

CASCADE POINT
FERRY TERMINAL STAGE 1 DESIGN BUILD

Project No. HSHWY00015

REQUEST FOR PROPOSALS

PART III – SCOPE OF WORK

May 23, 2025

**Alaska Department of Transportation and Public Facilities
Southcoast Region
6860 Glacier Highway
Juneau, AK 99801**

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1 INTRODUCTION

This Part III specifies the performance and prescriptive requirements as well as the Department's criteria for the complete and stamped design of the Cascade Point Ferry Terminal – Stage 1 work including access road development, Cascade Creek bridge crossing, upland site preparation and construction, and marine causeway material procurement, sorting and stockpiling on the prepared upland site.

The Design-Builder is responsible for all design and construction necessary to complete the entire stage 1 portion of the Project, including coordination of all activities required to accomplish the requirements of the Contract Documents.

1.1 PROJECT SUMMARY

The Project consists of work including engineering, environmental permitting, and construction related to the ferry terminal access road, uplands development areas, and material procurement for the marine causeway. The project includes the final design and construction of an access road for the end of Glacier Highway to the ferry terminal uplands site, a bridge over Cascade Creek along the access road, a locking access gate to restrict vehicle access at the project limits, and all initial site preparation and construction to top of subgrade and retaining wall construction for the upland ferry terminal site, and to secure, sort, and stockpile material for the marine causeway on the upland Ferry Terminal site for future placement into the marine causeway. Specific requirements for the Work elements emphasized below, as well as other Project requirements, are included in the Scope of Work sections that follow this Section 1, Introduction. A list of these scope items is provided below in Section 1.2.

1.1.1 Main Project Elements

The main elements of the Project are:

1. Construction of an 24-foot wide access road with 3-foot wide shoulders (30-foot width in total) and 4:1 recoverable slopes from the end of Glacier Highway to the ferry terminal uplands site and terminal causeway, a locking gate at the entrance, and all necessary drainage requirements.
2. Construction of a bridge over Cascade Creek along the alignment of the access road to accommodate two 12-foot lanes with two 3-foot wide shoulders (30-foot clear width in total) utilizing prestressed concrete voided slabs with DOT&PF 3-tube bridge rails crash-tested to MASH TL-3.

3. All initial site preparation and construction to top of subgrade and retaining wall construction for the upland ferry terminal site.
4. Secure, sort, and stockpile material for the causeway on the upland ferry terminal site for future placement into the causeway

The Access Road will be constructed with a Minimum Roadway width of 24-feet with a shoulder width of 3 feet for a total top surface of 30-foot wide between guardrails and meet all other AASHTO Standards for a 25 MPH road and remain within the right-of-way. The designed Access Road alignment is the preferred roadway alignment by the department and the Design/Builder must receive Department approval to deviate if efficiencies can be found within the ROW. The maximum access road grade shall not exceed 10%, the minimum access road radius shall comply with the AASHTO Design Manual for a 25 MPH road.

Bridge superstructures shall be constructed to accommodate two 12-foot lanes with two 3-foot wide shoulders (30-foot clear width in total) utilizing prestressed concrete voided slabs with DOT&PF 3-tube bridge rails crash-tested to MASH TL-3.

1.1.2 Public Information

A public involvement program is required to assist the Department and to inform and update the general public and news media about the Project's extent and progress. The public involvement program includes presentation of the Project to the community council of the City and Borough of Juneau (CBJ). (See RFP Part III, Section 7, Public Information, for specific requirements.)

1.2 SCOPE ITEMS

Sections 2 through 11 of RFP Part III address and specify the Department's requirements and criteria for the Project design and construction for each scope item. Each section describes the scope of Work; lists referenced standards, specifications, and guidelines; identifies performance requirements; specifies design and construction criteria; and describes required submittals.

The sections of this Part III that address the scope items are as follows:

1. Introduction
2. Roadways and Geometric Design
3. Geotechnical Considerations
4. Bridge and Structures
5. Drainage

6. Environmental Compliance
7. Public Information
8. Right-of-Way
9. Quality Program
10. Removal of Structures and Obstructions
11. Warranties

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2 ROADWAYS AND GEOMETRIC DESIGN

The Design-Builder shall design and construct the Project within the established right-of-way (ROW) using the criteria specified in this section. These criteria allow the Design-Builder flexibility to make changes that produce benefits or savings to the Department and/or the Design-Builder without impairing essential Project functions and characteristics such as safety, traffic operations, desired appearance, maintainability, environmental protection, and drainage.

2.1 REFERENCED STANDARDS AND PUBLICATIONS

Unless otherwise stipulated herein, the design and construction of all roadways shall be in accordance with this section and the relevant requirements of the standards, guidelines, and supplementary publications listed in Table 2-1.

Table 2-1 Referenced Standards for Roadways

Author or Agency ¹	Title	Report or Section No. ²	Short Form
AASHTO	<i>A Policy on Geometric Design of Highways and Streets, seventh edition (2018)</i>		Green Book
AASHTO	<i>Highway Drainage Guidelines</i>		
AASHTO	<i>Roadside Design Guide</i>	RSDG-3	
AASHTO	<i>Standard Specifications for Highway Bridges</i>		
AASHTO	<i>Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals</i>		
DOT&PF	<i>Alaska Flexible Pavement Design Manual</i>	FHWA-A-AK-RD-03-01	Pavement Design Manual
DOT&PF	<i>Alaska Hydraulics Manual</i>		
DOT&PF	<i>Alaska Sign Design Specifications</i>		ASDS
DOT&PF	<i>Alaska Standard Plans Manual</i>		
DOT&PF	<i>Alaska Traffic Manual (MUTCD and Alaska Traffic Manual Supplement)</i>		
DOT&PF	Computer Aided Drafting and Design (CADD) Standards		CADD Standards
DOT&PF	<i>Driveway Regulations</i>		
DOT&PF	Hard Aggregate Usage Policy Memorandum (August 2, 2013)		
DOT&PF	<i>Highway Preconstruction Manual</i>		PCM

Author or Agency ¹	Title	Report or Section No. ²	Short Form
TRB	<i>Highway Capacity Manual</i>		HCM 2000

¹AASHTO = American Association of State Highway and Transportation Officials; FHWA = Federal Highway Administration; TRB = Transportation Research Board

²The most current version as of the date of submission of the RFP Proposals is specified, other than for the Green Book.

The general hierarchy of precedence for Project standards is specified in RFP Part II, Subsection 105-1.04, Coordination of Contract Documents. It is the Design-Builder's responsibility to obtain clarification of any unresolved ambiguity in standards before proceeding with design or construction.

2.2 PERFORMANCE REQUIREMENTS

The Design-Builder shall complete the roadway Work in accordance with the criteria specified within this section. The roadway shall:

- Meet the DOT&PF design and engineering standards for roadway and bridge design.
- Stay within the established ROW and meet the requirements of environmental permits and approvals as well as RFP Part III, Section 6, Environmental Compliance.

2.3 DESIGN AND CONSTRUCTION CRITERIA

Key design criteria is referenced below and in the Stage 1 Concept plan set.

2.3.1 Design Exceptions

The Department discourages creating exceptions and will not consider exceptions for small or modest benefits. The Department may consider exceptions from standards or criteria on a case-by-case basis at specific locations where the Design-Builder demonstrates that substantial benefit to the Department and the public would accrue from the recommended exception.

The Design-Builder shall obtain Department approval of any such changes to the design standards or criteria. The Design-Builder shall fully and clearly document any changes from the Department's design standards and criteria, and shall maintain a complete record of all such changes for Department reference (see RFP Part III, Section 9, Quality Program).

2.3.2 Design Drawing Plan Set

The Design-Builder shall design and detail all Work required as part of the Project in a Design Drawing Plan Set that shall conform to the requirements set out for in the Alaska Preconstruction Manual and below in Section 2.4, Submittals. Each sheet shall be signed and stamped by a professional engineer who is of the appropriate discipline and is currently registered in the State of Alaska.

At a minimum, the Design Drawing Plan Set shall:

1. Show the entire Project in plan and profile view on individual plan sheets at 100 horizontal: 10 vertical scale.
2. Include all existing features for a minimum of 350 feet outside and past the limits of construction.
3. Clearly identify all new Work to be completed.
4. Clearly identify items to be removed (if any identified).
5. Provide design drawings (other than DOT&PF Standard Plans) of any special details required.

2.3.3 Design Study Report

The Design-Builder shall be responsible for creating a draft and final Design Study Report that shall meet the requirements of PCM Section 450.5, Design Study. This must be submitted to the Department for review and approval. The Design Study Report shall be stamped by a professional engineer currently registered in the State of Alaska. The Draft Design Study Report shall be submitted with the 60 percent milestone review set (Plans-in-Hand (PIH)). The Design-Builder shall adjudicate all comments in accordance with Part III, Section 9.2.2.2, Design Reviews. The Final Design Study Report shall be submitted with the 90 percent milestone review set (Plans Specs and Estimate (PS&E) Review).

2.3.4 Design Vehicle

Project design vehicle type is a WB-67.

2.3.5 Design Speeds

The Access Road is to be designed for a 25 MPH road.

2.3.6 Typical Sections

Governing typical sections for the Access Road are attached in the Stage 1 Concept Set.

2.3.7 Roadway Slopes

Provide recoverable slopes within the clear zone where fill slopes will catch within 5' beyond the clear zone. In areas where slopes will not catch within 5', the design builder may use steeper slopes provided the section is widened as necessary to allow for future installation of guardrail and end terminals in accordance with ADOT standard plans. The designer shall illustrate the future guardrail locations on the plans.

2.3.8 Number of Lanes

The Conceptual Design Plan specifies the anticipated number of lanes for the access road is two 12 foot-lanes

2.3.9 Vertical Alignment

The profiles shall be developed to contain the proposed footprint within the limits of the Project area as indicated in the Stage 1 Concept Plans and the ROW and as committed to in future environmental permits for disturbance of and impacts to sensitive areas. Roadway profiles for new or redesigned mainline, ramps and frontage roads shall meet the desirable requirements of the Green Book for the appropriate design speed and terrain type further modified as follows:

1. The allowable roadway grade for the realigned mainline shall not be greater than 10 percent.

All Access Road connections shall meet grade requirements as laid out in the Stage 1 Concept Set. All uplands grading points must be held to those established in the Stage 1 Concept Set.

2.3.10 Horizontal Alignment

Access Road mainline horizontal alignments shall meet the desirable requirements of the AASHTO Green Book for the appropriate design speed and terrain type. All design radius, including driveway return radius, should also meet AASHTO Green Book or PCM standards whichever is more restrictive unless approved by the department.

Tangent Lengths. Tangent lengths between all reverse curves shall be adequate to accommodate the superelevation transition lengths as defined in the Green Book, Chapter 3, Elements of Design, Transition Design Controls section.

2.3.11 Superelevation

Maximum. Refer to the AASHTO Greenbook and the PCM for the maximum allowable superelevation for all roadways affected by the Project.

Transitions. Superelevation transitions and transition lengths shall be in accordance with the Green Book, Chapter 3. Superelevation transitions on bridge decks shall be avoided.

2.3.12 Clearances

Horizontal Clearance. Mainline and ramp horizontal clearances shall meet the requirements of PCM Section 1130.2, Roadside Geometry; PCM Section 1130.3, Sideslopes, Roadway Sections, and Drainage Channels; and RFP Part III, Section 4, Bridge and Structures. Clear zones on horizontal curves shall be adjusted in accordance with the method included in PCM Section 1130.2.4, Clear Zones on Horizontal Curves.

2.3.13 Roadway Pavement Section

The roadway structural section for the access road and Ferry Terminal Uplands shall be recommended by the Design-Builder for acceptance by the Department using the Department's standard pavement design methodology.

2.3.14 Road Cross Slopes

Access road pavement cross-slopes shall meet the requirements of PCM Section 1130.1.2, Cross Slopes, and PCM Figure 1130-1.

2.3.15 Traffic Barriers

Access Road and Bridge. When warranted, including along the shoulder of all embankment sections where minimum width is not provided for clear zones, slope safety, or hazard protection, the Design-Builder shall locate the guardrail in accordance with the procedures and requirements of PCM Section 1130.5, Traffic Barriers, and the AASHTO *Roadside Design Guide*. Any inconsistency between these two documents as they pertain to traffic barriers along the access road shall be resolved with the PCM taking precedence over the *Roadside Design Guide*.

Provide temporary signage, gates, and/or barricades as necessary to prevent public traffic to the site during construction. Provide a lockable, steel, double swing gate near the location depicted on the concept drawings prior to final completion to prevent unauthorized vehicle traffic after construction. Gate locking mechanism shall be more robust than a simple pad lock due to known vandalism issues at the site. Contractor shall coordinate and provide lock access to both AKDOT and the property Owner.

2.3.16 Surveying and Construction Staking

Surveying performed by the Design-Builder to assist in the Project design shall be in accordance with the DOT&PF surveying requirements.

The Design-Builder shall provide construction surveying in accordance with RFP Part II, Section 642, Construction Surveying and Monuments.

2.4 SUBMITTALS

2.4.1 Documentation

The Design-Builder shall prepare design documents for roadway elements in U.S. customary units using a minimum scale of 1 inch equals 50 feet (details at a larger scale). Also see RFP Part III, Section 9, Quality Program.

In addition, electronic drawing files shall be submitted to the Department in a form compatible with the latest AutoCAD drawing format and prepared in accordance with the current DOT&PF *Regional Drafting Manual*. Drafting templates, symbols, linetypes, layers, hatch patterns, fonts, A1, and regional standard drawings will be made available to the Design-Builder.

2.4.2 Construction Phase

The construction submittals shall be in accordance with RFP Part III, Section 9, Quality Program.

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3 GEOTECHNICAL CONSIDERATIONS

3.1 REFERENCED STANDARDS AND PUBLICATIONS

Unless otherwise stipulated herein, all geotechnical Work shall be in accordance with this section and the relevant requirements of the referenced standards, guidelines, and supplementary publications listed in Table 3-1. The general hierarchy of precedence for Project standards is specified in RFP Part II, Subsection 105-1.04, Coordination of Contract Documents. It is the Design-Builder's responsibility to obtain clarification of any unresolved ambiguity in standards before proceeding with design or construction.

Table 3-1 Referenced Standards for Geotechnical Investigation

Author or Agency ¹	Title	Report or Section No. ²	Short Form
AASHTO	<i>LRFD Bridge Design Specifications (LRFD)</i> , current edition and current interim revisions		AASHTO LRFD ³
AASHTO	<i>Manual on Subsurface Investigations</i>		
DOT&PF	<i>Alaska Geotechnical Procedures Manual</i>		AK Geotechnical Manual
DOT&PF	<i>Engineering Geology and Geotechnical Procedures Manual</i> ⁴	1993 revision	1993 Geotechnical Manual
FHWA	<i>Design of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes</i> Nov. 2009	NHI-10-025	
NCHRP	<i>Seismic Analysis and Design of Retaining Walls, Buried Structures, Slopes, and Embankments</i>	Report 611	NCHRP Report 611

¹NCHRP = National Cooperative Highway Research Program.

²The most current version as of the date of submission of the RFP Proposals is required..

³LRFD = Load and Resistance Factor Design.

⁴Use of the *Engineering Geology and Geotechnical Exploration Procedures Manual* is restricted to those portions not updated in the *Alaska Geotechnical Procedures Manual*.

Geotechnical borings and analysis data will be provided by addendum. The geotechnical investigation was performed during summer, fall and winter of 2024. The Design-Builder should note that reliance on the accuracy of the information in Appendix 3-1 is subject to the following:

1. The information presented in the test hole logs is representative of the conditions only at the test hole location and only at the time of drilling of the test hole.

2. The laboratory soil test results are representative of the materials encountered in the test hole at the indicated depths at the time of drilling of the test hole.
3. Statements in the report regarding the presence or absence of zones, layers, layer thicknesses, and groundwater, including artesian groundwater conditions, are indicative only of conditions in the test hole at the time of the drilling of the test hole as interpreted by the Department's geotechnical subcontractor.
4. Ranges of thicknesses or other reported information are the ranges of thicknesses or other conditions encountered in the test hole at the time of drilling; no statement in the report is to be construed as indicating continuity or non-continuity of formations, extension, or extrapolation of any other information outside of the test hole.

Additional information regarding the Project site may be available from previous Projects conducted by by others. This information may be in the form of test hole logs, well logs, As-built Plans, technical papers, or published or unpublished reports. The Design-Builder may examine these reports for background information regarding the Project site; however, this information is to be relied upon solely at the Design-Builder's own risk. The Department specifically excludes these sources of information from the Contract.

3.2 DESIGN-BUILDER RESPONSIBILITIES

3.2.1 Supplemental Geotechnical Investigations

As explained above, the subsurface data in Appendix 3-1 are valid only at the test hole locations. It is the responsibility of the Design-Builder to review and interpret the provided geotechnical information and complete supplemental subsurface geotechnical investigations and test holes at bridge superstructure locations to develop the Proposal or Project final design. The Design-Builder is responsible for determining whether any other geotechnical data are needed to complete the design Work.

The Design-Builders responding to this RFP will be given access to the Project site to conduct such subsurface geotechnical investigations. Investigations shall be subject to all environmental permitting requirements and Department requirements as specified in RFP Part I, Instructions to Proposers.

3.2.2 Geotechnical Interpretation and Analysis

The Department shall not be held responsible for any interpretation of Project-related subsurface, geotechnical, or geologic data, regardless of any statements in geotechnical documents provided as part of this project, or in other available reports that have been prepared by the Department

and address subsurface conditions. The following shall be the responsibility of the Design-Builder:

1. To review the provided geotechnical information and make any such investigations the Design-Builder deems necessary to complete their final designs and to meet the minimum American Association of State Highway and Transportation Officials (AASHTO) recommendations.
2. To carry out any additional sampling or testing program as needed for the Design-Builder's design.
3. To determine the engineering characteristics of materials both in situ and disturbed.
4. To perform any stability analyses or other geotechnical engineering analyses required to make accurate interpretation of the site conditions.
5. To design and construct the Project considering the local conditions and properties of the site.

3.2.3 Foundation Design

The Design-Builder shall be responsible for interpretation and use of the information presented in Appendix 3-1 to prepare foundation designs for all Project elements necessary to produce a complete and final design for the Project. The same responsibility applies to information derived from other investigations the Design-Builder may complete, including sampling and testing, interpretation, and analysis.

3.3 ROADWAY WORK

3.3.1 Embankments

The Design-Builder shall be responsible for designing and constructing embankments in accordance with Department's requirements, discussed below.

3.3.1.1 Subexcavation

Requirement for Subexcavation. Any unsuitable or deleterious material (including but not limited to organic rich soils, ice-rich soils, and soft and compressible soils) encountered shall be subexcavated to contact with acceptable firm, stable mineral soil.

Backfill Material. Backfill material in subexcavated areas shall meet the requirements of Selected Material Type B, in accordance with RFP Part II, Subsection 703-2.07, Selected Material.

3.3.1.2 Stability

Stability Analysis. The Design-Builder shall perform detailed stability analyses of embankment slopes in accordance with NHCRP Report 611 and shall provide a description and the results of the analyses to the Engineer for review prior to the start of construction. Slopes shall be stabilized as required by the results of the analyses. The Design-Builder shall be responsible for bearing capacity, siding, and global stability analysis (considering embankment fills soils in addition to supporting subgrade soils) of all slopes, in their final configuration and during construction.

The stability of cut-and-fill slopes shall be determined using displacement analysis methods in accordance with NHCRP Report 611.

Stability analyses shall be performed considering the appropriate surcharge loading from structures and traffic a Service Load I Combination, and a resistance factor of 0.65.

Steep Embankment Slopes. Earthen embankment slopes steeper than 2:1 (horizontal to vertical) must be designed as reinforced soil slopes in accordance with the Federal Highway Administration (FHWA) *Design and Construction of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes*, NHCRP Report 611, and the applicable sections of AASHTO LRFD.

Ground Failure Analysis. In addition to the above stability analyses for embankments, strength loss in clays and effects of liquefaction should be considered in the analyses.

3.4 BRIDGE FOUNDATION WORK

The bridge foundation systems shall be designed to safely transfer structural loads to the underlying soils without causing excessive movements or distress to the bridge structures.

Foundations. Foundations shall be as required in RFP Part III, Section 4, Bridges and Structures.

Pile Foundations. If the Design-Builder selects pile foundations, it shall be responsible for developing a pile-driving plan prior to conducting pile-driving work for the project. The pile-driving plan shall include information about the types of equipment to be used, sequencing, and details of the test pile program. The Design-Builder should include a Wave Equation Analysis in accordance with RFP Part II, Section 505-3.01, Pile Driving Equipment, Item 2. The plan should include contingency items in the event that difficult driving is encountered so that minimum tip elevations are not obtainable. The Design-Builder should submit the pile-driving plan, and include the Pile Driving Equipment Data Form 25D-098, to the Department

for review and approval prior to mobilizing pile-driving equipment to the site.

Pile-Bearing Capacity. If pile foundations are selected, the Design-Builder shall be responsible for determining the pile sizes, capacities, and embedment depths. Bridge pier and abutment pile capacities (compressive and uplift) shall be designed using the appropriate resistance factors in accordance with the AASHTO LRFD. Consideration of pile group action shall be included in any capacity analysis.

Test Pile Program. If pile foundations are selected, as-built pile capacities shall be demonstrated by conducting dynamic pile testing of a minimum of one test pile at each pier and at each abutment. The Design-Builder shall perform dynamic monitoring of test piles at each pier and abutment using pile driving analyzer (PDA) methods. The Design-Builder shall be responsible for developing a test pile program that adequately demonstrates pile-bearing capacities for all structures and at each structure location. Test piles that achieve acceptable capacity may be used as production piles. The Design-Builder shall submit the proposed test pile program to the Department for review at least ten (10) working days prior to beginning pile-driving operations.

Test Pile Inspection. If pile foundations are selected, the Design-Builder's geotechnical engineer and an Independent Quality Firm (IQF) representative shall be on site during the driving of each test pile and during dynamic testing by the PDA firm.

Pile-Driving Record. If pile foundations are selected, the Department's pile-driving Form 25D-099 shall be used by the Design-Builder to record results of the driving of each production pile. The blows per foot of penetration shall be recorded for the entire length of the pile. Use of a saximeter as a secondary method to record the blows and estimate the fall of the ram shall be required, in addition to the written pile-driving record. (Department pile-driving Form 25D-099 will be provided.)

Pile-Driving Inspection. If pile foundations are selected, the record of the driving of each test and production pile shall be maintained by a qualified inspector from the IQF who has at least 1 year of experience working under the supervision of a registered civil engineer specializing in foundations and geotechnical engineering. The Design-Builder shall provide one inspector for each pile-driving operation.

Drilled Shafts. If drilled shaft foundations are selected, the Design-Builder shall be responsible for designing drilled shafts in accordance with the AASHTO LRFD.

Down-drag Forces. The Design-Builder shall consider down-drag forces on

piles or drilled shafts driven through earthen embankment, liquefiable, and/or compressible soils and shall account for them in calculations of pile-bearing capacities.

Bearing Capacity of Spread Footings. On-grade footings or pedestal foundations for pier support, within abutment fills or on native soils, will be permitted on this Project and shall be designed in accordance with the AASHTO LRFD.

Lateral Capacities. Lateral load capacity shall be analyzed in accordance with the AASHTO LRFD.

Settlement Criteria. The following settlement criteria shall be followed. Settlement refers to total overall settlement of the structure and any element of the structure, as well as differential settlement between elements of the structure and/or abutting elements of the Project:

1. Maximum tolerance for settlement of bridges: 0.5 inches
2. Maximum differential settlement of bridges: 0.5 inches over 50 feet
3. Maximum total settlement of walls: 0.9 inches
4. Maximum differential settlement of walls: 0.5 inches over 50 feet

3.5 RETAINING WALL WORK

General. Permanent retaining walls (conventional cast-in-place reinforced concrete, mechanically stabilized earth [MSE], or gravity walls) shall be designed for all anticipated loads and forces that will act on the structure, including dead load, earth pressure, hydrostatic pressure, live load, surcharge loading, and dynamic loading. The Design-Builder shall be responsible for analyses of global stability, external stability, and internal stability. All walls shall have a drainage system behind the wall sufficient to prevent buildup of hydrostatic pressure against the wall. All retaining walls shall be designed in accordance with the AASHTO LRFD. Non-frost-susceptible wall backfill material shall be used as required to protect the wall from damage caused by frost heaving forces.

Retaining walls.

The stage 1 concept drawing set depictions of concrete retaining walls are proposed solutions, but are not the only solutions. The design builder may use alternate retaining systems or slopes, if conditions permit, provided the minimum finished pad configuration is maintained and the backslopes or structures maintain local and global stability.

MSE Walls. MSE walls shall be designed in accordance with the referenced FHWA design guidance for MSE walls and reinforced soil slopes.

Global Stability. The global stability of the wall system(s) shall be determined with the use of an approved limit equilibrium program that estimates the minimum factor of safety along the critical failure surface. The minimum required factors of safety shall be as follows:

- | | |
|---|-----|
| 1. End of construction case: | 1.3 |
| 2. Seismic (pseudostatic) case: | 1.1 |
| 3. Global instability of temporary walls: | 1.2 |

The factors of safety for sliding, overturning, and bearing capacity shall be in accordance with the referenced specifications.

External Stability. External stability requirements shall be met using the required minimum factors of safety for wall foundation bearing capacity, wall overturning and sliding, and wall settlement.

Internal Stability. The internal structural stability of the reinforced soil mass shall be designed by the proprietary retaining wall vendor, and shall be based on material properties of the reinforced soil provided by the Design-Builder's geotechnical engineer.

Approved Retaining Wall Systems. The approved retaining wall systems are listed in RFP Part III, Section 4, Bridges and Structures.

3.6 SEISMIC DESIGN REQUIREMENTS

3.6.1 General

Seismic design shall be in accordance with the AASHTO LRFD. AASHTO criteria indicate that bridge design and evaluations should be based on earthquake ground motions with a 7 percent probability of exceeding in 75 years as determined by an appropriate probabilistic seismic hazard analysis (PSHA).

3.6.2 Liquefaction Assessment

Design Assumption. The Design-Builder shall be responsible for performing a ground failure analysis (liquefaction assessment) for the Project site if liquefiable soils are present.

Liquefaction Assessment Procedure. The liquefaction assessment shall be performed in accordance with the following procedure, and shall be documented in a report provided to the Department for its review and concurrence:

1. Assess the following liquefaction screening criteria:
 - a. Geologic age and origin

- b. Type of deposits
 - c. General distribution of deposits
 - d. Fines content and plasticity index (PI)
 - e. Degree of saturation
 - f. Depth of liquefaction below ground surface
 - g. SPT blow counts (N1)60
2. Evaluate the liquefaction potential:
 - a. Use Youd et al., 2001, procedure.
3. Evaluate and analyze the post-liquefaction conditions:
 - a. Evaluate deformation and stability.
 - b. Evaluate bearing capacity failure.
 - c. Evaluate loss of lateral support to foundations.
 - d. Evaluate lateral spreading.
 - e. Evaluate post-liquefaction settlement.
4. Evaluate potential soil improvement techniques, effectiveness, and cost, if needed.
5. Provide recommendations for design and construction if required.

Approach Embankment Stability Analysis. If liquefiable soils are determined to be present under the design earthquake, the Project site soils shall be stabilized to protect the roadway and ramps, approach embankment, and bridge structure foundations from damage due to deformations and settlements caused by the liquefaction. The roadway approach embankment and the bridge foundations shall be designed to withstand the forces and moments resulting from the movements caused by the liquefaction. The roadway approach embankment and bridge foundations shall be evaluated with the soil in the liquefied state.

Pseudostatic Stability Analysis. In pseudostatic stability analysis of embankments, an equivalent horizontal acceleration shall be taken as one-half of the peak ground acceleration specified herein. For peats and soft clays, a strength reduction shall be determined for analyses.

3.7 SUBMITTALS

The submittals listed below are required to facilitate the Department's review and oversight of the Design-Builder's quality assurance and design. Any additional field investigation and analysis shall be provided to the Department and shall be in accordance with the Department's standard procedures and borehole forms.

Piles. The Design-Builder shall submit the following:

1. All pile design calculations, including estimates of geotechnical and structural capacity and pile lengths for all structures.
2. Calculations of embankment settlement (magnitude and time-rate) and estimated down-drag forces on the piles, and length of any fill/pile sleeve, if planned.
3. Because the effects of pile setup could be significant, given the fine-grained nature of the soils encountered at depth, the Design-Builder's plan should include consideration for pile setup and for limiting downtime during splicing and other issues.
4. A written pile-driving plan, including information about the types of equipment to be used, sequencing, and details for the test pile program.
5. A written pile load test program detailing the planned test pile locations, size and length of each test pile, driving equipment, and methodology for evaluating the adequacy of the pile design.
6. PDA and wave equation analysis (WEAP) results for each abutment or pier and the calculated driving criteria for those production piles.
7. Pile-driving record forms for pile groups, submitted no later than 5 days before placing structural concrete for abutments or footings.
8. Results of WEAP of the hammer-pile- soil systems proposed for use on the Project and the proposed method of installation. Case pile wave analysis program (CAPWAP) analyses using the PDA dynamic measurements shall also be completed, as part of the test pile program, for all hammers proposed for use and for the anticipated range of pile sizes, lengths, and subsurface conditions.

Earthwork. Materials sampling and testing results must be in conformance with RFP Part II, Contract Requirements.

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4 BRIDGES AND STRUCTURES

4.1 STRUCTURAL DESIGN

The Contractor shall provide the Structural Design required for the project, which may include any or all of the following.

4.1.1 General. The Contractor shall perform civil and structural design work necessary for bridges, buried structures, and minor embankment support and retaining structures, including load ratings.

4.1.2 Bridge Design. Development and submission of bridge design shall be in accordance with the requirements of the *Alaska Bridges and Structures Manual (ABSM)*. The superstructure shall be a minimum of 50 feet long and utilize prestressed concrete voided slabs with DOT&PF 3-tube bridge rails crash-tested to MASH TL-3. If a bridge longer than 60 feet is required to meet hydraulic or other requirements, the superstructure type shall be approved by the DOT&PF Chief Bridge Engineer. The substructure shall use shallow foundations if competent bedrock is a maximum of 10 feet below the ground line; otherwise, deep foundations shall be used. The wingwalls shall be dimensioned according to Figure 18-4 of the ABSM and be aligned parallel to the roadway. The bridge shall have approach slabs and Structural Fill backfill according to the ABSM.

A National Bridge Inventory (NBI) bridge number will be assigned by the DOT&PF. Include the NBI bridge number on all reports, plans, and submittals.

An example bridge design plan set, for the Peterson Creek Bridge, is provided to support your development of the bridge design plans.

4.1.3 Superstructure Design. The Consultant shall complete the superstructure design, which may include the design of the bridge. The Consultant shall submit a Type Selection Memorandum in accordance with Chapter 4 of the ABSM for approval before starting final design. Structural designs and specifications shall be in accordance with the current edition and interims of the *AASHTO LRFD Bridge Design Specifications (LRFD)*, the *Alaska Bridges and Structures Manual*, and the *Alaska Standard Specifications for Highway Construction (SSHCC)*. The design shall incorporate hand calculations that may be supplemented by approved computer software applications. The Consultant will submit both sets of design calculations for review and approval with the contract drawings. The Consultant shall submit a load rating and independently calculated load rating in accordance with the ABSM.

4.1.4 Engineer. The structural design shall be sealed by a Professional Engineer registered in the State of Alaska and independently checked by a second qualified professional engineer as required by Section 9.1 of the ABSM.

4.1.5 Previous Designs. The Consultant should anticipate that design issues and assumptions made in previous designs may not be appropriate for this project. In those areas of the *AASHTO LRFD Bridge Design Specifications* where the Consultant is required to make assumptions or where the specifications may be interpreted in different manners, the Consultant shall bring these to the immediate attention of the DOT&PF Chief Bridge Engineer for resolution in accordance with Section 10.3 of the ABSM prior to proceeding with the design. Upon completion, a report documenting design assumptions and issues associated with this design, and resolutions shall be provided to the DOT&PF Chief Bridge Engineer.

4.1.6 Review. Review prints shall be used by the Contracting Agency for suggested changes, modifications, and/or adjustments. The Consultant shall make changes, modifications, and/or adjustments to the preliminary and final design work as the Contracting Agency or the Federal Highway Administration (FHWA) may require and, if requested, submit such revisions for review. A set of review prints shall be submitted to the DOT&PF Chief Bridge Engineer upon completion of the structural design.

4.1.7 Provided Items. The Contracting Agency will provide the following:

- a. Alaska Bridges and Structure Manual
- b. Standard Specifications for Highway Construction

4.1.8 Deliverable Items: See Section 9 and the requirements in the Alaska Bridges and Structure Manual.

4.2 FOUNDATION DESIGN

The Contractor shall provide the Foundation Design required for the project, which may include any or all of the following.

4.2.1 General. The Contractor shall perform civil and structural design work necessary to support bridge foundations, buried structures, culverts, minor embankment support and retaining structures.

4.2.2 Bridge Foundations. The Consultant shall complete a Structural Foundation Engineering Report (SFER) and the bridge foundation and substructure design, which may include the design of abutment, and/or retaining structures. Foundation designs and specifications shall be in accordance with the current edition and interims of the LRFD, ABSM, and SSHC. The design shall incorporate hand calculations that may be supplemented by approved computer software applications. The Consultant will submit the SFER and both sets of design calculations for review and approval with the contract drawings.

4.2.3 Engineer. The foundation designs shall be sealed by a Professional Engineer registered in the State of Alaska and independently checked by a second qualified professional engineer as required by Section 9.1 of the ABSM.

4.2.4 Previous Designs. The Consultant should anticipate that design issues and assumptions made in previous designs may not be appropriate for this project. In those areas of the LRFD specification where the Consultant is required to make assumptions or where the specifications may be interpreted in different manners, the Consultant shall bring these to the immediate attention of the Statewide Foundation Engineer and DOT&PF Chief Bridge Engineer for resolution in accordance with Section 10.3 of the ABSM prior to proceeding with the design. Upon completion, a report documenting design assumptions and issues associated with this design, and resolutions shall be provided to the DOT&PF Chief Bridge Engineer.

4.2.5 Review. Review prints shall be used by the Contracting Agency for suggested changes, modifications, and/or adjustments. The Consultant shall make changes, modifications, and/or adjustments to the preliminary and final design work as the Contracting Agency or FHWA may require and, if requested, submit such revisions for review. A set of review prints and final SFER shall be submitted to the DOT&PF Chief Bridge Engineer upon completion of the structural design.

4.2.6 Deliverable Items: See Section 9 and the requirements in the Alaska Bridges and Structure Manual.

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5 DRAINAGE

The Design-Builder shall design and construct a drainage system in accordance with this section. Existing drainage configurations should be continued when possible.

It is the responsibility of the Design-Builder to accommodate storm water and runoff entering the site.

No retention or detention of storm water generated by the Project or intercepted from existing drainages will be allowed out of the right-of-way without gaining permission in writing from that property owner and the Department.

5.1 REFERENCED STANDARDS AND PUBLICATIONS

Unless otherwise stipulated herein, the design and construction of all drainage work shall be in accordance with this section and the relevant requirements of the standards, guidelines, and supplementary publications listed in Table 5-1.

Table 5-1 Referenced Standards for Drainage

Author or Agency	Title	Report or Section No. ¹	Short Form
AASHTO	<i>Model Drainage Manual</i> , metric edition		
AASHTO	<i>A Policy on Geometric Design of Highways and Streets</i> , seventh edition (2018)		Green Book
AASHTO	<i>Roadside Design Guide</i>	S99-RSDG-2	
AASHTO	<i>Standard Specifications for Transportation Materials, and Methods of Sampling and Testing</i>	S99 HB 19, HM 191	
DOT&PF	<i>Alaska Highway Drainage Manual</i>		
DOT&PF	<i>Highway Preconstruction Manual</i>	Part II	PCM
DOT&PF	<i>Stormwater Contractor Guidance for Preparing and Execution, Stormwater Pollution Prevention Plans</i>		
FHWA	<i>Design of Roadside Channels with Flexible Linings</i>	HEC-15	HEC-15
FHWA	<i>Design of Urban Highway Drainage</i>		
FHWA	<i>Design of Riprap Revetment</i>	HEC-11	HEC-11
FHWA	<i>Drainage of Highway Pavements</i>	HEC-12	HEC-12
FHWA	<i>Hydraulic Design of Energy Dissipaters for Culverts and Channels</i>	HEC-14	HEC-14
FHWA	<i>Hydraulics Design of Highway Culverts</i>	HDS No. 5	

Author or Agency	Title	Report or Section No. ¹	Short Form
FHWA	<i>Hydraulics Design of Improved Inlets for Culverts</i>		
NCHRP ²	<i>Improved Surface Drainage of Pavements</i>	Project 1-29	
U.S. Dept. of Commerce, Weather Bureau	Probable Maximum Precipitation and Rainfall-Frequency Data ³		

¹The most current version as of the date of submission of the RFP Proposals is to be used, other than for the Green Book.

²NCHRP = National Cooperative Highway Research Program.

³Technical paper by John Frederick Miller, 1963.

The general hierarchy of precedence for Project standards is specified in RFP Part II, Subsection 105-1.04, Coordination of Contract Documents. It is the Design-Builder's responsibility to obtain clarification of any unresolved ambiguity in standards before proceeding with design or construction.

5.2 PERFORMANCE REQUIREMENTS

The Design-Builder shall design and construct the drainage system using the criteria specified in this section to:

- Effectively and efficiently convey and treat storm water from within the Project limits.
- Address functionality, durability, ease of maintenance, safety, aesthetics, protection against vandalism, water quality, and environmental compliance.
- Transmit surface flows through the Project.
- Meet water quality requirements.
- Promote a safe environment for those who use and maintain the Project.
- Size all drainage facilities designed for the conveyance of off-site flows for existing land use conditions.
- Control erosion of sediments complying with all Permit requirements.

Additional environmental impacts are not allowed as a result of the Design-Builder's operation outside the Project right-of-way (ROW).

5.3 DESIGN AND CONSTRUCTION CRITERIA

5.3.1 DOT&PF Guidelines

Bridge, culvert, and storm drain design shall be in accordance with the guidelines presented in the *DOT&PF Alaska Highway Drainage Manual*. Design for the hydraulic and hydrologic development of the drainage system shall meet the requirements of Section 1120.4 of the PCM.

5.3.2 Hydrology

All Access Road cross-drainage culverts shall be designed for the 50-year storm event. All on-site storm drain items and appurtenances shall be designed for a minimum 50-year storm event unless otherwise stated herein.

When using the rational method to determine storm flows, intensity-duration-frequency (IDF) data developed from Probable Maximum Precipitation and Rainfall-Frequency Data, a 1963 technical paper prepared by the U.S. Department of Commerce, shall be used.

5.3.3 Bridge Approach Drains

Pavement drainage shall be intercepted at both ends of bridges. Storm water flowing toward the bridge shall be intercepted before the joint between the approach slab and the bridge; storm water leaving a bridge shall be intercepted before reaching the joint between the approach slab and the bridge. This water shall be directed and dispersed to avoid corrosion of structural members or erosion of embankments. The inlets and catch basins shall conform to Section 5.3.5, Storm Drain Systems, below.

5.3.4 Storm Drain Systems

Runoff falling within the limits of the Project will be permanently directed to the shoulder or to storm water treatment areas whenever practical. Storm water will generally be directed off the side slopes of the highway embankment. The storm drain system shall be designed to convey without pressure flow conditions the 10-year, 1-hour storm. Storm drain design shall be performed in accordance with the *DOT&PF Alaska Highway Drainage Manual*.

5.3.4.1 Grates and Frames

To determine inlet efficiency, HEC-12 procedures P-1 7/8.4 (for bicycle- safe grates) and P-1 7/8 (for standard grates) shall be used. All grates must be bicycle-safe. Grates and frames shall be structural carbon steel conforming to American Association of State Highway and Transportation Officials (AASHTO) 270 Grade 250 and (in accordance with AASHTO M-111) shall be hot-dip galvanized after fabrication. Inlets shall be designed for HS-25 or interstate highway alternate live loading. A method of embedding a steel

frame into a concrete catch basin, gutter, or bridge deck shall be provided. Slotted drains are prohibited.

5.3.4.2 Catch Basins

Catch basins, if needed, shall be designed for HS-25 or interstate highway alternate live loadings. Manhole steps shall be provided when the inside depth of the box exceeds 48 inches. Pre-cast catch basins may be used unless any inside dimension exceeds 48 inches. For head losses at junctions due to changes in flow direction and the collision and turbulence of flows in manholes, refer to Section 5.10 of FHWA *Design of Urban Highway Drainage*. For manhole design, these losses shall be considered as required by the manhole structure characteristics. The maximum catch basin spacing shall be governed by the lesser of that required by drainage flow spread design or (as specified below) by the diameter of the storm drain.

<u>Storm Drain Diameter</u>	<u>Maximum Spacing</u>
18 inches to 30 inches	300 feet
36 inches to 48 inches	450 feet
Greater than 48 inches	500 feet

5.3.5 Pipes and Culverts

5.3.5.1 Design Life

The design life of new pipes and culverts shall be 50 years.

5.3.5.2 Existing Pipes and Culverts

The Design-Builder shall replace all existing pipes. The Design-Builder shall not reuse or allow any existing pipe or culvert to remain that does not meet this criterion.

The Design/Builder shall take into account, when designing the access road and staging area culverts, existing road culverts and whether those culverts may not be removed where the existing pioneer road and existing pioneer pads do not align with the new construction.

5.3.5.3 New Pipe

The Design-Builder shall use new HDPE Type S pipe, material thickness, bedding details, end sections, and other details. The minimum allowable pipe diameter is 24 inches.

5.3.6 Drainage Structures to Meet Permit Requirements

Before Notice to Proceed with that portion of the work, the Design-Builder shall obtain any permit and subsequent permit modifications that may be needed to construct the Project as designed. These permits will include, but may not be limited to, a Corps of Engineers Section 404 wetland permit; Alaska Department of Environmental Conservation Section 401 Certification of Reasonable Assurance; and the Alaska Pollutant Discharge Elimination System (APDES) General Permit for Discharges from Large and Small Construction Activities. It is anticipated that a portion of an existing ditch may have to be placed in a culvert. It will be the responsibility of the Design-Builder to size the pipe for the anticipated drainage.

5.3.7 Drainage Channels

Roadside channels or ditching shall be designed to capture and convey the flow of a 50-year design storm. The geometric layout shall be in accordance with the AASHTO *Roadside Design Guide* and shall consider safety, maintenance, landscaping, and aesthetics. The Design-Builder shall determine channel capacity using Manning's Equation. The Design-Builder shall design the channel linings in accordance with FHWA HEC-15, when required by analysis. Freeboard of 12 inches shall be provided above the design storm elevation.

5.3.8 Scour and Erosion Control

If needed, scour protection to mitigate downstream erosion shall be provided at all storm drain and bridge drain outfalls, based on a case-by-case analysis to determine outlet velocities. Velocities shall be calculated for the design storm. For velocities greater than 1 foot per second but less than 15 feet per second, loose riprap shall be provided, based on FHWAHEC-11. For velocities greater than 15 feet per second, an energy dissipater shall be provided, in accordance with FHWA HEC-14.

For erosion control measures during construction, see Part III, Section 6, Environmental Compliance.

5.3.9 Drainage Outfalls

Placement. The new outfalls shall be situated so that the outlet elevation is at the existing grade. High outlet elevations that will necessitate the use of excessive amounts of riprap are not allowed. Energy dissipaters shall be used as appropriate.

Construction Schedule. The Design-Builder shall provide the Department with a storm drain outfall construction schedule as part of the monthly plan updates.

5.4 MAINTENANCE DURING CONSTRUCTION

During the course of construction (to avert flooding of active roadways and properties abutting the ROW), the Design-Builder shall maintain all watercourses, drainage ways, and drainage systems; and shall be responsible for collecting and conveying storm water flows that are less than or equal to the 10-year storm event.

5.5 SUBMITTALS

Design Submittals. Design submittals shall be in accordance with Part III, Section 9, Quality Program.

Final Design Documents. The final design submittal shall include the type of culverts, locations of catch basins and cleanout boxes, a profile showing all invert elevations, proposed finished grade elevations above top of pipe, and the calculated hydraulic grade line. The Design-Builder shall submit calculations, hydraulic data sheets, drainage details sheets, pipe materials, and installation requirements as part of the final design submittal.

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6 ENVIRONMENTAL COMPLIANCE

This section describes the environmental compliance requirements of the Project. The Design-Builder shall design and construct the Project in accordance with this section.

6.1 Referenced Standards

The Project shall comply with the following:

- The Alaska Pollutant Discharge Elimination System (APDES) General Permit for Discharges from Large and Small Construction Activities
- All permits, certifications, all other environmental approvals and the preparation of state environmental documents will need to be developed and executed by the Design-Builder.

Unless otherwise stipulated herein, the implementation of environmental compliance measures shall be in accordance with this section and the relevant requirements of the standards, guidelines, and supplementary publications listed in Table 6-1.

Table 6-1 Referenced Standards for Environmental Compliance

Author or Agency	Title	Report or Section No. ¹	Short Form
AAC	<i>Alaska Administrative Code, 18 AAC 75, Oil and Other Hazardous Substances Pollution Control</i>	18 AAC 75	18 AAC 75
AASHTO	<i>Guidelines for Erosion and Sediment Control in Highway Construction, Volume III</i>		
ADEC	<i>Alaska Pollutant Discharge Elimination System General Permit for Discharges from Large and Small Construction Activities</i>		
DOT&PF	<i>Alaska Storm Water Pollution Prevention Plan Guide</i>		
DOT&PF	<i>Alaska Highway Drainage Manual</i>	Chapter 16, Erosion and Sediment Control	
EPA	<i>Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices</i>	EPA 832 R-92-005	

¹The most current version as of the date of submission of the RFP Proposals is specified.

The general hierarchy of precedence for Project standards is specified in RFP Part II, Subsection 105-1.04, Coordination of Contract Documents. It is

the Design-Builder's responsibility to obtain clarification of any unresolved ambiguity in standards before proceeding with design or construction.

6.2 Performance Requirements

6.2.1 General

Design-Builder Responsibility. The Design-Builder shall maintain the Project in full compliance with all environmental commitments, permits, and approvals. All other environmental authorizations required by the Design-Builder in performance of the Work referenced in other sections of this document shall be the responsibility of the Design-Builder.

Any environmental fines or additional costs resulting from noncompliance with environmental requirements or commitments will be borne by the Design-Builder and will be deducted from the Contract Price. All Project Work shall be in compliance with RFP Part II, Contract Requirements, with special attention to Section 107, Legal Relations and Responsibility to Public, and Section 641, Erosion, Sediment, and Pollution Control.

Environmental Document

The Design-Builder will prepare the State Projects Environmental Form and will analyze and document environmental considerations. The document will consider environmental impacts from the proposed action and identify permits and clearances necessary for construction. Individual evaluations will be prepared by the Design-Builder such as an Essential Fish Habitat (EFH) Assessment, Biological Assessment (BA) and Incidental Harassment Authorization (IHA) and may be performed under tasks identified below. All documents will be submitted in draft format for DOT&PF review.

Deliverables:

Deliverables are subject to negotiation and change depending on the authorized development level of the project. At a minimum, the following deliverables can be expected:

- Draft agency scoping and public notice documents
- Final agency scoping and public notice documents
- Draft State Funded Project Environmental Documentation Form
- Final State Funded Project Environmental Documentation Form

Permitting

Previous permits from the USACE were received for this project which expired in 2008 and 2016. The Consultant will draft the following permit application and associated drawings in order to obtain a new permit for the project:

- USACE Individual Permit Application and supporting materials
- USACE Individual Permit Figures

Deliverables:

Deliverables are subject to negotiation and change depending on the authorized development level of the project. At a minimum, the following deliverables can be expected:

- Provide assistance and support during the process for the USACE Permit Application
- Prepare, and provide assistance and support during the process, for the USACE's Applicant's Mitigation Statement if needed
- Prepare, and provide assistance and support during the process, the Essential Fish Habitat Assessment and MMPA/Section 7 consultation if requested by the USACE
 - Draft EFH Assessment package
 - Final EFH Assessment package
 - Draft IHA Application
 - Final IHA Application
 - Draft Protected Species Monitoring and Mitigation Plan (PSMMP)
 - Final PSMMP
 - Draft BA
 - Final BA
- Draft USACE Individual Permit Application
- Final USACE Individual Permit Application

National Historic Preservation Act Consultation

If requested by the USACE, the Design-Builder will engage the services of a Cultural Resources Specialist to perform the activities necessary to comply with Section 106 of the National Historic Preservation Act (NHPA) for consultation materials to be submitted to the USACE with the permit application package. The Design-Builder will draft a recommendation memo or initiation/findings letters that will be submitted to the USACE.

Assumptions:

- DOT&PF will share Section 106 information previously submitted for geotechnical efforts for this project to the USACE.
- DOT&PF will provide the Design-Builder with the final report from the geotechnical efforts.

- A cultural resources survey will not be needed.
- The Design-Builder shall draft Area of Potential Effect (APE) figures and initiation/findings letters for the USACE if requested.
- The Design-Builder shall provide revised APE figures and initiation/findings letters for the USACE if revisions are requested.

Deliverables:

- Draft and Final Recommendation Memo
- Draft and Final APE Figures
- Draft and Final Initiation and Finding Letters

Modification of Agency Requirement. If the Design-Builder proposes a Project change that requires modification of an environmental commitment made by the Department to a regulatory agency, the Design-Builder may request agency authorization for that modification only with the advance written approval of the Department, and may implement the modification only with the express written approval of the regulatory agency. The Design-Builder shall assume all cost and risk associated with modifying the environmental approvals with the respective agencies and with obtaining any necessary additional environmental approvals from the respective agencies.

Environmental Compliance Manager. The Design-Builder shall have an Environmental Compliance Manager who will be responsible for all environmental commitments and requirements for the duration of the Project.

6.2.2 Erosion and Pollution Control

APDES Permit. The Design-Builder shall provide the information and actions necessary to comply with the APDES General Permit for Discharges from Large and Small Construction Activities, formerly known as the U.S. Environmental Protection Agency's (EPA's) National Pollution Discharge Elimination System (NPDES) General Permit for Storm Water Discharges from Construction Activities. This Work shall consist of planning, providing, and maintaining control of erosion, sedimentation, water pollution, and hazardous materials contamination sufficiently to comply with all water quality regulations of the State of Alaska.

Erosion and Sediment Control Plan. The Design-Builder shall prepare an Erosion and Sediment Control Plan (ESCP). The ESCP shall be prepared according to RFP Part II, Section 641-1.02, Definitions.

Storm Water Pollution Prevention Plan. The Design-Builder shall prepare a Storm Water Pollution Prevention Plan (SWPPP) according to guidance provided in the APDES General Permit for Discharges from Large and Small Construction Activities (contained in RFP Part IV, Appendix 12); *Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices* (EPA 832 R-92-005); and DOT&PF's

Alaska Storm Water Pollution Prevention Plan Guide. The SWPPP shall comply with RFP Part II, Section 641-2.01, Storm Water Pollution Prevention Plan (SWPPP) Requirements. In addition to meeting all requirements described in the APDES General Permit, the SWPPP shall contain stringent measures to minimize turbidity in any receiving waters or wetlands, both during and after construction, until final stabilization is achieved. The SWPPP shall also describe stringent measures for removing turbidity-causing solids from water released or pumped from excavations during construction, and from water draining from excavated materials.

Hazardous Material Control Plan. The Design-Builder shall prepare a Hazardous Material Control Plan (HMCP). The plan must include special measures to prevent and control releases of pollutants into Project area wetlands and waterways. The HMCP shall comply with Part II, Section 641-2.02, Hazardous Material Control Plan (HMCP) Requirements.

Notice of Intent. To obtain coverage under the APDES General Permit, the Design-Builder must submit a Notice of Intent (NOI), but only after approval by the DOT&PF as the co-permitter. The NOI can either be filled out and submitted electronically. The NOI gives notice to the Alaska Department of Environmental Conservation (ADEC) that work will be conducted in compliance with the APDES General Permit.

Final Stabilization and Notice of Termination. Final stabilization (as determined by the Engineer) is described in RFP Part II, Section 641-1.02.

The Notice of Termination (NOT) of Coverage Under APDES Permit for Storm Water Discharges Associated with Industrial Activity is a standard ADEC form constituting notice that the Project site has been finally stabilized or that an operator of a construction activity, as defined in the APDES General Permit, has changed. This form can only be filled out after approval by the co-permitter, the DOT&PF.

6.3 Plan Requirements

6.3.1 Payments for Permits, Authorizations, and Licenses

Unless otherwise provided in the Contract Documents, the Design-Builder shall directly, or through one or more subcontractors, obtain and pay for all necessary permits, authorizations, and licenses required. The Design-Builder shall pay all applicable governmental charges, and wetland mitigation credits and fees, and inspection fees necessary for the prosecution of the Work.

6.3.2 Erosion and Pollution Control

Submittals. At least 20 days prior to ground-disturbing activities that will be covered by the NOI, the Design-Builder shall submit the Independent Quality Firm- (IQF-) approved ESCP for Department approval. The ESCP shall be approved by the Department prior to completion of the SWPPP.

The Project ESCP, SWPPP, and HMCP require approvals by environmental regulatory and resource agencies. Approval of these plans and associated costs and delays shall be the sole responsibility of the Design- Builder. The Department shall be a co-permittee for the Design Builder's SWPPP.

SWPPP Requirements. The SWPPP shall be prepared in accordance with the SWPPP paragraph in RFP Part III, Section 6.2.2, above. The SWPPP shall address all storm water discharge control and management issues identified in the ESCP and shall meet all requirements of the APDES General Permit for Storm Water Discharges from Large and Small Construction Activities. The APDES General Permit shall be appended to the SWPPP.

Control Measures. The Design-Builder shall comply with all requirements of the APDES General Permit for Storm Water Discharges from Large and Small Construction Activities and shall implement all temporary and permanent measures identified in the SWPPP and plans. Compliance with the APDES General Permit does not reduce the Engineer's authority to require additional erosion control measures. All erosion control and stabilization measures shall comply with RFP Part II, Section 641-3.01, Construction Requirements. Erosion and pollution control shall be accomplished utilizing Best Management Practices (BMPs) as specified in the SWPPP and HMCP.

The seeding season is the period during which the specific seeds used will germinate and the plants will become established sufficiently to continue growing the following growing season. Ground-disturbing activities may be undertaken outside the seeding season only when:

- The SWPPP describes the Work and methods to be taken to control storm water runoff after the seeding season.
- Persons, materials, and equipment are on hand to accomplish the control measures identified in the SWPPP.

Erosion and sediment control measures shall not be removed until slopes have been stabilized from further erosion, as determined by the Engineer. Upon completion of construction, the erosion and sediment control measures shall be removed and disposed of off site. All sediment shall be removed from sediment control measures when it reaches 50 percent capacity of the control measure.

6.4 Environmental Approvals and Commitments

The Department will not allow for Construction Work to begin until pertinent permits have been obtained by the Design-Builder and the Department determines they meet the scope of the Work in the contract. Below are additional notes regarding the various permits possibly required:

- **ADEC Certificate of Reasonable Assurance.** This Section 401 Water Quality Certification of Reasonable Assurance is associated with the U.S. Department of the Army, Corps of Engineers (USACE) permit. (The 401 certification is triggered when an application for a 404 permit is received.) The issuance of a USACE Nationwide Permit covers Section 401 authorization.
- **USACE Section 404, Clean Water Act Permit.** This permit authorizes work within wetlands and “waters of the U.S.” under USACE jurisdiction. A USACE Nationwide Permit will be obtained by Design-Builder. It is the responsibility of the Design-Builder to adhere to USACE permit conditions as issued. The Design-Builder will allow USACE full access to the work site for compliance inspections. Any proposed changes or modifications needed to the Nationwide Permit shall be communicated to USACE immediately and coordinated with USACE and DOT&PF. The Design-Builder cannot proceed with any Work in wetlands or waters of the U.S. without USACE authorization.
- **Alaska Department of Fish and Game (ADF&G), Fish Habitat Permit** (Alaska Statute 16.05.841-871). This permit is required for work within anadromous fish-bearing waterbodies if they are present and will be the responsibility of the Design-Builder to obtain. The Design-Builder shall adhere to any required ADF&G fish habitat permit conditions, including fish timing windows. Any proposed changes to the issued permit should be coordinated in a timely manner with ADF&G and DOT&PF.
- **Other authorizations (as applicable).** Dependent on construction techniques, additional authorizations may be required including but not limited to the following:
 - Floodplain permit
 - Bald eagle permit

The Design-Builder is responsible for seeking these authorizations or approvals if determined applicable by DOT&PF.

- **ADEC General Construction APDES Storm Water Permit.** The Design-Builder shall obtain and comply with this permit during construction. The Design-Builder shall prepare the SWPPP and the HMCP for Departmental approval prior to the coordinated effort to obtain the subject APDES permit.

- **A Phase I Hazardous Material Site Assessment.** The Design-Builder shall be responsible for any necessary assessment or any additional assessment that may be required if hazardous material is discovered during construction. If any assessment determines the existence of contaminated materials or the possibility of contaminated materials, the Design-Builder shall be responsible for obtaining the appropriate permits and/or cleanup plan approvals prior to cleanup or working in the contaminated areas.

The Design-Builder shall comply with all permits obtained by the Department or by the Design-Builder, including all stipulations, or shall obtain permit modifications. Copies of the permits must be retained in the Project office and be available upon request.

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7 PUBLIC INFORMATION

The Design-Builder shall keep the public informed during design and construction of the Project, from Department approval of a Public Involvement Plan through the final construction and Project closeout. Public information also includes all administrative responsibilities necessary to implement this work. Administrative duties include documentation and provision of public notices to the Department, public, businesses, municipality, school, website maintenance, and public outreach through community meetings and through the Design-Builder Public Information Coordinator.

7.1 GENERAL PUBLIC INFORMATION REQUIREMENTS

The Design-Builder shall keep the public informed throughout the Project by radio spots, public meetings, and other methods as outlined in the Design-Builder's Proposal. Important information includes the Project schedule and activities.. The methods will include but are not limited to:

- Providing website Project information to be added to the existing DOT&PF website
- Hosting Project open houses prior to each season construction startup and at the conclusion of each construction season if requested by the Department

7.2 PUBLIC INVOLVEMENT COORDINATOR

Public Information Coordinator. The Design-Builder shall provide a Public Information Coordinator, who shall prepare a Public Information Plan and be responsible for implementing the plan. The Public Information Coordinator will be responsible for maintaining 24-hour phone operation. The phone calls will be documented and responded to in accordance with a communication plan authorized by the Department.

The Public Information Coordinator shall be authorized to implement public relations and media relations in coordination with Department Public Affairs staff, and to coordinate between the Project and the community. Media and communications protocols should be developed by the Public Information Coordinator in coordination with DOT&PF. The Public Information Coordinator will be in regular communication with the Design-Builder's Project Manager, Department Public Affairs, and Department Project Manager.

Notification of Public. The Public Information Coordinator shall actively assist the Department in providing advance information to the public regarding construction phasing.

Public Information Coordinator will:

- Advise the public through written and email notice of Project activity at least 10 days in advance of future work as outlined in the any permit conditions.
- The Public Information Coordinator shall notify the Department and the Alaska State Troopers of the names, pager numbers, and telephone numbers (business, residence, and cellular) of personnel to contact in case of emergencies during the Project. This contact list shall be kept current continuously throughout the Project by the Public Information Coordinator.

Submittals to Department. Prior to implementation of each phase of the approved Construction Phasing Plan, the Design-Builder shall provide the Department with the Public Information Plan describing what events or outreach activities will take place during the phase.

7.3 EMERGENCY RESPONSE AGENCY COORDINATION

The Design-Builder and the Public Information Coordinator shall be responsible for ensuring that adequate information is provided regarding an emergency response throughout Project construction to protect and provide public safety throughout the Project. Should there be a need to close a section of the Project area, this will require coordinating with the appropriate authority and having a contingency plan in place to mitigate public concerns.

Cooperation. The Design-Builder and Public Information Coordinator shall cooperate with law enforcement and other emergency response agencies in their response to accidents, fires, spills, or other emergencies in any area affected by the Project on the construction site.. The Design-Builder shall also cooperate in all agency investigations of accidents and other incidents within the Project site.

7.4 PUBLIC MEETINGS

The Design-Builder shall assist the Department in preparing materials for and attending public meetings. The purpose of those public meetings will be to assist the Department in keeping the public informed about the progress of the Work.

It is expected that at least two public meetings will be held prior to construction. The Design-Builder shall have appropriate people to support the Department at these meetings. The Design-Builder should plan on reserving the space and coordinating the meetings at the community councils.

In addition, the Design-Builder must attend small group and one-on-one meetings with the adjacent property owner and the City and Borough of Juneau, or other agencies or organizations as identified by the Department.

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8 RIGHT-OF-WAY

All right-of-way (ROW) Work shall be in accordance with this section and the relevant requirements of the Department. The general hierarchy of precedence for Project standards is specified in RFP Part II, Subsection 105-1.04, Coordination of Contract Documents. It is the Design-Builder's responsibility to obtain clarification of any unresolved ambiguity in standards before proceeding with design or construction.

8.1 PROJECT RIGHT-OF-WAY LIMITS

The Department has identified real property to be used for the Project. It is anticipated that the Project will be designed and constructed within the existing ROW limits specified in the plans provided. This section shall be utilized if the Design-Builder's design requires additional ROW for either the base design.

8.2 PERFORMANCE REQUIREMENTS

The Department shall provide ROW sheets, as necessary, showing the overall Project location and ties to corner and local survey monuments of all adjacent property, as well as the Project coordinates.

All Project construction and Work activities (except as prescribed in Section 8.3, Additional Parcels Identified by the Design-Builder) shall take place within the Project ROW, within the limits specified in the environmental permits, and within any limits described elsewhere in this RFP unless the Design-Builder obtains the Department's prior approval and bears both the responsibility and the associated Contract time and cost impacts of such Work outside the ROW.

All utility relocations required by the design shall fall within this ROW, unless the Design-Builder obtains the prior approval of the Department and bears both the responsibility and the associated Contract time and cost impacts of such utility Work outside the ROW.

Unless prior approval is obtained from the Department, the Design-Builder's design and construction shall not require the Department to acquire any real property in addition to the Project ROW. In this case, the Design-Builder shall obtain the Department's prior approval and shall bear both the responsibility and the associated Contract time and cost impacts of such Work outside the ROW.

8.3 ADDITIONAL PARCELS IDENTIFIED BY THE DESIGN-BUILDER

The Design-Builder may choose to acquire or use land outside the Project ROW that would be advantageous for either Project design or construction, such as construction staging areas, offices, material stockpile areas, rock quarry development, off-site easements, and right-of-entry. The Design-Builder may do so only as specified in this section and only under the following conditions:

- **Department Approval.** The Design-Builder must obtain prior written consent from the Department's Project Manager; the Department has sole discretion to grant or withhold such consent.
- **Costs.** The Design-Builder shall assume full responsibility and the associated Contract and cost impacts of such Work outside the ROW.
- **Permits and Clearances.** The Design-Builder shall be responsible for obtaining all required permits and environmental clearances.

8.3.1 Acquisition of Land outside the Right-of-Way

Any Contract time, costs, or environmental clearances associated with the acquisition of additional land outside the Project ROW and/or rights or interests therein that the Design-Builder may design for its convenience shall be the sole responsibility of the Design-Builder. The Department will not provide acquisition services or participate in any acquisition costs, nor will the Department be held responsible for such acquisitions for the Design-Builder's convenience, unless specifically agreed to in writing by the Department.

For this purpose, the Design-Builder shall use acquisition agents and an acquisition process that the Department has approved in advance.

8.3.2 Use of Land outside the Right-of-Way

The Design-Builder may negotiate with landowners and obtain temporary construction easements on or rights-of-entry to land outside the Project ROW in the Project vicinity only with the Department's prior written approval, which the Department may withhold at its sole discretion.

The Design-Builder shall be responsible for obtaining all required permits and environmental clearances for any such temporary easements or rights-of-entry that are granted. The Department shall not be responsible for such easements and shall not provide acquisition services or any acquisition costs.

8.3.3 Use of Department-Owned or State-Owned Land outside the Right-of-Way

The Design-Builder shall not assume that any Department-owned, State-owned, or Department-acquired land outside the Project ROW limits is acceptable or available for its use.

The use of such land for temporary construction purposes (including material stockpiling and construction staging) is acceptable only with the Department's prior written consent (which may be withheld at the Department's sole discretion) and as specified in the conditions for such use.

The Design-Builder is responsible for returning the Department's property in its previous condition and free of any Design-Builder-added contaminants, or hazardous or harmful materials.

The Department reserves the right, at its sole discretion, to charge the Design-Builder a fee for such land use. The Department may deduct this fee from the Contract price.

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9 QUALITY PROGRAM

9.1 RESPONSIBILITY FOR QUALITY

The Design-Builder has the primary responsibility for the overall quality of the Work, including design and construction, products of Subcontractors, required fabricators, suppliers, and vendors. This section describes the Department's requirements for implementing the Design-Builder's Quality Program and interfacing it with the Department's Quality Program.

Except for preliminary meetings and the development of the Quality Management Plan (QMP) and other preliminary filings, no portion of the Work shall be started before the corresponding QMP has been approved by the Department. Additionally, no portion of the construction shall be started unless the Department has approved release for construction plans for the corresponding portion of Work. No pay estimate will be processed until the QMP has been approved.

The QMP shall address all elements of the project and all elements of quality management as stated in Section 9.2, Quality Requirements. The QMP shall conform to Section 9.3, Design-Builder QMP Requirements, and shall address lines of authority, responsibility, and communications; staffing levels; and required qualifications for all quality personnel. It shall also address processes, forms, remedial and corrective work steps, documentation requirements, audit requirements, and access to records. In addition, both the Design-Builder and the Independent Quality Firm (IQF) shall work with the Department's Concurrent Review Section to ensure records are in conformance with established Department standards and to assist in periodic progress review and project close-out activities.

9.1.1 Design-Builder

In close coordination with the Department and any relevant governmental agencies, the Design-Builder shall develop and implement a QMP for all elements of the Project, including, but not limited to, all elements of:

- Management
- Administration
- Design and design support activities such as geotechnical investigations

- Construction and construction-related activities such as environmental monitoring, environmental compliance, and maintenance of traffic
- Public information

The QMP shall be a written plan developed by the Design-Builder that specifies the quality procedures for the Project Work. The QMP shall be approved by the Department before any Work is performed on any element of the Project by the Design-Builder. The QMP shall delineate how the Design-Builder will ensure that all disciplines, aspects, and elements of the Work will comply with the requirements of the Contract and that all materials incorporated into the Work will perform satisfactorily for the purpose intended. The Design-Builder may use any nationally accepted format and process for the QMP.

The QMP shall designate a Senior Off-Site Quality Assurance (QA) Manager who will be responsible for the quality of the entire Project. The Senior Off-Site QA Manager shall not be involved in the day-to-day activities, but shall report independently to both the Department and to a principal officer of the Design-Builder.

The Department will deliver its approval, disapproval, or comments on each QMP submission within 10 working days following the Department's receipt of the QMP. Prior to delivery to the Department, the QMP submission shall be signed by a principal officer of the Design-Builder as well as the QA Manager. After the QMP has been approved, any revisions to the Plan shall require prior written Department approval.

The quality control (QC) function is an activity undertaken by the Design-Builder that controls processes and production to meet the requirements of the Contract. The Design-Builder shall maintain a qualified and experienced QC design, inspection, material sampling, and testing staff. The QC staff shall be certified in accordance with Table 9-1, below. The QC staff shall be qualified by formal education or training and experienced in construction or craft supervision at the journeyman level.

The Design-Builder's Design Quality Control reviewer shall check methods, calculations, analyses, conclusions, interpretations, engineering reports, specifications, and preliminary and release for construction plans for quality of the design. In doing so the Design Quality Control reviewer will account for:

- Project requirements
- Requirements of referenced standards
- Desirable design criteria

- Physical Project constraints such as right-of-way (ROW) and presence of utilities
- The RFP Proposal, to the extent it increases the Project requirements over the RFP
- Prudent engineering practice

9.1.2 Independent Quality Firm

IQF Responsibilities. The Design-Builder shall contract with the IQF named in the Proposal to manage the Quality Program during the Work. To strictly maintain the complete independence of the IQF from the Design-Builder's day-to-day organization, the IQF shall be responsible and report directly to the Department, as well as to the Design-Builder. The IQF shall:

- Not be owned by or affiliated with the Design-Builder or any of its joint venture members or partners.
- Be considered a Major Participant in the organization.
- Not be one of the design firms for the Project or be owned by or affiliated with one of the design firms.
- Have an American Association of State Highway and Transportation Officials (AASHTO) accredited testing laboratory, accredited in all applicable contract test methods, located within 60 miles of the Project site.
- Be subject to special subcontracting provisions (see RFP Part II, Contract Requirements).
- Have "Stop Work" authority.
- Take materials samples and deliver to the Department Materials Lab (CML) as required for the Department's testing. See Section 9.1.3. This shall be done in accordance with the *DOT&PF Alaska Construction Manual*.
- Be responsible for documentation of all quality-related data, including:
 - Design
 - Testing
 - Inspection
 - Geotechnical investigations
 - Environmental activities
- Report to both the Design-Builder and the Department.

Design Quality. The IQF will be responsible to check design submissions prior to transmittal to the Department. The IQF will determine whether the Design QC has been adequately carried out and documented. In so

doing, the IQF will review QC documentation produced by the Design-Builder that addresses the following elements of Design:

- Project requirements stated in the RFP
- Requirements of referenced standards
- Desirable design criteria
- Physical Project constraints such as ROW and presence of utilities
- The RFP Proposal, to the extent it increases the Project requirements over those stated in the RFP
- Prudent engineering practice

The IQF shall state in a cover letter accompanying each design submission that:

- The Design meets the Project requirements.
- The Design-Builder's QC has been adequately and accurately carried out.
- The documentation for the two conditions listed above exists and has been adequately reviewed by the IQF.

The QA Manager individually and the IQF as a firm shall be professionally licensed to practice engineering in the State of Alaska. Individual reviewers of design elements, for portions of the design that require a professional license, shall hold the same license as is required for the design, and shall be experienced in the type of design being reviewed.

The IQF shall withhold submittals until adequate documentation exists to verify that QC procedures are being followed.

The duly executed IQF statement shall be required as a cover to all design submissions made to the Department.

Table 9-1, below, presents the experience and certifications required for on-site inspection, materials testing, and sampling activities.

The IQF shall assemble a file of construction-related activity documentation consisting of original source documents that adequately and accurately document the quality of materials and workmanship on the Project. This original source documentation shall include but not be limited to:

- Inspector's reports
- Photographs
- Daily reports
- Telephone and conversation logs

- Email logs
- Correspondence
- Materials test reports (concrete and asphalt mix designs, aggregate quality and standard density reports)
- Nonconformance reports (NCRs) and follow-up documentation for NCRs
- Bills of lading
- Manufacturers' cut sheets and submittal information
- Manufacturers' certifications
- Truck delivery tickets
- Plant records
- Inventories and material tallies
- Surveys and cross sections
- Pile driving records
- Concrete placement records
- Samples and specimens
- Laboratory test reports
- Quantities books and pay estimate records
- As-built records

Table 9-1 Certifications Required for On-Site Inspection, Material Sampling, and Testing

Material	Qualification Requirement
Field Technician for:	
Concrete sampling and testing	ACI Concrete Field Testing Technician, Grade I, or WAQTC Qualified Concrete Testing Technician
Aggregate sampling and testing	WAQTC Qualified Aggregate Testing Technician
Soils and embankment sampling/testing	WAQTC Qualified Embankment and Base Testing Technician
In-place density testing	WAQTC Qualified In-Place Density Testing Technician
Asphalt sampling and testing	WAQTC Qualified Asphalt Testing Technician
Field Inspector for: (Note: There currently is no WAQTC Qualification for the following.)	
PCC paving and PCC batch plant	Experienced PCC Pavement Plant and Road Inspector or ACI Concrete Field Testing Technician, Grade I Embankment Experienced Embankment and Soils Inspector
Structural concrete	Experienced Concrete Testing Technician or ACI-Concrete Field Testing Technician, Grade I

Material	Qualification Requirement
Structural steel	Experience in Structures Inspection or AWS-Certified Welding Inspector Quality Control Inspector
Precast/prestressed concrete	ACI Concrete Field Testing Technician, Grade I or PCI QC Personnel Certification, Levels I and II

Type of Technician:

Concrete laboratory technician	WAQTC Qualified Concrete Testing Technician or ACI Concrete Field Testing Technician, Grade I
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ACI = American Concrete Institute

AWS = American Welding Society

PCC = Portland cement concrete

PCI = Precast/Prestressed Concrete Institute

QC = Quality Control

WAQTC = Western Alliance for Quality Transportation Construction

9.1.3 Department

Department's Role. The Department's role in the Quality Program is to:

- Actively participate in Quality Checkpoint (QCP) on-site meetings.
- Review the IQF's evaluation of the results of material sampling and testing.
- Oversee the Design-BUILDER's Quality Program activities to ensure adherence to the QMP.
- Audit the IQF's records.
- Conduct owner verification inspection and testing (oversight, sampling, inspection, and evaluation) as part of owner independent assurance (OIA), including the off-site verification inspection and testing for the fabrication of pre-cast and pre-stressed concrete structures and of structural steel.
- Perform all physical property quality tests (LA abrasion, degradation, sodium sulfate soundness, mechanically stabilized earth [MSE] electrochemical properties, etc.) and provide hot mix asphalt (HMA)/concrete mix designs.

Access to Testing Facilities. The Department reserves the right to:

- Check testing equipment for compliance with specified standards and check testing procedures and techniques.

- Access the testing facilities of independent testing agencies to witness testing and verify compliance of testing procedures, testing techniques, tester certifications, and test results.

Right to Stop Work. If there is evidence that the QMP procedures are not adequate, or if a problem is encountered during the oversight reviews or becomes evident during construction, the Department may, at its sole discretion, stop Work until appropriate quality procedures have been established and implemented. In addition, the Department retains authority to stop Work without liability wholly or in part if the Design-Builder fails to:

- Correct conditions that are unsafe for Project personnel or the general public.
- Correct unacceptable construction and environmental protection practices.
- Correct unacceptable design practices.

9.2 QUALITY REQUIREMENTS

9.2.1 General

9.2.1.1 Staffing Levels

The staffing levels proposed in the Proposal shall be stated in the QMP and adjusted as necessary during the course of the Project to reflect the actual schedule and requirements. The number of QMP staff shall reflect the complexity, needs, shifts, and composition of the construction activities consistent with the construction schedule, relative locations of the Work to be covered, geotechnical considerations, environmentally sensitive areas, and specific nature of the Work. The Department shall review and approve staffing levels for adequacy in meeting Project needs.

9.2.1.2 Documentation

The Design-Builder shall collect and retain each of the following types of data in written form during the performance of the Work, all of which shall be in a form acceptable to the Department. This documentation shall be made available to the Department daily throughout the Project.

Daily Manpower and Equipment Reports. The Design-Builder and each Subcontractor shall maintain daily manpower and equipment reports for construction-related activities.

Daily Occurrence Log. A Daily Occurrence Log of construction activities shall be maintained in narrative form by the IQF. This log shall document all significant occurrences on the Project, including:

- Unusual weather
- Events and conditions causing or threatening to cause any significant delay, disruption, or interference with the progress of Work
- Work site accidents and property damage
- All activities on the current Monthly Plan Update that are being actively prosecuted
- All labor, materials, and equipment expenses incurred (in a standard format)

Hazardous Materials. For hazardous material remediation Work, the data shall be maintained separately for each site.

Other Work. For all other non-construction Work, the data required in the Daily Occurrence Log shall be maintained separately for each element of the Work.

Quality Records. The IQF shall document all quality, inspection, and test activities; any delays encountered; Work that does not conform to the requirements of the Contract and design; and the corrective actions taken regarding such nonconforming Work.

IQF Monthly Certification. As part of the monthly progress report, the IQF shall provide to the Engineer a written certification signed by the Independent Design Quality Manager (IDQM), the independent Construction Quality Manager (ICQM), and the Senior Off-Site QA Manager, indicating that the QMP and all of the measures and procedures provided therein are functioning properly and are being fully complied with.

IQF Weekly Reports. The IQF shall also maintain and submit to the Engineer weekly records with evidence that all required activities and/or tests have been performed, including the following:

- Type, number, and results of all current quality management activities, including reviews, inspections, materials analysis, tests, audits, and monitoring of Work performance
- Closely related data, such as the qualifications of personnel and the procedures and equipment used
- Identity of the inspector or data recorder, the type of test or observation employed, the results and acceptability of the Work
- Minutes of all Quality meetings
- The nature of any nonconforming Work causes for rejection, etc.

- Proposed corrective action(s) for any nonconforming Work, corrective action(s) taken, and results of corrective action(s)

Materials and Equipment Conformance Record. The IQF shall maintain documentary evidence that all materials and equipment conform to the Contract Documents requirements, and shall have this record available at the jobsite at least 24 hours before installation or use of such material and equipment. This documentary evidence shall be retained at the jobsite and shall be sufficient to identify specific requirements, such as all Contract Documents, codes, standards, and specifications met by the purchased material and equipment. A Qualified Products List is available on the DOT&PF web page. The Department reserves the right to inspect and review these documents at any time.

The IQF shall develop and maintain accurate and up-to-date Materials Certification List and Materials Testing Summary in a format acceptable to the Department, for all Project materials shown, indicated, or required, on the Release for Construction Plans.

Weekly Scheduling Notice to Department. The Design-Builder shall notify the Department in writing by Friday noon of each week of planned construction activities, including fabrication. This notification shall describe the anticipated construction activities for the following week (Monday through Sunday) to allow the Department to schedule its resources. For activities (fabrication, etc.) occurring outside the immediate Project area (beyond 60 miles of the Project), the notification shall be given at least 10 working days before the planned Work.

Final Inspection. At the completion of Work, the QA Manager shall jointly conduct a Final Inspection with the Department. Final Inspection shall include inspection of Work, QC documentation and associated as-built documents, certifications, and other documentation. Inspection will be accomplished within 5 working days of notification that the Project is ready for Final Inspection.

Nonconforming Work List. The Department and the Independent Quality Manager (IQM) will jointly agree upon a list of nonconforming Work. This list shall be included in quality documentation with an agreed date of correction for each deficiency. The Design-Builder shall ensure that each deficiency has been corrected before the final completion date.

Final Certificate of Compliance. At Final Inspection of the Project, the Design-Builder shall submit with the final invoice a Certificate of Compliance signed by the Project Manager and IQM, indicating that all materials incorporated in the Project are in conformance with the Contract requirements.

Final Acceptance. The Department has sole responsibility and authority for the Final Acceptance of all Work.

9.2.1.3 Nonconforming Work

The IQF/Design-Builder shall identify, document, and report all elements of the Work that have not, or are believed to have not, been designed, fabricated, or constructed in accordance with the Project requirements, approved drawings, and/or specifications. This reporting shall be in the form of an NCR and shall be submitted to the IQM in writing within 24 hours of identification, with a copy sent to the Department.

An NCR shall clearly describe the element of Work that is nonconforming and the reason for nonconformance. The design engineer who signed and stamped drawings for the Work shall evaluate and determine whether a nonconformance exists and the effects of the nonconformance on performance, safety, durability, long-term maintenance, and the life of the item. Remedial actions shall be documented and bear the stamp of a professional engineer licensed in the State of Alaska. The IQF must also sign the NCR, stating that remedial actions to be employed have undergone the same level of inspection and testing as required for the original design.

If the Department does not agree with the remedial actions set forth in an NCR, it shall have the sole and final authority to call for removal of the nonconforming Work.

The IQF shall maintain a log of all NCRs and submit it biweekly to the Department. Each NCR shall be numbered sequentially, given a brief description and a status, and, if it is not closed, an expected date for closure. The Department will not grant acceptance for any portion of Work that has an outstanding NCR.

The Department shall retain the right to write its own NCRs based on its observance of Work. Department-generated NCRs require the same review and ultimate closure as NCRs generated by the IQF or Design-Builder.

9.2.2 Design

9.2.2.1 Scheduling Review and Submittals

For each design item, segment, or construction phase, reviews shall be included in the Monthly Plan Updates. The schedule shall allow 5 working days for each milestone review and 15 working days for each full review of designs. A review meeting will be held for significant packages as determined by the Department; this review meeting will be scheduled and facilitated by the Design-Builder. The meeting will be held after any required

review periods have elapsed, and the time will be coordinated with the Department.

The schedule impacts of revisions arising from the Department's review and caused by noncompliance with Contract requirements, including the Department's time for reviewing revisions, shall be borne by the Design-Builder.

9.2.2.2 Design Reviews

The Department will review all designs as defined above to ensure that the development of the plans and specifications are in accordance with the requirements of the Contract.

At a minimum, the engineer-in-responsible-charge of the Work and the appropriate design manager(s) for the discipline(s) involved in the design (e.g., structures design manager and highway design manager) shall be present for and participate in all reviews. The IDQM shall conduct oversight reviews. The Department shall participate in these reviews and comment as requested or as it otherwise deems necessary.

For any type of review, the Department reserves the right to take copies of Design Documents being reviewed to its offices for further review and examination.

The following is the order for scheduled design reviews:

- Early in Project: review and approval of 30 percent design
- Milestone reviews:
 - 60 percent (PIH), 90 percent (PS&E) oversight reviews
 - Design-Builder-requested interim oversight reviews
- Completion of an item: release-for-construction reviews
- Completion of design: 100 percent reviews
- Design changes: interim and 100 percent full reviews

The Design-Builder shall meet the requirements listed in this Section 9.2.2.2, below:

- Transmit to the Department for use in the design reviews: 12 paper copies of the plans, complete with all required Design-Builder and IQF certifications and a comment review/adjudication form for each of the 60 percent and 90 percent milestone reviews and the 100 percent review.
- Conform to the MOA's reasonable requirements for format and number of copies, and other administrative requirements.

- Notify the MOA Planning and Zoning Commission of the date for the review meetings, and provide an invitation to the review meetings.
- Be responsible for addressing all comments received, prior to completion of the design.
- Route all correspondence with the MOA thru the Department.

9.2.2.3 Oversight Reviews

The Department will perform oversight reviews using the over-the-shoulder technique. The over-the-shoulder reviews should be conducted in the office of the Design-Builder or its design engineer and in the presence of the IDQM and design personnel, with the intent of minimizing disruption of ongoing design Work. Formal assembly and submittal of drawings or other documents will not be required, but the Design-Builder is encouraged to provide informal submittals to facilitate reviews. The review may be of progress prints, computer images, draft documents, working calculations, draft specifications or reports, or other Design Documents. If mutually agreed upon for specific review items, the over-the-shoulder review may consist of a transfer of electronic files between the Design-Builder and the Department's review team.

9.2.2.4 Milestone Reviews

Milestone reviews will be conducted by the IDQM in the office of the Design-Builder or its design engineer or in the office of the Department. Milestone reviews will consist of checks to see that requirements and design criteria included in the Contract are being followed and that QC and QA activities are following the approved QMP. The reviews, as a minimum, will include review of design drawings, electronic files, calculations (as appropriate), reports, specifications, geotechnical data, environmental requirements, and other relevant design information at 30 percent, 60 percent, and 90 percent complete design. The IDQM shall compile and maintain documentation of the review. The Department shall participate in milestone reviews at its sole discretion.

9.2.2.5 Release-for-Construction Reviews

Release-for-construction reviews will be conducted by the Department at its offices on items, components, or segments with 100 percent complete design. The IDQM shall prepare a full set of drawings and other documents stamped "Checked and Ready for Review."

9.2.2.6 100 Percent Review and Final Design Review

Specifications. Plan submittals shall conform to the Department's plan format. Record drawings and final As-built Plans shall be submitted by the Design-Builder in accordance with DOT&PF Computer-Assisted Drafting

and Design (CADD) standards and in accordance with DOT&PF design standard practices.

Record Drawings. The final approved design drawings should be plotted on 11- by 17-inch paper and signed in all signature boxes provided in the title blocks. The design engineering firm shall place the name of the firm only in the title block of all sheets. The location on the sheet should be uniform throughout the plan set.

As-built Drawings. "As-built" changes shall be noted on these drawings after construction, and these original drawings shall become the property of the Department at the end of the Project.

Quantities and Calculations. Estimated quantities must be included on plan sheets according to DOT&PF design standard practices. Bridge load rating, design, and independent check calculations must be **included with the submittal of 100 percent drawings where they are required.** The design and check calculations for each bridge shall be separately bound. All calculation sheets shall be numbered consecutively. These calculation packages shall include a table of contents and a cover sheet identifying the bridge name and number.

Logos. No logos except that of DOT&PF are allowed.

When the 100 percent design is complete, the IDQM shall certify all of the following related to the Work:

- The design is in accordance with the Contract requirements.
- The design has been checked in accordance with the approved QMP.
- No design exceptions exist that have not previously been approved by the Department.

Final Design Documents. The Design-Builder shall proceed with construction only if the final design is signed and stamped, and accepted by the Department. The Design-Builder shall develop a method to redline the design package to document the comments provided by the IDQM and the Department at the 100 percent review, and shall provide a method to document the incorporation of these comments in the formal final design submittal. After the 100 percent design review comments have been incorporated into the design and/or any questions have been resolved to the satisfaction of the Department, the Design-Builder shall prepare a formal final design submittal of the final Design Documents that includes:

- All design plans
- Design calculations
- Design reports

- Specifications
- Estimated quantities
- Electronic files, in the format(s) specified in the Proposal documents

9.2.2.7 Design-Builder's Design Quality Control Checks

All designs will be checked by a senior experienced engineer. The checking of the structural design shall include independent calculations for all structural elements. If a checking engineer is not available within the design firm or if the design firm does not have a documented, operative, and effective design Quality Program consistent with the approved QMPs, an independent firm shall conduct the quality checks.

9.2.2.8 Design Review Documentation

The IDQM shall maintain a written record of all design reviews and oversight visits. The written record shall:

- List the participants in each review or visit.
- Report all items discussed.
- Identify discrepancies noted and report corrective action(s) taken or planned.
- Identify follow-up action items, due dates, and the responsible party.
- Identify items needing resolution and time constraints for resolution.

The Design-Builder shall maintain a record of internal quality activities. Internal quality activities shall be summarized in monthly progress reports. Reports of design reviews and oversight visits shall be submitted within 5 working days of the completion of the review or visit.

9.2.2.9 Acceptance of Design

Department acceptance of the design shall occur at the time of acceptance of construction. The IQF shall submit all documents required for final design approval, with a certification that the constructed Work has been built in conformance with the Contract Documents, Design Documents, and the Construction Documents prepared and approved by the IDQM.

9.2.3 Construction

9.2.3.1 Acceptance Testing

Testing of embankment and structural backfill compaction, gradations, and compaction of surfacing, pavement, structural concrete, and other items requiring on-site acceptance tests shall be performed by the IQF. All

testing personnel must meet WAQTC qualification requirements. Tests shall be conducted in accordance with the requirements (location, frequency, lot sizes, test methods, etc.) of the Materials Sampling & Testing Frequency table, available on the Department's web page:
<http://www.dot.state.ak.us/stwddes/dcsconst/assets/pdf/constman/2012/ch18.pdf>.

The Department will utilize the results of the IQF's testing and the *Alaska Construction Manual*, Table 11-1, to perform Acceptance versus Independent Assurance test comparisons. The results of the IQF material tests are the basis for acceptance. The IQF firm shall exercise sound judgment in its testing approach and shall increase the frequency of testing in situations in which quantities may be small but location is critical, such as sliver fills. The Design-Builder and IQF shall use a Department-approved standardized form for reporting test results. Samples of the Department forms are included in the *DOT&PF Alaska Construction Manual*.

The Design-Builder is responsible for providing all tools, equipment, and facilities required to conduct the Acceptance Testing, including but not limited to, field and off-site laboratories, laboratory and field testing equipment and supplies, and storage areas for tools and samples.

9.2.3.2 Quality Checkpoints

QCPs shall be established at certain stages of the construction process, as listed below, to ensure that only acceptable Work is incorporated into the Project. As Work is accomplished, representatives of the Design-Builder and the IQF, the engineer-in-charge, and the Department's oversight representative shall review the progress, to date, including inspection reports, process and acceptance test reports, settlement data, pile driving records, string-line measurements, audits, and other pertinent data. The IQF shall coordinate the group members to ensure that the QCPs are reached in a timely fashion so that the Design-Builder is not delayed. When a QCP is reached, the Department's oversight representative shall respond within 4 working hours of notification. Necessary documents such as inspection reports, test reports, and settlement data shall be provided to all parties at the time of QCP notification in order to determine the acceptability of Work. No additional Work shall take place past the QCP until all parties mutually agree that the Work up to that point is acceptable.

QCPs shall be established at the following stages of construction:

- After completion of drainage and utility installations
- Before the start of an MSE wall or other type of retaining wall (to confirm subgrade materials)
- At approval of pile driving submittals (including pile driving results, design calculations, wave analysis, and pile driving records)

- After completion of pile driving at each structure support (pile group)
- Before concrete placement of any substructure element
- After girder and diaphragm placement
- Before concrete placement of deck, approach slabs, diaphragms, and parapets, but with forms, reinforcement, and inserts in place
- Before beginning construction of undercrossings (to confirm subgrade materials)
- Before concrete placement for cast-in-place (CIP) structures, but with forms, reinforcement, and inserts in place

At each QCP the IQF, the Design-Builder, and the owner (at its discretion) shall meet and review the work and documentation to determine if the acceptable quality and quality documentation exists that would establish that the quality of the work performed meets the project requirements, so that additional work can be constructed without rework required. NCRs that affect work subject to a QCP must be satisfactorily resolved and closed prior to the QCP. An acceptable QCP result shall be a condition precedent to continuing work in the area affected by the work subject to the QCP. The Design-Builder shall provide 48 hours notice of QCP inspections to the owner. Forthcoming QCP inspections shall be addressed in the weekly progress meetings.

9.2.3.3 Quantity Estimates

The Design-Builder shall provide quantity estimates for Work covered by the construction plans. The quantity estimates shall be provided to facilitate quality acceptance sampling and testing; i.e., the units shall be consistent with the units used to determine the frequency of sampling and testing. For example, if the number of compaction tests to be taken is based on a specific number of cubic yards of embankment, then the quantity estimate shall also be in cubic yards.

9.2.3.4 Supplemental Drawing Procedures (Shop and Working Drawings)

The shop and working drawings shall be sent to the designer of record for review and internal approval under his direction. Shop and working drawings for permanent Work shall include structural steel fabrication plans, anchor bolt layouts, bar drawings, shop details, erection plans, equipment lists, and any other information specifically required by specifications. Shop and working drawings shall be reviewed and approved by the design engineers who prepared the Project Design Documents.

Shop drawings, working drawings, and calculations for excavation shoring, cribs, cofferdams, falsework, temporary support systems, formwork, and other temporary Work that describe the methods of construction proposed

to be used for the Work shall be reviewed by the Design-Builder's designer of record for those elements and the IQF. The Department will not review or regularly receive copies of these submittals unless it specifically requests so. However, the Department reserves the right to request copies of those submittals for audit purposes. All liability for temporary items used in the Work shall lie with the Design-Builder. The receipt of submittals for temporary Work shall in no way constitute approval of the planned Work or acceptance of any liability by the Department.

The Design-Builder shall not begin fabrication of any bridge elements without IQF-approved shop drawings. All shop drawings shall bear the stamp (as well as the signature) of a professional engineer licensed in the State of Alaska; be stamped "Approved for Construction"; be signed by the Design-Builder QC reviewer; and be reviewed by the IDQM prior to being considered approved.

The Design-Builder shall provide approved shop drawings to the owner in the field at least 48 hours prior to start of on-site work that is detailed in the shop drawings. Any required changes to shop drawings shall be subject to the review and approval process, including full documentation of all reviews and obtaining required signatures prior to being released to the field.

9.3 DESIGN-BUILDER QMP REQUIREMENTS

9.3.1 General

The QMP shall describe specific procedures to be followed to ensure that all the Work conforms to all requirements of the Contract Documents and the Design Documents being used as the basis for construction, and that all materials, equipment, and elements of the Work that shall be incorporated in the Project will perform satisfactorily for the purpose intended. The QMP shall specifically include the procedures for inspecting, sampling, testing, checking, and documenting the Work, including all Work performed by Subcontractors.

The QMP shall:

- Describe the quality management organization, including the number of full-time-equivalent employees with specific quality management responsibilities.
- Include an organization chart showing the lines of authority and reporting responsibilities for all Project Work.
- Identify the name, position, qualifications, duties, responsibilities, and authorities of each person proposed for a quality management function. Include all key positions identified within the Proposal.

- The persons and organizations performing quality management functions shall:
 - Have sufficient authority and organizational freedom to identify quality problems, and to recommend, provide, and verify implementation of solutions.
 - Be at an organizational level high enough to ensure that the Project schedule, performance, or cost will not influence implementation of quality management measures.

9.3.1.1 Key Staffing Positions

Qualifications. The QMP shall name the persons who will fill the four key quality management positions listed in the following paragraphs. Each of these key quality managers shall:

- Be an employee of the IQF
- Be Key Personnel on the Project
- Be an Alaska-licensed professional engineer (except for the Independent Environmental Quality Manager [IEQM] and the ICQM)

Independent Quality Manager (IQM). The IQM shall be responsible for the overall management and implementation of all elements of the QMP. The IQM will report both to the Design-Builder Senior Off-Site QA Manager and to the Department. The IQF shall not replace the IQM without the Department's prior written approval. A request to replace the IQM shall name a proposed replacement manager who shall be on-site within 20 working days of Department approval of the change.

Independent Construction Quality Manager (ICQM). The ICQM shall be responsible for the quality of the construction elements of the Project.

The ICQM shall have a minimum of 5 years of experience in state or federally funded highway construction and shall have had prior quality control experience on a project of comparable size and scope as the Project. Additional qualifications for this position shall include at least one of the following requirements:

1. Professional engineer with 1 year of paving, structures, utilities, or construction materials experience acceptable to the Engineer.
2. Engineer-in-training with 2 years of paving, structures, utilities, or construction materials experience acceptable to the Engineer.
3. An individual with 3 years of paving, structures, utilities, or construction materials experience acceptable to the Engineer, with a Bachelor of Science degree in Civil Engineering, Civil Engineering Technology, or Construction.

4. Construction materials technician certified in a Civil Engineering Technology Program at Level III or IV by the National Institute for Certification in Engineering Technologies (NICET).
5. A NICET Level I or II certified engineering technician in Civil Engineering Technology with 5 years of paving, structures, utilities, or construction materials experience acceptable to the Engineer.

The ICQM, or his representative, shall be on site during all construction activities. The ICQM shall be available on-site on 4 hours notice.

Independent Design Quality Manager (IDQM). The IDQM shall be responsible for the quality of the design elements of the Project.

Independent Environmental Quality Manager (IEQM). The IEQM shall be responsible for the quality of the environmental components protection and compliance elements of the Project.

Procedures. The QMP shall specify procedures that:

- Familiarize all personnel with all requirements of the Contract Documents pertaining to their responsibilities.
- Educate, train, and certify (as appropriate) personnel performing activities affecting or measuring the quality of the Work and ensure that they achieve and maintain reasonable proficiency.
- Ensure that personnel performing the Work do so according to the QMP.
- Identify the quality reporting requirements and lines of responsibility, including the Senior Off-Site QA Manager.

9.3.1.2 Document Control

The QMP shall specify procedures for meeting documentation requirements and document control for the filing of design criteria, reports and notes, calculations, plans, specifications, schematics, supporting materials, etc., and for the specific responsibilities of personnel to satisfy these requirements. All such documents shall be maintained for the duration of the Contract, and shall be organized, indexed, and delivered to the Department upon Final Inspection, as well as within 5 working days of receipt of request from the Department. Documentation shall be provided in a format acceptable to the Department. The QMP shall identify (by name) document control supervisory personnel for the maintenance and management of records and documents pertinent to Design-Build and IQF activities. The Department strongly encourages video/electronic documentation of the Project.

9.3.1.3 Change Documentation

The QMP shall specify measures to control the receipt and issuance of change documents. These measures shall ensure that approved documents, including all authorized changes thereto, are reviewed for adequacy, approved for release by authorized personnel, and distributed to and used at the locations where the prescribed activity is performed. Changes to documents shall be reviewed and approved by the same organizations that performed the original review and approval, unless the Department allows, in writing, another responsible organization to perform such reviews and approvals.

9.3.1.4 As-Built Drawings

The QMP shall specify procedures to be used in preparation of the final as-built drawings to ensure accurate and timely documentation of the constructed Project.

9.3.1.5 Audits

The QMP shall specify a comprehensive series of planned periodic audits to determine the effectiveness of the Quality Program. Audits shall be performed in accordance with the written procedures or checklists by appropriately trained personnel of the IQF. Audit results shall be documented, reviewed, and acted upon by Design-Builder management having responsibility in the areas audited. Follow-up action, including re-audit of deficient areas, shall be taken where indicated.
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9.3.1.6 Environmental Compliance and Monitoring Requirements

The QMP shall describe the methods, processes, and procedures to provide for the effective implementation and documentation of the environmental protection, training, compliance, and monitoring program.

9.3.1.7 Maintenance of Public Facilities Requirements

The QMP shall specify procedures to follow in the for controlling noise, dust, and debris associated with the hauling operations.

9.3.2 Design

9.3.2.1 Design Requirements

The QMP shall describe design quality management practices and processes that are intended to:

- Place responsibility for design quality on the Design-Builder.

- Ensure that Work is designed and built in accordance with the Contract.
- Ensure that all Design Documents are prepared in accordance with generally accepted design and engineering practices, and meet all the requirements of the Contract.
- Allow the Department to fulfill its responsibility to exercise due diligence in overseeing the design process and design products.

9.3.2.2 Design Checks

The QMP shall specify quality procedures for preparing and checking all plans, specifications, calculations, reports, and other documentation submitted to the Department to ensure that they are independently checked and back-checked in accordance with generally accepted engineering practices. The QMP shall include specific procedures for verifying computer programs used and their output. The QMP shall also include the process and procedures that the IQF managers will employ to demonstrate that the QMP is understood and followed by the design personnel.

The design engineer and checker shall be clearly identified on all final Design Documents.

9.3.2.3 Design Adequacy

The QMP shall specify the level, frequency, and methods of checking the design adequacy of the Project, including the methods by which all Design Documents, calculations, and reports shall be independently checked, verified for adequacy of design, and back-checked in accordance with generally accepted design and engineering practices by senior experienced engineers from the Design-Builder's staff.

9.3.2.4 Design Coordination

The QMP shall specify detailed procedures for coordinating Work performed by different persons, firms, or disciplines on related tasks. These procedures shall ensure that no conflicts, omissions, or misalignments occur between drawings or between the drawings and the specifications, and that the Design-Builder coordinates the review, approval, release, distribution, and revision of documents. Such procedures could be an interdisciplinary review process, conflict identification process, omission identification process, etc. The Design-Builder may not in any case propose changes to the RFP requirements, unless such change is submitted as an Alternative Technical Concept.

9.3.2.5 Design Changes

The QMP shall specify procedures for tracking and distributing design changes made after the release-for-construction design drawings. The QMP shall submit a process to propose, receive, track, respond to, and distribute design changes. The process shall identify the general goal, the participants, the participants' responsibilities, and a Work process. The Design-Builder shall request review and approval by the Department for all design changes; the procedures and timing of reviews shall be determined jointly by the Department and the Design-Builder.

All design changes shall undergo the same quality checks as the original design and conform to all provisions of the Contract. No design change affecting a utility shall be made without approval of the appropriate utility owner. All design change plans, sketches, memoranda, specifications, calculations, structure load ratings, and reports shall be signed, stamped, and dated by an Alaska-licensed professional engineer in responsible charge.

After a design has been approved or accepted by the Department as released for construction, any design changes allowed will be at the sole discretion of the Department.

In all cases, the IDQM shall certify in writing that the design change:

- Has been designed in accordance with Contract requirements.
- Has been checked in accordance with the approved QMP.
- Is consistent with the Proposal.
- Is consistent with other elements of the original design.

The procedures shall describe the process for managing changes to the Contract Documents, Design Documents, and Construction Documents, during both the design phase and the post-design phase of the Project.

9.3.3 Construction

9.3.3.1 Investigations and Testing Requirements

The QMP shall:

- Describe procedures for coordinating and ensuring the consistency and quality of materials and products supplied by various vendors.
- Describe procedures for ensuring the quality and documentation of Project field investigations, including geotechnical investigations and testing, field surveying, and the Project mapping coordinate system.
- Ensure qualifications of all laboratories

- Ensure that all testing is in accordance with the appropriate sections of *AASHTO Standard Specifications for Transportation Materials and Methods of Sampling and Testing*, *DOT&PF Alaska Test Methods*, and *RFP Part II, Contract Requirements*.

9.3.3.2 Construction Requirements

The QMP shall describe construction quality management requirements that are intended to:

- Place responsibility for construction quality on the Design-Builder.
- Ensure that Work is constructed in accordance with the Contract, plans, and specifications.
- Allow the Department to fulfill its responsibilities of exercising due diligence in overseeing the construction.

9.3.3.3 Work Conditions

The QMP shall specify procedures to ensure that all activities affecting the quality of the Work shall be accomplished under suitably controlled conditions, using appropriate equipment, and with assurance that all prerequisites to the proper accomplishment of a given task by a worker have been satisfied.

9.3.3.4 Purchased Materials

The QMP shall specify measures to ensure that purchased materials, equipment, and services conform to the Contract Documents and the Design Documents. Measures shall include provisions, as appropriate, for source evaluation and selection, objective evidence of quality furnished by Subcontractors, inspection at the manufacture or vendor source, and examination of products upon delivery.

9.3.3.5 Material Identification

The QMP shall specify procedures that identify and control materials, equipment, and elements of the Work to prevent the use of incorrect or defective materials and equipment. These procedures shall ensure that identification of the item is maintained by appropriate means, either on the item or on records traceable to the item, as necessary, throughout fabrication, erection, installation, and use of the item.

The QMP shall specify procedures to indicate (by the use of markings such as stamps, tags, labels, routing cards, or other suitable means) the status of inspections and tests performed upon individual items of the Work. To preclude inadvertent bypassing or duplication of such inspections and tests, these procedures shall provide for the identification of items that have satisfactorily passed required inspections and tests.

9.3.3.6 Inspection

The QMP shall include a program for inspection of all Work, including examinations, measurement, and tests of materials or elements for each Work operation, where appropriate, to verify quality. Such inspections shall not be limited to those required for quality testing purposes. If the Design Documents specify mandatory inspection points that require witnessing or inspecting by the IQF and then approval of the designated representative before Work shall proceed, the specific inspection points shall be indicated in all appropriate documents.

9.3.3.7 Field Procedures

The QMP shall specify procedures to address all elements that affect the quality in production, placement, and finishing (i.e., surfacing, embankments, paving, and structural concrete). These elements include the Design-Builder management and QC personnel, testing equipment and laboratory facilities, testing frequencies, aggregate production, stockpile management, proportioning, mixing and processing, transporting, placing, spreading, depth or thickness, finishing, compaction, joints, and mix designs.

9.3.3.8 Dispute Resolution Laboratory

The QMP shall recommend a system to resolve disputes that may arise in the IQF sampling and testing process. The QMP shall include the name of the recommended dispute resolution laboratory (DRL) if the recommended dispute resolution system involves a DRL. The DRL shall be an AASHTO-certified laboratory. The DRL shall not be a participant in the quality process of either the Design-Builder or the Department. The Design-Builder is responsible for maintaining all materials for the DRL.

9.3.3.9 Shop and Falsework Drawings

The QMP shall:

- Specify personnel assigned to shop drawing review and approval, including falsework drawings and other critical structure shop drawing.
- Specify procedures for documenting reviews and approvals and for obtaining corrective action, when necessary.
- Specify procedures for checking compliance with shop drawing and falsework drawing requirements.

9.3.3.10 Plant Inspection

The QMP shall specify procedures for plant inspection for production of structural concrete.

9.3.3.11 Test Procedures

The QMP shall specify written test procedures for all testing required to demonstrate that all materials, equipment, and elements of the Work will perform satisfactorily for the purpose intended and will meet the standards specified in the Contract Documents and Design Documents. The test procedures shall incorporate the requirements and acceptance limits contained in applicable Design Documents and shall include provisions for verifying that all prerequisites for the given test have been met and that adequate test instrumentation is available and used. The QMP shall require test results to be documented and evaluated to verify that test requirements have been satisfied.

9.3.3.12 Equipment Certifications

The QMP shall specify measures to ensure that tools, gauges, instruments, and other measuring and testing devices used in activities affecting quality are properly maintained, controlled, calibrated, certified, and adjusted at specified periods to maintain accuracy within necessary limits.

9.3.3.13 Material Handling

The QMP shall specify procedures to control the handling, storage, shipping, cleaning, and preservation of materials and equipment to prevent damage or deterioration.

9.3.3.14 Instrumentation

The QMP shall specify procedures and personnel to be used to ensure that specified instrumentation is installed, maintained, and monitored in accordance with applicable specifications.

9.4 INDEPENDENT QUALITY FIRM

9.4.1 IQF Staff Qualifications

IQF staff shall be employees of the IQF or its subconsultant and shall have been trained in the applicable procedures for inspection of Work and in geotechnical and environmental monitoring, and material sampling and testing. The IQF staff shall also have the certifications listed in Table 9-1. The professional training and experience of the IQF staff (including environmental staff and geotechnical engineers) shall be commensurate with the scope, complexity, and nature of the activity to be inspected, monitored, or tested. Portable or satellite field laboratories shall be under the direction of personnel certified by the WAQTC.

9.4.2 Department Right to Remove

The Department shall have the authority, by written notice, to have any of the following removed permanently from the Project:

- A technician who does not perform the IQF tests in accordance with the test methods
- A technician who does not report test results accurately
- An inspector or geotechnical or environmental monitor who, in the opinion of the Department, does not exercise good judgment in the performance of duty
- A technician who is not certified in accordance with Table 9-1

9.4.3 IQF Staff Responsibilities

The IQF inspection staff and geotechnical and environmental monitors shall check for compliance with all permits, environmental monitoring, and construction operations. Staff shall be on site to monitor all field operations for their appropriate disciplines. Construction operations requiring continuous field sampling and testing shall proceed only in the presence of the assigned IQF staff personnel.

All on-site Work shall be inspected by the IQF staff, except that certain portions of the Work may be inspected by qualified individuals who are employees of or retained by manufacturers, vendors, or suppliers, if approved in writing by the Department.

The IQF's staff shall coordinate with the utilities and Design-Builder to ensure that adequate notification is provided to the utilities for them to inspect any construction activities on their utility. The IQF staff shall also ensure that the utilities have the opportunity to conduct design reviews of utility modifications. The IQF shall ensure that payment is made in a timely manner to the utility owner by the Design-Builder for any inspection Work completed by the owner.

The IQF shall perform statistical reviews of the inspection and test results, and submit monthly summaries to the Department. Field performance and test results of the IQF staff will be reviewed periodically by the Department's oversight staff. The pile-driving analyzer (PDA) firm shall be employed by and report directly to the IQF. The PDA firm shall have a minimum of 5 years experience monitoring the driving of steel piles with the PDA and in performing Case Pile Wave Analysis Program analyses.

9.4.4 Laboratories

Laboratory material testing for the IQF shall be conducted by independent testing laboratories (i.e., not owned by or directly affiliated with the Design-Builder) that comply with the requirements of the AASHTO

Accreditation Program (AAP) certification for applicable tests. Equipment in the satellite laboratories shall be calibrated in accordance with applicable test methods by traceable standards of the National Institute of Standards and Technology. Laboratories may be owned by or under contract to the IQF. AAP accreditation shall be obtained for all AASHTO and ASTM International (ASTM) test methods to be performed by the testing laboratory. Accreditation shall also be obtained for AASHTO and ASTM test methods that are modified or referenced by State test methods. A copy of AAP certificate(s) shall be submitted to the Department upon receipt by the testing laboratory.

Satellite (field) laboratories shall be used for testing soils. Equipment in the satellite laboratories shall be certified by AASHTO and inspected by the Department at the start of Work and annually thereafter. The laboratory shall have written policies and procedures to ensure that the satellite laboratories performing testing activities on the Project are capable of providing testing services in compliance with applicable test methods. The policies and procedures shall address inspection and calibration of testing equipment as well as a correlation-testing program between the accredited laboratory and portable or satellite facilities.

9.4.5 Progress Payment Documentation and Material Tracking

Material Sampling Tracking. The IQF shall obtain and track manufacturers' certificates for all materials accepted by certification(s) and shall document receipt of the Department's "Approved for Shipment" certificates. A manufacturer's certificate of compliance will be used for acceptance of materials as approved by the Engineer.

Progress Payment Documentation. The IQF shall review all monthly progress payment requests to ensure that all materials are either certified or have undergone acceptance testing. The IQF shall review monthly progress payment requests to ensure that acceptable quality documentation is on file for all payment items. The IQF will be required to certify that all materials are either certified or have successfully undergone Acceptance Testing for each pay request. Items of Work for which no certification or passing acceptance test exists will be removed from the pay request until such item as adequate documentation of the acceptability of materials is furnished to the IQF.

9.4.6 Contract Price Adjustments

Quality-Based Price Adjustments. A price adjustment for environmental compliance shall be prepared by the IQF based on the documentation of testing and inspection results and the quantity of noncompliant materials. The Engineer will make final determination of Contract price adjustments.

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10 REMOVAL OF STRUCTURES AND OBSTRUCTIONS

All structure demolition and removals Work shall be in accordance with this section and the relevant requirements of the Department. The general hierarchy of precedence for Project standards is specified in RFP Part II, Subsection 105-1.04, Coordination of Contract Documents. It is the Design-Builder's responsibility to obtain clarification of any unresolved ambiguity in standards before proceeding with design or construction.

The Department recently acquired, or is in the process of acquiring, real property as right-of-way (ROW) for use on the Project. Construction of the Project will require demolition of an existing bridge over Cascade Creek.

10.1 PERFORMANCE REQUIREMENTS

The Design-Builder shall properly remove all deleterious materials, of whatever nature encountered, and shall properly dispose of the materials.

The Design-Builder shall perform this Work in accordance with applicable permits, plans, and laws.

The Design-Builder shall accommodate all removals required by the design within this ROW, unless the Design-Builder obtains the prior approval of the Department and bears both the responsibility and associated costs of such Work outside the ROW. See RFP Part III, Section 8, Right-of-Way, for the requirements.

10.2 CONSTRUCTION REQUIREMENTS

General. Removal of Structures and obstructions shall be in accordance with RFP Part II, Section 202, Removal of Structures and Obstructions, as modified. This includes all structures and obstructions encountered of whatever nature, whether patent or latent, and whether or not shown on the conceptual or final design.

The Design-Builder shall remove the bridge and all obstructions located over Cascade Creek as shown on the Stage 1 Concept Plans to make way for the construction of the new bridge. The Design-Builder shall coordinate the removals with the adjacent property Owner Goldbelt and the Department to ensure all necessary access needs are covered during the construction of the new bridge.

Hazardous Materials. Hazardous materials may be encountered in the Work. Treatment of hazardous materials shall be in accordance with all Federal, State, and municipal requirements. RFP Part IV, Appendix 17-2, Hazardous Building Materials Survey, is provided for the Design-Builder's use.

Fees and Costs. All fees and costs associated with handling, removal, and disposal of hazardous materials, if encountered, shall be the responsibility of the Design-Builder.

10.3 HAZARDOUS ASSESSMENT OF THE EXISTING SOILS

There are no known areas of contaminated soils within the Project limits.

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11 WARRANTIES

The Design-Builder shall warranty all Work in accordance with this section.

Warranty Period. In general, all warranties shall remain in effect for 1 year after the date of Final Inspection of the Project by the Department, except as specified in Table 11-1.

Table 11-1 Summary of Project Warranties with Warranty Periods of More Than 1 Year

Project Element	Warranty Period (after Final Inspection)
Concrete for Structures, Retaining Walls	5 years
Bridge: Elastomeric Bearings	5 years
Bridge: Expansion Joints	5 years

11.1 WARRANTY REQUIREMENTS

11.1.1 Beginning of the Warranty Period

The warranty period on all listed warranty items is the date of Project completion.

11.1.2 Final Warranty Acceptance

The Department and the Design-Builder shall jointly review all completed Work or any portion thereof, as determined by the Department. If the Work does not meet the Contract requirements, the Design-Builder shall make all necessary corrections, at its own expense, prior to Final Warranty Acceptance (FWA). FWA will occur on the date that the Department determines that the Contract requirements have been met for the warranted Work.

Final Inspection Exclusion for Corrective Work. Upon completion of the Project Work, if a portion of the Work needs corrective action, the Department may grant Final Inspection to, and begin the warranty period

on, all but that portion of the Work. The reason for excluding a portion of the Work from Final Inspection would be to accommodate staged construction or seasonal limitations.

Disclaimer. Neither Final Inspection nor any prior inspection, acceptance, or approval by the Department diminishes the Design-Builder's responsibility under this warranty.

Documentation. FWA will be documented and executed jointly by the Department and the Design-Builder on a form furnished by the Department. The Department will send a copy of the form to the Design-Builder's warranty bond surety agent.

Material. Acceptance of material in penalty under the Department's quality assurance program will not relieve the Design-Builder from meeting the material and workmanship warranty requirements for the accepted material.

11.1.3 Warranty Bond

Amount and Term. The Design-Builder shall furnish a single-term warranty bond in the amount of 5 million dollars (\$5,000,000). The effective starting date of the warranty bond shall be the date of Project completion. The warranty bond shall be released at the end of all warranty periods (i.e., at FWA) or after all warranty Work has been completed, whichever is later.

11.1.4 Rights and Responsibilities of the Department

The Department reserves the right to:

- Approve the schedule proposed by the Design-Builder to perform corrective Work (warranty Work).
- Approve all materials and specifications used in the warranty Work.
- Determine whether warranty Work performed by the Design-Builder meets the Contract specifications.
- Perform, or have performed, routine maintenance during the warranty period, which routine maintenance will not diminish the Design-Builder's responsibility under the warranty.
- If the Design-Builder is unable to make immediate emergency repairs to prevent an unsafe road condition as determined by the Department, the Department will attempt to notify the Design-Builder that action is required to address an unsafe condition. However, should the Design-Builder be unable to comply with this requirement to the Department's satisfaction and within the time frame required by the Department, the Department will perform, or have performed, any emergency repairs deemed necessary. Any such emergency repairs undertaken will not relieve the Design-

Builder from meeting the warranty requirements. Any costs associated with the emergency repairs shall be paid by the Design-Builder if it is determined to be caused by defective materials and/or workmanship.

The Department shall be responsible for:

- Monitoring throughout the warranty period and providing the Design-Builder written reports on the items that are related to the warranty requirements
- Notifying the Design-Builder in writing of any corrective action required to meet the warranty requirements

11.1.5 Rights and Responsibilities of the Design-Builder

The Design-Builder shall:

- Warrant to the Department that the warranted Work is free of defects in materials and workmanship; describe the warranty bond on a form furnished by the Department; and submit completed form to the Department prior to release of the performance bond.
- Perform all temporary or emergency repairs that are necessitated by noncompliance with the warranty requirements, using Department-approved materials and methods.
- Notify the Department and submit a written plan for performing the needed warranty Work at least 14 calendar days before starting warranty Work, except in case of emergency repairs as detailed in this Section 11, and propose in the plan a schedule for performing the warranty Work and the materials and methods to be used.
- Follow a Department-approved traffic control plan (TCP) when performing warranty Work.
- Schedule non-emergency warranty Work only during non-peak-period traffic.
- Supply to the Department original documentation that all insurance required by the Contract is in effect during the period in which warranty Work is being performed.
- Complete all warranty Work prior to conclusion of the warranty period, or as otherwise agreed to by the Department.
- Be liable during the warranty period in the same manner as contractors currently are liable for their construction-related activities with the Department in accordance with RFP Part II, Contract Requirements, including, but not limited to, Section 107, Legal Relations & Responsibility to Public. This liability shall arise and continue only during the period in which the Design-Builder is performing warranty Work. This liability is in addition to the Design-Builder performing and/or paying for any required warranty Work,

and includes liability for injuries and/or damages and any expenses resulting therefrom that are not attributable to normal wear and tear of traffic and weather, but are due to noncompliant materials, faulty workmanship, and/or the operations of the Design-Builder.

11.1.6 Corrective Action Requirements

Threshold Limits. The specific threshold limits are shown in tables in RFP Part III, Section 11.2, Material and Workmanship Warranty Specifications, below.

Investigations. To determine whether the failure to meet the warranty criteria is a result of defects in materials and/or workmanship, a joint field investigation by the Department and the Design-Builder will be conducted. The Department and/or the Design-Builder may elect to have a forensic investigation conducted. The decision to undertake a forensic investigation, the scope of the investigation, and the selection of the party to conduct it will be mutually agreed upon by the Department and the Design-Builder. All costs related to the forensic investigation will be shared proportionately, based on the determined cause of the condition as related to the materials and workmanship of this Contract.

Non-warranted Conditions. During the warranty period, the Design-Builder will not be held responsible for Work or material defects that are caused by factors unrelated to the Design-Builder's design methods, materials, and/or workmanship. These include, but are not limited to, chemical and fuel spills, vehicle fires, snowplowing and ice control, and destructive testing done by the Department during the warranty period. Other factors considered to be beyond the control of the Design-Builder will be considered by the Department on a case-by-case basis upon receipt of a written request from the Design-Builder.

Time Requirements for Corrective Action. The Design-Builder shall be responsible for taking corrective action within 30 calendar days after notice by the Department. If corrective action Work cannot be started within this time because of seasonal limitations, the Design-Builder shall notify the Department in writing and determine a schedule for completion of the corrective action Work. Failure by the Design-Builder to respond to the Department or take corrective action within the specified period of time shall be cause for the Department to complete the corrective action Work and recover the costs of such Work from the warranty bond.

Emergency Repairs. If the Department determines that emergency repairs are necessary for public safety, the Department or its agent may make repairs. The Department shall authorize emergency repairs. Prior to emergency repairs, the Department shall document the basis for the emergency action, and shall preserve evidence of the defective condition.

11.2 MATERIAL AND WORKMANSHIP WARRANTY SPECIFICATIONS

11.2.1 Concrete

Map Cracking: A series of cracks that extend only into the upper surface of the slab. Frequently, larger cracks are oriented in the longitudinal direction of the pavement and are interconnected by finer transverse or random cracks.

Scaling: Deterioration of the upper concrete slab surface, normally 0.125 inch to 0.5 inch and may occur anywhere on the pavement.

Popouts: Small pieces of pavement that have broken loose from the surface greater than 0.25 inch in diameter.

Staining: Discoloration of special surface finishes or paints.

Joint Sealant Damage: Any condition that enables incompressible materials or a significant amount of water to infiltrate the surface. Typical types of joint sealant damage are extrusion, hardening, adhesive failure (debonding), cohesive failure (splitting), and complete loss of sealant.

Corrective Actions. The Department's Bridge Section will be the final authority on determination of the necessity for corrective action Work with respect to the listed condition parameters.

11.2.2 Bridge Elastomeric Bearings

Application. This Section 11.2.2 is applicable to warranties on the bridge elastomeric bearings.

Limits of Warranted Work. The warranted Work includes all elastomeric bearings on the bridge.

Warranty Term. The warranty term will be as specified in Table 11-1.

Condition Parameters. Condition parameters will be used to measure the performance of the elastomeric bearings during the warranty term. Each condition parameter has a threshold level before corrective action (warranty Work) is required.

Definitions.

- **Horizontal Deformation:** Misalignment of the top surface of the bearing with the bottom surface of the bearing so that the vertical surfaces are not plumb.
- **Tearing:** Physical separation of the laminate material in the bearing.

Threshold Limits. Table 11-2 lists the allowable threshold limit for each condition parameter. If any of the threshold limits is exceeded as a result of a defect in materials and/or workmanship, corrective action (warranty Work) is required.

Table 11-2 Allowable Threshold Limits – Bridge Elastomeric Bearings

Condition Parameter	Threshold Limit
Horizontal Deformation	Greater than 1 inch out of plumb
Tearing	Any tear of the laminate materials

Corrective Actions. The following corrective actions are suggested to illustrate acceptable treatments for the various condition parameters. The Department will accept the listed corrective action if the action addresses the cause of the distress. The Design-Builder may use the Department-suggested corrective action or an alternative action, subject to Department approval.

Table 11-3 Corrective Actions – Bridge Elastomeric Bearings

Condition Parameter	Recommended Action
Horizontal Deformation	Jack bridge and reset bearing pad.
Tearing	Replace bearing pad.

11.2.3 Bridge Expansion Joints

Application. This Section 11.2.3 is applicable to warranties on the bridge waterproof expansion joints.

Limits of Warranted Work. The warranted Work includes all waterproof expansion joints on the bridge.

Warranty Term. The warranty term will be as specified in Table 11-1.

Condition Parameters. Condition parameters will be used to measure the performance of the waterproof expansion joints during the warranty term. Each condition parameter has a threshold level before corrective action (warranty Work) is required.

Definitions.

- **Tearing:** Any tear completely through the gland that allows water to pass through the joint.
- **Pullout:** A separation of the gland from the extrusion.

- **Broken or Missing Plow Fingers:** Plow fingers that are broken, cracked, or have been completely removed.

Threshold Limits. The following table lists the allowable threshold limit for each condition parameter. If any of the threshold limits is exceeded as a result of a defect in materials and/or workmanship, corrective action (warranty Work) is required.

Table 11-4 Threshold Limits – Bridge Waterproof Expansion Joints

Condition Parameter	Threshold Limits
Tearing	Any tear that will allow water to pass through the gland. ¹
Pullout	Any portion of the gland that has separated from the extrusion.
Broken or Missing Plow Fingers	Any broken, cracked, or missing plow finger.

¹The complete expansion joint installation shall be watertight at all points and shall be so tested by filling the joint opening or portions thereof with water as designated by the Engineer and observing the results for not less than 1 hour.

Corrective Actions. The following corrective actions are suggested to illustrate acceptable treatments for the various condition parameters. The Department will accept the listed corrective action if the action addresses the cause of the distress. The Design-Builder may use the Department-suggested corrective action or an alternative, subject to Department approval.

Table 11-5 Corrective Actions – Bridge Waterproof Expansion Joints

Condition Parameter	Recommended Action
Tearing	Completely replace the gland. ¹
Pullout	Completely replace the gland. ¹
Broken or Missing Plow Fingers	Replace the plow finger.

¹Partial replacement or patching of the gland will not be allowed.