

1 THE ALASKAN WAY VIADUCT &  
2 SEAWALL REPLACEMENT PROJECT

3 AGREEMENT Y-9715

4  
5 TASK NO. CJ  
6 SR 99 BORED TUNNEL  
7 MAPPING

8  
9 SCOPE OF WORK  
10 (EXHIBIT A)

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14 **Summary:**

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16 The purpose of this task order is to expand and update the existing Alaskan Way Viaduct and  
17 Seawall Replacement Program (AWVSRP) digital terrain model (DTM) and utility mapping to  
18 provide mapping coverage for the SR 99 Bored Tunnel alternative (PROJECT). This work is  
19 needed to accurately determine topography and locate existing infrastructure in order to  
20 advance design and determine potential impacts of the proposed construction.

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22 The CONSULTANT shall coordinate and perform field survey work, as required, to prepare  
23 and/or update the AWVSRP digital terrain model and utility mapping. Areas to be surveyed are  
24 depicted in Attachments 1-3 (survey boundaries). Three (3) areas are described:

- 25  
26
- **Armory Way** – This portion of the work consists of areas requiring new mapping and areas of updating existing mapping as indicated.
  - **North Portal** – This portion of the work consists entirely of areas requiring new mapping. (Field work was partially completed in this area for locating non-gravity subsurface utilities in Aurora Avenue under a previous Task Order. This previously obtained data will be verified, updated, and used by the CONSULTANT).
  - **South Portal** – This portion of the work consists of areas requiring new mapping and updating existing mapping as indicated.
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1 This Task Order duration is from May 1, 2009 through December 31, 2009. Work is budgeted  
2 to be complete by November 30, 2009.

3 **Objective:**

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5 The primary objective of this task order is to map new areas and update existing mapping to  
6 support design development for the PROJECT. The new and updated mapping products will be  
7 incorporated into existing AWVSRP topographic mapping and utility mapping. Additionally,  
8 Quality Level A data collection (“pot holing”) and survey of geotechnical boring locations for  
9 borings will be provided on an “as-directed” basis.

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11 **Approach:**

12  
13 **General**

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15 The Consultant shall perform the following:

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  - Topographic survey.
  - Utility Mapping for the non-gravity, gravity, and aerial utilities in the corridor including  
18 water, natural gas, petroleum and fuel oil, lighting, steam, telephone, fiber optics, cable  
19 television, electrical, traffic signals and parking meters, railroad communications, storm,  
20 sanitary, and combined sewers.

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23 The CONSULTANT shall adhere to the following standards and guidelines:

- 24  
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  - WSDOT *Highway Surveying Manual* (M 22-97) dated January 2005
  - WSDOT *Utilities Manual* (M 22-87) dated December 2008 (modified January 2009)
  - WSDOT *Electronic Engineering Data Standards* (M 3028) dated July 2006). Note:  
28 procedures for InRoads apply to the Alaskan Way Viaduct and Seawall Replacement  
29 Program (AWVSRP)
  - WSDOT *CADD Standard for MicroStation Using Expanded Levels*

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31 Mapping of underground utilities shall conform to American Society of Civil Engineers/  
32 Construction Institute standard ASCE/CI 38-02 *Standard Guidelines for Collection and Depiction*  
33 *of Existing Subsurface Utility Data* and the prevailing standard of care.

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35 The CONSULTANT shall use available means, including utility company records, as-built plans,  
36 visible indications of utilities, and other appropriate information sources and perform a  
37 geophysical search to identify utilities in the project area to achieve Subsurface Utility  
38 Engineering (SUE) Quality Level (QL) B except in the limited circumstances where surface  
39 geophysical methods are not successful.

40  
41 Mapping will be depicted in compliance with current AWVSRP CADD standards:

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  - All Topographic mapping shall be depicted in STATE standards and in Microstation  
44 Version 8 expanded level format.
  - All Utility Mapping shall be represented in AutoCAD 2009 using CAD menus available on  
45 the City of Seattle’s (COS) website.

- 1 • Each symbol and/or line style used to show utility locations shall be in a legend that  
2 includes standard project specific symbols. Each utility type will either be represented on  
3 its own level within the file or in an individual file. Each file must be able to reference the  
4 main map file. The achieved Quality Level will be depicted for subsurface utilities.  
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6 If requested, select areas shall be prioritized for earlier completion.  
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8 The work of this Task Order consists of the following subtasks:  
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10 CJ.01 – Project Management: The CONSULTANT shall perform the following project  
11 management activities:  
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- 13 • Prepare a work plan that describes the procedures for accomplishing the scope of work,  
14 schedule, permitting requirements, resources to be used and quality control procedures.  
15 • Coordinate and manage all elements of this Task Order.  
16 • Identify and communicate concerns and issues to the STATE and work to resolve them  
17 in a timely manner.  
18 • Liaison with designated representatives of the STATE in all technical matters and notify  
19 the STATE of any activities that are directed or requested which divert from the  
20 approved scope, schedule, or cost baselines of this Task Order.  
21 • Prepare a project schedule that includes subtask durations, work product and  
22 deliverable due dates, quality assurance and control reviews, and milestone dates for  
23 the scoped activities.  
24 • Supervise quality management procedures.  
25

26 CJ.02 – Topographic Survey and Aerial Utilities: Provide topographic mapping services to  
27 include all surface features and aerial utilities within the mapping boundaries established by  
28 existing Right of Way.  
29

- 30 • Prepare mapping using AWVSRP Project datum.  
31 • Provide survey control and topographic files at 1"=20' and 1"= 50' scale in both  
32 electronic and hard copy format.  
33 • Supply annotated Point, Elevation, and Description data in ASCII text files (including  
34 visible surface features as well as project control) for the mapping of all features  
35 including but not limited to non-gravity, gravity, and aerial elements.  
36 • Provide mapping of aerial/overhead utilities. Aerial mapping shall include all visible  
37 above ground utilities, utility poles and attached utility appurtenances plus conduits  
38 that are mounted on structures within the survey limits to include electric power,  
39 communications, lighting, traffic signals, fiber optics, and cable television. Mapping  
40 shall identify the type and ownership of the utility. Electrical utilities will be called out  
41 per Seattle City Light (SCL) standards to include identification of voltage. Supporting  
42 files including field notes and pole cards will be provided.  
43 • Mapping for aerial utilities shall contain available three dimensional (3D) data where  
44 access is safely possible from the surface. Physical measurement of the elevation of  
45 such features shall be made and recorded as a "measured elevation." The  
46 measurement data will also include an additional elevation at grade to enable the

1 calculation of height if needed. The vertical position of other aerial utilities, not directly  
2 measurable in the field, shall be indicated as “approximate” when elevation data exists  
3 and appears reasonable from existing mapping and available utility records. Aerial  
4 vertical information will be labeled on the pole sketch cards only.

- 5 • Detailed digital photography (including pole numbers) will be taken of each aerial utility  
6 by the CONSULTANT survey team to facilitate the identification of overhead lines.  
7 Digital photos shall be included with pole cards.
- 8 • Subsurface structural features within the Right of Way will be as indicated from as-  
9 built/record drawings.
- 10 • Final mapping deliverables and supporting data other than field notes and as-  
11 built/record drawings shall be stamped by a Washington-registered professional  
12 engineer and/or surveyor, as appropriate.

13  
14 Work for this subtask will be accounted for as follows:

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- 16 • CJ.02.A – Topographic Survey and Aerial Utilities - Armory Way
- 17 • CJ.02.N – Topographic Survey and Aerial Utilities - North Portal
- 18 • CJ.02.S – Topographic Survey and Aerial Utilities - South Portal
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21 CJ.03 – Gravity Utilities: Perform mapping of gravity utilities to include storm, sanitary, and  
22 combined sewer systems within the survey boundaries.

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- 24 • Perform field surveys within the survey boundaries to locate curb inlets, catch basins,  
25 culverts, outfalls, detention structures, regulator and control structures, manholes and  
26 to obtain pipe invert elevations, materials, size, and connections to adjoining gravity  
27 flow structures as shown on provided as-built plans and determined by physical site  
28 inspection.
- 29 • Obtain three dimensional (3D) data for gravity utility elements where access to buried  
30 utility elements is possible from the surface, such as at valve boxes, manholes, and  
31 catch basins. The physical measurement of the depth of such features shall be made  
32 and recorded as rim and invert elevation. The vertical position of other gravity  
33 underground utilities, not directly measurable in the field, shall be indicated as  
34 “approximate” when depth data exists and appears reasonable from the existing QL D  
35 composite mapping and available utility records. The appropriate quality level will be  
36 specified in field notes.
- 37 • Where QL A data is obtained, it shall be indicated on mapping.
- 38 • Conduct research of side sewer, main line sanitary sewer, storm water drainage and  
39 combined sewer system design and as-built/record drawings and maps. Research will  
40 be performed at the COS Map and Records Research Counter and with utility owners  
41 and is limited to the areas within the survey boundaries.
- 42 • Provide hard copies of record drawings to facilitate the completeness review.
- 43 • Final mapping deliverables and supporting data other than field notes and as-  
44 built/record drawings shall be stamped by a Washington-registered professional  
45 engineer and/or surveyor, as appropriate.

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2 Work for this subtask will be accounted for as follows:  
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- 4 • CJ.03.A – Gravity Utilities - Armory Way
- 5 • CJ.03.N – Gravity Utilities - North Portal
- 6 • CJ.03.S – Gravity Utilities - South Portal

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8 CJ.04 – Non-Gravity Subsurface Utilities: Perform mapping of non-gravity subsurface utilities to  
9 include water, steam, natural gas, fuels, lighting, signals, communications, fiber optic, cable  
10 television, and low, medium, and high voltage electrical systems and services within the survey  
11 boundaries.

- 12
- 13 • Perform field surveys within the survey boundaries to locate subsurface structures  
14 such as vaults, manholes, handholes, regulators, valves, and other appurtenances to  
15 determine materials, size, and connections to adjoining facilities as shown on provided  
16 as-built plans and determined through physical site inspection.
- 17 • Obtain three dimensional (3D) data for non-gravity utility elements as follows: (a)  
18 where access to buried utility elements (such as valve boxes, vaults, manholes,  
19 handholes, other structures) is possible from the surface, physical measurement of  
20 features such as conduits, switches, transformers, valves, etc. shall be made and  
21 recorded as a “measured depth below grade;” (b) where utilities are exposed below  
22 the surface through a test hole as a result of a QL A request, elevations and precise  
23 horizontal positions will be recorded as “QL A.”; (QL A data will be obtained on an as-  
24 directed basis. See sub-task CJ.05); and (c) the vertical position of other non-gravity  
25 underground utilities, not directly measurable in the field, shall be indicated as  
26 “approximate” when depth data exists and appears reasonable from the existing QL D  
27 composite mapping and available utility records. The appropriate quality level will be  
28 specified in field notes.
- 29 • Conduct research of non-gravity subsurface utility systems design and as-built/record  
30 drawings and maps. Research will be performed at the COS Map and Records  
31 Research Counter and with utility owners and is limited to the areas with the survey  
32 boundaries.
- 33 • Provide hard copies of record drawings to facilitate the completeness review.
- 34 • Final mapping deliverables and supporting data other than field notes and as-  
35 built/record drawings shall be stamped by a Washington-registered professional  
36 engineer and/or surveyor, as appropriate.

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38 Work for this subtask will be accounted for as follows:  
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- 40 • CJ.04.A – Non-Gravity Subsurface Utilities - Armory Way
- 41 • CJ.04.N – Non-Gravity Subsurface Utilities - North Portal
- 42 • CJ.04.S – Non-Gravity Subsurface Utilities - South Portal

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44 CJ.05 Quality Level A Data: As-directed and upon coordination with the STATE the Consultant  
45 shall obtain QL A data at locations to be determined by the STATE.

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- 47 • Obtain QL A Data points (pot holes) on an as-directed basis.

- 1 • Maintain a log of all QL A data requests detailing the specific information needed.
- 2 • Provide pothole reports within one (1) month of their specific Notice to Proceed.
- 3 • All QL A data shall be stamped by a Professional Engineer licensed by the State of
- 4 Washington.

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6 CJ.06 Locate Geotechnical Borings and Potholes: As-directed and upon coordination with the  
7 STATE the Consultant shall locate by survey the geotechnical boring and pothole locations as  
8 follows:

- 9 .
- 10 • Provide three dimensional (3D) coordinate information for up to seventy-five (75)
- 11 geotechnical borings performed by the STATE or the STATE's CONSULTANT.
- 12 • Provide three dimensional (3D) coordinate information for up to 200 potholes.
- 13 • Locations shall be along the proposed tunnel alignment within or along side city streets.
- 14 • This will be a level of effort sub-task.

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16 CJ.07 Completeness Reviews: The CONSULTANT shall perform the following quality  
17 assurance activities.

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- 19 • Perform a review of all mapping for completeness and suitability as a basis for beginning
- 20 preliminary design.
- 21 • Review mapping of topographic and surface features. Field verify surface features in
- 22 question.
- 23 • Redline type and size of overhead utility lines in the plan view and in the survey
- 24 sketches.
- 25 • Back check pole cards to ascertain accuracy of identifications and configuration of aerial
- 26 utilities.
- 27 • Back check subsurface utility mapping against as-built drawings for completeness,
- 28 accuracy, and conformance with standards in this Task Order. Field check
- 29 discrepancies.
- 30 • Identifying additional QL B requirements and QL A data points needed to complete or
- 31 enhance the utility mapping. QL A data will be collected on an as-directed basis.
- 32 • Maintain hard copy of quality assurance records and logs and post electronic copies with
- 33 mapping files.

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35 **Assumptions:**

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- 37 • The CONSULTANT is responsible for all necessary traffic control and coordination with local
- 38 and STATE agencies.
- 39 • The CONSULTANT shall coordinate with utility owners to allow access to their facilities.
- 40 • The CONSULTANT is responsible for all fees associated with permits, obtaining drawings of
- 41 existing utilities, and access/observation costs levied by utility owners.

- 1 • The control network is based on the prior agreed datum of Washington State Plane  
2 Coordinate system, North Zone, 1983/1991 (horizontal) and North American Vertical Datum,  
3 1988 (vertical).
- 4 • Up to seventy-five (75) geotechnical borings performed by the STATE or the STATE's  
5 CONSULTANT may be located. The CONSULTANT shall provide three dimensional (3D)  
6 coordinates for these borings as directed by the STATE. Locations of borings will be on or  
7 adjacent to the proposed tunnel alignment and may be outside mapping boundaries  
8 described in this Task Order.
- 9 • Seattle City Light (SCL) and other utility owners will provide electronic copies or hard copies  
10 of record drawings as available for the defined project area according to previously agreed  
11 secure data sharing protocols.
- 12 • Access to private property requires a separate right of entry for each private property  
13 accessed. The CONSULTANT survey team shall submit a list of private properties that  
14 require access by the CONSULTANT. The list will be approved by the STATE. Rights of  
15 Entry will be obtained by the STATE or its consultant.
- 16 • Utility designation will not include underground storage tanks, residential services, empty  
17 non-accessible conduits, landscape irrigation/sprinkler systems, or traffic sensor loops.
- 18 • Mapping of properties not within the public Right of Way is not included in this Task Order.

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**Activities List and Cost Accounts:**

<u>WSDOT MDL No.</u>	<u>PB No.</u>	<u>Description</u>
PE.PM.02	CJ.01	Project Management
PE.PD.06.20	CJ.02.A	Topographic Survey and Aerial Utilities – Armory Way
PE.PD.06.20	CJ.02.N	Topographic Survey and Aerial Utilities – North Portal
PE.PD.06.20	CJ.02.S	Topographic Survey and Aerial Utilities – South Portal
PE.PD.06.20	CJ.03.A	Gravity Utilities – Armory Way
PE.PD.06.20	CJ.03.N	Gravity Utilities - North Portal
PE.PD.06.20	CJ.03.S	Gravity Utilities – South Portal
PE.PD.06.20	CJ.04.A	Non-Gravity Subsurface Utilities – Armory Way
PE.PD.06.20.06	CJ.04.N	Non-Gravity Subsurface Utilities – North Portal
PE.PD.18	CJ.04.S	Non-Gravity Subsurface Utilities – South Portal
PE.PD.06.20	CJ.05	Quality Level A Data

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PE.PD.06.20	CJ.06	Locate Geotechnical Borings and Potholes
PE.PD.06.20	CJ.07	Completeness Reviews
	CJ.99	Other Direct Costs

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4 **Anticipated Schedule:**

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6 Schedule to be determined by work plan.

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9 **Consultant's Cost Computations (Cost Estimate):**

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11 The CONSULTANT's Cost Computations (Cost Estimates) are included as Exhibits D and E  
12 and by reference are made part of this Task Order.

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15 **Progress Reporting:**

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17 Progress of deliverables will be updated monthly. Reporting shall adhere to the cost  
18 management system protocols established in Task No. AA – Project Management, Alaskan  
19 Way Viaduct and Seawall Replacement Project or its successor Task Order as applicable.

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21 Progress milestones are established as follows:

22

- 23 15% Work Plan submitted
- 24 60% Draft mapping CAD files submitted for Completeness Review
- 25 75% Initial Completeness Review
- 26 90% Composite Mapping Submitted for Agency Review
- 27 100% Final Composite Mapping Submitted

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30 **List of Attachments and Exhibits:**

31 Attachments 1-3– Survey and Utility Mapping Boundaries

32 Exhibit D – Prime Consultant's Cost Computations

33 Exhibit E – Sub Consultant's Cost Computations