

[INSTRUCTIONS]:

- Yellow highlighted areas include instructions that should be deleted prior to release.
- Blue highlighted areas indicate text or fields that may need information provided or revised.
- Delete any items marked as “[Optional]” if they are not used for your solicitation/WOC.

Delete instructions throughout the document before executing Contract/WOC or amendment as follows:

- From the “Edit” menu select “Replace”;
- With cursor in the “Find what” field, click “More” button, then “Format” then “Font”, then in the font field select “Arial” text ;
- Leave the “Replace with” field blank;
- Click “Replace All”. This will delete all yellow highlighted text.

Not all subtasks are needed for each project. If a subtask is not needed, add the word RESERVED behind the subtask title. Delete all subtask narrative.]

TASK 6 GEOTECHNICAL / PAVEMENT SERVICES

Consultant shall conduct [choose one or leave both] geotechnical, and pavement field investigation(s) to explore the following:[remove or add items, as needed for the Project]

- Surface and subsurface conditions in proposed improvement areas, including bridge foundations, retaining walls, signal poles, signs, underground and utilities.
- Area of pavement rehabilitation and/or new pavement construction
- Surface and subsurface conditions in area of [choose one or leave both] existing and potential slope instability

Consultant shall provide documentation which summarizes and presents the results of the investigation, analyses, and recommendations.

6.1 Data Review / Reconnaissance

Data Review:

Consultant shall review available existing information to evaluate the following: [remove or add items, as needed for the Project]

- Geologic conditions and hazards along the proposed Project alignment, such as geologic units, historic land use, and fill materials
- Pavement construction history

Consultant shall review available information from the following sources (as applicable):

[remove or add items, as applicable to the Project]

- Existing published and unpublished literature from Agency/LPA records
- Previous geology and/or geotechnical reports from Agency, federal, city, county, or other officials, consultants, groups or individuals pertinent to the Project
- As-built roadway plans (as available)
- Maintenance records

Reconnaissance:

Consultant shall conduct a [choose as appropriate] pavement, geologic, and geotechnical reconnaissance of the site consisting of up to 2 separate site visits. Consultant shall identify the following: [remove or add items, as needed for the Project]

- Geologic conditions at the Project site, any geologic hazards present and their impacts to the proposed Project elements.
- General condition of the existing pavement

As part of the site reconnaissance work, Consultant shall [remove or add items, as needed for the Project]:

- Observe surface conditions that may be indicative of subsurface conditions of concern, as well as past or ongoing geologic processes (e.g., areas of seeps or springs, erosion, unstable slopes, shallow groundwater, roadway settlement, offsets and depressions, existing earthwork performance, exposed soil and bedrock units).
- Identify site constraints, staging concerns (for exploration and construction), and environmental considerations
- Identify areas for Falling Weight Deflectometer (FWD) testing.
- Identify potential exploration and/or monitoring locations.
- Locate potential pavement core explorations and paint on the ground proposed core locations.
- Locate borings and stake or paint on the ground proposed boring locations.

6.1 Consultant Deliverables and Schedule:

Information from this task shall be incorporated into deliverables for Tasks 6.2, 6.5 and 6.6.

6.2 Exploration and Testing Work Plan (ETWP)

Consultant shall prepare an Exploration and Testing Work Plan (ETWP) prior to beginning field work. No field work is to be performed, other than initial site reconnaissance, before review and approval by Agency and LPA of the ETWP.

The ETWP shall address the proposed [delete or add as appropriate]drilling (borings and cores), cone penetration test (CPT) probes, test pits, and drive probe locations; site access; exploration and sampling procedures; limits for FWD testing; preliminary laboratory testing plan; safety plan; and the traffic control plan. The traffic control plan must address minor road encroachments as well as lane and/or shoulder closures for activities associated with [delete or add as appropriate] cores, borings, CPT probes, test pits, and drive probes, and restoration of pavements, shoulders, and other areas disturbed due to subsurface exploration activities, including erosion control measures.

Consultant shall obtain required Right-of-Entry Permits from the Agency or LPA for exploration locations in public ROW prior to beginning field work.

Consultant shall obtain required Right-of-Entry Agreement(s) from the property owner(s) under Task 14.1 prior to beginning field work.

6.2 Consultant Deliverable and Schedule:

Consultant shall provide:

- ETWP in MS Word format at least 5 business days prior to beginning field work to APM and LAPM.

6.3 Geotechnical and Pavement Explorations

Consultant shall conduct field investigation work in accordance with the most current versions of the ODOT Geotechnical Design Manual and the ODOT Pavement Design Guide.

All field explorations shall be performed in conformance with the approved ETWP developed in Task 6.2. [Remove next sentence if not applicable] When possible, Consultant shall coordinate traffic control and other subcontractors, such as drillers, to provide exploration services for both pavement and geotechnical explorations concurrently.

[Include section #1 if geotechnical explorations are needed]

Consultant shall perform subsurface explorations to estimate and characterize the in situ soils for the purposes of addressing foundation support and other geotechnical or geological considerations for the following: [remove/add/revise items, as needed for the Project]

- New bridge or rehabilitation of existing bridge
- Supporting the anticipated mast arm of signal poles.
- Cantilever sign or sign bridge structures
- Retaining walls
- Utilities
- Non-vehicle access ways, such as multi-use paths, walkways, boardwalks, and pedestrian bridges
- Slope stability
- Embankment subgrade
- Shallow excavations to estimate topsoil stripping depth for new earthwork
- Onsite infiltration of stormwater

Consultant shall use data from the subsurface explorations to determine if site conditions are consistent with the assumptions stated on ODOT standard drawings for [remove or add items, as needed for the Project] mast arm poles and retaining walls, and to provide soil bearing information to support the anticipated structure(s). The anticipated subsurface explorations to be performed for the Project are shown in the following table:

TEST METHOD	EST # OF TESTS	DEPTH(S) OF EXPLORATION(S)
Drilled Borings	X	
Pavement Cores	X	
Hand Auger Borings	X	
Cone Penetration Test (CPT) Probes	X	
Test Pits	X	
Drive Probes	X	
Infiltration Tests	X	

Consultant shall provide an experienced engineer or geologist to supervise the field operations for in situ data gathering.

[End section #1]

[Include section #2 if pavement explorations or testing is needed]

Consultant shall perform pavement explorations and/or tests in order to estimate the following:
[remove or add items, as needed for the Project]

- Subgrade conditions for new or existing roadway alignments
- Structural capacity of the existing pavement
- Thickness of the existing pavement section
- Visual condition of the existing pavement

The pavement field investigation program will include: [remove or add items, as needed for the Project]

- Falling Weight Deflectometer (FWD) testing
- Dynamic penetrometer testing
- Pavement core explorations
- Shallow boring or soil probe explorations
- Visual condition survey of the existing pavement
- Rut depth measurement of the existing pavement
- Shallow excavations to estimate topsoil stripping depth for alignments

The anticipated pavement tests and/or explorations to be performed for the Project are shown in the following table:

TEST METHOD	EST #	TEST INTERVAL(S)
FWD tests	X	
Pavement Core Explorations	X	
Shallow Borings (5ft minimum)	X	

Consultant shall provide an experienced engineer or geologist, as applicable, to supervise the field operations and conduct a detailed visual pavement condition survey to identify the type, extent and severity of the distress present.

[End section #2]

Consultant shall perform the exploration work while following additional requirements as follows:

[remove or add items, as applicable to the Project]

- Boring locations that have restrictions must be performed in conformance with the permit requirements.
- Collect the drill cuttings and drilling mud in sealable steel drums and remove from the site, unless otherwise coordinated with Agency or LPA.
- The borings must be abandoned and backfilled according to Oregon Water Resources Department (OWRD) regulations.
- All borings and core holes through pavement must be patched with cold patch asphalt emulsion, quick set PCC, or as approved by Agency or LPA.
- Core samples of the pavement must be retrieved using a diamond bit core drill.

- Pavement cores must be logged according to the ODOT Pavement Design Guide and photographed for inclusion in the report.

[use the following paragraph if Consultant is collecting traffic count information, unless this effort is included in Task 8 Traffic]

Consultant is responsible for gathering the appropriate traffic information in order to compute the 18-kip equivalent single axle loads (ESALs) within the project limits. Compute the ESALs as required by the ODOT Pavement Design Guide. Consultant shall estimate the growth rate based on available traffic forecasts and shall acquire the traffic data for ESAL calculations by conducting classified traffic counts or using data from the Agency or LPA.

6.3 Consultant Deliverables and Schedule:

Information from this task shall be incorporated into deliverables for Tasks 6.5 and 6.6.

6.4 Laboratory Testing

Consultant shall perform laboratory tests on disturbed and/or undisturbed soil samples obtained from the explorations in order to:

- Characterize the subgrade and subsurface soils
- Develop engineering soil parameters for the [remove or add items, as applicable to the Project] bridge foundations, signal and/or sign foundations, pavement, retaining walls, illumination foundations, and embankment design
- Assist with determining engineering geologic unit boundaries
- Check field soil classification.

The laboratory testing program shall be performed in accordance with standard ASTM and Agency practices to include the following:

[remove or add items, as applicable to the Project]

- Moisture/density;
- Atterberg limits;
- Gradation (minus No. 200 sieve wash);
- Organic content;
- Consolidation;
- Soil unconfined compressive strength;
- Triaxial resilient modulus test;
- Torvane shear strength test
- Direct shear strength test
- Soil corrosion tests (sulfate, sulfide, chloride, pH, redox, and resistivity) for corrosion potential evaluation.

6.4 Consultant Deliverables and Schedule:

Information from this task shall be incorporated into deliverables for Tasks 6.5 and 6.6.

6.5 Pavement Design Report

Consultant shall prepare a Pavement Design Report indicating pavement design criteria, design parameters, and pavement design recommendations to be used for the Project. Consultant shall

provide alternative pavement design recommendations for up to a total of 3 pavement sections for: [remove or add items, as applicable to the Project]

- New pavement for areas of widening or reconstruction;
- Rehabilitation of the existing pavement

A cost estimate shall be developed for each of the design alternatives. Furthermore, the alternative designs shall be evaluated to determine the alternative with the lowest life cycle cost. Unless otherwise specified, the life cycle cost analysis shall be done using the FHWA's RealCost software considering only agency costs.

Unless otherwise specified, the pavement designs shall be developed for design periods as provided in the current version of the ODOT Pavement Design Guide. Pavement section design shall be performed in accordance with the most current versions of the ODOT Pavement Design Guide and AASHTO Guide for Design of Pavement Structures. Mechanistic design method(s) may also be used as stated in the current version of the ODOT Pavement Design Guide.

6.5 Consultant Deliverables and Schedule:

Consultant shall provide:

- Draft Pavement Design Report in MS Word and PDF format to be incorporated into DAP delivered under Task 13.
- Final Pavement Design Report in PDF format to APM and LAPM within 2 weeks of receipt of comments from Agency and LPA.

[Include this task if applicable for the Project, otherwise mark "reserved"]

6.6 Geotechnical Report and Foundation/Geotechnical Data Sheets

Consultant shall prepare a Geotechnical Report according to the ODOT Geotechnical Design Manual criteria for submittal to Agency and LPA for review. The Geotechnical Report must:

- Summarize the geotechnical design and construction recommendations.
- Identify general specification criteria for the construction contract and provide recommendations for special provisions, if required.
- Summarize the results of the geotechnical analyses.
- Provide design recommendations for the [remove or add items, as applicable to the Project] bridge foundations, signal and/or sign foundations, retaining walls, illumination foundation and embankment design.

Consultant shall prepare up to 4 Foundation data sheet(s) and Geotechnical data sheet(s) to be incorporated into the Advance and Final plan sheets.

6.6 Consultant Deliverables and Schedule:

Consultant shall provide:

- Draft Geotechnical Report in MS Word and PDF format to be incorporated into DAP delivered under Task 13.
- Final Geotechnical Report in PDF format to APM and LAPM within 2 weeks of receipt of comments from Agency and LPA.

- Foundation Data sheets and Geotechnical Data sheets to be incorporated into Advance and Final PS&E packages delivered under Tasks 13.1 and 13.2.