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Questions and Answers

- Q35. Part 1.7.3 of spec section 01 32 16 states "Contractor to provide and set up a construction camera to monitor progress of the construction. A minimum time interval of 10 minutes is required." Is there any more detail on this construction camera?
- A35. Construction camera specifications and requirements:
- 4mp resolution professional outdoor camera with optical zoom.
  - Cellular data connectivity LTE/3G/4G to transmit images to servers.
  - archive still images at 10 minute intervals.
  - Web hosting and archiving of still images.
  - Administrative features for remote access/viewing including but not limited to user/password, date selection, image download, and time-lapse video playback.
  - 120/240 AC power connection (optional solar or battery supply for power interruption)
  - Outdoor pole mountable camera system or able to secure/clamp on other outdoor surfaces
  - Deliverables: all digital still images without alteration, and professional produced high definition time-lapse movie of the project.
  - Installation: install camera at elevation location that provides maximum coverage of construction activities.
  - Contractor will rent, install, maintain and remove the camera equipment for the duration of the construction period.
- Q36. Is it possible to note the grade levels on the grade contours on drawing B-01 or B-03?  
We are trying to determine the existing grade at the location of the proposed control building, parking lot and precast concrete block retaining wall.
- A36. The contractor shall perform its own survey.
- Q37. Drawing B-58 shows the sanitary sewer from the control building. No water service or plumbing is shown?
- A37. No additional details on water service and plumbing are available at this time. The Departmental Representative will confirm final interior layout of the new Control House during construction. Contractor will install water and sanitary services to suit final layout.
- Q38. Based on our experience and information we are receiving from key subcontractors and suppliers the schedule as indicated on the documents may not be achievable. Has PWGSC considered extending the completion date? In addition, part 1.7 of spec section 01 14 00 states that the bridge will be closed to traffic on Aug 28, 2018 and reopen to traffic on May 22, 2019. Based on the current tender close date and allowing for tender award, preparation and acceptance of the Environmental Management Plan (EMP) and mobilization we anticipate that the earliest date for the road closure would be the end of October, 2018. This means that contractor will lose 2 months of their site schedule. Will PWGSC extend the bridge reopen to traffic date of May 22 by at least 2 months to make up for the expected late start of the contract?
- A38. Note the following changes to construction schedule.
1. Contractor shall maintain main channel (between center pier and east pier) open for navigation traffic at all times throughout the construction period. This includes the navigation period between May to October and all the other months that PCA does not operate the bridge.
  2. Contractor must re-open the road to vehicular traffic and complete the installation and commissioning of the fixed and swing bridges by July 31, 2019.
  3. Contractor may close the road to vehicular traffic starting on November 2018.

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- Q39. We are requesting an extension of time to the tender closing date as we require further time to determine the erection methodology for the new superstructures. The area is tightly confined and would require a large crane to install the new superstructure. We require further time to examine the site and determine the best method to approach the erection of the superstructure. Could you please provide an extension?
- A39. Yes. Refer to Solicitation Amendment #06.
- Q40. Re: Micropile Sub:
- Q40.1 Specification Section 31 63 19, 2.6.1 specifies OPSS Gr 517MPa threadbar, however the second sentence specifies ASTM A722 (Gr 150) and the drawings call for Grade 150ksi. 517MPa threadbar is Grade 75 ( $F_y = 75\text{psi}$ ). Typically on a project of this type, we would expect to use the standard Grade 75 material. Grade 150 is usually used for post-tensioned tie-down applications.
- A40.1 Grade should be 150 ksi, as specified on Drawing B-08 Note 2.
- Q40.2 Drawing specifies grout to have anti-washout properties. Piles are fully cased and drilled into sound bedrock for the bond length. I don't see the need for anti-washout grout.
- A40.2 Anti-washout grout is to be utilized given the location is below water table.
- Q40.3 Drawings show a 1.5m casing socket in sound bedrock. Usually we only socket about 150mm into the bedrock to seat the casing. We do not use 'plunge length' in our micropile design, so the socket depth does not contribute to axial capacity.
- A40.3. The design is based on the geotechnical recommendations.
- Q40.4. On the drawings, loading is given as "micropile geotechnical design capacity". What load does this represent? Service axial load (SLS) or factored axial load (ULS)?
- A40.4 750 kN is the factored axial geotechnical resistance.
- Q40.5. Specification 3.5.1.1 calls geotechnical resistance factor of 0.5. This relates to piles in compression with static loading, and a low degree of understanding. As the piles are to be founded in sound native bedrock, I would say there is a typical to high degree of understanding of the material, A resistance factor of 0.6 would be more appropriate.
- A40.5. The ultimate geotechnical resistance factor of 0.5 is recommended in the Geotechnical Report.

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Q40.6 Specification 3.5.8 calls for 3 pre-production load tests:

- a. 1 Compression Vertical at Pier
- b. 1 Compression Battered, either Abutment
- c. 1 Compression Vertical, opposite abutment

Load testing on battered piles is difficult to do and not recommended. Also I do not see reference to any production piles in the piers for the drawings we have received. Would recommend that it is more appropriate to have 2 load test, one at each abutment, performed vertically.

A40.6 Contractor is to comply all the requirements specified in section 3.5.8.

Q40.7 Further to Item 5, above, load testing is specified to be carried out to 2.5DL. This would correspond to a resistance factor of 0.4. Typically load testing is performed to the ultimate capacity based on the design resistance factor, for resistance factor of 0.5, this would be 2.00DL, for 0.6 (as suggested in Item 6) this would be 1.67DL.

A40.7 Per Section 3.5.8, the purpose of the pre-production testing is to verify the design assumptions, and the appropriateness of the proposed construction procedures prior to installation of production micropiles. The micropile shall be loaded to failure 2.5DL in compression.

Q40.8 Also regarding load tests, compression testing is specified, however tension testing provides a more practical set-up and procedure, without the need for reaction anchors. Compression performance is expected to be as good as or better than tension, so successful test performance in tension shows adequate confirmation of compression performance.

A40.8 Contractor is to perform compression testing.

Q40.9 Specification 3.5.8.10 calls for load testing of reaction piles. Given pile construction in sound bedrock and the high reliability, I don't see the purpose of these additional tests, nor is it clear how many would need to be performed. For compression testing, set-ups can include 2-8 reaction piles each depending on loading requirements and site issues. Would recommend not requiring this additional testing. In addition to this, if pile testing in tension is acceptable per Item 6, there will be no reaction anchors.

A40.9 Contractor is to comply with the requirement of proof tests per section 3.5.8.10. See response to Q40.6.

Q40.10 Section 3.5.9 refers to Verification Tests, however no quantity is specified. Also, Section 3.5.2 indicates Verification test to be performed on production piles. Typically verification testing is performed on full-scale sacrificial piles, as the loading is typically specified to the design ultimate capacity. (the primary difference with the general pre-production load test is that they are not scaled for bond length.

Note, this may also result in requiring significantly larger threadbar for test piles).  
3.5.9.2 specifies verification testing to 200% DL. Verification testing is performed to the ultimate geotechnical capacity of the pile corresponding to the geotechnical resistance factor (200% for 0.5, 167% for 0.6, see Item 7).

A40.10 As specified in Section 3.5.9, the contractor shall submit to the Departmental Representative a proposal recommending the production micropile (s) to be selected for testing; however, the final selection will be up to the Departmental Representative.

The verification testing requirement of 200%DL is per specification in FHWA/NHI 2005.

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- Q40.11 Section 3.5.10 calls for proof testing of production piles.
- 3.5.10.3 calls for 4 compression proof tests to be done on battered piles. As noted earlier, pile testing is not recommended on battered piles.
  - Section 3.5.10.2 calls for proof test to be carried out to 160% design load. Typically proof test are only carried out to 100%-110% of the factored design load
  - Piles installed in rock have a very high degree of reliability, it is our opinion that the pre-production testing will provide adequate confirmation of design without the need for additional proof testing.
- A40.11
- Refer to A40.6.
  - The proof testing requirement of 160% design load is specified in FHWA/NHI 2005.
  - Proof testing is recommended by FHWA/NHI 2005.

- Q40.12 In addition, some of the numerical discrepancies I've noted could be related to unfactored loads vs factored loads. As I point out, it is unclear what the 750kN pile load represents. Usually pile design and testing that we do, starts with ULS factored loading.

A40.12 Refer to A40.4.

- Q41. Where is concrete refacing as per drawing B-51 required? If the quantity is unknown should this be a unit price item?

A41. The concrete refacing details shown on drawing B-51 are for the Pivot Pier Modification and the rest pier rehabilitation, refer to drawings B-18 to B-21 and B-22 to B-23 for the Pivot Pier Modification and the rest pier rehabilitation respectively. Drawings B-18 to B-23 provide dimensions to estimate the new concrete quantities.

During removal, if additional deteriorated concrete is observed beyond the proposed removal limits, then removal limit shall be determined by the Departmental Representative.

Contractor shall note that Drawing B-51, the rest pier "Rehabilitated" Detail, the depth of the new concrete surface shall be revised to 300mm (150 mm as currently shown), refer to Drawing B-22 Section 1 and Drawing B-23 Detail 2 for details.

- Q42. Can the dates be revised in specifications (part 1.7 of section 01 14 00) to reflect the later close/potential award of the contract? As the 2 month shift or loss of working time from August Start to End of October start is required to implement the scope of work. It is unrealistic to maintain the bridge open to traffic date of May 22, 2019 – It needs to be moved a minimum of 2 months.

A42. Refer to A38.

- Q43. Various subcontractors and suppliers have requested a minimum one week extension to the tender close date. Will an extension be granted?

A43. Yes. Refer to Solicitation Amendment #06.

- Q44. It is not clear from the drawings the length of the electrical concrete trench. At what point does the trench end at the abutment? Please clarify.

A44. Concrete trench can be ended at the shore line. The submarine cables shall be installed in conduit sleeve laid 1.2m below mud line, turn up along the shoreline slope and enter the concrete trench at the shoreline.

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- Q45. For the Armouring angles (drawing B-54), and cable trench cover and frame, is it necessary to use 350WT material, or can we use 350W?  
A45. Grade 350W can be used for the armouring angles.
- Q46. For the Armouring angles (drawing B-54), and cable trench cover and frame, is it necessary to use 350WT material, or can we use 350W?  
A46. Refer to A38.
- Q47. Please revise dates in specifications (part 1.7 of section 01 14 00) to reflect the later close/potential award of the contract, as the 2 month shift or loss of working time from August Start to End of October start is required to implement the scope of work. It is unrealistic to maintain the bridge open to traffic date of May 22, 2019. Can it be moved a minimum of 2 months?  
A47. Refer to A38.
- Q48. Will the owner consider extending the contract completion date to avoid accelerated work costs?  
A48. Contractor must re-open the road to vehicular traffic and complete the installation of both fixed and swing bridges, and the commissioning of the swing bridge by July 31, 2019. Refer to earlier response to Question #38.
- Q49. A note on drawing B-58 states "Outdoor control console on concrete pad". It appears from drawing B-58 that the electrical concrete trench is located under the outdoor control console, thus a concrete pad is not possible. Please clarify.  
A49. "Electrical Concrete Trench" detail is provided on Drawing B-56, contractor to provide concrete pad beneath outdoor control console, instead of checkered plate.
- Q50. Drawing B-58 notes a "chain" between the bollards. Are there any special requirements for this?  
A50. Drawing B-58 notes "replace trees (Typ)" Is this correct? Please confirm quantity of replacement trees. Is there any specs for the trees?  
Currently there are six (6) trees present at the southwest side of the Control House. Contractor to replace the number of trees to be removed in the foot print of the proposed new Control House and parking spot.
- Q51. Section 1 on drawing B-58 shows the top precast concrete block wall extend above grade. This may not be possible. If the precast concrete wall stops at or about grade level, is a railing or fall protection barrier required at the edge of the parking lot?  
A51. The bollards and chain are intended to deter visitors from parking. Contractor to specify galvanized chain hooks, chain, and attachment to be used for the approval of the Departmental Representative.
- Q52. We note specification 33 05 16 Maintenance Holes and Catch Basin Structures. We did not see any of these structures shown on the drawings. Should this spec be omitted?  
A52. Yes, this specification can be omitted.

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- Q53. Part 1.2 of spec section 33 46 16 states that sub-drain will be measured in meters. Should there be a pay item for sub-drain?
- A53. Sub-drain is included as part of the Lump Sum price. Specification 33 46 16 will be revised accordingly.
- Q54. Do notes 4 and 6 on drawing B-20 apply to the pivot pier only or both the pivot pier and the rest pier?
- A54. Notes 4 and 6 apply to both Pivot Pier and Rest Piers.
- Q55. Section 019135 – Swing Bridge Balancing
- 1.3.1 states that “Balance calculations shall be prepared prior to fabrication and construction based on approved shop drawing ...
    - a) Is the intent that the steel fabricator cannot proceed with fabrication until these calculations are done?
    - b) How long does the departments anticipate to complete these calculations?
- A55. a) No. There would be no reason to delay fabrication of the symmetrical structural components of the swing span once shop drawings are approved. West side floor beams will have holes for fastening the balance plates and drilling the holes should be in conjunction with the approval of preliminary balance report.
- b) The swing span is symmetrical except for the navigation lights, signs, castors and strike plate at the East end and load plates for the end lifts, strike plates, balance plates and centering pin latch at the West end. The balance plates are intended to compensate for the net span heaviness at the east end of the machinery components and to create a span heavy condition at the West end.
- Q56. Section 099719 – Painting Exterior Metal Surfaces
- a) Do the interior surfaces of the truss bottom chords, top chords and diagonals require the 3 coat paint system?
  - b) Are the intermediate and top coats to the exterior surfaces to be field applied?
- A56. a) Yes.
- b) No, they are to be shop coated.
- Q57. Will the department extend the completion date till spring 2020 to allow for the bridge installation in the fall/winter of 2019/2020?
- A57. Contractor must re-open the road to vehicular traffic and complete the installation of both fixed and swing bridges, and the commissioning of the swing bridge by July 31, 2019. Refer to earlier response to Question #38.
- Q58. Section 099719 – Painting Exterior Metal Surfaces
- a) Do the interior surfaces of the truss bottom chords, top chords and diagonals require the 3 coat paint system?
  - b) Are the intermediate and top coats to the exterior surfaces to be field applied?
- A58. a) Yes.
- b) No, they are to be shop coated.

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- Q59. Will the department extend the completion date till spring 2020 to allow for the bridge installation in the fall/winter of 2019/2020?
- A59. Contractor must re-open the road to vehicular traffic and complete the installation of both fixed and swing bridges, and the commissioning of the swing bridge by July 31, 2019. Refer to earlier response to Question #38.
- Q60. Does Unit price table item 1 Common Excavation other than for bridge structure, include excavation for the proposed parking lot, precast concrete block retaining wall and control building?
- A60. Unit price item 1 "Common Excavation other than for Bridge Structure" has been updated to include the proposed parking lot, precast concrete block retaining wall and Control House. Revised quantity is included in the attached Combined Price Form REV2.
- Q61. Part 1.1 of spec section Roadway Embankments includes some measurement categories that are not on the unit price table (Stripping, borrow, rock excavation, unclassified excavation, overhaul). Please clarify.
- A61. Stripping item with the quantity is now added to the attached Combined Price Form REV2. The others do not apply.
- Q62. Please confirm if unit price table item 5 granular A and item 6 Granular B Type II include granular for the proposed parking lot, precast concrete block retaining wall and control building.
- A62. Unit Price item for Granular A is revised to include the proposed parking lot, concrete block retaining wall and the Control House. Revised quantity is included in the attached Combined Price Form REV2
- Q63. Refer to note .4 in bullet.16 of page 12 of the specifications section 09 97 19 Painting Exterior Metal Surfaces : "Paint metal surfaces to be in contact with wood with either full paint coats specified or three shop coats of specified primer". Are we required to apply the 3 coats paint system on top flange top surfaces of the galvanized stringers and floorbeams that they are in contact with wood?
- A63. Yes
- Q64. Would it be acceptable to perform the trial assembly of the floor system and side trusses separately? (Reference CSA-S6 section does not define this in such details). If our proposal above is not accepted, please define a detail procedure of shop trial assembly.
- A64. A trial assembly of the entire truss in its entirety including the floor system is required. It is up to the Contractor to come up with a procedure. The trial assembly should include a survey of the truss and the floor system and comparing the actual with theoretical values. Corrective measure shall be provided by the Contractor for values exceeding the allowable tolerances.
- Q65. Please confirm that the top cover plates of Bottom Chords, bottom cover plates of Top Chords and both cover plates of Diagonals stopped at the vertical gusset plates. That will leave empty spaces at those locations.
- A65. Yes



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- Q66. Note 7 on drawing R-09 states that advance warning signs shall be placed one month before schedule closure. Can this period be reduced?
- A66. No, PCA requires the advanced road closure signs to be up one month in advance.
- Q67. Per part 3.2 of spec section of 02 41 13.14 the existing asphalt is to be pulverized and reclaimed. As per drawing R-01, existing asphalt is removed full depth. Please clarify.
- A67. Asphalt to be removed in full depth, and will not be pulverized and reclaimed.
- Q68. Note 1 on drawing B-47 states that "all timber used for new laminated deck and curb shall be pressure treated SPF grade select structural (SS)". Part 2.1 of spec section 06 15 00 states that wood decking, support blocks and curbs are Western Hemlock. Please clarify.
- A68. All timber used for new laminated deck and curb shall be pressure treated SPF grade select structural (SS) as specified on Drawing B-47.
- Q69. We note spec section 33 41 00 Storm Utility Drainage Piping. We did not see any storm drainage on the drawings. Should this spec section be omitted?
- A69. Yes, this Spec section can be omitted.
- Q70. Part 1.2 & 1.5 of spec section 31 11 00 states that clearing and grubbing will be included in the unit price for debris removal. There is no unit price for debris removal?
- A70. The debris removal is part of the lump sum, and Specification 31 11 00 will be revised.
- Q71. Part 1.12.1 of spec section 01 11 00 make reference to the removal and re-instatement of the existing water treatment system. What and where is this water treatment system? Please provide more information.
- A71. The existing Control House draws from the Canal as the water source. There is not a municipal service or a separate well.  
The water treatment system consists of a water line with foot valve, pump, and Hallett UV disinfection system in the Control House.  
The existing system is brand new, and shall be re-installed. The exact location of the re-installation will be determined by the Departmental Representative in conjunction with the new Control House layout.
- Q72. Part 1.6.3 of spec section 01 14 00 details Security Escorts. Please confirm this is required on this project? If required, please advise what areas are "non-public".
- A72. PCA will not require security escorts around the site; thus, Sect 01 14 00 part 1.6.3 does not apply.
- Q73. Part 1.1.1.12 of spec section 01 22 01 make reference to "flashing bolt anchors". Please provide more information.
- A73. Flashing bolt anchors do not apply.
- Q74. Part 1.1.1.24 of spec section 01 22 01 make reference to the removal and restoration of the existing water system. What and where is this water system? Please provide more information.
- A74. Please see response to Q#1.