31 60 00 – FOUNDATION PREPARATION

Prepared by:

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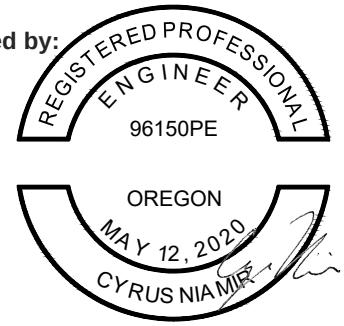

EXPIRES: 06/30/2024

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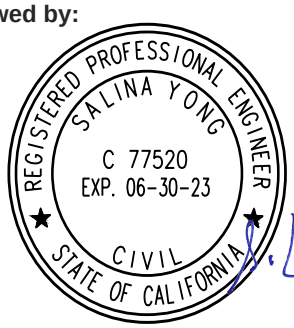

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REVISION INDEX

Revision No.	Signatures				Date (MMDDYY)	Pages Revised	Remarks
	Prepared by	Reviewed by	Reviewed by	Approved by			
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Approval that this document adheres to the Knight Piésold Quality System: 

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PART 1 - GENERAL

1.1 SUMMARY

A. This specification describes the construction and quality management requirements for preparation and dewatering activities for foundations where engineered structures or fills are being constructed.

B. This specification applies to the Foundation Preparation as specified in this Section and set out in the Drawings.

1.2 RELATED SECTIONS

A. Section 03 30 00 – Cast-in-Place Concrete.

B. Section 03 60 00 – Grouting.

C. Section 31 05 00 – Materials for Earthwork.

D. Section 31 10 00 – Clearing, Grubbing and Stripping.

E. Section 31 23 00 – Excavation and Fill Placement.

F. Section 31 25 00 – Erosion and Sedimentation Controls.

1.3 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM):

1. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort.

B. California Stormwater Quality Association:

1. California Stormwater BMP Handbook – Construction.

C. State of California Department of Transportation (Caltrans) Standard Specifications, Section 21- Erosion control.

D. State of Oregon Department of Environmental Quality:

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1. Construction Stormwater Best Management Practices Manual, 1200-C NPDES General Permit.

E. State of Oregon Department of Transportation (ODOT):

1. Oregon Department of Transportation (ODOT): Oregon Standard Specifications for Construction, 2018.

1.4 DEFINITIONS

A. **Foundation** – Native surface on which earthwork, road, concrete, or metal structures are placed.

B. **Unsuitable Material** – Material encountered during Foundation Preparation work that is not acceptable as foundation or subgrade material for fill placement.

C. **Proof-roll** – The act of compacting overburden foundation material to densify the strata and to identify unsuitable material requirement removal.

1.5 SUBMITTALS

A. Items listed in this section are to be submitted to the Engineer for information prior to the start of any Works, unless noted otherwise.

B. Project Record Documents: Record actual locations of abandoned utilities and services, foundations, and other appurtenances.

C. Inspection and Testing Plan: Detail inspection and testing plans including foundation inspection hold points, testing requirements and inspection sheets for review and approval by the Engineer.

1.6 QUALITY ASSURANCE

A. Work shall be performed in conformance with the Drawings, submittals, and other project documents.

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PART 2 - PRODUCTS

2.1 EQUIPMENT

A. Equipment shall be the responsibility of the Contractor.

2.2 MATERIALS

A. Concrete used in Foundation Preparation Work shall be as specified in Section 03 30 00 – Cast-in-Place Concrete.

B. Water used in Foundation Preparation Work shall be as specified in Section 03 30 00 – Cast-in-Place Concrete.

C. Grout used in Foundation Preparation Work shall be as specified in Section 03 60 00 – Grouting.

D. Earthwork fill materials used in Foundation Preparation Work shall be as specified in Section 31 05 00 – Materials for Earthwork.

PART 3 - EXECUTION

3.1 GENERAL

A. The Contractor shall prepare all foundations prior to installation of structures or fill placement to the limits as shown on the Drawings.

B. Foundation Preparation shall be scheduled to be performed immediately prior to when approval is required to enable each portion of the Work to be carried out.

C. Foundation Preparation varies by structure and location and includes but is not limited to:

1. Cleaning and compaction of overburden materials.
2. Cleaning and preparation of rock foundations.
3. Dewatering.

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3.2 OVERBURDEN FOUNDATIONS

A. All overburden foundations shall be cleaned by the Contractor to remove mud, debris, topsoil, ice, snow and other unsuitable materials to the lines and grades shown on the Drawings.

B. All overburden foundations shall be proof-rolled with 6 passes of a minimum 20,000 lb vibratory drum roller in the static mode or other approved equipment. The resulting surface shall be free from potholes and uniform. Soft foundations identified by proof-rolling shall be removed as per the direction of the Engineer. Replacement of removed materials with compacted fill may be necessary.

C. Sloping surfaces shall be trimmed as shown on the Drawings.

D. Before earthwork fill placement, scarify the overburden foundation surface to a depth of 6 inches to ensure a bond between the layers.

E. The prepared overburden foundation should not be frozen or contain frost.

3.3 ROCK FOUNDATIONS

A. All rock foundations shall be cleaned by the Contractor including potholes, cavities, and fault zones. Loose materials such as roots debris and other unsuitable materials shall be removed to the lines and grades shown on the Drawings.

B. Concrete and grout may be used to prepare overhangs or fill cavities and faults per the drawings.

C. Overhangs may be eliminated by excavation to produce a final surface not steeper than 70 degrees.

3.4 ROAD FOUNDATIONS

A. All road foundations or native structural subgrades shall be firm, unyielding native material free of unsuitable material.

B. Rocks greater than 4 inches in diameter are to be removed.

C. Road foundations are to be scarified to 8” depth and recompacted to a minimum of 95% relative density and within 2% of optimum moisture or until firm and unyielding under vibratory proof-roll. Compaction is to be tested as per ASTM D698.

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3.5 DEWATERING

A. All Foundation Preparation Dewatering shall be completed in accordance with Section 31 23 00 – Excavation and Fill Placement.

B. All Foundation Preparation Work shall be completed in near dry conditions.

1. Protect all prepared foundations from damage by water. Accumulations of water in and around foundations shall be promptly removed.
2. Sides and slopes of foundations should be protected from erosion and sloughing caused by water.
3. If a was previously approved foundation is exposed to runoff or precipitation or other source of water, the foundation will require a subsequent inspection and re-approval.

3.6 QUALITY

A. The Contractor shall provide the Owner and Engineer access to the site at all times.

B. The Contractor is responsible for performing work in accordance with the Drawings and performing quality control. An inspection and test plan for Foundation Preparation including hold points, testing requirements and inspection sheets is the responsibility of the Contractor and requires approval prior to implementation from the Engineer.

C. The Engineer shall inspect all Foundation Preparation Work to determine whether preparation and cleaning has been completed satisfactorily.

D. A foundation approval will become invalid if the foundation is left exposed for longer than 24 hours. The Contractor is responsible for maintaining the foundation if fill or structure placement is delayed.

E. Survey will be taken of the area for as-built information in order to verify quantities and/or verify layer thicknesses.

END OF SECTION 31 60 00