be licensed in the State of Kentucky.
- 1.4.6 Testing Laboratory. An independent engineering testing laboratory engaged by the Owner to perform testing services required in this section not otherwise designated, and to perform any such services requested by the Owner's Representative.
- 1.4.7 Auger Refusal. The point at which the auger, with approved cutting teeth, rotating under its full weight at the standard drilling speed, advances no more than two inches in one minute.
- 1.4.8 Production Piles. Piles installed after completion of pile load tests.
- 1.4.9 Special Inspections. Inspections required by the International Building Code, Chapter 17, for the materials, installation, fabrication, erection or placement of components and connections requiring special expertise to ensure compliance with approved construction documents and reference standards.
- 1.5 SUBSURFACE SOIL INFORMATION

Reports of subsurface soil investigations pertaining to this project are available from the Owner upon request. The contents of these reports are offered only as general information. These reports were prepared only for the Owner's and Engineer's use in design and do not form a part of this contract. These reports are not a warranty of subsurface conditions. The reference report is "Report of Geotechnincal Engineering Study Addition to D., B. Wilson Station Big Rivers Electirc Corporation Centertown, Kentucky", Wood Environment & Infrastructure Solutions, Inc. 1800 Ezell Road, Suite 100 Nashville, Tennessee 37211, Wood E&IS Project No. 7382-20-9000, dated 30 November 2020.

- 1.6 SUBMITTALS
- 1.6.1 *Certifications of Contractor's Capability.* The Contractor shall provide evidence that the Contractor has successfully completed three previous similar projects with approximately the same piling quantity under similar subsurface conditions.
- 1.6.2 *Description of Proposed Materials and Equipment.* The Contractor shall provide a written mix design report for the proposed grout (including pertinent physical properties of each ingredient used) and manufacturer's data on the equipment to be used.
- 1.6.3 *Description of Proposed Installation Procedure.* The Contractor shall provide a written explanation of the proposed procedures for the pile testing and pile installation.
- 1.6.4 *Daily Piling Reports.* The Contractor shall provide written reports which outline the amount and nature of work accomplished each day, including identifying each pile installed. These reports shall include pile locations, elevations of tip and level of cut off, the amount of grout used to complete each pile, and explanation of anything unusual relative to pile installation or operation of the equipment. These daily reports shall be submitted to the Engineer and the Geotechnical Engineer for review.

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1.6.4.1 The piling report shall also include the following data:

- Amount of water added to the ready mix grout truck at the jobsite •
- Flow cone results •
- Time of starting auger removal •
- Time of completion of auger removal •
- Rate of auger withdrawal •
- Ready Mix truck delivery ticket batch number •
- Number of grout samples taken per pile •
- Field Grout Test Reports. Provide written reports of specified testing of representative grout 1.6.5 test cubes or cylinders. All grout test cubes or cylinders shall have a unique numbering system, identifying them with the pile represented, and the Ready Mix truck delivery ticket batch number.
- 1.6.6 Final Installation Report. The Geotechnical Engineer shall provide a written summary of the piling installation. All deviations from the specifications and anything unusual relative to the pile installation shall be noted and the corrective action taken, described. This summary shall bear the Geotechnical Engineer's seal and signature.
- 1.6.7 Special Inspections Reports. All special inspections reports shall be prepared and submitted as described in Section 014533, Special Inspections and Tests, of the Construction Specifications.

1.7 INSTALLATION CRITERIA

Final pile bottom elevations and other pertinent installation criteria shall be determined by the Geotechnical Engineer after pile load tests have been completed. Production piles shall be installed in accordance with these criteria, as directed by the Geotechnical Engineer's Representative.

ALTERNATE PILE TYPE 1.8

An alternate pile type of equal capacity and having a proven performance record may be submitted for consideration, provided that the Contractor's submittal includes a complete material and installation specification which contains requirements corresponding to those included in this Section and descriptive material which documents the fact that the proposed piling will in all respects be capable of meeting the requirements of this Section. Alternate pile type submittals shall contain the following information: pile diameters, lengths, allowable compression, tension & lateral load capacities, minimum spacing requirements, group effect factors for lateral loads, vertical pile stiffness and lateral pile stiffness.

1.9 PRECONSTRUCTION CONFERENCE

A preconstruction conference shall be conducted at the job site prior to the installation of the first pile, between the Contractor, the Geotechnical Engineer, and the Owner's Representative, for a final review of the proposed materials, equipment, and procedure.

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1.10 SAFETY

The Contractor and others engaged in performing the work for this specification shall perform their work in a safe manner in accordance with OSHA regulations and all safety requirements of the Owner.

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2.0 PRODUCTS

- 2.1 GENERAL
- 2.1.1 All materials shall be new and all equipment shall be in good repair and capable of performing the work intended.
- 2.1.2 Auger-grouted piling shall be placed in accordance with this specification, unless the Contractor is given permission to place another type of piling as provided in Paragraph 1.8. The number of piles and locations shall be in accordance with the piling plan drawings regardless of pile type.
- 2.2 MATERIALS FOR AUGER-GROUTED PILING
- 2.2.1 Portland Cement shall conform to ASTM C150, Type II, all of the same brand.
- 2.2.2 Pozzolan material shall be a fly ash or other approved pozzolanic material conforming to ASTM C618.
- 2.2.3 Grout fluidifier shall conform to ASTM C937, except that expansion shall not exceed 4 percent. The fluidifier shall be a compound possessing characteristics which will increase the flowability of the mixture, assist in the dispersal of cement grains, and neutralize the setting shrinkage of the high-strength cement mortar.
- 2.2.4 Fine aggregate shall conform to ASTM C33 (Concrete Aggregates).
- 2.2.5 Admixtures used in the work shall be of the same composition as those used in the laboratory trial batch. Calcium chloride shall not be used.
- 2.2.6 Mixing water shall be suitable for drinking.
- 2.2.7 Grout used for the pile shafts shall consist of an approved mixture of Portland cement, a pozzolanic material when approved, fluidifier, fine aggregate and water, proportioned and mixed so as to provide a grout capable of maintaining the solids in suspension without appreciable water gain and so as to attain a minimum compressive strength of 4000 psi in 28 days, yet which may be placed without difficulty and which will laterally penetrate and fill any voids in the foundation material.
- 2.2.8 *Laboratory Strength Requirements.* A laboratory trial batch of any grout mix to be used for batching project concrete shall attain a minimum compressive strength of 250 psi in 4 hours, 500 psi in 8 hours, 2500 psi in 7 days and 4000 psi in 28 days.
- 2.3 REINFORCING STEEL
- 2.3.1 All reinforcing steel shall conform to ASTM A615 Grade 60, or as otherwise noted on the Drawings.
- 2.3.2 Dywidag Threadbar, as manufactured by Dywidag Systems International, (or approved equal) conforming to ASTM A722 Grade 150 as indicated on the Drawings. The Dywidag Threadbar is not to be installed as a post tension system. Only a single bar is to be provided and installed per tension pile as indicated on the Drawings. All necessary hardware shall

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be provided to ensure that the Dywidag Threadbar is installed at the center of the pile to within 6 inches of the bottom of the pile.

2.4 AUGER-GROUTED PILING EQUIPMENT

- 2.4.1 Augering equipment shall be hollow-shafted with a minimum inside diameter of $1\frac{1}{4}$ inches and shall meet the following requirements:
 - Shall be capable of imparting sufficient torque to the auger to produce piles of the specified capacity, subject to the approval of the Geotechnical Engineer.
 - Auger flighting shall be continuous over the entire length with no gaps.
 - Piling leads shall be equipped to prevent noticeable rotational or wobble movement.
- 2.4.2 *Mixing and Pumping Equipment.* The mixing equipment shall be of the continuous mixing and continuous agitating type. The grout pump, equipped with a grout pressure gauge, shall be a positive displacement piston-type pump capable of developing the required displacing pressures, and shall not contain oil or other rust inhibitor. Adequate means for insuring continuity in the pumping operation and for insuring the placing of grout homogeneously shall be provided. The Contractor shall document the total volume of grout placed in each pile.

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3.0 EXECUTION

3.1 GENERAL

The Contractor shall furnish all piling materials, labor, tools, supervision, equipment, and supplies necessary for installing auger-grouted piles in accordance with the contract documents and this specification.

The Contractor shall comply with Federal Standards and Instructions of the Occupational Safety and Health Administration (OSHA), including any additional requirements by state or local agencies that have jurisdiction where piles are to be installed.

The installation of each pile shall not begin until each specified preliminary requirement is met. The Geotechnical Engineer's Representative shall be present during the complete installation of each pile.

3.2 LOCATION OF PILES

Test piles, as well as other piles required for load tests, shall be located as shown on the Drawings or as otherwise directed by the Owner's Representative.

The locations of the piles as shown on the Drawings shall be established by a surveyor registered in the State of Kentucky. The Surveyor shall be paid by the Contractor.

- 3.3 PLACEMENT TOLERANCES
- 3.3.1 Pile centers shall be located to an accuracy of plus or minus three inches.
- 3.3.2 Pile cutoffs shall be within one inch of elevations shown on the Drawings.
- 3.3.3 Vertical piles shall be plumb within two percent.
- 3.3.4 Battered piles shall be installed to within four percent of the specified batter as determined by the angle from horizontal.
- 3.4 PILE LOAD TESTS
- 3.4.1 General
 - The Piling Contractor's proposed load test set up, equipment and testing procedures shall be submitted to the Engineer and Geotechnical Engineer for approval prior to performing the load tests as required below.
 - Install test piles in the locations and depth as determined by the Piling Contractor and based on design criteria as shown on the Drawings. Installation of the test piles and reaction piles shall be to the same tolerance as applicable for the production piles. The Geotechnical Engineer's Representative shall monitor the installation of the test and reaction piles.
 - The grout shall reach the required design strength before applying test loads.
 - Perform the load tests to the loads indicated within this specification using the "Standard Loading Procedures" referenced in ASTM D1143, D3966 and D3689 and compile complete records for all test piles indicated, under the observation and with the consultation of the Geotechnical Engineer.

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- 3.4.2 Static Axial Compressive Load Test:
 - The compressive load tests shall be conducted in accordance with ASTM D1143.
 - The maximum test load shall be at least 200 percent of the design compressive load.
 - The maximum load application shall be held and monitored for a period of 2 hours.
 - The test and reaction piles shall not be used as production piles.

3.4.3 Lateral Load Test:

- The lateral load tests shall be conducted in accordance with ASTM D3966.
- The maximum test load shall be limited to that load which produces ½-inch of lateral deflection for safety and load stability reasons.
- The test and reaction piles shall not be used as production piles.
- 3.4.4 Static Axial Tensile Load Test:
 - The tensile load tests shall be conducted in accordance with ASTM D3689.
 - The maximum test load shall be at least 200 percent of the design tensile load.
 - The test and reaction piles shall not be used as production piles.

3.4.5 Strain Gauges for Load Tests

Provide a minimum of four strain gauges per test pile.

3.5 EVALUATION OF PILE TESTS

The Geotechnical Engineer shall analyze test pile results and shall determine from these results the depth of pile to be used for each pile location.

3.6 PRODUCTION PILES

Production piles shall be installed in the same manner as the test piles (except as directed by the Geotechnical Engineer) to the depth determined by the Geotechnical Engineer from the load test results.

3.7 AUGER-GROUTED PILING

- 3.7.1 General. Auger-grouted piles shall be placed by rotating a continuous flight hollow-shaft auger into the ground to a predetermined pile depth. Grout is then injected through the auger shaft as the auger is being withdrawn in such a way as to exert removing pressure on the withdrawing earth-filled auger as well as lateral pressure on the soil surrounding the grout-filled pile hole. The specified installation procedure shall be used at all times, even when the hole is sufficiently stable to retain its shape without support from the earth-filled auger. Auger withdrawal rate should not exceed 10 feet per minute unless a faster rate can be demonstrated to be acceptable.
- 3.7.2 *Location of Equipment.* Unless otherwise approved by the Geotechnical Engineer, the augering equipment shall be located not closer than 10 feet from the location of a pile being installed and not closer than 10 feet from any pile grouted within the previous 24 hours.

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- 3.7.3 *Termination of Augering.* Augering for each pile shall be terminated in accordance with on-the-site instructions of the Geotechnical Engineer's Representative.
- 3.7.4 *Obstructions.* If the Geotechnical Engineer's Representative determines that an obstruction causes auger refusal, as defined, to be reached prematurely, installation of the pile shall be terminated. The Geotechnical Engineer shall instruct the Contractor how to proceed further to provide support for the load assigned to that particular pile.
- 3.7.5 *Batching and mixing grout.* All grout shall be batched in accordance with the approved mix design and shall be homogeneously mixed to the desired consistency. When measured for fluidity by ASTM C939, flow rates shall be in the range of 10 to 25 seconds when using a flow cone with a 3/4 inch opening, or as approved by the Geotechnical Engineer.
- 3.7.6 *Pumping of Grout.* After achieving the desired pile tip depth, a positive grout pressure should be observed prior to initiating withdrawal of the auger. As the auger is withdrawn, specified grout shall be pumped through the opening provided at the bottom of the auger with sufficient pump pressure and sufficient grout volume to fill the hole, to prevent hole collapse, and to cause the lateral movement of the grout into any soft or porous zones of the surrounding soil. This pressure, measured at the pump, shall not be less than 200 psi, or as approved by the Geotechnical Engineer.
- 3.7.7 The auger should be withdrawn slowly and smoothly so that a positive grout pressure head is maintained in the hole at all times during auger withdrawal. Until the grout reaches the top of the pile, a head of ten or more feet of grout above the injection point shall be carried around the perimeter of the auger flighting at all times during the raising of the auger, so that the grout has a displacing action removing any loose material from the hole. Grout shall be placed within 90 minutes of batching.
- 3.7.8 Rate of grout injection and auger withdrawal from the soil shall be coordinated so as to maintain a steady positive pressure on the grout pressure gauge at all times and to insure that the minimum required grout volume is placed in every five foot increment of the pile. The auger shall not be rotated during withdrawal except as allowed by the Geotechnical Engineer's Representative.
- 3.7.9 The minimum volume of grout placed in the augered excavation shall be equal to the theoretical volume of a "true" hole plus fifteen percent (to account for an increased hole diameter due to auger warp and lateral soil displacement due to grout pressure).
- 3.7.10 The Contractor shall determine the volume of grout per pump stroke and the minimum number of strokes required for each five feet of auger withdrawal (to pump a grout volume equal to 115% of the theoretical hole volume). This data is to be verified by the Geotechnical Engineer's Representative.
- 3.7.11 The Contractor shall mark the "leads" of the installation rig at five-foot increments in such a manner as to be clearly visible to an inspector located at the pump.
- 3.7.12 If grout subsidence occurs after auger removal (due to bulging of the grout column in very loose clayey sand or very soft clay zones, for example), the pile should be topped off with grout as necessary. If the grout becomes contaminated with soil as its level recedes, then it will be necessary to either manually remove the contaminated grout before topping off

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the pile, or insert the grout hose into the fluid grout in the pile and pump grout below the contaminated zone to "flush out" the contaminated grout.

- 3.7.13 Automated Monitoring Equipment (AME) may be used to monitor the following items; however, it does not replace the field inspection by the Geotechnical Engineer.
 - Auger Depth
 - Installation Drilling Rate
 - Grout Volume Pumped Per Unit Depth Increment
 - Minimum and Maximum Grout Pressure
 - Angle of Installation
 - Number of Auger Revolutions, or Speed of Rotation
- 3.7.14 *Inspection.* The Geotechnical Engineer's Representative shall monitor the complete installation of each pile. He shall confirm the length of each pile, the volume of grout placed in each five-foot length of the pile, the maintenance of adequate grout pump pressure, the rate of auger withdrawal, and general compliance with the specifications.
- 3.7.15 *Grout.* Grout at top of pile shall be fully confined laterally either by the sides of a well defined auger excavation, which extends at least 6 inches higher than the pile cut-off level, or by a steel tube of suitable diameter centered over the pile and extending at least one-foot below the level at which firm augered excavation edges occur.
- 3.7.16 *During a Temporary Interruption.* When placing of grout is interrupted for more than 15 minutes (or as determined by the Geotechnical Engineer's Representative), the auger and hose shall be retracted and any grout remaining in the truck shall be continuously circulated through the pump during the interruption period. Following permission by the Geotechnical Engineer's Representative to resume operations, the hole shall be reaugered; then, placing of approved grout shall begin again.
- 3.7.17 *Installation of Low-Headroom Piles.* After having temporarily disconnected the grout line to remove a portion of the auger, the hole shall be re-augered at least five feet before grout placement resumes, unless the Geotechnical Engineer's Representative determines that additional re-augering is required.
- 3.7.18 *Starting of Adjacent Piles*. The sequence of pile installation shall be such that adjacent piles show no evidence of disturbance. Piles shall not be installed within 6-pile diameters center-to-center of a pile grouted within the previous 24 hours nor within 5 feet of a pile grouted within the previous 72 hours.
- 3.7.19 *Testing Grout.* Cubes or cylinders for testing grout prior to placing shall be made and tested by the Testing Laboratory in accordance with ASTM C109, with the exception that the grout shall be restrained from expansion by top and bottom plates held in place with two "C" clamps. At least two sets of six, 2-inch square grout cubes, or 3-inch diameter by 6-inch long grout cylinders shall be made during each day of pile installation, two of which shall be tested at 7 days, two of which shall be tested at 28 days, and two of which shall be kept in reserve for use as may be required.

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TITLE: AUGER-GROUTED PILES

PROJECT 1439

143993-ASA-DD2-SPC-1300 REV.

3.8 PLACING REINFORCEMENT

All reinforcement required shall be placed as detailed immediately after removal of the auger (while grout is still fluid), or as noted on the Drawings. Placement of reinforcement shall include vibratory equipment as required.

3.9 PILE CUT-OFF

The final elevation of the top of the pile shall be set by either "dipping" the grout while it is in a fluid state or cutting off the pile after the grout has hardened (at the Contractor's option).

3.10 PILES INCORRECTLY INSTALLED

If, due to Contractor error or negligence, any piles that are not correctly positioned or are otherwise incorrectly installed, all work required to fulfill the requirements of the Drawings and Specifications to the satisfaction of the Owner's Representative shall be performed by the Contractor at no additional cost to the Owner. Unless otherwise provided, augered holes that cannot be used shall be filled with grout.

3.11 QUALITY CONTROL

During pile installation, the following quality control observations shall be performed by qualified geotechnical personnel.

- Monitor the installation procedures to check that the tip depths are properly achieved and that auger withdrawal techniques are sufficient to remove loose cuttings from the pile.
- Monitor and record the rate of auger penetration and withdrawal.
- Check and calibrate the equipment for controlling and measuring the flow rate of grout into the pile.
- Monitor the ratio of actual grout take to the theoretical hole pile volume.
- Monitor the installation of steel reinforcement.
- Check the fluid grout level in completed piles during installation of an adjacent pile.
- Sample and test specimens of the fluid grout. Mold at least two sets of 2-inch by 2inch grout cubes or 3-inch diameter by 6-inch long grout cylinders, each day during pile production, for compressive strength testing.

3.12 APPLICATION OF LOAD TO COMPLETED PILING

The results of compression testing of representative grout placed in a particular pile shall be equal to or greater than the minimum compressive strength required. Any corrective work required shall be accomplished before any load is applied to this pile.

3.13 CLEANING UP

At the end of each day of work all debris and excess materials generated by the piling installation at the location of each completed pile shall be removed to designated spoil areas, or as directed by the Owner's Representative.

3.14 SPECIAL INSPECTION

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TITLE: AUGER-GROUTED PILES

PROJECT DOC. NO.:

143993-ASA-DD2-SPC-1300 REV. 0

The required verification and inspection of auger-grouted piling (cast-in-place deep foundation elements) shall be in accordance with the International Building Code, Section 1704 "Special Inspections, Contractor Responsibility and Structural Observations", Section 1705 "Required Verification and Inspection" and Table 1705.8.

In addition, refer to Section SECTION 014533, Special Inspections and Tests, of the Construction Specifications.

END OF SECTION

wood.

CONSTRUCTION SPECIFICATION

TITLE: Drille	d Piers	PROJECT DOC. NO.	:	143993-ASA-D	D2-SPC-1301	REV.	0
PROJECT NAME:	D.B. Wilson Retrofit Project	Station	FGD	PROJECT NO.:	245891		
CLIENT:	Big River Electri	ic Corpor	ation	AREA NO.:			

	APPROVAL STATUS											
PREPA	RED BY:	DRF	DATE	10FEB21	10FEB21 СНЕСКЕД ВУ		DATE	23FEB21				
APPRO	VED BY:	JDW	DATE	12FEB21 APPROVED BY:		BY: CLF	DATE	01APR21				
REVISION STATUS												
REV		ISSUED F	OR	REVISED BY	CHECKED BY	APPROVAL	APPROVAL	DATE				
А	APPRO	OVAL		DRF	JDW			12FEB21				
В	BID			SCK	JDW	CLF	NDH	01APR21				
0	CONS	TRUCTIO	N	SCK	JDW	CLF	NDH	20MAY21				

Permit Stamp







TITLE:	Drilled Piers	PROJECT DOC. NO.:	143993-ASA-DD2-SPC-1301	REV.	0	

SECTION 316329

DRILLED PIERS

1.0 GENERAL

1.1 SCOPE

This Specification includes all materials, labor, equipment and services required to install drilled pier foundations, in accordance with the Drawings, Construction Specifications, and Scope of Work Document.

Work on this project shall conform to all the requirements of ACI Specification 336.1-01 published by the American Concrete Institute, Farmington Hills, Michigan, except as modified by this Construction Specification and the Scope of Work Document.

Where there is a discrepancy between the Drawings and this Specification, the Drawings shall take precedence.

1.2 OTHER PROJECT SPECIFICATION SECTIONS REFERENCED HEREIN

- Cast-In-Place Concrete SECTION 033000
- Special Inspections and Testing SECTION 014533
- 1.3 PUBLICATIONS REFERENCED HEREIN (Latest edition unless noted)
 - American Concrete Institute (ACI), "Specification for the Construction of Drilled Piers (ACI 336.1-01)". Attachment 1 to this Construction Specification.
 - OSHA Regulations 29 CFR Part 1910 Occupational Safety and Health Standards
 - OSHA Regulations 29 CFR Part 1926 Safety and Health Regulations for Construction
 - 2015 International Building Code, Chapter 17 Special Inspections and Tests

1.4 DEFINITIONS

- 1.4.1 Contractor. Company, partnership or corporation responsible for providing the drilled piers and all scope of work defined herein.
- 1.4.2 Owner. Big River Electric Dorporation.
- 1.4.3 Owner's Representative. The authorized representative of the Owner.
- 1.4.4 Engineer. Wood, doing business as AMEC Foster Wheeler Industrial Power Company, Inc.
- 1.4.5 Others. Any vendor, contractor, etc., other than the Contractor and Owner herein defined.
- 1.4.6 Geotechnical Engineer. An independent soils engineering consultant, engaged by the Owner, who shall determine installation criteria in consultation with the Engineer and shall perform inspection services as required. The Geotechnical Engineer shall be licensed in the State of Kentucky.



TITLE:	Drilled Piers	PROJECT 143993- DOC. NO.:	ASA-DD2-SPC-1301	REV. 0				
1.4.7	Testing Laboratory. An Owner to perform testing to perform any such serv	Testing Laboratory. An independent engineering testing laboratory engaged by the Owner to perform testing services required in this section not otherwise designated, and to perform any such services requested by the Owner's Representative.						
1.4.8	Special Inspections. Insp for the materials, instal connections requiring construction documents	ections required by the Intration, fabrication, erection pecial expertise to ensu	ernational Building Coo n or placement of co ure compliance with	le, Chapter 17, mponents and the approved				
1.4.9	Rock. Any natural mater machine equipped with a	Rock. Any natural material which cannot be removed with a fully operative earth boring machine equipped with a conventional earth auger.						
1.4.10	Earth. Any material not c	assified as rock which can	be removed with the e	arth auger.				
1.5	SUBMITTALS							
1.5.1	General. All submittals persons or parties identif	required by this specifica ed in the contract docume	ation and ACI 336.1 s nts.	shall be to the				
1.5.2	Certification of Contracto	's Qualifications. See Para	agraph 1.9.1.					
1.5.3	Detailed description of including type of equip hardware or miscellaneo	Detailed description of the proposed method of performing each stage of the work including type of equipment to be used and details and function of any proposed hardware or miscellaneous items.						
1.5.4	Concrete Design Mix Re Production Concrete Te Concrete Specification S	ports, Mill Test Reports, F t Reports shall be submit ECTION 033000.	Reinforcing Steel Shop tted as required by the	Drawings, and Cast-In-Place				
1.5.5	Contractor's drilling log.							
1.5.6	Geotechnical Engineer's	nspection reports and fina	l report.					
1.5.7	The contract price, unlest including all drilled pier of Contractor's interpretation credits permitted for room changes required by rev a charge per foot for the depth shown on the Draw	s otherwise specified, shal vork shown on the Drawin n of all available informatio k removal, additional test sions initiated by the Engir ose drilled piers which mu rings.	I be a unit price contra- gs. This price shall be n and there shall be no holes, or any other neer. The contract pric ust be taken deeper th	ct with a scope based on the allowances or reason, except be shall include nan the design				
1.6	SUBSURFACE SOIL INF	ORMATION						
	Reports of subsurface so Owner upon request. information. These repo design and do not form subsurface conditions. T	il investigations pertaining he contents of these re ts were prepared only for a part of this contract. he referenced report is "I	to this project are ava eports are offered or r the Owner's and Eng These reports are not Report of Geotechninc	ailable from the ly as general gineer's use in a warranty of cal Engineering				

Study Addition to D. B. Wilson Station Big Rivers Electirc Corporation Centertown, Kentucky", Wood Environment & Infrastructure Solutions, Inc. 1800 Ezell Road, Suite 100 Nashville, Tennessee 37211, Wood E&IS Project No. 7382-20-9000, dated 30 November 2020.

1.7 PERMANENT PROPERTY MARKERS



TITLE: Drilled Piers PROJECT 143993-ASA-DD2-SPC-1301 DOC. NO.:	REV.	0	
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All established boundary markers and bench marks on the site shall be sufficiently referenced prior to the beginning of the Work to keep easy reference to lines and grades intact during the progress of the work. Any such markers disturbed or destroyed shall be replaced at the Contractor's expense.

1.8 SAFETY MEASURES

The Contractor and others engaged in performing the work for this specification shall perform their work in a safe manner in accordance with OSHA regulations and all safety requirements of the Owner.

The Contractor shall take all precautions necessary to protect the safety of anyone who is required to descend into any excavation.

- 1.9 QUALITY ASSURANCE
- 1.9.1 Drilled Pier Installer Qualifications.
- 1.9.1.1 Installer shall have a minimum of five years of successful experience and a minimum of five successful installations on projects of a similar size and scope to this project and of using similar installation methods as may be anticipated for this project. Individual drill rig operators shall have a minimum of three years of experience in installing drilled piers similar to those used for this project. Prospective drilled pier installers shall present their resume of applicable experience as well as the resumes of individual rig operators.
- 1.9.1.2 The drilled pier installer's record of the expeditious completion as well as the accurate installation of drilled pier work will be of prime consideration in qualifying the drilled pier installer for this project.
- 1.9.1.3 The drilled pier installer shall visit and examine the work site and observe conditions thereon and take into consideration such conditions that may affect this work. Claims for additional compensation for extra costs incurred because of failure to examine the site will not be recognized.
- 1.9.2 Geotechnical Engineer
- 1.9.2.1 A Geotechnical Engineer will be engaged by the Owner to observe the installation of the drilled piers.
- 1.9.2.2 It shall be the responsibility of the drilled pier installer to coordinate his activities with the Geotechnical Engineer and provide adequate notice to the Geotechnical Engineer of all anticipated activities.
- 1.9.2.3 The Geotechnical Engineer shall perform all inspections as required to ensure a complete, correct installation of the drilled piers. A copy of all inspection reports shall be submitted to the Engineer.
- 1.9.3 Each excavation shall be inspected and approved by the Geotechnical Engineer after cleaning and prior to placing any reinforcement or concrete.
- 1.9.4 The elevations of the bottoms of the drilled piers shown on the Drawings are estimated. The actual elevations required to obtain the specified bearing capacity shall be determined by the Geotechnical Engineer from his inspections and tests.
- 1.9.5 The locations of the drilled piers shall be established by a surveyor registered in the State of Kentucky. The Surveyor shall be paid by the Contractor unless otherwise specified.



TITLE:	Drilled Piers	PROJECT DOC. NO.:	143993-ASA-DD2-SPC-1301	REV. 0					
	The centerline of each construction unless show	drilled pier shall vn otherwise on t	be located on the centerline of the Drawings.	the supported					
1.9.6	The following tolerances	will be permitted	l:						
1.9.6.1	The centerline location (whichever is less) of th 1/8 inch of the location s	must be withir at shown on the hown.	n 4.2 percent of shaft diamete Drawings. Anchor bolts shall be	r or 3 inches located within					
1.9.6.2	The drilled pier shall be pier.	drilled pier shall be plumb within 1 inch in 8 feet for the entire length of the drilled							
1.9.6.3	The slope of the botto horizontal unless approv	m excavation, if ed by the Geoted	any slope, shall not exceed 1 chnical Engineer.	vertical to 12					
1.9.6.4	The diameter shall alway	/s be at least 98	percent of that shown on the Drav	ving.					
1.9.7	If the tolerances specifie of the Contractor to de Geotechnical Engineer a	ed in Paragraph esign a correctiv and the Engineer	1.9.6 are exceeded, it shall be th ve procedure which must be ap prior to the implementation of the	e responsibility proved by the procedure.					
1.9.8	A report shall be kept by the Contractor's surveyour information. As a minim	the Geotechnica r shall assist the um, the report sh	al Engineer for each drilled pier. Geotechnical Engineer in obtaini nall contain the following information	When required, ng the required on:					
	identifying drilled pie	er number							
	• date of excavation								
	• bottom elevation, sl	ope of bottom if a	any						
	• soil stratum and bea	aring capacity at l	bottom						
	• seepage of water								
	• still water level								
	location								
	• plumbness								
	• date when concrete	was placed							
	 concrete placement reinforcing steel pla 	inspection notes cement)	s (concrete quantities, concrete tr	uck number(s),					
	• top elevation								
	• any unusual condition	on							
	• information regardin	g casings if used	l (size, length)						
	• statement of Geoted	chnical Engineer	accepting or rejecting drilled pier						
	• signature of Geotec	hnical Engineer							
	Upon completion of the Geotechnical Engineers	e drilled pier ins shall submit a wri	stallation and any required reme itten report stating that, in his opi	edial work, the nion, the drilled					

piers which he has inspected have been installed in accordance with the Drawings and



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Specifications. This report shall bear the seal and signature of a professional Geotechnical Engineer registered in the State of Kentucky.



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2.0 PRODUCTS

2.1 CAST-IN-PLACE CONCRETE AND REINFORCING STEEL

All cast-in-place concrete and reinforcing steel shall conform to the applicable portions of the Cast-In-Place Concrete Specification SECTION 033000, except that slump shall be 5 inches plus or minus one inch, if corresponding proportioning requirements are met.

2.2 FORMS

Forms for the portion of the drilled pier projecting above grade shall be Sonotube Fibre Forms as manufactured by Sonoco Products Company, Hartsville, South Carolina, or an Engineer approved equal.



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3.0 EXECUTION

3.1 GENERAL

Drilled pier construction shall conform to all requirements of ACI 336.1-01 published by the American Concrete Institute, except as modified by the requirements of this Construction Specification. The Contractor shall have a copy of ACI 336.1-01 on site at all times.

- 3.2 PROTECTION OF SURROUNDING PROPERTY AND EXISTING STRUCTURES
- 3.2.1 *Surrounding Property.* Surrounding property shall be adequately protected from damage resulting from the presence of water, mud and silt during construction. Local, County and State regulations pertaining to storm and waste water runoff shall be strictly observed.
- 3.2.2 *Existing or Adjacent Structures and Piers.* Drilled piers shall be installed by a method which gives due consideration for the safety of adjacent structures and piers, which leaves their strength unimpaired and which develops and retains the required load bearing capacity of the existing structure's foundation or adjacent pier. Where closely spaced piers are required, each pier will be complete prior to drilling the next adjacent pier unless specific approval from the Geotechnical Engineer is obtained to proceed with drilling in cased holes.
- 3.3 PREPARATION FOR DRILLING

The Contractor shall perform any grading of existing surface necessary for operation of equipment and shall accurately lay out drilled pier locations as indicated, subject to the approval of the Owner's Representative.

- 3.4 EARTH EXCAVATION AND STEEL CASING INSTALLATIONS
- 3.4.1 *General.* At each drilled pier location indicated, earth shall be excavated and a reinforced concrete pier shall be installed as indicated. Materials removed from the excavation shall be kept clear of the opening at the top, allowing easy, safe access to the opening all around its edge.
- 3.4.1.1 Excavate holes for closely spaced drilled piers (piers who's center are within five times their average diameter, or as otherwise specified by the Geotechnical Engineer) only after adjacent holes are filled with concrete and allowed to set.
- 3.4.1.2 Remove from bottom of the excavation loose material or free water in quantities sufficient to cause settlement or affect concrete strength as determined by the Geotechnical Engineer. Excavate pier bottoms to a level plane, as approved by the Geotechnical Engineer. If bottoms are sloping rock, excavate to a level plane or step with maximum step height less than one-quarter the width or diameter of the bearing area.
- 3.4.1.3 In drilling the holes, the earth walls shall be adequately and securely protected, when necessary, against cave-ins, displacement of the surrounding earth and for the retention of ground water by means of temporary steel cylinder liners or casings. If casings are required, they shall have an outside diameter not less than the specified shaft size. The Geotechnical Engineer shall determine if steel casings are required.



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- 3.4.1.4 Where the Geotechnical Engineer determines that the foundation material is sufficiently stable for the hole to retain its shape without support, the earth filled auger may be removed after the hole has been drilled to the proper depth.
- 3.4.1.5 Uncased or belled excavations shall not be left open overnight.
- 3.4.1.6 Ream or cut bells of drilled piers to the angles and dimensions shown on the Drawings.
- 3.4.2 *Test Holes.* The Geotechnical Engineer shall determine the number and location of holes, not less than 1 in every 10 piers, in order to best determine the bearing value of the strata tested. If the bearing material proves unsatisfactory, the pier shall be carried deeper to satisfactory bearing material and retested.

At drilled piers which are to bear on rock, after the excavation has reached rock, any required casing installed, and the bottom dewatered and cleaned of loose and watersoftened material, pneumatically drill one 2-inch diameter test hole in the bottom of piers 36 inches or less in diameter (two holes in piers more than 36 inches in diameter), or as otherwise directed by the Geotechnical Engineer. Unless otherwise directed by the Geotechnical Engineer. Unless otherwise directed by the shaft diameters of the piers in which they are located, into the rock-bearing material.

- 3.5 CONCRETE WORK AND STEEL CASING WITHDRAWAL
- 3.5.1 *General.* Except as otherwise indicated, the installation of concrete shall be in accordance with the Cast-In-Place Concrete Specification SECTION 033000.
- 3.5.2 *Preparation for Concrete Placing.* Dewater each drilled pier excavation in accordance with ACI 336.1 and as directed by the Geotechnical Engineer.
- 3.5.3 *Placing Concrete.* After the Geotechnical Engineer has determined that a drilled pier location has been satisfactorily put in readiness, concrete shall be placed. When placing of concrete under water cannot be avoided, the Contractor shall use tremie pipe or pumping procedure, as approved by the Geotechnical Engineer, and in accordance with ACI 336.1, in order to force the water up from the bottom as the concrete is deposited.
- 3.5.4 *Steel Casing Withdrawal.* At each drilled pier location, the Contractor shall withdraw the steel casing only as the pier shaft is filled with concrete, maintaining an adequate head of concrete above the bottom of the casing to balance outside soil and water pressure at all times during withdrawal, subject to the approval of the Geotechnical Engineer.
- 3.5.5 *Vibration of Concrete.* After the steel casing has been removed, the Contractor shall vibrate the top 5-feet of concrete.
- 3.6 DRILLING LOG

An accurate log of each drilled pier as it is installed shall be kept by the Contractor, indicating description of material encountered, exact pier location and number, elevations of each earth and rock strata, height of water table, and any other pertinent data. The Geotechnical Engineer and the Owner's Representative shall have access to this log at all times.

- 3.7 TESTING
- 3.7.1 Testing of concrete shall be in accordance with the Cast-In-Place Concrete Specification SECTION 033000.



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3.7.2 Integrity Testing

Integrity testing to be per Geotechnical report. Crosshole Sonic Logging (CSL) and Sonic Caliper Logging (SCL) are two methods of integrity testing for drilled piers which may be used.

3.7.3 Load Testing

Load testing to be per Geotechnical report. The Osterberg Cell (O-cell) Load Testing is a non destructive method for the static load testing of drilled piers.

- 3.7.4 Construction and testing of drilled piers shall be monitored by the Geotechnical Engineer or his field representative on a full-time basis.
- 3.8 CLEANING OF THE SITE

All debris and excavated material shall be removed from the site or otherwise disposed of as directed by the Owner's Representative.

3.9 SPECIAL INSPECTION

The required verification and inspection of drilled piers (cast-in-place deep foundation elements) shall be in accordance with the International Building Code, Section 1704 "Special Inspections, Contractor Responsibility and Structural Observations", Section 1705 "Required Verification and Inspection" and Table 1705.8.

In addition, refer to SECTION 014533, Special Inspections and Tests, of the Construction Specifications.

END OF SECTION



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ATTACHMENT 1 - ACI 336.1-01

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CONSTRUCTION SPECIFICATION

TITLE:	ITTLE: CAST-IN-PLACE CONCRETE		PROJE DOC. N	ECT 143993-ASA-DD2-SPC-1302			0		
PROJECT	NAME:	D.B. Retro	Wilson ofit Project	Station	FGD	PROJECT NO.:	245891		
CLIENT: Big River Electric Corp		ric Corpoi	ration	AREA NO.:					

APPROVAL STATUS										
PREPAR	PREPARED BY: DRF DATE 10FEB21 CHECKED BY: SCK DATE 23FEB21									
APPROVED BY: JDW DATE 12FEB21 APPROVED BY: CLF DATE 01APR21							01APR21			
	REVISION STATUS									
REV	REV ISSUED FOR REVISED CHECKED APPROVAL APPROVAL DATE BY BY									
А	APPRC	VAL		DRF	JDW			12FEB21		
В	BID			SCK	JDW	CLF	NDH	01APR21		
0	CONST	RUCTIO	N	SCK	JDW	CLF	NDH	20MAY21		

Permit Stamp



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TITLE: CAST-IN-PLACE CONCRETE PROJECT 143993-ASA-DD2-SPC-1302 REV. 0

SECTION 033000

CAST-IN-PLACE CONCRETE

1.0 GENERAL

The purpose of this Specification is to ensure compliance with the American Concrete Institute ACI 301 "Specifications for Structural Concrete", December, 2010. It is the intent of this Specification to conform to the requirements of ACI 301-10 as a minimum standard.

1.1 SCOPE

This section includes all materials, labor, equipment and services required for the installation of all plain and reinforced cast-in-place concrete (including formwork, reinforcement, reinforcement supports, embedded items detailed on the concrete drawings, joint fillers, joint sealers, and waterstops) and all related activities, in accordance with the Drawings, Construction Specifications and Scope of Work Document.

Where there is a discrepancy between the Drawings and this Specification, the Drawings shall take precedence.

1.2 OTHER PROJECT SPECIFICATION SECTIONS REFERENCED HEREIN

- Grout SECTION 036000
- Structural Steel and Miscellaneous Metal Fabrication and Erection
 - SECTION 051200
- Structural Inspections and Tests SECTION 014533
- Precast-Prestressed Concrete SECTION 034000 HOLD
- 1.3 PUBLICATIONS REFERENCED HEREIN (Latest edition unless noted)

All work shall conform to the requirements of these codes and standards, unless noted otherwise.

- American Concrete Institute (ACI) as listed:
- ACI 117 Specification for Tolerances for Concrete Construction and Materials
- ACI 301 Specifications for Structural Concrete
- ACI SP-66 ACI Detailing Manual 2004
- ACI 207.1R Guide to Mass Concrete
- ACI 350 Code Requirements for Environmental Engineering Concrete Structures
- American Society for Testing and Materials (ASTM), Standards as indicated
- CRD-C 572 Corps of Engineers Specifications for Polyvinylchloride Waterstops
- CRD-C 48 Standard Test Method for Water Permeability of Concrete



TITLE: CAST-IN-PLACE CONCRETE PROJECT 143993-ASA-DD2-SPC-1302 REV. 0

- Concrete Reinforcing Steel Institute, Manual of Standard Practice
- American Association of State Highway and Transportation Officials (AASHTO), T 260, Standard Method of Test for Sampling and Testing for Chloride Ion in Concrete and Concrete Raw Materials
- American Welding Society, AWS D1.4 *Structural Welding Code Reinforcing Steel*
- OSHA Regulations 29 CFR Part 1910 Occupational Safety and Health Standards
- OSHA Regulations 29 CFR Part 1926 Safety and Health Regulations for Construction
- 2015 International Building Code, Chapter 17 Special Inspections and Tests

Note: The Contractor shall keep a copy of ACI Field Reference Manual, ACI SP-15, containing ACI 301 and other selected ACI and ASTM references pertaining to concrete, at the jobsite.

- 1.4 DEFINITIONS
- 1.4.1 Contractor. Company, partnership or corporation contractually obligated to perform the work outlined in the Drawings, Construction Specifications and Scope of Work Document.
- 1.4.2 Owner. Big River electric Corporation.
- 1.4.3 Owner's Representative. The authorized representative of the Owner.
- 1.4.4 Engineer. Wood, doing business as AMEC Foster Wheeler Industrial Power Company, Inc.
- 1.4.5 Fabricator. The contractor fabricating the reinforcing steel.
- 1.4.6 Others. Any vendor, contractor, etc., other than the Contractor and Owner herein defined.
- 1.4.7 Embedded Items. All bolts, inserts, sleeves, conduit, fixtures and other material placed so as to become anchored in concrete, as indicated and specified elsewhere in the contract documents.
- 1.4.8 Testing Laboratory. An independent engineering testing laboratory engaged by the Owner to perform testing services required in this section not otherwise designated, and to perform any other such services requested by the Owner's Representative.
- 1.4.9 Concrete Design Mix. A concrete design mix is the quantities of specific ingredients which, when mixed, will yield one cubic yard of concrete of a given strength, slump, and air content. Any variation in admixtures, cement or water content, or of any other ingredient, shall constitute a different design mix.
- 1.4.10 Hydraulic Structures. Concrete structures which have as their primary purpose the containment, conveyance or processing of liquids and are designed to provide water tightness in accordance with ACI 350.



TITLE: CAST-IN-PLACE CONCRETE PROJECT 143993-ASA-DD2-SPC-1302 REV. 0

- 1.4.11 Special Inspections. Inspections required by the International Building Code, Chapter 17, for the materials, installation, fabrication, erection or placement of components and connections requiring special expertise to ensure compliance with approved construction documents and reference standards.
- 1.4.12 Definitions of other terms used in this specification, not defined where used or elsewhere in the contract documents, shall be as given in ACI 301.
- 1.5 SUBMITTALS
- 1.5.1 *General.* All submittals required by this specification shall be to the persons or parties identified in the contract documents.
- 1.5.2 *Concrete Design Mix Reports*. Design mix reports for each proposed concrete design mix shall be submitted. These submittals shall include the results of all tests performed to qualify the materials (including determination of chloride ion concentration) and to establish each design mix. No concrete shall be placed until the design mix for that concrete is accepted.
- 1.5.3 *Concrete Permeability.* Certified test results, showing that the water permeability of concrete proposed for use in any hydraulic structure designed to contain liquids satisfies the requirements of Paragraph 2.22.15, shall be submitted prior to the placement of any such concrete.
- 1.5.4 *Mill Test Reports*. Certified test reports, showing compliance with the required standards, shall be submitted for any or all materials proposed for use on the project, if required by the Owner's Representative. When so required, such test reports shall certify that the material tested is of the same quality as that proposed for use on this project.
- 1.5.5 *Reinforcing Steel Shop Drawings*. Reinforcing steel shop drawings shall be submitted for review prior to fabrication. They shall conform to the requirements of ACI SP-66 and shall include placement plans, bar details and bills of materials. Fabrication shall not be started until the submitted shop drawings have been reviewed, and marked "Released for Production," by the Engineer.
- 1.5.6 *Production Concrete Testing*. The Contractor and the testing laboratory shall report the results of all tests and inspections immediately after they are performed. Reports on strength tests shall include, in addition to the information required by ASTM C39, the following:
 - Project name and Wood project number
 - Air temperature and temperature of concrete at time of sampling
 - Slump of sample
 - Air content of sample, percent
 - Location where the concrete represented by the sample was deposited
 - Name of person who molded the test cylinders
 - Description of storage and curing conditions prior to testing



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• Batching information (amount of concrete, time loaded or mixed, concrete design mix designation, type and brand of cement and any admixtures, total mixing water, maximum aggregate size, weights of ingredients, and amount of added water)

Note: ASTM C94 requires that the batching information be shown on the delivery ticket.

- 1.5.7 *Special Inspections Reports.* All special inspections reports shall be prepared and submitted as described in SECTION 014533, Special Inspections and Tests, of the Construction Specifications.
- 1.6 SAFETY
- 1.6.1 The Contractor, Fabricator and others engaged in performing the work for this specification shall perform their work in a safe manner in accordance with OSHA regulations and all safety requirements of the Owner.



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2.0 **PRODUCTS**

2.1 GENERAL

All materials shall be new and shall conform to the respective specifications and other requirements specified herein, unless otherwise indicated.

2.2 QUALITY OF MATERIALS

When selecting materials, the Contractor shall confirm the availability of certified test reports showing compliance with all required standards. See SUBMITTALS, Paragraph 1.5.4.

2.3 CEMENT

All cement shall be Portland Cement conforming to ASTM C150, Type II (moderately sulfate resistant), and shall all be of one brand produced at a single cement manufacturing plant.

2.4 ADMIXTURES

- 2.4.1 All admixtures shall be compatible with all other concrete mix ingredients and reinforcing steel, and with the intended use of the concrete. No admixtures shall be used without the consent of the Owner's Representative. All admixtures shall be furnished by the same manufacturer and shall be certified by the manufacturer as compatible.
- 2.4.2 Admixtures to be used in concrete, when permitted, shall conform to the following specifications:
 - ASTM C260 Air-Entraining Admixtures for Concrete
 - ASTM C494 Chemical Admixtures for Concrete
 - ASTM C618 Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
 - ASTM C989 Slag Cement for Use in Concrete and Mortars

Note: Cementitious or pozzolan admixtures vary in their effect on concrete mixes, therefore, before such an admixture can be used, they must be tested as part of the design mix to determine the effect on the water requirements, concrete strength, shrinkage and durability of the concrete. All such cementitious or pozzolan admixtures used must be from a single source and shall not exceed 25 percent by weight of the total cementitious material in the design mix.

2.4.3 Admixtures shall not contain calcium chloride and shall be used in accordance with the manufacturer's instructions.

2.5 WATER

Mixing water shall meet the requirements of ASTM C94 Ready-Mix Concrete.



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2.6 AGGREGATES

Aggregates shall conform to the requirements of ASTM C33 Concrete Aggregates.

Note: See Paragraph 2.22.9 for maximum permitted aggregate size. Lightweight concrete shall be used only where specified on the Drawings.

2.7 CHLORIDE ION CONCENTRATION

Maximum water soluble chloride ion concentration in hardened concrete at ages 28 to 42 days contributed from the ingredients of the concrete including water, aggregates, cement, and admixtures shall not exceed 0.10 percent, by weight, of the cement, unless otherwise specified. The water soluble chloride ion concentration in each proposed concrete design mix shall be determined by testing in accordance with ASTM C1218 Water-Soluble Chloride in Mortar and Concrete.

2.8 MATERIAL STORAGE AND HANDLING

- 2.8.1 Store and handle concrete reinforcement in accordance with ACI 301, Section 3.1.2. Reinforcement shall be stored clear of the ground and protected from the formation of rust and other damage.
- 2.8.2 Store and handle cementitious materials, aggregates, water and ice, and admixtures in accordance with ACI 301, Section 4.1.4.

2.9 FORMWORK

All material for formwork shall conform to the requirements of ACI 301, Section 2.

2.10 REINFORCEMENT

Reinforcement material shall conform to the requirements of ACI 301, Section 3.2. All reinforcing bars shall be Grade 60, unless noted otherwise on the Drawings.

2.11 BAR SUPPORTS

Bar supports shall be designed and fabricated in accordance with the Manual of Standard Practice by the Concrete Reinforcing Steel Institute and shall be steel or precast concrete blocks. Precast concrete blocks shall be not less than 4 inches square when supporting reinforcement on the ground. Precast concrete blocks shall have a compressive strength not less than that of the surrounding concrete. Wire bar supports in contact with forms for concrete to be left exposed shall conform to Class 1 Maximum Protection. All other wire bar supports may conform to Class 2 Moderate Protection as defined in the CRSI Manual of Standard Practice, Chapter 3.

2.12 SLAB ON GRADE DOWELS

Slab on grade dowels shall be smooth round bars conforming to ASTM A36 minimum.



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2.13 EMBEDDED ITEMS

See SECTION 05130, Structural Steel and Miscellaneous Metal Fabrication and Erection, of the Construction Specifications.

2.14 PREMOLDED EXPANSION JOINT FILLER

Premolded expansion joint filler material shall conform to ASTM D1752, Type I or II, or to ASTM D1751.

Note: If ASTM D1751 joint filler material is used, backer material compatible with the joint sealer shall be used between the joint sealer and the joint filler material. Such backer material must provide a complete permanent separation of the joint filler and the joint sealer.

2.15 ELASTOMERIC JOINT SEALANT

Joint sealant shall be a multicomponent selfleveling sealant conforming to ASTM C920, Type M, Grade P, Class 50.

2.16 JOINT BACK-UP MATERIAL

Joint back-up material shall be a closed-cell, polyethylene foam backer-rod conforming to ASTM C1330, Type C.

2.17 EPOXY OR POLYUREA JOINT FILLER

Joint filler shall be a two-component, semi-rigid epoxy or polyurea material with 100% solids and a minimum Shore A Hardness of 80 when measured in accordance with ASTM D2240.

2.18 WATERSTOPS

Waterstops shall conform to Corps of Engineers Specification CRD-C 572, with polyvinylchloride as the basic resin, and shall have a dumbbell configuration, unless noted otherwise on the Drawings.

2.19 CURING MATERIALS

- 2.19.1 Waterproof sheet material (such as polyethylene film) shall conform to ASTM C171.
- 2.19.2 Membrane curing compound material shall conform to ASTM C309, Type I-D with fugitive dye. Materials containing wax, silicones or other ingredients detrimental to subsequent floor finishes are not acceptable.
- 2.19.3 Other suitable materials, which when saturated over a period of time will not stain the concrete or otherwise be detrimental to the work may be used if approved by the Owner's Representative.
- 2.20 GROUT


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See Section 036000, GROUT, of the Construction Specifications.

2.21 EPOXY BONDING AGENT

Epoxy Bonding Agent shall be Sika Armatec 110 EpoCem, a three-component, solventfree, moisture-tolerant, epoxy-modified, cementitious bonding agent with extended "open" time, mixed and applied in accordance with the manufacturer's recommendations, unless otherwise specified.

- 2.22 PROPORTIONING OF CONCRETE DESIGN MIX
- 2.22.1 *General.* All concrete shall be of the specified quality and capable of being placed without excessive segregation. When hardened, concrete shall develop all characteristics required by these specifications and the contract documents.
- 2.22.2 *Strength.* The specified compressive strength of the concrete, f'c, shall be 4500 psi unless otherwise specified. Strength requirements shall be based on 28-day compressive strength unless a different test age is specified.
- 2.22.3 *Weight*. Unless otherwise specified the concrete shall be normal weight. When lightweight concrete is specified, the concrete proportions shall be selected to meet the specified limit on maximum air-dry unit weight as measured in accordance with ASTM C567.
- 2.22.4 *Durability*. Concrete shall be air-entrained to meet the requirements of ACI 301, Table 4.2.2.7.b.1, subject to Exposure Class F2 as follows:

Aggregate Size	Percent Air Content by Volume
#7 (½ in. max.)	7
#67 (¾ in. max.)	6
#57 (1 in. max.)	6

Measurement of air content shall conform to ASTM C231.

Note: Concrete for slabs to which a metallic floor hardener is to be applied shall have an air content of two to three percent (by volume)

- 2.22.5 *Water-Cement Ratio.* Concrete for all structures shall have a water-cementing material ratio (cement plus any accepted pozzolans) not exceeding 0.45 by weight, unless otherwise specified.
- 2.22.6 *Minimum cement.* Minimum cementing material content (cement plus any accepted cementitious or pozzolan admixtures) per cubic yard for all concrete shall conform to ACI 301, Table 4.2.2.1 as follows, unless otherwise specified:



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	Nominal Maximum Aggregate	Size	Minimum Cement	
	1 in. (#57 stone)		520 pounds/cubic yard (5.5 Bags/	/C.Y.)
	¾ inch (#67 stone)		540 pounds/cubic yard (5.7 Bags	/C.Y)
	½ inch (#7 stone)		590 pounds/cubic yard (6.3 Bags/	/C.Y.)

2.22.7 *Minimum Cement for Hydraulic Structures.* Minimum cementing material content (cement plus any accepted pozzolans) per cubic yard for hydraulic structures shall conform to ACI 350, Table 4.1.2.1 as follows, unless otherwise specified:

Nominal Maximum Aggregate Size	Minimum Cement
1 in. (#57 stone)	535 pounds/cubic yard (5.7 Bags/C.Y.)
¾ inch (#67 stone)	560 pounds/cubic yard (6.0 Bags/C.Y)
½ inch (#7 stone)	580 pounds/cubic yard (6.2 Bags/C.Y.)

- 2.22.8 Slump.
 - All concrete (except floor slabs) with specified f'c of 4500 psi or greater shall be proportioned and produced to have at the point of delivery a slump of four inches. Concrete for floor slabs with specified f'c of 4500 psi or greater shall be proportioned and produced to have a slump of three inches or less. The slump shall be determined in accordance with ASTM C143. Slump tolerance shall meet the requirements of ACI 117.
 - When use of an accepted plasticizing admixture conforming to ASTM C1017 or when a Type F or G high range water reducing admixture conforming to ASTM C494 is permitted to increase the slump of concrete, concrete shall have a slump of 2 to 4 inches before the admixture is added and a maximum slump of 8 inches at the point of delivery after the admixture is added.
- 2.22.9 *Maximum Size of Coarse Aggregate.* Maximum size of coarse aggregate shall not be more than #57 stone (one inch), one-fifth of the narrowest width of beams or walls, one-third of the depth of slabs, nor three-quarters of the minimum clear spacing between reinforcing bars. Additionally, the maximum size of coarse aggregate shall not be less than #7 stone (one-half inch).

Note: To minimize shrinkage, the use of concrete with #7 stone maximum aggregate should be restricted to situations where the use of small aggregate is required, such as concrete placements into narrow forms congested with reinforcement.

2.22.10 *Selection of Proportions.* Each concrete design mix shall be proportioned in accordance with ACI 301, Section 4.2.3 on the basis of previous field experience or laboratory trial mixtures.



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2.22.11 Proportioning on the Basis of Previous Field Experience or Trial Mixtures.

• The determination of the standard deviation and the required average compressive strength shall be in accordance with ACI 301, Section 4.2.3.

Note: ACI 301 stipulates that, when the data required to compute the standard deviation is not available, the required average strength (such as determined by trial mixtures) shall not be less than f'c + 1200 psi, for f'c, between 3000 and 5000 psi.

- The documentation of the average compressive strength shall be in accordance with ACI 301, Section 4.2.3.4.
- 2.22.12 *Proportioning Based on Empirical Data*. Concrete shall not be proportioned based on empirical data.
- 2.22.13 *Reduction of the Required Average Strength.* After sufficient data becomes available during construction, the amount by which the average strength must exceed the specified minimum strength f'c may be reduced, subject to approval by the Engineer, in accordance with ACI 301, Section 4.2.3.6.
- 2.22.14 *Lightweight Concrete.* The ability of the selected proportions to meet the specified limits for air-dry weight shall be verified by tests made in accordance with ASTM C567. The air-dry unit weight shall be correlated with the fresh unit weight of the same concrete to permit use of the latter as the basis for acceptance during construction.
- 2.22.15 *Hydraulic Structure Water Permeability.* The permeability of trial batch concrete proposed for use in any watertight structure indicated on the Drawings shall not exceed 10 times 10 to the minus 12 when tested in accordance with CRD-C 48, Standard Test Method for Water Permeability of Concrete.



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3.0 EXECUTION

- 3.1 FORMWORK
- 3.1.1 The design and installation of all formwork and formwork accessories shall be in accordance with ACI 301, Section 2, except as otherwise specified.
- 3.1.2 Chamfer strips, ³/₄ inch by 45 degrees in size, shall be used at all edges of formed concrete to be left exposed, unless otherwise specified.
- 3.1.3 *Tolerances.* Unless otherwise specified, formwork shall be constructed so that the concrete surfaces will conform to the tolerances given in ACI 117. Formed surface irregularities (gradual or abrupt) shall conform to Class C Surface in accordance with ACI 117, unless otherwise specified.
- 3.1.4 The portion of the forms in contact with concrete surfaces to receive joint sealer shall be free of any substance which will remain on these surfaces and cause the adhesion between the surfaces and the sealer to be weakened.
- 3.1.5 Form tie assemblies for hydraulic structures shall be of such type as to leave no metal or other material within $1\frac{1}{2}$ inches of the surface. The assembly shall provide a cone-shaped depression at the surface of the concrete at least one inch in diameter and $1\frac{1}{2}$ inches deep to allow filling and patching.
- 3.1.6 When a portion of single rod ties are to remain in a liquid retaining structure, the portion that is to remain shall be provided with a tightly fitted washer at midpoint.
- 3.2 REINFORCEMENT
- 3.2.1 The fabrication of reinforcing steel shall conform to the requirements of ACI 301, Section 3.2.2. All reinforcement shall be cold bent unless otherwise specified.

Note: Fabrication shall not be started until the reinforcing steel shop drawings have been reviewed and marked "Released for Production" by the Engineer.

- 3.2.2 Reinforcing shall not be welded unless otherwise specified. When welding of reinforcement is specified all such welding shall conform to AWS D1.4.
- 3.2.3 Where welding is specified for zinc-coated or epoxy-coated reinforcement, zinc coatings shall be repaired afterwards with a zinc-rich formulation conforming to ASTM A767 and epoxy coatings shall be repaired with a patching material conforming to ASTM A775. Such repairs shall conform to the material manufacturer's recommendations. All welds, and all steel splice members used to splice reinforcing bars, shall be coated with the material used for repair of coating damage.
- 3.2.4 Tolerances for the fabrication of reinforcing steel shall conform to ACI 117, Section 2.1.
- 3.2.5 Tolerances for the placing of reinforcing steel shall conform to the requirements of ACI 117, Section 2.2.



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- 3.2.6 Reinforcement shall be accurately placed and adequately supported before the concrete is placed, secured against displacement in accordance with the permitted tolerances, and shall conform to the requirements of ACI 301, Section 3.3.
- 3.2.7 Welded wire reinforcement shall be accurately placed and supported to maintain positioning in the slab during concrete placement. Do not place welded wire reinforcement on grade and subsequently raise into position during placement of concrete.
- 3.2.8 Slab on grade dowels shall be saw-cut, not sheared. Remove all burrs.
- 3.2.9 Slab on grade dowels shall be secured perpendicular to the joint and parallel to the finished concrete surface. Use prefabricated dowel supports (dowel basket assembly) at ends of dowels to maintain alignment, unless otherwise allowed by the Owner's Representative. Cut prefabricated dowel supports as required to allow adjacent slab panels to move longitudinally. Ensure dowel misalignment does not exceed specified tolerances given in ACI 117, Section 2.2.10. Ensure dowels are not installed closer than 12 inches from the corner of any slab panel.
- 3.3 CONSTRUCTION AND CONTROL JOINTS
- 3.3.1 Construction joints, when necessary, shall be located as near as possible to the quarter points of the spans of slabs, beams, and girders as approved by the Engineer. Joints, when necessary, in columns and walls shall be at the underside of beams and girders, and at the top of footings. Beams, girders, brackets, column capitals, haunches, and drop panels shall be placed at the same time as slabs.
- 3.3.2 In slabs on grade, unless otherwise indicated on the Drawings, provide construction or control joints continuously at a maximum spacing (in feet) of two to three times the slab thickness (in inches) with length-to-width ratio less than 2:1, into a grid pattern which coincides with column center lines whenever feasible, and as approved by the Owner's Representative. (For example: maximum joint spacing for a 6 inch slab should be 3 x 6 = 18 feet).
- 3.3.3 Control joints shall be completed while the concrete is still in the plastic state. Saw cut control joints as soon as concrete has hardened sufficiently to prevent raveling or dislodgement of coarse aggregate particles and within 12 hours of concrete placement.
- 3.3.4 Do not extend reinforcement, corner protection angles or other fixed metal items through construction or control joints in slabs on grade or walls, or through joints between slabs on grade and vertical surfaces, unless otherwise noted on the Drawings.
- 3.4 EXPANSION AND ISOLATION JOINTS
- 3.4.1 Reinforcement or other embedded metal items bonded to the concrete, except dowels in slabs on grade, bonded on only one side of the joint, shall not be permitted to extend through any expansion joint.
- 3.4.2 Provide ½-inch wide joints continuously at edges of slabs on grade abutting walls, columns, foundations and other construction, unless otherwise indicated. Joint filler



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material shall be securely positioned and extend the full depth of the joint with space at the top for joint sealer.

- 3.4.3 Exposed corners with rough edges shall be smoothed with an abrasive tool prior to joint sealer installation. Concrete surfaces to receive joint sealer shall be clean and dry prior to sealer installation.
- 3.5 WATERSTOPS
- 3.5.1 Waterstops shall be placed at the locations shown on the Drawings with the layout designed to provide a continuous water tight barrier.
- 3.5.2 Each piece of premolded waterstop shall be of the maximum practical length to reduce the number of required splices.
- 3.5.3 Premolded waterstop material shall be fused at all joints to form a continuous barrier. Joints shall develop water tightness equal to that of continuous waterstop material, shall permanently develop not less than 50 percent of the mechanical strength of the parent section, and shall permanently retain their flexibility.
- 3.6 OTHER EMBEDDED ITEMS
- 3.6.1 All Contractors whose work is related to the concrete or must be supported by it shall be given ample notice and opportunity to set and/or furnish embedded items before the concrete is placed.
- 3.6.2 *Embedded Items*. All embedded items and anchor bolts set in any section or area where concrete is scheduled to be placed shall be set true to the positions shown to within ¹/₈ inch or to closer tolerances as otherwise indicated on the Drawings. Embedded items and anchor bolts shall be free of oil and other foreign matter, securely installed, and thoroughly checked for placement accuracy by the Contractor before concrete placement is started for that section or area. Voids to be filled with other materials as part of the embedded item shall be temporarily filled with readily removable material to prevent the entry of concrete into these voids.

3.7 PRODUCTION OF CONCRETE

The production of all concrete shall conform to the requirements of ACI 301, Section 4.3. Plant equipment and facilities shall conform to "Certification of Ready Mixed Concrete Production Facilities" by the National Ready Mixed Concrete Association. Ready-mixed concrete shall be batched, mixed and transported in accordance with ASTM C94, except as otherwise specified. Discharge of concrete shall be completed within 1½ hours or 300 drum revolutions, whichever comes first after batching into the concrete drum.

3.8 TEMPERING AND CONTROL OF MIXING WATER

3.8.1 Concrete shall be mixed only in quantities for immediate use. Concrete which has started to harden shall be discarded and shall not be retempered.



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- 3.8.2 When concrete arrives at the jobsite with a slump below the specified slump at the point of placement and is unsuitable for placing at that slump, water may be added only as approved by the concrete supplier and the Owner's Representative as follows:
 - a) Additional water may be added provided the design mix water-cement ratio nor the maximum slump for the concrete mix is exceeded. Additional water may be permitted provided the water-cement ratio is maintained by the addition of cement in sufficient quantities to maintain the proper water-cement ratio.
 - b) Additional water shall be added only once and incorporated into the mixture by mixing for a minimum additional 30 drum revolutions in accordance with ASTM C94. Immediately after such additional mixing, representative samples shall be taken for separate strength tests.
 - c) Water shall not be added to concrete after plasticizing or high-range water reducing admixtures have been added to the concrete at the site.
- 3.9 EXTREME WEATHER CONDITIONS
- 3.9.1 *Hot Weather:* The temperature of the concrete as delivered shall not exceed 95°F. Loss of slump, flash set, or cold joints due to temperature of concrete as placed shall not be acceptable.
- 3.9.2 *Cold Weather:* When the average of the highest and lowest ambient temperature during the period midnight to midnight is expected to be less than 40°F for more than three consecutive days, concrete shall be delivered to meet the following minimum temperatures immediately after being placed:

Least Dimension of Section	Minimum Temperature
less than 12"	55°F
12" to 36"	50°F
36" to 72"	45°F
greater than 72"	40°F

The temperature of concrete as placed shall not be less than these minimum values by more than 20°F. Minimum temperature requirements may be terminated when temperatures above 50°F occur for more than half of any 24-hour duration.

- 3.10 PREPARATION BEFORE PLACING CONCRETE
- 3.10.1 General. Immediately prior to concreting, the place of deposit and all mixing, transporting, conveying and placing equipment shall be available for inspection. The Contractor shall give the Owner's Representative 24 hours notice before placing concrete.
- 3.10.2 The inner surfaces of conveying equipment shall be free of hardened concrete and foreign materials.



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- 3.10.3 Previously cast construction joints shall be prepared as follows:
 - a) Concrete surfaces shall be free of all laitance, soft mortar, dirt, form oil and other foreign materials.
 - b) Concrete surfaces shall be moistened thoroughly to be damp but completely free of standing water or free moisture and roughened to 1/4 inch amplitude.
 - c) Surfaces of all vertical construction joints cast against bulkheads shall be roughened to uniformly expose the aggregate, and then washed with clean water to remove all dust and loose particles.
 - d) Surfaces of all horizontal construction joints in the work designed to contain liquids (such as chests) shall be dampened, but not saturated, and then thoroughly covered with a coat of cement grout of similar proportions to the mortar in the concrete. Concrete shall be placed before the grout has attained its initial set.
 - e) Surfaces specified to receive an adhesive shall be prepared and the adhesive applied in accordance with the manufacturer's recommendations.
- 3.10.4 Formwork shall be completed; snow, ice and water shall be removed; reinforcement shall be secured in place; and expansion joint materials, anchor bolts, and other embedded items shall be properly positioned.
- 3.10.5 Reinforcement shall be free of dirt, loose scale, oil, ice, kinks or bends not shown on the details or Drawings, and free of rust capable of removal by moderate handwiping.
- 3.10.6 *Preventing Cave-Ins.* Adequate means of preventing cave-ins of earth during placing of concrete shall be provided. All work shall conform to OSHA Standards.
- 3.10.7 *Preventing Absorption of Water.* Earth, against which concrete is to be placed, shall be sufficiently damp to prevent absorption of water from the concrete, without allowing water to stand.
- 3.10.8 Grade under slabs shall conform to line and grade of the slab bottom as indicated on the Drawings.
- 3.10.9 Concrete shall not be placed on frozen ground.
- 3.10.10 The readiness of each place to receive concrete shall be approved by the Owner's Representative before concrete placement.
- 3.11 PLACEMENT OF CONCRETE
- 3.11.1 *General*. Placement of concrete shall be in accordance with ACI 301, Section 5.3.2 and the following additional requirements:
- 3.11.2 Concrete shall be conveyed and deposited in such manner as to prevent separation of ingredients and to minimize rehandling and flowing. In depositing concrete, the following requirements shall be observed:
 - a) For free-fall heights of six feet or less, concrete may be deposited without the use of a dropchute if apparent separation of ingredients does not occur.



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- b) For free-fall heights greater than six feet, a dropchute shall be used.
- c) For hydraulic structures the free-fall height shall not exceed four feet.
- 3.11.3 Where concrete is placed against earth, care shall be taken to prevent mixing of earth and concrete during placing and consolidation.
- 3.11.4 Concrete shall be properly consolidated at or near the place of deposit. Thickness of deposited concrete layers shall not exceed 18 inches. The vibrator shall not be used to move the concrete to other parts of the form. Adequate reserve vibration equipment shall be on hand to insure continuous consolidation of all freshly placed concrete.
- 3.11.5 All concrete surfaces to receive grout, or an additional concrete pour, shall be roughened with a rake or coarse broom before the fresh concrete obtains final set.
- 3.11.6 Concrete shall not be deposited under water, unless otherwise specified. Where such placement is specified, procedures for placing concrete shall ensure the concrete enters the mass of previously placed concrete where the concrete displaces water with minimum disturbance at the concrete/water interface. Placing procedures and the concrete mix design shall be approved by the Owner's Representative.
- 3.12 CURING AND PROTECTION
- 3.12.1 Concrete shall be cured and protected immediately after placement in accordance with ACI 301, Section 5.3.6 and as follows:

Note: Curing compound shall not be used on any surface against which additional concrete or other material is to be bonded unless it is proven that the curing compound will not prevent bond.

- 3.12.2 Concrete surfaces to receive joint sealer shall be kept free of any substance which might cause the adhesion between these surfaces and the joint sealer to be weakened.
- 3.12.3 After concrete has been placed, anchor bolts shall be protected from corrosion by daubing the threads with grease, wrapping with burlap, and then covering bolts with wooden boxes or plastic protectors. All grout pockets, anchor bolt sleeves and other areas vulnerable to the collection of water and debris shall be suitably protected at all times to prevent damage to concrete or embedments from freezing water or contact with deleterious materials until such time as these voids are grouted and the installation completed.
- 3.12.4 Contractor shall provide additional attention to water curing requirements and keep each surface wet for concrete slabs exposed to direct sunlight throughout the curing period especially on any day when the surface temperature reaches 80°F.
- 3.12.5 Curing of floor hardened surfaces shall be in accordance with the recommendations of the floor hardener manufacturer.
- 3.12.6 Housing, covering or other protection used to maintain elevated temperature shall remain in place for at least 24 hours after artificial heating is discontinued.



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Note: ACI 301 stipulates that concrete shall be cured for seven days after placement except for high-early-strength concrete for which the minimum period is three days. Alternately, ACI 301 permits terminating proper moisture retention measures when properly field-cured cylinders reach 70 percent of f'c, or when laboratory-cured cylinders reach 85 percent of f'c provided the temperature of the in-place concrete has been maintained at 50 °F or higher during curing.

3.12.7 Maintain concrete protection to prevent freezing of the concrete and to ensure necessary strength development for structural safety. Remove protection so that the maximum decrease in temperature measured at the concrete surface in a 24 hour period shall not exceed the following:

Least Dimension of Section	Maximum Surface Temperature Change
less than 12"	50 <i>°</i> F
12" to 36"	40 <i>°</i> F
36" to 72"	30 <i>°</i> F
greater than 72"	20 <i>°</i> F

When the concrete surface temperature is within 20°F of the ambient or surrounding temperature, protective measures may be discontinued.

3.13 REMOVAL OF FORMS AND RESHORING

- 3.13.1 The removal of forms and reshoring shall conform to ACI 301, Section 2.3.2 and the following additional requirements:
- 3.13.2 Forms and shoring supporting the weight of floor slabs shall remain in place until the concrete attains at least 50 percent of the specified compressive strength (f'c) but not less than 2000 psi, unless otherwise specified.
- 3.13.3 Forms and shoring supporting the weight of concrete other than slabs shall remain in place until the concrete attains at least 75 percent of the specified compressive strength (f'c), unless otherwise specified.
- 3.13.4 Construction loads shall not exceed 50 percent of the design live load until the specified compressive strength is attained unless shoring is designed and installed to carry the total load, unless otherwise specified.
- 3.13.5 For the purpose of determining when form removal is allowed, the concrete will be presumed to have reached the specified strength when either of the following conditions has been met:
 - a) When field cured test cylinders representing the concrete where form removal is planned have reached the strength specified for form removal.



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 - b) When the concrete has been cured in accordance with these specifications for the same length of time as the age for the testing of laboratory-cured cylinders which have reached the strength specified for form removal. The length of time the concrete in the structure has cured shall be taken to be the cumulative time when the concrete has been dampened or thoroughly sealed against moisture loss and the temperature has been above 50°F.
- 3.13.6 Forms to be reused shall be cleaned immediately after removal.
- 3.14 REPAIR OF SURFACE DEFECTS

Repair all tie holes and all surface defects immediately after form removal in accordance with ACI 301, Section 5.3.7, except as otherwise specified.

- 3.15 FINISHING OF FORMED SURFACES
- 3.15.1 Formed surfaces of exposed concrete shall have all concrete fins removed and patching performed immediately after removal of forms with surfaces rubbed to remove loosened surface particles, to provide a uniform surface texture and to reduce misalignment of adjacent forms to not over 1/16 inch in subsequent pours.
- 3.15.2 Formed surfaces of unexposed concrete shall be patched as needed immediately after removal of forms and typically do not require further work, unless specified by the Owner's Representative.
- 3.16 FINISHING OF UNFORMED (TOP) SURFACES
- 3.16.1 Unformed top surfaces of concrete shown on plans as level or as sloping planes shall be finished to a "straightedged" finishing tolerance as determined by placing a 10 foot straightedge anywhere on the slab and allowing it to rest upon two high spots within 72 hours after concrete placement, unless otherwise indicated. The gap at any point between the straightedge and the concrete shall not exceed 5/₁₆ inch.
- 3.16.2 Any depressed surface shall be struck off to elevations noted on plans.
- 3.16.3 Floor finishes shall be provided depending upon the use to which the surface will be subjected as follows, unless otherwise indicated on the Drawings.
 - a) Float Finish. Provide an even, level, dense surface by mechanical and/or hand floating to establish finished grades. See ACI 301, Section 5.3.4.2.b.

Note: This finish is for roof slabs, interior floor slabs to receive tile or other covering and concealed surfaces such as tops of footings and grade beams below slabs or below ground level.

b) Soft-Textured Broom Finish. The surface shall be thoroughly hand or mechanically floated as required for Float Finish. Following any trowelling required to meet the specified finishing tolerance, the surface shall be lightly brushed with a soft bristled broom to produce a uniform, slightly textured surface, with grooves at right angles to the direction of greater traffic.



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Note: This finish is for slightly sloped interior floor slabs in areas containing operating equipment.

c) Rough-Textured Broom Finish. The surface shall be thoroughly hand or mechanically floated as required for Float Finish. Following any trowelling required to meet specified finishing tolerance, the surface shall be lightly brushed with a coarse bristled broom to produce a uniform roughly textured surface, with grooves at right angles to the direction of greater traffic.

Note: This finish is for exterior concrete exposed surfaces and all interior floor slabs in continuously wet operating areas.

d) Trowel Finish. After thorough hand or mechanical floating, when no additional mortar or moisture can be drawn to the surface, and when the concrete is sufficiently hardened to bear a man's weight without imprint, the surface shall be steel trowelled smooth. Final trowelling by hand shall produce a ringing sound when the trowel is drawn across the surface. This requires a "Flat" finishing tolerance (maximum 3/16 inch gap between the 10 foot straightedge and the concrete).

Note: This finish is for electrical room floor slabs, operator control room floor slabs, interior floor slabs which do not contain operating equipment and tops of curbs and walls.

3.17 METALLIC FLOOR HARDENER APPLICATION

When application of a metallic floor hardener is specified on the Drawings, the hardener material shall be applied to a float finished surface at the rate recommended by the manufacturer for the particular type of service to which the floor will be subjected, in accordance with procedures demonstrated in the preparation of a Floor Slab Test Panel. The finish shall match the texture and density of the Floor Slab Test Panel finish selected by the Owner's Representative as the model for this work.

- 3.18 JOINT SEALING AND FILLING
- 3.18.1 *General.* Fill control and construction joints in floor slabs with sealant or filler where indicated on the Drawings. Use elastomeric joint sealant in control and construction joints subject to pneumatic tires and light traffic loading, unless otherwise specified. Use semi-rigid epoxy or polyurea joint filler for control and construction joints subject to small, hard-wheeled traffic, like solid rubber, hard urethane, nylon casters or steel-wheeled traffic. Isolation joints shall be sealed with an elastomeric joint sealant.
- 3.18.2 *Cleaning.* Immediately prior to sealing or filling, clean joints to full depth of saw-cut in accordance with manufacturer's recommendations. Remove all form release agent, curing compound or other contaminants.
- 3.18.3 *General Installation.* Commence placing joint sealant/filler when all construction is nearing completion, but in no case sooner than 90 days after concrete is placed. Delay sealing/filling operations until the facility's environmental systems have been placed in operation for 14 days. Install in accordance with manufacturer's recommendations. Use a primer if recommended for the specific application. Install tape on both sides of joints to assure no spill-over on sides of joints. When tape is removed, ensure entire joint has



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been filled. Completely fill joints. Remove excess sealant/filler prior to setting. Add extra sealant/filler prior to setting if needed to prevent depressed areas. Provide cured sealant/filler flush with finished concrete surface.

- 3.18.4 *Elastomeric Joint Sealant Installation*. Use joint back-up material.
- 3.18.5 *Epoxy or Polyurea Joint Filler Installation.* Do not use joint back-up material. However, use ¼ inch maximum of sand at the bottom of the joint to prevent loss of filler and bonding to bottom of the joint.

3.19 ARCHITECTURAL CONCRETE

All concrete designated as architectural concrete on the Drawings or elsewhere in the contract documents shall conform to the requirements of ACI 301, Section 6 for architectural concrete.

3.20 MASS CONCRETE

All concrete with a least dimension greater than six feet, or when designated on the Drawings, shall be treated as mass concrete and the requirements of ACI 301, Section 8 for mass concrete shall be satisfied. Refer to ACI 207.1R for references and general information on mass concrete. Refer to the notes on the Drawings for additional specific mass concrete requirements.

3.21 PRECAST-PRESTRESSED CONCRETE

Precast - Prestressed concrete shall be in accordance with SECTION 033400, Precast-Prestressed Concrete of the Construction Specifications.

3.22 JOB-CAST, POST-TENSIONED, PRESTRESSED CONCRETE

Job-cast, post-tensioned, prestressed concrete shall conform to the special provisions of ACI 301, Section 9, in addition to all other applicable portions of this specification.

3.23 QUALITY ASSURANCE

General. Quality assurance shall be in accordance with ACI 301, Section 1.6, unless specified otherwise, and as follows:

- 3.23.1 Concrete testing procedures, except as otherwise provided, shall be as follows:
 - a) Determining Air Content. ASTM C173, Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method, or other suitable method approved by the Owner's Representative.
 - b) Determining Slump. ASTM C143, Standard Test Method for Slump of Hydraulic Cement Concrete.



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 - c) Making, Curing and Shipment of Test Specimens. ASTM C31, Standard Practice for Making and Curing Concrete Test Specimens in the Field, with special attention to consolidation, prevention of water evaporation, temperature control and handling.
 - d) Compression Testing of Strength Test Specimens. ASTM C39, Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
- 3.23.2 Concrete testing shall be performed as follows:
 - a) By the Contractor. Representative samples for an air test, a slump test and a strength test from four molded test cylinders shall be taken not less than once each day of concrete placement and for each 100 cubic yards of concrete placed for each design mix. Additional cylinders required to permit early stripping of forms or early application of working loads on the concrete shall also be prepared by the Contractor. Air test and slump test shall be made in the field and the results recorded. After proper field handling and curing, the cylinders shall be carefully transported to the testing laboratory in time for scheduled testing. The persons who do this work shall be ACI Concrete Field Testing Technicians, Grade 1, or accepted equivalent.
 - b) By the Testing Laboratory. Minimum compression testing for each Strength Test shall be one cylinder at seven days and two cylinders at 28 days. If the 28 day test fails, the fourth cylinder shall be tested at 60 days. Additional cylinders required to permit early stripping of forms or early application of working loads on the concrete (see Paragraph 3.13), shall also be compression-tested by the testing laboratory.
- 3.23.3 *Unused Concrete.* Concrete in samples removed from the concrete trucks for testing purposes shall be wasted on the site as directed by the Owner's Representative.
- 3.24 EVALUATION AND ACCEPTANCE OF CONCRETE STRENGTH AND STRUCTURE

The evaluation of test results, acceptance of concrete and core tests where required and acceptance of the structure shall be in accordance with ACI 301, Sections 1.6.5, 1.6.6, 1.6.7 and 1.7 and the contract documents.

3.25 SPECIAL INSPECTION

The required verification and inspection of concrete construction shall be in accordance with the International Building Code, Section 1704 "Special Inspections and Tests, Contractor Responsibility and Structural Observation" and Section 1705 "Required Special Inspections and Tests", and Table 1705.3.

In addition, refer to SECTION 014533, Structural Inspections and Tests, of the Construction Specifications.

END OF SECTION

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CONSTRUCTION SPECIFICATION

TITLE: GROU	Т	PROJECT DOC. NO.:	143993-ASA-D	D2-SPC-1303	REV.	0
PROJECT NAME:	D.B. Wilson Station I Retrofit Project	FGD	PROJECT NO.:	245891		
CLIENT:	Big River Electric Co	orporation	AREA NO.:			

				APPROV	AL S	STATUS				
PREPA	RED BY:	DRF	DATE	10FEB21	с	HECKED B	Y:	SCK	DATE	23FEB21
APPRO	VED BY:	JDW	DATE	12FEB21	A	PPROVED	BY:	CLF	DATE	01APR21
				REVISIO	N S	TATUS				5
REV		ISSUED F	OR	REVISED BY	СН	IECKED BY	APPRC	VAL	APPROVAL	DATE
А	APPRO	DVAL		DRF		JDW				12FEB21
В	BID			SCK		JDW	CL	F	NDH	01APR21
0	CONS	TRUCTIC	N	SCK		JDW	CL	F	NDH	20MAY21

Permit Stamp

Engineer's Seal







TITLE: GROUT

PROJECT **143993-ASA-DD2-SPC-1303** DOC. NO.:

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SECTION 036000

GROUT

1.0 **GENERAL**

1.1 SCOPE

This Section includes all material, labor, equipment and services required to install all grout for equipment base plates, sole plates, slide plates, column base plates and other bearing plates in accordance with the Drawings, Construction Specifications and Scope of Work Document.

Where there is a discrepancy between the Drawings and this Specification, the Drawings shall take precedence.

- 1.2 PUBLICATIONS REFERENCED HEREIN (Latest edition unless noted)
 - American Society for Testing and Materials (ASTM), Standards as indicated
 - American Association of State Highway and Transportation Officials, AASHTO T260, Standard Method of Test for Sampling and Testing for Chloride Ion in Concrete and Concrete Raw Materials
 - American Concrete Institute: ACI Committee 116, Cement and Concrete Terminology

1.3 DEFINITIONS

- 1.3.1 Contractor. Company, partnership or corporation contractually obligated to perform the work outlined in the Drawings, Construction Specifications and the contract documents.
- 1.3.2 Owner. Big River Electric Corporation.
- 1.3.3 Owner's Representative. The authorized representative of the Owner.
- 1.3.4 Engineer. Wood, doing business as AMEC Foster Wheeler Industrial Power Company, Inc.
- 1.3.5 Acceptance. No substitutions will be considered unless specifically requested in writing with reasons for the substitution and supporting technical data. Acceptance shall be by the Engineer for all materials and methods.
- 1.3.6 Sand-Cement Grout. Job mixed sand-cement or premixed non-shrink, natural aggregate proprietary Portland cement-based grout.
- 1.3.7 Precision Grout. Premixed, high precision, flowable/fluid non-shrink, natural aggregate, proprietary Portland cement-based grout.
- 1.3.8 Epoxy Grout. Three component proprietary chemical grout consisting of a resin, hardener and aggregate.
- 1.3.9 Testing Laboratory. An independent engineering testing laboratory engaged by the Contractor, or as otherwise specified in the contract documents, to perform testing services required in this Section not otherwise assigned.
- 1.3.10 Owner's Testing Laboratory. An independent engineering testing laboratory engaged by the Owner to perform evaluation and testing services specified in this Section.

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- 1.3.11 Definitions of other terms used in this Section and not defined herein or elsewhere in the contract documents shall be as defined by ACI Committee 116.
- 1.4 SUBMITTALS
- 1.4.1 Independent certified test reports showing compliance with this specification and a list of similar projects where proposed grouts and any alternately proposed grouts have been previously used shall be submitted to the Engineer. The reports shall include the following:
- 1.4.1.1 Results of flow consistency tests conducted immediately after the mixing of a test grout batch, and at least 30 minutes later on grout from that same batch at both a low temperature of not less than 45°F and at a high temperature of not greater than 90°F in accordance with ASTM C1107.
- 1.4.1.2 Results of height change and strength tests conducted on specimens cast immediately after the mixing of a test grout batch, and on specimens cast at least 30 minutes later from same batch at both a low temperature of not less than 45°F and a high temperature of not greater than 90°F in accordance with ASTM C1107.
- 1.4.1.3 Certification that chlorides have not been added to the grout mixture. The water soluble chloride ion concentration in the hardened grout shall not exceed 0.10% by weight of the cement when tested in accordance with AASHTO T260 or ASTM C1218.
- 1.4.2 All grouts proposed to be used on the project including any alternate grouts shall not be used until evaluated by the Owner's Testing Laboratory to ensure that the grout supplied to the project has been manufactured to the same quality standards as the grout on which the certified tests were conducted.
- 1.4.3 The Owner's Testing Laboratory shall evaluate and submit reports to the Engineer on all cement-based grouts as follows:
- 1.4.3.1 Five bags of cement-based grout representative of the grout(s) proposed for use on the project shall be furnished by the Contractor to the Owner's Testing Laboratory from the same supply source that the grout(s) for the project will be obtained.
- 1.4.3.2 The Owner's Testing Laboratory shall perform the following observations and tests on cement-based grouts to evaluate compliance with this specification as follows:
 - a) Product packaging shall be marked in accordance with ASTM C1107 including instructions either marked or attached as specified herein.
 - b) There are no discrepancies between the product markings and the requirements of this specification.
 - c) All bag weights are within 2% of the nominal weight.
 - d) Grouts mixed at 45°F and 90°F to a flowable/fluid consistency in accordance with the manufacturer's written instructions and temperatures held constant at 45°F and 90°F with mixed product placed in a pail covered to prevent evaporation and set in chilled/heated water to maintain mix temperature shall:
 - Remain at a flowable/fluid consistency for a minimum of 30 minutes.
 - Not show signs of any visible bleed water collecting on the surface.
 - Provide a minimum of 1000 psi compressive strength on 2 inch cube specimens tested at 24 hours in accordance with ASTM C109.



- 1.4.4 The Owner's Testing Laboratory shall evaluate and submit reports to the Engineer on all epoxy grouts as follows:
- 1.4.4.1 Three standard units of the three components of epoxy grout representative of the epoxy grout proposed for use in the project shall be furnished by the Contractor to the Owner's Testing Laboratory from the same supply source that the grout for the project will be obtained.
- 1.4.4.2 The Owner's Testing Laboratory shall perform the following observations and tests on epoxy grouts to evaluate compliance with this specification as follows:
 - a) Product packaging shall be marked and include instructions either marked or attached to the packaging as specified herein.
 - b) There are no discrepancies between the product markings and the requirements of this specification.
 - c) Component unit weights are within 2% of the nominal weight.
 - d) Epoxy grouts mixed at 60°F and 90°F in accordance with the manufacturer's written instructions and placed in a pail holding the grout in chilled/heated water during the test to maintain the mix temperature shall:
 - Remain fluid with a self-leveling consistency for a minimum of 30 minutes.
 - Provide a minimum of 2000 psi compressive strength on 2 inch cube specimens tested at 24 hours with grout mixed and cured at 60°F in accordance with ASTM C579 (Method B).
- 1.4.5 Grout Manufacturer's Technical Representative Service Report shall be submitted to the Contractor, Owner and Engineer as specified in this Section.
- 1.4.6 Production testing shall be the responsibility of the Contractor and all test reports shall be submitted to the Owner and Engineer as specified in this Section.

1.5 COORDINATION BETWEEN DRAWINGS AND SPECIFICATIONS

Grout shall be provided as specified in the Grout Schedule included at the end of this Section, unless otherwise noted on the Drawings. Grouting instructions shown on the Drawings shall govern over this specification.

1.6 DELIVERY CONDITION

- 1.6.1 Cement, premixed sand-cement grout, precision grout, and epoxy grout aggregates shall be delivered to the Contractor in sound dry bags. Epoxy grout liquid components shall be delivered in sealed containers. The Contractor shall be responsible for storing materials in a dry, weatherproof area and maintain this area within the temperature range specified by the manufacturer(s).
- 1.6.2 Any material which becomes damp or otherwise defective shall be immediately removed from the site by the Contractor at his own expense.
- 1.6.3 The total job storage time for grout materials shall be limited to 10 months or the manufacturer's recommended maximum storage duration whichever is shorter.

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2.0 **PRODUCTS**

2.1 PORTLAND CEMENT

Cement shall be Portland cement conforming to ASTM C150, Type I, II or III, and shall be of one brand produced at a single cement manufacturing plant.

2.2 WATER

Mixing water shall be suitable for drinking.

- 2.3 JOB MIXED SAND-CEMENT GROUT
- 2.3.1 Job mixed sand-cement grout shall consist of Portland cement, fine aggregate, and for Class "B" Grout ³/₈ inch coarse aggregate. Job mixed sand-cement grout shall be proportioned by volume according to class as follows:

Class	Proportion	Thickness Range
"A"	1 Part – Portland Cement 2.5 Parts – Fine Aggregate	2 inches or less
"В"	1 Part – Portland Cement 2.5 Parts – Fine Aggregate 2.5 Parts – Coarse Aggregate	Over 2 inches

- 2.3.2 Sand-cement grout may be a premixed non-shrink proprietary grout mixed according to the manufacturer's written instructions to provide the required consistency.
- 2.3.3 Sand-cement grout shall be used for dry-packing only and only when there is at least one inch of clearance under the base plate, unless specifically noted on the Drawings. Base plates with less than 1 inch clearance shall be grouted with a premixed, non-shrink proprietary gout with a flowable consistency.
- 2.3.4 Dry-packed sand-cement grouts shall have only sufficient water to form a ball when squeezed in the "fist" of a hand and shall not change shape by "crumbling" or "flowing" when the "fist" is opened. The water-cement ratio shall not be less than 0.23 by weight.
- 2.3.5 Fine aggregate shall conform to ASTM C33, concrete sand.
- 2.3.6 Coarse aggregate shall conform to ASTM C33, size No. 8 ($^{3}/_{8}$ inch maximum nominal size).
- 2.3.7 Precision grouts listed in this specification may be used as a sand-cement grout.
- 2.3.8 Compressive strength of sand-cement grouts shall be a minimum of 2,000 psi in seven days, and 4,000 psi in 28 days.
- 2.3.9 Premixed construction grade grout meeting these requirements may be used as sandcement grout.
- 2.4. PRECISION GROUT

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- 2.4.1 Non-shrink cement-based proprietary grout shall conform to ASTM C1107 and shall satisfy the following requirements when mixed and cured at all temperatures between 45°F and 90°F in accordance with this specification and the manufacturer's recommendations:
- 2.4.1.1 Grout shall be non-corrosive, free of chlorides, and suitable for use in industrial environments.
- 2.4.1.2 Grout shall be suitable for placing at a flowable consistency as defined by ASTM C1437 or at a fluid consistency as defined by ASTM C939, and when mixed to such a consistency shall remain at that consistency for a minimum of 30 minutes for all temperatures between 45°F and 90°F.
- 2.4.1.3 Grout shall exhibit no shrinkage, a maximum of 4.0% early height change, and a maximum of 0.3% expansion at 28 days age when tested in accordance with ASTM C1107.
- 2.4.1.4 Grout when mixed with the maximum amount of water permitted by the manufacturer's recommendations shall achieve the following minimum compressive strength when tested in accordance with ASTM C109:

Strength	Age
1000 psi	1 day
2500 psi	3 days
4000 psi	7 days
6000 psi	28 days

- 2.4.1.5 Grout shall not foam or bleed when mixed with the maximum amount of water permitted by the manufacturer's recommendations.
- 2.4.1.6 All grout packaging shall clearly show the following in accordance with ASTM C1107:
 - Brand name and grade
 - Date of manufacturer and recommended expiration date
 - Lot identification number
- 2.4.1.7 The following information shall either be shown on the packaging or attached to the packaging:
 - Surface preparation, mixing, placing, and curing instructions
 - Maximum amount of mixing water or maximum recommended consistency
 - Unit weight or yield
 - Maximum working time that grout retains required properties
 - High and low preparation and placement temperatures
- 2.4.2 Non-shrink cement-based proprietary grout shall be selected from one of the following:

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	Grout Name		Manufacturer]		
	"Five Star Grout"		Five Star Products, Inc. 60 Parrott Drive Shelton, CT 06484			

"MasterFlow 928" Fluid	BASF Construction Chemicals, LLC
	889 Valley Park Drive
	Shakopee, MN 55379
"MasterFlow 555" Flowable	BASF Construction Chemicals, LLC
	889 Valley Park Drive
	Shakopee MN 55379

- 2.4.3 Only those grouts listed above and which meet the requirements of this Section shall be used.
- 2.5 **EPOXY GROUTS**

TITLE:

- 2.5.1 Epoxy grout shall satisfy the following requirements when mixed in accordance with the manufacturer's written instructions as furnished with each unit of grout:
- 2.5.1.1 Epoxy grout shall be suitable for supporting precision machinery subjected to high impact and shock loadings in industrial environments while exposed to elevated temperatures as high as 150°F. For temperatures above 150°F but not exceeding 1000°F use MasterFlow 4316 by BASF.
- 2.5.1.2 Epoxy grout including all required aggregates shall be of a self-leveling consistency suitable for flowing under equipment base plates at the grout depths specified herein, into shear key pockets and remain at a self-leveling consistency for a minimum of 30 minutes at all temperatures between 60°F and 90°F.
- 2.5.1.3 Epoxy grout shall be suitable for placement at one to four inches of thickness in a single pour at all temperatures between 60°F and 90°F.
- 2.5.1.4 Epoxy grout shall achieve the following minimum properties when tested in accordance with the indicated test method at seven days with a conditioning/curing temperature of 73°F:

Compressive Strength	10,000 psi	ASTM C579, Method B
Tensile Strength	2,000 psi ASTM C307	
Maximum Shrinkage	0.001 inch/inch	ASTM C531
Modulus of Elasticity	1.5x10 ⁶ psi	ASTM C580

- 2.5.1.5 Epoxy grout when mixed and cured at 60°F shall achieve a minimum compressive strength of 2000 psi at 24 hours. Testing shall be in accordance with the procedures of ASTM C579 (Method B) with the test age and temperature so modified.
- 2.5.2 All epoxy grout packaging shall clearly show the following:

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GROUT

TITLE:

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- Date of manufacturing and recommended expiration date
- Lot identification number
- 2.5.3 The following information shall be shown on the packaging or attached to it:
 - Surface preparation, mixing, placing and curing instructions
 - Unit weight or yield
 - Maximum working time
 - High and low temperatures for preparation and placement
 - Safety Precautions

2.5.4 Epoxy grout shall be selected from one of the following:

Grout Name	Manufacturer	
"Five Star HP Epoxy Grout"	Five Star Products, Inc.	
"Five Star DP Epoxy Grout"	60 Parrott Drive	
	Shelton, CT 06484	
"MasterFlow 648"	BASF Construction Chemicals, LLC	
master low 040	889 Valley Park Drive	
	Shakopee, MN 55379	
"I Inisorb \/100"	Unisorb Installation Technologies	
	P.O. Box 1000	
	Jackson, MI 49204	

2.5.5 Only those grouts listed above and which meet the requirements of this Section shall be used.



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TITLE: GROUT

PROJECT DOC. NO.: 143993-ASA-DD2-SPC-1303

3.0 EXECUTION

3.1 GENERAL

All grout shall be mixed and installed as specified and in accordance with the manufacturer's recommendations.

- 3.1.1 The Contractor shall ensure that the grout manufacturer(s) provides a technical representative at the site during the initial grout placement, who will instruct and assist the Contractor in the proper techniques and procedures for mixing, placing and curing each type of grout being supplied.
- 3.1.2 The grout manufacturer's technical representative shall prepare a service report describing the techniques and procedures and information related to the initial grout placement such as type of grout, flow consistency, ambient temperature, mixing apparatus, method of placement, problems associated with the grouting procedures and quantity of water per unit weight of grout for cement-based grouts.
- 3.1.3 Technical representative's service report shall be submitted to the Contractor, Owner and the Engineer.
- 3.2 SETTING OF STRUCTURES AND EQUIPMENT
- 3.2.1 Roughen all concrete surfaces against which grout will be placed, by chipping, sandblasting or other mechanical means to assure bond of grout to concrete. Surfaces to be in contact with grout shall be entirely free of oil, grease, laitance, curing compounds, and other foreign substances.
- 3.2.2 Shims shall be coated to prevent bonding and located to facilitate removal.
- 3.2.3 Column base plates, equipment bases and sole plates shall be set, aligned, firmly anchored and thoroughly cleaned before grout is placed.
- 3.3 ANCHOR BOLTS
- 3.3.1 Anchor bolts to be grouted in place shall be thoroughly cleaned of all oil, grease and other foreign substances.
- 3.3.2 Anchor bolt sleeves shall be cleared of excess water and debris and filled with grout, unless specified otherwise on the Drawings.
- 3.3.3 Grouting of anchor bolts and anchor bolt sleeves shall be completed prior to grouting of the base plates or equipment.
- 3.4 SURFACE PREPARATION
- 3.4.1 Concrete surfaces to receive Sand-Cement or Precision grout shall be saturated with water for 24 hours prior to placing grout. Excess surface water shall be removed just prior to grouting.
- 3.4.2 Concrete surfaces to receive epoxy grout shall be kept completely dry before grouting.
- 3.5 FORMS
- 3.5.1 Sand-cement grout shall be dry packed against a back brace.
- 3.5.2 Precision grout and Epoxy grout shall be placed using containment forms.

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- 3.5.3 Forms shall be built of materials of adequate strength, securely anchored and shored to withstand all forces which occur during placement of grout.
- 3.5.4 Precision grout forms shall be tight against all surfaces having all joints sealed with tape or other suitable material to make the forms leak-proof. Form oil or heavy wax shall be applied before forms are erected.
- 3.5.5 Epoxy grout forms shall be watertight with chamfer strips in place where chamfer edge is required. Caulking such as glazier's putty, butyl rubber caulking or "Dux Seal" shall be used on all joints. Forms shall be lined with polyethylene or carefully waxed with two coats of heavy floor or auto wax. Wax applications shall be applied before forms are erected.
- 3.5.6 Expansion joints in epoxy grout shall be located in accordance with the manufacturer's recommendations, unless otherwise specified.
- 3.5.7 Forms shall remain in place at least 24 hours or as recommended by the manufacturer.
- 3.6 PLACEMENT
- 3.6.1 Grout placement shall proceed in a manner that will assure the filling of all spaces and provide intimate contact of grouting materials with surfaces to be supported. A minimum effective bearing area of 90% within every 10 square inches of the bearing area shall be achieved.
- 3.6.2 Placement of grout shall be rapid and continuous so as to avoid cold joints under the base plate or equipment base.
- 3.6.3 *Hydraulic Head Grouting.* When hydraulic head pressure is used, the level of grout in the head-box shall never be below the bottom of the base or below the top of grout holes or finished surface of the grout. The head-box shall be filled to the maximum height and grout worked under the base. This procedure is repeated until the grout rises above the bottom of the base, top of grout holes or finished surface of the grout.
- 3.6.4 *Pumping Grout.* Pumped grout shall be placed starting from the back form and worked toward the side of the application while the grout completely fills the void with the nozzle always remaining in the grout. Grout shall continue to be pumped until it rises above the bottom of base, top of grout holes or finished surface of the grout.
- 3.6.5 Grout shall not be vibrated unless it can be shown that bleeding will not occur.
- 3.6.6 Shims shall be removed after grout has set for a minimum of seven (7) days. Resulting voids shall be completely filled with grout. Shims shall be coated to prevent bonding and located to facilitate removal.
- 3.6.7 Leveling screws shall be either "backed off" three turns, cutoff flush and ground smooth or completely removed after grout has cured. When leveling screws are removed, the remaining cavity shall be filled with grout.
- 3.6.8 *Grout Depth.* The minimum clearance between the top of rough concrete and the bottom of sole plate or base plate shall generally be in accordance with the following table:

Over 30 inches to 36 inches

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	Base Plate Least Plan Dim (Distance Grout Must F	nension Flow)	Minimum Depth of Grout		
	24 inches or less		1½ inches	1	
	Over 24 inches to 30 inc	ches	1¾ inches	1	

For each 12 inches of additional width over 36 inches add ½ inch of depth.

- 3.7 FINISHING
- 3.7.1 *Cement-Based Grout.* After sand-cement or precision grout has reached an initial set it shall be trimmed back to the level indicated on the Drawings. When not shown on the Drawings, trim back at a 45° angle from a line 1/8-inch above the bottom of base toward the forms.

2 inches

- 3.7.2 *Epoxy Grout.* Epoxy grout cannot be trimmed after set and must be left at finished level with all chamfer strips built into forms. Top surfaces shall be finished in accordance with the manufacturer's recommended procedures for providing a smooth surface. All finishing after the initial set will require grinding.
- 3.8 CURING
- 3.8.1 *Cement-Based Grout.*
- 3.8.1.1 Sand-cement and precision grout shall be cured according to this specification and the manufacturer's recommendations.
- 3.8.1.2 Temperature of the foundation concrete, base and grout shall be maintained between 45°F and 90°F during grouting and for a minimum of 24 hours. Where grouting at temperatures below 45°F or above 90°F has been approved, follow the manufacturer's written instructions for steps to be taken to compensate for low or high temperatures.
- 3.8.1.3 Grout shall be protected from extreme drying conditions by covering exposed grout surfaces with waterproof sheet material for a minimum of three days.
- 3.8.2 Epoxy Grout.
- 3.8.2.1 Grout shall be cured in accordance with the manufacturer's specifications and recommendations.
- 3.8.2.2 Temperature of the foundation concrete, base and grout shall be maintained between 60°F and 90°F during grouting and for a minimum of 24 hours. Where grouting at temperatures below 60°F or above 90°F has been approved, follow the manufacturer's written instructions for steps to be taken to compensate for low or high temperatures.
- 3.9 TESTING
- 3.9.1 *General.* The Contractor is responsible for preparing, storing, curing, and transporting test samples for testing to the Testing Laboratory. Contractor's personnel shall follow the Testing Laboratory's written procedures for preparing the test specimens.
- 3.9.2 *Testing Schedule.* Representative samples shall be taken by the Contractor not less than once each day of grout placement and for each 50 cubic feet of each type of grout placed for





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strength tests in accordance with ASTM C109 for cement-based grout or ASTM C579 for epoxy grout using brass molds. Nine cubes shall be made for each type of grout. The cubes shall be tested in accordance with the following table:

Grout Type	24 Hours	7 Days	28 Days
Sand-Cement	3	3	3
Precision	3	3	3
Ероху	3	3	3

- 3.9.3 *Test Reports.* Copies of the test results shall be submitted to the Owner and Engineer immediately after the test results are available. The report shall include the following information:
 - Project name and Wood job number
 - Air temperature
 - Name of grout
 - Location of grout placement
 - Description of storage and curing procedures of sample prior to testing.
 - Mixing information including amount of grout placed represented by sample and total mixing water for cement grout



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3.10. GROUT SCHEDULE

	GROUT SCHEDULE					
Type of Equipment	Sand-Cement Class A or B *Dry-pack only	Non-shrink Flowable / Fluid	Ероху	Comments		
Stair Landing Supports, Utility Supports and Small Misc Platforms	√			See drawings for locations		
Anchor Bolts / Rebar Set in Existing Concrete			\checkmark	See drawing for grouting specifications.		
Pump Bases		\checkmark		With motors < 250 HP		
Reducers and Drives		\checkmark				
Tissue Machine Sole Plates		\checkmark				
Storage Tanks on Legs		\checkmark				
Tanks, Flat Bottom		\checkmark				
Chimneys, Stacks		\checkmark				
Conveyors		\checkmark				
Steel Column Base Plates		\checkmark		Use flowable mix at shear keys.		
Fans		\checkmark	\checkmark	Use epoxy grout for motors exceeding 250 HP		
Air Compressors		\checkmark	\checkmark	Use epoxy grout for motors exceeding 250 HP		
Fan Pumps		\checkmark	\checkmark	Use epoxy grout for motors exceeding 250 HP		

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END OF SECTION

wood.

CONSTRUCTION SPECIFICATION

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PROJECT NAME:	D.B. Wilson Statio Retrofit Project	n FGD	PROJECT NO.:	245891		
CLIENT:	Big River Electric Corp	ooration	AREA NO.:			

	APPROVAL STATUS							
PREPARED BY: DRF DATE 10FEB21 CHECKED BY: SCK DATE 23FEB2		23FEB21						
APPROVED BY: JDW DATE 12FEB21 APPROVED BY: CLF DATE 01APR21		01APR21						
	REVISION STATUS							
REV		ISSUED F	OR	REVISED BY	CHECKED BY	APPROVAL	APPROVAL	DATE
А	APPRO	OVAL		DRF	JDW			12FEB21
В	BID			SCK	JDW	CLF	NDH	01APR21
0	CONST	IRUCTIO	N	SCK	JDW	CLF	NDH	20MAY21

Permit Stamp





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SECTION 051200 STRUCTURAL STEEL AND MISCELLANEOUS METAL FABRICATION AND ERECTION

1.0 GENERAL

The purpose of this Specification is to ensure compliance with the American Institute of Steel Construction "Specification for Structural Steel Buildings", June 22, 2010. It is the intent of this Specification to conform to the requirements of this document as a minimum standard.

1.1 SCOPE

This section includes all materials, labor, equipment and services required for fabrication, delivery to the jobsite and erection of all structural steel and miscellaneous metal, as well as related work indicated, in accordance with the Drawings, Construction Specifications and Scope of Work Document. All protective coatings shall be as specified, or as referenced herein.

Where there is a discrepancy between the Drawings and this Specification, the Drawings shall take precedence.

1.1.1 Furnish and install connections for structural steel components.

The Contractor (Steel Fabricator) shall prepare connection design calculations under the supervision of a registered professional engineer licensed in the State of Kentucky for all connections. These calculations shall be submitted to the Engineer along with the detail drawings depicting the designed connections and shall bear the Contractor's Engineer certification and seal.

Proposed connection details, fabrication, quality control and inspection procedures shall be submitted to the Engineer for review and approval prior to commencement of detailing. Details or procedures not included in this submittal or proposed changes to the submittal must be clearly indicated as such and must be submitted immediately after award of contract to allow adequate time for review by the Engineer (see Paragraph 1.5.2).

The design method used (Load and Resistance Factor Design - LRFD or Allowable Strength Design - ASD) and the type of forces used (factored loads or service loads) are noted on the drawings and typical details (see AISC Steel Construction Manual, 14^{TH} Edition).

- 1.1.2 Grouting of base plates shall be included in the General Contractor's scope of work.
- 1.1.3 The fabrication and performance of steel erection work described in this specification and shown on the Engineer's drawings shall comply with all laws, ordinances, regulations and codes of Federal and State authorities and any local laws and codes.
- 1.1.4 All structural steel fabricators shall be AISC certified and shall employ and maintain on staff a registered professional engineer in civil/structural engineering.
- 1.2 OTHER PROJECT SPECIFICATION SECTIONS REFERENCED HEREIN
 - Grout SECTION 036000
 - Painting, General SECTION 099000



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- 1.3 PUBLICATIONS REFERENCED HEREIN (Latest edition unless noted) All work shall conform to the requirements of these codes and standards, unless noted otherwise.
 - American Institute of Steel Construction (AISC), AISC 360-10, Specification for Structural Steel Buildings, June 22, 2010 and AISC 303-10, Code of Standard Practice for Steel Buildings and Bridges, April 14, 2010
 - AISC 341-10 Seismic Provisions for Structural Steel Buildings, June 22, 2010
 - AISC Steel Construction Manual, 14TH Edition and related standards
 - AISC Detailing for Steel Construction, 3RD Edition, August 2009
 - Research Council on Structural Connections (RCSC), Specification for Structural Joints Using High-Strength Bolts, December 31, 2009
 - American Galvanizers Association (AGA), The Design of Products to be Hot Dip Galvanized after Fabrication
 - American Society for Testing and Materials (ASTM), Standards as indicated
 - American Welding Society (AWS), Structural Welding Code D1.1
 - National Fire Protection Association (NFPA), National Fire Code
 - International Building Code, 2015 Edition
 - AASHTO LRFD Bridge Design Specification 6th Edition 2012
 - OSHA Regulations 29 CFR Part 1910 Occupational Safety and Health Standards
 - OSHA Regulations 29 CFR Part 1926 Safety and Health Regulations for Construction

Any discrepancies between various codes and standards shall be referred to the Engineer for clarification.

- 1.4 DEFINITIONS
- 1.4.1 Contractor. Company, partnership or corporation contractually obligated to perform the work outlined in the Drawings, Construction Specifications and Scope of Work Document.
- 1.4.2 Owner. Big River Electric Corporation.
- 1.4.3 Owner's Representative. The authorized representative of the Owner.
- 1.4.4 Engineer. Wood, doing business as AMEC Foster Wheeler Industrial Power Company, Inc.
- 1.4.5 Erector. The contractor erecting the structural steel (may be the same as the Fabricator).
- 1.4.6 Fabricator. The contractor fabricating the structural steel.
- 1.4.7 Others. Any vendor, contractor, etc., other than the Contractor and Owner herein defined.
- 1.4.8 Testing Laboratory. An independent engineering testing laboratory engaged by the Owner to perform testing services required in this specification not otherwise designated, and to perform any other such services requested by the Owner's Representative.
- 1.4.9 Special Inspections. Inspections required by the International Building Code (Chapter 17) for the materials, installation, fabrication, erection or placement of components and



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 connections requiring special expertise to ensure compliance with approved construction documents and reference standards.
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1.5 SUBMITTALS

- 1.5.1 *General.* The following information shall be submitted to the Engineer for review and appropriate action prior to commencement of work to which submission is applicable:
 - Shop Drawings
 - Connection details and calculations for connections
 - Welder Certification
 - Mill Certificates
 - Direct Tension Indicator Washers and Installation Procedures
 - Testing Laboratory Reports
- 1.5.2 Shop Drawings and Calculations for Connections. Shop drawings shall include all shop and erection details (showing all cuts, copes, connections, holes, bolts, painting and/or galvanizing, etc.). All shop and field welds shall be indicated by AWS standard welding symbols. The required size and quantity of field bolts required for each connection shall be listed. The proper sequence of erection shall be clearly stated. The system of orientation of piece marks shall be fully described. All shop drawings shall be thoroughly checked and approved by the Fabricator's Engineer prior to submittal to the Engineer and if this procedure is not followed, the submittal will be subject to rejection. Shop drawings shall be submitted in an orderly and timely manner to meet the erection schedule.

Shop drawings will be reviewed by the Engineer for general arrangement and design intent only. This review shall in no way relieve the Contractor of his responsibility for correct dimensions, quantities, design, fabrication and proper functioning of materials and equipment, nor in any way alter the requirements of the contract documents. The Engineer shall be allowed a minimum of two working weeks to review and approve shop drawing submittals.

Fabrication shall not start until the revised shop drawings have been reviewed and returned bearing the status of "Released for Production".

Connection details and calculations for connections shall be submitted to the Engineer for review and approval a minimum of three weeks prior to submitting shop drawings related to these connection details.

- 1.5.3 Paint Coatings. Submit protective coatings product certification, color samples, any specialty paint shop certifications, inspection reports and certifications on volatile organic compounds (VOC) as specified in SECTION 099000, Painting, General, of the Construction Specifications.
- 1.5.4 *Welder Certification.* Demonstration test results and/or qualification papers for each welder who will do any shop or field welding on this project.
- 1.5.5 *Company Welding Certification.* Demonstration test results and/or qualification papers for the company's welding qualifications.
- 1.5.6 *Mill Certificates.*
- 1.5.6.1 Submit copies of the test reports for each heat of steel from which structural steel for this project is taken in accordance with ASTM A6 to the Engineer. If foreign steel is used, obtain additional tests of steel certified by an independent testing agency, approved by the Engineer, to verify that steel meets specified ASTM requirements.



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1.5.6.2	Submit copies of the inspection strength bolts for this project in	on test reports accordance	s for each production or shippin with ASTM F3125 to the Enginee	ig lot of high er.
1.5.7	Direct Tension Indicator Wash and written installation procedu project for the Engineer's review	ners and Insta ures for direct w prior to any	allation Procedures. Submit bra tension indicator washers to be installations.	and, samples used on this
1.5.8	<i>Testing Laboratory Reports.</i> Engineer.	Reports of te	sts or inspections shall be sub	mitted to the
1.5.9	Welding Inspector. Welding Ins	spector certific	ation shall be submitted to the E	ngineer.
1.5.10	<i>SDNF File.</i> The Fabricator's s File (SDNF) for use by the Eng	teel detailer s ineer.	shall submit their Structural Deta	ailing Neutra
1.5.11	Special Inspections Reports. submitted as described in Chap AISC 360.	All special pter 17 of the	inspections reports shall be p International Building Code and	repared and Chapter N o
1.6	SAFETY			
	The Contractor, Fabricator, Enspecification shall perform th regulations and all safety require	ector and oth eir work in rements of the	ers engaged in performing the a safe manner in accordance owner.	work for this with OSHA
1.7	WORKMANSHIP			
1.7.1	<i>General.</i> Surfaces exposed to where practice for the particula mitered, welded and ground s length and confirmed by field n fillers. All joints and connection	finished view ar type of met mooth at cor neasurements as shall fit clos	shall be free from fabrication mathematical prohibits, moldings and memores and angles. Members shares so that field assembly may be se and tight.	arks. Excep bers shall be all be true to done withou
1.7.2	<i>Welding.</i> Fabrication and ere Welders shall be qualified and the AWS code or similar require	ction welding certified to p ements.	technique shall conform to the erform the work required, in acc	AWS Code ordance with
1.8	ACCESS FOR INSPECTION			
	The Owner and the Engineer protective coatings process, a which they wish to inspect durin	shall have fr nd/or erection ng and/or upo	ee access to any fabrication, g າ work on any piece of steel fo n completion of such work.	alvanizing or r this projec
1.9	HANDLING AND STORAGE			
1.9.1	<i>Handling.</i> After shop fabricati structural steel members sha During shipment, sufficient dun steel.	ion, galvanizi II be handleo nage shall be	ng and/or application of protect d with sufficient care to minim e used to prevent any rubbing of	ive coatings ize damage steel agains
1.9.2	<i>Storage.</i> Galvanized and pain formation of wet storage stains The members shall be stacked as to allow air between the continuous drainage. Members	ited steel sha s, and shall be or bundled d galvanized s shall be stor	Il be loaded and stored so as to e protected from contamination a uring transport and storage in su or protective coating surfaces ed above ground on platforms, s	o prevent the and damage ich a manne and provide skids or othe

supports.



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1.10 WRAPPING AND SHIPPING

Wrapping and shipping shall be accomplished in a manner which will prevent damage. Marking of shipments shall readily identify the material and shall consist of the Contractor's name, project address, Owner's name, Wood project number and the jobsite location where the item is to be installed.



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2.0 PRODUCTS

2.1 GENERAL

All materials shall be new and shall conform to the respective specifications and other requirements specified herein, unless otherwise indicated.

2.2 STRUCTURAL AND MISCELLANEOUS STEEL

Shape	Designation	Minimum Yield Stress
W Shapes & WT's cut from W Shapes	ASTM A992 Grade 50	50 ksi
M & S Shapes, C & MC Channels	ASTM A36	36 ksi
	ASTM A572 Grade 50	50 ksi
Angles	ASTM A36	36 ksi
	ASTM A529 Grade 50	50 ksi
Structural Plates and Bars	ASTM A36	36 ksi
	ASTM A572 Grade 50	50 ksi
Round HSS	ASTM A500 Grade C	46 ksi
Square and Rectangular HSS	ASTM A500 Grade C	50 ksi
Standard Pipe	ASTM A53 Grade B Type E or S	35 ksi
HP Shapes	ASTM A572 Grade 50	50 ksi

- 2.2.1 Galvanizing of structural steel shall be compatible with the structural steel material supplied. Structural shapes, plates and bars shall conform to the ASTM Specifications listed above, except that the silicon content shall be in the range of 0 to 0.04% or 0.15 to 0.22% only. Mill certificates shall be furnished to note compliance with these requirements as per Paragraph 1.5.6.
- 2.2.2 *Heavy Section Charpy V-Notch Requirements*. Rolled Heavy Shapes and Built-Up Heavy Shapes shall meet the requirements of AISC 360-10 Sections A3.1c and A3.1d.

Structural steel shapes used in the Seismic Load Resisting System (SLRS) with flanges 1 ¹/₂ inches and thicker shall have a Charpy V-Notch (CVN) toughness of 20 ft-lbf at 70°F tested in the alternate core location as described in ASTM A6 Supplementary Requirement S30 in addition to the requirements of AISC 360.



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	Plates 2 inches and thicker used in the Seismic Load Resisting System (SLRS) shall have a minimum Charpy V-Notch (CVN) toughness of 20 ft-lbf at 70°F measured at any location permitted by ASTM A673, Frequency P, for members built-up from plate, connection plates where inelastic strain under seismic loading is expected and for steel core plates of buckling-restrained braces.
2.3	BOLTS (including suitable hex nut and ASTM F436 washer for each bolt).
	 High Strength Bolts. ASTM F3125 Grade A325 or Grade A490, Type 1 Unfinished Bolts. ASTM A307, Grade A. Nuts. ASTM A563 heavy hex Washers. ASTM F436 Protective Coating. All bolts (except ASTM F3125 Grade A490), nuts and washers, shall be galvanized by coatings of zinc mechanically deposited on iron and steel in accordance with ASTM B695, Class 50, Type 1. ASTM F3125 Grade A490 bolts shall be black (plain). Direct Tension Indicator Washers. ASTM F959, mechanically galvanized.
2.4	WELDING ELECTRODES
2.4.1	Welding electrodes shall be in accordance with AWS D1.1.
	[Note: AWS A5.1 or A5.5, E70XX, are generally required for shielded metal arc welding; AWS A5.17 or A5.23, F7X-EXXX for submerged arc welding; AWS A5.18, ER70S-X for gas metal-arc welding, and AWS A5.20, E7XT.X for flux cored arc welding].
2.4.2	Shop welding of connections in the Seismic Load Resisting System. All welds used in members and connections in the Seismic Load Resisting System shall be made with a filler metal that can produce welds that have a minimum Charpy V-Notch toughness of 20 ft-lbf at 0°F, as determined by the appropriate AWS A5 classification test method or manufacturer certification.
2.4.3	<i>Field welding of column splices.</i> All column splices using complete-joint-penetration welds shall be made with a filler metal that can produce welds that have a minimum Charpy V-Notch toughness of 20 ft-lbf at minus 20°F, as determined by the appropriate AWS classification test method or manufacturer certification.
2.4.4	<i>Complete-joint-penetration (CJP) groove welds between columns and base plates.</i> All CJP groove welds between columns and base plates shall be made with a filler metal that can produce welds that have a minimum Charpy V-Notch toughness of 20 ft-lbf at minus 20°F, as determined by the appropriate AWS classification test method or manufacturer certification.
2.4.5	Field welding of connections in the Seismic Load Resisting System. All welds used in members and connections in the Seismic Load Resisting System shall be made with a

- filler metal that can produce welds that have a minimum Charpy V-Notch toughness of 20 ft-lbf at 0°F, as determined by the appropriate AWS A5 classification test method or manufacturer certification.
- 2.4.6 Welding shall not be performed when the ambient temperature is lower than 0°F per AWS D1.1, Section 5.12.2.



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- 2.5 SHEAR CONNECTOR STUDS
- 2.5.1 *General.* Shear connector studs shall be made from ASTM A108 cold drawn bar stock and shall conform to AWS D1.1 requirements for Type B studs (60,000 psi minimum tensile strength). Studs shall have fluxed tips and shall be supplied with manufacturer's standard ferrules for use on flat surfaces and corners as required.
- 2.5.2 Stud welding, workmanship, technique, qualifications, production control, and inspections shall conform to AWS D1.1 requirements.

2.6 FRAMES IN MASONRY WALLS

Door, window and miscellaneous frames in masonry walls shall be shop-fabricated from steel shapes and painted. Corners shall be mitered, welded and ground smooth. Frames shall be square. Heads, jambs and sills shall be straight to line. Anchor straps shall be as indicated on drawings. Unless otherwise indicated, door stops shall be seal-welded to frames, exterior window stops shall be seal-welded to frames and interior window stops shall be attached to frames with flat headed, countersunk screws, prior to being shipped to jobsite. Provide clip angles at door sills, welded to frames and prepunched or drilled for expansion bolts. All exposed surfaces of frames shall be finished smooth without voids, pits, mill scale, rust or weld spatter. Frames for fire-rated doors shall comply with the requirements of NFPA 80, *Standard For Fire Doors and Windows*, current edition.

2.7 ANCHOR BOLTS AND ANCHOR STRAPS

Anchor bolts and anchor straps to be embedded in concrete or built into masonry shall be galvanized steel complying with ASTM F1554 Grade 36 or ASTM A36 respectively, unless otherwise indicated or specified. Expansion or toggle bolts, if required, shall be approved types of galvanized or corrosion resistant metals, suitable for the items to be anchored. Bolts and nuts for anchoring wood members shall be provided with washers.

2.8 SLEEVES

Sleeves for piping or conduit passing through concrete or masonry shall provide at least one inch clearance on all sides of insulated and uninsulated piping or conduit, if not otherwise indicated. Sleeves shall be seamless or welded galvanized steel pipe with wall thicknesses equal to Schedule 40 pipe, or as otherwise approved by the Engineer. Anchorage into concrete or masonry shall be as shown on the Drawings.

2.9 GUARD RAILING AND SAFETY GATES

Guard railing posts and rails shall be welded construction, shop-fabricated from carbon steel, ASTM A53, Grade B, Type E pipe and hot-dip galvanized after fabrication. Fit post to top rail and intermediate rails to post. Bend rails continuously at corners except at corners with posts. Groove-weld all joints and grind smooth. Splice joints in rails shall occur next to posts within $1/_6$ of the span if indicated or otherwise approved by the Engineer. Field welds shall be ground smooth and finished to match adjoining surfaces. Guard rail posts shall be spaced as shown on the Drawings. Vent and drain holes shall be provided as required in ASTM A385.

Safety gates at guard rail openings shall be self-closing, fabricated with a minimum of one top and one bottom rail.

2.10 LADDERS


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Ladders, ladder cages and rungs shall be shop-fabricated in accordance with AISI, ANSI A14.3 and the Drawings. All ladders and their parts shall be galvanized. Steel shall be fabricated from ASTM A36 or ASTM A572 Grade 50 material. Anchoring angles, plates and bolts shall be provided as required to secure ladders in place. Surfaces of ladder rungs shall be non-slip in accordance with OSHA requirements.

2.11 FLOOR GRATING AND STAIR TREADS

Floor grating shall be electro-forged welded, ASTM A1011, plain surface steel bar grating with 1¼ inches by ${}^{3}\!/_{16}$ inch bearing bars spaced at $1{}^{3}\!/_{16}$ inches and with cross bars spaced at 4 inches. Grating shall be fabricated so that cross bars of adjacent panels are aligned when installed. Each hole or opening greater than 8 inches shall be banded with a 5¼ inches x ${}^{3}\!/_{16}$ inch band, welded to the cut-portions of the grating. Floor grating shall be hot-dip galvanized after fabrication. Grating that is inclined, in wet areas, or used in outdoor platforms and walkways shall have a serrated surface.

Stair treads shall be of the same material as the floor grating specified hereinbefore with the tread widths not less than those specified on the Drawings, including a minimum $1\frac{1}{4}$ inches wide by full length of the tread, steel raised-pattern checkered plate nosing. Stair treads shall be hot-dip galvanized after fabrication.

Floor grating and stair tread requirements shall be as specified on the Drawings.

2.12 CHECKERED PLATE

Checkered plate shall be skid-resistant, raised-pattern floor plate of commercial quality, ASTM A786, galvanized steel plate as specified on the Drawings.

2.13 CONCRETE STAIR AND LANDING NOSINGS

Concrete stair treads and concrete landings shall have a 3 inches wide cast iron with $\frac{1}{4}$ inch nose lip, cross-hatched abrasive pattern top and cast-in or other suitable anchor nosing by the full width of the stair tread less 3 inches at each tread and each landing.

2.14 BUILDING DRAINS

Building floor and roof drains shall be as indicated on the Drawings.

2.15 CRANE RAILS AND CONNECTIONS

Crane rails shall conform to ASTM A759, ASTM A1 and/or the manufacturer's specifications and tolerances. Crane rail splices (bolted or welded) shall be as indicated on the Drawings. For bolted splices, steel joint bars shall conform to ASTM A49 and joint bar bolts shall conform to ASTM F3125 Grade A325 with compatible ASTM A563 nuts. For welded splices, consult the manufacturer for recommended rail-end preparation and welding procedure.

Rails shall be attached to the crane girder using patented rail clip fastenings and pads as manufactured by Gantrex or an Engineer approved equal.

2.16 OTHER FABRICATED ITEMS

Other miscellaneous metal fabricated items indicated on the Drawings shall be fabricated and furnished in accordance with final reviewed and completed shop drawings.



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2.17 GASKETS

Electrolysis-proof gaskets shall be neoprene or other suitable material of sufficient thickness to provide insulation to prevent electrolytic action between dissimilar materials as indicated on the Drawings or approved by the Engineer.

2.18 STRUCTURAL AND MISCELLANEOUS STEEL FABRICATION

- 2.18.1 *General.* Fabrication and delivery shall be performed in accordance with the AISC 303 *Code of Standard Practice for Steel Buildings and Bridges.* Permissible variations for sweep, camber, length, and cross section of all steel members shall conform to ASTM A6, AISC Manual, Part 1 and AISC Code of Standard Practice. Steel shall be fabricated and assembled in the shop to the greatest extent feasible. Bolts and other loose fasteners shall be delivered to the jobsite with the members being connected with sufficient quantities and overages to meet the erection requirements.
- 2.18.2 *Connections.* Connection materials, design, installation and inspections of bolted connections shall conform to the RCSC *Specification for Structural Joints Using High-Strength Bolts.* Connections shall be fabricated to conform to the approved shop drawings.
- 2.18.3 *Shop Connections*. Shop connections may be welded or bolted, unless otherwise indicated. Welded connections shall be shop fabricated unless otherwise specified on the Drawings.

All shop welded connections shall be such that resulting hidden surfaces are continuously seal-welded, unless otherwise approved by the Engineer. No shop welding is permitted after hot-dip galvanizing.

Shop bolted connections shall not be assembled until after the individual components have been galvanized and faying surfaces appropriately roughened by hand wire brushing only.

- 2.18.4 *Field Connections*. Field connections shall be bolted using high strength bolts, except where field welding is specified on the Drawings.
- 2.18.5 *Bolted Connections*. Bolted connections shall be bearing type with threads included in the shear plane, unless otherwise indicated on the Drawings. All high strength bolted type connections shall have the bolts fully pretensioned.

All faying surfaces for connections that are part of the Seismic Load Resisting System shall be prepared as required for Class A Slip-Critical Joints.

Bolted joints shall not be designed to share load in combination with welds on the same faying surface.

Where framed beam reactions are not shown on the Drawings, the end connections shall be designed for an end reaction equal to one-half of the maximum total uniform load (for W-shapes having braced compression flanges with $L_b < L_p$, with simple-span bent about the strong axis) found in the AISC Beam Tables (14th Edition, Table 3-6) for the given span, considering bolt, beam web and clip angle capacities per the AISC 360 Specifications.

Connections shall have no fewer rows of bolts than as follows:

wood.

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	NOMINAL BEAN	MINIMUM BOLT F	ROWS			
	W8 & W10	2				
	W12 & W1	3				
	W16	4				
	W18	5				
	W21 & W2	6				
	W27	7				
	W30 & W3	8				
	W36			10		

CONSTRUCTION SPECIFICATION

Beam connections shall be double angle type connections similar to those shown in AISC 14th Edition Table 10-2 with the connecting angles welded to the full available depth of the beam, unless otherwise noted. One-sided or other types of eccentric connections are not permitted except for large skew angle connections or where shown on the Drawings or where called to the Engineer's attention, shown in detail and individually approved by the Engineer prior to submitting detailed shop drawings.

- 2.18.6 *Bolt Holes.* Bolt holes shall be drilled or punched at right angles to the surface of the metal and shall not be made or enlarged by burning. Outside burrs shall be ground smooth and all sharp or rough edges or corners shall be ground smooth and slightly rounded.
- 2.18.7 *Column Ends.* Column ends at base plates, cap plates and splices shall be accurately sawed or otherwise finished to a true plane by any suitable means, unless otherwise indicated. Thermal cutting shall be in accordance with AISC 360 Specification, Section M2.2 and AWS 5.15.4. Grinding may be required to meet Roughness Requirements in AWS 5.15.4.3. Jumbo Shape Columns, W14x426 thru W14x730 shall have the ends milled, unless otherwise indicated.
- 2.18.8 *Base and Cap Plates.* Base plates and cap plates shall provide full contact bearing surfaces between the column and base plate in accordance with AISC 360 Specification, Section M2.8, Finish of Column Bases. Base plates in which the least dimension is greater than 24 inches shall be provided with grout holes located as close to center as practicable and a minimum of 2 inches in diameter.
- 2.18.9 *Column Splices.* Column splices shall be detailed as shown in the AISC Steel Construction Manual 14th Edition, Table 14-3 using all bolted flange-plated column splices, unless otherwise indicated. Columns in the vertical Seismic Load Resisting System shall have directly welded flange column splices using complete-joint-penetration groove welds with tapered transitions between flanges of unequal thickness or width.
- 2.18.10 *Stiffeners.* Stiffeners shall be fitted neatly between the flanges and welded as shown on the Drawings. Corners shall be cropped corners or drainage holes provided for drainage.
- 2.18.11 *HSS Sections.* Exposed ends of any pipe or HSS section shall be closed with a ³/₁₆ in. steel plate cut to fit the cross-section of the member and seal-welded all around the



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	perimeter. Where sections are	e to be hot-	dip galvanized	after fabrication,	, the	sections
	shall be properly vented and in	clude drain h	oles for the co	mpleted assembly	1.	

- 2.18.12 *Trusses.* Connect chord and web members at intersecting points along the top and bottom chords in accordance with AISC "Specification for Structural Steel Buildings". Design and weld all web member to chord connections to develop loads shown on the Drawings using gusset plates where required. Detail connection joints where the center of gravity of all connecting members intersect at a common panel point. Design and detail truss connections to columns and truss splice connections as indicated in AISC "Detailing for Steel Construction" and "Steel Construction Manual". Provide camber in trusses as indicated on the Drawings.
- 2.18.13 *Bracing*. Design bracing connections where all force components can be delivered directly to center of gravity of intersecting members, unless otherwise indicated. Where bracing force components do not intersect at a common point, design connections to account for resulting eccentricities.
- 2.18.14 *Crane Rails*. Fabricate crane rails with finished ends for close fit using bolted or welded joints as indicated on the Drawings. Arrange rails so that joints on opposite sides of the crane runway will be staggered with respect to each other and with due consideration to the wheelbase of the crane. Ensure rail joints do not occur closer than four feet from crane girder joints. Use odd crane rail lengths not less than ten feet long to complete a run or necessary stagger. Rail clamps shall be set as pairs and are not to be staggered. Space clamps a minimum of three feet on center or closer if recommended by the manufacturer of the rail clamps. Provide crane stops on crane rails and countersink holes in wood bumpers for nuts, bolts and washers as shown on the Drawings.
- 2.18.15 *Marking.* Piece mark each piece of steel with at least one appropriate identifying mark which can be easily read after completion of fabrication and application of the protective coating(s). Permanent steel piece mark tags may be used where seal-welded to the steel and the piece mark remains readable. Paint stick marks which cannot be fully obliterated after erection, shall not be used.
- 2.18.16 *Welded Joints.* Welding shall be performed in accordance with the Welding Procedure Specification (WPS) established for the particular type joints being welded as required in AWS D1.1 and as approved by the Engineer. The WPS variables shall be within the parameters established by the filler metal manufacturer.
- 2.19 WELDING INSPECTION
- 2.19.1 Inspection Procedures and Responsibilities

The Fabricator and Erector shall be responsible for inspection of all shop and field welding with special attention to AWS D.1.1, Section 6 "Inspection" including Paragraph 6.6 "Obligations of the Contractor".

All inspection shall be performed by AWS certified welding inspectors certified in conformance with the provisions of AWS QC1.

The Fabricator and Erector shall submit to the Engineer for review and approval a copy of the quality control and assurance standards for welding procedures to be used to maintain good welding quality in making shop and field welds.



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Copies of all shop and field weld inspections and test reports shall be submitted weekly to the Engineer by the Fabricator and Erector AWS Inspector.

The Owner reserves the right to perform independent inspections using his own testing agency or independent inspectors to inspect and test shop and field welding procedures, completed welds and welding quality at the Owner's own expense. The Owner's inspections do not relieve the Fabricator and Erector from the responsibility for inspections. Any deficiencies identified during inspections by the Owner shall be corrected by the Fabricator or Erector at their expense.

2.19.2 Visual Inspection

All welds shall be visually inspected by the AWS Inspector. Where welds do not meet the acceptance criteria of AWS D1.1, Section 6, Part C, Table 6.1, the Fabricator or Erector shall correct all deficiencies at their own expense.

Where visual inspection indicates an unsatisfactory standard of welding of more than 2% of weld inspections being rejected, non-destructive testing of welds selected by the AWS Inspector shall be performed. Non-destructive testing shall continue until the following parameters are met:

- Visual inspection indicates rejection of less than 2% of the welds, then further nondestructive testing may not be required.
- Visual inspection indicates rejection greater than 2% but less than 50% of the welds inspected, non-destructive testing will be required of 10% of all welds of the type rejected.
- Visual inspection indicates rejection of more than 50% of the welds inspected, nondestructive testing will be required of all welds of the type rejected.
- 2.19.3 Non-Destructive Testing

Non-destructive testing shall be radiographic or ultrasonic testing depending on the method most suitable for the type of weld being tested. Non-destructive testing shall be performed in addition to visual inspections as follows:

Weld Description	Percent of Welds to be <u>Tested</u>
Full Penetration Welds in material > 5/8" Thick	5%
Fillet Welds >1/2"	5%
Welded Moment Connections in Moment Resisting Frames	100%
Welded Truss Chords and Column Splices	100%
Welded Beam Splices (only as permitted by the Engineer after splicing procedure approval)	100%

Non-destructive testing shall be performed at all critical locations such as moment connections to ensure that the welded metals and material are free from laminations.

All deficiencies identified by non-destructive testing shall be corrected by the Fabricator or Erector at their own expense.



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2.19.4	Inspections shall follow schedu Code and Chapter N of A Agency/Testing Laboratory.	lled criteria ISC 360,	within Chapter 17 of the Internation and will be performed by the	onal Building Inspection

2.20 PAINTING

Protective coating paint system shall be applied in the shop in accordance with SECTION 099000, Painting, General, of the Construction Specifications.

- 2.21 ZINC COATING OF STEEL (HOT-DIP GALVANIZING)
- 2.21.1 Galvanizing shall be performed after fabrication as applicable to items specified to be galvanized. Galvanizing shall be performed in accordance with ASTM A123 to deposit zinc (hot-galvanized) coatings on products fabricated from rolled, pressed and forged steel shapes, plates, bars and strips.
- 2.21.2 Other Applicable ASTM Standards:
 - A90, Standard Test Method for Weight (Mass) of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings
 - A143, Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement
 - A153, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
 - A384, Standard Practice for Safeguarding Against Warpage and Distortion During Hot-Dip Galvanizing of Steel Assemblies
 - A385, Standard Practice for Providing High-Quality Zinc Coatings (Hot-Dip)
 - A780, Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
 - B6, Standard Specification for Zinc
 - B695, Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel
 - E376, Standard Practice for Measuring Coating Thickness by Magnet-Field or Eddy-Current (Electromagnetic) Examination Methods
- 2.21.3 *Surface Preparation.* All surfaces that are required to be galvanized shall be cleaned to bare metal by degreasing, pickling, rinsing, fluxing, etc., in accordance with the standards of the American Galvanizing Industry.
- 2.21.4 *Embrittlement.* The Fabricator and Galvanizer shall guard against embrittlement of steel members in accordance with ASTM A143. Tests for embrittlement shall be documented and submitted to the Engineer.
- 2.21.5 *Warpage.* Steel members that are warped beyond the dimensional tolerances allowed by ASTM A6 shall be straightened and repaired before shipment to the construction site.
- 2.21.6 *Zinc Bath.* The composition of metal in the galvanizing bath shall not be less than 98.0% zinc.
- 2.21.7 *Coating Thickness.* Coating thickness shall be as specified in ASTM A123 (2.3 oz./sq. ft. average, 2.0 oz./sq. ft. individual specimens). Tests required for coating thickness per ASTM A123 shall be documented and submitted to the Engineer. In addition, three stripping tests shall be conducted in accordance with ASTM A90. Test specimens shall be cut approximately 4 inches in length and be made of the same type and shape as the



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	material being galvanized. Th	e total zino	c on each s	pecimen	shall be det	ermined	d in a
	single stripping operation. F	ailure to	satisfy the	coating	thickness	require	ments
	constitutes grounds for rejection	on of the e	ntire lot, unl	ess the n	nembers are	accept	ed by
	test on an individual basis in ac	cordance v	with ASTM A	123, Sect	ion 8.3.		

- 2.21.8 *Surface Finish and Adhesion.* The galvanized coating shall be continuous, adherent, smooth, evenly distributed and free from any defect that is detrimental to its end use. The galvanized coating shall be sufficiently adherent to withstand normal handling during transport and erection.
- 2.21.9 *Galvanizing Repair.* Field repair of damaged galvanized zinc coatings shall be done in accordance with ASTM A780, Section 4.2.2 and Annex A2. The minimum thickness of the repair coat shall be equal to the thickness of the hot-dip galvanized coating as specified in Paragraph 2.21.7. Shop repair shall be by hot-dip galvanizing.
- 2.21.10 Bolt holes shall be cleared of excess zinc in order to allow the specified bolt clearance.
- 2.21.11 Welding or flame cutting of galvanized steel or parts of galvanized steel shall not be permitted without prior written approval of the Engineer.



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3.0 EXECUTION

3.1 ERECTION AND INSTALLATION

3.1.1 GENERAL

Erection and installation shall be performed in accordance with the AISC 360 Specification, AISC 303 Code of Standard Practice, the manufacturer's printed instructions and the "Released for Production" shop drawings, as applicable, unless otherwise indicated.

Prior to erection of structural steel and miscellaneous metal fabrications, installation of all anchor bolts shall be verified and checked as to their correct projection and location. Any discrepancies shall be reported to the Engineer.

Each part of the structure shall be plumbed and aligned to required tolerances before completing field connections. Drift pins shall not be driven so as to damage adjoining members.

Any significant condition of misfit in structural steel shall be reported to the Engineer for correction instructions. The Erector shall be responsible for making any Engineer approved misfit corrections, at no expense to the Owner. Correction of minor misfits and a reasonable amount of reaming or punching of blind holes shall be considered a normal part of the structural steel erection. Enlarging of bolt holes by gas cutting is not permitted.

No cutting of any structural steel members will be permitted without written approval from the Engineer.

3.1.2 ERECTION SAFETY REQUIREMENTS

- The concrete in the supporting foundations must have attained a minimum of 75% of the minimum compressive strength prior to beginning structural steel erection.
- Structural stability shall be maintained at all times during the erection process.
- Shear stud connectors shall not be attached to the top flanges of beams, joists or beam attachments so that they project vertically above or horizontally across the top flange of the member until after the metal decking or other walking surface has been installed.
- All columns shall be anchored with a minimum of 4 anchor bolts.
- Each column anchor bolt assembly, including the column-to-base plate weld and the column foundation, shall be designed to resist a minimum eccentric gravity load of 300 pounds located 18 inches from the extreme outer face of the column in each direction at the top of the column shaft.
- When two structural members on opposite sides of a column web, or a beam web over a column, are connected sharing common connection holes, at least one bolt with a wrench-tight nut shall remain connected to the first member unless a shop-attached or field-attached seat or equivalent connection device is supplied with the member to secure the first member and prevent the column from being displaced.
- If a seat or equivalent device is used, the seat (or device) shall be designed to support the load during the double connection process. It shall be adequately bolted or welded to both a supporting member and the first member before the nuts on the shared bolts are removed to make the double connection.
- Column splices shall be designed to resist a minimum eccentric gravity load of 300



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	pounds located 18 inche	s from the	extreme	outer	face	of	the	colu	ımn	in	each
	direction at the top of the c	olumn shaft:									

- Perimeter columns shall extend a minimum of 48 inches above the finished floor to permit installation of safety cables prior to erection of the next tier, except where constructability does not allow.
- The perimeter columns shall have holes or other devices in or attached to them at 42 to 45 inches above the finished floor and the midpoint between the finished floor and the top cable to permit installation of perimeter safety cables, except where constructability does not allow.

3.1.3 COLUMN BASES AND BEARING PLATES

Column base plates and bearing plates shall be aligned and solidly supported on at least 3 pairs of wedges, shims, or leveling screws. All shims or wedges shall have full bearing and be so positioned that the hollow spaces under each plate can be filled solid with grout and the shims can be removed.

After plates shipped loose to the job have been correctly positioned, grout shall be placed.

After members with shop-connected plates have been properly positioned and connections of other members to these members have been completed, anchor bolt nuts shall be snug tightened and grout shall be placed.

The grouting of base plates shall be in accordance with SECTION 036000, Grout, of the Construction Specifications.

Wedges, shims, or leveling screws shall be removed after the grout has set for a minimum of seven (7) days. Resulting voids shall be completely filled with grout and the anchor bolt nuts shall be retightened.

3.1.4 GRATING ANCHORAGE

Grating shall be anchored to supporting steel with Hilti X BT Grating Fastening System, clip-type connections with powder actuated fasteners. Provide a minimum of two anchors to each steel support member and a minimum of four anchors per grating panel.

3.1.5 INSTALLATION AND INSPECTION OF HIGH STRENGTH BOLTS

Installation and inspection of high strength bolts shall be in accordance with the RCSC Specification for Structural Joints Using High-Strength Bolts, Sections 8 and 9 using Turn-of-nut, Twist-Off-Type Tension-Control Bolt or Direct-Tension-Indicator pretensioning. All high strength bolts shall be fully pretensioned. Special washer requirements given in the RCSC Specification, Section 6 shall be used for special conditions such as those related to slotted holes. Pre-installation verification of fastener assemblies shall be in accordance with the RCSC Specification, Section 7.

A representative sample of not fewer than three complete fastener assemblies of each combination of diameter, length, grade and lot to be used in the work shall be checked at the jobsite in a tension calibrator such as a Skidmore Wilhelm calibrator to verify that the pretensioning method selected develops a pretension that is equal to or greater than 1.05 times that specified for installation and inspection given in the RCSC Specification, Table 8.1. Washers shall be used in the pre-installation verification assemblies as required in the work in accordance with the requirements in the RCSC Specification, Section 6.2.



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Bolts with Direct Tension Indicator (DTI) washers shall be installed in strict accordance with the RCSC Specification, Section 8.2.4 and the manufacturer's printed installation procedures. DTI washers shall be used on all bolts for the connection and initially brought to a snug tight condition without causing one-half or more of the gaps between the arch-like protrusions to close to 0.005 in. or less for coated direct tension indicators. All bolts shall then be pretensioned, progressing systematically from the most rigid part of the connection to the free edges in a manner that will minimize relaxation of previously pretensioned fasteners. In some cases, more than a single cycle of systematic partial pretensioning may be required to deform the direct tension indicator protrusions to the gap that is specified by the manufacturer.

DTI washers shall be mechanically galvanized. The protrusions must face a hardened stationary unturned surface of a hardened washer or the bolt head when it is not the turned element. It must not face the nut or clamped element without a hardened washer separator.

Inspections shall also follow scheduled criteria in SECTION 014533, Special Inspections and Tests, of the Construction Specifications. Inspections will be performed by the Inspection Agency/Testing Laboratory.

3.1.6 INSTALLATION OF SHEAR CONNECTOR STUDS

Installation of shear connector studs shall be performed in the field by automatic welding to the structural steel with a suitable stud welding gun, as recommended by AWS D1.1, unless otherwise approved by the Owner's Representative.

3.1.7 INSPECTION AND ACCEPTANCE OF SHEAR STUD WELDING

Welding of shear connector studs to structural steel shall be supervised by the Inspection Agency/Testing Laboratory, tested by the Erector in accordance with AWS D1.1 and corrected as necessary by the Erector at their own expense.

3.1.8 INSPECTION OF WELDS

Where indicated on the Drawings or requested by the Owner or Engineer, the Inspection Agency/Testing Laboratory shall inspect and test field welds.

3.2 TEMPORARY SHORING AND BRACING

The Erector shall determine, furnish and install temporary shoring and bracing members with connections of sufficient strength to bear imposed loads until permanent structural elements are in place and capable of supporting the loads.

Provide temporary guy lines to achieve proper alignment of the structures as erection proceeds. Remove temporary connections and members when permanent members are in place and final connections are made. At concrete floors, temporary bracing shall be left in place until the concrete has obtained a minimum of 75% of the design compressive strength. Shore existing members when unbolting of common connections is required. In cases where permanent stability of steel depends on other parts of the building such as masonry, timber or concrete work, thoroughly brace and keep steel framework plumb and in position against wind, weather or other damaging conditions until other supporting parts are in place.

3.3 WET STORAGE STAIN



 Any wet storage stains shall be renoved prior to installation. A coating thickness check shall be made in the affected areas to ensure that the thickness of the remaining coating satisfies the requirements of the protective coating system. PROTECTION FROM ELECTROLYTIC ACTION Dissimilar materials which could cause corrosion if in contact with each other shall be protected from electrolytic action by electrolytic-proof gaskets. FIRE-RATED DOOR FRAMES Fire-rated door frames shall be installed in accordance with NFPA 80, Standard for Fire Doors and Windows. ERRORS OR DAMAGE Errors or damage resulting from handling, transportation or improper fabrication that prevents the proper assembly and fitting of parts shall be reported to the Owner's Representative. The Contractor shall correct all errors and damage as directed by the Owner's Representative. The Contractor shall correct all errors and damage as directed by the Owner's Representative. The Use of a gas cutting torch in the field is not permitted. TOUCH-UP PAINTING Upon arrival at the jobsite and after erection, steel shall be touched up as required, in accordance with SECTION 099000, Painting, General, of the Construction Specifications. TOUCH-UP GALVANIZING All damaged galvanizing shall be fully replaced by the use of an approved galvanizing repair paint containing zinc dust. The damaged area shall be thoroughly cleaned by wire brushing and other means in accordance with instructions of the galvanizing applicator. CLEANING UP Progress Cleaning, During the progress of the work, the Contractor shall keep the premises in a neat and orderly condition, free from construction debris. Finished surfaces shall be kept thoroughly clean, free from mud, dirt and other foreign matter. SPECIAL INSPECTION Special inspections and tests of	TITLE:	Structural Steel Framing PROJECT 143993-ASA-DD2-SPC-1304 REV. 0											
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 FIRE-RATED DOOR FRAMES Fire-rated door frames shall be installed in accordance with NFPA 80, <i>Standard for Fire Doors and Windows</i>. ERRORS OR DAMAGE Errors or damage resulting from handling, transportation or improper fabrication that prevents the proper assembly and fitting of parts shall be reported to the Owner's Representative. The Contractor shall correct all errors and damage as directed by the Owner's Representative. The use of a gas cutting torch in the field is not permitted. TOUCH-UP PAINTING Upon arrival at the jobsite and after erection, steel shall be touched up as required, in accordance with SECTION 099000, Painting, General, of the Construction Specifications. TOUCH-UP GALVANIZING All damaged galvanizing shall be fully replaced by the use of an approved galvanizing repair paint containing zinc dust. The damaged area shall be thoroughly cleaned by wire brushing and other means in accordance with instructions of the galvanizing applicator. CLEANING UP Progress Cleaning. During the progress of the work, the Contractor shall keep the premises in a neat and orderly condition, free from construction debris. Finished surfaces shall be kept thoroughly clean, free from mud, dirt and other foreign matter. SPECIAL INSPECTION Special inspections and tests of steel construction shall be in accordance with the International Building Code, Section 1704 "Special Inspections and Tests", and the quality control and quality assurance inspection requirements of AISC 360, Chapter N. 		Dissimilar materials which could cause corrosion if in contact with each other shall be protected from electrolytic action by electrolytic-proof gaskets.											
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		END OF SECTION											

wood.

CONSTRUCTION SPECIFICATION

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PROJECT NAME:	D.B. Wilson Stati Retrofit Project	on FGD	PROJECT NO.:	245891		
CLIENT:	Big River Electric Con	poration	AREA NO.:			

	APPROVAL STATUS										
PREPARED BY: DRF DATE		DATE	10FEB21	CHECKED I	BY: SCK	DATE	23FEB21				
APPROVED BY: JDW DATE		DATE	12FEB21	APPROVED	BY: CLF	DATE	01APR21				
REVISION STATUS											
REV		ISSUED F	OR	REVISED BY	CHECKED BY	APPROVAL	APPROVAL	DATE			
Α	APPRO	OVAL		DRF	JDW			12FEB21			
В	BID			SCK	JDW	CLF	NDH	01APR21			
0	CONS	TRUCTIO	N	SCK	JDW	CLF	NDH	20MAY21			

Permit Stamp

Engineer's Seal





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SECTION 014533

SPECIAL INSPECTIONS AND TESTS

1 GENERAL

- 1.1 SCOPE
- 1.1.1 This Section describes requirements for structural special inspections and testing services required to verify that all field fabricated, shop fabricated and installed work for the structural framework, structural welding, structural bolting, miscellaneous steel, concrete shear studs, anchorage systems, concrete and concrete reinforcing, foundations, grouts, and supports and attachments of designated seismic systems and architectural, mechanical and electrical components are supplied and installed in accordance with the Construction Specifications and Drawings.
- 1.1.2 Special Inspections shall satisfy the minimum requirements outlined in Chapter 17 of the 2015 International Building Code, along with this Section and other project construction documents. In case of conflict between the Construction Specifications and this Section, this Section shall govern the inspection requirements. In case of conflict between the Drawings and this Section, the Drawings shall take precedence over this Section.
- 1.1.3 The Owner or the registered design professional in responsible charge, acting as the Owner's agent, shall employ one or more approved agencies to perform inspections during construction on the types of work listed in this Section.
- 1.1.4 The Inspection Agency shall coordinate the work described by this Section with the Construction Specifications and Drawings. The Special Inspectors employed by the Inspection Agency shall coordinate the inspection work and document all of their inspections in written reports in accordance with the Project Quality Assurance / Quality Control program administered by the Construction Manager (or his designee) and the Owner's Representative.
- 1.1.5 The special inspection requirements of the local Authorities Having Jurisdiction (AHJ) will be defined by that agency and are part of the Inspection Agency's scope of services. The AHJ requirements are the minimum inspection requirements. In the event that this Section and the AHJ requirements are in conflict, the Owner's Representative shall be informed of such variances in writing.

1.2 DEFINITIONS

- 1.2.1 Inspection Agency. An established and recognized company, partnership, or corporation regularly engaged in conducting tests or furnishing inspection services. The Inspection Agency shall comply with the technical criteria of ASTM E329, Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection.
- 1.2.2 Approved Fabricator. An established and qualified person, firm or corporation approved by the building official in accordance with Chapter 17 of the 2015 International Building Code (through the AISC Quality Certification Program) to perform structural steel fabrication without Special Inspection.
- 1.2.3 Inspector/Special Inspector. Employee of the Inspection Agency, who is experienced, qualified and educated in conducting, supervising, evaluating tests and/or inspections and submitting written reports. All Inspectors and Special Inspectors shall be a registered engineer or work under the direct supervision of a registered engineer.



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	Competence/Certification shall be Jurisdiction.	e demonstra	ted to the satisfaction of the Autho	orities ⊢	laving
1.2.4	Authorities Having Jurisdiction (A Agency, or other Authorities Havi	HJ). Local E ng Jurisdicti	Building Official or Authority, other on.	Enforce	ement

- 1.2.5 Owner. Big River Electric Corporation
- 1.2.6 Owner's Representative. The authorized representative of the Owner.
- 1.2.7 Contractor. Company, partnership, or corporation contractually obligated to perform the work outlined in the Drawings, Construction Specifications and Scope of Work Document.
- 1.2.8 Engineer/Engineer of Record. Engineer of Record (EOR) are engineers working for an engineering firm in responsible charge for the engineering design(s) of the structure(s) and system(s) and who supervise the engineering work as a Professional Engineer licensed in the State of Kentucky.
- 1.2.9 Registered Design Professional. Registered Design Professional in responsible charge (RDP) may be employed by the Owner to act as the Owner's agent for the purpose of employing one of more approved agencies to perform inspections during construction.
 - The RDP may also be the EOR for the project.
 - The RDP and/or the EOR are permitted to act as an approved agency for special inspections and their personnel are permitted to act as the special inspectors for the work designed by the RDP/EOR, provided their personnel are qualified as special inspectors.
- 1.2.10 Architect/Architect of Record. Architect of Record (AOR) for the architectural design who is a Registered Architect licensed in the State of Kentucky.
- 1.2.11 Geotechnical Engineer. Geotechnical Engineer of Record (GOR) for the geotechnical design who is a licensed Geotechnical Engineer in the State of Kentucky.
- 1.2.12 Structural Observation. The visual observation of the structural system by a registered design professional licensed in the State of Kentucky .for general design conformance to the approved construction documents.
- 1.2.13 Construction Management Quality Assurance Lead (CMQA). CM Quality Assurance Lead (CMQA) reviews and approves Contractor(s) quality control plans to assure compliance with the Drawings, Construction Specifications and Scope of Work Document. The QA Lead also prepares and issues internal quality audit reports identifying any non-conformances and satisfactory corrective actions.
- 1.2.14 Continuous Special Inspection. The full-time observation of work requiring special inspection by an approved Special Inspector who is present in the area where the work is being performed.
- 1.2.15 Periodic Special Inspection. The part-time or intermittent observation of work requiring special inspection by an approved Special Inspector who is present in the area where work has been or is being performed and at the completion of the work.
- 1.2.16 Special Inspections. Inspections required by 2015 IBC, Sections 1704 and 1705 and as amended by this Section for the materials, installation, fabrication, erection or placement of components and connections requiring special expertise to ensure compliance with approved construction documents and reference standards.



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- 1.2.17 Wind Force Resisting Systems (WFRS). The assembly of structural elements, such as struts, collectors, chords, diaphragms, vertical and horizontal bracing, and trusses used to resist the design wind forces which form the WFRS.
- 1.2.18 Seismic Force Resisting System (SFRS). The assembly of structural elements, such as struts, collectors, chords, diaphragms, vertical and horizontal bracing, and trusses used to resist the design seismic forces which form the SFRS.
- 1.2.19 Designated Seismic System. Those architectural, electrical and mechanical systems and their components designed in accordance with Chapter 13 of ASCE 7-10 with an Importance Factor greater than 1.0 as follows:
 - Systems and components required to function for life-safety purposes after an earthquake, including fire protection sprinkler systems.
 - Components containing hazardous materials.
- 1.3 SUBMITTALS
- 1.3.1 A Statement of Special Inspections shall be submitted by the Registered Design Professional in responsible charge (RDP) as a condition for permit issuance to the AHJ. The Statement of Special inspections is included as Attachment **06** and requires the inclusion of Attachments **01** thru **05** to identify the following:
 - Materials, systems, components and work requiring special inspections or testing.
 - Type and extent of each special inspection.
 - Type and extent of each test.
 - Additional requirements for special inspection or testing for seismic or wind resistance.
 - Identification as to whether each type of special inspection will be continuous or periodic special inspection.
- 1.3.2 Each Contractor responsible for construction or fabrication of a main wind or seismic forceresisting system or component listed in the Statement of Special Inspections shall submit a Contractor's Statement of Responsibility. An example of a Contractor's Statement of Responsibility is included as Attachment **07** to this Specification.
- 1.3.3 Inspection reports shall be submitted to the Contractor, CMQA, Owner/Owner's Representative and other designees no later than the second workday following the date of the inspection. Nonconformance reports shall be submitted as soon as possible upon the completion of the inspection or the test.
- 1.3.4 The Inspection Agency shall submit weekly reports describing the work performed, test documentation and inspection reports for all of the work performed within the reporting period to the Contractor(s), CMQA, Owner/Owner's Representative, RDP and/or EOR (as applicable), Geotechnical Engineer (as appropriate) and other designees.
- 1.3.5 A final report shall be prepared and submitted by the Inspection Agency(s) documenting the following:
 - Required Special Inspections have been performed
 - Discrepancies noted in the inspections have been resolved.
 - The final report shall be submitted at the completion of the project for occupancy by the Owner.



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	•	The final report will indicat	te the compl	eted work was in accordance with	n the	

- The final report will indicate the completed work was in accordance with the approved contract drawings, specifications, and the inspection requirements of Chapter 17 of the 2015 IBC and this Specification.
- This report shall be submitted to the CMQA, Owner/Owner's Representative, RDP and/or EOR (as applicable). A sample final report entitled "Final Report of Special Inspections" is shown in Attachment **09** to this Specification.
- 1.3.6 Special Inspection is not required for work done on the premises of a structural steel fabricator registered and approved to perform such work (through the AISC Quality Certification Program) without Special Inspection in accordance with 2015 IBC, Section 1704.2.5.1.

The Approved Fabricator shall submit to the CMQA, Owner/Owner's Representative, RDP and/or EOR (as applicable) a certificate of compliance stating that the work was performed in accordance with the approved drawings and specifications. A sample report entitled "Fabricator's Certificate of Compliance" is shown in Attachment **08** to this Specification.



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2 EXECUTION

- 2.1 GENERAL
- 2.1.1 The Special Inspector shall be a qualified/certified person with demonstrated competence for the type of construction or operation requiring Special Inspection(s).
- 2.1.2 The Inspection Agency, Special Inspector(s), Owner/Owner's Representative, CMQA, and RDP shall meet at a pre-construction conference to review the Special Inspection(s) requirements.
- 2.1.3 The Special Inspector shall observe the work for conformance with the approved design drawings and specifications.
- 2.1.4 The Inspection Agency shall plan and execute inspections and tests to avoid delays in construction operations.
- 2.1.5 The Inspection Agency shall provide all tools, equipment, and materials required for inspection as well as any safety equipment. Safety equipment includes hard hat, safety shoes, safety glasses, safety harness, and other safety equipment. Site safety procedures shall be followed at all times.
- 2.1.6 The Special Inspector shall provide means of collecting concrete samples, storing concrete samples, and storage of testing equipment as provided by the Inspection Agency.
- 2.1.7 All discrepancies noted in the inspection reports shall be brought to the immediate attention of the Contractor, CMQA, RDP and the Owner's Representative for correction. If no corrective action is taken, written notification of the deficiency shall be made to the Contractor, CMQA, RDP and Owner's Representative.
- 2.1.8 The Contractor shall give a minimum of 72-hours of notification to the Inspection Agency/Special Inspector for work that is ready or will be ready for inspection. The work shall remain exposed and accessible for special inspection purposes until completion of the required special inspection.
- 2.1.9 The Construction Manager/CMQA shall provide the Special Inspector a set of project construction drawings, shop fabrication drawings, specifications, bulletins, addenda and written modifications or sketches prepared by the EOR.
- 2.1.10 The Construction Manager/CMQA shall maintain an organized set of job site copies of all reports submitted by the Inspection Agency/Special Inspector.
- 2.1.11 The Special Inspector shall not suggest, direct or approve deviation from the Contract Documents and approved shop drawings without written approval from the EOR.



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3 **REQUIRED SPECIAL INSPECTIONS AND TESTS**

3.1 GENERAL. Special inspections and tests of elements and nonstructural components of buildings and structures shall be as required by this Section.

3.2 STEEL CONSTRUCTION

- 3.2.1 Special inspections and nondestructive testing of structural steel elements in buildings, structures and portions thereof shall be in accordance with the quality assurance inspection requirements of AISC 360.
- 3.2.2 Special inspections and qualification of welding special inspectors for cold-formed steel floor and roof deck shall be in accordance with the quality assurance inspection requirements of the Steel Deck Institute QA/QC.
- 3.2.3 Special inspections of open-web steel joists and joist girders in buildings, structures and portions thereof shall be in accordance with Attachment **01** (2015 IBC Table 1705.2.3).
- 3.3 CONCRETE CONSTRUCTION

Special inspections and tests of concrete construction shall be performed in accordance with Attachment **02** (2015 IBC Table 1705.3).

3.4 MASONRY CONSTRUCTION

Special inspections and tests of masonry construction shall be performed in accordance with the quality assurance requirements of TMS 402/ACI 530/ASCE 5 and TMS 602/ACI 530.1/ASCE 6.

3.5 SOILS

Special inspections and tests of existing site soil conditions, fill placement and load-bearing requirements shall be performed in accordance with Attachment **03** (2015 IBC Table 1705.6).

The approved geotechnical report and the construction documents prepared by the registered design professionals shall be used to determine compliance. During fill placement, the special inspector shall verify that proper materials and procedures are used in accordance with the provisions of the approved geotechnical report.

3.6 DRIVEN DEEP FOUNDATIONS

Special inspections and tests shall be performed during installation of driven deep foundation elements as specified in Attachment **04** (2015 IBC Table 1705.7). NOT APPLICABLE TO THIS PROJECT.

The approved geotechnical report and the construction documents prepared by the registered design professionals shall be used to determine compliance.

3.7 CAST-IN- PLACE DEEP FOUNDATIONS

Special inspections and tests shall be performed during installation of cast-in-place deep foundation elements as specified in Attachment **05** (2015 IBC Table 1705.8).

The approved geotechnical report and the construction documents prepared by the registered design professionals shall be used to determine compliance.

- 3.8 WOOD CONSTRUCTION NOT APPLICABLE TO THIS PROJECT
- 3.9 HELICAL PILE FOUNDATIONS NOT APPLICABLE TO THIS PROJECT



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3.10	SPECIAL INSPECTIONS FOR W performed during installation of re exterior wall covering, wall conner accordance with the quality assur-	/IND RESIS oof covering ctions to roo rance requir	TANCE – Periodic special inspec , roof deck and roof framing conne of and floor diaphragms and framin ements of 2015 IBC Sections 1705	tion sha ctions, ig in 5.11.3.	all be
3.11	SPECIAL INSPECTIONS FOR S performed during installation of s force-resisting systems of building of AISC 341 (2015 IBC Sections	EISMIC RE tructural ste gs in accord 1705.12.1.1	SISTANCE – Special inspection sh el and structural steel elements in ance with the quality assurance re and 1705.12.1.2).	nall be the seis quirem	smic ients
3.12	TESTING FOR SEISMIC RESISt installation of structural steel and systems of buildings in accordance (2015 IBC Sections 1705.12.1.1 a	FANCE – Sp structural s ce with the c and 1705.12	becial testing shall be performed du teel elements in the seismic force- quality assurance requirements of 2.1.2).	uring resistin AISC 3	g 41
3.13	SPRAYED FIRE-RESISTANT M	ATERIALS -	- NOT APPLICABLE TO THIS PRO	OJECT	
3.14	MASTIC AND INTUMESCENT F THIS PROJECT	IRE-RESIS ⁻	TANT COATINGS – NOT APPLIC	ABLE T	0
3.15	EXTERIOR INSULATION AND F PROJECT	INISH SYS	TEMS (EIFS) – NOT APPLICABLE	Ε ΤΟ ΤΗ	HIS
3.16	FIRE-RESISTANT PENETRATIC PROJECT	ONS AND JO	DINTS – NOT APPLICABLE TO TH	HIS	

3.17 TESTING FOR SMOKE CONTROL – NOT APPLICABLE TO THIS PROJECT



SPECIAL INSPECTIONS	PROJECT	143993-ASA-DD2-SPC-1305	DEV	Δ
AND TESTS	DOC. NO.:		REV.	U

4 DESIGN STRENGTHS OF MATERIALS

- 4.1 Conformance to standards. The design strengths and permissible stresses of any structural material that are identified by a manufacturer's designation as to manufacture and grade by mill tests, or the strength and stress grade is otherwise confirmed to the satisfaction of the AHJ, shall conform to the specifications and methods of design of accepted engineering practice or the approved rules in the absence of applicable standards.
- 4.2 New materials. For materials that are not specifically provided for in the 2015 IBC, the design strengths and permissible stresses shall be established by tests provided for in Chapter 17, 2015 IBC. These tests include but are not limited to alternative test procedures, in-situ load tests, and preconstruction load tests.



2.ATTACHMENTS	
Attachment 01 : Required Special Inspections of Open-web Steel Joists and Jois Girders (Note: IBC no longer contains a list of required special inspections for structural steel, instead it references AISC 360)	۶t
Attachment 02: Required Special Inspections and Tests of Concrete Construction	n
Attachment 03: Required Special Inspections and Tests of Soils	
Attachment 04 : Required Special Inspections and Tests of Driven Deep Founda Elements NOT APPLICABLE TO THIS PROJECT	tion
Attachment 05 : Required Special Inspections and Tests of Cast-In-Place Deep Foundation Elements	
Attachment 06: Statement of Special Inspections	
Attachment 07: Contractor's Statement of Responsibility	
Attachment 08: Fabricator's Certificate of Compliance	
Attachment 09: Final Report of Special Inspections	

END OF SECTION

ATTACHMENT 01 2015 IBC TABLE 1705.2.3 REQUIRED SPECIAL INSPECTIONS OF OPEN-WEB STEEL JOISTS AND JOIST GIRDERS

REQUIRED SPECIAL INSPECTIONS OF OPEN-WEB STEEL JOISTS AND JOIST GIRDERS Note – for Structural Steel, Special inspections shall be in accordance with the quality assurance inspection requirements of AISC 360, Chapter N, specifically tables N5.4-1 through 3, N5.6-1 through 3, and N6.1. IBC no longer contains a table of required special inspections for Structural Steel. Refer to AISC 360.

ТҮРЕ	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	REFERENCED STANDARD ^a
1. Installation of open-web steel joists and joist girders.			
a. End connections – welded or bolted.	_	Х	SJI specifications listed in Section 2207.1.
b. Bridging – horizontal or diagonal			
1. Standard bridging.		Х	SJI specifications listed in Section 2207.1.
2. Bridging that differs from the SJI specifications listed in Section 2207.1.		Х	

a. Where applicable, see also Section 1705.12, Special inspections for seismic resistance.

ATTACHMENT 02
2015 IBC TABLE 1705.3
REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION

	ТҮРЕ	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	REFERENCED STANDARD*	IBC REFERENCE
1.	Inspect reinforcement, including prestressing tendons, and verify placement.		Х	ACI 318 Ch. 20, 25.2, 25.3, 26.5.1 – 26.5.3	1908.4
2.	Reinforcing bar welding: a. Verify weldability of reinforcing bars other than ASTM A706; b. Inspect single-pass fillet welds, maximum 5/16"; and c. Inspect all other welds.	 X	x x	AWS D1.4 ACI 318: 26.5.4	
3.	Inspect anchors cast in concrete.		Х	ACI 318: 17.8.2	
4.	Inspect anchors post-installed in hardened concrete members. ^b a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads.	x		ACI 318: 17.8.2.4	
	b. Mechanical anchors and adhesive anchors not defined in 4.a.		Х	ACI 318: 17.8.2	
5.	Verify use of required design mix.		Х	ACI 318: Ch. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
6.	Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	x		ASTM C172 ASTM C31 ACI 318: 26.4.5, 26.12	1908.10
7.	Inspect concrete and shotcrete placement for proper application techniques.	x		ACI 318: 26.4.5	1908.6, 1908.7, 1908.8
8.	Verify maintenance of specified curing temperature and techniques.		Х	ACI 318: 26.4.7 – 26.4.9	1908.9
9.	Inspect pre-stressed concrete for: a. Application of prestressing forces; and b. Grouting of bonded prestressing tendons.	x x		ACI 318: 26.9.2.1 ACI 318: 26.9.2.3	
10.	Inspect erection of precast concrete members.		Х	ACI 318: Ch. 26.8	
11.	Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.		Х	ACI 318: 26.10.2	
12.	Inspect formwork for shape, location and dimensions of the concrete member being formed.		х	ACI 318: 26.10.1 (b)	

a. b.

Where applicable, see also Section 1705.12, Special inspections for seismic resistance. Specific requirements for special inspection shall be included in the research report for the anchor issued by an approved source in accordance with 17.8.2 in ACI 318, or other qualification procedures. Where specific requirements are not provided, special inspection requirements shall be specified by the registered design professional and shall be approved by the building official prior to the commencement of the work.

ATTACHMENT 03 2015 IBC TABLE 1705.6 REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS

ТҮРЕ	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	_	Х
2. Verify excavations are extended to proper depth and have reached proper material.		Х
3. Perform classification and testing of compacted fill materials.		Х
 Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill. 	X	_
5. Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly.	_	Х

ATTACHMENT 04
2015 IBC TABLE 1705.7
REQUIRED SPECIAL INSPECTIONS AND TESTS OF DRIVEN DEEP FOUNDATION ELEMENTS

	ТҮРЕ	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
1.	Verify element materials, sizes and lengths comply with the requirements.	Х	_
2.	Determine capacities of test elements and conduct additional load tests, as required.	Х	_
3.	Inspect driving operations and maintain complete and accurate records for each element.	Х	_
4.	Verify placement locations and plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and document any damage to foundation element.	Х	_
5.	For steel elements, perform additional special inspections in accordance with Section 1705.2.		_
6.	For concrete elements and concrete-filled elements, perform tests and additional special inspections in accordance with Section 1705.3.		_
7.	For specialty elements, perform additional inspections as determined by the registered design professional in responsible charge.	_	_

ATTACHMENT 05 2015 IBC TABLE 1705.8 REQUIRED SPECIAL INSPECTIONS AND TESTS OF CAST-IN-PLACE DEEP FOUNDATION ELEMENTS

	ТҮРЕ	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
1.	Inspect drilling operations and maintain complete and accurate records for each element.	X	_
2.	Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, embedment into bedrock (if applicable) and adequate end- bearing strata capacity. Record concrete or grout volumes.	X	
3.	For concrete elements, perform tests and additional special inspections in accordance with Section 1705.3.		_

PROJECT: LOCATION: PERMIT APPLICANT: APPLICANT'S ADDRESS: ARCHITECT OF RECORD: STRUCTURAL ENGINEER OF RECORD: REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE:

This Statement of Special Inspections is submitted in accordance with Section 1704 of the 2015 International Building Code. It includes a *Schedule of Special Inspection Services* applicable to the above-referenced Project as well as the identity of the individuals, agencies, or firms intended to be retained for conducting these inspections. If applicable, it includes *Requirements for Seismic Resistance* and/or *Requirements for Wind Resistance*.

Are Requirements for Seismic Resistance included in the Statement of Special Inspections?	🛛 Yes	🗌 No
Are Requirements for Wind Resistance included in the Statement of Special Inspections?	🗌 Yes	🛛 No

The Special Inspector(s) shall keep records of all inspections and shall furnish interim inspection reports to the Building Official and to the Registered Design Professional in Responsible Charge at a frequency agreed upon by the Design Professional and the Building Official prior to the start of work. Discrepancies shall be brought to the immediate attention of the Contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the Building Official and the Registered Design Professional in Responsible Charge prior to completion of that phase of work. A *Final Report of Special Inspections* documenting required special inspections and corrections of any discrepancies noted in the inspections shall be submitted to the Building Official and the Registered Design Professional in Responsible Charge at the conclusion of the project.

Frequency of interim report submittals to the Registered Design Professional in Responsible Charge:

___Weekly

__Bi-Weekly

___Monthly

Other; specify:_____

The Special Inspection program does not relieve the Contractor of the responsibility to comply with the Contract Documents. Jobsite safety and means and methods of construction are solely the responsibility of the Contractor.

Statement of Special Inspections Prepared by:

Jesse D. Walton III

Type or print name augh here 5-21-2021 Signature



Building Official's Acceptance:

Signature	Date		
		· · · · · · · · · · · · · · · · · · ·	
Permit Number:			
Frequency of interim report submittals to the Building Official:			
Monthly	Bi- Monthly	Upon Completion	Other; specify:

Attachment 06 STATEMENT OF SPECIAL INSPECTIONS REQUIREMENTS FOR SEISMIC RESISTANCE

See the Schedule of Special Inspections for inspection and testing requirements, if applicable

Seismic Design Category: D

Statement of Special Inspection for Seismic Resistance Required (Yes/No): Yes

Description of seismic force-resisting system subject to special inspection and testing for seismic resistance:

- The structural system for the Absorber Access Tower Frame and Outlet Support Steel Frame shall be "Steel Ordinary Concentrically Braced Frame with Permitted Height Increase" per ASCE 7-10 Table 15.4-1.
- The structural system for the Inlet Support Steel Frame shall be "Steel Ordinary Concentrically Braced Frame with Unlimited Height" per ASCE 7-10 Table 15.4-1.
- The structural system for the Pre-engineered Metal Buildings shall be "Steel Ordinary Moment Frames with Unlimited Height" per ASCE 7-10 Table 15.4-1.
- The structural system for other structures shall be "Steel Ordinary Concentrically Brace Frame with Unlimited Height" per ASCE 7-10 Table 15.4-1.

<u>Description of designated seismic systems subject to special inspection and testing for</u> <u>seismic resistance: LATER</u>

(Consideration required for structures assigned to Seismic Design Category C, D, E or F per 2015 IBC Section 1705.12.)

Description of additional seismic systems and components requiring special inspections and testing: LATER

(Consideration required for structures assigned to Seismic Design Category B, C, D, E or F or for seismic isolation systems in seismically isolated structures per 2015 IBC Section 1705.12)

Statement of Responsibility:

(Each contractor responsible for the construction or fabrication of a system or component described above must submit a Statement of Responsibility.)

Attachment 06 STATEMENT OF SPECIAL INSPECTIONS REQUIREMENTS FOR WIND RESISTANCE

See the Schedule of Special Inspections for inspection and testing requirements, if applicable

<u>Strength-Level Wind Speed (3 second gust):</u> 120 mph <u>Service-Level Wind Speed (3 second gust, Vasd):</u> 93 mph

Wind Exposure Category:

Statement of Special Inspection for Wind Resistance Required (Yes/No): No (Required in wind exposure Category B, where the service-level wind speed (V_{asd}) is 120 miles per hour or greater. Required in wind exposure Category C or D, where the service-level wind speed (V_{asd}) is 110 miles per hour or greater)

Description of main wind force-resisting system subject to special inspection for wind resistance:

Not Applicable

<u>Description of wind force-resisting components subject to special inspection for wind</u> <u>resistance:</u>

Not Applicable

Statement of Responsibility:

(Each contractor responsible for the construction or fabrication of a system or component described above must submit a Statement of Responsibility.)

Not Applicable

Attachment 06 STATEMENT OF SPECIAL INSPECTIONS SCHEDULE OF INSPECTION AND TESTING AGENCIES

This Statement of Special Inspections / Quality Assurance Plan includes the following building systems:

\boxtimes	Soils and Earthwork
\boxtimes	Cast-in-Place Concrete
	Masonry
\boxtimes	Structural Steel
	Cold-Formed Steel Framing

Spray Fire Resistant Material

Wood Construction

Exterior Insulation and Finish System

Mechanical & Electrical Systems

Architectural Systems

Special Cases

Special Inspection Agencies	Firm	Address, Telephone, e-mail
1. Special Inspection Coordinator	TBD	
 Special Inspector (Soils and Earthwork) 	TBD	
3. Special Inspector (Cast-In-Place Concrete)	TBD	
4. Special Inspector (Masonry)	TBD	
5. Special Inspector (Structural Steel)	TBD	
6. Testing Agency	TBD	
 Structural Observation (Engineer of Record) 	TBD	

Note: The inspectors and testing agencies shall be engaged by the Owner or the Owner's Representative, and not by the Contractor or Subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the Building Official, prior to commencing work.

Attachment 06 STATEMENT OF SPECIAL INSPECTIONS QUALIFICATIONS OF INSPECTORS AND TESTING TECHNICIANS

The qualifications of all personnel performing Special Inspection and testing activities are subject to the approval of the Building Official. The credentials of all Inspectors and testing technicians shall be provided if requested.

Key for Minimum Qualifications of Inspection Agents:

When the Registered Design Professional in Responsible Charge deems it appropriate that the individual performing a stipulated test or inspection have a specific certification or license as indicated below, such designation shall appear below the *Agency Number* on the Schedule.

- AE/PE Registered Architect or licensed PE specializing in the design of building structures PE/GE Geotechnical Engineer – a licensed PE specializing in soil mechanics, foundations
- EIT Engineer-In-Training a graduate engineer who has passed the Fundamentals of Engineering examination

American Concrete Institute (ACI) Certification

- ACI-CFTT Concrete Field Testing Technician Grade 1
- ACI-CCI Concrete Construction Inspector
- ACI-LTT Laboratory Testing Technician Grade 1&2
- ACI-STT Strength Testing Technician

American Welding Society (AWS) Certification

AWS-CWI Certified Welding Inspector

AWS/AISC-SSI Certified Structural Steel Inspector

American Society of Non-Destructive Testing (ASNT) Certification

ASNT Non-Destructive Testing Technician – Level II or III.

International Code Council (ICC) Certification

- ICC-SMSI Structural Masonry Special Inspector
- ICC-SWSI Structural Steel and Welding Special Inspector
- ICC-SFSI Spray-Applied Fireproofing Special Inspector
- ICC-PCSI Pre-stressed Concrete Special Inspector
- ICC-RCSI Reinforced Concrete Special Inspector

National Institute for Certification in Engineering Technologies (NICET)

- NICET-CT Concrete Technician Levels I, II, III & IV
- NICET-ST Soils Technician Levels I, II, III & IV
- NICET-GET Geotechnical Engineering Technician Levels I, II, III & IV

Exterior Design Institute (EDI) Certification

EDI-EIFS EIFS Third Party Inspector

Other

Structural Steel & Miscellaneous Steel (See Attachment 01, 2015 IBC Table 1705.2.3 for openweb steel joists and joist girders, see AISC 360 Chapter N for structural steel)

Item	Agency # (Qualif.)	Scope
 Fabricator Certification/ Quality Control Procedures Fabricator Exempt 	Later (AWS/AISC- SSI ICC-SWSI)	Review shop fabrication and quality control procedures.
2. Material Certification	Later (AWS/AISC- SSI ICC-SWSI)	Review certified mill test reports and identification markings on wide-flange shapes, high-strength bolts, nuts and welding electrodes
3. Open Web Steel Joists	N/A (AWS/AISC- SSI ICC-SWSI)	Inspect installation, field welding and bridging of joists.
4. Bolting	Later (AWS/AISC- SSI ICC-SWSI)	Inspect installation and tightening of high-strength bolts. Verify compliance with AISC 360 Chapter N.
5. Welding	Later (AWS-CWI ASNT)	Visually inspect all welds. Inspect pre-heat, post-heat and surface preparation between passes. Verify size and length of fillet welds. Ultrasonic testing of all full-penetration welds. Verify compliance with AISC 360 Chapter N.
6. Shear Connectors	N/A (AWS/AISC- SSI ICC-SWSI)	Inspect size, number, positioning and welding of shear connectors. Inspect studs for full 360 degree flash. Ring test all shear connectors with a 3 lb hammer. Bend test all questionable studs to 15 degrees.
7. Structural Details	Wood (PE)	Inspect steel frame for compliance with structural drawings, including bracing, member configuration and connection details.
8. Metal Deck	Later (AWS/AISC- SSI)	Inspect powder-actuated fasteners and side-lap fastening screws for metal roof deck.

Cast-in-Place Concrete (See Attachment 02, 2015 IBC Table 1705.3)

ltem	Agency #	Scope
1. Mix Design	Later (ACI-CCI ICC-RCSI)	Review concrete batch tickets and verify compliance with approved mix design. Verify that water added at the site does not exceed that allowed by the mix design.
2. Material Certification	Later (ACI-CCI ICC-RCSI)	Verify material certifications are in conformance with appropriate mix design.
3. Reinforcement Installation	Later (ACI-CCI ICC-RCSI)	Inspect size, spacing, cover, positioning and grade of reinforcing steel. Verify that reinforcing bars are free of form oil or other deleterious materials. Inspect bar laps and mechanical splices. Verify that bars are adequately tied and supported on chairs or bolsters
4. Post-Tensioning Operations (Not Applicable on this project)	NA (ACI-CCI ICC-RCSI)	Inspect placement, stressing, grouting and protection of post- tensioning tendons. Verify that tendons are correctly positioned, supported, tied and wrapped. Record tendon elongations.
5. Welding of Reinforcing, if any	Later (ACI-CCI ICC-RCSI)	Visually inspect all reinforcing steel welds. Verify weldability of reinforcing steel. Inspect preheating of steel when required.
6. Anchor Rods	Later (ACI-CCI ICC-RCSI)	Inspect size, positioning and embedment of anchor rods. Inspect concrete placement and consolidation around anchors.
7. Concrete Placement	Later (ACI-CCI ICC-RCSI)	Inspect placement of concrete. Verify that concrete conveyance and depositing avoids segregation or contamination. Verify that concrete is properly consolidated.
8. Sampling and Testing of Concrete	Later (ACI-CCI ICC-RCSI)	Test concrete compressive strength (ASTM C31 & C39), slump (ASTM C143), air-content (ASTM C173 or C231) and temperature (ASTM C1064).
9. Curing and Protection	Later (ACI-CCI ICC-RCSI)	Inspect curing, cold weather protection and hot weather protection procedures.
10. Post Installed Anchors	Later (ACI-CCI ICC-RCSI)	Inspect installation in accordance with manufacturer's instructions and in accordance with ICC legacy reports

Soils and Earthwork (See Attachment 03, 2015 IBC Table 1705.6)

Item	Agency #	Scope
1. Shallow Foundation Subgrade	Later (PE/GE)	 Inspect soils below footings for adequate bearing capacity and consistency with geotechnical report.
		2. Inspect removal of unsuitable material and preparation of subgrade prior to placement of controlled fill.
2. Controlled Structural Fill	Later (PE/GE)	 Perform sieve tests (ASTM D422 & D1140) and Modified Proctor tests (ASTM D1557) for each source of fill material.
		2. Inspect placement, lift thickness and compaction of controlled fill.
		 Test density of each lift of fill by nuclear methods (ASTM D6938) or sand-cone method (ASTM D1556).
		4. Verify extent and slope of fill placement.

Attachment 07 CONTRACTOR'S STATEMENT OF RESPONSIBILITY

Each contractor responsible for the construction or fabrication of a main wind or seismic force-resisting system, designated seismic system or wind or seismic-resisting component listed in the Statement of Special Inspections, Requirements for Seismic or Wind Resistance, must submit a Statement of Responsibility.

Project: D.B. Wilson Station FGD Retrofit Project

Contractor's Name:_____

Address:_____

License No.:_____

Description of building systems and components included in Statement of Responsibility:

Contractor's Acknowledgement of Special Requirements

I hereby acknowledge that I have received, read, and understand the Statement of Special Inspections and Special Inspection program:

I hereby acknowledge that control will be exercised to obtain conformance with the approved construction documents.

Name and Title (type or print)

Signature

Date

Contractor's Provisions for Quality Control

Procedures for exercising control within the contractor's organization, the method and frequency of reporting and distribution of reports is attached to this Statement.

Identification and qualifications of the person(s) exercising such control and their position(s) in the organization are attached to this Statement.
Attachment 08 FABRICATOR'S CERTIFICATE OF COMPLIANCE

Each approved fabricator that is exempt from Special Inspection of shop fabrication and implementation procedures per section 1704.2.5.1 of the 2015 International Building Code must submit *Fabricator's Certificate of Compliance* at the completion of fabrication.

Project: D.B. Wilson Station FGD Retrofit Project

Fabricator's Name:

Address:

Certification or Approval Agency:

Certification Number:_____

Date of Last Audit or Approval:_____

Description of structural members and assemblies that have been fabricated:

I hereby certify that items described above were fabricated in strict accordance with the approved construction documents.

Name and Title (type or print)

Signature

Date

Attach copies of fabricator's certification or building code evaluation service report and fabricator's quality control manual.

Attachment 09 FINAL REPORT OF SPECIAL INSPECTIONS

PROJECT: D.B. Wilson Station FGD Retrofit Project LOCATION: Centertown, KY PERMIT APPLICANT: APPLICANT'S ADDRESS: ARCHITECT OF RECORD: STRUCTURAL ENGINEER OF RECORD: Jesse D. Walton III REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE:

To the best of my information, knowledge, and belief, which are based upon observations or diligent supervision of our inspection services for the above-referenced Project, I hereby state that the special inspections or testing required for this Project, and designated for this Agent in the *Schedule of Special Inspection Services*, have been completed in accordance with the Contract Documents.

The Special Inspection program does not relieve the Contractor of the responsibility to comply with the Contract Documents. Jobsite safety and means and methods of construction are solely the responsibility of the Contractor.

Interim reports submitted prior to this final report and numbered___to___form a basis for, and are to be considered an integral part of this final report. The following discrepancies that were outstanding since the last interim report dated _____ have been corrected:

(Attach 8 ½"x11" continuation sheet(s) if required to complete the description of corrections)

Prepared By:

Special Inspection Agent/Firm

Type or print name

Signature

Date



In the Matter of:

ELECTRONIC APPLICATION OF) **BIG RIVERS ELECTRIC CORPORATION**) FOR APPROVAL OF ITS 2020 ENVIRONMENTAL) **COMPLIANCE PLAN, AUTHORITY TO RECOVER COSTS** THROUGH A REVISED ENVIRONMENTAL SURCHARGE) AND TARIFF, THE ISSUANCE OF A CERTIFICATE OF) PUBLIC CONVENIENCE AND NECESSITY FOR CERTAIN) PROJECTS, AND APPROPRIATE ACCOUNTING) AND OTHER RELIEF)

Case No. 2019-00435

Project 12 Wilson Station FGD Replacement and Upgrade

Scope of Work Document dated April 2, 2021 Appendix C – Electrical Specifications

Filed pursuant to Ordering Paragraph No. 18 of Commission's August 6, 2020 Order FILED: June 18, 2021



In the Matter of:

ELECTRONIC APPLICATION OF) **BIG RIVERS ELECTRIC CORPORATION**) FOR APPROVAL OF ITS 2020 ENVIRONMENTAL) **COMPLIANCE PLAN, AUTHORITY TO RECOVER COSTS** Case No. THROUGH A REVISED ENVIRONMENTAL SURCHARGE 2019-00435 AND TARIFF, THE ISSUANCE OF A CERTIFICATE OF) PUBLIC CONVENIENCE AND NECESSITY FOR CERTAIN) **PROJECTS, AND APPROPRIATE ACCOUNTING**) AND OTHER RELIEF)

> Project 12 Wilson Station FGD Replacement and Upgrade

Appendix C – Electrical Specifications Document Index

Filed pursuant to Ordering Paragraph No. 18 of Commission's August 6, 2020 Order FILED: June 18, 2021

Document Number 143993-ASA-DF0-SPC-1701 **Document Title** Electrical Work – Construction Specification



Electrical Work	14399	03-ASA-DF0-SPC-1701
Big Rivers Electric Corp.	Rev.	0
Centertown, Kentucky	Project No.	245891

	APPROVAL STATUS						
PREPARED BY	ARS	DATE	3-12-21	APPROVED BY	JTB	DATE	3-12-21
CHECKED BY	AJG	DATE	3-11-21	APPROVED BY		DATE	

RELEASE STATUS					
REV	DESCRIPTION	REVISED BY	CHECKED BY	ISSUED BY	DATE
0	Issued for Construction		AJG	ARS	5-14-21







Electrical Work	14399	03-ASA-DF0-SPC-1701
Big Rivers Electric Corp.	Rev.	0
Centertown, Kentucky	Project No.	245891

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ELECTRICAL WORK

1. GENERAL

1.1. SCOPE

- 1.1.1. The work to be performed under this section of the specifications includes the furnishing of all materials, labor, supervision and tools necessary to install complete electrical systems in good operating order and in accordance with the specifications, the drawings, and the other contract documents. Items not specifically shown on the drawings or mentioned in the specifications, but essential to the proper completion of the work, shall be furnished and installed as if specified and shown.
- 1.1.2. Ground elevation at the job site will be 392 feet above sea level.
- 1.2. CODES, ETC.
- 1.2.1. All electrical work under the requirements of these specifications shall be in conformance with the National Occupational Safety and Health Administration requirements; the requirements of the current editions of the National Electrical Code and the National Electrical Safety Code; and shall also be in compliance with all applicable state and/or local laws and ordinances.
- 1.2.2. In preparing his bid, the contractor shall carefully check the plans and specifications for compliance with applicable codes and other legal requirements. He shall inform the Owner's Engineer in writing of any nonconformance before he submits his bid.
- 1.2.3. The contractor shall cooperate with and assist the Owner's Engineer in securing from the authority enforcing the codes any "Special Permission" or interpretation needed to complete the work.

1.3. DRAWINGS

- 1.3.1. The locations shown on the drawings are, unless dimensioned, only approximate, and the contractor shall select the actual locations for installation with due consideration for the features of the construction and the work of other trades. Where locations are dimensioned on the drawings, they may be changed only with the approval of the Owner's Engineer.
- 1.3.2. If interferences are found between the electrical work and that of other trades, the Owner's Engineer shall decide which must be relocated.



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1.3.3. The contractor shall keep a complete set of prints in good condition, and on these shall indicate all field changes made. The drafting of changes on the prints shall be done neatly with the aid of appropriate drafting tools, so that they are legible and readily understood. These prints shall be turned over to the Owner's Engineer at the completion of the project.

1.4. WORKMANSHIP

Workmanship shall be first quality and in accordance with the best practices of the trade. Only workmen skilled in the tasks assigned to them shall be employed.

1.5. MATERIAL

Material furnished for inclusion in the work shall have been designed, built and tested in accordance with applicable NEMA and IEEE standards; shall be approved and labeled by the Underwriters' Laboratories, Inc., if label service is available; and shall be new. Where reference is made, either in these specifications or on the drawings, to a particular manufacturer's product, the substitution of a similar product of the specified manufacturer or of a different manufacturer may be made only with the approval of the Owner's Engineer.

1.6. MATERIALS FURNISHED BY THE OWNER

- 1.6.1. The following listed apparatus will be furnished by the Owner:
 - 4160V switchgear
 - 125VDC battery and battery charger
 - UPS
 - 480V switchgear
 - Low-voltage motor control centers
 - AC variable speed drives
 - Oil filled transformers
 - Generator neutral (circuit breaker and) grounding resistor
- 1.6.2. The items listed above shall be received and unloaded from the carrier at the jobsite, placed in storage, removed from storage, transported to their assigned locations, set in place and installed by the contractor.
- 1.6.3. The contractor shall inspect all material for damage and shortage, and if either is found shall complete and file a "Claim Report" with the Owner or Owner's



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representative. The contractor shall be responsible for any demurrage or recall charges on rail cars or trucks if the charges are occasioned by his failure to unload them in due time.

- 1.6.4. The contractor shall be responsible for the proper storage of all items. When apparatus designed for indoor use must be stored outdoors, it must be elevated above ground level and covered to exclude rain water. The rainproof covers shall not extend to the ground but must be arranged to permit a flow of air under the apparatus. Electric heaters, which may be incandescent lamps, shall be installed inside control centers, switchgear, operators' consoles, relay panels, etc., not furnished with heaters. All heaters shall be energized 24 hours a day while the apparatus is in storage.
- 1.6.5. The shafts of all motors shall be rotated one half turn at least once in each six-week period. The person performing this service shall write his initials and the date of each service on a tag to be attached to the motor.

1.7. MATERIALS AND WORK BY OTHERS

The contractor shall furnish all other required materials not specifically enumerated to be furnished by the Owner. Contractor furnished items shall include, but are not limited to, those specified in Section 2.

1.8. PERMANENT LIGHTING

The contractor shall make every reasonable effort to complete the permanent lighting installations in each area at an early date, in order that the requirements for temporary lighting facilities may be minimized and that advantage may be gained from better lighting systems.

1.9. INTERRUPTIONS OF POWER AND CONNECTIONS TO EXISTING BUSES

- 1.9.1. The work is to be carried out without unnecessary interference with the Owner's existing facilities and operations. Power interruptions shall be scheduled with the Owner or Owner's representative and shall be taken only during those periods which he has approved in writing.
- 1.9.2. When another power system, or source, is to be connected to an existing system, it shall be the contractor's responsibility to determine that the phase relations and voltages at the connection point are such that the two systems can operate satisfactorily in parallel.
- 1.9.3. The contractor shall demonstrate, with the aid of suitable instrumentation, that the connections he has made at tie breakers are correct before an attempt is made to synchronize the two systems and close the breaker.



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1.9.4. Any power switching shall be coordinated with the Owner and done in full compliance with the Owner's safety procedures.

1.10. ADDITIONAL INFORMATION TO BE ISSUED TO THE CONTRACTOR

The information given on the drawings, lists, schedules and other documents issued with the "Invitation to Bid" is thought to be quite sufficient to enable the contractor to prepare his estimate and bid and to begin the work. Other drawings, detail sheets, lists, etc., may from time to time be issued to the contractor to clarify the requirements of his work and simplify its execution. Such additional drawings and other supplementary information will not be considered acceptable grounds for a claim for extra work, unless they show work not previously shown or clearly inferable from the documents issued with the "Invitation to Bid," or unless the work in connection with any item previously shown or listed therein is increased.

1.11. TYPICAL INSTALLATION DETAILS

Installation details showing typical motor connections, lighting fixtures, cable tray supports and other features of work are included as a part of these specifications and will be issued on full size drawings.

1.12. WIRING METHODS

The wiring method and cable type for all power and control wiring are described on the cable schedules. In general, medium-voltage cables will be single conductor installed in aluminum cable trays. Most other wiring will be multiconductor cables installed in aluminum cable trays or single conductor cables installed in rigid aluminum conduit. Unless otherwise noted on the drawings, all cable trays and above ground raceways shall be aluminum, and all underground raceways shall be PVC. Intermediate metal conduit and EMT shall not be used, unless specifically called for on the drawings.

1.13. VENDOR DRAWINGS AND INSTALLATION MANUALS

The contractor shall review and follow manufacturer's recommendations for all equipment. Any discrepancy between the vendor information and the installation drawings shall be referred to the Owner's Engineer.

2. MATERIALS AND EQUIPMENT

2.1. CONDUIT

2.1.1. Rigid aluminum conduit, couplings and elbows shall be manufactured of a suitable copper-free aluminum alloy. Conduit lengths shall be seamless throughout and shall



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have hard, smooth and gum-free interior coatings to facilitate the pulling-in of conductors. It shall be furnished in nominal 10-foot lengths, with both ends threaded and a coupling applied to one end of each stick. Threads on the coupling end shall be coated with a special lubricant so that the coupling may be removed without difficulty. Threads on the end opposite the coupling shall be protected from damage by a plastic cap.

- 2.1.2. Plastic coated flexible conduit shall be constructed with a flexible core of galvanized steel and an overall PVC jacket to form a liquid-tight raceway. The overall jacket shall be wrinkle-free and suitable for use in temperatures from -40°C to +100°C. Flexible conduit shall be "Sealtite" type UA as manufactured by ANAMET Electric, Inc., or a product of equal construction specifically approved by the Owner's Engineer.
- 2.1.3. Plastic conduit shall be heavy wall Schedule 40 tubing of polyvinyl chloride, furnished in 10 or 20-foot lengths, with one coupling applied to each stick. Plastic conduit shall be similar and equal to Type 40 PVC conduit as manufactured by Carlon, or a product of equal construction specifically approved by the Owner's Engineer. PVC conduit stub-ups shall be Schedule 80.
- 2.1.4. Accessories. For all fiber and plastic conduit, the contractor shall provide, as required, factory-made end bells, bends, adapters, etc., and for concrete encased runs, plastic spacers, ties and steel hold-down stakes.

2.2. CONDUIT FITTINGS

- 2.2.1. Bushings. Insulated bushings for conduit sizes 1¼ inches and larger shall have metal bodies and threads, with molded-on high impact phenolic thermosetting insulation to prevent conductor insulation damage. The metal body shall be of the same material as the conduit to which it is attached. Bushings shall be Type "B" insulated bushings as manufactured by O.Z. Gedney, or a product of equal construction specifically approved by the Owner's Engineer. Insulated bushings for conduit sizes 1 inch and smaller may be of plastic, O.Z. Gedney Type "A," or a product of equal construction specifically approved by the Owner's Engineer.
- 2.2.1.1. Insulated grounding bushings shall be similar to the insulated bushings described above, except they shall have set screws to lock the bushings on the conduits and shall have mechanical type lugs attached. Lugs shall be sized to accept the ground wire sizes as set forth in the latest edition of the National Electrical Code, but in no case smaller than No. 8 AWG wire. Grounding bushings shall be Type "BLG" as manufactured by O.Z. Gedney, or a product of equal construction specifically approved by the Owner's Engineer.
- 2.2.1.2. Male bushings shall be insulated throat chase nipples. Bushings used only to pass



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conductors through metal partitions, etc. shall be O.Z. Gedney Type "ABB," or a product of equal construction specifically approved by the Owner's Engineer.

- 2.2.2. Condulets for use with aluminum conduit shall be of copper-free aluminum alloy. Those for use with steel conduit may be of galvanized, or cadmium plated cast iron, or of copper free aluminum alloy. All condulet fittings shall be provided with neoprene gaskets and sheet metal covers, except that cast covers shall be used for sizes 1¹/₄ inches and larger. Cover screws shall be captive. All condulet fittings shall be Crouse Hinds Form 8 or Mark 9, or a product of equal construction specifically approved by the Owner's Engineer.
- 2.2.3. *Outlet Boxes.* All exposed or surface mounted outlet boxes shall be cast metal of the proper size and type for the conditions involved. Galvanized sheet metal outlet boxes with no open knockouts may be used for concealed or recessed mounting in dry locations.
- 2.2.4. *Hubs.* Watertight conduit connections are required on all electrical equipment located outside or in process areas. Where hubs or watertight threaded connections are not provided as a part of the enclosure and are required, watertight hubs shall be installed. Watertight hubs shall be Myers "Scru-tite," or a product of equal construction specifically approved by the Owner's Engineer.
- 2.2.5. *Junction Boxes.* Junction boxes shall be of code gage metal with continuously welded joints or of cast metal as called for on the drawings. All junction boxes shall have gasketed screw covers. Boxes for use with aluminum conduits shall be of aluminum. Sheet steel boxes shall be galvanized after fabrication. Screws for galvanized steel box covers shall be made of brass. Screws for aluminum box covers shall be stainless steel.
- 2.2.6. *Pull Fittings*. Type "LB," "C" and "TB" condulet fittings may be used as pull fittings on individual conduits, where the conductor size does not exceed No. 2 AWG for 600 volt insulation. Pull boxes shall be sized in accordance with the requirements of the latest edition of the National Electrical Code and shall be O.Z. Gedney, Type "PBW," Appleton Electric Company, Type "PTC," or a product of equal construction specifically approved by the Owner's Engineer.
- 2.2.7. *Expansion Joint Fittings*. All expansion joint fittings shall be of the same metal as the conduit involved and shall be O. Z. Gedney, Type "AX," or a product of equal construction specifically approved by the Owner's Engineer. All expansion joint fittings shall be furnished complete with bonding jumpers.
- 2.2.8. *Conduit Unions*. Where conduit unions are required in a run, Thomas and Betts Corporation, Erickson couplings may be used, except that unions in outdoor conduits or in conduits in wet areas shall be watertight.



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- 2.2.9. Cable supports to be used in vertical conduit runs shall be O.Z. Gedney, Type "R," or a product of equal construction specifically approved by the Owner's Engineer.
- 2.2.10. Fittings for plastic coated, flexible conduit shall be Appleton Electric Company, Type "STB," or a product of equal construction specifically approved by the Owner's Engineer.
- 2.3. WIRE AND CABLE
- 2.3.1. Refer to Wire and Cable specification 143993-ASA-DF0-SPE-1715.
- 2.4. CABLE FITTINGS
- 2.4.1. Fittings for use on armored cables shall be American Connectors, Inc., "Per-fit" or Thomas and Betts Corporation, "Spin-on." All armored cable fittings used in outdoor or process areas shall be watertight types and shall be completely sealed with Raychem's, Type WCSM-S, heavy wall cable sleeves after installation.
- 2.4.2. Fittings for use with non-armored cable shall be Appleton type "CG," Crouse-Hinds Type "CGFP," or a product of equal construction specifically approved by the Owner's Engineer.
- 2.5. CABLE SUPPORT SYSTEMS
- 2.5.1. *General.* Metallic cable tray systems shall comply in all respects with the latest edition of NEMA Standard VE-1. Fiberglass cable tray systems shall comply with the latest edition of NEMA Standard FG-1.
- 2.5.1.1. Metallic cable trays shall be manufactured by B-Line Systems, T&B, Chalfant Manufacturing, Cope Cable Tray, MP/Husky, or P-W Industries. Cable trays manufactured by other firms may be used, if specifically approved by the Owner's Engineer.
- 2.5.1.2. The cable tray designs shown on WOOD drawings are based upon products produced by MP Husky, with a side rail height of 6 inches and a 1^{3/4} inch wide C channel shaped flange. If cable trays other than these are installed, the contractor shall be responsible for coordinating the tray system with all other designs to avoid interferences.
- 2.5.1.3. Cable trays installed indoors shall be rated to support a minimum of five pounds per inch of width per foot of length with a safety factor of 1.5 when supported as a simple beam with the maximum distance between supports as described below. Cable trays installed outdoors shall be rated to support seven pounds per inch of width per foot of length with a safety factor of 1.5 when supported as a simple beam with the maximum distance between supports as described below. The maximum distance between supports for aluminum trays shall not exceed ten feet. When cable trays are loaded as



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described above, the deflection of the bottom of a side rail at mid span shall not exceed 1.5 inches. The deflection of any rung at mid span shall not exceed 0.3 inches.

- 2.5.1.4. Cable trays and fittings shall be ladder type with rungs spaced 12 inches on centers for power cables and 9 inches on centers for control and signal cables. The inside bend radii of all fittings shall be 24 inches, unless otherwise noted on the drawings. The usable clear loading depth shall be 5 inches. Straight sections shall be furnished in lengths of 24 feet. Cable support channels shall be 4 inches wide, unless otherwise noted on the drawings.
- 2.5.1.5. All metallic cable tray systems shall be constructed of 6063-T6 aluminum alloy, unless otherwise noted on the drawings.
- 2.5.1.6. All horizontal and vertical fittings shall have the same thickness and cross sectional areas of side members and rungs as straight sections. The tray design shall be such that adjacent sections can be joined together without the use of special tools.
- 2.5.2. Aluminum cable tray and fittings shall be of extruded aluminum alloy sections and of the widths shown on the drawings.
- 2.5.3. Aluminum cable channels shall be of extruded aluminum alloy, stress free and bottom ventilated.
- 2.5.4. All cable tray support fittings shall be of the same material as the tray they are to support, except that threaded rods, bolts, beam clamps, conduit clamps, structural shapes, etc. for metallic cable trays, shall be of steel with a hot dipped galvanized finish.
- 2.6. NOT USED
- 2.7. WIRING DEVICES
- 2.7.1. Toggle switches shall be specification grade rated 20 amperes at 120-277 volts, ac. Switches shall be Arrow-Hart Catalog No. AH1221, AH1222 or AH1223, depending on the type of switch required for the application involved, or a product of equal construction specifically approved by the Owner's Engineer.

Convenience outlets shall be three-wire grounding type rated 15 amperes at 125 volts ac or dc. Duplex receptacles, for use in manufacturing areas, shall be Arrow-Hart Catalog No. 5262-CR, or a product of equal construction specifically approved by the Owner's Engineer. Receptacles for use in offices and other clean, dry areas shall be Arrow-Hart Catalog No. 5252, or a product of equal construction specifically approved by the Owner's Engineer.

2.7.2. Receptacles connected to branch circuits served by instrument power panels with an isolated equipment grounding system shall be Arrow-Hart Catalog No. IG5262 for



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straight blade plugs or IG4700 for locking type.

- 2.7.3. Welding receptacle installations shall include an interlocked receptacle disconnect switch with viewing window. The disconnect switch shall be fused with 60A class "J" fuses and mounted in a NEMA 4/4X enclosure right above the welding receptacle. Welding receptacle shall be rated 60 amperes, three-wire, four-pole at 480 volts, 60 hertz.
- 2.7.3.1. Welding receptacle plugs shall be rated 60 ampere, four-wire, three-pole, with a grounded body.
- 2.7.3.2. Unless otherwise noted, one plug shall be furnished for each three receptacles shown on the drawing.
- 2.7.4. Clock outlets shall be single two-pole, three-wire, 15 ampere, 125 volt receptacles with stainless steel plates. Receptacles shall be Arrow Hart Catalog No. 5708, or a product of equal construction specifically approved by the Owner's Engineer.
- 2.8. LOW-VOLTAGE CIRCUIT PROTECTING DEVICES
- 2.8.1. *Molded Case Circuit Breakers*. Individual molded case circuit breakers located in clean, dry areas shall be furnished in NEMA 1 enclosures. Circuit breakers shall be furnished in NEMA 4X fiberglass reinforced polyester enclosures if they are to be located outdoors or in process locations. Breaker continuous and interrupting ratings shall be as shown on the drawings, or as specified elsewhere herein, but in no case shall the interrupting rating be less than 65,000 symmetrical rms amperes at 480 volts. Breaker frames larger than 100 amperes shall have interchangeable trip units. An auxiliary pole or interlock shall be furnished when indicated on the drawings.

Fused type circuit breakers shall combine conventional thermal-magnetic molded case circuit breakers with current limiting type fuses. The fuse-breaker combination shall be coordinated so that the circuit breaker shall provide protection against overloads and short-circuits within its interrupting capacity with the current limiting fuses opening only to clear high level currents above the rating of the circuit breaker. The unit shall be so designed that if any fuse blows the breaker will trip, opening all three poles preventing a single phase condition. Fuse breaker combination shall be General Electric Company "Tri-Break," Cutler-Hammer/Westinghouse, "Tri-Pac," or a product of equal construction specifically approved by the Owner's Engineer.

2.8.2. Fused safety switches shall be of a heavy duty type with an interlocked cover, positive quick-make, quick-break mechanism, and visible blades. Fused safety switches shall have rejection type fuse clips and UL Class "RK" fuses. The switch shall have a NEMA 12 enclosure, except that NEMA 4X fiberglass reinforced polyester enclosures shall be used outdoors or in other process area locations. The



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switch shall have provisions for padlocking the operating arm in the "off" position and for padlocking the front cover closed. The number of poles and the ampere ratings of the switch and fuses shall be as indicated on the drawings or as required for the application involved. (An auxiliary pole or interlock shall be furnished when indicated on the drawings.)

- 2.8.3. Non-fused safety switches shall be heavy duty type, horsepower rated, three-pole, motor circuit switches. Contacts shall be completely visible with the cover open and shall be of a quick-make, quick-break type. The switch shall have provisions for padlocking the operating handle in the "off" position with the front cover in the closed position. The switch enclosure shall be NEMA 12, except that switches for use in outdoor or process locations shall have NEMA 4X, fiberglass reinforced polyester enclosures. All switches shall be rated for use at 600 volts and shall be of the ampere rating required for the application involved.
- 2.8.4. Double throw safety switches shall be of the heavy duty type, 600 volt, horsepower rated and with NEMA 12 enclosures. All switches shall have quick-make, quick-break mechanisms and shall have provisions for locking the operating handle in the top, open or bottom positions.

2.9. LOW-VOLTAGE MOTOR CONTROLLERS

- 2.9.1. Full voltage induction motor controllers shall be combination type with three-pole circuit breakers and magnetically operated contactors. All motor controllers shall have a minimum interrupting capacity of 65,000 symmetrical rms amperes at 480 volts. Each controller shall contain an individual control power transformer for 120 volt control circuits. All control power transformers shall have the ungrounded secondary lead fused and both primary leads fused. Controllers for single speed motors shall have three thermal overload devices each. Multispeed motor controllers shall have a separate set of thermal overloads for each motor speed. Overloads shall be sized in accordance with the full load running current of the motor at the particular speed involved. Reversing type controllers shall have mechanical and electrical interlocks between forward and reverse contactors.
- 2.9.1.1. The insulation on all internal wiring in controllers shall be of a self-extinguishing, thermosetting type, with a conductor temperature rating of at least 90°C.
- 2.9.1.2. Individually mounted motor controllers shall have NEMA 12 enclosures, except that when mounted outdoors or in process locations they shall have NEMA 4X fiberglass reinforced polyester enclosures. All controllers shall have provisions for the external hand resetting of their thermal overloads.
- 2.9.2. *Motor Control Centers*. Low-voltage motor control centers will be NEMA Class 1, Type B wired, with NEMA 1 enclosures with gasketed doors. They shall be suitable



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for service on 480 volt, three-phase, 60 hertz systems.

- 2.9.2.1. Controllers will be full-voltage, combination type with circuit breakers. Controllers shall have a minimum interrupting rating of 65,000 rms amperes symmetrical at 480 volts.
- 2.9.2.2. Controllers will be grouped in the required number of vertical sections, each section being approximately 90 inches high, 20 inches wide. These sections shall be bolted together to form rigid, free-standing units. Normally, controllers will be mounted on the front side only, but where indicated on the drawings back-to-back mounting may be used.
- 2.9.2.3. Each controller compartment will have its own door on which will be furnished an embossed laminated plastic nameplate giving an equipment number and name or other information as indicated on the drawings.
- 2.9.2.4. Overload Protection:

When indicated on Data Sheet bi-metallic over loads shall be provided. Overload relays shall be an ambient compensated bimetallic-type with interchangeable heaters, calibrated for 1.0 and 1.15 service factor motors. Electrically isolated normally open and normally closed contacts shall be provided on the relay. Visual trip indication shall be standard. A test trip feature shall be provided for ease of troubleshooting and shall be conveniently operable without removing components or the motor starter. Overload to have (+/-) 24% adjustability, single-phase sensitivity, isolated alarm contact, and manual or automatic reset.

- 2.9.3. Manual motor controllers for single-phase, fractional horsepower motors shall be single or two-pole, as required, and rated for the proper voltage. Each shall have one thermal overload device and shall be General Electric CR101Y or CR101H, or a product of equal construction specifically approved by the Owner's Engineer. Manual motor starters in outdoors or other process areas shall be furnished in NEMA 4X fiberglass reinforced polyester enclosures.
- 2.10. Not used
- 2.11. SWITCHGEAR
- 2.11.1. Low-voltage metal-enclosed switchgear will be for indoor use and arranged as shown on the drawings. Breakers will be air-break, draw-out mounted, with static overcurrent tripping devices in each pole and stored energy type closing mechanisms. Breaker interrupting capabilities, frame sizes, trip ratings and operation (manual or electrical) will be as shown on the drawings or documents used to release equipment for manufacture. Refer to specification 143993-ASA-DF0-SPE-1703 for the LV switchgear.



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- 2.11.2. Medium-voltage metal-clad switchgear will be for indoor use and arranged as shown on the drawings. Breakers will be vacuum-break, draw-out mounted, with stored energy closing devices, ac or dc trip and close. Breaker interrupting capabilities, voltage and ampere ratings, instrumentation, relaying and other details will be as given on the drawings or documents used to release equipment for manufacture. Refer to specifications 143993-ASA-DF0-CWP-1701 and 143993-ASA-DF0-CWP-1702 for the MV switchgear.
- 2.11.2.1. A 125 volt battery with a rack and an automatic charger will be furnished to provide power for dc circuit breaker control. Refer to specification 143993-ASA-DF0-SPE-1717 for the 125VDC system.

2.12. LOAD CENTER UNIT SUBSTATIONS

Load center unit substations generally will consist of the following principal parts:

- 2.12.1. A medium voltage vacuum breaker in switchgear.
- 2.12.2. Cable for incoming and outgoing connections.
- 2.12.3. A three-phase, 60-hertz, air cooled, two winding, less-flammable liquid-insulated (bio-degradable FR3) transformer, delta-wye connected with secondary neutral brought out, NEMA standard taps and accessories. Voltages and kVA ratings will be as noted on the drawings.

2.13. TRANSFORMERS

2.13.1. Small dry type transformers to provide power for lighting, convenience outlets, heating, etc. shall be wall or platform mounted and shall have NEMA standard taps. Primary and secondary voltages, phases and transformer ratings shall be as indicated on the drawings. Sizes 25 kVA and smaller shall be totally enclosed and Underwriters Laboratories listed for indoor or outdoor installation. Sound levels shall not exceed those listed by NEMA-ANSI standards for general purpose transformers.

All dry type transformers shall have an insulation system with a maximum temperature rating of 220°C. All transformers shall be designed to produce rated output with an average conductor temperature rise of 80° in a 40°C ambient temperature. All transformers shall be furnished with four primary voltage taps: two $2\frac{1}{2}\%$ and 5% above and two $2\frac{1}{2}\%$ and 5% below rated voltage. All dry type transformers shall be of General Electric, Square D, Eaton, or a product of equal construction specifically approved by the Owner's Engineer.

- 2.14. GROUNDING EQUIPMENT
- 2.14.1. Ground rods shall be ³/₄ inch in diameter x 10 feet long and manufactured of high



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strength copper clad steel. Where ground rods greater than 10 feet in length are required, sectional ground rods with both ends threaded and connected with threaded bronze couplings shall be used. Ground rods shall be as manufactured by Copperweld Steel Company, or a product of equal construction specifically approved by the Owner's Engineer.

- 2.14.2. Grounding connectors for wire-to-wire or wire-to-ground rods shall be made by "Cadweld" process or with Thomas and Betts Corporation compression type ground grid connectors. Grounding connections to pipes or flat surfaces shall be made by "Cadweld" process or with Burndy Type GAR connectors (for pipe) and types GB or GC for cable to flat surfaces. Refer to the grounding drawings for additional grounding equipment and installation requirements.
- 2.14.3. All grounding connections shall use semi conductive dielectric grease and/or anticorrosion inhibitors per industry standards.
- 2.15. MOTORS
- 2.15.1. Motors will, unless otherwise noted, will be furnished by the Owner or with the equipment they drive.
- 2.16. NOT USED
- 2.17. PANELBOARDS
- 2.17.3. Panelboards shall be of the dead-front type, with molded case circuit breaker branches. Details of construction including service voltage, number and ratings of branches, size of mains and whether surface or flush mounting are given on the drawings or in the schedules. Distribution panelboards shall be Eaton Pow-R-Line C, or a product of equal construction specifically approved by the Owner's Engineer. Panelboards for lighting shall be Eaton Pow-R-Line 1 for 120/240 and 208Y/120 volts, or Pow-R-Line 2 or 3 for 480Y/277 volts, or a product of equal construction specifically approved by the Owner's Engineer.
- 2.17.4. All panelboard locks shall be keyed alike. Circuit breakers used to switch lighting shall be approved for switching service. Any other branch circuit breakers in the same panelboards used to protect receptacle circuits, circuits to unit heaters and other non-switched loads shall be provided with handle locks to prevent the inadvertent opening of these circuits.

2.18. DEVICE PLATES

2.18.1. Device plates for use on flush mounted boxes in offices and other finished areas shall be "specification grade" stainless steel as manufactured by Arrow Hart, or a



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product of equal construction specifically approved by the Owner's Engineer. For surface mounted outlet boxes in dry areas, device plates shall be of galvanized sheet steel with beveled edges and countersunk screw holes.

- 2.18.2. Covers for use outdoors and in manufacturing areas shall be of cast metal and gasketed. Convenience outlet covers shall be Crouse-Hinds WLRD-1, WLGF or a product of equal construction specifically approved by the Owner's Engineer. Tumbler switch covers shall be Crouse-Hinds No. DS181, or a product of equal construction specifically approved by the Owner's Engineer.
- 2.19. NOT USED

2.20. LIGHTING FIXTURES

Lighting fixtures shall be as shown on the fixture schedule. Lamps shall be manufactured by CROUSE HINDS, Sylvania, Philips, or a product of equal construction specifically approved by the Owner's Engineer. Where indicate on drawings, LED lighting fixtures suitable for multi voltage shall be used.

2.21. TERMINAL BLOCKS

Terminal blocks shall be Allen-Bradley Bulletin 1492-F1 or Square D Company channel mounted, Type KBA-1 for 300 volts and less and Allen-Bradley Bulletin 1492-CA1 or Square D Company Type KCA-1 for 600 volts, or a product of equal construction specifically approved by the Owner's Engineer.

2.22. NOT USED

2.23. LIGHTNING PROTECTION EQUIPMENT (When Specified)

Air terminals for lightning protection shall be as specified on the drawings. Cable for connecting air terminals together and/or to grounded metal shall be as specified by an accredited lightning protection vendor. Ground pigtails are included in the grounding design for connection to lightning protection devices.

- 2.24. Not used
- 2.25. Not used
- 2.26. Not used
- 2.27. EQUIPMENT NAMEPLATES
- 2.27.1. All electrical equipment, device or enclosure shall be properly identified with a



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nameplate, plastic marker or other suitable means as approved by the Owner's Engineer. Nameplates shall be laminated plastic with white backgrounds engraved to expose a black core.

- 2.27.2. Generally, large pieces of equipment will be provided with engraved nameplates, and details are provided for nameplates at pushbuttons and other local devices. It shall be the responsibility of the contractor to provide identification for all other electrical equipment, device or enclosure not furnished with readily noticeable tag, nameplate or other means of identification.
- 2.27.3. Nameplates shall be provided for all motors. Nameplates shall provide the driven equipment description, i.e., "Slushing Chest Pump," the equipment or motor number, the motor control center (MCC) number with compartment number. Nameplates will normally be mounted adjacent to the motor.
- 2.27.4. All cable trays shall be identified at the time of installation with the alphanumeric number shown on the plan drawings. This cable tray identifier shall be painted or installed on the outside rail with 4-inch high characters. Characters shall be colored black on a painted white background at least 6 inches long. The tray identifier shall be installed at each point where the tray designation changes and at 50-foot intervals in between. Cable trays with cables over 600 V shall have warning markings per NEC 392.18(H).
- 2.27.5. Small devices such as limit switches, solenoids or photoelectric cells shall identify the device tag number by small plastic tags fastened to the outside of the device with plastic band or stainless steel wire.
- 2.27.6. Large junction boxes, pull boxes or similar enclosures shall be identified as shown on the drawings with painted letters and/or numbers which shall be readily seen from floor level. These letters and numbers shall be minimum 2½ inches high and the color paint shall be in contrast to the color of the box or enclosure. In addition, these letters and/or numbers shall be painted on the inside of the box and on the door or cover.
- 2.27.7. Control panels, relay panels or enclosures with electrical devices mounted inside or on the outside of the enclosure shall have a large nameplate (3 inches by 5 inches) indicating the purpose of the cabinet and smaller nameplates (1 inch by 3 inches) describing the use or action of the device mounted on or inside the enclosure.
- 2.27.8. Circuit breaker panelboards (i.e., lighting, instrument or receptacle panels) shall have a nameplate installed on the outside and inside of the door. This nameplate shall state the panelboard name and the location of the circuit breaker feeding the panel MCC tag number and compartment and the drawing number on which the panelboard schedule shows.



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- 2.27.9. All transformers shall have a nameplate installed on the front cover which states the transformer service equipment number or identification number, the panelboard or device served, and the location of the circuit breaker feeding the transformer MCC tag number and compartment, and the drawing number on which the transformer schematic shows.
- 2.27.10. Equipment such as motor starters, safety switches, welding receptacles and circuit breakers shall be furnished with 1 inch by 3 inches plastic nameplates stating description of item served and the MCC tag number with compartment number (which feeds the equipment), if applicable.
- 2.27.11. Panelboard directories shall be filled in with a typewriter and properly inserted inside the correct panelboard door.
- 2.27.12. Miscellaneous items not covered above or items that are not suitable to standard methods because of location, shape, size, etc., shall be identified as approved by the Owner's Engineer.
- 2.27.13. For reused equipment supplied by the Owner, the contractor shall remove all nameplates that are not relevant or have changed.
- 2.28. FUSES

Prior to acceptance testing of any equipment, the contractor shall inspect all fuses for that equipment and ensure that all fuse holders have the proper size fuse and that all fuses are in proper working condition. Any blown or otherwise defective fuse shall be replaced. The contractor shall furnish one extra fuse for each size and type fuse used on the project (for equipment which the contractor furnished).

2.29. ROTATING EQUIPMENT

- 2.29.1. The contractor will be responsible to electrically connecting and bumping the motors for proper rotation. Motors shall be connected to the ground system as shown elsewhere in these specifications. Unless otherwise noted or detailed on the drawings, flexible metal conduit shall enter the side or bottom of motor conduit boxes and shall be so installed that liquids will tend to run off the surface rather than toward the motor fitting.
- 2.29.2. All motors must be "Meggered" when received, when removed from storage and during checkout. All three readings should appear on a tag attached to the motor. Refer to Section 4.2 for Insulation Tests.
- 2.29.3. The contractor shall make all electrical connections to motors and other rotating equipment as specified herein and as shown on applicable drawings. The contractor shall verify that the proper overload heaters are installed, based upon motor



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nameplate full load current. One spare overload heater for every size and type used shall be provided. All motors shall be tested for proper direction of rotation and necessary reconnections made. Unless specifically approved, motors shall be checked for rotation with the coupling removed. Any motor found to be operating incorrectly shall be checked to determine the cause and the conditions corrected to the satisfaction of the Owner's representative or Owner. Permission shall be obtained from the Owner's representative or Owner before starting any motor for a test.

- 2.29.4. An electrical equipment tag shall be completed for each motor indicating the following information and signed by the contractor and the resident electrical Owner's Engineer:
 - equipment description
 - service location number
 - equipment number
 - megger test results
 - installation complete
 - checkout complete
- 2.29.5. The contractor shall assure that each motor has a metal tag on it with the equipment identification number.

2.30. MOUNTING HEIGHTS

Unless otherwise noted, mounting heights from finished floor to centerline of electrical equipment shall be as follows:

Device	Mounting Heights
Selector Switches	4 ft 6 in.
Pushbutton Stations	4 ft 6 in.
Convenience Outlets (Plant)	3 ft 6 in.
Convenience Outlets (Office)	1 ft 6 in.
Toggle (Lighting) Switches	4 ft 6 in.



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Device	Mounting Heights
Lighting Panelboards (To Top)	6 ft 0 in.
Circuit Breakers (To Top)	6 ft 0 in.

2.31. SITE CLEARING AND DEMOLITION

- 2.31.1. When specified, the contractor shall be responsible for site clearing of various items as called out on the drawings. In some cases, these items shall be relocated and will be so noted. Other items will require demolition and will not be relocated. All electrical devices removed shall be turned over to the Owner.
- 2.31.2. Prior to disconnecting of any wires for demolition, the contractor shall locate the power source (i.e., disconnect switch, motor starter, etc.). Devices removed from service shall have all power conductors grounded at both ends (motor and starter, etc.). Both ends of the conductors shall have an information tag installed advising who disconnected the device, the date, and the reason (and where the unit was fed from for field end of cable).
- 2.31.3. In no case shall the contractor cut wires that have no proper identification.

3. INSTALLATION

3.1. RACEWAY INSTALLATION

- 3.1.1 General. Conduit runs are to be so installed that they are mechanically secure, electrically continuous, and neat in appearance. The interiors of conduit shall provide clean, smooth raceways through which conductors may be drawn without damage to the insulation. All threaded connections shall be wrench-tight.
- 3.1.1.1. Unless otherwise noted or required, all raceways shall be of rigid aluminum conduit above ground and PVC underground. The minimum size raceway shall be ³/₄ inch trade size, except that ¹/₂ inch conduit may be used for lighting fixture stems.
- 3.1.1.2. Conduit shall not be stored directly on the ground or in any other place where dirt is likely to enter it. After conduit is installed and before the wires are drawn in, its ends shall be plugged, capped or protected in some other way against the intrusion of foreign matter.
- 3.1.1.3. Should any raceways become clogged through the neglect of the contractor to protect them, they shall be replaced by the contractor without additional expense to the Owner.



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- 3.1.1.4. Conduit shall be cut off square with a power saw or a rotary type conduit cutter designed to leave a flat conduit face. Pipe cutters shall not be used for cutting conduit. The cut ends of conduit shall be reamed with a reamer, designed for the purpose to eliminate all rough edges. Threads shall be cut with standard conduit dies providing ³/₄-inch taper per foot and shall be of the proper length so that joints and terminals may be made up tight and the ends of the conduit not deformed. Dies shall be kept sharp and a good quality threading oil used continuously during the threading operation. Metal cuttings and oil shall be removed from the conduit ends after the threads are cut and threads shall be painted before connections are made. Zinc-rich epoxy primer shall be used on the threads of steel conduit. A lubricant recommended by the conduit manufacturer and approved by the Owner's Engineer shall be applied to aluminum conduit threads.
- 3.1.1.5. Strap wrenches only shall be used to tighten joints in plastic coated rigid steel conduit. All damage to the plastic coating, such as cuts, nicks and threader chuck jaw marks, shall be carefully repaired using the conduit manufacturer's recommended patching material. A solvent, or the same patching material, shall be used to seal around the edges of conduit fitting covers.
- 3.1.1.6. All bends in conduit 1½ inches and smaller may be made in the field using manual or power tools designed for the purpose, except PVC coated conduit systems shall utilize manufactured elbows. Right angle bends in conduit sizes 2 inches and larger shall be made with manufactured elbows. Changes in direction of conduit shall be made in elbows or fittings, if the conductors are smaller than No. 1 AWG. Pull boxes shall not be used unless specifically designated otherwise. Concentric bends shall not be used in place of elbows in grouped conduit runs.
- 3.1.1.7. The Owner or Owner's representative may require the contractor to remove conduit unions if, in his opinion, their use could have been avoided by proper layout and planning of the installation. Such removal shall be at the contractor's expense.
- 3.1.1.8. Trapped runs of conduit shall be avoided, if possible. When they are necessary, they shall be drained using a "tee" condulet equipped with a drain, Crouse-Hinds ECD 15 or a product of equal construction specifically approved by the Owner's Engineer. Conduit passing through areas where there is likely to be a temperature differential of 20°F or more shall be sealed with a proper seal fitting at the wall or barrier between such areas.
- 3.1.1.9. All conduit crossing building or structure expansion joints shall be fitted with approved expansion fittings, except that fittings will not be required when conduit crossing an expansion joint is supported on trapeze hangers in such a way that at no time will the conduit be under stress due to building expansion or contraction. Bonding jumpers shall be installed around all expansion joint fittings.



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- 3.1.1.10. All conduit terminating in sheet metal boxes where no threaded hubs are provided shall be fitted with double locknuts and bushings. Sheet metal enclosures located in wet process areas shall be furnished with threaded hubs or Myers "Scru-tite" hubs. Flexible metallic conduit shall be provided where called for on the drawings; where necessary to allow for movement; or to localize sound or vibration, at transformers, at motors and any other rotating equipment.
- 3.1.1.11. Conduit routing, where not detailed and/or dimensioned on the drawings, shall be determined in the field by the contractor. Final and exact routing of conduit even when dimensioned on the drawings shall be determined by a field check of the proposed conduit routing before installation of the run is started. Any obstacles encountered or conflicts with the work of other trades shall be brought to the Owner's Engineer attention so that he may determine the exact routing to be followed. Exposed conduit shall be run perpendicular or parallel to the main structural components of the building. Concealed conduit shall follow the most direct practical route from outlet to outlet, unless specifically indicated otherwise on the drawings.
- 3.1.1.12. Curbed openings through floors and openings through walls for the passage of banks or raceways and sleeves through floors for the passage of single raceways will usually be shown on the Architectural and Structural drawings and furnished under other sections of the specifications. When necessary to cut through walls, floors, or roofs for raceways, the work shall be neat and the contractor shall repair any damage to the building using material equal to that originally used and labor skilled in the trades involved. Holes shall not be cut or burned through structural members unless approved in writing by the Owner's Engineer.
- 3.1.1.13. A polyproplyene pull cord shall be left in each telephone conduit to facilitate the future installation of conductors by others.
- 3.1.1.14. The contractor shall seal all openings or holes where conduits pass through walls or floors. When passing through a fire wall or floor, the seal shall be fire rated per the drawing details.
- 3.1.2 Underfloor Conduit Installation. The installation of conduit in slabs and under slabs on grade is to be avoided whenever possible and shall only be made when specifically required by the drawings or with written approval of the Owner's Engineer.
- 3.1.2.1. Only PVC conduits may be installed in concrete or underground. Conduits installed in slabs shall occupy the middle third of the slab and shall have a space not less than 3 times the nominal diameter of the larger conduit between parallel runs of conduit.
- 3.1.2.2. Conduits turning up from a concrete slab shall terminate in couplings, with their top ends set 2 inches above the concrete or as indicated on drawings. Where they turn up into permanent walls or partitions, the couplings may be omitted and the conduit



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runs need not be interrupted at floor level. A stick of conduit shall be screwed into each coupling and maintained in the vertical position until the concrete has hardened. After the concrete has set, they shall be removed and the couplings plugged with screw type pipe plugs. When the concrete surface is likely to be wet, steel conduit shall be protected at the slab surface and for at least 2 inches above by heavy application of a gray or aluminum color paint, GE Glytal, or a product of equal construction specifically approved by the Owner's Engineer.

- 3.1.3 *Raceway Supports*. Parallel runs of conduit may be supported by structural steel racks or prefabricated structural systems. When two or more racks are arranged one above the other, vertical separation of not less than 12 inches shall be provided between racks, unless otherwise indicated on the drawings. The spacings of conduits on the racks shall be at least enough to provide 3-inch clearance between locknuts on adjacent conduits at terminations and to allow room for fittings.
- 3.1.3.1. All miscellaneous iron used for conduit racks, all hanger rods, conduit clamps, beam clamps, nuts, bolts, etc. shall be galvanized. Where it is necessary to cut or drill galvanized metal, it shall be given one zinc-rich epoxy primer coat before installation. After installation, an additional primer coat and one finish coat of aluminum paint shall be applied over the area of the cut. Welds made in the field shall be thoroughly cleaned and then given three coats of paint as described above.
- 3.1.3.2. The contractor may use prefabricated structural systems such as Kindorf, Powerstrut, Unistrut, or a product of equal construction specifically approved by the Owner's Engineer, for support of raceways.
- 3.1.3.3. The contractor shall be fully responsible for the proper sizing and assembling of support systems to adequately and rigidly support raceways and/or equipment mounted thereon with a safety factor of at least three.
- 3.1.3.4. Conduit racks shall be filled to not more than 75% of their capacity by the conduit shown on the contract documents. The intent is to have usable space available for future conduit. To ensure this, conduits leaving the rack horizontally shall be offset up or down so that future conduits may be installed in the space remaining. Conduit racks shall be constructed to permit access for wire or cable pulling at all pull points, even when future conduits are added to fill the racks.
- 3.1.3.5. Where conduit racks are supported on rods from beam clamps or by some other non-rigid suspension system, rigid supports shall be installed at not more than 50 foot intervals to give lateral stability to the rack.
- 3.1.3.6. Conduit racks or hangers must in no way interfere with machinery, piping, structural members, process equipment, process access of anticipated future equipment, etc. The contractor shall refer to architectural, structural, equipment layout and piping drawings to insure that this requirement is met. All high voltage conduit shall be



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labeled with the circuit phase-to-phase voltage by means of a firmly attached tag or label of approved design at each conduit termination, on each side of all walls or barriers pierced and at intervals not exceeding 50 feet along the entire length of the conduit.

- 3.1.3.7. Conduit sizes two inches and larger shall be supported at spacings not exceeding 10 feet and conduit sizes 1¹/₂ inches and smaller shall be supported at spacings not exceeding 8 feet.
- 3.1.3.8. The means of fastening conduit to supports shall be by one hole malleable iron conduit straps secured by wood screws to wood, by bolts or power driven studs to steel and by bolts with expansion anchors to concrete or masonry; by "Korn" clamps, by U-bolts, or a product of equal construction specifically approved by the Owner's Engineer. "Clamp backs" shall be used when strapping conduits to walls, column faces, or other such surfaces.
- 3.1.3.9. Pliers, channel-lock or otherwise, shall not be used to tighten nuts, bolts or screws. All nuts bearing on metal shall be locknuts or have lock-washers.
- 3.1.4 *Underground Duct Installation*. Details, including locations, for duct bank and manhole construction are given on the drawings.
- 3.1.4.1. Refer to Structural Owner's Engineering Construction Specification section, "Installation of Underground Utilities" for concrete, reinforcing and placement specifications.
- 3.1.4.2. Long-radius elbows of galvanized rigid steel conduit shall be used where ducts turn up and leave the concrete encasement. These elbows shall be coated with zinc-rich epoxy primer for at least 2 inches above and 6 inches below the concrete surface.
- 3.1.4.3. When the installation is complete, each duct shall be brushed and swabbed out and a mandrel then pulled through to demonstrate that it is free of obstructions. The mandrel shall be approximately 3 inches less in diameter than the duct I.D.
- 3.1.5. Raceway installation on metal grating. Under no circumstances shall cable raceway or conduit be installed directly on top of platform grating causing a tripping hazard.

3.2. CABLE TRAY INSTALLATION

- 3.2.1 The contractor shall furnish and install all cable tray supports and miscellaneous fittings required. Cable trays and their fittings shall be constructed, installed and supported in accordance with NEMA Standards Publications VE-2 for metal cable trays or FG-1 for fiberglass trays. When cable trays are installed one above the other, the bend radius of all trays so installed shall be the same.
- 3.2.2 When it is necessary to cut out a rung to facilitate cable dropouts, all edges shall be



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filed smooth and rounded. The contractor shall make miter joints in tray when manufactured fittings will not satisfy field requirements. Ventilated channels in 4-inch widths or conduit shall be used for supporting cables dropping out of trays to connect to individual pieces of equipment.

- 3.2.3 Unless otherwise noted, all cable trays shall be supported by rigid steel brackets, trapeze type hangers or fittings made by the tray manufacturer. All hanger materials, including threaded hanger rods, all brackets and other structural support items shall be of hot dipped galvanized steel and shall have sufficient strength to support the load with a safety factor of at least three when all trays are filled to design capacity. All field cuts and welds shall be thoroughly cleaned; given two primer coats, each of a different color, and a finish coat of aluminum paint. In fabricating or installing cable tray supports, all holes shall be drilled and all cuts made with a saw. All hanger rods shall be of 2 inches or larger diameter; shall be double-nutted at the lowest cable tray support; and shall not be spliced. Except with specific approval, or where otherwise noted on the drawings, cable tray support spacing for horizontal runs shall not exceed 8 feet for ladder and channel type trays. For vertical runs, supports shall be not more than 8 feet apart for either tray or channel. Cable trays installed on trapeze type hangers shall be braced laterally at intervals not exceeding 50 feet for ladder type tray and 25 feet for 3 and 4 inch channel tray.
- 3.2.4 The contractor may use prefabricated structural systems such as Kindorf, Unistrut, or a product of equal construction specifically approved by the Owner's Engineer, for support of cable tray and channels.
- 3.2.5 Aluminum cable tray installed in heated areas shall have expansion joint splice plates installed at intervals not exceeding 144 feet on all straight runs, and when installed in non-heated areas at intervals not exceeding 72 feet. Steel cable tray shall have expansion joint splice plates installed at intervals not exceeding 288 feet on straight runs installed in heated areas and at intervals not exceeding 146 feet in non-heated areas. The gap set between cable tray lengths at expansion joint fittings shall relate to the maximum and minimum gap possible as the temperature at the time of installation relates to the temperature extremes for that area. All expansion joints shall incorporate an approved bonding jumper to maintain electrical continuity. An approved lubricant shall be used on the sliding surfaces of expansion joints.
- 3.2.6 The contractor shall seal all openings where tray passes through walls or floors. When passing through a fire wall or floor, the seal shall be fire rated per the drawing details.
- 3.3. WIRE AND CABLE INSTALLATION
- 3.3.1 *Cable Installation, General.* Connectors and terminal lugs for all sizes of conductors may be of the crimp-on type, provided that the connectors and lugs and the tools for



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their installation are approved by the Owner's Engineer. Hydraulic and ratchet type tools for compressing lugs or connectors shall be built to require full closure of the dies before the tool can be reopened. Crimp-on connectors and terminators for cables larger than No. 3/0 AWG shall be long barrel with two hole tongues. For conductor sizes No. 14, No. 12, and No. 10 AWG in lighting service, splices and taps may be made with MMM "Hyflex" connectors, or a product of equal construction specifically approved by the Owner's Engineer. Other splices and taps in 600 volt conductors sizes through No. 2/0 AWG may be made with "Split-Bolt" connectors and insulated with heat shrinkable insulation as manufactured by Raychem, Sigmaform, or a product of equal construction specifically approved by the Owner's Engineer. With 600 volt conductors larger than No. 2/0 AWG, splices and taps may be made with Burndy type KVS connectors, or a product of equal construction specifically approved by the Owner's Engineer. These splices and taps shall also be insulated with heat shrinkable insulation as manufactured by Raychem, Sigmaform, or a product of equal construction specifically approved by the Owner's Engineer. Control conductors shall be connected directly to terminal strips. Splices and taps in cables operating at more than 600 volts will be permitted only with the approval of the Owner or Owner's representative. Splices and taps, if approved, and terminals in high-voltage cables shall be made with long-barrel compression type fittings as made by Burndy Corporation, or a product of equal construction specifically approved by the Owner's Engineer. Installation shall be in strict accordance with the cable manufacturer's recommendations. Stress relief cones shall be used at the terminations of all shielded medium-voltage cables. All power cable ends shall be sealed to exclude moisture from the strands.

- 3.3.1.1 All terminations, stress relief cones, and other insulation seals for cables shall be heat shrinkable products by Raychem, Sigmaform, or a product of equal construction specifically approved by the Owner's Engineer.
- 3.3.1.2 Connections in motor terminal boxes, where the motor leads are furnished with crimped-on lugs, shall be made by installing lugs on the motor branch circuit ends and then bolting the proper pairs of lugs together. Motor connection kits as manufactured by Raychem, Sigmaform, or a product of equal construction specifically approved by the Owner's Engineer, shall be used to insulate the connections.
- 3.3.1.3 Connections to high voltage switches, switchgear, and buswork are to be made using silicon bronze bolts, flatwashers, and Belleville washers and shall be torqued as shown below:

Bolt Size	Torque

wood.

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Bolt Size	Torque
¼ in 20	5 ft-lb
⁵ / ₈ in 18	10 ft-lb
³ / ₈ in 16	15 ft-lb
7/ ₁₆ in 14	30 ft-lb
½ in 13	40 ft-lb
⁵ / ₈ in 11	55 ft-lb

- 3.3.1.4 When spare conductors are called for, the free lengths shall be neatly coiled and tied where they emerge from the conduit or cable termination fittings and tagged "spare." Free lengths shall be long enough to reach any terminal in the enclosure they enter, except that in motor control centers they need not be more than 10 feet in length.
- 3.3.2 Single Conductor Cable Installation. Single conductor wire and cable shall be installed in conduit or other approved raceways. Conductors shall be pulled into raceways with great care to prevent abrasions, kinks or other damage. Lubricants used for conductor pulling shall not be harmful to the conductor insulation and shall be approved by the Owner's Engineer for such use. When drawing conductors into aluminum conduit, heavy pulls shall be made with polypropylene rope or other approved line to avoid cutting into elbows. Sufficient slack shall be provided in all junction boxes or other points of termination to permit splicing and taps for both immediate and future needs. Conductors in vertical raceways shall be supported at distances not exceeding those recommended in the current edition of the National Electrical Code.
- 3.3.2.1 All control power, lighting and convenience outlet circuits shall be color coded throughout their entire lengths. When any outlet or junction box contains more than one conductor with the same phase color coding, each conductor shall be labeled with its circuit number by means of plastic sleeve type markers.
- 3.3.2.2 All control conductors will be numbered on the drawings and shall be labeled at each termination with this number, using plastic sleeve type markers designed for the application. Junction boxes for the interchanging of conductors between conduits are to be avoided and shall not be used unless specifically called for on the drawings. In large junction boxes, such as those above or below motor control centers and large wiring gutters, the conductors from each conduit shall be bound



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together to give a neat appearance and to facilitate any future rework. Power and control wiring shall be run in separate conduits, unless otherwise specifically indicated on the drawings. When conduits terminate in a junction box, wiring gutter or piece of equipment, all conductors and each conduit shall be labeled. Conduits shall be identified by using Thomas and Betts Corporation "Ty-Rap" identification tags, or a product of equal construction specifically approved by the Owner's Engineer. Metal tags and tags with metal rims will not be permitted in any enclosure.

- 3.3.3 *Multiconductor Cable Installation*. Most power and control cables will be installed in cable trays, unless otherwise shown on the drawings. When cables leave trays, they shall be protected between the trays and the cable terminus points by drawing them through conduits, or by installing them in ventilated channels.
- 3.3.3.1 It shall be the contractor's responsibility to accurately measure all cable runs before the cable is cut. The contractor will be held responsible for all losses resulting from his failure to do so. The contractor shall furnish all tools and equipment; use sufficient properly trained personnel; and exercise necessary care to ensure that the cable is not damaged during installation. Any cable damaged because the contractor did not comply with these requirements shall be removed and replaced by the contractor without further expense to the Owner. Cable found to be damaged before installation shall not be installed without written permission from the Owner or Owner's representative.
- 3.3.3.2 Generally, cables shall enter and leave trays, as shown on the detail drawings, to prevent liquids from collecting inside the conduit dropouts. Care shall be exercised with cables entering or leaving cable trays, that all cable bend radii exceed the recommended minimums and that cables are not left to rest unprotected on any sharp edge or corner.
- 3.3.3.3 When spacing is to be maintained between cables in trays, they shall be fastened to the trays with suitable bands or straps at intervals not greater than 7½ feet on horizontal runs and 4½ feet on vertical runs. All cable in trays where spacing is not maintained shall be attached at points 6 inches from the end of the fitting to each elbow or tee and at intervals not exceeding 4½ feet in all tray runs in other than a horizontal plane. Bands or strips, shall be plastic, and of a type not adversely affected by sunlight.
- 3.3.3.4 Cables connecting stationary pieces of electrical equipment shall be rigidly supported over its entire length. Cable connecting to equipment subject to vibration, such as transformers, motors, etc., shall have not less than 18 inches or more than 36 inches of cable left free at each such termination, unless additional length is required because of the minimum bending radius of the cable.
- 3.3.3.5 PVC insulated or jacketed cables shall not be installed or worked in any way at



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temperatures below 14°F.

- 3.3.3.6 Each cable entering an enclosure shall have its conductors bundled together and identified with the cable number using a Thomas and Betts Corporation identification type "Ty-Rap," or a product of equal construction specifically approved by the Owner's Engineer. All groups of conductors within an enclosure shall be shaped and formed to provide a neat appearance and to facilitate future additions or rework. All control conductors shall be numbered and shall be labeled at each termination with this number, using plastic sleeve type markers designed for the. Metal tags and tags with metal rims will not be permitted in any enclosure.
- 3.3.4 Shielded signal cable shall, unless specifically noted otherwise, be installed in cable tray or aluminum conduit. They shall not be spliced at any point and shall be terminated with compression type ring tongue terminals. The shields and drain wires of shielded signal cables shall be grounded only at one point, as indicated on the drawings. At the time of installation, shields shall be checked for accidental grounds.
- 3.3.5 The contractor shall furnish and install a suitable permanent plastic marker on each end of every multiconductor cable or conduit if single conductor wires are installed. This marker shall indicate the cable/conduit number as indicated on the drawings. Identification type "Ty-Rap" as manufactured by Thomas and Betts Corporation, or a product of equal construction specifically approved by the Owner's Engineer shall be used.

3.4. EQUIPMENT SUPPORTS

- 3.4.1 The contractor shall furnish and install all necessary supports for mounting electrical apparatus. Structural shapes, rods, bolts, nuts, etc., used to support electrical equipment shall be galvanized. Field cuts in galvanized material shall be given two zinc rich epoxy primer coats and a finish coat of aluminum paint.
- 3.4.2 The contractor may, with the approval of the Owner's Engineer, use prefabricated structural systems such as Kindorf, Unistrut, or a product of equal construction specifically approved by the Owner's Engineer, for support of equipment.
- 3.4.3 The contractor shall, except where sizes are given on the drawings, be responsible for selecting bolts, shapes and other items to support apparatus and equipment with a minimum safety factor of four. He shall take care that he does not weaken or overload any part of the building or other structures and shall not drill or burn structural members without the prior approval of the Owner's Engineer or Owner or Owner's representative.
- 3.4.4 Fastenings to steel may be welded or by beam clamps or velocity driven studs; to concrete or solid masonry by bolts with expansion shields or inserts; and to hollow tile or block masonry by toggle bolts. Lock washers shall be used under all nuts



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bearing on metal.

- 3.5. NOT USED
- 3.6. GROUNDING
- 3.6.1 Building, tanks, electrical distribution equipment, switchgear, motor controller centers, control panels, bench-boards, large motors, drives, computers, and other structures and equipment shall be grounded as indicated on the drawings. Where ground rods are required, the rods shall be 10 feet long or otherwise as noted on drawings. Rods shall be driven vertically, and the top of the rods shall be a minimum of 30 inches below finished grade.
- 3.6.2 Ladder type cable trays, separately derived systems and all medium-voltage motor frames shall be connected to the grounding electrode system. The frames of all motors, two-wire control devices, disconnect switches, lighting transformers, panelboards, and the enclosures of other electrical apparatus shall be grounded through an equipment grounding conductor run with the power supply or control circuit conductors. Local pushbutton and selector switch stations with nonmetallic enclosures shall be grounded as shown on the installation detail sheets. At expansion joints, adjoining ends of cable trays shall be bonded with jumpers of appropriate size and material, i.e., copper for steel trays and aluminum for aluminum tray.
- 3.6.3 All aluminum power cable trays shall have a continuous 4/0AWG green PVC jacketed copper cable installed and connected to the cable tray system. The green jacket shall be stripped to bond the cable to the cable tray using tin plated cast copper alloy ground clamp (Burndy type GC-CT or equal). 4/0AWG bare copper cable can be used on steel cable trays. If bare cables is used on aluminum cable trays, make sure that the copper conductor is not touching the cable tray.
- 3.6.4 Messengers supporting cables shall be bonded at each end to the cable trays or raceways in which the cable runs are continued.
- 3.6.5 The ground wires in power cable assemblies shall be connected at each terminal point to a ground bus, if available, or to the equipment enclosure. These ground wires shall not be carried through "doughnut" CTs used for ground fault relaying, but ground leads from stress cones shall be. Cable armor shall be grounded at each end.
- 3.6.6 Care shall be taken to avoid grounding the insulated bearing pedestals of large motors.
- 3.6.7 The neutrals of the 2.4, 4.16, and 15 kV systems shall be grounded through resistors as shown on the drawings. The neutrals of the 480 V systems shall be grounded as



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shown on the drawings. The cable between the transformer neutral bushing and the neutral grounding resistor shall be insulated for line-to-line voltage of the system.

- 3.6.8 In making grounding connections, the areas which are to be in contact shall be cleaned of all paint, rust, grease, dirt, etc., to ensure good conductivity.
- 3.6.9 All exothermic process welded connections and uninsulated segments of ground conductors below grade shall be painted with a bitumastic compound to prevent corrosion.
- 3.6.10 Where a grounding conductor is installed in a ferrous conduit, both ends of the conduit shall be bonded to the grounding conductor.
- 3.6.11 Where the wiring for lighting systems consists of single conductor cables in conduit, each conduit shall contain an equipment grounding conductor. The grounding conductor shall have GREEN colored insulation and shall be used to ground equipment in the lighting system. Where the wiring for lighting systems consists of multiconductor cables, the equipment grounding conductor(s) in the cables shall be used to ground equipment in the lighting system.
- 3.7. LIGHTING
- 3.7.1 The contractor shall furnish and install a complete lighting system including fixtures and supports and all wiring.
- 3.7.2 Fixtures shall be installed as near as possible to the locations shown on the drawings. The contractor shall study the work of all trades and select fixture locations that avoid interference with other work and that result in symmetrical layouts.
- 3.7.3 The contractor shall furnish and install all lamps. At the conclusion of the work, regardless of what lamps have been used during its course, he shall leave each fixture properly lamped.
- 3.8. NOT USED

3.9. LIGHTNING PROTECTION INSTALLATION

Lightning protection installations shall be made in accordance with Underwriters' Laboratories, Inc. "Installation Requirements" and NFPA 780.

3.10. COMMUNICATIONS SYSTEM

3.10.1 Page/Party Voice Communication System

Page/party voice communication system will be furnished and supplied based on a


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Gai-tronics system devices that will provide public address, paging, and general alarm capabilities.

3.10.2 Fire Detection and Alarm System

Fire detection and alarm systems shall be furnished and installed based on the following:

- Office Areas Manual fire and smoke detection with audio/visual alarm.
- Control Rooms Manual fire and smoke detection with audio/visual alarm.
- Electric Rooms Manual fire and smoke detection with audio/visual alarm.
- General Building Manual fire detection with audio/visual alarm.
- Bathroom/Locker Rooms Smoke detection with audio/visual alarm.

The communication and fire detection cable between these units shall be run in rigid aluminum conduit.

3.11. VOLTAGE ADJUSTMENT

Unless otherwise noted, the tap position on all transformers shall be selected and set so that under full load conditions the output voltage is as near as possible to the nameplate rating of supplied equipment.

4. INSPECTION, TESTING AND START-UP

The intent of the inspection, testing, and checkout work specified herein, or required, is to ensure that all electrical workmanship and equipment, whether Owner furnished or Contractor furnished, is installed and performs in accordance with the design specifications, drawings, manufacturer's instructions and all applicable codes and requirements. Also, it is intended to provide, ensure, or determine the following:

- If the equipment or installation has been subjected to damage during shipment or installation,
- If the equipment is in accordance with the Purchase Orders and specifications,
- Provide initial acceptance tests and recorded data that can be used as a bench mark for future routine maintenance and trouble shooting by plant's operating forces,
- Ensure a successful start-up with a minimum of last minute interruptions and problems,
- Determine the suitability of the equipment and systems for energization and placing into operating service,



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- Provide assurance that each system component is not only installed satisfactorily but performs, and will continue to perform, its function in the system with reasonable reliability throughout the life of the plant,
- Contractor Responsibility. The Contractor shall provide all necessary supervision and labor, materials, tools, test instruments or other equipment or services and expenses required to inspect, test, adjust, set, calibrate, functionally and operationally check all work and components of the various electrical systems and circuitry throughout the installation. Also, the Contractor shall include the furnishing of sufficient personnel to assist operating forces in any additional checks they may require for acceptance, start-up, run-in and placing the equipment and systems into continuous service,
- Listings and Descriptions of Work. The listings and descriptions of the inspections, tests and checks described herein shall not be considered as complete and all inclusive. Additional normal standard construction (and sometimes repetitive) checks and tests will be necessary throughout the job, prior to final acceptance by the Owner.

4.1. INSPECTION AND OTHER TESTS

- 4.1.1 Equipment purchased by the Contractor or purchased by the Owner for Contractor installation shall be inspected and tested to determine its condition. At any stage of construction and when observed, any electrical equipment or system determined to be damaged, faulty, or requiring repairs shall be reported to the Owner's representative. Corrective action may require prior approval.
- 4.1.2 Upon completion of the various phases of the project, or at convenient times during the progress of the work, wiring and equipment installed by the contractor shall be checked and tested as hereinafter specified. All tests shall be recorded and submitted to the Owner or Owner's representative for review.
- 4.1.3 Inspection and test shall be performed to the satisfaction of the Owner or Owner's representative. The Owner or Owner's representative will coordinate the program, and may request additional tests if he deems necessary.
- 4.1.4 Under no circumstances shall any part of the installation be operated by construction personnel without prior approval of the Owner or Owner's representative. This restriction includes the checking of electrical motors for proper rotation.



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- 4.1.5 All equipment and instruments required to conduct the tests shall be provided by the contractor. This test equipment shall have calibrations traceable to the National Bureau of Standards. Contractor dated calibration labels shall be visible on all test equipment. Calibrations over 6 months old shall not be acceptable on field test instruments. All testing instruments shall be checked to insure satisfactory operation prior to proceeding with the tests. Serial and model numbers of the instruments used shall be recorded on the test forms.
- 4.1.6 All testing and checkout work shall be performed with fully qualified personnel skilled in the particular tests being conducted. This is essential for obtaining and properly evaluating data while the tests are in progress and for insuring that important facts and questionable data are reported.
- 4.1.7 The Contractor shall ensure that all testing and checkout work is conducted in a safe manner. Special safety precautions such as the following shall be utilized where appropriate: (1) locking and tagging procedures; (2) barricades; (3) de-energization and/or isolation of equipment prior to testing; (4) review of procedures with the Owner's safety personnel; (5) erection of warning signs; 6) stationing of guards and watchmen; (7) maintenance of voice communications; and (8) personnel orientation.
- 4.1.8 Upon receipt of written notice from the contractor that the work has been completed, including all tests as herein specified, the Owner or Owner's representative will give the entire work a thorough inspection. Any defects or omissions noted shall be corrected before acceptance of the work.
- 4.1.9 The checks and tests to be made shall include, but not be limited to, the following:
 - Check continuity of all conductors and shields on shielded cables. Check for shield grounds,
 - Visually check all wire and cable connections, including terminal wiring of switchgear, transformers and motor control centers,
 - Make continuity checks of all power and control cables, including each conductor of multiconductor power and control cables,
 - Check polarity of all bushing current transformers and instrument type current and potential transformers,
 - Check current transformer ratios and continuity of the secondary circuits by passing current through the primary windings and taking readings of the primary current and of the current flowing through meter, relay and instrument coils in the secondary circuit,
 - Check all ac and dc control circuits for short-circuits and extraneous grounds,



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- Check all equipment for proper mechanical adjustment and freedom of operation, and remove all shipping blocks.
- Visually check all insulators for cracks or checking,
- Check adjustment and characteristics of all control and protective relays in accordance with manufacturer's instructions. Set and calibrate all relays or circuit protective devices in accordance with the system coordination requirements, and where applicable load test by approved means to assure proper calibration,
- Operate all electrically operated breakers, motor starters, contactors, etc., from their control devices.
- Check all closing, tripping, supervision and alarm functions of the control equipment.
- Trip each circuit breaker by operation of its associated protective relays.
- Check operation of all alarm circuits,
- Check voltage level on the buses and adjust no-load taps on all transformers in accordance with the directions of the Owner's Engineer,
- Check drive motors for proper rotation during pre-shutdown checkout in the drive aisle.
- 4.1.10 The Owner or Owner's representative shall be notified at least 48 hours before tests are performed, and he shall have the right to witness all tests.
- 4.1.11 The contractor shall furnish assistance, as required, to equipment vendor's representatives in the testing and adjustment of equipment furnished by their companies.

4.2. INSULATION TESTS

- 4.2.1 The contractor shall furnish the necessary test equipment and labor to test the insulation of electrical equipment and circuits before they are energized. A 500 volt "Megger", or other approved instrument, shall be used to test the insulation resistance of circuits insulated for 600 volts, 460 volt motors and transformers, low-voltage motor control centers and low-voltage switchgear. A 2500 volt "Megger", or other approved instrument, shall be used on medium-voltage motor controllers, high-voltage switchgear and transformers and 4160 volt motors. A high-voltage dc test set shall be used on 5 and 15 kV cable.
- 4.2.2 The insulation resistance of lighting and receptacle circuits and of control circuits need not be "Megged" but the circuits must be shown to be free of short-circuits and



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unintentional grounds. The insulation to ground of each low-voltage feeder conductor shall be tested and must be at least 1 megohm. The phase-to-phase and phase-to-ground resistance of low-voltage switchgear and motor control centers must be at least 1 megohm before they may be energized.

4.2.3 The insulation resistance, in megohms, of motors shall be at least as great as the values given in the following table before they may be energized. The insulation resistance of the 480 volt and 2400 volt windings of dry type transformers must be at least equal to the values required for 460 volt and 2300 volt motors respectively.



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4.2.4

Insulation Resistance in Megohms							
Winding		Motor Terminal Voltage					
Temperature	230	230 460 500 575 230 400					
0°C	18.9	22.5	23.1	24.2	50.8	76.9	
5°C	13.7	16.2	16.7	17.5	36.7	55.6	
10°C	10.7	12.7	13.0	13.7	28.7	43.5	
15°C	6.8	8.1	8.3	8.8	18.3	27.8	
20°C	4.7	5.6	5.8	6.1	12.7	19.2	
25°C	3.3	3.9	4.1	4.3	8.9	13.5	
30°C	2.4	2.9	2.9	3.1	6.5	9.8	
35°C	1.7	2.0	2.1	2.2	4.6	6.9	
40°C	1.23	1.46	1.5	1.58	3.3	5.0	

- 4.2.5 Low-voltage feeder insulation resistance may be tested with the connections to low-voltage switchgear and/or motor control centers made, in which case the resistance to ground and the resistance phase-to-phase must be at least 1 megohm. The resistance to ground of low-voltage motor branch circuits may be tested at the motor control centers with the motors connected, in which case the combined resistance to ground must be at least as high as the higher of the requirements for the separate parts.
- 4.2.6 Control power transformers, potential transformers and other devices connected phase-to-phase or phase-to-ground and any devices not designed to withstand the test voltages must be disconnected when testing insulation resistance in switchgear, motor control centers and other apparatus.
- 4.2.7 The insulation tests on cables rated 5 kV and higher shall be made after all splices and terminations are complete, but with equipment disconnected. The test equipment shall be the products of reputable manufacturers and shall be in good condition and calibration. The operator shall be trained and qualified in high-voltage dc cable testing and all reasonable precautions shall be taken to prevent injury to persons or property. Test voltages and procedures shall be as specified by the ICEA. All failures of high-voltage cables to meet test requirements shall be reported to the Owner or Owner's representative at once.
- 4.2.8 Test voltage shall be applied uniformly, not to exceed 1 kV per second or 75% of the rated current output of the test set (whichever is less). Record the micro-ampere leakage at equal steps of 5 kV. Allow 30 seconds stabilization time between steps



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and leakage current measurements. When the maximum test voltage is reached, record the micro-ampere leakage current at 0, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, 1 minute and each minute thereafter up to at least 3 minutes. This data shall be plotted while tests are in progress and testing may proceed if the curve remains relatively flat. If, as the test voltage is increased, the current starts to rise at a more rapid rate and a "knee" begins to be evident at the curve, the testing shall be stopped and the Owner shall be informed and decide the next course of action to be followed.

- 4.2.9 Maximum test voltages are as follows:
 - 65 kV for 15 kV cable (133% insulation, No. 2 AWG and larger)
 - 25 kV for 5 kV cable (No. 8 AWG and larger)
- 4.2.10 Test duration for shielded cables shall be 15 minutes maximum. Test duration for non-shielded cables shall be 5 minutes. The test voltage should be applied from phase to ground on each conductor with the other conductors, shields, and metallic jackets connected to ground.
- 4.2.11 A written record of all insulation tests shall be kept by the contractor on forms approved for the purpose and turned over to the Owner's Engineer upon request, or at the termination of the work. These forms shall show the number or other suitable identification of each circuit or piece of apparatus tested, the date of the test, the temperature at the time the test was made, the instrument used, the test voltage applied, the resistance values found and the name of the person in charge of and witnessing the test.

4.3. GROUNDING

- 4.3.1 Visual inspection of all systems, raceway and equipment grounds shall be made to determine the adequacy and integrity of the grounding.
- 4.3.2 All ground testing results shall be properly recorded, witnessed, and reported to the Owner's Representative.
- 4.3.3 All main plant building loops and major equipment grounds shall be tested to remote earth or directly. System ground resistance for generating stations, switchyards and large substations shall not exceed one (1) ohm. System ground resistance for industrial plants, substations and buildings shall be in the range of two (2) to five (5) ohms and shall not exceed five (5) ohms.
- 4.4. START-UP
- 4.4.1 Prior to checkout by the Owner or Owner's representative, the contractor shall check all his work and correct any faults discovered. The contractor shall have competent personnel available at all times to assist and to correct any faults found during the



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Owner's checkout and start-up periods.

4.4.2 Wire used for temporary jumpers and test connections during checkout shall have insulation of a color obviously different from all other wire. All temporary jumpers shall be removed after the checkout is completed.

4.5. CONDUIT INSTALLATION QA/QC

All Conduits installed in ductbanks shall be quality checked for installation defects by the contractor who installed it. The Contractor shall have approval of the QA/QC procedure by the Owner and Owner's Engineer before starting installation. The records of the installation checks shall be turned over to Owner within a day of testing.

END OF DOCUMENT



In the Matter of:

ELECTRONIC APPLICATION OF) **BIG RIVERS ELECTRIC CORPORATION**) FOR APPROVAL OF ITS 2020 ENVIRONMENTAL) **COMPLIANCE PLAN, AUTHORITY TO RECOVER COSTS** Case No. THROUGH A REVISED ENVIRONMENTAL SURCHARGE) 2019-00435 AND TARIFF, THE ISSUANCE OF A CERTIFICATE OF) PUBLIC CONVENIENCE AND NECESSITY FOR CERTAIN) **PROJECTS, AND APPROPRIATE ACCOUNTING**) AND OTHER RELIEF)

> Project 12 Wilson Station FGD Replacement and Upgrade

Appendix D – Reference Documentation Document Index

Filed pursuant to Ordering Paragraph No. 18 of Commission's August 6, 2020 Order FILED: June 18, 2021



In the Matter of:

ELECTRONIC APPLICATION OF) **BIG RIVERS ELECTRIC CORPORATION**) FOR APPROVAL OF ITS 2020 ENVIRONMENTAL) **COMPLIANCE PLAN, AUTHORITY TO RECOVER COSTS** Case No. THROUGH A REVISED ENVIRONMENTAL SURCHARGE 2019-00435 AND TARIFF, THE ISSUANCE OF A CERTIFICATE OF) PUBLIC CONVENIENCE AND NECESSITY FOR CERTAIN) PROJECTS, AND APPROPRIATE ACCOUNTING) AND OTHER RELIEF)

> Project 12 Wilson Station FGD Replacement and Upgrade

Appendix D – Reference Documentation Document Index

Filed pursuant to Ordering Paragraph No. 18 of Commission's August 6, 2020 Order FILED: June 18, 2021

Document Number

Document Title

143993-ASA-DD1-CAL-1450

Stormwater Pollution Prevention Plan (SWPP) – <u>Excluding</u> Appendix A – Site Maps Document No.: 143993-ASA-DD1-CAL-1450 Revision: 0 Issued for Permit Date: 05/21/2021

Stormwater Pollution Prevention Plan (SWPPP)

For Construction Activities At:

Big Rivers Electric Corporation D.B. Wilson Station 5663 KY-85 Centertown, KY 42328 (270) 844-5000

SWPPP Prepared For:

Big Rivers Electric Corporation Ronald Gregory 5663 KY-85 Centertown, KY 42328 (270) 844-6192

SWPPP Prepared By:

Wood. (Doing Business as Wood Group USA, Inc.) Brent Hanley, PE 30 Patewood Dr., Suite 200 Greenville, SC 291615 (864) 458-3600

SWPPP Preparation Date:

05/21/2021

Estimated Project Dates:

Project Start Date: __/ __/ ___/ Project Completion Date: __/ __/ __/

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SECTION 1: CONTACT INFORMATION/RESPONSIBLE PARTIES

1.1 Operator(s) / Subcontractor(s)

Operator(s):

F

Company: Big Rivers Electric Corporation Name: Ronald Gregory Address: 5663 KY-85 City, State, Zip Code: Centertown, KY 42328 Telephone Number: (270) 844-6192

Area of Control: Site wide

Subcontractor(s):

Company:
Name:
Address:
City, State, Zip Code:
Telephone Number:
Fax/Email:
Area of Control:

Subcontractor(s):

Company:
Name:
Address:
City, State, Zip Code:
Telephone Number:
Fax/Email:
Area of Control:

Subcontractor(s):

Company:
Name:
Address:
City, State, Zip Code:
Telephone Number:
Fax/Email:
Area of Control:

Subcontractor(s):

Company: Name: Address: City, State, Zip Code: Telephone Number: Fax/Email: Area of Control:

Subcontractor(s):

Company:
Name:
Address:
City, State, Zip Code:
Telephone Number:
Fax/Email:
Area of Control:

Subcontractor(s):

Company:
Name:
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Telephone Number:
Fax/Email:
Area of Control:

Subcontractor(s):

Company:
Name:
Address:
City, State, Zip Code:
Telephone Number:
Fax/Email:
Area of Control:

Subcontractor(s):

Company: Name: Address: City, State, Zip Code: Telephone Number: Fax/Email: Area of Control:

Emergency 24-Hour Contact:

Big Rivers Electric Company Ronald Gregory (270) 844-6192

1.2 Stormwater Team

Stormwater Team			
Name and/or position, and contact	Responsibilities	I Have Read the Construction General Permit (CGP) and Understand the Applicable Requirements	
Brent Hanley	SWPPP Preparer	🛛 Yes	
Civil Engineer		Date: 21May2021	
(864) 458-3600			
Ronald Gregory	24 Hour Contact and		
Project Manager	Inspector	Date:	
(270) 844-6192			

SECTION 2: SITE EVALUATION, ASSESSMENT, AND PLANNING

2.1 Project/Site Information

Project Name and Address

Project/Site Name: D.B. Wilson Station Project Street/Location: 5663 KY-85 City: Centertown State: Kentucky ZIP Code: 42328 County or Similar Subdivision: Ohio

Project Latitude/Longitude

(Use one of three possible formats, and specify method)		
Latitude:	Longitude:	
37 ° 26 ' 58" N	87 ° 4 ' 51" W	

Latitude/longitude data source: Google Earth

Horizontal Reference Datum:

If you used a U.S.G.S topographic map, what was the scale? <u>Site specific survey</u> performed: FGD Project at Big Rivers Electric Surveying and Subsurface Utility Engineering" by Civil & Environmental Consultants, Inc dated December 2020.

Additional Project Information

Is the project/site located on Indian country lands, or located on a property of religious or cultural significance to an Indian tribe? \Box Yes \boxtimes No

Are you applying for permit coverage as a "federal operator" as defined in Appendix A of the 2012 CGP? \Box Yes \boxtimes No

2.2 Discharge Information

Does your project/site discharge stormwater into a Municipal Separate Storm Sewer System (MS4)?
Yes Xo

Are there any surface waters that are located within 50 feet of your construction disturbances?

🗌 Yes 🛛 🖾 No

Table 1 – Names of Receiving Waters

Name(s) of the first surface water that receives stormwater directly from your site and/or from the MS4 (note: multiple rows provided where your site has more than one point of discharge that flows to different surface waters)

1. Elk Creek

2. Green River

Table 2 – Impaired Waters / TMDLs (Answer the following for each surface water listed in Table 1 above)

		If you answered yes, then answer the following:			
	Is this surface water listed as "impaired"?	What pollutant(s) are causing the impairment?	Has a TMDL been completed?	Title of the TMDL document	Pollutant(s) for which there is a TMDL
1. Elk Creek	🗌 yes 🛛 no		🗌 yes 🖾 no		
2. Green River	🗌 yes 🖾 no		YES NO		

Describe the method you used to determine whether or not your project/site discharges to an impaired water: Kentucky 303(d) list 2016 IR

Table 3 – Tier 2, 2.5, or 3 Waters	(Answer the following for each surface water listed in Table 1 abo	ove)
------------------------------------	--	------

	Is this surface water designated as a Tier 2, Tier 2.5, or Tier 3 water? (see Appendix F of the CGP)	If you answered yes, specify which Tier (2, 2.5, or 3) the surface water is designated as?
1. Elk Creek	🗌 yes 🖾 no	N/A
2. Green River	🗌 yes 🛛 no	N/A
3.	YES NO	
4.	YES NO	
5.	YES NO	
6.	🗌 yes 🔲 no	

2.3 Nature of the Construction Activity

General Description of Project

Provide a general description of the construction project:

• The Absorber Project consists of a relocated absorber and proposed inlet/outlet ducts, blower building, electrical building, transformers, sump, and miscellaneous tanks.

Size of Construction Site

Size of Property (acres)	1,763
Total Area Expected to be Disturbed by Construction Activities (acres)	+/- 10.0
Maximum Area Expected to be Disturbed at Any One Time (acres)	2.0

Construction Support Activities (only provide if applicable)

Describe any construction support activities for the project (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas)

Equipment staging areas, material storage areas, stockpile areas will be located adjacent to the project site along the west edge.

Ronald Gregory Project Manager (270) 844-6192

2.4 Sequence and Estimated Dates of Construction Activities

Clearing and Grubbing and Demolition	
Estimated Start Date of Construction Activities for this Phase	8/10/2021
Estimated End Date of Construction Activities for this Phase	8/21/2021
Estimated Date(s) of Application of Stabilization Measures	8/10/2021
for Areas of the Site Required to be Stabilized	
Estimated Date(s) when Stormwater Controls will be	2/1/2022
Removed	

Grading and Site Preparation	
Estimated Start Date of Construction Activities for this Phase	8/24/2021
Estimated End Date of Construction Activities for this Phase	9/25/2021
Estimated Date(s) of Application of Stabilization Measures	8/10/2021
for Areas of the Site Required to be Stabilized	
Estimated Date(s) when Stormwater Controls will be	2/1/2022
Removed	

Fine Grading and Asphalt Paving

Estimated Start Date of Construction Activities for this Phase 9/28/2021

Estimated End Date of Construction Activities for this Phase	10/19/2021
Estimated Date(s) of Application of Stabilization Measures	8/10/2021
for Areas of the Site Required to be Stabilized	
Estimated Date(s) when Stormwater Controls will be	2/1/2022
Removed	

Building Construction	
Estimated Start Date of Construction Activities for this Phase	9/28/2021
Estimated End Date of Construction Activities for this Phase	2/1/2022
Estimated Date(s) of Application of Stabilization Measures	8/10/2021
for Areas of the Site Required to be Stabilized	
Estimated Date(s) when Stormwater Controls will be	2/1/2022
Removed	

2.5 Allowable Non-Stormwater Discharges

List of Allowable Non-Stormwater Discharges Present at the Site

Type of Authorized Non-Stormwater Discharge	Likely to be Present at Your Site?
Discharges from emergency fire-fighting activities	🛛 Yes 🗆 No
Fire hydrant flushings	🛛 Yes 🗆 No
Landscape irrigation	🗆 Yes 🛛 No
Waters used to wash vehicles and equipment	🗆 Yes 🛛 No
Water used to control dust	🛛 Yes 🗆 No
Potable water including uncontaminated water line flushings	🛛 Yes 🗆 No
External building washdown (soaps/solvents are not used and external surfaces do not contain hazardous substances)	🗆 Yes 🖾 No
Pavement wash waters	🗆 Yes 🛛 No
Uncontaminated air conditioning or compressor condensate	🛛 Yes 🗌 No
Uncontaminated, non-turbid discharges of ground water or spring water	🗆 Yes 🛛 No
Foundation or footing drains	🗆 Yes 🛛 No
Construction dewatering water	Xes I No

2.6 Site Maps

See SWPPP Appendix A.

SECTION 3: DOCUMENTATION OF COMPLIANCE WITH OTHER FEDERAL REQUIREMENTS

3.1 Endangered Species Protection

Eligibility Criterion

Under which	criterion li	isted in Appendix D of the	CGP are you elig	gible for coverage	e under this permit?
\bowtie A	🗌 B	□c	🗌 D	🗌 E	

For reference purposes, the eligibility criteria listed in Appendix D are as follows:

- **Criterion A.** No federally-listed threatened or endangered species or their designated critical habitat(s) are likely to occur in your site's "action area" as defined in Appendix A of this permit.
- **Criterion B.** The construction site's discharges and discharge-related activities were already addressed in another operator's valid certification of eligibility for your action area under eligibility Criterion A, C, D, E, or F and there is no reason to believe that federally-listed species or federally-designated critical habitat not considered in the prior certification may be present or located in the "action area". To certify your eligibility under this Criterion, there must be no lapse of NPDES permit coverage in the other operator's certification. By certifying eligibility under this Criterion, you agree to comply with any effluent limitations or conditions upon which the other operator's certification was based. You must include in your NOI the tracking number from the other operator's certification under this permit. If your certification is based on another operator's certification under Criterion C, you must provide EPA with the relevant supporting information required of existing dischargers in Criterion C in your NOI form.
- **Criterion C.** Federally-listed threatened or endangered species or their designated critical habitat(s) are likely to occur in or near your site's "action area," and your site's discharges and discharge-related activities are not likely to adversely affect listed threatened or endangered species or critical habitat. This determination may include consideration of any stormwater controls and/or management practices you will adopt to ensure that your discharges and discharge-related activities are not likely to adversely affect listed species and critical habitat. To make this certification, you must include the following in your NOI: 1) any federally listed species and/or designated habitat located in your "action area"; and 2) the distance between your site and the listed species or designated critical habitat (in miles). You must also include a copy of your site map with your NOI.
- **Criterion D.** Coordination between you and the Services has been concluded. The coordination must have addressed the effects of your site's discharges and discharge-related activities on federally-listed threatened or endangered species and federally-designated critical habitat, and must have resulted in a written concurrence from the relevant Service(s) that your site's discharges and discharge-related activities are not likely to adversely affect listed species or critical habitat. You must include copies of the correspondence between yourself and the Services in your SWPPP and your NOI.
- **Criterion E.** Consultation between a Federal Agency and the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service under section 7 of the ESA has been concluded. The consultation must have addressed the effects of the construction site's discharges and discharge-related activities on federally-listed threatened or endangered species and federally-designated critical habitat. The result of this consultation must be either:

- a biological opinion that concludes that the action in question (taking into account the effects of your site's discharges and discharge-related activities) is not likely to jeopardize the continued existence of listed species, nor the destruction or adverse modification of critical habitat; or
- ii. written concurrence from the applicable Service(s) with a finding that the site's discharges and discharge-related activities are not likely to adversely affect federally-listed species or federally-designated habitat.

You must include copies of the correspondence between yourself and the Services in your SWPPP and your NOI.

Criterion F. Your construction activities are authorized through the issuance of a permit under section 10 of the ESA, and this authorization addresses the effects of the site's discharges and discharge-related activities on federally-listed species and federally-designated critical habitat. You must include copies of the correspondence between yourself and the Services in your SWPPP and your NOI.

Supporting Documentation

Provide documentation for the applicable eligibility criterion you select in Appendix D of the CGP, as follows:

For criterion A, indicate the basis for your determination that no federally-listed threatened or endangered species or their designated critical habitat(s) are likely to occur in your site's action area (as defined in Appendix A of the CGP). Check the applicable source of information you relied upon:

Specific communication with staff of the U.S. Fish & Wildlife Service or National Marine Fisheries Service.

Publicly available species list.

 \boxtimes Other source:

USFWS Threatened & Endangered Species Active Critical Habitat Report

https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8db fb77

For criterion B, provide the Tracking Number from the other operator's notification of permit authorization:

Provide a brief summary of the basis used by the other operator for selecting criterion A, B, C, D, E, or F:

For criterion C, provide the following information:

Also, provide a brief summary of the basis used for determining that your site's discharges and discharge-related activities are not likely to adversely affect listed species or critical habitat:

For criterion D, E, or F, attach copies of any letters or other communication between you and the U.S. Fish & Wildlife Service or National Marine Fisheries Service concluding consultation or coordination activities.

3.2 Historic Preservation

Appendix E, Step 1

Do you plan on installing any of the following stormwater controls at your site? Check all that apply below, and proceed to Appendix E, Step 2.

🗌 Berm

Catch Basin

Pond

Stormwater Conveyance Channel (e.g., ditch, trench, perimeter drain, swale, etc.)

Culvert

Other type of ground-disturbing stormwater control:

Appendix E, Step 2

If you answered yes in Step 1, have prior surveys or evaluations conducted on the site already determined that historic properties do not exist, or that prior disturbances at the site have precluded the existence of historic properties? \boxtimes YES \square NO

- If yes, no further documentation is required for Section 3.2 of the Template.
- If no, proceed to Appendix E, Step 3.

Appendix E, Step 3

If you answered no in Step 2, have you determined that your installation of subsurface earthdisturbing stormwater controls will have no effect on historic properties? \square YES \square NO

If yes, provide documentation of the basis for your determination.

If no, proceed to Appendix E, Step 4.

Appendix E, Step 4

If you answered no in Step 3, did the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Office (THPO), or other tribal representative (whichever applies) respond to you within 15 calendar days to indicate whether the subsurface earth disturbances caused by the installation of stormwater controls affect historic properties?

If no, no further documentation is required for Section 3.2 of the Template.

If yes, describe the nature of their response:

- Written indication that adverse effects to historic properties from the installation of stormwater controls can be mitigated by agreed upon actions.
- No agreement has been reached regarding measures to mitigate effects to historic properties from the installation of stormwater controls.

Other:

3.3 Safe Drinking Water Act Underground Injection Control Requirements

Do you plan to install any of the following controls? Check all that apply below.

- Infiltration trenches (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)
- Commercially manufactured pre-cast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate stormwater flow
- Drywells, seepage pits, or improved sinkholes (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)

If yes,

N/A

SECTION 4: EROSION AND SEDIMENT CONTROLS

4.1 Natural Buffers or Equivalent Sediment Controls

Buffer Compliance Alternatives

Are there any surface waters within 50 feet of your project's earth disturbances? 🗌 YES 🛛 NO

Check the compliance alternative that you have chosen:

I will provide and maintain a 50-foot undisturbed natural buffer.
□ I will provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by additional erosion and sediment controls, which in combination achieves the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.
☐ It is infeasible to provide and maintain an undisturbed natural buffer of any size, therefore I will implement erosion and sediment controls that achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.
I qualify for one of the exceptions in Part 2.1.2.1.e. (If you have checked this box, provide information on the applicable buffer exception that applies, below.) Buffer Exceptions
Which of the following exceptions to the buffer requirements applies to your site?
There is no discharge of stormwater to the surface water that is located 50 feet from my construction disturbances.
No natural buffer exists due to preexisting development disturbances that occurred prior to the initiation of planning for this project.
For a "linear project" (defined in Appendix A), site constraints (e.g., limited right-of-way) make it infeasible for me to meet any of the CGP Part 2.1.2.1.a compliance alternatives.
The project qualifies as "small residential lot" construction (defined in Part 2.1.2.1.e.iv and in
Appendix A). For Alternative 1 (see Appendix G, Part G.2.3.2.a):
For Alternative 2 (see Appendix G, Part G.2.3.2.b):
Buffer disturbances are authorized under a CWA Section 404 permit.
Buffer disturbances will occur for the construction of a water-dependent structure or water acces

area (e.g., pier, boat ramp, and trail).

4.2 Perimeter Controls

General

 Perimeter control structures shall be functional throughout the course of earth disturbing activity. Perimeter controls shall be implemented prior to grading and within seven days from the start of grubbing. They shall continue to function until the upslope development area is stabilized with permanent cover. As construction progresses, perimeter controls shall be maintained throughout the duration by removing sediment before it has accumulated to one-half of the above ground height.

Specific Perimeter Controls

SILT FENCE	
Description: Silt and sometimes transport sedim sheet flow.	fence is a sediment-trapping practice utilizing a geotextile fence, topography vegetation to cause sediment deposition. Silt fence reduces runoff's ability to ent by ponding runoff and dissipating small rills of concentrated flow into uniform
Installation	DATE OF INSTALLATION:
	Silt Fence shall be installed before any land disturbance activities.
Maintenance Requirements	Silt Fence requires regular inspection and maintenance to ensure its effectiveness. Silt fences must be inspected after each rainfall and at least daily during prolonged rainfall. Silt fence found damaged or improperly installed shall be replaced or repaired immediately. Sediment deposits shall be routinely removed when they reach approximately
	one-halt the height of the silt tence.
Design	See Construction Drawings and Details
Specifications	

4.3 Sediment Track-Out

General

• Sediment track-out control structures shall be functional throughout the course of earth disturbing activity. Sediment track-out controls shall be implemented prior to grading and within seven days from the start of grubbing. They shall continue to function until the development area is stabilized with permanent cover. Where sediment has been tracked-out from the site onto paved roads, sidewalks, or other paved areas outside of the site, the deposited sediment shall be removed by the end of the same business day in which the track-out occurs or by the end of the next business day if track-out occurs on a non-business day. The track-out shall be removed by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. It shall be prohibited from hosing or sweeping tracked-out sediment into any stormwater conveyance, storm drain inlet, or water of the U.S.

Specific Track-Out Controls

STABILIZED CONS	TRUCTION ENTRANCE
Description: A sto	abilized construction entrance is a stabilized pad of stone underlain with a
geotextile and is	used to reduce the amount of mud tracked off-site with construction traffic.
Located at poin	ts of ingress/egress, the practice is used to reduce the amount of mud tracked
off-site with cons	truction traffic.
Installation	

	Stabilized Construction Entrance shall be installed before any major
	earthmoving activities begin.
Maintenance	The entrance shall be maintained in a condition that will prevent tracking or
Requirements	flow of mud onto public rights-of-way. This may require periodic top dressing
	with additional stone or the washing and reworking of existing stone as
	conditions demand and repair and/or cleanout of any structures used to trap
	sediment. Where sediment has been tracked-out from your site onto paved
	roads, sidewalks, or other paved areas outside of your site, remove the
	deposited sediment by the end of the same business day in which the track-out
	occurs or by the end of the next business day if track-out occurs on a non-
	business day. Remove the track-out by sweeping, shoveling, or vacuuming
	these surfaces, or by using other similarly effective means of sediment removal.
	It is prohibited from hosing or sweeping tracked-out sediment into any
	stormwater conveyance, storm drain inlet, or water of the U.S.
Design	See Construction Drawings and Details
Specifications	

4.4 Stockpiled Sediment or Soil

General

Stockpile perimeter controls shall be implemented around all stockpiled sediment and soil.
 Stockpiles shall be located outside of any natural buffers and away from any stormwater conveyances, drain inlets, and areas where stormwater flow is concentrated. For piles that will be unused for 14 or more days, stockpiles shall be temporarily seeded. It is prohibited from hosing down or sweeping soil or sediment accumulated on pavement or other impervious surfaces into any stormwater conveyance, storm drain inlet, or water of the U.S.")

Specific Stockpile Controls

TEMPORARY SEE	DING	
Description: Ter	nporary seedings establish temporary cover on disturbed areas by planting	
appropriate rap	bidly growing annual grasses or small grains. Temporary seeding provides erosion	
control on area	s in between construction operations. Grasses, which are quick growing, are	
seeded and usually mulched to provide prompt, temporary soil stabilization. It effectively		
minimizes the a	rea of a construction site prone to erosion and should be used everywhere	
the sequence of	of construction operations allows vegetation to be established.	
Installation	DATE OF INSTALLATION:	
	Temporary Seeding shall be installed if pile will be unused for 14 or more days.	
Maintenance	Areas failing to establish vegetative cover adequate to prevent erosion shall	
Requirements	be reseeded as soon as such areas are identified.	
-	Seeding performed during hot and dry summer months shall be watered at a	
	rate of 1 inch per week.	
Design	See Construction Drawings and Details	
Specifications		

SILT FENCE

Description: Silt fence is a sediment-trapping practice utilizing a geotextile fence, topography and sometimes vegetation to cause sediment deposition. Silt fence reduces runoff's ability to

transport sedim sheet flow.	ent by ponding runoff and dissipating small rills of concentrated flow into uniform
Installation	DATE OF INSTALLATION: Silt Fence shall be installed around the entire perimeter of each stockpile
	immediately after it is placed.
Maintenance	Silt Fence requires regular inspection and maintenance to ensure its
Requirements	effectiveness. Silt fences must be inspected after each rainfall and at least daily during prolonged rainfall. Silt fence found damaged or improperly installed shall be replaced or repaired immediately. Sediment deposits shall be routinely removed when they reach approximately one-half the height of the silt fence.
Design	See Construction Drawings and Details
Specifications	Ŭ

4.5 Minimize Dust

General

 On areas of exposed soil, dust shall be minimized through appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged in stormwater from the site.

Specific Dust Controls

DUST CONTROLS	S
Description: Due during land dist borne substance plant life.	st control involves preventing or reducing dust from exposed soils or other sources urbing, demolition and construction activities to reduce the presence of air- es which may present health hazards, traffic safety problems or harm animal or
Installation	DATE OF INSTALLATION:
	As needed to minimize dust
Maintenance	Most dust control measures, such as applications of water will require
Requirements	monitoring and repeat applications as needed to accomplish good control.
Design	See Construction Drawings and Details
Specifications	

4.6 Minimize the Disturbance of Steep Slopes

General

• Steep Slope Controls consists of surface roughening and rolled erosion control product. Using these controls will minimize the disturbance of steep slopes.

Specific Steep Slope Controls

SURFACE ROUGHTENING

Description: Grade Treatment or surface roughening creates horizontal depressions in the soil surface that help to reduce erosion by reducing runoff velocity and increasing infiltration. These depressions aid in the establishment of vegetative cover and provide localized trapping of sediments. Grade Treatment is typically created by operating tillage implements on the contour or by running tracked equipment up and down a slope without fine grading the surface.

Installation	DATE OF INSTALLATION:
	As needed to minimize Steep Slope Disturbances
Maintenance	Roughened areas shall be seeded and mulched within seven (7) days of last
Requirements	disturbance to obtain optimum seed germination and seedling growth.
Design	See Construction Drawings and Details
Specifications	

ROLLED EROSION CONTROL PRODUCT

Description: A Temporary Rolled Erosion Control Product (TRECP) is a degradable manufactured material used to stabilize easily eroded areas while vegetation becomes established. Temporary Rolled Erosion Control Products are degradable products composed of biologically, photo chemically or otherwise degradable materials. Temporary RECPs consist of erosion control netting, open weave textiles, and erosion control blankets and mattings. These products reduce soil erosion and assist vegetative growth by providing temporary cover from the erosive action of rainfall and runoff while providing soil-seed contact.

Installation	DATE OF INSTALLATION:
	As needed to minimize Steep Slope Disturbances
Maintenance	Roughened areas shall be seeded and mulched within seven (7) days of last
Requirements	disturbance to obtain optimum seed germination and seedling growth.
Design	See Construction Drawings and Details
Specifications	

4.7 Topsoil

General

• Topsoiling is when the upper most organic layer of soil is stripped and stockpiled from areas being graded and subsequently replaced on the newly graded areas. The native topsoil shall be preserved, if feasible.

Specific Topsoil Controls

TOPSOILING		
Description: Topsoiling occurs during grading operations as the upper most organic layer of soil		
is stripped and s	is stripped and stockpiled from areas being graded and subsequently replaced on the newly	
graded areas.	Topsoil provides a more suitable growing medium than subsoil or on areas with	
poor moisture, la	ow nutrient levels, undesirable pH, or in the presence of other materials that	
would inhibit est	tablishment of vegetation. Replacing topsoil helps plant growth by improving	
the water holding capacity and nutrient content and consistency of the soils.		
Installation	DATE OF INSTALLATION:	
	As stripping of the topsoil occurs.	
Maintenance	Topsoil stockpiles shall be protected to minimize any erosion. Temporary cover	
Requirements	BMPs include temporary seeding, mulches, blankets, or mats.	
Design	See Construction Drawings and Details	
Specifications		

4.8 Soil Compaction

General

• Soil Compaction shall be implemented in areas where final vegetative stabilization will occur or where infiltration practices will be installed.

Specific Soil Compaction Controls

PERMANENT SEE	DING
Description: Permanent vegetation is used to stabilize soil, reduce erosion, prevent sediment	
pollution, reduce runoff by promoting infiltration, and provide stormwater quality benefits	
offered by dense	e grass cover.
Storm water quo	ality and the amount of runoff both vary significantly with soil compaction. Non-
compacted soils	s improve stormwater infiltration by promoting:
 dense vegetar 	tive growth;
 high soil infiltra 	tion & lower runoff rates;
 pollutant filtrat 	ion, deposition & absorption; and
 beneficial biol 	ogic activity in the soil.
Construction ac	tivity creates highly compacted soils that restrict water infiltration and root
growth. The bes	st time for improving soil condition is during the establishment of permanent
vegetation. It is	highly recommended that subsoilers, plows, or other implements are
specified as part of final seedbed preparation. Use discretion in slip-prone areas.	
Installation	DATE OF INSTALLATION:
	Applied within 14 days of completion of work in areas set to final grade and
	topsoiling has been completed.
Maintenance	Permanent seeding shall not be considered established for at least 1 full year
Requirements	from the time of planting. Inspect the seeding for soil erosion or plant loss
	during this first year. Repair bare and sparse areas. Fill gullies. Re-fertilize, re-
	seed, and re-mulch it required. Consider no-till planting. A minimum of 70%
	growth density, based on a visual inspection, must exist for an adequate
	permanent vegetative planting.
Design	See Construction Drawings and Details
Specifications	

4.9 Storm Drain Inlets

General

Inlet protection measures shall be installed to remove sediment from discharges prior to entry into any storm drain inlet. Inlet protection measures shall be cleaned, or removed and replaced as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation adjacent to the inlet protection measure, remove the deposited sediment by the end of the same business day in which it is found or by the end of the following business day if removal by the same business day is not feasible.

Specific Storm Drain Inlet Controls

STORM DRAIN INLET PROTECTION		
Description: Storm drain inlet protection devices remove sediment from storm water before it		
enters storm sewel may be constructed that are supported some sediment an systems prior to the considered a second controls.	enters storm sewers and downstream areas. Inlet protection devices are sediment barriers that may be constructed of washed gravel or crushed stone, geotextile fabrics and other materials that are supported around or across storm drain inlets. Inlet protection is installed to capture some sediment and reduce the maintenance of storm sewers and other underground piping systems prior to the site being stabilized. Due to their poorer effectiveness, inlet protection is considered a secondary sediment control to be used in conjunction with other more effective controls.	
Installation D	DATE OF INSTALLATION:	

Maintenance Requirements	Effective storm drain inlet protection collects sediment and therefore must be cleaned regularly to prevent clogging and subsequent flooding conditions, piping, or overtopping of the control structures. Sediment barriers that sag, fall over, or are not properly secured, must be promptly repaired or replaced. Inlet protection shall be inspected weekly and after each rainfall event. Areas where there is active traffic shall be inspected daily. Repairs shall be made as needed to assure the practice is performing as intended. Sediment shall be removed when accumulation is one-half the height of the trap. Sediment shall not be washed into the inlet. Sediment shall be removed and placed in a location where it is stable and not subject to erosion. Once the contributing drainage area has been properly stabilized, all filter material and collected sediment shall be removed and properly disposed. Clean, or remove and replace the protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment by the end of the same business day in which it is found or by the end of the following business day if removal by the same business day is not feasible.
Design Specifications	See Construction Drawings and Details
specifications	

BLOCK AND GR	AVEL
Description: Blot the storm water downstream are	ck and gravel inlet protection devices use block and gravel filters installed over inlet to remove sediment from storm water before it enters storm sewers and eas.
Installation	DATE OF INSTALLATION: Before grading activities begin for existing inlets and after inlets have been installed for proposed inlets
Maintenance Requirements	Effective storm drain inlet protection collects sediment and therefore must be cleaned regularly to prevent clogging and subsequent flooding conditions, piping, or overtopping of the control structures. Sediment barriers that sag, fall over, or are not properly secured, must be promptly repaired or replaced. Inlet protection shall be inspected weekly and after each rainfall event. Areas where there is active traffic shall be inspected daily. Repairs shall be made as needed to assure the practice is performing as intended. Sediment shall be removed when accumulation is one-half the height of the trap. Sediment shall not be washed into the inlet. Sediment shall be removed and placed in a location where it is stable and not subject to erosion. Once the contributing drainage area has been properly disposed. Clean, or remove and replace the protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment by the end of the same business day in which it is found or by the end of the following business day if removal by the same business day is not feasible.
Design Specifications	See Construction Drawings and Details

4.10 Constructed Stormwater Conveyance Channels

General

• Stormwater conveyance channels controls shall be installed to control stormwater discharges, including both peak flowrates and total stormwater volume, to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points.

Specific Conveyance Channel Controls

ROCK CHECK D	ROCK CHECK DAMS	
Description: Check dams are shaped rock dams constructed in swales, grassed waterways or		
diversions. They	diversions. They reduce the velocity of concentrated flows, thereby reducing erosion within the	
swale or waterv	swale or waterway.	
Installation	DATE OF INSTALLATION:	
	Check dams shall be installed before any land disturbance activities in existing	
	conveyance, and immediately following installation of proposed conveyances.	
Maintenance	Sediment shall be removed from behind check dam once it accumulates to	
Requirements	one-half the original height of the check dam.	
Design	See Construction Drawings and Details	
Specifications		

ROCK OUTLET PI	ROTECTION
Description: A rock or riprap apron typically needed at the outlet of storm drains, culverts, or	
open channels. Rock Outlet Protection provides an erosion resistant transition area where	
concentrated of	or high velocity flows enter less modified channels or natural streams.
Installation	DATE OF INSTALLATION:
	After storm drainage conveyances have been installed.
Maintenance	A maintenance program shall be established to maintain riprap and
Requirements	associated structural components such as pipe outlets, and tile lines. Items to
	consider in the maintenance program include:
	Determine responsible party to inspect and maintain the outlet protection
	after construction.
	Missing riprap should be replaced as soon as possible.
	Protect the outlet protection from damage by equipment and traffic.
	Remove sediment and debris that have accumulated.
Design	See Construction Drawings and Details
Specifications	

TEMPORARY DIVERSION		
Description: A temporary diversion is used to redirect sheet flow runoff from denuded areas.		
Runoff shall be i	Runoff shall be intercepted by diversions to protect adjacent properties and water resources	
from sediment t	ransported	
Installation	DATE OF INSTALLATION:	
	Install at the beginning of earth disturbing operations to protect adjacent areas	
	from damaging sheet and shallow concentrated flow.	
Maintenance	A maintenance program shall be established to remove sediment and debris	
Requirements	that have accumulated.	
Design	See Construction Drawings and Details	
Specifications		

4.11 Sediment Basins

General

 Sediment basins shall be installed outside of any waters of the US and any natural buffers. Basins shall be installed to avoid collecting water from wetlands. They shall be designed to provide storage for the 2-year, 24-hour design storm or 3,600 cubic feet per drained acre. Basins shall utilize outlet structures that withdraw water from the surface of the sediment basin. Basins shall use erosion control and velocity dissipation devices to prevent erosion at inlets and outlets.

Specific Sediment Basin Controls

SEDIMENT TRAP	
Description: A s	ediment trap is a temporary settling pond formed by construction of an
embankment a	nd/or excavated basin and having a simple outlet structure that is typically
stabilized with g	eotextile and rip-rap. Sediment traps are constructed to detain sediment-laden
runoff from sma	II, disturbed areas for a sufficient period of time to allow the majority of the
sediment to set	tle out. They are established early in the construction process using natural
drainage patte	rns and favorable topography where possible to minimize grading.
Installation	DATE OF INSTALLATION:
	Before disturbing more than 5 acres
Maintenance	The capacity and function of the sediment trap shall be maintained by
Requirements	inspecting on a weekly basis and after each runoff event, and by performing
-	the necessary activities below.
	Establish vegetative cover and fertilize as necessary to maintain a
	vigorous cover around the sediment trap.
	 Inspect the pool area, embankment and spillway area for burrowing
	rodents, slope failure, seepage, excess settlement, and displaced stone.
	The area should be inspected for structural soundness and repaired as
	needed.
	 Regularly inspect water discharged from trap for excess suspended
	sediments. Identify and perform necessary repairs to improve water
	quality. Excessive suspended sediments may require design
	modifications or treatment with flocculants.
	 Remove woody vegetated growth on the embankment and spillway
	areas.
	 Remove trash and debris that accumulate in the pond and have
	potential to block spill-ways.
	 Dewatering outlets shall be regularly checked to ensure that
	performance is maintained. Filter stone choked with sediment shall be
	removed and replaced to restore its flow capacity.
	 Remove sediment and restore the sediment trap to its original
	dimensions when sediment has accumulated to the top of the sediment
	storage or wet storage zone. This elevation shall be signified by the top
	of a stake near the center of the trap. Removing sediment by hand
	may be necessary adjacent to the outlet section of the embankment
	to prevent equipment damage. Place the removed sediment and
	stabilize with vegetation in a designated area where it will not easily
	erode again. Restore trap to its original dimensions and replace stone
	as needed on the outlet.

	After the entire construction project is completed, temporary sediment traps should be dewatered and regraded so as to conform to the contours of the area. All temporary structures shall be removed and the area seeded, mulched and stabilized as necessary.
Design	See Construction Drawings and Details
Specifications	

4.12 Chemical Treatment

Soil Types

List all the soil types (including soil types expected to be found in fill material) that are expected to be exposed during construction in areas of the project that will drain to chemical treatment systems: The general soil profile can be divided into four strata:

- o Fill material;
- o Clay Residuum;
- o Decomposed Shale;
- o Limestone bedrock.

Treatment Chemicals

List all treatment chemicals that will be used at the site and explain why these chemicals are suited to the soil characteristics: No Fertilization or pesticide applications are planned for this project. All concrete and asphalt will be delivered to the site in trucks and immediately placed. A concrete washout area will be used for cleaning of the concrete trucks. No onsite batch plants will be used. The equipment/vehicle fueling and maintenance practice that will be implemented to eliminate the discharge of spilled or leaked fuel will be a Fuel Containment Area. Contractor will have a designated area for fuel storage and handling that is equipped with spill response tools for containment and fast clean up. All vehicle maintenance to be performed off site in an approved location. Refer to Construction Drawings (Site Maps and Details) for information and details corresponding to the selected BMPs.

Describe the dosage of all treatment chemicals you will use at the site or the methodology you will use to determine dosage: N/A

Provide information from any applicable Safety Data Sheets (SDS): N/A

Describe how each of the chemicals will stored: N/A

Include references to applicable state or local requirements affecting the use of treatment chemicals, and copies of applicable manufacturer's specifications regarding the use of your specific treatment chemicals and/or chemical treatment systems: N/A

Special Controls for Cationic Treatment Chemicals (if applicable)

If the applicable EPA Regional Office authorized you to use cationic treatment chemicals, include the official EPA authorization letter or other communication, and identify the specific controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to an exceedance of water quality standards: N/A

Schematic Drawings of Stormwater Controls/Chemical Treatment Systems

Provide schematic drawings of any chemically-enhanced stormwater controls or chemical treatment systems to be used for application of treatment chemicals: N/A

Training

Describe the training that personnel who handle and apply chemicals have received prior to permit coverage, or will receive prior to the use of treatment chemicals: N/A

4.13 Dewatering Practices

General

 Contractor shall treat dewatering discharges with controls to minimize discharges of pollutants. Contractor shall not discharge dewatering discharges if visible solids or foam are present. Dewatering activities shall utilize a suitable filtration device that is designed to remove suspended solids. Contractor shall replace and clean the filter media used in dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications.

Specific Dewatering Practices

DEWATERING M	EASURES	
Description: Dewatering measures provide a stable area for receiving and treating water		
pumped from excavation or work areas prior to being released off the site. These practices		
reduce sediment impacts to downstream water resources.		
Geotextile Filter Bags:		
Commonly discharge is pumped into a filter bag chosen for the predominant sediment size.		
Filter bags are r	nanufactured products made typically from woven monofilament	
polypropylene textile (coarse materials, e.g. sands) or non-woven geotextile (silts/clays). While		
they may be useful, they are generally high flow products, which have limited ability to treat		
fine-grained sediments. Gravity drained filter bags should apply the following:		
• They should be placed outside of a vegetated filter area and not in close proximity to site		
storm water controls.		
• They must sit on a relatively flat grade so that water leaving the bag does not cause		
additional		
erosion. Placing the bag on a flat bed of aggregate will maximize the flow and useful		
surface area of	the bag.	
Installation	DATE OF INSTALLATION:	
	Before dewatering activities occur.	
Maintenance	Filter Bags are single use products that must be replaced when they become	
Requirements	clogged or half full of sediment. Trapped sediment to be removed shall be	
	spread on the project site at an appropriate location away from storm water	
	controls and stabilized with permanent seeding. With backwash water, either	
	haul it away for disposal or return it to the beginning of the treatment process;	
	and replace and clean the filter media used in dewatering devices when the	
	pressure differential equals or exceeds the manufacturer's specifications.	
Design	See Construction Drawings and Details	
Specifications		

4.14 Other Stormwater Controls

General

N/A

Specific Stormwater Control Practices

N/A

4.15 Site Stabilization

Total Amount of Land Disturbance Occurring at Any One Time

- □ Five Acres or less
- \boxtimes More than Five Acres

TEMPORARY SEEDING		
🛛 Vegetative 🗆 Non-Vegetative		
🛛 Temporary 🗆 Permanent		
Description:		
 Temporary seedings establish temporary cover on disturbed areas by planting appropriate rapidly growing annual grasses or small grains. Temporary seeding provides erosion control on areas in between construction operations. Grasses, which are quick growing, are seeded and usually mulched to provide prompt, temporary soil stabilization. Temporary seeding should be applied on exposed soil where additional work is not used at a factor. 		
Completion COMPLETION DATE:		
Maintenance Areas failing to establish vegetative cover adequate to prevent erosion shall		
Requirements be reseeded as soon as such areas are identified.		
Design See Construction Drawings and Details Specifications		

TEMPORARY AGGREGATE SURFACING		
🗆 Vegetative 🛛 Non-Vegetative		
🛛 Temporary 🗆 Permanent		
Description:		
 Temporary aggregate is a temporary cover on disturbed areas by placing and 		
compacting aggregate. Temporary aggregate surfacing provides a laydown area for		
construction operations.		
 Temporary Aggregate Surfacing should be applied on exposed soil where additional 		
work is not scheduled for more than 14 days.		
Installation	DATE OF INSTALLATION:	
Completion	COMPLETION DATE:	
Maintenance	This may require periodic top dressing with additional stone or the washing and	
Requirements	reworking of existing stone as conditions demand.	
Design	See Construction Drawings and Details	
Specifications		

PERMANENT SEEDING		
🛛 Vegetative 🗆 Non-Vegetative		
\Box Temporary \boxtimes Permanent		
Description:		
 Permanent vegetation is used to stabilize soil, reduce erosion, prevent sediment pollution, reduce runoff by promoting infiltration, and provide stormwater quality benefits offered by dense grass cover. Any disturbed areas or portions of construction sites at final grade. Permanent seeding 		
should not be delayed on any one portion of the site at final grade while construction on another portion of the site is being completed. Permanent seeding shall be completed in phases if papagent.		

in phases, if necessary.

Installation	DATE OF INSTALLATION:
Completion	COMPLETION DATE:
Maintenance	Permanent seeding shall not be considered established for at least 1 full year
Requirements	from the time of planting. Inspect the seeding for soil erosion or plant loss during this first year. Repair bare and sparse areas. Fill gullies. Re-seed and re- mulch if required. Consider no-till planting. A minimum of 70% growth density, based on a visual inspection, must exist for an adequate permanent vegetative planting.
Design	See Construction Drawings and Details
Specifications	

PERMANENT AGGREGATE SURFACING		
\Box Vegetative	⊠ Non-Vegetative	
Temporary	🛛 Permanent	
Description:		
 Permanent aggregate is a permanent cover on disturbed areas by placing and 		
compacting aggregate.		
Installation	DATE OF INSTALLATION:	
Completion	COMPLETION DATE:	
Maintenance	This may require periodic top dressing with additional stone or the washing and	
Requirements	reworking of existing stone as conditions demand.	
Design	See Construction Drawings and Details	
Specifications		
SECTION 5: POLLUTION PREVENTION STANDARDS

5.1 Potential Sources of Pollution

Construction Site Pollutants

See Table Below

Pollutant-Generating Activity	Pollutants or Pollutant Constituents (that could be discharged if exposed to stormwater)	Location on Site (or reference SWPPP site map where this is shown)
Fueling	Diesel, Gasoline	See Construction Drawing
Paving Operations	Volatile Organic Compounds	Throughout Project (See Construction Drawing)
Concrete Washout	Slurry containing toxic metals that is caustic and corrosive.	See Construction Drawing
Paint	Water or Solvent based paints	Site Wide
Solid Waste Dumpsters	General Waste	At appropriate site locations
Equipment Outdoor Storage (laydown areas)	General Waste	See Construction Drawing
Generators	Diesel, Gasoline	At appropriate site locations
Loading / unloading operations	General Waste	Site Wide
Construction Equipment	Diesel, Oil	Site Wide

5.2 Spill Prevention and Response

Any hazardous or potentially hazardous material that is brought onto the construction site shall be handled properly to reduce the potential for stormwater pollution. All materials used on this construction site shall be properly stored, handled, dispensed and disposed of following all applicable label directions. Flammable and combustible liquids shall be stored and handled according to applicable regulations. Only approved containers and portable tanks shall be used for storage and handling of flammable and combustible liquids.

Safety Data Sheets (SDS) information shall be kept on site for all hazardous or potentially hazardous materials. Alternately, SDS may also be accessed via telephone or other electronic means or apparatus.

In the event of an accidental spill, immediate action shall be taken by the Contractor to contain and remove the spilled material. The spill shall be reported to the appropriate agencies in the required time frames. As required under the provisions of the Clean Water Act, any spill or discharge entering waters of the United States shall be properly reported.

Any spills of petroleum products or hazardous materials in excess of reportable quantities as defined by the EPA, state or local agency regulations, shall be immediately reported and documented.

To minimize the potential for spills to come into contact with stormwater, the following steps shall be taken:

- 1. All materials with hazardous properties, including but not necessarily limited to, pesticides, petroleum products, fertilizers, soaps, detergents, construction chemicals, acids, bases, paints, paint solvents, additives for soil stabilization, concrete, curing compounds and additives, shall be stored in a secure location, under cover and in appropriate, tightly sealed containers when not in use.
- 2. The minimum practical quantity of all such materials shall be kept on the job site and scheduled for delivery as close to time of use as practical.
- 3. A spill control and containment kit (containing for example, absorbent material such as kitty litter or sawdust, acid, base, neutralizing agent, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) shall be provided at the construction site and its location(s) shall be identified with legible signage and annotated by the Contractor on the Construction Drawings.
 - a. The spill control and containment kit supplies shall be of sufficient quantities and appropriate content to contain a spill from the largest anticipated piece of equipment and from the largest anticipated quantities of products stored on the site at any given time.
 - b. Contents shall be inspected regularly.
- 4. All products shall be stored in and used from the original container with the original product label. Containers must be stored in a manner to protect them from the elements and incidental damage.
- 5. All products shall be used in strict compliance with instructions on the product label.

The disposal of excess or used products shall be in strict compliance with instructions on the product label and regulations.

5.3 Fueling and Maintenance of Equipment or Vehicles

General

The equipment/vehicle fueling and maintenance practice that will be implemented to eliminate the discharge of spilled or leaked chemicals will be a Fuel Containment Area. Refer to Construction Drawings for information and details corresponding to the selected BMPs. Contractor will have a designated area for fuel storage and handling that is equipped with spill response tools for containment and fast clean up. All vehicle maintenance to be performed off site in an approved location.

Specific Pollution Prevention Practices

FUEL CONTAINMENT AREA	
Description: Above grade area created using straw bales and 10 mil plastic lining. Operator is	
required to be p	present during any fueling operation - if spill occurs then clean-up procedures will
be initiated.	
Installation	DATE OF INSTALLATION:
	Before any fueling activities on site occur.
Maintenance	Avoid mobile fueling of mobile construction equipment around the site; rather,
Requirements	transport the equipment to designated fueling areas. Train employees and subcontractors in proper fueling and cleanup procedures. Dedicated fueling areas should be protected from stormwater runon and runoff and should be located at least 50 feet away from downstream drainage facilities and watercourses. Fueling must be performed on level-grade areas. Vehicles and equipment should be inspected each day of use for leaks. Leaks should be repaired immediately or problem vehicles or equipment should be removed from the project site.
Design	See Construction Drawings and Details
Specifications	

5.4 Washing of Equipment and Vehicles

General

- Washing of equipment and vehicles is not expected as part of this project but if needed:
- The washing of equipment and vehicles practice that will be implemented to minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other types of wash waters will be a Washing Area

Specific Pollution Prevention Practices

WASHING AREA		
Description: Above grade area created for washing vehicles with water only.		
Installation	DATE OF INSTALLATION:	
	Before any washing of vehicles occurs.	
Maintenance	Equipment and vehicles contaminated with fuel, oil, and/or other hazardous	
Requirements	materials shall not be washed on site. Detergents/Solvents are not to be used	
	on site.	
Design	See Construction Drawings and Details	
Specifications		

5.5 Storage, Handling, and Disposal of Construction Products, Materials, and Wastes

5.5.1 Building Products

General

• All building products shall be stored in appropriate laydown areas out of pedestrian and vehicle pathways. Building materials and products shall be covered to minimize exposure to precipitation and stormwater.

Specific Pollution Prevention Practices

STORAGE, HANDLING, AND DISPOSAL OF BUILDING PRODUCTS, MATERIALS, AND WASTES		
Description: All building materials to be stored, handled and disposed of in a manner to prevent		
pollutants from reaching storm water. All waste material will be placed in appropriate waste		
containers and managed per applicable state and federal requirements.		
Installation	DATE OF INSTALLATION:	
Maintenance	All storage areas to be inspected on a regular basis to ensure proper function	
Requirements	and housekeeping.	
Design	As determined by contractor.	
Specifications		

5.5.2 Pesticides, Herbicides, Insecticides, Fertilizers, and Landscape Materials

General

• No pesticides, herbicides, insecticides, or fertilizers are planned for this project.

Specific Pollution Prevention Practices

N/A

5.5.3 Diesel Fuel, Oil, Hydraulic Fluids, Other Petroleum Products, and Other Chemicals

General

 Diesel fuel, oil, hydraulic fluids, other petroleum products, and other chemicals shall be stored in water-tight containers and provided with cover to minimize the exposure of the containers to precipitation and stormwater. All spills shall be cleaned up immediately, using dry clean-up methods where possible. Dispose of used and waste materials properly. The contractor is prohibited from hosing down the area to clean surfaces or spills.

Specific Pollution Prevention Practices

FUEL CONTAINMENT AREA		
Description: Ab	Description: Above grade area created using straw bales and 10 mil plastic lining. Operator is	
required to be present during any fueling operation - if spill occurs then clean-up procedures will		
be initiated.		
Installation	DATE OF INSTALLATION:	
	Before any fueling activities on site occur.	
Maintenance	Avoid mobile fueling of mobile construction equipment around the site; rather,	
Requirements	transport the equipment to designated fueling areas. Train employees and	
	subcontractors in proper fueling and cleanup procedures. Dedicated fueling	
	areas should be protected from stormwater runon and runoff and should be	
	located at least 50 feet away from downstream drainage facilities and	
	watercourses. Fueling must be performed on level-grade areas. Vehicles and	

	equipment should be inspected each day of use for leaks. Leaks should be repaired immediately, or problem vehicles or equipment should be removed from the project site.
Design Specifications	See Construction Drawings and Details

Hazardous or Toxic Waste 5.5.4

General

Construction contractors shall provide means and methods for storing and handling hazardous materials on site. These methods are intended to prevent accidental spills from contaminating storm water and area soils and to facilitate prompt clean out. These methods may include double containment, impervious surfaces, absorbing mats and / or perimeter berms. Contractor will notify the site spill response team in the event that a leak is detected to ensure proper clean out or remediation is implemented immediately. A very minimum amount of hazardous or toxic waste is expected. Contractor shall handle and dispose of all toxic or hazardous substances in strict compliance with EPA and applicable local jurisdiction regulations. Covered and leak-proof containers are planned for disposal of hazardous or petroleum wastes.

Specific Pollution Prevention Practices

As determined by the Contractor.

5.5.5 Construction and Domestic Waste

General

Waste bin will be available on site to dispose of general construction waste. Contractor will be responsible for providing and emptying the waste bin. Whenever possible, covered and leakproof containers are planned for disposal of debris and trash. The site best management practice is that disposal of chemical liquids into general construction waste bins is not allowed. All liquid disposal will be coordinated through the site waste coordinator to ensure proper disposal.

specific Pollution	Prevention Practices
SOLID WASTE CO	ONTAINERS
Description: All	waste material will be placed in appropriate waste containers and manage
per state and fe	ederal requirements.
Installation	DATE OF INSTALLATION:
	Before waste materials accumulate.
Maintenance	All waste containers to be inspected on a regular basis to ensure proper
Requirements	function and housekeeping.
Design	As determined by Contractor
Specifications	

S

5.5.6 Sanitary Waste

General

Portable toilets will be installed so that they are secure and will not be tipped or knocked over. They will be located away from waters of the US and stormwater inlets or conveyances.

d

Specific Pollution Prevention Practices

PORTABLE SANITARY WASTE CONTAINERS		
Description: Co	ntract a service to pump out porta-potties and manage waste per state and	
federal regulato	ory requirements.	
Installation	DATE OF INSTALLATION:	
	Prior to deployment of Contractor's employees to the project site.	
Maintenance	All sanitary portable toilets and collection tanks to be inspected and emptied	
Requirements	on a contract basis to ensure proper function and maintenance.	
Design	As determined by Contractor	
Specifications		

5.6 Washing of Applicators and Containers used for Paint, Concrete or Other Materials

General

All washing of applicators and containers used for paint, concrete, or other materials shall direct
wash waters into a leak-proof container or leak-proof and lined pit designed so that no overflows
can occur due to inadequate sizing or precipitation. Contactor shall not dump liquid wastes in
storm sewers or waters of the US and shall remove and dispose of hardened concrete waste
consistent of waste disposal.

Specific Pollution Prevention Practices

CONCRETE WASHOUT AREA			
Description: Ab	Description: Above grade area created using straw bales and 10 mil plastic lining. Operator is		
required to be p	required to be present during washout operation.		
Installation	DATE OF INSTALLATION:		
	Before concrete operations begin.		
Maintenance	Inspect at least once per seven calendar days, or within a reasonable time		
Requirements	period (not to exceed 48 hours) of a rainfall event which causes stormwater runoff to occur onsite. Remove and disposed of hardened concrete and return the facility to a functional condition. Washout facilities must be cleaned, or new facilities must be constructed and ready for use once the washout is 75% full.		
Design	See Construction Drawings.		
Specifications			

5.7 Fertilizers

General

• No fertilizers are planned for this project.

Specific Pollution Prevention Practices

N/A

5.8 Other Pollution Prevention Practices

General

N/A

Specific Pollution Prevention Practices

N/A

SECTION 6: INSPECTION AND CORRECTIVE ACTION

6.1 Inspection Personnel and Procedures

Personnel Responsible for Inspections

Ronald Gregory

Note: All personnel conducting inspections must be considered a "qualified person." CGP Part 4.1.1 clarifies that a "qualified person" is a person knowledgeable in the principles and practices of erosion and sediment controls and pollution prevention, who possesses the skills to assess conditions at the construction site that could impact stormwater quality, and the skills to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of this permit.

Inspection Schedule

Specific Inspection Frequency

Standard Frequency:
 Every 7 days Every 14 days and within 24 hours of a 0.25" rain or the occurrence of runoff from snowmelt sufficient enough to cause a discharge
Increased Frequency (if applicable):
For areas of sites discharging to sediment or nutrient-impaired waters or to waters designated as Tier 2, Tier 2.5, or Tier 3
Every 7 days and within 24 hours of a 0.25" rain
Reduced Frequency (if applicable)
 For stabilized areas Twice during first month, no more than 14 calendar days apart; then once per month after first month; Stabilized Areas: Date That They Were Completed:
For stabilized areas on "linear construction sites"
 Twice during first month, no more than 14 calendar days apart; then once more within 24 hours of a 0.25" rain N/A
For arid, semi-arid, or drought-stricken areas during seasonally dry periods or during drought
Once per month and within 24 hours of a 0.25" rain
 N/A
For frozen conditions where earth-disturbing activities are being conducted
□ Once per month
• N/A

Rain Gauge Location (if applicable)

Specify Location of Rain Gauge:

Rain gauge shall be located near construction facilities where it can be effectively monitored after every rainfall event and to not negatively affect its accuracy (not under awnings, on the side of buildings, equipment etc.)

Inspection Report Forms

See Appendix D

6.2 Corrective Action

Personnel Responsible for Corrective Actions General Contractor/Operator

Corrective Action Forms See Appendix E

6.3 Delegation of Authority

Duly Authorized Representative(s) or Position(s):

Big Rivers Electric Company Ronald Gregory Project Manager 5663 KY-85 Centertown, KY 42328 (270) 844-6192

SECTION 7: TRAINING

Table 7-1: Documentation for Completion of Training

Name	Date Training Completed

SECTION 8: CERTIFICATION AND NOTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: Brent Hanley	Title: Lead Civil Engineer	
Signature: Brant Thomas Honlay	Date: <u>21May2021</u>	
Name: Ronald Gregory	Title: Project Manager	
Signature:	Date:	

SWPPP APPENDICES

Attach the following documentation to the SWPPP:

Appendix A – Site Maps

Appendix B – Copy of 2017 CGP

Appendix C – NOI

Appendix D – Inspection Form

Appendix E – Corrective Action Form

Appendix F – SWPPP Amendment Log

Appendix G – Subcontractor Certifications/Agreements

Appendix H – Grading and Stabilization Activities Log

Appendix I – SWPPP Training Log

Appendix J – Delegation of Authority Form

Appendix K – Endangered Species Documentation

Appendix L – Historic Properties Documentation

Appendix M – Rainfall Gauge Recording

Appendix A – Site Maps





Appendix B – Copy of 2012 CGP

National Pollutant Discharge Elimination System General Permit for Discharges from Construction Activities (as modified)

In compliance with the provisions of the Clean Water Act, 33 U.S.C. §1251 et. seq., (hereafter CWA), as amended by the Water Quality Act of 1987, P.L. 100-4, "operators" of construction activities (defined in Appendix A) that meet the requirements of Part 1.1 of this National Pollutant Discharge Elimination System (NPDES) general permit, are authorized to discharge pollutants in accordance with the effluent limitations and conditions set forth herein. Permit coverage is required from the "commencement of construction activities" (see Appendix A) until one of the conditions for terminating CGP coverage has been met (see Part 8.2).

This permit becomes effective on June 27, 2019.

This permit and the authorization to discharge expire at 11:59pm, February 16, 2022.

Signed and issued this 14th day of May 2019	Signed and issued this 14th day of May 2019
Deborah Szaro,	Charles W. Maguire,
Acting Regional Administrator, EPA Region 1.	Director, Water Division, EPA Region 6.
Signed and issued this 14th day of May 2019	Signed and issued this 14th day of May 2019
Jeff Gratz,	Jeffery Robichaud,
Deputy Director, Water Division, EPA Region 2.	Director, Water Division, EPA Region 7.
Signed and issued this 14th day of May 2019 Jose C. Font, Acting Director, Caribbean Environmental Protection Division, EPA Region 2.	Signed and issued this 14th day of May 2019 Darcy O'Connor, Director, Water Division, EPA Region 8.
Signed and issued this 14th day of May 2019	Signed and issued this 14th day of May 2019
Catharine McManus,	Tomás Torres,
Deputy Director, Water Division, EPA Region 3.	Director, Water Division, EPA Region 9.
Signed and issued this 14th day of May 2019	Signed and issued this 14th day of May 2019
Jeaneanne M. Gettle,	Daniel D. Opalski,
Director, Water Division, EPA Region 4.	Director, Water Division, EPA Region 10.
Signed and issued this 14th day of May 2019	

Joan M. Tanaka, Acting Director, Water Division, EPA Region 5.

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1 HOW TO OBTAIN COVERAGE UNDER THE CONSTRUCTION GENERAL PERMIT (CGP)

To be covered under this permit, you must meet the eligibility conditions and follow the requirements for obtaining permit coverage in this Part.

1.1 ELIGIBILITY CONDITIONS

- **1.1.1** You are an "operator" of a construction site for which discharges will be covered under this permit. For the purposes of this permit and in the context of stormwater discharges associated with construction activity, an "operator" is any party associated with a construction project that meets either of the following two criteria:
 - a. The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or
 - b. The party has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Where there are multiple operators associated with the same project, all operators must obtain permit coverage.¹ Subcontractors generally are not considered operators for the purposes of this permit.

- **1.1.2** Your site's construction activities:
 - a. Will disturb one or more acres of land, or will disturb less than one acre of land but are part of a common plan of development or sale that will ultimately disturb one or more acres of land; or
 - b. Have been designated by EPA as needing permit coverage under 40 CFR 122.26(a)(1)(v) or 40 CFR 122.26(b)(15)(ii);
- **1.1.3** Your site is located in an area where EPA is the permitting authority (see Appendix B);
- **1.1.4** Discharges from your site are not:
 - a. Already covered by a different NPDES permit for the same discharge; or
 - b. In the process of having coverage under a different NPDES permit for the same discharge denied, terminated, or revoked.^{2, 3}
- 1.1.5 You are able to demonstrate that you meet one of the criteria listed in Appendix D with respect to the protection of species that are federally listed as endangered or threatened under the Endangered Species Act (ESA) and federally designated critical habitat;
- **1.1.6** You have completed the screening process in Appendix E relating to the protection of historic properties; and

¹ If the operator of a "construction support activity" (see Part 1.2.1c) is different than the operator of the main site, that operator must also obtain permit coverage. See Part 7.1 for clarification on the sharing of permit-related functions between and among operators on the same site and for conditions that apply to developing a SWPPP for multiple operators associated with the same site.

² Parts 1.1.4a and 1.1.4b do not include sites currently covered under the 2012 CGP that are in the process of obtaining coverage under this permit, nor sites covered under this permit that are transferring coverage to a different operator.

³ Notwithstanding a site being made ineligible for coverage under this permit because it falls under the description of Parts 1.1.4a or 1.1.4b, above, EPA may waive the applicable eligibility requirement after specific review if it determines that coverage under this permit is appropriate.

- **1.1.7** You have complied with all requirements in Part 9 imposed by the applicable state, Indian tribe, or territory in which your construction activities and/or discharge will occur.
- **1.1.8** For "new sources" (as defined in Appendix A) only:
 - a. EPA has not, prior to authorization under this permit, determined that discharges from your site will cause, have the reasonable potential to cause, or contribute to an excursion above any applicable water quality standard. Where such a determination is made prior to authorization, EPA may notify you that an individual permit application is necessary. However, EPA may authorize your coverage under this permit after you have included appropriate controls and implementation procedures designed to bring your discharge into compliance with this permit, specifically the requirement to meet water quality standards. In the absence of information demonstrating otherwise, EPA expects that compliance with the requirements of this permit, including the requirements applicable to such discharges in Part 3, will result in discharges that will not cause, have the reasonable potential to cause, or contribute to an excursion above any applicable water quality standard.
 - b. Discharges from your site to a Tier 2, Tier 2.5, or Tier 3 water⁴ will not lower the water quality of the applicable water. In the absence of information demonstrating otherwise, EPA expects that compliance with the requirements of this permit, including the requirements applicable to such discharges in Part 3.2, will result in discharges that will not lower the water quality of such waters.
- 1.1.9 If you plan to add "cationic treatment chemicals" (as defined in Appendix A) to stormwater and/or authorized non-stormwater prior to discharge, you may not submit your Notice of Intent (NOI) unless and until you notify your applicable EPA Regional Office (see Appendix L) in advance and the EPA Regional Office authorizes coverage under this permit after you have included appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to discharges that cause an exceedance of water quality standards.

1.2 TYPES OF DISCHARGES AUTHORIZED⁵

- **1.2.1** The following stormwater discharges are authorized under this permit provided that appropriate stormwater controls are designed, installed, and maintained (see Parts 2 and 3):
 - a. Stormwater discharges, including stormwater runoff, snowmelt runoff, and surface runoff and drainage, associated with construction activity under 40 CFR 122.26(b)(14) or 122.26(b)(15)(i);
 - b. Stormwater discharges designated by EPA as needing a permit under 40 CFR 122.26(a)(1)(v) or 122.26(b)(15)(ii);

⁴ Note: Your site will be considered to discharge to a Tier 2, Tier 2.5, or Tier 3 water if the first water to which you discharge is identified by a state, tribe, or EPA as a Tier 2, Tier 2.5, or Tier 3 water. For discharges that enter a storm sewer system prior to discharge, the first water of the U.S. to which you discharge is the waterbody that receives the stormwater discharge from the storm sewer system. See list of Tier 2, Tier 2.5, and Tier 3 waters in Appendix F.

⁵ See "Discharge" as defined in Appendix A. Note: Any discharges not expressly authorized in this permit cannot become authorized or shielded from liability under CWA section 402(k) by disclosure to EPA, state, or local authorities after issuance of this permit via any means, including the Notice of Intent (NOI) to be covered by the permit, the SWPPP, or during an inspection.

- c. Stormwater discharges from construction support activities (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) provided that:
 - i. The support activity is directly related to the construction site required to have permit coverage for stormwater discharges;
 - ii. The support activity is not a commercial operation, nor does it serve multiple unrelated construction sites;
 - iii. The support activity does not continue to operate beyond the completion of the construction activity at the site it supports; and
 - iv. Stormwater controls are implemented in accordance with Part 2 and Part 3 for discharges from the support activity areas.
- d. Stormwater discharges from earth-disturbing activities associated with the construction of staging areas and the construction of access roads conducted prior to active mining.
- **1.2.2** The following non-stormwater discharges associated with your construction activity are authorized under this permit provided that, with the exception of water used to control dust and to irrigate vegetation in stabilized areas, these discharges are not routed to areas of exposed soil on your site and you comply with any applicable requirements for these discharges in Parts 2 and 3:
 - a. Discharges from emergency fire-fighting activities;
 - b. Fire hydrant flushings;
 - c. Landscape irrigation;
 - d. Water used to wash vehicles and equipment, provided that there is no discharge of soaps, solvents, or detergents used for such purposes;
 - e. Water used to control dust;
 - f. Potable water including uncontaminated water line flushings;
 - g. External building washdown, provided soaps, solvents, and detergents are not used, and external surfaces do not contain hazardous substances (as defined in Appendix A) (e.g., paint or caulk containing polychlorinated biphenyls (PCBs));
 - h. Pavement wash waters, provided spills or leaks of toxic or hazardous substances have not occurred (unless all spill material has been removed) and where soaps, solvents, and detergents are not used. You are prohibited from directing pavement wash waters directly into any water of the U.S., storm drain inlet, or stormwater conveyance, unless the conveyance is connected to a sediment basin, sediment trap, or similarly effective control;
 - i. Uncontaminated air conditioning or compressor condensate;
 - j. Uncontaminated, non-turbid discharges of ground water or spring water;
 - k. Foundation or footing drains where flows are not contaminated with process materials such as solvents or contaminated ground water; and
 - I. Construction dewatering water discharged in accordance with Part 2.4.
- **1.2.3** Also authorized under this permit are discharges of stormwater listed above in Part 1.2.1, or authorized non-stormwater discharges listed above in Part 1.2.2, commingled with a

discharge authorized by a different NPDES permit and/or a discharge that does not require NPDES permit authorization.

1.3 PROHIBITED DISCHARGES⁶

- **1.3.1** Wastewater from washout of concrete, unless managed by an appropriate control as described in Part 2.3.4;
- **1.3.2** Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials;
- **1.3.3** Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance;
- **1.3.4** Soaps, solvents, or detergents used in vehicle and equipment washing or external building washdown; and
- **1.3.5** Toxic or hazardous substances from a spill or other release.

To prevent the above-listed prohibited non-stormwater discharges, operators must comply with the applicable pollution prevention requirements in Part 2.3.

1.4 SUBMITTING YOUR NOTICE OF INTENT (NOI)

All "operators" (as defined in Appendix A) associated with your construction site, who meet the Part 1.1 eligibility requirements, and who seek coverage under this permit, must submit to EPA a complete and accurate NOI in accordance with the deadlines in **Table 1** prior to commencing construction activities.

Exception: If you are conducting construction activities in response to a public emergency (e.g., mud slides, earthquake, extreme flooding conditions, widespread disruption in essential public services), and the related work requires immediate authorization to avoid imminent endangerment to human health, public safety, or the environment, or to reestablish essential public services, you may discharge on the condition that a complete and accurate NOI is submitted within 30 calendar days after commencing construction activities (see Table 1) establishing that you are eligible for coverage under this permit. You must also provide documentation in your Stormwater Pollution Prevention Plan (SWPPP) to substantiate the occurrence of the public emergency.

1.4.1 Prerequisite for Submitting Your NOI

You must develop a SWPPP consistent with Part 7 before submitting your NOI for coverage under this permit.

1.4.2 How to Submit Your NOI

You must use EPA's NPDES eReporting Tool (NeT) to electronically prepare and submit your NOI for coverage under the 2017 CGP, unless you received a waiver from your EPA Regional Office.

To access NeT, go to <u>https://www.epa.gov/npdes/stormwater-discharges-</u> construction-activities#ereporting.

Waivers from electronic reporting may be granted based on one of the following conditions:

⁶ EPA includes these prohibited non-stormwater discharges here as a reminder to the operator that the only non-stormwater discharges authorized by this permit are at Part 1.2.2. Any unauthorized non-stormwater discharges must be covered under an individual permit or alternative general permit.

- a. If your operational headquarters is physically located in a geographic area (*i.e., ZIP code or census tract*) that is identified as under-served for broadband Internet access in the most recent report from the Federal Communications Commission; or
- b. If you have limitations regarding available computer access or computer capability.

If the EPA Regional Office grants you approval to use a paper NOI, and you elect to use it, you must complete the form in Appendix J.

1.4.3 Deadlines for Submitting Your NOI and Your Official Date of Permit Coverage

Table 1 provides the deadlines for submitting your NOI and the official start date of your permit coverage, which differ depending on when you commence construction activities.

Type of Operator	NOI Submittal Deadline ⁷	Permit Authorization Date ⁸		
Operator of a new site (i.e., a site where construction activities commence on or after February 16, 2017)	At least 14 calendar days before commencing construction activities.	14 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that		
Operator of an existing site (i.e., a site with 2012 CGP coverage where construction activities commenced prior to February 16, 2017)	No later than May 17, 2017 .	or denied.		
New operator of a permitted site (i.e., an operator that through transfer of ownership and/or operation replaces the operator of an already permitted construction site that is either a "new site" or an "existing site")	At least 14 calendar days before the date the transfer to the new operator will take place.			
Operator of an "emergency-related project" (i.e., a project initiated in response to a public emergency (e.g., mud slides, earthquake, extreme flooding conditions, disruption in essential public services), for which the related work requires immediate authorization to avoid imminent endangerment to human health or the environment, or to reestablish essential public services)	No later than 30 calendar days after commencing construction activities.	You are considered provisionally covered under the terms and conditions of this permit immediately, and fully covered 14 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization is delayed or denied.		

Table 1 NOI Submittal Deadlines and Official Start Date for Permit Coverage.

1.4.4 Modifying your NOI

⁷ If you miss the deadline to submit your NOI, any and all discharges from your construction activities will continue to be unauthorized under the CWA until they are covered by this or a different NPDES permit. EPA may take enforcement action for any unpermitted discharges that occur between the commencement of construction activities and discharge authorization.

⁸ Discharges are not authorized if your NOI is incomplete or inaccurate or if you are not eligible for permit coverage.

If after submitting your NOI you need to correct or update any fields, you may do so by submitting a "Change NOI" form using NeT. Waivers from electronic reporting may be granted as specified in Part 1.4.1. If the EPA Regional Office has granted you approval to submit a paper NOI modification, you may indicate any NOI changes on the same NOI form in Appendix J.

When there is a change to the site's operator, the new operator must submit a new NOI, and the previous operator must submit a Notice of Termination (NOT) form as specified in Part 8.3.

1.4.5 Your Official End Date of Permit Coverage

Once covered under this permit, your coverage will last until the date that:

- a. You terminate permit coverage consistent with Part 8; or
- b. You receive permit coverage under a different NPDES permit or a reissued or replacement version of this permit after expiring on February 16, 2022; or
- c. You fail to submit an NOI for coverage under a revised or replacement version of this permit before the deadline for existing construction sites where construction activities continue after this permit has expired.

1.5 REQUIREMENT TO POST A NOTICE OF YOUR PERMIT COVERAGE

You must post a sign or other notice of your permit coverage at a safe, publicly accessible location in close proximity to the construction site. The notice must be located so that it is visible from the public road that is nearest to the active part of the construction site, and it must use a font large enough to be readily viewed from a public right-of-way.⁹ At a minimum, the notice must include:

- a. The NPDES ID (i.e., permit tracking number assigned to your NOI);
- b. A contact name and phone number for obtaining additional construction site information;
- c. The Uniform Resource Locator (URL) for the SWPPP (if available), or the following statement: "If you would like to obtain a copy of the Stormwater Pollution Prevention Plan (SWPPP) for this site, contact the EPA Regional Office at [include the appropriate CGP Regional Office contact information found at https://www.epa.gov/npdes/contact-us-stormwater#regional];" and
- d. The following statement "If you observe indicators of stormwater pollutants in the discharge or in the receiving waterbody, contact the EPA through the following website: <u>https://www.epa.gov/enforcement/report-environmental-violations</u>."

2 TECHNOLOGY-BASED EFFLUENT LIMITATIONS

You must comply with the following technology-based effluent limitations in this Part for all authorized discharges.¹⁰

⁹ If the active part of the construction site is not visible from a public road, then place the notice of permit coverage in a position that is visible from the nearest public road and as close as possible to the construction site.

¹⁰ For each of the effluent limits in Part 2, as applicable to your site, you must include in your SWPPP (1) a description of the specific control(s) to be implemented to meet the effluent limit; (2) any applicable design specifications; (3) routine maintenance specifications; and (4) the projected schedule for its (their)

2.1 GENERAL STORMWATER CONTROL DESIGN, INSTALLATION, AND MAINTENANCE REQUIREMENTS

You must design, install, and maintain stormwater controls required in Parts 2.2 and 2.3 to minimize the discharge of pollutants in stormwater from construction activities. To meet this requirement, you must:

2.1.1 Account for the following factors in designing your stormwater controls:

- a. The expected amount, frequency, intensity, and duration of precipitation;
- b. The nature of stormwater runoff and run-on at the site, including factors such as expected flow from impervious surfaces, slopes, and site drainage features. You must design stormwater controls to control stormwater volume, velocity, and peak flow rates to minimize discharges of pollutants in stormwater and to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points; and
- c. The soil type and range of soil particle sizes expected to be present on the site.
- 2.1.2 Design and install all stormwater controls in accordance with good engineering practices, including applicable design specifications.¹¹

2.1.3 Complete installation of stormwater controls by the time each phase of construction activities has begun.

- a. By the time construction activity in any given portion of the site begins, install and make operational any downgradient sediment controls (e.g., *buffers, perimeter controls, exit point controls, storm drain inlet protection*) that control discharges from the initial site clearing, grading, excavating, and other earth-disturbing activities.¹²
- b. Following the installation of these initial controls, install and make operational all stormwater controls needed to control discharges prior to subsequent earth-disturbing activities.

2.1.4 Ensure that all stormwater controls are maintained and remain in effective operating condition during permit coverage and are protected from activities that would reduce their effectiveness.

- a. Comply with any specific maintenance requirements for the stormwater controls listed in this permit, as well as any recommended by the manufacturer.¹³
- b. If at any time you find that a stormwater control needs routine maintenance, you must immediately initiate the needed maintenance work, and complete such work by the close of the next business day.

¹² Note that the requirement to install stormwater controls prior to each phase of construction activities for the site does not apply to the earth disturbance associated with the actual installation of these controls. Operators should take all reasonable actions to minimize the discharges of pollutants during the installation of stormwater controls.

installation/implementation. See Part 7.2.6.

¹¹ Design specifications may be found in manufacturer specifications and/or in applicable erosion and sediment control manuals or ordinances. Any departures from such specifications must reflect good engineering practices and must be explained in your SWPPP. You must also comply with any additional design and installation requirements specified for the effluent limits in Parts 2.2 and 2.3.

¹³ Any departures from such maintenance recommendations made by the manufacturer must reflect good engineering practices and must be explained in your SWPPP.

c. If at any time you find that a stormwater control needs repair or replacement, you must comply with the corrective action requirements in Part 5.

2.2 EROSION AND SEDIMENT CONTROL REQUIREMENTS

You must implement erosion and sediment controls in accordance with the following requirements to minimize the discharge of pollutants in stormwater from construction activities.

2.2.1 Provide and maintain natural buffers and/or equivalent erosion and sediment controls when a water of the U.S. is located within 50 feet of the site's earth disturbances.

- a. **Compliance Alternatives.** For any discharges to waters of the U.S. located within 50 feet of your site's earth disturbances, you must comply with one of the following alternatives:
 - i. Provide and maintain a 50-foot undisturbed natural buffer; or
 - ii. Provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve, in combination, the sediment load reduction equivalent to a 50-foot undisturbed natural buffer; or
 - iii. If infeasible to provide and maintain an undisturbed natural buffer of any size, implement erosion and sediment controls to achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.

See Appendix G, Part G.2 for additional conditions applicable to each compliance alternative.

b. Exceptions. See Appendix G, Part G.2 for exceptions to the compliance alternatives.

2.2.2 Direct stormwater to vegetated areas and maximize stormwater infiltration and filtering to reduce pollutant discharges, unless infeasible.

2.2.3 Install sediment controls along any perimeter areas of the site that will receive pollutant discharges.¹⁴

- a. Remove sediment before it has accumulated to one-half of the above-ground height of any perimeter control.
- b. **Exception**. For areas at "linear construction sites" (as defined in Appendix A) where perimeter controls are infeasible (e.g., due to a limited or restricted right-of-way), implement other practices as necessary to minimize pollutant discharges to perimeter areas of the site.

2.2.4 Minimize sediment track-out.

- a. Restrict vehicle use to properly designated exit points;
- b. Use appropriate stabilization techniques¹⁵ at all points that exit onto paved roads.

¹⁴ Examples of perimeter controls include filter berms, silt fences, vegetative strips, and temporary diversion dikes.

¹⁵ Examples of appropriate stabilization techniques include the use of aggregate stone with an underlying geotextile or non-woven filter fabric, and turf mats.

- i. **Exception**: Stabilization is not required for exit points at linear utility construction sites that are used only episodically and for very short durations over the life of the project, provided other exit point controls¹⁶ are implemented to minimize sediment track-out;
- c. Implement additional track-out controls¹⁷ as necessary to ensure that sediment removal occurs prior to vehicle exit; and
- d. Where sediment has been tracked-out from your site onto paved roads, sidewalks, or other paved areas outside of your site, remove the deposited sediment by the end of the same business day in which the track-out occurs or by the end of the next business day if track-out occurs on a non-business day. Remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. You are prohibited from hosing or sweeping tracked-out sediment into any stormwater conveyance, storm drain inlet, or water of the U.S.¹⁸

2.2.5 Manage stockpiles or land clearing debris piles composed, in whole or in part, of sediment and/or soil:

- a. Locate the piles outside of any natural buffers established under Part 2.2.1 and away from any stormwater conveyances, drain inlets, and areas where stormwater flow is concentrated;
- b. Install a sediment barrier along all downgradient perimeter areas;19
- c. For piles that will be unused for 14 or more days, provide cover²⁰ or appropriate temporary stabilization (consistent with Part 2.2.14);
- d. You are prohibited from hosing down or sweeping soil or sediment accumulated on pavement or other impervious surfaces into any stormwater conveyance, storm drain inlet, or water of the U.S.
- **2.2.6 Minimize dust.** On areas of exposed soil, minimize dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged in stormwater from the site.
- **2.2.7** Minimize steep slope disturbances. Minimize the disturbance of "steep slopes" (as defined in Appendix A).

¹⁶ Examples of other exit point controls include preventing the use of exit points during wet periods; minimizing exit point use by keeping vehicles on site to the extent possible; limiting exit point size to the width needed for vehicle and equipment usage; using scarifying and compaction techniques on the soil; and avoiding establishing exit points in environmentally sensitive areas (e.g., karst areas; steep slopes).

¹⁷ Examples of additional track-out controls include the use of wheel washing, rumble strips, and rattle plates.

¹⁸ Fine grains that remain visible *(i.e., staining)* on the surfaces of off-site streets, other paved areas, and sidewalks after you have implemented sediment removal practices are not a violation of Part 2.2.4.

¹⁹ Examples of sediment barriers include berms, dikes, fiber rolls, silt fences, sandbags, gravel bags, or straw bale.

²⁰ Examples of cover include tarps, blown straw and hydroseeding.

2.2.8 Preserve native topsoil, unless infeasible.²¹

- **2.2.9 Minimize soil compaction.**²² In areas of your site where final vegetative stabilization will occur or where infiltration practices will be installed:
 - a. Restrict vehicle and equipment use in these locations to avoid soil compaction; and
 - b. Before seeding or planting areas of exposed soil that have been compacted, use techniques that rehabilitate and condition the soils as necessary to support vegetative growth.

2.2.10 Protect storm drain inlets.

- a. Install inlet protection measures that remove sediment from discharges prior to entry into any storm drain inlet that carries stormwater flow from your site to a water of the U.S., provided you have authority to access the storm drain inlet;²³ and
- b. Clean, or remove and replace, the protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation adjacent to the inlet protection measure, remove the deposited sediment by the end of the same business day in which it is found or by the end of the following business day if removal by the same business day is not feasible.

2.2.11 Control stormwater discharges, including both peak flowrates and total stormwater volume, to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points. ²⁴.

2.2.12 If you install a sediment basin or similar impoundment:

- a. Situate the basin or impoundment outside of any water of the U.S. and any natural buffers established under Part 2.2.1;
- b. Design the basin or impoundment to avoid collecting water from wetlands;
- c. Design the basin or impoundment to provide storage for either:
 - i. The calculated volume of runoff from a 2-year, 24-hour storm (see Appendix H); or
 - ii. 3,600 cubic feet per acre drained.

²¹ Stockpiling topsoil at off-site locations, or transferring topsoil to other locations, is an example of a practice that is consistent with the requirements in Part 2.2.8. Preserving native topsoil is not required where the intended function of a specific area of the site dictates that the topsoil be disturbed or removed. For example, some sites may be designed to be highly impervious after construction, and therefore little or no vegetation is intended to remain, or may not have space to stockpile native topsoil on site for later use, in which case, it may not be feasible to preserve topsoil.

²² Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted.

²³ Inlet protection measures can be removed in the event of flood conditions or to prevent erosion.

²⁴ Examples of control measures that can be used to comply with this requirement include the use of erosion controls and/or velocity dissipation devices (e.g., check dams, sediment traps), within and along the length of a stormwater conveyance and at the outfall to slow down runoff.

- d. Utilize outlet structures that withdraw water from the surface of the sediment basin or similar impoundment, unless infeasible;²⁵
- e. Use erosion controls and velocity dissipation devices to prevent erosion at inlets and outlets; and
- f. Remove accumulated sediment to maintain at least one-half of the design capacity and conduct all other appropriate maintenance to ensure the basin or impoundment remains in effective operating condition.
- 2.2.13 If using treatment chemicals (e.g., polymers, flocculants, coagulants):
 - a. Use conventional erosion and sediment controls before and after the application of treatment chemicals. Chemicals may only be applied where treated stormwater is directed to a sediment control (e.g., sediment basin, perimeter control) before discharge.
 - b. **Select appropriate treatment chemicals.** Chemicals must be appropriately suited to the types of soils likely to be exposed during construction and present in the discharges being treated (i.e., the expected turbidity, pH, and flow rate of stormwater flowing into the chemical treatment system or area).
 - c. **Minimize discharge risk from stored chemicals.** Store all treatment chemicals in leakproof containers that are kept under storm-resistant cover and surrounded by secondary containment structures (e.g., spill berms, decks, spill containment pallets), or provide equivalent measures designed and maintained to minimize the potential discharge of treatment chemicals in stormwater or by any other means (e.g., storing chemicals in a covered area, having a spill kit available on site and ensuring personnel are available to respond expeditiously in the event of a leak or spill).
 - d. **Comply with state/local requirements.** Comply with applicable state and local requirements regarding the use of treatment chemicals.
 - e. Use chemicals in accordance with good engineering practices and specifications of the chemical provider/supplier. Use treatment chemicals and chemical treatment systems in accordance with good engineering practices, and with dosing specifications and sediment removal design specifications provided by the provider/supplier of the applicable chemicals, or document in your SWPPP specific departures from these specifications and how they reflect good engineering practice.
 - f. **Ensure proper training.** Ensure that all persons who handle and use treatment chemicals at the construction site are provided with appropriate, product-specific training. Among other things, the training must cover proper dosing requirements.
 - g. Perform additional measures specified by the EPA Regional Office for the authorized use of cationic chemicals. If you have been authorized to use cationic chemicals at your site pursuant to Part 1.1.9, you must perform all additional measures as conditioned by your authorization to ensure that the use of such chemicals will not cause an exceedance of water quality standards.

²⁵ The circumstances in which it is infeasible to design outlet structures in this manner are rare. Exceptions may include areas with extended cold weather, where using surface outlets may not be feasible during certain time periods (although they must be used during other periods). If you determine that it is infeasible to meet this requirement, you must provide documentation in your SWPPP to support your determination, including the specific conditions or time periods when this exception will apply.

2.2.14 Stabilize exposed portions of the site. Implement and maintain stabilization measures (e.g., seeding protected by erosion controls until vegetation is established, sodding, mulching, erosion control blankets, hydromulch, gravel) that minimize erosion from exposed portions of the site in accordance with Parts 2.2.14a and 2.2.14b.

Total Amount of Land Disturbance Occurring At Any One Time ²⁷	Deadline
 Five acres or less (≤5.0) Note: this includes sites disturbing more than five acres (>5.0) total over the course of a project, but that limit disturbance at any one time (i.e., phase the disturbance) to five acres or less (≤5.0) 	 Initiate the installation of stabilization measures immediately²⁸ in any areas of exposed soil where construction activities have permanently ceased or will be temporarily inactive for 14 or more calendar days;²⁹ and Complete the installation of stabilization measures as soon as practicable, but no later than 14 calendar days after stabilization has been initiated.³⁰

a. Stabilization Deadlines:26

²⁷ Limiting disturbances to five (5) acres or less at any one time means that at no time during the project do the cumulative earth disturbances exceed five (5) acres. The following examples would qualify as limiting disturbances at any one time to five (5) acres or less:

- 1. The total area of disturbance for a project is five (5) acres or less.
- 2. The total area of disturbance for a project will exceed five (5) acres, but the operator ensures that no more than five (5) acres will be disturbed at any one time through implementation of stabilization measures. In this way, site stabilization can be used to "free up" land that can be disturbed without exceeding the five (5)-acre cap to qualify for the 14-day stabilization deadline. For instance, if an operator completes stabilization of two (2) acres of land on a five (5)-acre disturbance, then two (2) additional acres could be disturbed while still qualifying for the longer 14-day stabilization deadline.

²⁸ The following are examples of activities that would constitute the immediate initiation of stabilization:

- 1. Prepping the soil for vegetative or non-vegetative stabilization as long as seeding, planting, and/or installation of non-vegetative stabilization products takes place as soon as practicable, but no later than one (1) calendar day of completing soil preparation;
- 2. Applying mulch or other non-vegetative product to the exposed area;
- 3. Seeding or planting the exposed area;
- 4. Starting any of the activities in # 1 3 on a portion of the entire area that will be stabilized; and
- 5. Finalizing arrangements to have stabilization product fully installed in compliance with the deadlines for completing stabilization.

²⁹ The requirement to initiate stabilization immediately is triggered as soon as you know that construction work on a portion of the site is temporarily ceased and will not resume for 14 or more days, or as soon as you know that construction work is permanently ceased. In the context of this provision, "immediately" means as soon as practicable, but no later than the end of the next business day, following the day when the construction activities have temporarily or permanently ceased.

³⁰ If vegetative stabilization measures are being implemented, stabilization is considered "installed" when all activities necessary to seed or plant the area are completed. If non-vegetative stabilization measures are being implemented, stabilization is considered "installed" when all such measures are implemented or applied.

²⁶ EPA may determine, based on an inspection carried out under Part 4.8 and corrective actions required under Part 5.3, that the level of sediment discharge on the site makes it necessary to require a faster schedule for completing stabilization. For instance, if sediment discharges from an area of exposed soil that is required to be stabilized are compromising the performance of existing stormwater controls, EPA may require stabilization to correct this problem.

ii. More than five acres (>5.0)	 Initiate the installation of stabilization measures immediately³¹ in any areas of exposed soil where construction activities have permanently ceased or will be temporarily inactive for 14 or more calendar days;³² and
	• Complete the installation of stabilization measures as soon as practicable, but no later than seven (7) calendar days after stabilization has been initiated. ³³

iii. Exceptions:

- (a) Arid, semi-arid, and drought-stricken areas (as defined in Appendix A). If it is the seasonally dry period or a period in which drought is occurring, and vegetative stabilization measures are being used:
 - Immediately initiate and, within 14 calendar days of a temporary or permanent cessation of work in any portion of your site, complete the installation of temporary non-vegetative stabilization measures to the extent necessary to prevent erosion;
 - As soon as practicable, given conditions or circumstances on the site, complete all activities necessary to seed or plant the area to be stabilized; and
 - (iii) If construction is occurring during the seasonally dry period, indicate in your SWPPP the beginning and ending dates of the seasonally dry period and your site conditions. Also include the schedule you will follow for initiating and completing vegetative stabilization.

(b) Operators that are affected by unforeseen circumstances³⁴ that delay the initiation and/or completion of vegetative stabilization:

- (i) Immediately initiate and, within 14 calendar days, complete the installation of temporary non-vegetative stabilization measures to prevent erosion;
- (ii) Complete all soil conditioning, seeding, watering or irrigation installation, mulching, and other required activities related to the planting and initial establishment of vegetation as soon as conditions or circumstances allow it on your site; and
- (iii) Document in the SWPPP the circumstances that prevent you from meeting the deadlines in Part 2.2.14a and the schedule you will follow for initiating and completing stabilization.
- (c) Discharges to a sediment- or nutrient-impaired water or to a water that is identified by your state, tribe, or EPA as Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes. Complete stabilization as soon as

³⁴ Examples include problems with the supply of seed stock or with the availability of specialized equipment and unsuitability of soil conditions due to excessive precipitation and/or flooding.

³¹ See footnote 27

³² See footnote 28

³³ See footnote 29

practicable, but no later than seven (7) calendar days after stabilization has been initiated.

- b. Final Stabilization Criteria (for any areas not covered by permanent structures):
 - i. Establish uniform, perennial vegetation (i.e., evenly distributed, without large bare areas) that provides 70 percent or more of the cover that is provided by vegetation native to local undisturbed areas; and/or
 - ii. Implement permanent non-vegetative stabilization measures³⁵ to provide effective cover.
 - iii. Exceptions:
 - (a) Arid, semi-arid, and drought-stricken areas (as defined in Appendix A). Final stabilization is met if the area has been seeded or planted to establish vegetation that provides 70 percent or more of the cover that is provided by vegetation native to local undisturbed areas within three (3) years and, to the extent necessary to prevent erosion on the seeded or planted area, non-vegetative erosion controls have been applied that provide cover for at least three years without active maintenance.
 - (b) Disturbed areas on agricultural land that are restored to their preconstruction agricultural use. The Part 2.2.14b final stabilization criteria does not apply.
 - (c) Areas that need to remain disturbed. In limited circumstances, stabilization may not be required if the intended function of a specific area of the site necessitates that it remain disturbed, and only the minimum area needed remains disturbed (e.g., dirt access roads, utility pole pads, areas being used for storage of vehicles, equipment, materials).

2.3 POLLUTION PREVENTION REQUIREMENTS³⁶

You must implement pollution prevention controls in accordance with the following requirements to minimize the discharge of pollutants in stormwater and to prevent the discharge of pollutants from spilled or leaked materials from construction activities.

2.3.1 For equipment and vehicle fueling and maintenance:

a. Provide an effective means of eliminating the discharge of spilled or leaked chemicals, including fuels and oils, from these activities;³⁷

³⁷ Examples of effective means include:

- Locating activities away from waters of the U.S. and stormwater inlets or conveyances so that stormwater coming into contact with these activities cannot reach waters of the U.S.;
- Providing secondary containment (e.g., spill berms, decks, spill containment pallets) and cover where appropriate; and
- Having a spill kit available on site and ensuring personnel are available to respond expeditiously in the event of a leak or spill.

³⁵ Examples of permanent non-vegetative stabilization measures include riprap, gravel, gabions, and geotextiles.

³⁶ Under this permit, you are not required to minimize exposure for any products or materials where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use).

- b. If applicable, comply with the Spill Prevention Control and Countermeasures (SPCC) requirements in 40 CFR part 112 and Section 311 of the CWA;
- c. Ensure adequate supplies are available at all times to handle spills, leaks, and disposal of used liquids;
- d. Use drip pans and absorbents under or around leaky vehicles;
- e. Dispose of or recycle oil and oily wastes in accordance with other federal, state, tribal, or local requirements; and
- f. Clean up spills or contaminated surfaces immediately, using dry clean up measures (do not clean contaminated surfaces by hosing the area down), and eliminate the source of the spill to prevent a discharge or a continuation of an ongoing discharge.

2.3.2 For equipment and vehicle washing:

- a. Provide an effective means of minimizing the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other types of wash waters;³⁸
- b. Ensure there is no discharge of soaps, solvents, or detergents in equipment and vehicle wash water; and
- c. For storage of soaps, detergents, or solvents, provide either (1) cover (e.g., plastic sheeting, temporary roofs) to minimize the exposure of these detergents to precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas.

2.3.3 For storage, handling, and disposal of building products, materials, and wastes:

a. For building materials and building products³⁹, provide either (1) cover (e.g., plastic sheeting, temporary roofs) to minimize the exposure of these products to precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas.

Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use).

- b. For pesticides, herbicides, insecticides, fertilizers, and landscape materials:
 - i. In storage areas, provide either (1) cover (e.g., plastic sheeting, temporary roofs) to minimize the exposure of these chemicals to precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas; and
 - ii. Comply with all application and disposal requirements included on the registered pesticide, herbicide, insecticide, and fertilizer label (see also Part 2.3.5).
- c. For diesel fuel, oil, hydraulic fluids, other petroleum products, and other chemicals:

³⁸ Examples of effective means include locating activities away from waters of the U.S. and stormwater inlets or conveyances and directing wash waters to a sediment basin or sediment trap, using filtration devices, such as filter bags or sand filters, or using other similarly effective controls.

³⁹ Examples of building materials and building products typically present at construction sites include asphalt sealants, copper flashing, roofing materials, adhesives, concrete admixtures, and gravel and mulch stockpiles.

- i. Store chemicals in water-tight containers, and provide either (1) cover (e.g., plastic sheeting, temporary roofs) to minimize the exposure of these containers to precipitation and to stormwater, or (2) a similarly effective means designed to minimize the discharge of pollutants from these areas (e.g., having a spill kit available on site and ensuring personnel are available to respond expeditiously in the event of a leak or spill), or provide secondary containment (e.g., spill berms, decks, spill containment pallets); and
- ii. Clean up spills immediately, using dry clean-up methods where possible, and dispose of used materials properly. You are prohibited from hosing the area down to clean surfaces or spills. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge.
- d. For hazardous or toxic wastes:40
 - i. Separate hazardous or toxic waste from construction and domestic waste;
 - ii. Store waste in sealed containers, which are constructed of suitable materials to prevent leakage and corrosion, and which are labeled in accordance with applicable Resource Conservation and Recovery Act (RCRA) requirements and all other applicable federal, state, tribal, or local requirements;
 - iii. Store all outside containers within appropriately-sized secondary containment (e.g., spill berms, decks, spill containment pallets) to prevent spills from being discharged, or provide a similarly effective means designed to prevent the discharge of pollutants from these areas (e.g., storing chemicals in a covered area, having a spill kit available on site);
 - iv. Dispose of hazardous or toxic waste in accordance with the manufacturer's recommended method of disposal and in compliance with federal, state, tribal, and local requirements;
 - v. Clean up spills immediately, using dry clean-up methods, and dispose of used materials properly. You are prohibited from hosing the area down to clean surfaces or spills. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge; and
 - vi. Follow all other federal, state, tribal, and local requirements regarding hazardous or toxic waste.
- e. For construction and domestic wastes:⁴¹
 - i. Provide waste containers (e.g., *dumpster, trash receptacle*) of sufficient size and number to contain construction and domestic wastes;
 - ii. Keep waste container lids closed when not in use and close lids at the end of the business day for those containers that are actively used throughout the day. For waste containers that do not have lids, provide either (1) cover (e.g., a tarp, plastic sheeting, temporary roof) to minimize exposure of wastes to precipitation,

⁴⁰ Examples of hazardous or toxic waste that may be present at construction sites include paints, caulks, sealants, fluorescent light ballasts, solvents, petroleum-based products, wood preservatives, additives, curing compounds, and acids.

⁴¹ Examples of construction and domestic waste include packaging materials, scrap construction materials, masonry products, timber, pipe and electrical cuttings, plastics, styrofoam, concrete, demolition debris; and other trash or building materials.

or (2) a similarly effective means designed to minimize the discharge of pollutants (e.g., secondary containment);

- iii. On business days, clean up and dispose of waste in designated waste containers; and
- iv. Clean up immediately if containers overflow.
- f. For sanitary waste, position portable toilets so that they are secure and will not be tipped or knocked over, and located away from waters of the U.S. and stormwater inlets or conveyances.

2.3.4 For washing applicators and containers used for stucco, paint, concrete, form release oils, curing compounds, or other materials:

- a. Direct wash water into a leak-proof container or leak-proof and lined pit designed so that no overflows can occur due to inadequate sizing or precipitation;
- b. Handle washout or cleanout wastes as follows:
 - i. Do not dump liquid wastes in storm sewers or waters of the U.S.;
 - ii. Dispose of liquid wastes in accordance with applicable requirements in Part 2.3.3; and
 - iii. Remove and dispose of hardened concrete waste consistent with your handling of other construction wastes in Part 2.3.3; and
- c. Locate any washout or cleanout activities as far away as possible from waters of the U.S. and stormwater inlets or conveyances, and, to the extent feasible, designate areas to be used for these activities and conduct such activities only in these areas.

2.3.5 For the application of fertilizers:

- a. Apply at a rate and in amounts consistent with manufacturer's specifications, or document in the SWPPP departures from the manufacturer specifications where appropriate in accordance with Part 7.2.6.b.ix;
- b. Apply at the appropriate time of year for your location, and preferably timed to coincide as closely as possible to the period of maximum vegetation uptake and growth;
- c. Avoid applying before heavy rains that could cause excess nutrients to be discharged;
- d. Never apply to frozen ground;
- e. Never apply to stormwater conveyance channels; and
- f. Follow all other federal, state, tribal, and local requirements regarding fertilizer application.

2.3.6 Emergency Spill Notification Requirements

Discharges of toxic or hazardous substances from a spill or other release are prohibited, consistent with Part 1.3.5. Where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR 110, 40 CFR 117, or 40 CFR 302 occurs during a 24-hour period, you must notify the National Response Center (NRC) at (800) 424-8802 or, in the Washington, DC metropolitan area, call (202) 267-2675 in accordance with the requirements of 40 CFR 110, 40 CFR 117, and 40 CFR 302 as soon as you have knowledge of the release. You must also, within seven (7) calendar days of knowledge of the release, provide a

description of the release, the circumstances leading to the release, and the date of the release. State, tribal, or local requirements may necessitate additional reporting of spills or discharges to local emergency response, public health, or drinking water supply agencies.

2.4 CONSTRUCTION DEWATERING REQUIREMENTS

Comply with the following requirements to minimize the discharge of pollutants in ground water or accumulated stormwater that is removed from excavations, trenches, foundations, vaults, or other similar points of accumulation, in accordance with Part 1.2.2.⁴²

- 2.4.1 Treat dewatering discharges with controls to minimize discharges of pollutants;⁴³
- 2.4.2 Do not discharge visible floating solids or foam;
- **2.4.3** Use an oil-water separator or suitable filtration device (such as a cartridge filter) that is designed to remove oil, grease, or other products if dewatering water is found to contain these materials;
- 2.4.4 To the extent feasible, use vegetated, upland areas of the site to infiltrate dewatering water before discharge. You are prohibited from using waters of the U.S. as part of the treatment area;
- **2.4.5** At all points where dewatering water is discharged, comply with the velocity dissipation requirements of Part 2.2.11;
- **2.4.6** With backwash water, either haul it away for disposal or return it to the beginning of the treatment process; and
- 2.4.7 Replace and clean the filter media used in dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications.

3 WATER QUALITY-BASED EFFLUENT LIMITATIONS

3.1 GENERAL EFFLUENT LIMITATION TO MEET APPLICABLE WATER QUALITY STANDARDS

Discharges must be controlled as necessary to meet applicable water quality standards. Discharges must also comply with any additional state or tribal requirements that are in Part 9.

In the absence of information demonstrating otherwise, EPA expects that compliance with the conditions in this permit will result in stormwater discharges being controlled as necessary to meet applicable water quality standards. If at any time you become aware, or EPA determines, that discharges are not being controlled as necessary to meet applicable water quality standards, you must take corrective action as required in Parts 5.1 and 5.2, and document the corrective actions as required in Part 5.4.

⁴² Uncontaminated, clear (non-turbid) dewatering water can be discharged without being routed to a control.

⁴³ Appropriate controls include sediment basins or sediment traps, sediment socks, dewatering tanks, tube settlers, weir tanks, filtration systems (e.g., bag or sand filters), and passive treatment systems that are designed to remove sediment. Appropriate controls to use downstream of dewatering controls to minimize erosion include vegetated buffers, check dams, riprap, and grouted riprap at outlets.

EPA may insist that you install additional controls (to meet the narrative water qualitybased effluent limit above) on a site-specific basis, or require you to obtain coverage under an individual permit, if information in your NOI or from other sources indicates that your discharges are not controlled as necessary to meet applicable water quality standards. This includes situations where additional controls are necessary to comply with a wasteload allocation in an EPA-established or approved TMDL.

If during your coverage under a previous permit, you were required to install and maintain stormwater controls specifically to meet the assumptions and requirements of an EPA-approved or established TMDL (for any parameter) or to otherwise control your discharge to meet water quality standards, you must continue to implement such controls as part of your coverage under this permit.

3.2 DISCHARGE LIMITATIONS FOR SITES DISCHARGING TO SENSITIVE WATERS⁴⁴

For any portion of the site that discharges to a sediment or nutrient-impaired water or to a water that is identified by your state, tribe, or EPA as Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes, you must comply with the inspection frequency specified in 4.3 and you must comply with the stabilization deadline specified in Part 2.2.14.a.iii.(c).⁴⁵

If you discharge to a water that is impaired for a parameter other than a sedimentrelated parameter or nutrients, EPA will inform you if any additional controls are necessary for your discharge to be controlled as necessary to meet water quality standards, including for it to be consistent with the assumptions of any available wasteload allocation in any applicable TMDL, or if coverage under an individual permit is necessary.

In addition, on a case-by-case basis, EPA may notify operators of new sites or operators of existing sites with increased discharges that additional analyses, stormwater controls, or other measures are necessary to comply with the applicable

Tiers 2, 2.5 and 3 refer to waters either identified by the state as high quality waters or Outstanding National Resource Waters under 40 CFR 131.12(a) (2) and (3). For the purposes of this permit, you are considered to discharge to a Tier 2, Tier 2.5, or Tier 3 water if the first water of the U.S. to which you discharge is identified by a state, tribe, or EPA as Tier 2, Tier 2.5, or Tier 3. For discharges that enter a storm sewer system prior to discharge, the water of the U.S. to which you discharge is the first water of the U.S. that receives the stormwater discharge from the storm sewer system. See list of Tier 2, Tier 2.5, and Tier 3 waters in Appendix F.

EPA may determine on a case-by-case basis that a site discharges to a sensitive water.

⁴⁵ If you qualify for any of the reduced inspection frequencies in Part 4.4, you may conduct inspections in accordance with Part 4.4 for any portion of your site that discharges to a sensitive water.

⁴⁴ Sensitive waters include waters that are impaired and Tier 2, Tier 2.5, and Tier 3 waters.

[&]quot;Impaired waters" are those waters identified by the state, tribe, or EPA as not meeting an applicable water quality standard and (1) requires development of a TMDL (pursuant to section 303(d) of the CWA; or (2) is addressed by an EPA-approved or established TMDL; or (3) is not in either of the above categories but the waterbody is covered by a pollution control program that meets the requirements of 40 CFR 130.7(b)(1). Your construction site will be considered to discharge to an impaired water if the first water of the U.S. to which you discharge is an impaired water for the pollutants contained in the discharge from your site. For discharges that enter a storm sewer system prior to discharge, the first water of the U.S. to which you discharge is the waterbody that receives the stormwater discharge from the storm sewer system. For assistance in determining whether your site discharges to impaired waters, EPA has developed a tool that is available both within the electronic NOI form in NeT, and at https://water.epa.gov/polwaste/npdes/stormwater/discharge.cfm.
antidegradation requirements, or notify you that an individual permit application is necessary.

If you discharge to a water that is impaired for polychlorinated biphenyls (PCBs) and are engaging in demolition of any structure with at least 10,000 square feet of floor space built or renovated before January 1, 1980, you must:

- a. Implement controls⁴⁶ to minimize the exposure of PCB-containing building materials, including paint, caulk, and pre-1980 fluorescent lighting fixtures, to precipitation and to stormwater; and
- b. Ensure that disposal of such materials is performed in compliance with applicable state, federal, and local laws.

4 SITE INSPECTION REQUIREMENTS

4.1 PERSON(S) RESPONSIBLE FOR INSPECTING SITE

The person(s) inspecting your site may be a person on your staff or a third party you hire to conduct such inspections. You are responsible for ensuring that the person who conducts inspections is a "qualified person."⁴⁷

4.2 FREQUENCY OF INSPECTIONS.⁴⁸

At a minimum, you must conduct a site inspection in accordance with one of the two schedules listed below, unless you are subject to the Part 4.3 site inspection frequency for discharges to sensitive waters or qualify for a Part 4.4 reduction in the inspection frequency:

- **4.2.1** At least once every seven (7) calendar days; or
- **4.2.2** Once every 14 calendar days and within 24 hours of the occurrence of a storm event of 0.25 inches or greater, or the occurrence of runoff from snowmelt sufficient to cause a discharge.⁴⁹ To determine if a storm event of 0.25 inches or greater has occurred on your site, you must either keep a properly maintained rain gauge on your site, or obtain the storm event information from a weather station that is representative of your location. For any day of rainfall during normal business hours that measures 0.25 inches or greater, you must record the total rainfall measured for that day in accordance with Part 4.7.1d.

⁴⁷ A "qualified person" is a person knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention, who possesses the appropriate skills and training to assess conditions at the construction site that could impact stormwater quality, and the appropriate skills and training to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of this permit.

⁴⁸ Inspections are only required during the site's normal working hours.

⁴⁶ Examples of controls to minimize exposure of PCBs to precipitation and stormwater include separating work areas from non-work areas and selecting appropriate personal protective equipment and tools, constructing a containment area so that all dust or debris generated by the work remains within the protected area, using tools that minimize dust and heat (<212°F). For additional information, refer to Part 2.3.3 of the CGP Fact Sheet.

⁴⁹ "Within 24 hours of the occurrence of a storm event" means that you must conduct an inspection within 24 hours once a storm event has produced 0.25 inches within a 24-hour period, even if the storm event is still continuing. Thus, if you have elected to inspect bi-weekly in accordance with Part 4.2.2 and there is a storm event at your site that continues for multiple days, and each day of the storm produces 0.25 inches or more of rain, you must conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the end of the storm.

4.3 INCREASE IN INSPECTION FREQUENCY FOR SITES DISCHARGING TO SENSITIVE WATERS.

For any portion of the site that discharges to a sediment or nutrient-impaired water or to a water that is identified by your state, tribe, or EPA as Tier 2, Tier 2.5, or Tier 3 for antidegradation purposes (see Part 3.2), instead of the inspection frequency specified in Part 4.2, you must conduct inspections in accordance with the following inspection frequencies:

Once every seven (7) calendar days and within 24 hours of the occurrence of a storm event of 0.25 inches or greater, or the occurrence of runoff from snowmelt sufficient to cause a discharge. To determine if a storm event of 0.25 inches or greater has occurred on your site, you must either keep a properly maintained rain gauge on your site, or obtain the storm event information from a weather station that is representative of your location. For any day of rainfall during normal business hours that measures 0.25 inches or greater, you must record the total rainfall measured for that day in accordance with Part 4.7.1d.

4.4 REDUCTIONS IN INSPECTION FREQUENCY

4.4.1 Stabilized areas.

- a. You may reduce the frequency of inspections to twice per month for the first month, no more than 14 calendar days apart, then once per month in any area of your site where the stabilization steps in 2.2.14a have been completed. If construction activity resumes in this portion of the site at a later date, the inspection frequency immediately increases to that required in Parts 4.2 and 4.3, as applicable. You must document the beginning and ending dates of this period in your SWPPP.
- b. **Exception.** For "linear construction sites" (as defined in Appendix A) where disturbed portions have undergone final stabilization at the same time active construction continues on others, you may reduce the frequency of inspections to twice per month for the first month, no more than 14 calendar days apart, in any area of your site where the stabilization steps in 2.2.14a have been completed. After the first month, inspect once more within 24 hours of the occurrence of a storm event of 0.25 inches or greater. If there are no issues or evidence of stabilization problems, you may suspend further inspections. If "wash-out" of stabilization materials and/or sediment is observed, following re-stabilization, inspections must resume at the inspection frequency required in Part 4.4.1a Inspections must continue until final stabilization is visually confirmed following a storm event of 0.25 inches or greater.
- **4.4.2** Arid, semi-arid, or drought-stricken areas (as defined in Appendix A). If it is the seasonally dry period or a period in which drought is occurring, you may reduce the frequency of inspections to once per month and within 24 hours of the occurrence of a storm event of 0.25 inches or greater. You must document that you are using this reduced schedule and the beginning and ending dates of the seasonally dry period in your SWPPP. To determine if a storm event of 0.25 inches or greater has occurred on your site, you must either keep a properly maintained rain gauge on your site, or obtain the storm event information from a weather station that is representative of your location. For any day of rainfall during normal business hours that measures 0.25 inches or greater, you must record the total rainfall measured for that day in accordance with Part 4.7.1d.

4.4.3 Frozen conditions:

a. If you are suspending construction activities due to frozen conditions, you may temporarily suspend inspections on your site until thawing conditions (as defined in Appendix A) begin to occur if:

- i. Runoff is unlikely due to continuous frozen conditions that are likely to continue at your site for at least three (3) months based on historic seasonal averages. If unexpected weather conditions (such as above freezing temperatures or rain events) make discharges likely, you must immediately resume your regular inspection frequency as described in Parts 4.2 and 4.3, as applicable;
- ii. Land disturbances have been suspended; and
- iii. All disturbed areas of the site have been stabilized in accordance with Part 2.2.14a.
- b. If you are still conducting construction activities during frozen conditions, you may reduce your inspection frequency to once per month if:
 - i. Runoff is unlikely due to continuous frozen conditions that are likely to continue at your site for at least three (3) months based on historic seasonal averages. If unexpected weather conditions (such as above freezing temperatures or rain events) make discharges likely, you must immediately resume your regular inspection frequency as described in Parts 4.2 and 4.3, as applicable; and
 - ii. Except for areas in which you are actively conducting construction activities, disturbed areas of the site have been stabilized in accordance with Part 2.2.14a.

You must document the beginning and ending dates of this period in your SWPPP.

4.5 AREAS THAT MUST BE INSPECTED

During your site inspection, you must at a minimum inspect the following areas of your site:

- **4.5.1** All areas that have been cleared, graded, or excavated and that have not yet completed stabilization consistent with Part 2.2.14a;
- **4.5.2** All stormwater controls (including pollution prevention controls) installed at the site to comply with this permit;⁵⁰
- **4.5.3** Material, waste, borrow, and equipment storage and maintenance areas that are covered by this permit;
- **4.5.4** All areas where stormwater typically flows within the site, including drainageways designed to divert, convey, and/or treat stormwater;
- 4.5.5 All points of discharge from the site; and
- **4.5.6** All locations where stabilization measures have been implemented.

You are not required to inspect areas that, at the time of the inspection, are considered unsafe to your inspection personnel.

4.6 **REQUIREMENTS FOR INSPECTIONS**

During your site inspection, you must at a minimum:

4.6.1 Check whether all stormwater controls (*i.e.*, erosion and sediment controls and pollution prevention controls) are properly installed, appear to be operational, and are working as intended to minimize pollutant discharges;

⁵⁰ This includes the requirement to inspect for sediment that has been tracked out from the site onto paved roads, sidewalks, or other paved areas consistent with Part 2.2.4.

- **4.6.2** Check for the presence of conditions that could lead to spills, leaks, or other accumulations of pollutants on the site;
- **4.6.3** Identify any locations where new or modified stormwater controls are necessary to meet the requirements of Parts 2 and/or 3;
- **4.6.4** Check for signs of visible erosion and sedimentation (*i.e., sediment deposits*) that have occurred and are attributable to your discharge at points of discharge and, if applicable, the banks of any waters of the U.S. flowing within or immediately adjacent to the site;
- **4.6.5** Identify any incidents of noncompliance observed;
- **4.6.6** If a discharge is occurring during your inspection:
 - a. Identify all discharge points at the site; and
 - b. Observe and document the visual quality of the discharge, and take note of the characteristics of the stormwater discharge, including color; odor; floating, settled, or suspended solids; foam; oil sheen; and other indicators of stormwater pollutants.
- **4.6.7** Based on the results of your inspection, complete any necessary maintenance under Part 2.1.4 and corrective action under Part 5.

4.7 INSPECTION REPORT

- **4.7.1** You must complete an inspection report within 24 hours of completing any site inspection. Each inspection report must include the following:
 - a. The inspection date;
 - b. Names and titles of personnel making the inspection;
 - c. A summary of your inspection findings, covering at a minimum the observations you made in accordance with Part 4.6, including any necessary maintenance or corrective actions;
 - d. If you are inspecting your site at the frequency specified in Part 4.2.2, Part 4.3, or Part 4.4.1b, and you conducted an inspection because of rainfall measuring 0.25 inches or greater, you must include the applicable rain gauge or weather station readings that triggered the inspection; and
 - e. If you determined that it is unsafe to inspect a portion of your site, you must describe the reason you found it to be unsafe and specify the locations to which this condition applies.
- **4.7.2** Each inspection report must be signed in accordance with Appendix I, Part I.11 of this permit.
- **4.7.3** You must keep a copy of all inspection reports at the site or at an easily accessible location, so that it can be made available at the time of an on-site inspection or upon request by EPA.
- **4.7.4** You must retain all inspection reports completed for this Part for at least three (3) years from the date that your permit coverage expires or is terminated.

4.8 INSPECTIONS BY EPA

You must allow EPA, or an authorized representative of EPA, to conduct the following activities at reasonable times. To the extent that you are utilizing shared controls that are

not on site to comply with this permit, you must make arrangements for EPA to have access at all reasonable times to those areas where the shared controls are located.

- **4.8.1** Enter onto all areas of the site, including any construction support activity areas covered by this permit, any off-site areas where shared controls are utilized to comply with this permit, discharge locations, adjoining waterbodies, and locations where records are kept under the conditions of this permit;
- 4.8.2 Access and copy any records that must be kept under the conditions of this permit;
- **4.8.3** Inspect your construction site, including any construction support activity areas covered by this permit (see Part 1.2.1c), any stormwater controls installed and maintained at the site, and any off-site shared controls utilized to comply with this permit; and
- **4.8.4** Sample or monitor for the purpose of ensuring compliance.

5 CORRECTIVE ACTIONS

5.1 CONDITIONS TRIGGERING CORRECTIVE ACTION.

You must take corrective action to address any of the following conditions identified at your site:

- **5.1.1** A stormwater control needs repair or replacement (beyond routine maintenance required under Part 2.1.4); or
- **5.1.2** A stormwater control necessary to comply with the requirements of this permit was never installed, or was installed incorrectly; or
- 5.1.3 Your discharges are causing an exceedance of applicable water quality standards; or
- 5.1.4 A prohibited discharge has occurred (see Part 1.3).

5.2 CORRECTIVE ACTION DEADLINES

For any corrective action triggering conditions in Part 5.1, you must:

- **5.2.1** Immediately take all reasonable steps to address the condition, including cleaning up any contaminated surfaces so the material will not discharge in subsequent storm events;
- **5.2.2** When the problem does not require a new or replacement control or significant repair, the corrective action must be completed by the close of the next business day;
- **5.2.3** When the problem requires a new or replacement control or significant repair, install the new or modified control and make it operational, or complete the repair, by no later than seven (7) calendar days from the time of discovery. If it is infeasible to complete the installation or repair within seven (7) calendar days, you must document in your records why it is infeasible to complete the installation or repair within the 7-day timeframe and document your schedule for installing the stormwater control(s) and making it operational as soon as feasible after the 7-day timeframe. Where these actions result in changes to any of the stormwater controls or procedures documented in your SWPPP, you must modify your SWPPP accordingly within seven (7) calendar days of completing this work.

5.3 CORRECTIVE ACTION REQUIRED BY EPA

You must comply with any corrective actions required by EPA as a result of permit violations found during an inspection carried out under Part 4.8.

5.4 CORRECTIVE ACTION REPORT

For each corrective action taken in accordance with this Part, you must complete a report in accordance with the following:

- **5.4.1** Within 24 hours of identifying the corrective action condition, document the specific condition and the date and time it was identified.
- **5.4.2** Within 24 hours of completing the corrective action (in accordance with the deadlines in Part 5.2), document the actions taken to address the condition, including whether any SWPPP modifications are required.
- **5.4.3** Each corrective action report must be signed in accordance with Appendix I, Part I.11 of this permit.
- **5.4.4** You must keep a copy of all corrective action reports at the site or at an easily accessible location, so that it can be made available at the time of an on-site inspection or upon request by EPA.
- **5.4.5** You must retain all corrective action reports completed for this Part for at least three (3) years from the date that your permit coverage expires or is terminated.

6 STAFF TRAINING REQUIREMENTS

Each operator, or group of multiple operators, must assemble a "stormwater team" to carry out compliance activities associated with the requirements in this permit.

- **6.1** Prior to the commencement of construction activities, you must ensure that the following personnel⁵¹ on the stormwater team understand the requirements of this permit and their specific responsibilities with respect to those requirements:
 - a. Personnel who are responsible for the design, installation, maintenance, and/or repair of stormwater controls (including pollution prevention controls);
 - b. Personnel responsible for the application and storage of treatment chemicals (if applicable);
 - c. Personnel who are responsible for conducting inspections as required in Part 4.1; and
 - d. Personnel who are responsible for taking corrective actions as required in Part 5.
- **6.2** You are responsible for ensuring that all activities on the site comply with the requirements of this permit. You are not required to provide or document formal training for subcontractors or other outside service providers, but you must ensure that such personnel understand any requirements of this permit that may be affected by the work they are subcontracted to perform.

⁵¹ If the person requiring training is a new employee who starts after you commence construction activities, you must ensure that this person has the proper understanding as required above prior to assuming particular responsibilities related to compliance with this permit.

For emergency-related projects, the requirement to train personnel prior to commencement of construction activities does not apply, however, such personnel must have the required training prior to NOI submission.

- **6.3** At a minimum, members of the stormwater team must be trained to understand the following if related to the scope of their job duties (e.g., only personnel responsible for conducting inspections need to understand how to conduct inspections):
 - a. The permit deadlines associated with installation, maintenance, and removal of stormwater controls and with stabilization;
 - b. The location of all stormwater controls on the site required by this permit and how they are to be maintained;
 - c. The proper procedures to follow with respect to the permit's pollution prevention requirements; and
 - d. When and how to conduct inspections, record applicable findings, and take corrective actions.
- 6.4 Each member of the stormwater team must have easy access to an electronic or paper copy of applicable portions of this permit, the most updated copy of your SWPPP, and other relevant documents or information that must be kept with the SWPPP.

7 STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

7.1 GENERAL REQUIREMENTS

All operators associated with a construction site under this permit must develop a SWPPP consistent with the requirements in Part 7 prior to their submittal of the NOI.^{52, 53} The SWPPP must be kept up-to-date throughout coverage under this permit.

If a SWPPP was prepared under a previous version of this permit, the operator must review and update the SWPPP to ensure that this permit's requirements are addressed prior to submitting an NOI for coverage under this permit.

7.2 SWPPP CONTENTS

At a minimum, the SWPPP must include the information specified in this Part and as specified in other parts of this permit.

- 7.2.1 All Site Operators. Include a list of all other operators who will be engaged in construction activities at the site, and the areas of the site over which each operator has control.
- **7.2.2** Stormwater Team. Identify the personnel (by name or position) that are part of the stormwater team, as well as their individual responsibilities, including which members are responsible for conducting inspections.

⁵² The SWPPP does not establish the effluent limits and other permit terms and conditions that apply to your site's discharges; these limits, terms, and conditions are established in this permit.

Where there are multiple operators associated with the same site, they may develop a group SWPPP instead of multiple individual SWPPs. Regardless of whether there is a group SWPPP or multiple individual SWPPs, each operator is responsible for compliance with the permit's terms and conditions. In other words, if Operator A relies on Operator B to satisfy its permit obligations, Operator A does not have to duplicate those permit-related functions if Operator B is implementing them for both operators to be in compliance with the permit. However, Operator A remains responsible for permit compliance if Operator B fails to implement any measures necessary for Operator A to comply with the permit. In addition, all operators must ensure, either directly or through coordination with other operators, that their activities do not compromise any other operators' controls and/or any shared controls.

7.2.3 Nature of Construction Activities.⁵⁴ Include the following:

- a. A description of the nature of your construction activities, including the age or dates of past renovations for structures that are undergoing demolition;
- b. The size of the property (in acres or length in miles if a linear construction site);
- c. The total area expected to be disturbed by the construction activities (to the nearest quarter acre or nearest quarter mile if a linear construction site);
- d. A description of any on-site and off-site construction support activity areas covered by this permit (see Part 1.2.1c);
- e. The maximum area expected to be disturbed at any one time, including on-site and off-site construction support activity areas;
- f. A description and projected schedule for the following:
 - i. Commencement of construction activities in each portion of the site, including clearing and grubbing, mass grading, demolition activities, site preparation (i.e., excavating, cutting and filling), final grading, and creation of soil and vegetation stockpiles requiring stabilization;
 - ii. Temporary or permanent cessation of construction activities in each portion of the site;
 - iii. Temporary or final stabilization of exposed areas for each portion of the site; and
 - iv. Removal of temporary stormwater controls and construction equipment or vehicles, and the cessation of construction-related pollutant-generating activities.
- g. A list and description of all pollutant-generating activities⁵⁵ on the site. For each pollutant-generating activity, include an inventory of pollutants or pollutant constituents (e.g., sediment, fertilizers, pesticides, paints, caulks, sealants, fluorescent light ballasts, contaminated substrates, solvents, fuels) associated with that activity, which could be discharged in stormwater from your construction site. You must take into account where potential spills and leaks could occur that contribute pollutants to stormwater discharges, and any known hazardous or toxic substances, such as PCBs and asbestos, that will be disturbed or removed during construction;
- h. Business days and hours for the project;
- i. If you are conducting construction activities in response to a public emergency (see Part 1.4), a description of the cause of the public emergency (e.g., mud slides, earthquake, extreme flooding conditions, widespread disruption in essential public services), information substantiating its occurrence (e.g., state disaster declaration or similar state or local declaration), and a description of the construction necessary to reestablish affected public services.
- **7.2.4** Site Map. Include a legible map, or series of maps, showing the following features of the site:
 - a. Boundaries of the property;

⁵⁴ If plans change due to unforeseen circumstances or for other reasons, the requirement to describe the sequence and estimated dates of construction activities is not meant to "lock in" the operator to meeting these dates. When departures from initial projections are necessary, this should be documented in the SWPPP itself, or in associated records, as appropriate.

⁵⁵ Examples of pollutant-generating activities include paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and disposal; and dewatering operations.

- b. Locations where construction activities will occur, including:
 - i. Locations where earth-disturbing activities will occur (note any phasing), including any demolition activities;
 - ii. Approximate slopes before and after major grading activities (note any steep slopes (as defined in Appendix A));
 - iii. Locations where sediment, soil, or other construction materials will be stockpiled;
 - iv. Any water of the U.S. crossings;
 - v. Designated points where vehicles will exit onto paved roads;
 - vi. Locations of structures and other impervious surfaces upon completion of construction; and
 - vii. Locations of on-site and off-site construction support activity areas covered by this permit (see Part 1.2.1c).
- c. Locations of all waters of the U.S. within and one mile downstream of the site's discharge point. Also identify if any are listed as impaired, or are identified as a Tier 2, Tier 2.5, or Tier 3 water;
- d. Areas of federally listed critical habitat within the site and/or at discharge locations;
- e. Type and extent of pre-construction cover on the site (e.g., vegetative cover, forest, pasture, pavement, structures);
- f. Drainage patterns of stormwater and authorized non-stormwater before and after major grading activities;
- g. Stormwater and authorized non-stormwater discharge locations, including:
 - i. Locations where stormwater and/or authorized non-stormwater will be discharged to storm drain inlets;⁵⁶ and
 - ii. Locations where stormwater or authorized non-stormwater will be discharged directly to waters of the U.S.
- h. Locations of all potential pollutant-generating activities identified in Part 7.2.3g;
- i. Locations of stormwater controls, including natural buffer areas and any shared controls utilized to comply with this permit; and
- j. Locations where polymers, flocculants, or other treatment chemicals will be used and stored.
- **7.2.5** Non-Stormwater Discharges. Identify all authorized non-stormwater discharges in Part 1.2.2 that will or may occur.

7.2.6 Description of Stormwater Controls.

- a. For each of the Part 2.2 erosion and sediment control effluent limits, Part 2.3 pollution prevention effluent limits, and Part 2.4 construction dewatering effluent limits, as applicable to your site, you must include the following:
 - i. A description of the specific control(s) to be implemented to meet the effluent limit;

⁵⁶ The requirement to show storm drain inlets in the immediate vicinity of the site on your site map only applies to those inlets that are easily identifiable from your site or from a publicly accessible area immediately adjacent to your site.

- ii. Any applicable stormwater control design specifications (including references to any manufacturer specifications and/or erosion and sediment control manuals/ordinances relied upon);⁵⁷
- iii. Routine stormwater control maintenance specifications; and
- iv. The projected schedule for stormwater control installation/implementation.
- b. You must also include any of the following additional information as applicable.
 - i. Natural buffers and/or equivalent sediment controls (see Part 2.2.1 and Appendix G). You must include the following:
 - (a) The compliance alternative to be implemented;
 - (b) If complying with alternative 2, the width of natural buffer retained;
 - (c) If complying with alternative 2 or 3, the erosion and sediment control(s) you will use to achieve an equivalent sediment reduction, and any information you relied upon to demonstrate the equivalency;
 - (d) If complying with alternative 3, a description of why it is infeasible for you to provide and maintain an undisturbed natural buffer of any size;
 - (e) For "linear construction sites" where it is infeasible to implement compliance alternative 1, 2, or 3, a rationale for this determination, and a description of any buffer width retained and/or supplemental erosion and sediment controls installed; and
 - (f) A description of any disturbances that are exempt under Part 2.2.1 that occur within 50 feet of a water of the U.S.
- ii. **Perimeter controls for a "linear construction site"** (see Part 2.2.3). For areas where perimeter controls are not feasible, include documentation to support this determination and a description of the other practices that will be implemented to minimize discharges of pollutants in stormwater associated with construction activities.

Note: Routine maintenance specifications for perimeter controls documented in the SWPPP must include the Part 2.2.3a requirement that sediment be removed before it has accumulated to one-half of the above-ground height of any perimeter control.

- iii. **Sediment track-out controls** (see Parts 2.2.4b and 2.2.4c). Document the specific stabilization techniques and/or controls that will be implemented to remove sediment prior to vehicle exit.
- iv. **Sediment basins** (see Part 2.2.12). In circumstances where it is infeasible to utilize outlet structures that withdraw water from the surface, include documentation to support this determination, including the specific conditions or time periods when this exception will apply.
- v. Treatment chemicals (see Part 2.2.13), you must include the following:
 - (a) A listing of the soil types that are expected to be exposed during construction in areas of the project that will drain to chemical treatment systems. Also include a listing of soil types expected to be found in fill material to be used in these same areas, to the extent you have this information prior to construction;

⁵⁷ Design specifications may be found in manufacturer specifications and/or in applicable erosion and sediment control manuals or ordinances. Any departures from such specifications must reflect good engineering practice and must be explained in the SWPPP.

- (b) A listing of all treatment chemicals to be used at the site and why the selection of these chemicals is suited to the soil characteristics of your site;
- (c) If the applicable EPA Regional Office authorized you to use cationic treatment chemicals for sediment control, include the specific controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to an exceedance of water quality standards;
- (d) The dosage of all treatment chemicals to be used at the site or the methodology to be used to determine dosage;
- (e) Information from any applicable Safety Data Sheet (SDS);
- (f) Schematic drawings of any chemically enhanced stormwater controls or chemical treatment systems to be used for application of the treatment chemicals;
- (g) A description of how chemicals will be stored consistent with Part 2.2.13c;
- (h) References to applicable state or local requirements affecting the use of treatment chemicals, and copies of applicable manufacturer's specifications regarding the use of your specific treatment chemicals and/or chemical treatment systems; and
- (i) A description of the training that personnel who handle and apply chemicals have received prior to permit coverage, or will receive prior to use of the treatment chemicals at your site.
- vi. Stabilization measures (see Part 2.2.14). You must include the following:
 - (a) The specific vegetative and/or non-vegetative practices that will be used;
 - (b) The stabilization deadline that will be met in accordance with Part 2.2.14.a.i-ii;
 - (c) If complying with the deadlines for sites in arid, semi-arid, or drought-stricken areas, the beginning and ending dates of the seasonally dry period and the schedule you will follow for initiating and completing vegetative stabilization; and
 - (d) If complying with deadlines for sites affected by unforeseen circumstances that delay the initiation and/or completion of vegetative stabilization, document the circumstances and the schedule for initiating and completing stabilization.
- vii. **Spill prevention and response procedures** (see Part 1.3.5 and Part 2.3). You must include the following:
 - (a) Procedures for expeditiously stopping, containing, and cleaning up spills, leaks, and other releases. Identify the name or position of the employee(s) responsible for detection and response of spills or leaks; and
 - (b) Procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity consistent with Part 2.3.6 and established under either 40 CFR 110, 40 CFR 117, or 40 CFR 302, occurs during a 24-hour period. Contact information must be in locations that are readily accessible and available to all employees.

You may also reference the existence of Spill Prevention Control and

Countermeasure (SPCC) plans developed for the construction activity under Part 311 of the CWA, or spill control programs otherwise required by an NPDES permit for the construction activity, provided that you keep a copy of that other plan on site.⁵⁸

- viii. **Waste management procedures** (see Part 2.3.3). Describe the procedures you will follow for handling, storing and disposing of all wastes generated at your site consistent with all applicable federal, state, tribal, and local requirements, including clearing and demolition debris, sediment removed from the site, construction and domestic waste, hazardous or toxic waste, and sanitary waste.
- ix. **Application of fertilizers** (see Part 2.3.5). Document any departures from the manufacturer specifications where appropriate.
- 7.2.7 Procedures for Inspection, Maintenance, and Corrective Action. Describe the procedures you will follow for maintaining your stormwater controls, conducting site inspections, and, where necessary, taking corrective actions, in accordance with Part 2.1.4, Part 4, and Part 5 of this permit. Also include:
 - a. The inspection schedule you will follow, which is based on whether your site is subject to Part 4.2 or Part 4.3, or whether your site qualifies for any of the reduced inspection frequencies in Part 4.4;
 - b. If you will be conducting inspections in accordance with the inspection schedule in Part 4.2.2, Part 4.3, or Part 4.4.1b, the location of the rain gauge or the address of the weather station you will be using to obtain rainfall data;
 - c. If you will be reducing your inspection frequency in accordance with Part 4.4.1b, the beginning and ending dates of the seasonally defined arid period for your area or the valid period of drought;
 - d. If you will be reducing your inspection frequency in accordance with Part 4.4.3, the beginning and ending dates of frozen conditions on your site; and
 - e. Any maintenance or inspection checklists or other forms that will be used.
- **7.2.8 Staff Training.** Include documentation that the required personnel were, or will be, trained in accordance with Part 6.
- 7.2.9 Compliance with Other Requirements.
 - a. **Threatened and Endangered Species Protection.** Include documentation required in Appendix D supporting your eligibility with regard to the protection of threatened and endangered species and designated critical habitat.
 - b. **Historic Properties.** Include documentation required in Appendix E supporting your eligibility with regard to the protection of historic properties.
 - c. Safe Drinking Water Act Underground Injection Control (UIC) Requirements for Certain Subsurface Stormwater Controls. If you are using any of the following stormwater controls at your site, document any contact you have had with the applicable state agency⁵⁹ or EPA Regional Office responsible for implementing the requirements for underground injection wells in the Safe Drinking Water Act and EPA's implementing

⁵⁸ Even if you already have an SPCC or other spill prevention plan in existence, your plans will only be considered adequate if they meet all of the requirements of this Part, either as part of your existing plan or supplemented as part of the SWPPP.

⁵⁹ For state UIC program contacts, refer to the following EPA website: <u>https://www.epa.gov/uic</u>.

regulations at 40 CFR 144 -147. Such controls would generally be considered Class V UIC wells:

- i. Infiltration trenches (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system);
- ii. Commercially manufactured pre-cast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate stormwater flow; and
- iii. Drywells, seepage pits, or improved sinkholes (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system).
- 7.2.10 SWPPP Certification. You must sign and date your SWPPP in accordance with Appendix I, Part I.11.
- **7.2.11 Post-Authorization Additions to the SWPPP.** Once you are authorized for coverage under this permit, you must include the following documents as part of your SWPPP:
 - a. A copy of your NOI submitted to EPA along with any correspondence exchanged between you and EPA related to coverage under this permit;
 - b. A copy of the acknowledgment letter you receive from NeT assigning your NPDES ID (i.e., permit tracking number);
 - c. A copy of this permit (an electronic copy easily available to the stormwater team is also acceptable).

7.3 ON-SITE AVAILABILITY OF YOUR SWPPP

You must keep a current copy of your SWPPP at the site or at an easily accessible location so that it can be made available at the time of an on-site inspection or upon request by EPA; a state, tribal, or local agency approving stormwater management plans; the operator of a storm sewer system receiving discharges from the site; or representatives of the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS).

EPA may provide access to portions of your SWPPP to a member of the public upon request. Confidential Business Information (CBI) will be withheld from the public, but may not be withheld from EPA, USFWS, or NMFS.⁶⁰

If an on-site location is unavailable to keep the SWPPP when no personnel are present, notice of the plan's location must be posted near the main entrance of your construction site.

7.4 SWPPP MODIFICATIONS

⁶⁰ Information covered by a claim of confidentiality will be disclosed by EPA only to the extent of, and by means of, the procedures set forth in 40 CFR Part 2, Subpart B. In general, submitted information protected by a business confidentiality claim may be disclosed to other employees, officers, or authorized representatives of the United States concerned with implementing the CWA. The authorized representatives, including employees of other executive branch agencies, may review CBI during the course of reviewing draft regulations.

- 7.4.1 You must modify your SWPPP, including the site map(s), within seven (7) days of any of the following conditions:
 - a. Whenever new operators become active in construction activities on your site, or you make changes to your construction plans, stormwater controls, or other activities at your site that are no longer accurately reflected in your SWPPP. This includes changes made in response to corrective actions triggered under Part 5. You do not need to modify your SWPPP if the estimated dates in Part 7.2.3f change during the course of construction;
 - b. To reflect areas on your site map where operational control has been transferred (and the date of transfer) since initiating permit coverage;
 - c. If inspections or investigations by EPA or its authorized representatives determine that SWPPP modifications are necessary for compliance with this permit;
 - d. Where EPA determines it is necessary to install and/or implement additional controls at your site in order to meet the requirements of this permit, the following must be included in your SWPPP:
 - i. A copy of any correspondence describing such measures and requirements; and
 - ii. A description of the controls that will be used to meet such requirements.
 - e. To reflect any revisions to applicable federal, state, tribal, or local requirements that affect the stormwater controls implemented at the site; and
 - f. If applicable, if a change in chemical treatment systems or chemically enhanced stormwater control is made, including use of a different treatment chemical, different dosage rate, or different area of application.
- **7.4.2** You must maintain records showing the dates of all SWPPP modifications. The records must include the name of the person authorizing each change (see Part 7.2.10 above) and a brief summary of all changes.
- **7.4.3** All modifications made to the SWPPP consistent with Part 7.4 must be authorized by a person identified in Appendix I, Part I.11.b.
- **7.4.4** Upon determining that a modification to your SWPPP is required, if there are multiple operators covered under this permit, you must immediately notify any operators who may be impacted by the change to the SWPPP.

8 HOW TO TERMINATE COVERAGE

Until you terminate coverage under this permit, you must comply with all conditions and effluent limitations in the permit. To terminate permit coverage, you must submit to EPA a complete and accurate Notice of Termination (NOT), which certifies that you have met the requirements for terminating in Part 8.

8.1 MINIMUM INFORMATION REQUIRED IN NOT

- **8.1.1** NPDES ID (*i.e., permit tracking number*) provided by EPA when you received coverage under this permit;
- 8.1.2 Basis for submission of the NOT (see Part 8.2);
- 8.1.3 Operator contact information;
- 8.1.4 Name of site and address (or a description of location if no street address is available); and

8.1.5 NOT certification.

8.2 CONDITIONS FOR TERMINATING CGP COVERAGE

You must terminate CGP coverage only if one or more of the following conditions has occurred:

- **8.2.1** You have completed all construction activities at your site and, if applicable, construction support activities covered by this permit (see Part 1.2.1c), and you have met the following requirements:
 - a. For any areas that (1) were disturbed during construction, (2) are not covered over by permanent structures, and (3) over which you had control during the construction activities, you have met the requirements for final vegetative or non-vegetative stabilization in Part 2.2.14b;
 - b. You have removed and properly disposed of all construction materials, waste and waste handling devices, and have removed all equipment and vehicles that were used during construction, unless intended for long-term use following your termination of permit coverage;
 - c. You have removed all stormwater controls that were installed and maintained during construction, except those that are intended for long-term use following your termination of permit coverage or those that are biodegradable; and
 - d. You have removed all potential pollutants and pollutant-generating activities associated with construction, unless needed for long-term use following your termination of permit coverage; or
- **8.2.2** You have transferred control of all areas of the site for which you are responsible under this permit to another operator, and that operator has submitted an NOI and obtained coverage under this permit; or
- 8.2.3 Coverage under an individual or alternative general NPDES permit has been obtained.

8.3 HOW TO SUBMIT YOUR NOT

You must use EPA's NPDES eReporting Tool (NeT) to electronically prepare and submit your NOT for the 2017 CGP.

To access NeT, go to <u>https://www.epa.gov/npdes/stormwater-discharges-</u> construction-activities#ereporting.

Waivers from electronic reporting may be granted as specified in Part 1.4.1. If the EPA Regional Office grants you approval to use a paper NOT, and you elect to use it, you must complete the form in Appendix K.

8.4 DEADLINE FOR SUBMITTING THE NOT

You must submit your NOT within 30 calendar days after any one of the conditions in Part 8.2 occurs.

8.5 EFFECTIVE DATE OF TERMINATION OF COVERAGE

Your authorization to discharge under this permit terminates at midnight of the calendar day that a complete NOT is submitted to EPA.

9 PERMIT CONDITIONS APPLICABLE TO SPECIFIC STATES, INDIAN COUNTRY LANDS, OR TERRITORIES

The provisions in this Part provide modifications or additions to the applicable conditions of this permit to reflect specific additional conditions required as part of the state or tribal CWA Section 401 certification process, or the Coastal Zone Management Act (CZMA) certification process, or as otherwise established by the permitting authority. The specific additional revisions and requirements only apply to activities in those specific states, Indian country, and areas in certain states subject to construction projects by Federal Operators. States, Indian country, and areas subject to construction by Federal Operators not included in this Part do not have any modifications or additions to the applicable conditions of this permit.

9.1 EPA Region 1

9.1.1 NHR100000 State of New Hampshire

- a. If you disturb 100,000 square feet or more of contiguous area, you must also apply for an Alteration of Terrain (AoT) permit from DES pursuant to RSA 485- A:17 and Env-Wq 1500. This requirement also applies to a lower disturbance threshold of 50,000 square feet or more when construction occurs within the protected shoreline under the Shoreland Water Quality Protection Act (see RSA 483-B and Env-Wq 1400). A permit application must also be filed if your project disturbs an area of greater than 2,500 square feet, is within 50 feet of any surface water, and has a flow path of 50 feet or longer disturbing a grade of 25 percent or greater. Project sites with disturbances smaller than those discussed above, that have the potential to adversely affect state surface waters, are subject to the conditions of an AoT General Permit by Rule.
- b. You must determine that any excavation dewatering discharges are not contaminated before they will be authorized as an allowable non-stormwater discharge under this permit (see Part 1.2.2). The water is considered uncontaminated if there is no groundwater contamination within 1,000 feet of the groundwater dewatering location. Information on groundwater contamination can be generated over the Internet via the NHDES web site http://des.nh.gov/ by using the One Stop Data Mapper at http://des.nh.gov/ by using the One Stop Data Mapper at http://des.nh.gov/ by using the One Stop Data Mapper at http://des.nh.gov/ by using the One Stop Data Mapper at http://des.nh.gov/ by using the One Stop Data Mapper at http://des.nh.gov/ or other waste site you must apply for the Remediation General Permit (see https://www3.epa.gov/region1/npdes/rgp.html.)
- c. You must treat any uncontaminated excavation dewatering discharges as necessary to remove suspended solids and turbidity. The discharges must be sampled at least once per week during weeks when discharges occur. Samples must be analyzed for total suspended solids (TSS) or turbidity and must meet monthly average and daily maximum limits of 50 milligrams per liter (mg/L) and 100 mg/L, respectively for TSS or 33 mg/l and 67 mg/l, respectively for turbidity. TSS (a.k.a. Residue, Nonfilterable) or turbidity sampling and analysis must be performed in accordance with Tables IB and II in 40 CFR 136.3 (http://www.ecfr.gov/cgi-bin/text-

idx?SID=0243e3c4283cbd7d8257eb6afc7ce9a2&mc=true&node=se40.25.136_13&r gn=div8). Records of any sampling and analysis must be maintained and kept with the SWPPP for at least three years after final site stabilization.

d. Construction site owners and operators must consider opportunities for postconstruction groundwater recharge using infiltration best management practices (BMPs) during site design and preparation of the SWPPP. If your construction site is in a town that is required to obtain coverage under the NPDES General Permit for discharges from Municipal Separate Storm Sewer Systems (MS4) you may be required to use such practices. The SWPPP must include a description of any on-site infiltration that will be installed as a post-construction stormwater management measure or reasons for not employing such measures such as 1) The facility is located in a wellhead protection area as defined in RSA 485- C:2; or 2) The facility is located in an area where groundwater has been reclassified to GAA, GAI or GA2 pursuant to RSA 485-C and Env-DW 901; or 3) Any areas that would be exempt from the groundwater recharge requirements contained in Env-Wq 1507.04, including all land uses or activities considered to be a "High-load Area" (see Env-Wq 1502.30). For design considerations for infiltration measures see Env-Wq 1508.06.

- e. Appendix F contains a list of Tier 2, or high quality waters. Although there is no official list of tier 2 waters, it can be assumed that all NH surface waters are tier 2 for turbidity unless 1) the surface water that you are proposing to discharge into is listed as impaired for turbidity in the states listing of impaired waters (see Surface Water Quality Watershed Report Cards at http://des.nh.gov/organization/divisions/water/wmb/swqa/report_cards.htm) or 2) sampling upstream of the proposed discharge location shows turbidity values greater than 10 NTU. A single grab sample collected during dry weather (no precipitation within 48 hours) is acceptable.
- f. To ensure compliance with RSA 485-C, RSA 485-A, RSA 485-A:13, I(a), Env-Wq 1700 and Env-Wq 302, the following information may be requested by NHDES. This information must be kept on site unless you receive a written request from NHDES that it be sent to the address shown in Part 9.1.4 (g).
 - i. A site map required in Part 7.2.4, showing the type and location of all postconstruction infiltration BMPs utilized at the facility or the reason(s) why none were installed;
 - ii. A list of all non-stormwater discharges that occur at the facility, including their source locations and the control measures being used (see Part 1.2.2).
 - iii. Records of sampling and analysis of TSS required for construction dewatering discharges (see Part 9.1.4 (c)).
- g. All required or requested documents must be sent to:

NH Department of Environmental Services, Wastewater Engineering Bureau, Permits & Compliance Section P.O. Box 95 Concord, NH 03302-0095

9.1.2 VTR10F000 Areas in the State of Vermont subject to construction by a Federal Operator

- a. Earth disturbance at any one time is limited to five acres.
- b. All areas of earth disturbance must have temporary or final stabilization within 14 days of the initial disturbance. After this time, disturbed areas must be temporarily or permanently stabilized in advance of any runoff producing event. A runoff producing event is an event that produces runoff from the construction site. Temporary stabilization is not required if the work is occurring in a self-contained

excavation (i.e. no outlet) with a depth of two feet or greater (e.g. house foundation excavation, utility trenches). Areas of a construction site that drain to sediment basins are not considered eligible for this exemption, and the exemption applies only to the excavated area itself.

- c. The use of the cationic polymers is prohibited unless approved under a site-specific plan.
- d. Site inspections on active construction sites shall be conducted daily during the period from October 15 April 15.
- e. Any applicant under EPA's CGP shall allow authorized Agency representatives, at reasonable times and upon presentation of credentials, to enter upon the project site for purposes of inspecting the project and determining compliance with this Certification.
- f. The Agency may reopen and alter or amend the conditions of this Certification over the life of the project when such action is necessary to assure compliance with the VWQS.

9.2 EPA Region 3

9.2.1 DCR100000 District of Columbia

- a. The permittee must comply with the District of Columbia Water Pollution Control Act of 1984, as amended, (D.C. Official Code § 8-103.01 et seq.) and its implementing regulations in Title 21, Chapters 11 and 19 of the District of Columbia Municipal Regulations. Nothing in this permit will be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to District of Columbia laws and regulations.
- b. The permittee must comply with the District of Columbia Stormwater Management, and Soil Erosion and Sediment Control in Chapter 5 of Title 21 of the District of Columbia Municipal Regulations.
- c. The permittee must comply with District of Columbia Flood Management control in Chapter 31 of Title 20 of the District of Columbia Municipal Regulations.
- d. The Department may request a copy of the Stormwater Pollution Prevention Plan (SWPPP) and the permittee is required to submit the SWPPP to the Department within 14 days of such request. The Department may conduct an inspection of any facility covered by this permit to ensure compliance with District's law requirements, including water quality standards. The Department may enforce its certification conditions.
- e. The Department may require the permittee to perform water quality monitoring during the permit term if monitoring is necessary for the protection of public health or the environment as designated under the authority in Chapter 19 of Title 21 of the District of Columbia Municipal Regulations.
- f. The Department may require the permittee to provide measurable verification of the effectiveness of Best Management Practices (BMPs) and other control measures used in the stormwater management program, including water quality monitoring.
- g. The Department has determined that compliance with this permit does not protect the permittee from enforcement actions deemed necessary by the Department

under its associated regulations to address an imminent threat to public health or a significant adverse environmental impact which results in a violation of the District of Columbia Water Pollution Control Act of 1984, as amended, (D.C. Official Code § 8-103.01 et seq.) and its implementing regulations.

- h. The Department reserves the right to modify this Section 401 Water Quality Certification if any changes, modifications, or deletions are made to this general permit. In addition, the Department reserves the right to add and/or alter the terms and conditions of this Section 401 Water Quality Certification to carry out its responsibilities during the term of this general permit with respect to water quality, including any revisions to District of Columbia Water Quality Standards in Chapter 11 of Title 21 of the District of Columbia Municipal Regulations.
- i. Should any violation of the District's Water Quality Standards, or the conditions of this Section 401 Water Quality Certification occur, the Department will direct the permittee to correct the violation(s). The Department has the right to take any action as authorized by the District laws and regulations to address the violations of this permit or the Water Pollution Control Act and implementing regulations. Substantial civil and criminal penalties are authorized for discharging into District waters in violation of an order or permit issued by the Department. This Section 401 Water Quality Certification does not relieve the permittee of the duty to comply with other applicable District's statutes and regulations.
- j. The permittee must submit copies of Notice of Intent (NOI) and Notice of Termination to DOEE at the same time these documents are submitted to EPA.
- k. The permittee shall allow DOEE to inspect any facilities, equipment, practices, or operations regulated or required under this permit and to access records maintained under the conditions of this permit.
- I. All required or requested documents shall be signed and sent to the: Department of Energy & Environment, 1200 First Street, N.E., 5th Floor, Washington, DC 20002, Attention: Associate Director, Inspection and Enforcement Division.

9.2.2 DER10F000 Areas in the State of Delaware subject to construction by a Federal Operator

- a. Federal agencies engaging in construction activities must submit, to DNREC, a sediment and stormwater management (S&S) plan and obtain approval from DNREC in accordance with 7 Del. C. §4010, 7 DE Admin. Code 5101, and 7 DE Admin. Code 7201.
- b. Federal agencies engaging in construction activities must provide for construction review by a certified construction reviewer in accordance with 7 Del. C. §§4010 & 4013 and 7 DE Admin. Code 5101, subsection 6.1.6.
- c. Federal agencies engaging in construction activities must certify that all responsible personnel involved in the construction project will have attended the blue card training prior to initiation of any land disturbing activity see 7 Del. C. §§ 4002 & 4014 and 7 DE Admin. Code 5101.

9.3 EPA Region 5

- 9.3.1 MNR101000 Indian country within the State of Minnesota
- **9.3.1.1** Fond du Lac Band of Lake Superior Chippewa. The following conditions apply only to discharges on the Fond du Lac Band of Lake Superior Chippewa Reservation:
 - a. A copy of the Stormwater Pollution Prevention Plan (SWPPP) must be submitted to the Office of Water Protection at least fifteen (15) days in advance of sending the Notice of Intent (NOI) to EPA. The SWPPP can be submitted electronically to or by hardcopy sent to:

Fond du Lac Reservation Office of Water Protection 1720 Big Lake Road Cloquet, MN 55720

CGP applicants are encouraged to work with the FDL Office of Water Protection in the identification of all proposed receiving.

- b. Copies of the Notice of Intent (NOI) and the Notice of Termination (NOT) must be sent to the Fond du Lac Office of Water Protection at the same time they are submitted to EPA.
- c. The turbidity limit shall NOT exceed 10% of natural background within the receiving water(s) as determined by Office of Water Protection staff.
- d. Turbidity sampling must take place within 24 hours of a ½-inch or greater rainfall event. The results of the sampling must be reported to the Office of Water Protection within 7 days of the sample collection. All sample reporting must include the date and time, location (GPS: UTM/Zone 15), and NTU. CGP applicants are encouraged to work with the Office of Water Protection in determining the most appropriate location(s) for sampling.
- e. Receiving waters with open water must be sampled for turbidity prior to any authorized discharge as determined by Office of Water Protection staff. This requirement only applies to receiving waters in which no ambient turbidity data exists.
- f. This Certification does not pertain to any new discharge to Outstanding Reservation Resource Waters (ORRW) as described in §105 b.3. of the Fond du Lac Water Quality Standards (Ordinance #12/98, as amended). Although additional waters may be designated in the future, currently Perch Lake, Rice Portage Lake, Miller Lake, Deadfish Lake, and Jaskari Lake are designated as ORRWs. New dischargers wishing to discharge to an ORRW must obtain an individual permit from EPA for stormwater discharges from large and small construction activities.
- g. All work shall be carried out in such a manner as will prevent violations of water quality criteria as stated in the Water Quality Standards of the Fond du Lac Reservation, Ordinance 12/98, as amended. This includes, but is not limited to, the prevention of any discharge that causes a condition in which visible solids, bottom deposits, or turbidity impairs the usefulness of water of the Fond du Lac Reservation for any of the uses designated in the Water Quality Standards of the Fond du Lac Reservation. These uses include wildlife, aquatic life, warm water fisheries, cold water fisheries, subsistence fishing (netting), primary contact recreation, secondary

contact recreation, cultural, wild rice areas, aesthetic waters, agriculture, navigation, and commercial.

- h. Appropriate steps shall be taken to ensure that petroleum products or other chemical pollutants are prevented from entering waters of the Fond du Lac Reservation. All spills must be reported to the appropriate emergency management agency (National Response Center AND the State Duty Officer), and measures shall be taken immediately to prevent the pollution of waters of the Fond du Lac Reservation, including groundwater. The Fond du Lac Office of Water Protection must also be notified immediately of any spill regardless of size.
- i. This certification does not authorize impacts to cultural, historical, or archeological features or sites, or properties that may be eligible for such listing.
- **9.3.1.2** Grand Portage Band of Lake Superior Chippewa. The following conditions apply only to discharges on the Grand Portage Band of Lake Superior Chippewa Reservation:
 - a. The CGP authorization is for construction activities that may occur within the exterior boundaries of the Grand Portage Reservation in accordance to the Grand Portage Land Use Ordinance. The CGP regulates stormwater discharges associated with construction sites of one acre or more in size. Only those activities specifically authorized by the CGP are authorized by this certification (the "Certification"). This Certification does not authorize impacts to cultural, historical, or archeological features or sites, or properties that may be eligible for listing as such.
 - b. All construction stormwater discharges authorized by the CGP must comply with the Water Quality Standards and Water Resources Ordinance, as well as Applicable Federal Standards (as defined in the Water Resources Ordinance). As such, appropriate steps must be taken to ensure that petroleum products or other chemical pollutants are prevented from entering the Waters of the Reservation (as defined in the Water Resources Ordinance). All spills must be reported to the appropriate emergency-management agency, and measures must be taken to prevent the pollution of the Waters of the Reservation, including groundwater.
 - c. The 2017 CGP requires inspections and monitoring reports of the construction site stormwater discharges by a qualified person. Monitoring and inspection reports must comply with the minimum requirements contained in the 2017 CGP. The monitoring plan must be prepared and incorporated into the Stormwater Pollution Prevention Plan (the "SWPPP"). A copy of the SWPPP must be submitted to the Board at least 30 days in advance of sending the requisite Notice of Intent to EPA. The SWPPP should be sent to:

Grand Portage Environmental Resources Board P.O. Box 428 Grand Portage, MN 55605

Copies of the Notice of Intent and Notice of Termination required under the CGP must be submitted to the Board at the address above at the same time they are submitted to the EPA.

d. If requested by the Grand Portage Environmental Department, the permittee must provide additional information necessary for a case-by-case eligibility determination to assure compliance with the Water Quality Standards and any Applicable Federal Standards.

- e. Discharges that the Board has determined to be or that may reasonably be expected to be contributing to a violation of Water Quality Standards or Applicable Federal Standards are not authorized by this Certification.
- f. The Board retains full authority provided by the Water Resources Ordinance to ensure compliance with and to enforce the provisions of the Water Resource Ordinance and Water Quality Standards, Applicable Federal Standards, and these Certification conditions.
- g. Appeals related to Board actions taken in accordance with any of the preceding conditions may be heard by the Grand Portage Tribal Court.

9.3.2 WIR101000 Indian country within the State of Wisconsin, except the Sokaogon Chippewa (Mole Lake) Community

- **9.3.2.1** Bad River Band of Lake Superior Tribe of Chippewa Indians: The following conditions apply only to discharges on the Bad River Band of the Lake Superior Tribe of Chippewa Indians Reservation:
 - a. Only those activities specifically authorized by the CGP are authorized by this Certification. This Certification does not authorize impacts to cultural properties, or historical sites, or properties that may be eligible for listing as such.^{61, 62}
 - b. All projects which are eligible for coverage under the CGP and are located within the exterior boundaries of the Bad River Reservation shall be implemented in such a manner that is consistent with the Tribe's Water Quality Standards (WQS) in order to protect Reservations waters that may be impacted by stormwater discharge including embankments, outlets, adjacent streambanks, slopes, and downstream waters.⁶³
 - c. Operators are not eligible to obtain authorization under the CGP for all new discharges to an Outstanding Tribal Resource Water (or Tier 3 water).⁶⁴ Outstanding Tribal Resource Waters, or Tier 3 waters, include the following: Kakagon Slough and the lower wetland reaches of its tributaries that support wild rice, Kakagon River, Bad River Slough, Honest John Lake, Bog Lake, a portion of Bad River, from where it enters the Reservation through the confluence with the White River, and Potato River.⁶⁵
 - d. An operator proposing to discharge to an Outstanding Resource Water (or Tier 2.5 water) under the CGP must comply with the antidegradation provisions of the Tribe's WQS. Outstanding Resource Waters, or Tier 2.5 waters, include the following: a portion of Bad River, from downstream the confluence with the White River to Lake Superior, White River, Marengo River, Graveyard Creek, Bear Trap Creek, Wood Creek, Brunsweiler River, Tyler Forks, Bell Creek, and Vaughn Creek.⁶⁶ The antidegradation demonstration materials described in provision E.4.iii. must be submitted to the following address:

⁶¹ Bad River Band of Lake Superior Tribe of Chippewa Indians Water Quality Standards adopted by Resolution No. 7-6-11-441 (hereafter, Tribe's WQS).

⁶² 36 C.F.R. § 800.16(I)(2).

⁶³See footnote 61.

⁶⁴ Tribe's WQS: See provisions E.3.ii. and E.4.iv.

⁶⁵ Tribe's WQS: See provision E.2.iii.

⁶⁶ Tribe's WQS: See provision E.2.ii.

Bad River Tribe's Natural Resources Department Attn: Water Resources Specialist P.O. Box 39 Odanah, WI 54861

e. An operator proposing to discharge to an Exceptional Resource Water (or Tier 2 water) under the CGP must comply with the antidegradation provisions of the Tribe's WQS. Exceptional Resource Waters, or Tier 2 waters, include the following: any surface water within the exterior boundaries of the Reservation that is not specifically classified as an Outstanding Resource Water (Tier 2.5 water) or an Outstanding Tribal Resource Water (Tier 3 water).⁶⁷ The antidegradation demonstration materials described in provision E.4.ii. must be submitted to the following address:

Bad River Tribe's Natural Resources Department Attn: Water Resources Specialist P.O. Box 39 Odanah, WI 54861

- f. Projects utilizing cationic treatment chemicals⁶⁸ within the Bad River Reservation boundaries are not eligible for coverage under the CGP.⁶⁹
- g. A discharge to a surface water within the Bad River Reservation boundaries shall not cause or contribute to an exceedance of the turbidity criterion included in the Tribe's WQS, which states: Turbidity shall not exceed 5 NTU over natural background turbidity when the background turbidity is 50 NTU or less, or turbidity shall not increase more than 10% when the background turbidity is more than 50 NTU.⁷⁰
- h. All projects which are eligible for coverage under the CGP within the exterior boundaries of the Bad River Reservation must comply with the Bad River Reservation Wetland and Watercourse Protection Ordinance, or Chapter 323 of the Bad River Tribal Ordinances, including the erosion and sedimentation control, natural buffer, and stabilization requirements. Questions regarding Chapter 323 and requests for permit applications can be directed to the Wetlands Specialist in the Tribe's Natural Resources Department at (715) 682-7123 or wetlands@badriver_nsn.gov.
- i. An operator of a project, which is eligible for coverage under the CGP, that would result in an allowable discharge under the CGP occurring within the exterior boundaries of the Bad River Reservation must notify the Tribe prior to the commencing earth-disturbing activities.^{71, 72} The operator must submit a copy of the Notice of Intent (NOI) to the following addresses at the same time it is submitted to the U.S. EPA:

⁶⁷ Tribe's WQS: See provision E.2.i.

⁶⁸ See definition of cationic treatment chemicals in Appendix A of the CGP.

⁶⁹ Tribe's WQS: See provisions E.6.ii.a. and E.6.ii.c.

⁷⁰ Tribe's WQS: See provision E.7.iii.

⁷¹ See footnote 61.

 $^{^{72}}$ See footnote 62.

Bad River Tribe's Natural Resources Department Attn: Water Resources Specialist P.O. Box 39 Odanah, WI 54861

Bad River Tribe's Natural Resources Department Attn: Tribal Historic Preservation Officer (THPO) P.O. Box 39 Odanah, WI 54861

The operator must also submit a copy of the Notice of Termination (NOT) to the above addresses at the same time it is submitted to the U.S. EPA.

- j. The Tribal Historic Preservation Officer (THPO) must be provided 30 days to comment on the project.⁷³
- k. The operator must obtain THPO concurrence in writing. This written concurrence will outline measures to be taken to prevent or mitigate effects to historic properties. For more information regarding the specifics of the cultural resources process, see 36 CFR Part 800. A best practice for an operator is to consult with the THPO during the planning stages of an undertaking.⁷⁴
- I. An operator of a project, which is eligible for coverage under the CGP, that would result in an allowable discharge under the CGP occurring within the exterior boundaries of the Bad River Reservation must submit a copy of the Stormwater Pollution Prevention Plan (SWPPP) to the following address at the same time as submitting the NOI: ⁷⁵

Bad River Tribe's Natural Resources Department Attn: Water Resources Specialist P.O. Box 39 Odanah, WI 54861

m. Any corrective action reports that are required under the CGP must be submitted to the following address within one (1) working day of the report completion: ⁷⁶

Bad River Tribe's Natural Resources Department P.O. Box 39 Odanah, WI 54861

n. An operator shall be responsible for meeting any additional permit requirements imposed by the U.S. EPA necessary to comply with the Tribe's antidegradation policies if the discharge point is located upstream of waters designated by the Tribe.⁷⁷

^{73 36} C.F.R. § 800.3(c)(4).

^{74 36} C.F.R. § 800.3(b).

⁷⁵ See footnote 61.

⁷⁶ See footnote 61.

⁷⁷ See footnote 61.

- **9.3.2.2** Lac du Flambeau Band of Lake Superior Tribe of Chippewa Indians: The following conditions apply only to discharges on the Lac du Flambeau Band of the Lake Superior Tribe of Chippewa Indians Reservation:
 - a. A copy of the Stormwater Pollution Prevention Plan must be submitted to the following office, for the Traival environmental review process, at least thirty (30) days in advance of sending the Notice of Intent (NOI) to EPA:

Lac du Flambeau Tribal Land Management P.O. Box 279 Lac du Flambeau, WI 54538

CGP applicants are encouraged to work with the LdF Water Resources Program in the identification of all proposed receiving waters.

- b. Copies of the NOI and the Notice of Termination (NOT) must be sent to the LdF Water Resources Program at the same time they are submitted to EPA.
- c. All work shall be carried out in such a manner as will prevent violations of water quality criteria as stated in the Water Quality Standards of the Lac du Flambeau Reservation. This includes, but is not limited to, the prevention of any discharge that cause a condition in which visible solids, bottom deposits, or turbidity impairs the usefulness of water of the Lac du Flambeau Reservation for any of the uses designated in the Water Quality Standards of the Lac du Flambeau Reservation.
- d. Appropriate steps shall be taken to ensure that petroleum products or other chemical pollutants are prevented from entering waters of the Lac du Flambeau Reservation. All spills must be reported to the appropriate emergency management agency, and measures shall be taken immediately to prevent the pollution of waters of the Lac du Flambeau reservation, including groundwater.
- e. This certification does not authorize impacts to cultural, historical, or archeological features or sties, or properties that may be eligible for such listing.
- f. Due to the significant ecological and cultural importance of the Lac du Flambeau Reservation, any operator requesting a permit for a point source discharge of pollutants (i.e., discharge) associated with the Stormwater Discharge will need a stormwater pollution prevention plan in place that does not violate Lac du Flambeau Water Quality Standards to protect Reservation Waters.

9.4 EPA Region 6

9.4.1 NMR100000 State of New Mexico, except Indian country

- a. If construction dewatering activities are anticipated at a site, permittees must complete the following steps:
 - i. Investigative information must be documented in the facility SWPPP.
 - ii. Refer to the GWQB Mapper at <u>https://gis.web.env.nm.gov/GWQB/</u> AND the PSTB Mapper (Go Mapper) at https://gis.web.env.nm.gov/GoNM/

Project Location Relative to a Source of Potential Groundwater Contamination	Constituents likely to be required for testing
Within 0.5 mile of an open Leaking Underground Storage Tank (LUST) site	BTEX (Benzene, Toluene, Ethylbenzene, and Xylene) plus additional parameters depending on site conditions.*
Within 0.5 mile of an open Voluntary Remediation site	All parameters listed in Appendix A (or an alternate list approved by the NMED
Within 0.5 mile of an open RCRA Corrective Action Site	SWQBJ**
Within 0.5 mile of an open Abatement Site	
Within 0.5 mile of an open Brownfield Site	
Within 1.0 mile or more of a Superfund	
associated groundwater contamination.	

and check if the following sources are located within the noted distance from your anticipated construct site groundwater dewatering activity:

*For further assistance determining whether dewatering may encounter impacted groundwater, the permittee may contact the NMED Ground Water Quality Bureau at: 505-827-2965.

**EPA approved-sufficiently sensitive methods must be used - approved methods are listed in 40 CFR Part 136.3.

- ii. Indicate on the NOI that dewatering activities are anticipated. Provide information on flow and potential to encounter impacted groundwater.
- iii. Permittee must test the quality of the groundwater according to the chart above. Hardness and pH must also be measured.
- iv. Permittee must send test result data to EPA Region 6 and the NMED Surface Water Quality Bureau. If the test data exceed standards, it cannot be discharged from the construction site into surface waters under this permit. Discharge to surface waters must be conducted under a separate NPDES individual permit to ensure proper treatment and disposal.
- v. If disposal will be to the ground surface or in an unlined pond, the permittee must submit an NO/ to the NMED Ground Water Quality Bureau.
- b. Operators are not eligible to obtain authorization under this permit for all new and existing storm water discharges to outstanding national resource waters (ONRWs) (also referred to as "Tier 3" waters.)
- c. Operators who intend to obtain authorization under this permit for new and existing storm water discharges from construction sites must satisfy the following condition:
 - i. The SWPPP must include site-specific interim and permanent stabilization, managerial, and structural solids, erosion and sediment control best management practices (BMPs) and/or other controls that are designed to prevent to the maximum extent practicable an increase in the sediment yield and flow velocity from pre-construction, pre-development conditions to assure that applicable standards in 20.6.4.NMAC, including the antidegradation policy, or TMDL waste load allocations (WLAs) are met. This requirement applies to discharges both during construction and after construction operations have been completed. The SWPPP must identify

and document the rationale for selecting these BMPs and/or other controls. The SWPPP must also describe design specifications, construction specifications, maintenance schedules (including a long term maintenance plan), criteria for inspections, and expected performance and longevity of these BMPs. For sites greater than 5 acres in size, BMP selection must be made based on the use of appropriate soil loss prediction models (i.e. SEDCAD, RUSLE, SEDIMOT, MULTISED, etc.) OR equivalent generally accepted (by professional erosion control specialists) soil loss prediction tools.

- ii. For all sites, the operator(s) must demonstrate, and include documentation in the SWPPP, that implementation of the site-specific practices will assure that the applicable standards or TMDL WLAs are met, and will result in sediment yields and flow velocities that, to the maximum extent practicable, will not be greater than the sediment yield levels and flow velocities from preconstruction, pre-development conditions.
- iii. All SWPPPs must be prepared in accordance with good engineering practices by qualified (e.g. CPESC certified, engineers with appropriate training) erosion control specialists familiar with the use of soil loss prediction models and design of erosion and sediment control systems based on these models (or equivalent soil loss prediction tools). Qualifications of the preparer (e.g., professional certifications, description of appropriate training) must be documented in the SWPPP. The operator(s) must design, implement, and maintain BMPs in the manner specified in the SWPPP.
- d. Permittees can call 505-827-9329 for emergencies at any time and 505-476-6000 for non-emergencies during business hours from 5am-5pm, Monday through Friday.
- 9.4.2 NMR101000 Indian country within the State of New Mexico, except Navajo Reservation Lands that are covered under Arizona permit AZR101000 and Ute Mountain Reservation Lands that are covered under Colorado permit COR101000.
- **9.4.2.1 Pueblo of Isleta.** The following conditions apply only to discharges on the Pueblo of Isleta Reservation:
 - a. CGP at 1.3 Prohibited discharges: Stormwater discharges associated with construction activity that EPA or the Pueblo of Isleta, prior to authorization under this perm it, determines will cause, have the reasonable potential to cause, or may reasonably be expected to contribute to a violation or excursion of any applicable water quality standard, including the antidegradation policy, or the impairment of a designated use of receiving waters are not authorized by this permit.
 - b. CGP at 1.4.1 How to Submit Your NOI: The operator shall provide a copy of the Notice of Intent ("NOI") to the Pueblo of Isleta at the same time it is submitted to the U.S. Environmental Protection Agency, for projects occurring within the exterior boundaries of the Pueblo of Isleta. The operator shall also notify the Pueblo of Isleta when it has submitted the Notice of Termination ("NOT"). The NOI and NOT shall be sent to the Pueblo of Isleta at the following address:

Water Quality Control Officer Pueblo of Isleta Environment Department PO Box 1270 Isleta, NM 87022 (505) 869-9819

Overnight/Express Mail Delivery Pueblo of Isleta Environment Department 6 Sagebrush St. Albuquerque, NM 87105

- c. CGP at 1.5 Requirement to post a notice of your permit coverage: Amend to read: "You must post a sign or other notice of your permit coverage at a safe, publicly accessible location in close proximity to the construction site. The notice must be located so that it is visible from the public road <u>or tribal road</u> that is nearest to the active part of the construction site..."
- d. CGP at 7.2.6 Description of stormwater controls: The SWPPP will be considered to be incomplete if the operator has not coordinated requirements under this Part with the Pueblo of Isleta Environment Department.
- e. CGP I.12.6.1 at pg.I-6 of 8. The Pueblo of Isleta requests notification within 10 hours (rather than 24 hrs.) if health or the environment become endangered.
- f. CGP at I.12.2 Anticipated noncompliance: Amend to read: "You must give advance notice to EPA and the Pueblo of Isleta at the address indicated in 1.4.1(a) of any planned changes in the permitted facility or activity which may results in noncompliance with permit requirements."
- g. CGP at I.12.6.1: Any noncompliance for projects within the exterior boundaries of the Pueblo of Isleta which may endanger health or the environment shall be reported directly to the EPA Regional Office [(see contacts at https://www2.e pa.gov/national-pollutant-discharge-elimination-system-npdes/contact-usstormwater#regional)I and to the Pueblo of Isleta Water Quality Control Officer. Any information must be provided orally with n 12 hours of the time you become aware of the circumstances. Other requirements of this Part for a written submission apply. Electronic communication (E-mail) shall be provided as soon as practical. Verbal notice shall be provided to:

Water Quality Control Officer Pueblo of Isleta

(505) 869-9819 (505) 917-8346 mobile (505) 869-3030 Police Dispatch

- h. CGP at 2.2 Erosion and sediment control requirements: Erosion and sediment controls shall be designed to retain sediment on-site.
- i. CGP at 2.2 Under Sediment control requirements, Standard Permit Condition Duty to Mitigate Volumes of sediment at or over (five) 5 cubic yards must be removed and placed for disposal within a tribally approved sediment Disposal Site, located on Pueblo of Isleta lands. CGP 2.2 at pg. 8.
- j. Under Minimize erosion, a permittee must secure permission from the Pueblo or affected Pueblo of Isleta land assignment owner if a dissipation device needs to

be placed up- or down- elevation of a given construction site. CGP 2.2.11 at pg. 11.

- k. CGP at 2.3.6 Emergency spill notification requirements: You must notify the Pueblo of Isleta Water Quality Control Officer and National Response Center (NRC) [at (800) 424-8802 or, in the Washington, DC metropolitan area, call (202) 267-2675 in accordance with the requirements of 40 CFR 110, 40 CFR 117, and 40 CFR 302] as soon as you have knowledge of the release. Verbal and electronic notice shall be provided as specified in I.12.6.1
- I. CGP at C.3 Equivalent analysis waiver: Parties wishing to apply for an Equivalent Analysis Waiver (see Appendix D, Section C) must provide a copy of the waiver analysis to the Pueblo of Isleta Water Quality Control Officer at the address indicated in 1.4.1 (a).
- **9.4.2.2 Pueblo of Sandia.** The following conditions apply only to discharges on the Pueblo of Sandia Reservation:
 - a. Only those activities specifically authorized by the CGP are authorized by the Pueblo of Sandia's Water Quality certification. The Pueblo of Sandia's Water Quality Certification does not authorize impact to cultural properties, historical sites or properties that may be eligible as such.
 - b. Copies of all Notices of Intent (NOI) submitted to the EPA must also be sent concurrently to the Pueblo of Sandia at the following address. Discharges are not authorized by this permit unless an accurate and complete NOI has been submitted to the Pueblo of Sandia, either by mail or electronically.

<u>Regular U.S. Delivery Mail:</u> Pueblo of Sandia Environment Department Attention: Scott Bulgrin, Water Quality Manager 481 Sandia Loop Bernalillo, New Mexico 87004

Electronically:

- c. Any correspondences between the applicant and EPA related to analytical data, written reports, corrective action, enforcement, monitoring, or an adverse incident written reports should likewise be routed to the Pueblo of Sandia at the above address.
- d. The Stormwater Pollution Prevention Plan (SWPPP) must be available to the Pueblo of Sandia Environment Department either electronically or hard copy upon request for review. The SWPPP must be made available at least fourteen (14) days before construction begins. The fourteen (14) day period will give Pueblo staff time to become familiar with the project site, prepare for construction site inspections, and determine compliance with the Pueblo of Sandia Water Quality Standards. Failure to provide a SWPPP to the Pueblo of Sandia may result in the delay or denial of the construction project.
- e. If requested by the Pueblo of Sandia Environment Department, the permittee must provide additional information necessary for a case-by-case eligibility determination to assure compliance with the Pueblo of Sandia Water Quality Standards and/or applicable Federal Standards not authorized by this certification.
- f. An "Authorization to Proceed Letter" with site specific mitigation requirements may

be sent out to the permittee when a review of the NOI and SWPPP, on a case- bycase basis is completed by the Pueblo of Sandia Environment Department. This approval will allow the application to proceed if all mitigation requirements are met.

- g. The Pueblo of Sandia will not allow Small construction Waivers (Appendix C) or the Rainfall Erosivity Waiver (Appendix C.1) to be granted for any small construction activities.
- h. Before submitting a Notice of Termination (NOT) to the EPA, permittees must clearly demonstrate to the Pueblo of Sandia Environment Department through a site visit or documentation that requirements for site stabilization have been met and any temporary erosion control structures have been removed. A short letter stating the NOT is acceptable and all requirements have been met will be sent to the permittee to add to the permittee's NOT submission to EPA.
- i. Copies of all NOT submitted to the EPA must also be sent concurrently to the Pueblo of Sandia through the mail or electronically.

<u>Regular U.S. Delivery Mail:</u> Pueblo of Sandia Environment Department Attention: Scott Bulgrin, Water Quality Manager 481 Sandia Loop Bernalillo, New Mexico 87004

<u>Electronically:</u>

- j. The Pueblo of Sandia may require the permittee to perform water quality monitoring for pH, turbidity, and total suspended solids (TSS) during the permit term if the discharge is to a surface water leading to the Rio Grande for the protection of public health and the environment.
- **9.4.2.3 Pueblo of Santa Ana.** The following conditions apply only to discharges on the Pueblo of Santa Ana Reservation:
 - a. The permittee shall provide a copy of the Notice of Intent (NOI) to the Pueblo of Santa Ana (the Pueblo), at the same time it is submitted to the U.S. Environmental Protection Agency (EPA), for projects with discharges onto the lands of the Pueblo as defined in the Pueblo's antidegradation policy within the Pueblo of Santa Ana Water Quality Standards.
 - b. The permittee shall provide a final copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Pueblo that is associated with any project identified in the NOI, at the same time that an NOI is submitted to the EPA. The SWPPP should include any projects with discharges onto the lands of the Pueblo as defined in

the antidegradation policy within the Pueblo of Santa Ana Water Quality Standards.

- c. The operator shall provide copies of inspections reports and of corrective action reports to the Pueblo at the address below for review, upon request.
- d. Upon completion of the project identified in the NOI, the permittee will submit a Notice of Termination (NOT) to the Pueblo.
- e. All required or requested permittee specific information identified above shall be submitted to the following address:

Pueblo of Santa Ana Department of Natural Resources, Attention: Water Resources Division 2 Dove Road Santa Ana Pueblo, NM 87004

- f. Discharges are not authorized by permittee unless an accurate and complete NOI and SWPPP have been submitted to the Pueblo. Failure to provide an accurate and complete NOI and SWPPP may result in a denial of the discharge permit or a delay in groundbreaking or construction.
- g. The permittee will not proceed with site work until authorized by the Pueblo. The Pueblo requires review of the complete and final SWPPP before authorization to proceed. The Pueblo will provide an "Authorization to Process" notice after review and approval of the SWPPP.
- h. The permittee could be required to perform water quality monitoring, sampling or analysis during the active permit dates for constituents determined by the Pueblo.
- Before submitting a NOT, permittees must certify to the Pueblo's Department of Natural Resources in writing that requirements for site stabilization have been met, and any temporary erosion control structures have been removed. Documentation of the Pueblo's review that such requirements have been reviewed and met will be provided for the permittee to add to the permittee's NOT submission to EPA. Copies of all NOT submitted to the EPA must also be sent to the Pueblo at the address provided above.
- **9.4.2.4 Pueblo of Santa Clara.** The following conditions apply only to discharges on the Pueblo of Santa Clara Reservation:
 - a. The operator must provide a copy of the Notice of Intent (NOI) and Notice of Termination (NOT) to the Santa Clara Pueblo Governor's Office at the same time it is provided to the US Environmental Protection Agency.
 - b. A copy of the Storm water Pollution Prevention Plan shall be made available to the Pueblo of Santa Clara staff upon request.
- **9.4.2.5 Pueblo of Tesuque.** The following conditions apply only to discharges on the Pueblo of Tesuque Reservation:
 - a. Based on the Section 401 Certification provisions within the CWA, no discharges that will exceed or cause the exceedance of the Pueblo of Tesuque Water Quality Standards will be allowed within the boundaries of the Pueblo of Tesuque.
 - b. The operator shall provide a copy of the Notice of Intent (NOI) to the Pueblo of Tesuque Governor's Office in care of the Department of Environmental and Natural Resources (DENR) at the same time it is submitted to the Environmental

Protection Agency, for projects occurring within the boundaries of Tesuque tribal lands. The operator shall also notify the Pueblo of Tesuque Governor's Office in care of the DENR when it submits the Notice of Termination (NOT), but not before the DENR post-construction inspection has been completed as described below. The NOI and NOT shall be sent to the following address:

> Pueblo of Tesuque Office of the Governor Attn: DENR 20 TP828 Administration Bldg. Santa Fe, NM 87506-5512

Alternatively, the operator may arrange with DENR to email the documents.

- c. The operator shall also provide a copy of the Stormwater Pollution Prevention Plan, copies of inspection reports, and copies of corrective action reports to the DENR.
- d. Construction requiring this permit will not commence until the above document submissions have been made and DENR provides the operator with notice to proceed. Operators will not demobilize until DENR personnel inspect the site for complication of stabilization. Once the inspection has taken place and all SWPPP-related work has been completed to the satisfaction of DENR, the operator will submit its NOT as described above and then demobilize.
- **9.4.2.6 Taos Pueblo**. The following conditions apply only to discharges on the Taos Pueblo Reservation:
 - a. The operator shall provide a copy of the Notice of Intent (NOI) to the Taos Pueblo Governor's Office, War Chief's Office and Environmental Office, at the same time it is submitted to the U.S. Environmental Protection Agency, for projects occurring within the exterior boundaries of Taos Pueblo. The operator shall also notify Taos Pueblo when it has submitted the Notice of Termination (NOT). The NOI and NOT shall be sent to the Taos Pueblo at the following addresses:
 - i. Taos Pueblo Governor's Office P.O. Box 1846 Taos NM 87571
 - ii. Taos Pueblo War Chief's Office P.O. Box 2596 Taos NM 87571
 - iii. Environmental Office Attn: Program Manger P.O. Box 1846 Taos NM 87571

- b. Taos Pueblo requests that in the event Indian artifacts or human remains are inadvertently discovered on projects occurring near or on Taos Pueblo lands that consultation with the tribal Governor's Office occur at the earliest possible time.
- c. The operator shall provide a copy of the Stormwater Pollution Prevention Plan, copies of inspections reports, and copies of corrective action reports to staff in the Taos Pueblo Environmental Office for review and copy, upon request.
- **9.4.2.7** Ohkay Owingeh. The following conditions apply only to discharges on the Ohkay Owingeh Reservation:
 - a. Prior to commencement of any construction activity on Ohkay Owingeh Lands requiring permit coverage under EPA's Construction General Permit, the operator(s) shall submit to Ohkay Owingeh Office of Environmental Affairs, a copy of the electronic "Notice of Intent," submitted to the Environmental Protection Agency, immediately following EPA's electronic notification that the NOI has been received. A copy of the Stormwater Pollution Prevention Plan(s) must be made available to the Ohkay Owingeh Office of Environmental Affairs upon the tribe's request either electronically or hard copy. Operator(s) shall also submit to Ohkay Owingeh Office of Environmental Affairs a copy of the electronic Notice of Termination (NOT) submitted to the Environmental Protection Agency. Documents shall be submitted to Ohkay Owingeh at the following address:

Ohkay Owingeh Office of Environment Affairs Attention: Environmental Programs Manager P.O. Box 717 Ohkay Owingeh, New Mexico 87566 Office # 505.852.4212 Fax # 505.852.1432 Electronic mai

- b. Ohkay Owingeh will not allow the Rainfall Erosivity Waivers (see Appendix C) to be granted for any small construction activities.
- c. All vegetation used to prevent soil loss, seeding or planting of the disturbed area(s) to meet the vegetative stabilization requirements must utilize native seeds/vegetation commonly known to the area. All temporary erosion control structures, such as silt fences must be removed as soon as stabilization requirements are met.
- **9.4.2.8 Pueblo of Laguna.** The following conditions apply only to discharges on the Pueblo of Laguna Reservation:
 - a. The operator must provide a paper and electronic copy of the Notice of Intent (NOI) and Notice of Termination (NOT) to the Pueblo of Laguna at the same time it is provided to the U.S. Environmental Protection Agency. The NOI and NOT should be provided to the following address:

Pueblo of Laguna, Office of the Governor Attn: Environmental & Natural Resources Department P.O. Box 194 Laguna, NM 87026 Email:

b. The operator must provide an electronic copy of the Storm Water Pollution

Prevention Plan to the Pueblo of Laguna Environmental Program at the same time the NOI is submitted to the above listed email addresses. Any correspondences between the applicant and EPA related to analytical data, written reports, corrective action, enforcement, monitoring, or an adverse incident written reports threshold likewise be routed to the Pueblo of Laguna Environmental Program.

- c. Immediate initiation of consultation with the Pueblo of Laguna is required should any human remains or artifacts be unearthed during the project that fall under the Native American Graves Protection and Repatriation Act guidelines. If human remains are unearthed, contact the Pueblo of Laguna Police Department at 505.552.6666. If artifacts are unearthed, contact the Pueblo of Laguna Tribal Historic Preservation Office at 505.552.5033.
- **9.4.2.9 Picuris Pueblo.** The following conditions apply only to discharges on the Picuris Pueblo Reservation:
 - a. The operator, landowner and construction operators doing earth-disturbance work must meet the definition of "operator" under the Construction General Permit (CGP), and must provide an electronic and paper copy of the Notice of Intent (NOI) and Notice of Termination (NOT) to <u>both</u> The Office of the Picuris Pueblo Governor and the Picuris Pueblo Environmental Department at the same time it is provided to the U.S. Environmental Protection Agency (USEPA). The NOI and NOT should be provided to the following address:

Picuris Pueblo The Office of the Governor PO BOX 127 Penasco, NM 87553 575-587-2519 575-587-1071 (Fax) Governor

Picuris Pueblo Environmental Department PO BOX 158 Penasco, NM 87553 575-587-0110 575-587-0223 (Fax) Environmental Director:

- b. The operator must provide an electronic copy of the Storm Water Pollution Prevention Plan to the Picuris Pueblo Environmental Department at least <u>30 days</u> prior to submitting the NOI to USEPA and the Picuris Pueblo by email to Picuris Pueblo Environmental Department
- **9.4.2.10 Pueblo of Pojoaque.** The following conditions apply only to discharges on the Pueblo of Pojoaque Reservation:
 - a. The operator, landowner and construction operators doing earth-disturbance work must meet the definition of "operator" under the CGP and must provide a copy of the Notice of Intent (NOI) to the Pueblo of Pojoaque Governor's Office and Environmental Department within 3 days following U.S. Environmental Protection Agency's electronic confirmation that the NOI was certified and submitted and is undergoing its 14-day review period. Additionally, a copy of the Notice of Termination (NOT) must be provided the same day electronic confirmation is

received from the U.S. Environmental Protection Agency that the NOT has been accepted. The NOI and NOT should be provided to the following address:

Pueblo of Pojoaque Office of the Governor 78 Cities of Gold Road Santa Fe, NM 87506

Pueblo of Pojoaque Environmental Department 39 Camino Del Rincon Santa Fe, NM 87506

- b. The operator must provide an electronic copy of the Stormwater Pollution Prevention Plans to the Pueblo of Pojoaque Environmental Department by email to Adam L Duran department at least 30 days prior to submitting the NOI to EPA and the Pueblo of Pojoaque.
- 9.4.2.11 Nambe Pueblo. The following conditions apply only to discharges on Nambe Pueblo:
 - a. The operator must provide a copy of the Notice of Intent (NOI) and Notice of Termination (NOT) to the Nambe Pueblo Governor's Office at the same time it is provided to the US Environmental Protection Agency. The NOI and NOT should be provided to the following address:

Office of the Governor Nambe Pueblo 15A NP102 WEST Nambe Pueblo, NM 87506

b. The operator must provide a copy of the Stormwater Pollution Prevention Plan to Nambe Pueblo at the same time it is submitted to the EPA, either by email to or mailed to the above address.

9.4.3 OKR101000 Indian country within the State of Oklahoma

- **9.4.3.1 Pawnee Nation.** The following conditions apply only to discharges within Pawnee Indian country:
 - a. Copies of the Notice of Intent (NOI) and Notice of Termination (NOT) must be provided to the Pawnee Nation at the same time it is submitted to the Environmental Protection Agency to the following address:

Pawnee Nation Department of Environmental Conservation and Safety P.O. Box 470 Pawnee, OK 74058 Or email to

- b. The Storm Water Pollution Prevention Plan must be available to Departmental inspectors upon request.
- c. The Department must be notified at 918-762-3655 immediately upon discovery of any noncompliance with any provision of the permit conditions.

- 9.4.4 OKR10F000 Discharges in the State of Oklahoma that are not under the authority of the Oklahoma Department of Environmental Quality, including activities associated with oil and gas exploration, drilling, operations, and pipelines (includes SIC Groups 13 and 46, and SIC codes 492 and 5171), and point source discharges associated with agricultural production, services, and silviculture (includes SIC Groups 01, 02, 07, 08, 09).
 - a. For activities located within the watershed of any Oklahoma Scenic River, including the Illinois River, Flint Creek, Barren Fork Creek, Upper Mountain Fork, Little Lee Creek, and Lee Creek or any water or watershed designated "ORW" in Oklahoma's Water Quality Standards, this permit may only be used to authorize discharges from temporary construction activities. Certification is denied for any on-going activities such as sand and gravel mining or any other mineral mining.
 - b. For activities located within the watershed of any Oklahoma Scenic River, including the Illinois River, Flint Creek, Barren Fork Creek, Upper Mountain Fork, Little Lee Creek, and Lee Creek or any water or watershed designated "ORW" in Oklahoma's Water Quality Standards, certification is denied for any discharges originating from support activities, including concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, or borrow areas.
 - c. In order to company with Oklahoma's Water Quality Standards, these conditions and restrictions also apply to any construction projects located wholly or partially on Indian Country lands within the State of Oklahoma.

9.5 EPA Region 8

- 9.5.1 COR101000 Indian country within the State of Colorado, as well as the portion of the Ute Mountain Reservation located in New Mexico.
- **9.5.1.1** The Ute Mountain Ute Tribe. The following conditions apply only to discharges on the Ute Mountain Ute Reservation.
 - a. Permittees must send the Stormwater Pollution Prevention Plan (SWPPP) to the Tribal Environmental Department for review and approval at least 30 days before construction starts.
 - b. Before submitting the Notice of Termination (NOT), permittees must clearly demonstrate to the Tribal Environmental Department during an on-site inspection that requirements for site stabilization have been met.
 - c. The permittee must send a copy of the Notice of Intent (NOI) and the Tribal Environmental Department.
 - d. Permittees may submit their SWPPPs and NOI and NOT requests electronically to: <u>clarrick@utemountain.org</u>.
 - e. Written NOIs, SWPPPs, and NOTs may be mailed to:

Colin Larrick, Water Quality Program Manager Ute Mountain Ute Tribe Environmental Department P.O. Box 448 Towaoc, CO 81334
9.5.2 MTR101000 Indian country within the State of Montana

- **9.5.2.1** The Confederated Salish and Kootenai Tribes of the Flathead Nation. The following conditions apply only to discharges on the Confederated Salish and Kootenai Tribes of the Flathead Nation Reservation:
 - a. Permittees must submit the Stormwater Pollution Prevention Plan (SWPPP) to the Confederated Salish and Kootenai Tribes at least 30 days before construction starts.
 - b. Before submitting the Notice of Termination (NOT), permittees must clearly demonstrate to an appointed Tribal staff person during an onsite inspection that requirements for site stabilization have been met.
 - c. The permittee must send a copy of the Notice of Intent (NOI) and the NOT to CSKT.
 - d. Permittees may submit their SWPPPs, NOIs and NOTs electronically to: <u>clintf@cskt.org</u>.
 - e. Written SWPPPs, NOIs and NOTs may be mailed to:

Clint Folden, Water Quality Regulatory Specialist Confederated Salish and Kootenai Tribes Natural Resources Department P.O. Box 278 Pablo, MT 59855

9.6 EPA Region 9

9.6.1 AZR101000 Indian Country within the state of Arizona, as well as Navajo Nation lands in New Mexico and Utah

- **9.6.1.1** Navajo Nation. The following conditions apply only to discharges on the Navajo Nation reservation:
 - a. Courtesy copies of Notice of Intents and stormwater pollution prevention plans shall be made available to Navajo EPA.
 - b. Copies of all monitoring reports must be provided to Navajo EPA.
 - c. Facilities covered under the CGP will be subject to compliance inspections by Navajo EPA staff with active Federal Inspector Credentials under the authority of the Clean Water Act.
 - d. Specific awareness and adherence to Sections 201 Anti-degradation Policy, 203 Narrative WQS, and 207.H Turbidity.

9.6.2 CAR101000 Indian country within the State of California

- **9.6.2.1 Twenty-Nine Palms Band of Mission Indians.** The following conditions apply only to discharges on the Twenty-Nine Palms Band of Mission Indians Reservation:
 - a. At the time the applicant submits its Notice of Intent (NOI) to the EPA, the applicant must concurrently submit written notification of the NOI and a copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Twenty-Nine Palms Band of Mission Indians at the address below:

Tribal Environmental Coordinator Twenty-Nine Palms Band of Mission Indians 46-200 Harrison Place Coachella, CA 92236

- b. The applicant must also concurrently submit to the Tribal Environmental Coordinator written notification of any other forms or information submitted to the EPA, including waivers, reporting, and Notice of Termination (NOT).
- c. Permitted entities under the CGP must keep the Tribal EPA informed of authorized discharges under the CGP by submitting written information about the type, quantity, frequency and location, intended purpose, and potential human health and/or environmental effects of their activities. These requirements are pursuant to Section 4 of the Twenty-Nine Palms Band of Mission Indians Water Pollution Control Ordinance (022405A). This information may be submitted to Tribal EPA in the form of Stormwater Pollution Prevention Plans (SWPPPs), monitoring reports, or other reports as required under the CGP. Spills, leaks, or unpermitted discharges must be reported in writing to Tribal EPA within 24 hours of the incident.
- **9.6.2.2** Morongo Band of Mission Indians. The following conditions apply only to discharges on the Morongo Band of Mission Indians Reservation:
 - a. This certification does not exempt, and is provisional upon compliance with, other applicable statutes and codes administered by federal and tribal agencies. Pursuant to the Morongo Band of Mission Indians Surface Water Quality Protection Ordinance (Ordinance 39), all unpermitted discharges must be reported to the Morongo Band of Mission Indians Environmental Protection Department (Morongo EPD) within 24 hours of the incident.
 - b. Each operator shall submit a signed hard copy of the Notice of Intent (NOI) and stormwater pollution prevention plan (SWPPP) to the Morongo EPD at the same time it is submitted electronically to the EPA.
 - c. The operator shall allow the Morongo EPD or its designee to inspect and sample at the construction site as needed.

Correspondence should be submitted to:

Morongo Band of Mission Indians Environmental Protection Department 12700 Pumarra Road Banning, CA 92220 Phone: (951) 755-5128 Email:

- **9.6.3 GUR100000 Island of Guam**. The following conditions apply only to discharges on the Island of Guam:
 - a. Any earth-moving operations which require a permit must be obtained from the Department of Public Works (DPW) with clearance approval from various Government of Guam Agencies including Guam EPA prior to the start of any earth-moving activity.
 - b. In the event that the construction sites are within the Guam Sole Source Aquifer, the construction site owner and operator must consider opportunities to facilitate groundwater recharge for construction and post-construction implementing infiltration Best Management Practices. Stormwater disposal systems shall be designed and operated within the boundaries of the project. Stormwater systems shall not be permitted within any Wellhead Protection Zone unless the discharge meets the Guam Water Quality Standards within the zone. Waters discharged

within the identified category G-2 recharge zone shall receive treatment to the degree required to protect the drinking water quality prior to it entering the category G-1 resource zone.

- c. All conditions and requirements set forth in the 22 Guam Administrative Rules and Regulations (GARR), Division II, Water Control, Chapter 10, Guam Soil Erosion and Sediment Control Regulations (GSESCR) that are more protective than the CGP regarding construction activities must be complied with.
- d. All standards and requirements set forth in the 22 GARR, Division II, Water Control, Chapter 5, Guam Water Quality Standards (GWQS) 2001 Revisions, must be complied with to include reporting GWQS exceedance to Guam EPA.
- e. All operators/owners of any property development or earth moving activities shall comply with the erosion control pre-construction and post-construction BMP design performance standards and criteria set forth in the 2006 CNMI and Guam Stormwater Management Manual.
- f. All conditions and requirements regarding dewatering activities set forth in 22 Guam Administrative Rules and Regulations Chapter 7, Water Resources Development and Operating Regulations must be complied with to include securing permits with Guam EPA prior to the start of any dewatering activities.
- g. If a project to be developed is covered under the Federal Stormwater Regulations (40 CFR Parts 122 & 123), a Notice of Intent (NOI) to discharge stormwater to the surface and marine waters of Guam must be submitted to the U.S. EPA and a copy furnished to Guam EPA, pursuant to Section 10, 104(B)(5)(d) 22GAR, Division II, Chapter 10.
- h. Guam EPA shall apply the Buffer Requirements listed in Appendix G of the CGP NPDES Permit for construction activities as it pertains to Waters of the U.S. in Guam. Guam EPA shall also apply the same buffer requirements for sinkholes in Guam.
- i. When Guam EPA, through its permit review process, identifies that the proposed construction activity is close proximity to marine waters, contractors and owners will be informed that any activity that may impair water quality are required to stop during peak coral spawning periods as per the Guam Coral Spawning Construction Moratoriums.
- j. The Proposed Construction General Permit must set appropriate measures and conditions to protect Guam's Threatened and Endangered Species and Outstanding Resource Waters of exceptional recreational or ecological significance as determined by the Guam EPA Administrator as per Guam Water Quality Standards 2001 Revisions, §5102, Categories of Waters, D. Outstanding Resource Waters.
- k. When Guam EPA through its permit review process identifies that proposed construction activity is in close proximity to any Section 303d impaired waters, which includes marine waters and surface waters, shall ensure that construction activity does not increase the impaired water's ambient parameters.
- I. When Rainfall Erosivity and TMDL Waivers reflected in the CGP, Appendix C, are submitted to the U.S. EPA, Guam EPA will review waivers on a project by project basis.
- m. Prior to submission of the Notice of Termination (NOT) to the U.S. EPA, permittees must clearly demonstration to Guam EPA that the project site has met all soil

stabilization requirements and removal of any temporary erosion control as outlined in the GSESCR.

9.7 EPA Region 10

9.7.1 IDR100000 State of Idaho, except Indian country

- a. <u>Idaho's Antidegradation Policy</u>. The WQS contain an antidegradation policy providing three levels of protection to water bodies in Idaho (IDAPA 58.01.02.051).
 - Tier I Protection. The first level of protection applies to all water bodies subject to Clean Water Act jurisdiction and ensures that existing uses of a water body and the level of water quality necessary to protect those existing uses will be maintained and protected (IDAPA 58.01.02.051.01; 58.01.02.052.01). Additionally, a Tier 1 review is performed for all new or reissued permits or licenses (IDAPA 58.01.02.052.05).
 - 2. Tier II Protection. The second level of protection applies to those water bodies considered high quality and ensures that no lowering of water quality will be allowed unless deemed necessary to accommodate important economic or social development (IDAPA 58.01.02.051.02; 58.01.02.052.08).
 - 3. Tier III Protection. The third level of protection applies to water bodies that have been designated outstanding resource waters and requires that activities not cause a lowering of water quality (IDAPA 58.01.02.051.03; 58.01.02.052.09).

DEQ is employing a water body by water body approach to implementing Idaho's antidegradation policy. This approach means that any water body fully supporting its beneficial uses will be considered high quality (IDAPA 58.01.02.052.05.a). Any water body not fully supporting its beneficial uses will be provided Tier I protection for that use, unless specific circumstances warranting Tier II protection are met (IDAPA 58.01.02.052.05.c). The most recent federally approved Integrated Report and supporting data are used to determine support status and the tier of protection (IDAPA 58.01.02.052.05).

- b. <u>Pollutants of Concern.</u> The primary pollutants of concern associated with stormwater discharges from construction activities are sediment, typically measured as total suspended solids and turbidity. Other potential pollutants include the following: phosphorus, nitrogen, pesticides, organics, metals, PCBs, petroleum products, construction chemicals, and solid wastes.
- c. <u>Receiving Water Body Level of Protection</u>. The CGP provides coverage to construction activities throughout the entire State of Idaho. Because of the statewide applicability, all of the jurisdictional waters within Idaho could potentially receive discharges either directly or indirectly from activities covered under the CGP. DEQ applies a water body by water body approach to determine the level of antidegradation a water body will receive.

All waters in Idaho that receive discharges from activities authorized under the CGP will receive, at minimum Tier I antidegradation protection because Idaho's antidegradation policy applies to all waters of the state. Water bodies that fully support their aquatic life or recreational uses are considered to be *high quality waters* and will receive Tier II antidegradation protection.

Although Idaho does not currently have any Tier III designated outstanding resource waters (ORWs) designated, it is possible for a water body to be designated as an ORW during the life of the CGP. Because of this potential, the antidegradation review also assesses whether the permit complies with the

outstanding resource water requirements of Idaho's antidegradation policy.

To determine the support status of the receiving water body, persons filing a Notice of Intent (NOI) for coverage under this general permit must use the most recent EPA-approved Integrated Report, available on Idaho DEQ's website: <u>http://www.deq.idaho.gov/water-quality/surface-water/monitoringassessment/integrated-report/</u>.

High quality waters are identified in Categories 1 and 2 of the Integrated Report. If a water body is in either Category 1 or 2, it is a Tier II water body.

Unassessed waters are identified as Category 3 of DEQ's Integrated Report. These waters require a case-by-case determination to be made by DEQ based on available information at the time of the application for permit coverage. If a water body is unassessed, the applicant is directed to contact DEQ for assistance in filing the NOI.

Impaired waters are identified in Categories 4 and 5 of the Integrated Report. Category 4(a) contains impaired waters for which a TMDL has been approved by EPA. Category 4(b) contains impaired waters for which controls other than a TMDL have been approved by EPA. Category 5 contains waters which have been identified as "impaired," for which a TMDL is needed. These waters are Tier I waters, for the use which is impaired. With the exception, if the aquatic life uses are impaired for any of these three pollutants—dissolved oxygen, pH, or temperature and the biological or aquatic habitat parameters show a health, balanced biological community, then the water body shall receive Tier II protection, in addition to Tier I protection, for aquatic life uses (IDAPA 58.01.02.052.05.c.i.).

DEQ's webpage also has a link to the state's map-based Integrated Report which presents information from the Integrated Report in a searchable, map-based format: <u>http://www.deq.idaho.gov/assistance-resources/maps-data/</u>.

Water bodies can be in multiple categories for different causes. If assistance is needed in using these tools, or if additional information/clarification regarding the support status of the receiving water body is desired, the operator is directed to make contact with the appropriate DEQ regional office of the State office in the table below:

Regional and State Office	Address	Phone Number	Email
Boise	1445 N. Orchard Rd., Boise 83706	208-373- 0550	Kati.carberry@deq.idaho.gov
Coeur d'Alene	2110 Ironwood Parkway, Coeur D'Alene 83814	208-769- 1422	<u>June.bergquist@deq.idaho.gov</u>
Idaho Falls	900 N. Skyline, Suite B., Idaho Falls 83402	208-528- 2650	<u>Troy.saffle@deq.idaho.gov</u>

Lewiston	1118 "F" St., Lewiston 83501	208-799- 4370	Mark.sellet@deq.idaho.gov
Pocatello	444 Hospital way, #300 Pocatello 83201	208-236- 6160	<u>Lynn.vanevery@deq.idaho.gov</u>
Twin Falls	650 Addison Ave., W., Suite 110, Twin Falls 83301	208-736- 2190	<u>Balthasar.buhidar@deq.idaho.gov</u>
State Office	1410 N. Hilton Rd., Boise 83706	208-373- 0502	Nicole.deinarowicz@deq.idaho.gov

d. <u>Turbidity Monitoring</u>. The permittee must conduct turbidity monitoring during construction activities and thereafter on days where there is a direct discharge of pollutants from an unstabilized portion of the site which is causing a visible plume to a water of the U.S.

A properly and regularly calibrated turbidimeter is required for measurements analyzed in the field (preferred method), but grab samples may be collected and taken to a laboratory for analysis. If the permittee can demonstrate that there will be no direct discharge from the construction site, then turbidity monitoring is not required. When monitoring is required, a sample must be taken at an undisturbed area immediately upstream of the project area to establish background turbidity levels for the monitoring event. Background turbidity, location, date and time must be recorded prior to monitoring downstream of the project area. A sample must also be taken immediately downstream from any point of discharge and within any visible plume. The turbidity, location, date and time must be recorded. The downstream sample must be taken immediately following the upstream sample in order to obtain meaningful and representative results.

Results from the compliance point sampling or observation⁷⁸ must be compared to the background levels to determine whether project activities are causing an exceedance of state WQS. If the downstream turbidity is 50 NTUs or more than the upstream turbidity, then the project is causing an exceedance of WQS. Any exceedance of the turbidity standard must be reporting to the appropriate DEQ regional office within 24 hours. The following six (6) steps should be followed to ensure compliance with the turbidity standard:

1. If a visible plume is observed, quantify the plume by collecting turbidity measurements from within the plume and compare the results to Idaho's instantaneous numeric turbidity criterion (50 NTU over the background).

⁷⁸ A visual observation is only acceptable to determine whether BMPs are functioning properly. If a plume is observed, the project may be causing an exceedance of WQS and the permittee must collect turbidity data and inspect the condition of the projects BMPs. If the BMPs appear to be functioning to their fullest capability and the turbidity is 50 NTUs or more than the upstream turbidity, then the permittee must modify the activity or implement additional BMPs (this may also include modifying existing BMPs).

- 2. If turbidity is less than 50 NTU instantaneously over the background turbidity; continue monitoring as long as the plume is visible. If turbidity exceeds background turbidity by more than 50 NTU instantaneously then stop all earth disturbing construction activities and proceed to step 3.
- 3. Take immediate action to address the cause of the exceedance. That may include inspection the condition of project BMPs. If the BMPs are functioning to their fullest capability, then the permittee must modify project activities and/or BMPs to correct the exceedance.
- 4. Notify the appropriate DEQ regional office within 24 hours.
- 5. Possibly increase monitoring frequency until state water quality standards are met.
- 6. Continue earth disturbing construction activities once turbidity readings return to within 50 NTU instantaneously <u>and</u> 25 NTU for more than ten consecutive days over the background turbidity.

Copies of daily logs for turbidity monitoring must be available to DEQ upon request. The report must describe all exceedances and subsequent actions taken, including the effectiveness of the action.

e. <u>Reporting of Discharges Containing Hazardous Materials or Petroleum Products.</u> All spills of hazardous material, deleterious material or petroleum products which may impact waters (ground and surface) of the state shall be immediately reported. Call 911 if immediate assistance is required to control, contain or clean up the spill. If no assistance is needed in cleaning up the spill, contact the appropriate DEQ regional office in the table below during normal working hours or Idaho State Communications Center after normal working hours. If the spilled volume is above federal reportable quantities, contact the National Repose Center.

For immediate assistance: Call 911

National Response Center: (800) 424-8802

Idaho State Communications Center: (208) 632-8000

Regional office	Toll Free Phone Number	Phone Number
Boise	888-800-3480	208-373-0321
Coeur d'Alene	877-370-0017	208-769-1422
Idaho Falls	800-232-4635	208-528-2650
Lewiston	977-547-3304	208-799-4370
Pocatello	888-655-6160	208-236-6160
Twin Falls	800-270-1663	208-736-2190

9.7.2 IDR101000 Indian country within the State of Idaho, except Duck Valley Reservation lands (see Region 9)

- **9.7.2.1** Shoshone-Bannock Tribes. The following conditions apply only to discharges on the Shoshone-Bannock Reservation:
 - f. Each operator shall submit a signed hard copy of the Notice of Intent (NOI) to the Shoshone-Bannock Tribes Water Resources Department at the same time it is

submitted electronically to the Environmental Protection Agency (EPA) and shall provide the Shoshone-Bannock Tribes Water Resources Department the acknowledgement of receipt of the NOI from the EPA within 7 calendar days of receipt from the EPA.

- **9.7.3** WAR10F000 Areas in the State of Washington, except those located on Indian country, subject to construction activity by a Federal Operator. The following conditions apply only to discharges on federal facilities in the State of Washington:
 - a. Discharges shall not cause or contribute to a violation of surface water quality standards (Chapter 173-201A WAC), groundwater quality standards (Chapter 173-200 WAC), sediment management standards (Chapter 173-204 WAC), and human health-based criteria in the National Toxics Rule (40 CFR Part 131.36). Discharges that are not in compliance with these standards are not authorized.
 - b. Prior to the discharge of stormwater and non-storm water to waters of the State, the Permittee must apply all known, available, and reasonable methods of prevention, control, and treatment (AKART). This includes the preparation and implementation of an adequate SWPPP, with all appropriate BMPs installed and maintained in accordance with the SWPPP and the terms and conditions of this permit.
 - c. Permittees who discharge to segments of waterbodies listed as impaired by the State of Washington under Section 303(d) of the Clean Water Act for turbidity, fine sediment, phosphorus, or pH must comply with the following numeric effluent limits:

Parameter Identified in 303(d) Listing	Parameter Sampled	Unit	Analytical Method	Numeric Effluent Limit
TurbidityFine SedimentPhosphorus	Turbidity	NTU	SM2130 or EPA 180.1	25 NTUs at the point where the stormwater is discharged from the site.
High pH	рН	Su	pH meter	In the range of 6.5 – 8.5

- d. All references and requirements associated with Section 303(d) of the Clean Water Act mean the most current EPA approved listing of impaired waters that exists on February 16, 2017, or the date when the operator's complete permit application is received by EPA, whichever is later.
- e. Discharges to waterbodies subject to an applicable Total Maximum Daily Load (TMDL) for turbidity, fine sediment, high pH, or phosphorus, shall be consistent with the assumptions and requirements of the TMDL.
 - i. Where an applicable TMDL sets specific waste load allocations or requirements for discharges covered by this permit, discharges shall be consistent with any specific waste load allocations or requirements establish by the applicable TMDL.
 - ii. Where an applicable TMDL has established a general waste load allocation for construction stormwater discharges, but no specific requirements have been identified, compliance with this permit will be assumed to be consistent with the approved TMDL.

- iii. Where an applicable TMDL has not specified a waste load allocation for construction stormwater discharges, but has not excluded these discharges, compliance with this permit will be assumed to be consistent with the approved TMDL.
- iv. Where an applicable TMDL specifically precludes or prohibits discharges from construction activity, the operator is not eligible for coverage under this permit.
- v. Applicable TMDL means a TMDL for turbidity, fine sediment, high pH, or phosphorus, which has been completed and approved by EPA prior to February 16, 2017, or prior to the date the operator's complete NOI is received by EPA, whichever is later.

9.7.4 WAR101000 Indian country within the State of Washington

- **9.7.4.1** Confederated Tribes of the Colville Reservation. The following conditions apply only to discharges on the Colville Indian Reservation (CIR) and on other Tribal trust lands or allotments of the Confederated Tribes of the Colville Reservation:
 - a. A copy of the Stormwater Pollution Prevention Plan must be submitted to the following office at least thirty (30) days in advance of sending the Notice of Intent (NOI) to EPA:

Environmental Trust Department Confederated Tribes of the Colville Reservation PO Box 150 Nesepelem, WA 99155

- b. Copies of the Notice of Intent (NOI) and Notice of Termination (NOT) must be sent to the ETD at the same time they are submitted to EPA.
- c. Discharges to Omak Creek, the Okanogan River, and Columbia River downstream of Chief Joseph Dam may affect threatened or endangered species, and shall only be permitted in adherence with Appendix D of the CGP.
- d. All work shall be carried out in such a manner as will prevent violations of water quality criteria as stated in Chapter 4-8 Water Quality Standards of the Colville Law and Order Code, as amended.
- e. Appropriate steps shall be taken to ensure that petroleum products or other chemical pollutants are prevented from entering waters of the CIR. All spills must be reported to the appropriate emergency management agency and the ETD, and measures shall be taken immediately to prevent the pollution of waters of the CIR, including groundwater.
- f. Stormwater site inspections shall be conducted at least once every 7 calendar days, within 24-hours of the occurrence of a rain event of 0.25 inches or greater in a 24-hour period, and daily during periods of saturated ground surface or snowmelt with accompanying surface runoff.
- g. Results of discharge sampling must be reported to the ETD within 7 days of sample collection. All sample reporting must include the date and time, location, and individual performing the sampling.
- h. Any corrective action reports that are required under the CGP must be submitted to the ETD at the above address within one (1) working day of the report completion.

- i. This certification does not authorize impacts to cultural, historical, or archeological features or sites, or proprieties that may be eligible for such listing.
- **9.7.4.2** Lummi Nation. The following conditions apply only to discharges on the Lummi Reservation:
 - a. The Lummi Nation reserves the right to modify this 401 certification if the final version of the NPDES General Permit for Storm Water Discharges Associated with Construction Activity (CGP) on tribal lands in the State of Washington (Permit No. WAR101000) is substantively different than the draft version of the proposed permit that was made available for public comments during April 2016. The Lummi Nation will determine if the final version of the NPDES CGP is substantively different than the draft version once the EPA makes it available.
 - b. This certification does not exempt and is provisional upon compliance with other applicable statutes and codes administered by federal and Lummi tribal agencies. Pursuant to Lummi Code of Laws (LCL) 17.05.020(a), the operator must also obtain a land use permit from the Lummi Planning Department as provided in Title 15 of the Lummi Code of Laws and regulations adopted thereunder.
 - c. Pursuant to LCL 17.05.020(a), each operator shall develop and submit a Storm Water Pollution Prevention Plan to the Lummi Water Resources Division for review and approval by the Water Resources Manager prior to beginning any discharge activities.
 - d. Pursuant to LCL Title 17, each operator shall be responsible for achieving compliance with the Water Quality Standards for Surface Waters of the Lummi Indian Reservation (Lummi Administrative Regulations [LAR] 17 LAR 07.010 through 17 LAR 07.210 together with supplements and amendments thereto).
 - e. Each operator shall submit a signed hard copy of the Notice of Intent (NOI) to the Lummi Water Resources Division at the same time it is submitted electronically to the Environmental Protection Agency (EPA) and shall provide the Lummi Water Resources Division the acknowledgement of receipt of the NOI from the EPA and the associated NPDES tracking number provided by the EPA within 7 calendar days of receipt from the EPA.
 - f. Each operator shall submit a signed hard copy of the Notice of Termination (NOT) to the Lummi Water Resources Division at the same time it is submitted electronically to the EPA and shall provide the Lummi Water Resources Division the EPA acknowledgement of receipt of the NOT.
 - g. Storm Water Pollution Prevention Plans, Notice of Intent, Notice of Termination and associated correspondence with the EPA shall be submitted to:

Lummi Natural Resources Department ATTN: Water Resources Manager 2665 Kwina Road Bellingham, WA 98226-9298

- **9.7.4.3** Makah Tribe. The following conditions apply only to discharges on the Makah Reservation:
 - a. The operator shall be responsible for achieving compliance with the Makah Tribe's Water Quality Standards.

- b. The operator shall submit a Storm Water Pollution Prevention Plan to the Makah Tribe Water Quality Program and Makah Fisheries Habitat Division for review and approval at least thirty (30) days prior to beginning any discharge activities.
- c. The operator shall submit a copy of the Notice of Intent to the Makah Tribe Water Quality Program and Makah Fisheries Habitat Division at the same time it is submitted to EPA.
- d. Storm Water Pollution Prevention Plans and Notices of Intent shall be submitted to:

Aaron Parker Makah Fisheries Management Water Quality Specialist (360) 645-3162 Cell 206-356-0319 PO Box 115 Neah Bay WA 98357

- **9.7.4.4 Puyallup Tribe of Indians.** The following conditions apply only to discharges on the Puyallup Tribe of Indians Reservation:
 - a. Each permittee shall be responsible for achieving compliance with the Puyallup Tribe's Water Quality Standards, including antidegradation provisions. The Puyallup Natural Resources Department will conduct an antidegradation review for permitted activities that have the potential to lower water quality. The antidegradation review will be consistent with the Tribe's Antidegradation Implementation Procedures. The Tribe may also impose additional controls on a site-specific basis, or request EPA to require the operator obtain coverage under an individual permit, if information in the NOI or from other sources indicates that the operator's discharges are not controlled as necessary to meet applicable water quality standards.
 - b. The permittee shall be responsible for meeting any additional permit requirements imposed by EPA necessary to comply with the Puyallup Tribe's antidegradation policies if the discharge point is located within 1 linear mile upstream of waters designated by the Tribe.
 - c. Each permittee shall submit a copy of the Notice of Intent (NOI) to be covered by the general permit to Char Naylor (<u>char.naylor@puyalluptribe.com</u>) and Russ Ladley (<u>russ.ladley@puyalluptribe.com</u>) by email or at the address listed below at the same time it is submitted to EPA.

Puyallup Tribe of Indians 3009 E. Portland Avenue Tacoma, WA 98404 ATTN: Russ Ladley and Char Naylor

- d. All supporting documentation and certifications in the NOI related to coverage under the general permit for Endangered Species Act purposes shall be submitted to the Tribe's Resource Protection Manager () and Char Naylor () for review.
- e. If EPA requires coverage under an individual or alternative permit, the permittee shall submit a copy of the permit to Russ Ladley and Char Naylor at the address listed above.

- f. The permittee shall submit all stormwater pollution prevention plans to Char Naylor for review and approval prior to beginning any activities resulting in a discharge to tribal waters.
- g. The permittee shall conduct benchmark monitoring for turbidity (or transparency) and, in the event of significant concrete work or engineered soils, pH monitoring as well. Monitoring, benchmarks, and reporting requirements contained in Condition S.4. (pp.13-20) of the Washington State Construction Stormwater General Permit, effective January 1, 2016, shall apply, as applicable.
- h. The permittee shall notify Char Naylor (253-680-5520) and Russ Ladley (253-680-5560) prior to conducting inspections at construction sites generating storm water discharged to tribal waters.
- i. Treat dewatering discharges with controls necessary to minimize discharges of pollutants in order to minimize the discharge of pollutants to groundwater or surface waters from stormwater that is removed from excavations, trenches, foundations, vaults, or other storage areas. Examples of appropriate controls include sediment basins or sediment traps, sediment socks, dewatering tanks, tube settlers, weir tanks, and filtration systems (e.g., bag or sand filters) that are designed to remove sediment.

To the extent feasible, utilize vegetated, upland areas of the site to infiltrate dewatering water before discharge. At all points where dewatering water is discharged, comply with the velocity dissipation requirements of Part 2.2.11 of EPA's 2016 General Construction Stormwater Permit. Examples of velocity dissipation devices include check dams, sediment traps, riprap, and grouted riprap at outlets.

- j. The permittee shall provide and maintain natural buffers to the maximum extent possible (and/or equivalent erosion and sediment controls) when tribal waters are located within 100 feet of the site's earth disturbances. If infeasible to provide and maintain an undisturbed 100 foot natural buffer, erosion and sediment controls to achieve the sediment load reduction equivalent to a 100-foot undisturbed natural buffer shall be required.
- **9.7.4.5** Spokane Tribe of Indians. The following conditions apply only to discharges on the Spokane Tribe Reservation:
 - a. Pursuant to Tribal Law and Order Code (TLOC) Chapter 30 each operator shall be responsible for achieving compliance with the Surface Water Quality Standards of the Spokane Tribe. The operator shall notify the Spokane Tribe, Water Control Board (WCB) of any spills of hazardous material and;
 - b. Each operator shall submit a signed hard copy of the Notice of Intent (NOI) to the WCB at the same time it is submitted to EPA.
 - c. The permittee shall allow the Tribal Water Control Board or its designee to inspect and sample at the construction site as needed.
 - d. Each operator shall submit a signed copy of the Notice of Termination (NOT) to the WCB at the same time it is submitted to EPA.

The correspondence address for the Spokane Tribe Water Control Board is:

Water Control Board c/o. Brian Crossley P0 Box 480 Wellpinit WA 99040 (509)626-4409

9.7.4.6 Swinomish Indian Tribal Community. The following conditions apply only to discharges on the Swinomish Reservation:

m

- a. Owners and operators seeking coverage under this permit who intend to discharge to Regulated Surface Waters must submit a copy of the Notice of Intent (NOI) to the DEP at the same time the NOI is submitted to EPA.
- b. Owners and operators seeking coverage under this permit must also submit a Stormwater Pollution Prevention Plan to the DEP for review and approval by DEP prior to beginning any discharge activities.
- c. Owners and operators must also submit to the DEP Changes in NOI and/or Notices of Termination at the same time they are submitted to EPA.
- **9.7.4.7 Tulalip Tribes.** The following conditions apply only to discharges on the Tulalip Reservation:
 - a. This certification does not exempt and is provisional upon compliance with other applicable statues and codes administered by federal and Tulalip tribal agencies. Pursuant to Tulalip Tribes code of law, the operator must also obtain a land use permit from the Tulalip Tribes Planning Department as provided in Title 7 of the Tulalip Tribal Code (http://www.codepublishing.com/WA/Tulalip/?Tulalip02/Tulalip0205.html).
 - b. Each CGP operator shall be responsible for achieving compliance with Tulalip Tribes Water Quality Standards.
 - c. Each CGP operator shall submit their Stormwater Pollution Prevention Plan (SWPPP) to the:

Tulalip Natural & Cultural Resources Department Tulalip Tribes 6406 Marine Drive Tulalip, WA 98271

Appendix C – Copy of NOI and EPA Authorization email

NOI is online only.

Appendix D – Copy of Inspection Form

Stormwater Construction Site Inspection Report

	General Info	rmation		
Project Name				
NPDES Tracking No.		Location		
Date of Inspection		Start/End Time		
Inspector's Name(s)				
Inspector's Title(s)				
Inspector's Contact Information				
Inspector's Qualifications				
Describe present phase of construction				
Type of Inspection:RegularPre-storm event	During storm event	Post-storm e	vent	
	Weather Info	rmation		
Has there been a storm event sinceIf yes, provide:Storm Start Date & Time:S	torm Duration (hrs):	s □No Approximate	Amount of Precipitation (in):	
Weather at time of this inspection? Clear Cloudy Rain Sleet Fog Snowing High Winds Other: Temperature:				
Have any discharges occurred since the last inspection? Yes No If yes, describe:				
Are there any discharges at the tin If yes, describe:	ne of inspection?	No		

Site-specific BMPs

- Number the structural and non-structural BMPs identified in your SWPPP on your site map and list them below (add as many BMPs as necessary). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.
- Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.

	BMP	BMP	BMP	Corrective Action Needed and Notes
		Installed?	Maintenance	
			Required?	
1		□Yes □No	□Yes □No	
2		□Yes □No	□Yes □No	
3		□Yes □No	□Yes □No	
4		□Yes □No	□Yes □No	
5		□Yes □No	□Yes □No	
6		□Yes □No	□Yes □No	
7		□Yes □No	□Yes □No	
8		□Yes □No	□Yes □No	
9		□Yes □No	□Yes □No	
10		□Yes □No	□Yes □No	
11		□Yes □No	□Yes □No	

	BMP	BMP	BMP	Corrective Action Needed and Notes
		Installed?	Maintenance	
			Required ?	
12		□Yes □No	□Yes □No	
13		□Yes □No	□Yes □No	
14		□Yes □No	□Yes □No	
15		□Yes □No	□Yes □No	
16		□Yes □No	□Yes □No	
17		□Yes □No	□Yes □No	
18		□Yes □No	□Yes □No	
19		□Yes □No	□Yes □No	
20		□Yes □No	□Yes □No	

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	□Yes □No	UYes DNo	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	□Yes □No	□Yes □No	
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	□Yes □No	□Yes □No	
4	Are discharge points and receiving waters free of any sediment deposits?	□Yes □No	□Yes □No	
5	Are storm drain inlets properly protected?	□Yes □No	□Yes □No	
6	Is the construction exit preventing sediment from being tracked into the street?	□Yes □No	□Yes □No	
7	Is trash/litter from work areas collected and placed in covered dumpsters?	□Yes □No	Yes No	
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	□Yes □No	□Yes □No	

	BMP/activity	Implemented?	Maintenance	Corrective Action Needed and Notes
			Required ?	
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	□Yes □No	□Yes □No	
10	Are materials that are potential stormwater contaminants stored inside or under cover?	□Yes □No	□Yes □No	
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	□Yes □No	□Yes □No	
12	(Other)	Yes No	Yes No	

Non-Compliance

Describe any incidents of non-compliance not described above:

CERTIFICATION STATEMENT

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Print name and title: _____

Signature:_____ Date:_____

Appendix E – Copy of Corrective Action Form

Section A – Initial Report (CGP Part 5.4.1) (Complete this section within 24 hours of identifying the condition that triggered corrective action)							
Name of Project		NPDES ID I	No.			Today's Date	
Date Problem First Discovered		1	Tim	ne Problem First D	scovered		1
Name and Contact Information of Individual Completing this Form							
 What site conditions triggered the requirement to conduct corrective action (check the box that applies): A stormwater control needs repair or replacement (beyond routine maintenance required under Part 2.1.4) A stormwater control necessary to comply with the requirements of this permit was never installed, or was installed incorrectly A discharge is causing an exceedance of applicable water quality standards A Part 1.3 prohibited discharge has occurred EPA requires corrective action as a result of permit violations found during an EPA inspection carried out under Part 4.8 							
Provide a description of the problem	n:						
Deadline for completing corrective	 Deadline for completing corrective action (check the box that applies): Immediately take all reasonable steps to address the condition, including cleaning up any contaminated surfaces so the material will not discharge in subsequent storm events Complete by close of the next business day when problem does not require a new or replacement control or significant repair No later than 7 calendar days from the time of discovery for problems that require a new or replacement control or significant repair Infeasible to complete the installation or repair within 7 calendar days. Explain why it is infeasible and document schedule for installing control: 						
Enter date of corrective action cor	npletion:						
Complete thi	s section <u>no l</u>	ater than 24 h	on Co <u>hours</u> a	ompletion (CGP after completing t	Part 5.4.2 he correct) ive action)	
Section B. I – Why the Problem Occ	urrea					augo and the Date	Veu
(Add an additional sheet if necessor	ary)			Determined the C	lnea îne C Cause	ause and the Date	100
1.				1.			
2.				2.			
Section B.2 – Stormwater Control M	odifications l	mplemented	to Cor	rect the Problem			
List of Stormwater Control Modificat Needed to Correct Problem	ion(s)	Date of Completion	SWPP Nece	P Update essary?	Notes		
1.	<u>, , , , , , , , , , , , , , , , , , , </u>		∏Ye If yes SWPF	s □No , provide date PP modified:			
2.			☐Ye If yes SWPF	s □No s, provide date PP modified:			

Section C –Signature and Certification (CGP Part 5.4.3)

Section C.1 – Contractor or Subcontractor Signature and Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Contractor or Subcontractor:

Date:

Printed Name and Affiliation:

Section C.2 – Operator Signature and Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Operator or "Duly Authorized Representative":

Date:

Printed Name and Affiliation:

Appendix F – SWPPP Amendment Log

No.	Description of the Amendment	Date of Amendment	Amendment Prepared by [Name(s) and Title]

Appendix G - Subcontractor Certifications/Agreements

SUBCONTRACTOR CERTIFICATION STORMWATER POLLUTION PREVENTION PLAN

Project Number:		
Project Title:		
Operator(s):		

As a subcontractor, you are required to comply with the Stormwater Pollution Prevention Plan (SWPPP) for any work that you perform on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the office trailer.

Each subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement:

I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the practices described in the SWPPP.

This certification is hereby signed in reference to the above named project:

Company:

Address:

Title:

Telephone Number: _____

Type of construction service to be provided: _____

Signature: _____

Date:

Appendix H – Grading and Stabilization Activities Log

Date Grading Activity Initiated	Description of Grading Activity	Description of Stabilization Measure and Location	Date Grading Activity Ceased (Indicate Temporary or Permanent)	Date When Stabilization Measures Initiated

Appendix I – SWPPP Training Log

	Stormwater Pollution Prevention Training Log					
Pro	ject Name:					
Pro	Project Location:					
Inst	Instructor's Name(s):					
Inst	Instructor's Title(s):					
Cou	rse Location:		Date:			
Cou	rse Length (hours):					
Stormwater Training Topic: (check as appropriate)						
	Sediment and Erosion Controls		Emergency Procedures			
	Stabilization Controls		Inspections/Corrective Actions			
	Pollution Prevention Measures					
Spea	cific Training Objective:					

Attendee Roster: (attach additional pages as necessary)

No.	Name of Attendee	Company
1		
2		
3		
4		
5		
6		
7		
8		

Appendix J – Delegation of Authority Form

Delegation of Authority

I, ______ (name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the Construction General Permit, at the ______ construction site. The designee is authorized to sign any

reports, stormwater pollution prevention plans and all other documents required by the permit.

 (name of person or position)
 (company)
 (address)
 (city, state, zip)
(phone)

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in Appendix I of EPA's Construction General Permit (CGP), and that the designee above meets the definition of a "duly authorized representative" as set forth in Appendix I.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name:		
Company:		
Title:		
Signature:		
Date:		

Appendix K – Endangered Species Documentation

Critical Habitat for Threatened & Endangered Species [USFWS]



A specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection.

U.S. Fish and Wildlife Service | The data found in this file were developed by the U.S. Fish & Wildlife Service field offices. For more information please refer to the species level metadata found with the individual shapefiles. The ECOS Joint Development Team is responsible for creating and serving this conglomerate file. No data alterations are made by ECOS. | USDA FSA, Maxar | Esri Community Maps Contributors, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

0.4mi

Appendix L – Historic Properties Documentation

See Appendix A - Site Maps

Appendix M – Rainfall Gauge Recording

Use the table below to record the rainfall gauge readings at the beginning and end of each work day. An example table follows.

Month/Year		Month/Year Month/Y			th/Year			
Day	Start time	End time	Day	Start time	End time	Day	Start time	End time
1			1			1		
2			2			2		
3			3			3		
4			4			4		
5			5			5		
6			6			6		
7			7			7		
8			8			8		
9			9			9		
10			10			10		
11			11			11		
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29			29			29		
30			30			30		
31			31			31		



ELECTRONIC APPLICATION OF BIG RIVERS ELECTRIC CORPORATION FOR APPROVAL OF ITS 2020 ENVIRONMENTAL COMPLIANCE PLAN, AUTHORITY TO RECOVER COSTS THROUGH A REVISED ENVIRONMENTAL SURCHARGE AND TARIFF, THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR CERTAIN PROJECTS, AND APPROPRIATE ACCOUNTING AND OTHER RELIEF

Case No. 2019-00435

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CONFIDENTIAL INFORMATION

Project 12 Wilson Station FGD Replacement and Upgrade

Scope of Work Document dated April 2, 2021 Appendix E – Civil Drawings

Filed pursuant to Ordering Paragraph No. 18 of Commission's August 6, 2020 Order FILED: June 18, 2021

INFORMATION SUBMITTED with MOTION FOR CONFIDENTIAL TREATMENT



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Project 12 Wilson Station FGD Replacement and Upgrade

Scope of Work Document dated April 2, 2021 Appendix E – Civil Drawings (*continued*)

INFORMATION SUBMITTED with MOTION FOR CONFIDENTIAL TREATMENT

Civil Cover Sheet Civil General Notes, Legend and Abbreviations Civil Conditions and Demolition Plan Civil Grading and Drainage Plan Civil Underground Utility Plan Civil Erosion and Sedimentation Control Plan – Initial Civil Erosion and Sedimentation Control Plan – Intermediate



ELECTRONIC APPLICATION OF BIG RIVERS ELECTRIC CORPORATION FOR APPROVAL OF ITS 2020 ENVIRONMENTAL COMPLIANCE PLAN, AUTHORITY TO RECOVER COSTS THROUGH A REVISED ENVIRONMENTAL SURCHARGE AND TARIFF, THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR CERTAIN PROJECTS, AND APPROPRIATE ACCOUNTING AND OTHER RELIEF

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Project 12 Wilson Station FGD Replacement and Upgrade

Scope of Work Document dated April 2, 2021 Appendix E – Civil Drawings (continued)

INFORMATION SUBMITTED with MOTION FOR CONFIDENTIAL TREATMENT

Civil Erosion and Sedimentation Control Details – Sheet 1 of 2 Civil Erosion and Sedimentation Control Details – Sheet 2 of 2 Civil Finish Grading and Drainage Details Underground Utility Details



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Project 12 Wilson Station FGD Replacement and Upgrade

Scope of Work Document dated April 2, 2021 Appendix F – Structural Drawings

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Project 12 Wilson Station FGD Replacement and Upgrade

Scope of Work Document dated April 2, 2021 Appendix F – Structural Drawings (continued)

INFORMATION SUBMITTED with MOTION FOR CONFIDENTIAL TREATMENT

Structural Concrete Absorber Drilled Piers & Sump Auger Cast Piles Plan
Structural Concrete Absorber Drilled Pier Detail – Notes & Sections
Structural Concrete Auger Cast Piles – Notes, Sections & Details
Structural Concrete Absorber Foundation – Plan
Structural Concrete Absorber Foundation Sections and Details – Sheet 1, Sheet 2, and Sheet 3
Structural Concrete Absorber Sump Foundation & Shoring – Plan
Structural Steel Absorber Sump Framing Plan – Sections & Details



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Project 12 Wilson Station FGD Replacement and Upgrade

Scope of Work Document dated April 2, 2021 Appendix F – Structural Drawings (continued)

INFORMATION SUBMITTED with MOTION FOR CONFIDENTIAL TREATMENT

Structural Concrete Notes And Typical Details – Sheet 1 of 5 Structural Concrete Typical Details – Sheet 2 of 5 Structural Concrete Typical Details – Sheet 3 of 5 Structural Concrete Typical Details – Sheet 4 of 5 Structural Concrete Typical Details – Sheet 5 of 5 Structural Steel General Notes and Typical Details – Sheet 1 of 5 Structural Steel Typical Details – Sheet 2 of 5 Structural Steel Typical Details – Sheet 3 of 5 Structural Steel Typical Details – Sheet 4 of 5 Structural Steel Typical Details – Sheet 4 of 5 Structural Steel Typical Details – Sheet 4 of 5


ELECTRONIC APPLICATION OF BIG RIVERS ELECTRIC CORPORATION FOR APPROVAL OF ITS 2020 ENVIRONMENTAL COMPLIANCE PLAN, AUTHORITY TO RECOVER COSTS THROUGH A REVISED ENVIRONMENTAL SURCHARGE AND TARIFF, THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR CERTAIN PROJECTS, AND APPROPRIATE ACCOUNTING AND OTHER RELIEF

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Project 12 Wilson Station FGD Replacement and Upgrade

Scope of Work Document dated April 2, 2021 Appendix G – Electrical Drawings

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Project 12 Wilson Station FGD Replacement and Upgrade

Scope of Work Document dated April 2, 2021 Appendix G – Electrical Drawings (continued)

INFORMATION SUBMITTED with MOTION FOR CONFIDENTIAL TREATMENT

Electrical UG Grounding Layout Area 01

- Electrical UG Grounding Layout Area 02
- Electrical UG Grounding Layout Area 03
- Electrical UG Grounding Layout Area 04
- Electrical UG Grounding Layout Area 05

Electrical UG Grounding Layout Area 06



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Project 12 Wilson Station FGD Replacement and Upgrade

Scope of Work Document dated April 2, 2021 Appendix G – Electrical Drawings (continued)

INFORMATION SUBMITTED with MOTION FOR CONFIDENTIAL TREATMENT

Electrical Underground Layout Area 01 Electrical Underground Layout Area 03 Electrical Underground Layout Area 04 Electrical Underground Layout Area 05 Electrical Underground Layout Area 06 Electrical Underground Manhole Sections and Details Electrical Underground Sections and Details – Sheet 1 Electrical Underground Sections and Details – Sheet 1 Electrical Underground Sections and Details – Sheet 2 Electrical Standard Installation Details Legend – Sheet 1 of 2 Electrical Standard Installation Details Legend – Sheet 2 of 2



ELECTRONIC APPLICATION OF BIG RIVERS ELECTRIC CORPORATION FOR APPROVAL OF ITS 2020 ENVIRONMENTAL COMPLIANCE PLAN, AUTHORITY TO RECOVER COSTS THROUGH A REVISED ENVIRONMENTAL SURCHARGE AND TARIFF, THE ISSUANCE OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR CERTAIN PROJECTS, AND APPROPRIATE ACCOUNTING AND OTHER RELIEF

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Project 12 Wilson Station FGD Replacement and Upgrade

Scope of Work Document dated April 2, 2021 Appendix G – Electrical Drawings (continued)

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Electrical Standard Installation Details Drafting Symbology Tables Electrical Standard Installation Details Grounding Electrical Standard Installation Details Underground Electrical Standard Installation Details – Motor Electrical Standard Installation Details – Cable