

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

REQUEST FOR QUOTES

Mariposa Park Irrigation System Supply & Install

March 11, 2024

1. INTRODUCTION

1.1. PURPOSE

The Regional District is seeking quotes for the supply and install of an irrigation system at Mariposa Park in West Bench. This new system is replacing the old now abandoned irrigation system.

1.2. BACKGROUND

The RDOS provides services for six municipalities and nine electoral areas. It has a geographic area of approximately 10,400 km² and serves 82,000 residents. Mariposa Park, located in West Bench at the end of Vedette Dr, Penticton, BC, is a popular destination for locals and tourists alike.

2. SCOPE OF WORK AND SCHEDULE

2.1. SCOPE OF WORK

Irrigation

Supply and installation of sleeves, mainline, lateral lines, control zone valves, dripline, spray heads, and all related items necessary to provide a properly operating automatic irrigation system to distribute water in a way that adequately maintains the landscape while conserving and protecting water resources.

Irrigation specification attached as Appendix A.

Design and layout attached as Appendix B.

Restoration

Any areas disrupted during the installation process, including turf, must be restored to their original condition or improved upon. The restoration method must be approved and signed off by the Regional District to ensure compliance with environmental and aesthetic standards.

2.2. SCHEDULE

It is anticipated that the award of the project will occur after quotes are received (March).

The Regional District has established the following preliminary schedule for the project. Any advancement of the times indicated are desirable and would be welcomed by the Regional District.

Task	Completion Date
Award to Consultant	March
Construction	April - May

Please note, the Regional District will be constructing a pathway around the park in early April. It is anticipated that this work will be completed by mid-April. All irrigation work will need to occur after said construction, unless authorized.

3. INSTRUCTIONS TO PROPONENTS

3.1. RATES

The RDOS is requesting that proponents provide all-found unit rates for building the irrigation system, using the form included in Appendix C. Payment will be based on actual length of completed irrigation system.

3.2. EXPERIENCE

The proponent must show they have an understanding of the work, what the work involves and what is required to complete the project. The Proponent must demonstrate that they have completed three (3) projects of similar scope.

3.3. SAFETY PLAN

Prior to the start of the Work, the successful Proponent will be required to supply the Regional District with a site-specific Work Safety Plan.

3.4. ENVIRONMENTAL PLAN

Prior to the start of the Work, the successful Proponent will be required to provide an environmental management plan including a Spill Contingency Plan.

3.5. INSURANCE REQUIREMENTS

The successful Proponent will be required to provide proof of insurance using the RDOS's standard insurance form. The insurance form, with minimum insurance requirements is included in Appendix D.

3.6. QUOTE SUBMISSIONS

Quotes will be accepted in hardcopy and/or by email.

Hardcopy quote submissions and their envelopes should be clearly marked with the name and address of the Proponent, the RFQ title, and be addressed as follows:

Community Services Department
Regional District of Okanagan-Similkameen
101 Martin Street
Penticton, BC V2A 5J9

Quote submissions sent via email should include the RFQ title in the subject line, and sent to the Project Contact:

Kyle Gabelhei
kgabelhei@rdos.bc.ca

Quotes must be received on or before the Closing Time of:

TIME: 4:00PM PST

DATE: MARCH 27, 2024

The Proponent is responsible for ensuring its Quote is received at the address or email set out above by the Closing Time.

Proponents wishing to make revisions to their Quote after submission but prior to the Closing Time may do so by submitting the revisions by email or hard copy to the Project Contact listed above.

Quotes received after the Closing Time will not be considered.

3.7. INQUIRIES

Proponents must carefully examine the RFQ documents for any other factor that may affect the Work. No consideration will be given after submission of a Quote to any claim that there was any misunderstanding with respect to undertaking of the Work.

Proponents finding discrepancies or omissions in this RFQ, or having doubts as to the meaning or intent of any provisions therein, should immediately notify the Regional District project contact. If there are any changes, additions, or deletions to the RFQ, Proponents will be advised by means of an Addendum issued by the Regional District. All Addenda will become part of the RFQ. Receipt of

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Addenda should be acknowledged by the Proponent in their submission.

Verbal discussions between the Proponent and the RDOS (including Regional District directors, trustees, management, Parks and Recreation Commission members, or staff) shall not become a part of the RFQ or modify the RFQ unless confirmed by written Addendum.

All project inquiries must be submitted by:

TIME: 4:00PM PST

DATE: MARCH 22, 2024

3.8. PROPONENT BRIEFING MEETING:

A non-mandatory proponents briefing meeting is scheduled for Wednesday **March 19, 2023 at 1:00pm** onsite at Mariposa Park located at the end of Vedette Dr, Penticton, BC V2A 8Y3.

4. GENERAL TERMS OF QUOTE PROCESS

4.1. QUOTE PREPARATION COSTS

All expenses incurred by the Proponent in preparation and submission of a Quote are to be borne by the Proponent. The Regional District shall not be responsible for any costs involved in or associated with any meetings, discussion or negotiation following submission that may or may not result in acceptance of the Quote and award of a contract.

4.2. QUOTE CONFIDENTIALITY

All Quote submissions become the property of the Regional District and will not be returned. The Regional District reserves the right to make copies of Quotes for its internal review and for review by its financial, accounting, legal, and technical consultants.

Proponents should be aware that the Regional District is a “public body” as defined in and subject to the provisions of the *Freedom of Information and Protection of Privacy Act*. If the Proponent believes any of the information provided by them in their Quote is confidential, then they should identify it as such and provide a rationale as to why it should not be released under “Freedom of Information” legislation.

The rationale for keeping information confidential under this legislation includes:

- a) Trade secrets of the Proponent;
- b) Financial, commercial, scientific or technical information, the disclosure of which could reasonably be expected to result in material financial loss or gain or could reasonably be expected to prejudice the competitive position of the Proponent; or
- c) Information the disclosure of which could be reasonably expected to interfere with contractual or other negotiations of the Proponent.

4.3. CONFLICT OF INTEREST

Quotes must disclose any actual or potential conflicts of interest and existing business relationships the Proponent may have with the Regional District, its elected or appointed officials or employees. The Regional District may rely on such disclosure.

4.4. NO COLLUSION

Except as otherwise specified or as arising by reason of the provision of the contract documents, no person whether natural, or body corporate, other than the Proponent has or will have any interest or share in this Quote or in the proposed contract which may be completed in respect thereof. By submission of a Quote, the Proponent certifies that there is no collusion or arrangement between the Proponent and any other actual or prospective Proponents in connection with Quotes submitted for this project and the Proponent has no knowledge of the contents of other Quotes and has made no comparison of figures or agreement or arrangement, express or implied, with any other party in connection with the making of the Quote.

4.5. LITIGATION

Proponents who, either directly or indirectly through another corporation or entity, have been or are in litigation, or who have served notice with intent to proceed with court action against the Regional District in connection with any contract for works or services, may be considered ineligible Proponents. Receipt of Quotes from such Proponents may be disqualified from the evaluation process.

4.6. NO CONTRACT

This RFQ is not a tender and does not commit the Regional District in any way to select a preferred Proponent. By submitting a Quote and participating in the process as outlined in this RFQ, Proponents expressly agree that no contractual, tort or other legal obligation of any kind is formed under or imposed on the Regional District by this RFQ or submissions prior to the acceptance of a Quote and the execution of a formal written contract.

4.7. ACCEPTANCE OF QUOTE

The acceptance of a Quote will be made in writing from the Regional District, and will be sent to the successful Proponent at the address given in the submitted Quote. Following acceptance, the Proponent is expected to enter into a contract with the Regional District to perform the works or services set out in their Quote. Acceptance of a Quote may be subject to approval by the RDOS Board of Directors.

The agreement that the successful Proponent will be expected to execute with the Regional District will contain terms similar to those contained in the draft Contracting Services Agreement provided in Appendix E. The agreement attachments will include the entire Request for Quote, the Proponent's Quote submission and any mutually agreed upon modifications, changes or negotiated adjustments.

4.8. WORKERS COMPENSATION ACT

While undertaking the Work, the Contractor will be required to meet or exceed at all times the Provincial Occupational Health and Safety Regulations. The Contractor will be designated as the Prime Contractor for the purposes of health and safety of the Work site as set out in the WCB Act Section 118, and the Occupational Health and Safety Regulations Sections 3 and 20.

The Proponent, and any proposed sub-contractor(s), should provide a Workers Compensation Board Registration Number in the Quote and shall at the time of signing a contract, provide proof of having

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an account that is active and in good standing with Work Safe BC.

4.9. General

The Regional District reserves the right to reject any or all quotations, to waive any informality, to accept in whole or part such quotations as may be deemed in the best interest of the Regional District. The Regional District also reserves the right to cancel this RFQ at any time.

The Regional District of Okanagan-Similkameen reserves the right to negotiate on any details – including changes to specifications and price. If specifications require significant modification, all business providing quotations shall have the opportunity to adjust their quotes.

APPENDIX A - SPECIFICATIONS

(attached as next page)

1.0 **GENERAL**

1.1 Section 32 84 00 refers to those portions of the work that are unique to the complete installation of a fully automatic underground irrigation system, including all necessary preparatory work and all electrical, wiring, and plumbing connections, and maintenance work during the guarantee period. This section must be referenced and interpreted simultaneously with all sections pertinent to the works described herein.

1.2 **SCOPE OF WORK**

1.2.1 Supply and installation of sleeves, mainline, lateral lines, control zone valves, dripline, spray heads, and all related items necessary to provide a properly operating automatic irrigation system to distribute water in a way that adequately maintains the landscape while conserving and protecting water resources.

1.2.2 Maintenance of irrigation system.

1.3 **REFERENCE STANDARDS**

1.3.1 ASTM D2241 – Poly Vinyl Chloride (PVC) Plastic Pipe (SDR-PR)

1.3.2 ASTM D2564 – Solvent Cement for PVC Pipe and Fittings

1.3.3 CSA B137 – Thermoplastic Pressure Piping

1.4 **CODES AND REGULATION**

1.4.1 Perform all work of this section in strict accordance with all municipal, provincial, or federal guidelines, regulations, and codes. Requirements of these specifications not conflicting therewith, exceeding code requirements govern.

1.4.2 Work Safe BC regulations shall be followed.

1.5 **PERMITS AND FEES**

1.5.1 The Contractor shall be responsible for obtaining all necessary permits, approvals required to undertake and complete the work. Include costs for permits and approvals in tendered prices.

1.5.2 Provide Contract Administrator with signed and approved copies of all required permits, including the following:

1.5.2.1 BC Safety Authority Electrical Contractor Authorization and Declaration of Compliance Electrical Inspection Request Form

1.6 **CONTRACT DRAWINGS**

1.6.1 Drawings are diagrammatic and indicate the general arrangement of systems and work included in the contract. Do not scale drawings.

1.7 QUALITY ASSURANCE

- 1.7.1 The trade contractor performing this work shall be a “Certified Irrigation Technician Level 2” having met the certification standards established by *The Irrigation Industry Association of British Columbia*, and having experienced, trained, and insured personnel qualified for the scope of work. Provide documented proof within 5 days of receipt of Notice to Proceed.
- 1.7.2 Be certified as a Class C-R – Low Energy Field Safety Representative registered with British Columbia Safety Authority as an Electrical Contractor. Provide documented proof within 5 days of receipt of Notice to Proceed.
- 1.7.3 Install all irrigation components per manufacturer’s recommendations, instructions, and specifications. If unsure on how to install or use a specific product consult manufacturer to ensure proper installation and operation.
- 1.7.4 All equipment specified and installed from various manufacturers to be compatible with existing equipment and other products specified for the irrigation system.
- 1.7.5 All electrical components or products specified or used in construction of the proposed irrigation system must be CSA approved and installed in accordance with all local, provincial, and national electrical codes.
- 1.7.6 All materials to be new and without flaws.
- 1.7.7 The completed irrigation system is to efficiently and uniformly irrigate all areas and perform as required by these specifications.

1.8 SCHEDULING AND SHOP DRAWINGS

- 1.8.1 Ensure that sequencing of irrigation work is carried out in coordination with work of other trades and that sleeves, wire, pipes, valves and other equipment installed when appropriate.
- 1.8.2 Plan, schedule and execute work to ensure a supply of water is available for landscape establishment and maintenance purposes at the appropriate time, in adequate amounts, and operating at design pressures to ensure satisfactory irrigation of all landscaped areas.

1.9 SUBSTITUTION

- 1.9.1 Where materials are specified by brand name and model number, such specifications shall be deemed to facilitate a description of the materials and material quality and shall establish a standard for performance and quality against which proposed substitutes shall be evaluated.
- 1.9.2 Substitution requests shall not be considered unless submitted in writing with sufficient descriptive literature and product samples to permit product

comparison. Substitution requests must be made within 5 days of Notice to Proceed and must allow for 5 days to review.

- 1.9.3 Proposed substitutions shall be of equal or greater performance, value, and water efficiency than the original design. All proposed sprinkler substitutions must be accompanied with verifiable water efficiency performance data provided by the manufacturer.
- 1.9.4 Alternate materials shall match the specified materials in performance, flow, and pressure loss so as not to compromise the intent of the design.
- 1.9.5 The written approval by the Contract Administrator is required for the use of materials that are different from those shown on the Contract Drawings. Materials installed which have not been pre-approved by the Contract Administrator are subject to removal and replacement with approved materials at the Contractor's expense.
- 1.9.6 Substitution requests by Contractor shall have no impact on Milestone Dates.

1.10 SHOP DRAWINGS

- 1.10.1 Shop Drawings or irrigation system are required for all aspects of the irrigation system not included in the Drawings. This includes but is not limited to:
 - 1.10.1.1 Revisions to irrigation system design not previously addressed in Contract Documents, including revisions to irrigation system design which markedly alter the original design, as determined by the Contract Administrator
 - 1.10.1.2 Installation details for irrigation components not addressed in Contract Documents
 - 1.10.1.3 Details required by Contract Administrator for review proposed substitutes.
 - 1.10.1.4 Tasks identified in project specifications as requiring a Shop Drawing
- 1.10.2 Submit Shop Drawing to Contract Administrator for review, comment, and approval or rejection.

1.11 SUBMITTALS

- 1.11.1 The Contractor shall submit evidence of project personnel having certification as a Class C-R – Low Energy Field Safety Representative prior to commencing the work.
- 1.11.2 The contractor shall submit evidence of having the required certifications with Irrigation Industry Association of British Columbia or the Irrigation Association prior to commencing the work.
- 1.11.3 The Contractor shall submit shop drawings, product literature, and specifications for approval by the Contract Administrator prior to commencing the work.
- 1.11.4 Submit a complete set of Record Drawings to Contract Administrator prior to issuance of Certificate of Substantial Performance. Submit digital copy in .pdf and .dwg format, and hard copies in full size and reduced (125mm x 17”) size, including one (1) laminated 125mm x 17” copy in controller cabinet.
- 1.11.5 A suitably scaled as-built drawing shall be submitted, preferably in AutoCAD 2013 or newer format along with three (3) printed copies of the as-built.
- 1.11.6 Submit complete Operating Manual to Contract Administrator prior to issuance of Certificate of Substantial Performance. Provide one (1) hard copy in a binder and one (1) digital copy.
- 1.11.7 A written guarantee of the installed irrigation system shall be provided to the Owner covering workmanship and materials for a minimum of one (1) year from the date of substantial completion. The contractor shall warranty maintenance on the system for a minimum of one (1) year, including but not limited to spring start-up, adjustments and maintenance operations as required, and winterization.

1.12 RECORD DRAWINGS

- 1.12.1 Maintain accurate scaled records of installed irrigation system and its components on a marked up set of Contract Drawings daily during construction. Show all deviations from Contract Drawings. Make marked-up Contract Drawings available to Contract Administrator upon request.
- 1.12.2 Record exact location of all irrigation components installed, including changes of direction in pipe. Show all other deviations from the Contract Drawings.
- 1.12.3 The Record Drawings shall be submitted prior to issue of Substantial Performance. The Contractor shall maintain the as-built record drawing

throughout the maintenance and warranty period and issue a revised As-Built Irrigation Drawing at Final Acceptance if any changes are made. The as-built drawings shall be certified by the Contractor as being an accurate record of installation.

1.12.4 The Record Drawings must clearly and legibly show all components of the irrigation system as installed. The Record Drawings must include the following:

1.12.4.1 Identify each zone numerically complete with precipitation rate and GPMs per zone.

1.12.4.2 Scale and north arrow.

1.12.4.3 Legend of all equipment installed complete with make and model of product.

1.12.4.4 Date of installation.

1.12.4.5 Irrigation watering schedule.

1.13 OPERATING MANUAL

1.13.1 Prepare and deliver to the Owner one (1) hard copy in a binder and one (1) digital copy of the following:

1.13.1.1 Product literature on every material and component installed under this Contract.

1.13.1.2 Product warranty documentation for all controllers, meters, backflows, valves, filters, sensors, and related irrigation components. Date the warranties with the date of Substantial Performance.

1.13.1.3 Complete operating and maintenance instruction on all major equipment.

1.13.1.4 Winterization and spring start-up procedures.

1.13.1.5 One copy of the Electrical Permit.

1.13.1.6 Maintenance materials to be furnished: Two (2) sets of tools required for adjusting each type of sprinkler supplied on this project. One (1) quick coupler key and matching hose swivel for each type of quick coupler installed.

1.13.1.7 Written guarantee.

1.14 SITE CONDITIONS

- 1.14.1 Verify the existence and location of all underground utilities and services prior to commencement of the work.
- 1.14.2 Consult with the Contract Administrator to adjust the design, if necessary, to suit existing site conditions and grades prior commencement of the work.
- 1.14.3 Ensure sequencing of this work is carried out in coordination with the work of other trades. It is essential to coordinate the installation of sleeves under hard surfaces and irrigation piping through open tree soil trenches to ensure their installation is completed when the work area accessible.
- 1.14.4 Protect from damage existing landscape features, plant material, structures, irrigation work in progress, and the work of other trades.

1.15 NOTIFICATION OF CONSULTANT

- 1.15.1 Report to the Contract Administrator, in writing, any conditions or defects encountered on the site during or prior to construction upon which the work of this section depends and which may adversely affect its performance.
- 1.15.2 Notify the Contract Administrator and obtain approvals for inspection and testing of irrigation system as specified in this section. Provide the Contract Administrator and Owner minimum 3-days' notice prior to required inspections or meetings.

1.16 TESTS AND INSPECTIONS

- 1.16.1 System installation inspections shall be held on a regular basis and at milestone dates.
- 1.16.2 Provide equipment and personnel necessary for performance of inspections and tests.
- 1.16.3 In addition to coordinating the inspection schedule, the irrigation contractor shall, in the presence of the Contract Administrator conduct the following tests and inspections:
 - 1.16.3.1 Point of connection inspection.
 - 1.16.3.2 Inspection of mainline and sand bedding prior to burial.
 - 1.16.3.3 Pressure tests of mainline.

1.16.3.4 System coverage and operation test.

1.16.3.5 Dripline/emitter inspection and test.

1.16.4 Keep work uncovered and accessible until successful completion of inspection or test.

1.16.5 Conduct all inspections and tests in presence of Contract Administrator and request Contract Administrator issue a report to Contractor within three days of test result. Request attendance of Contract Administrator for proposed inspection or test at least three days prior to proposed inspection or test.

1.17 POINT OF CONNECTION INSPECTION

1.17.1 Conduct inspection of point of connection. Visually inspect all connections and components, wire splices, and supports.

1.18 MAINLINE INSPECTION

1.18.1 Visually inspect trench of mainline to confirm that:

1.18.1.1 Trench depth does not exceed the parameters laid out in this document.

1.18.1.2 Adequate sand bedding is installed below mainline pipe.

1.18.1.3 Connections on mainline pipe are to the standard laid out in this document.

1.18.1.4 Minimal separation between mainline and wire is achieved.

1.18.1.5 Caution tape is installed over wire as per Electrical Code.

1.19 MAINLINE PRESSURE TEST

1.19.1 Perform mainline pressure test to identify potential leaks and ensure mainline can operate at design pressure and maintain pressure.

1.19.2 Conduct mainline pressure test prior to backfilling of mainline.

1.19.3 Fill mainline with water and expel all air from pipe. Maintain water in pipe for three (3) hours.

1.19.4 Subject mainline to hydrostatic pressure of 120psi or twice the optimum design pressure of the mainline and not to exceed 160psi.

1.19.5 Stop supply of make-up water to mainline and record hydrostatic pressure in mainline.

- 1.19.6 Visually inspect mainline and fittings for leaks.
- 1.19.7 Record hydrostatic pressure in mainline 3 hours after supply of make-up water stopped.
- 1.19.8 Determine test result based on difference in recorded pressures at beginning and end of test as follows:
 - 1.19.8.1 Passed test: Equal to or less than 5% difference.
 - 1.19.8.2 Failed test: Great than 5% difference.
- 1.19.9 Identify source of leak and replace all defective material and workmanship as necessary to eliminate leak.
- 1.19.10 Repeat mainline pressure test and make replacements as necessary until a passed result is achieved.

1.20 SYSTEM COVERAGE AND OPERATION TEST

- 1.20.1 Conduct coverage and operation test after installation and operation of complete irrigation system and prior to issuance of Certificate of Substantial Performance:
 - 1.20.1.1 Head spacing does not exceed the distances shown on Contract Drawings
 - 1.20.1.2 Where applicable, irrigation piping should be installed to follow the contours of the land to minimize low head drainage situations.
 - 1.20.1.3 Heads, boxes, vaults and trenches are at specified elevation relevant to finished grade and not subject to settlement or lifting
- 1.20.2 Conduct operational tests to verify that:
 - 1.20.2.1 Controller can be programmed manually on site and remotely via Owner's central control system.
 - 1.20.2.2 Operating pressure is within design parameters.
 - 1.20.2.3 Each zone can be operated automatically and in succession via programmed controller.
 - 1.20.2.4 Performance provides head-to-head coverage.
 - 1.20.2.5 There is no overspray onto different control zones, hard surfaces, or other improvements.

1.21 DRIPLINE/EMITTER INSPECTION

- 1.21.1 Perform inspection and testing of dripline/emitter manifold and lines to identify potential leaks and confirm manifold, driplines and emitters can operate at design pressure. Conduct inspection and testing prior to backfilling of manifold, driplines or emitters.
- 1.21.2 Fill manifold and lines with water at operating pressure and maintain pressure for 1 hour. Visually inspect manifold, driplines and fittings for leaks. Confirm that emitters are functioning correctly. Identify sources of leaks and replace all defective materials and workmanship as necessary to eliminate leak.
- 1.21.3 Repeat inspection and testing and make replacements as necessary until no further leaks are identified.

2.0 PRODUCT

2.1 BLOW-OUT ASSEMBLY

- 2.1.1 Blowout assembly to be on a tee with a ball valve with plug and swing joint assembly.

2.2 GATE VALVE

- 2.2.1 Acceptable 19mm to 50mm gate valves include the following:

- 2.2.1.1 Red White #280

- 2.2.1.2 Toyo #206A

2.3 CONTROL WIRE

- 2.3.1 Control wire from irrigation controller to electric control valve to be minimum #14-gauge, direct burial, type TWU-40 wire. Control wire to be any colour other than white, blue, purple or red.
- 2.3.2 Common wire from irrigation controller to electric control valve to be minimum #14-gauge direct burial, type TWU-40 wire. Common wire to be white in colour.
- 2.3.3 Spare control wire to be blue in colour.
- 2.3.4 Spare common wire to be white in colour.
- 2.3.5 All connectors to be new, two-step, CSA approved for the watertight applications and assembled according to the manufacturer's recommendations.

2.4 ELECTRICAL PRODUCTS

- 2.4.1 All electrical products shall be CSA approved and bear the CSA label. Alternatively, where a product does not bear the required CSA label, it shall be approved in writing, by the authority having jurisdiction.
- 2.4.2 Wire conduit shall be Grey PVC DB2 non-metallic electric conduit as shown on drawings, minimum 50mm diameter.

2.5 POLYVINYL CHLORIDE (PVC) PIPE

- 2.5.1 New condition, extruded from virgin, high impact materials, solvent weldable with belled ends, continually and permanently marked showing manufacturer's name, material, size, and pressure rating.
- 2.5.2 Acceptable pipe is as shown on Contract Drawings.

2.6 LOW DENSITY POLYETHYLENE PIPE (LDPE)

- 2.6.1 New condition Series 100 Prime LDPE in new condition, extruded from virgin materials, continually and permanently marked showing manufacturers name, material, size, and pressure rating.

2.7 SLEEVING

- 2.7.1 Schedule 40 PVC for irrigation sleeve in bored hole or under hard surface
- 2.7.2 Irrigation sleeve diameter to be minimum 50mm or twice the diameter or main or lateral line running through it, whichever is greater.
- 2.7.3 Electrical conduit to be minimum 50mm diameter CSA approved electrical conduit.

2.8 VALVE BOXES

- 2.8.1 Irrigation valve boxes are to be as follows:
 - 2.8.1.1 NDS Pro Series 10" Round
 - 2.8.1.2 NDS Pro Series Plus 1419
 - 2.8.1.3 NDS Pro Series Plus 1320 Jumbo
 - 2.8.1.4 NDS Pro Series 1730
- 2.8.2 Valve box and matching T Cover Lid and extensions to be commercial grade and green in colour.
- 2.8.3 Valve box to have locking lid with stainless steel bolt locking device.

2.9 WIRE SPLICE BOXES

2.9.1 Wire splice box and matching lid and extensions to be commercial grade and grey in colour. Wire splice box to have locking lid with stainless steel bolt locking device.

2.10 ELECTRIC CONTROL VALVE

2.10.1 Acceptable valves are as shown on Contract Drawings.

2.10.2 Size electric control valve in accordance with valve manufacturer's recommendations for the design flow.

2.10.3 Include pressure regulating modules as required to provide the optimum operating pressure for each irrigation circuit and head/outlet specification.

2.11 DRIP ZONE KITS

2.11.1 Acceptable drip zone kits are as shown on Contract Drawings.

2.11.2 Drip zone kits shall include one (1) schedule 40 PVC ball valve and filter.

2.12 FILTERS

2.12.1 Acceptable filters are as shown on Contract Drawings.

2.12.2 Filter to be commercial grade filter appropriate for designed flow rates and with an external indicator showing if filter is clean or dirty.

2.13 SWING JOINT ASSEMBLY

2.13.1 Fabricated with three (3) threaded Schedule 40 PVC elbows and one threaded Schedule 80 PVC nipple.

2.13.2 Length of nipple shall be such a length to permit installed head or valve to be set as specified.

2.13.3 Diameter of nipple to match inlet for valve or head shown on Contract Drawings.

2.14 SPRINKLERS

2.14.1 Acceptable sprinklers are as shown on Contract Drawings.

2.15 LANDSCAPE DRIPLINE

2.15.1 Acceptable driplines are as shown on Contract Drawings.

2.15.2 Dripline shall be pressure compensating.

2.16 DRIP EMITTERS

2.16.1 Rain Bird Xeri bugs, sized as shown on drawing.

2.17 LATERAL FLUSH ASSEMBLY

2.17.1 Ball valve with street elbow on swing joint assembly complete with 10" round valve box.

2.18 FITTINGS

2.18.1 New condition Schedule 40 PVC conforming to ASTM D-2466-97 standards and of the same material as pipe. Fittings to be designed for solvent welding to PVC pipe except where valves and risers require threaded joints.

2.18.2 Nipples to be threaded Schedule 80 PVC and manufactured from same material as pipe.

2.18.3 At the point where the supply source changes from metal to PVC pipe, the metal end of the pipe must be an FIPT (female) adapter and the PVC fitting a MIPT (male) adapter.

2.18.4 Flange couplers may be used upon approval of Contract Administrator.

2.18.5 Fittings for LDPE pipe to be PVC insert fittings complete with stainless steel gear clamps.

2.18.6 Fittings for dripline and drip emitters to compatible with specified dripline or emitter and as recommended by manufacturer.

2.18.7 All pipe and fittings installed in irrigation vault to be Schedule 80 per Contract Drawings.

2.19 PIPE SOLVENT AND PRIMER

2.19.1 PVC pipe solvent and primer combinations recommended by manufacturer and suitable for use with specified materials and application.

2.19.2 Use solvent and primer as directed by manufacturer. Use only solvent and primer that meets local codes.

2.19.3 The use of wet and dry solvent and primer is prohibited.

2.20 BACKFILL MATERIAL

- 2.20.1 Native excavated material shall be clean excavated soil, free from organic matter, stones larger than 25mm, building debris, and other foreign substances.
- 2.20.2 Sand: pit run sand.
- 2.20.3 25mm drain rock.

3.0 EXECUTION

3.1 EXISTING CONDITIONS

- 3.1.1 Report existing conditions at variance with Contract Drawings to Contract Administrator.
- 3.1.2 Verify locations of underground utilities prior to commencing excavation and conduct work so to prevent interruption and damage to services and utilities. Make good all damages to same at Contractor's cost.
- 3.1.3 Verify location of all services in building walls before boring or drilling holes. Make good all damages to same at Contractor's cost.
- 3.1.4 Protect existing conditions and completed work from disturbance during Work. Make good all damages to same at Contractor's cost.
- 3.1.5 Adjustments to installation of irrigation system to avoid existing conditions, completed work and utilities will be permitted subject to prior approval by Contract Administrator.

3.2 LAYOUT

- 3.2.1 Locations of irrigation components shown on plans are schematic in nature. Coordinate actual location of irrigation components with landscaping, building and physical features of site. Confirm proposed changes to location of irrigation components in writing with Contract Administrator prior to installation. Changes that markedly alter the irrigation design in the opinion of the Contract Administrator require submission of Shop Drawings and updated Design Report to the Contract Administrator for their permission to proceed. Record all approved revisions on a marked up set of Contract Drawings.
- 3.2.2 Layout and stake irrigation system per Contract Drawings to confirm:
 - 3.2.2.1 Layout is within project boundary and property lines.
 - 3.2.2.2 Site grades are consistent with Contract Drawings.

- 3.2.2.3 Damage to root system of existing trees is minimized.
- 3.2.2.4 Installation of irrigation components to be minimum of 1 meter outside the dripline of existing trees.
- 3.2.2.5 Minimum horizontal and vertical clearances from electrical and other utilities are met.
- 3.2.2.6 Location of all sleeving, mainlines, pedestals, vaults, valve boxes, splice boxes

3.3 EXCAVATION

- 3.3.1 Excavate to ensure depth and bedding requirements are met.
- 3.3.2 All excavation is unclassified. Report any material or site condition that cannot be excavated by normal mechanical or normal means or that may affect excavation to required depth to Contract Administrator prior to excavation.
- 3.3.3 Identify and recycle all suitable materials recovered during construction.
- 3.3.4 Remove and dispose of buried debris exposed during excavation, including decommissioned irrigation materials and underground utilities, which may impede the proper installation and operation of irrigation system.

3.4 BLOW-OUT ASSEMBLY

- 3.4.1 Install blow-out assembly immediately in vault at point of connection. In the case where the point of connection is inside a building, install blow-out connection immediately downstream of isolation valve where mainline pipe exits building.

3.5 GATE VALVE

- 3.5.1 Install in valve box per manufacturer's recommendations and Contract Drawings.
- 3.5.2 Where points of connections are located within a building, install isolation valve immediately downstream of where pipe exits building, installed in rectangular valve box.

3.6 CONTROL WIRE

- 3.6.1 Install control wire per code by qualified personnel employed by the company holding the electrical permit.

- 3.6.2 Bury control wire per applicable code and in no case above the bottom side of parallel pipe.
- 3.6.3 Bed control wire in sand with minimum 50mm sand around control wire. Where control wire is in same trench as pipe, place wire beside pipe with horizontal clearance of a minimum of 50mm and in accordance with BC Electrical Code depth.
- 3.6.4 Bundle multiple lengths of wire in same trench or conduit with ties at maximum 3.0m intervals.
- 3.6.5 Install wire with 600mm length of coiled slack at all changes of direction, in wire splice boxes and at connections to controlled components.
- 3.6.6 Identify all control wires entering controller cabinet with permanent label or tag indicating zone number of valve operated by each control wire.
- 3.6.7 Maintain consistent wire colour through wire splice box.
- 3.6.8 Minimize wire splices. Where wire splices are unavoidable make splice only in wire splice box using specified connector.
- 3.6.9 Identify spliced wire with permanent label or tag indicating zone number of spliced control valve.
- 3.6.10 Where specified on Contract Drawings, install extra control wire to wire splice box. Provide 600mm length of coiled slack of each wire end in wire splice box. Identify extra control wire as 'extra' wire with permanent label or tag.

3.7 WIRE SPLICE BOX

- 3.7.1 Locate wire splice box in planting bed where possible and locate for ease of access, maintenance, and testing.
- 3.7.2 Install wire splice box per Drawings and arrange in a neat and orderly manner.
- 3.7.3 Do not install valves in wire splice box.
- 3.7.4 Wire splice box to be a rectangular type valve box with grey lid.

3.8 GROUNDING AND BONDING

- 3.8.1 Install ground assembly in location shown on Contract Drawings or the revised location approved by the Contract Administrator.

- 3.8.2 Use the rod, plate and wire configuration as recommended by the manufacturer of irrigation controller and per BC Electrical Code.

3.9 PIPE AND FITTINGS

- 3.9.1 Verify that all pipe, fittings, primer, and cements are compatible for proper installation.
- 3.9.2 Do not locate open side of trench any closer than 150mm from hard surface or feature.
- 3.9.3 Keep inside of pipe and outside of pipe ends clean at all times. Cap or plug open pipe ends to keep out dirt and debris.
- 3.9.4 Cut PVC pipe ends at right angle to pipe length. Clean burrs prior to joining pipe and fittings.
- 3.9.5 Immediately prior to joining pipe and fittings wipe contact surfaces clean with primer on clean rag.
- 3.9.6 Apply light coat pipe of cement on inside of fitting and heavier coat on outside of pipe. Insert pipe into fitting and give a quarter turn to seat cement. Wipe excess cement from outside of pipe.
- 3.9.7 Wrap male threads of threaded fittings with minimum 3 wraps of Teflon tape immediately prior to making connection.
- 3.9.8 Flush all irrigation pipe fully to remove accumulation of dirt and debris prior to installation of heads, dripline, emitters, and filters. Flush all laterals in a manner approved by the manufacturer to prevent clogging of screens, nozzles, and emitters.
- 3.9.9 Set mainlines and laterals on sand and backfill with sand to clearance limit shown on Drawings.
- 3.9.10 Install lateral piping at a depth of 300mm to 450mm.
- 3.9.11 Install mainline piping at a depth of 450mm to 600mm.

3.10 SLEEVING

- 3.10.1 Install irrigation sleeves in locations shown on Contract Drawings.
- 3.10.2 Install irrigation sleeve to depth as follows:
 - 3.10.2.1 Mainline Piping
 - 3.10.2.1.1 600mm below walkways

- 3.10.2.1.2 600mm below driveways, roads, and plazas
- 3.10.2.2 Lateral Piping
 - 3.10.2.2.1 200mm below walkways
 - 3.10.2.2.2 450mm below driveways, roads, and plazas
- 3.10.3 Install sleeves to extend 1.0m past edge of hard surface into soft landscape surface.
- 3.10.4 Cap sleeve with removable plug or cover. Maintain plug in sleeve until such time as pipe or wire is ready to be installed.
- 3.10.5 Bed sleeve as follows:
 - 3.10.5.1 Under walkways, 100mm of sand placed all around
 - 3.10.5.2 Under driveways, roads, and plazas, compacted base aggregate all around per materials shown on Drawings.
- 3.10.6 Bury a piece of detectable metal on top of each end of sleeve to enable location of sleeve end by metal detector after burial.
- 3.10.7 Stake location of each end of sleeve prior to backfilling such that top of stake is 150mm above finished grade and maintain. Label exposed end of stake with the word "sleeve".
- 3.10.8 Record location of sleeve ends and label size of sleeve on record drawings.
- 3.10.9 Remove sleeve stake after submission of Record Drawings.

3.11 VALVE BOXES

- 3.11.1 Install manual and electric control valves, control zone kits and quick coupler valves in valve boxes or concrete vault as shown on Contract Drawings.
- 3.11.2 Except as shown otherwise on Contract Drawings or approved otherwise by Contract Administrator, locate valve boxes in planting beds and locate for ease of access, maintenance, and testing.
- 3.11.3 Install valve box flush with finish grade and arrange in a neat and orderly manner.
- 3.11.4 Valve box must have 150mm depth of 25mm drain rock. Wrap valve box in landscape fabric to prevent ingress of material.

- 3.11.5 Provide minimum 50mm clearance between valve box and all components within.
- 3.11.6 Valve box must not contact irrigation pipe. Use matching valve box extensions as required.
- 3.11.7 Up to three (3) 25mm control valves or two (2) 38mm control valves may be contained within a single valve box provided there is 10mm of clearance between valves. Install valves 50mm and larger in their own valve box.

3.12 WIRE SPLICE BOXES

- 3.12.1 Locate wire splice box in planting bed where possible and locate for ease of access, maintenance, and testing.
- 3.12.2 Install wire splice box per Contract Drawings and arrange in a neat and orderly manner.
- 3.12.3 Do not install valves in wire splice box.

3.13 ELECTRIC CONTROL VALVE

- 3.13.1 Install in valve box per manufacturer's recommendations and Contract Drawings.
- 3.13.2 Identify electric control valve with permanent label or tag indicating zone number of valve.
- 3.13.3 Ensure 50mm gap between bottom of valve and top of drain rock.
- 3.13.4 Install gate valve or ball valve upstream of each valve as shown on Contract Drawings.

3.14 DRIP ZONE KITS

- 3.14.1 Install in valve box per manufacturer's recommendations and Contract Drawings.
- 3.14.2 Identify electric control valve with permanent label or tag indicating zone number of valve.
- 3.14.3 Ensure 50mm gap between bottom of valve and top of drain rock.

3.15 FILTERS

- 3.15.1 Install filter in same valve box as valve, per manufacturer's recommendations and Contract Drawings.

3.16 SWING JOINT ASSEMBLY

- 3.16.1 Fabricate assembly of triple swing joint using three threaded Schedule 40 PVC elbows and one threaded Schedule 80 PVC nipple.
- 3.16.2 Install swing joint assembly to rotate counterclockwise when depressed.
- 3.16.3 Tape threads of PVC fittings with Teflon tape and make hard hand tight.

3.17 SPRINKLERS

- 3.17.1 Install per manufacturer's recommendations and in location shown on Contract Drawings.
- 3.17.2 Location of heads as illustrated on Contract Drawings is intended as a guide to layout of heads. Establish actual head locations in the field to ensure complete and adequate coverage of all areas to be irrigated and no overspray onto adjacent surfaces and improvements. Do not exceed head spacing shown on Contract Drawings.
- 3.17.3 Where obstructions or site improvements hinder or block head-to-head coverage advise Contract Administrator and determine best method to maximize coverage.
- 3.17.4 For flat surfaces install head plumb to finished grade. For sloped surfaces install head perpendicular to half the grade of the slope.
- 3.17.5 Mount pop-up heads on triple swing joint assembly. Connect bottom inlet of sprinkler to swing joint assembly, not side inlet. Adjust swing joint assembly to set head flush with finish grade. Tape threads of PVC fittings with Teflon tape and make hand tight.
- 3.17.6 Adjust arc, radius of coverage and flow at each sprinkler to achieve even head-to-head coverage of area to be irrigated, with minimum over spray onto other surfaces.
- 3.17.7 When installing fixed arc nozzles that do not fit the intended extents of the designed irrigated area, install variable arc nozzles from the same manufacturer.

3.18 LANDSCAPE DRIPLINE

- 3.18.1 Do not install driplines or emitters of different flow lengths or spacing on the same zone.
- 3.18.2 Place dripline on prepared surface. Surface to be free of sharp rocks or other objects that may damage dripline. Surface to be at grade necessary

for dripline to be at specified depth after placement of remainder of topsoil or growing medium.

3.18.3 Placement of dripline by trenching using hand or mechanical methods permitted only if specified as such on Contract Drawings or upon written approval of Contract Administrator.

3.18.4 Thoroughly flush each zone after installation and before beginning regular operation of drip zone.

3.18.5 Stake dripline in beds every 450mm on centre.

3.18.6 Make all zone connections and test manifold, lines and fittings for leaks prior to placement of topsoil or growing medium over manifold, headers, dripline and emitters.

3.19 DRIP EMITTERS

3.19.1 Install per manufacturer's recommendations and as shown on Contract Drawings.

3.20 LATERAL FLUSH ASSEMBLY

3.20.1 Install flush assembly on swing joint in valve box.

3.21 CLEAN UP AND RESTORATION

3.21.1 Remove all waste and debris resulting from irrigation installation from site.

3.21.2 Restore all disturbed surfaces to original condition and repair all trench settlement.

3.22 INSTRUCTIONS TO OWNER

3.22.1 Instruct Owner in complete operating and maintenance procedures for irrigation system, including start-up, winterization, and programming.

3.22.2 Review Record Drawings and Operating Manual with Owner on site.

3.23 MAINTENANCE - GENERAL

3.23.1 Inspect, operate, maintain, and adjust irrigation system through the Landscape Maintenance Period until issuance of Certificate of Acceptance to ensure it operates as intended, including but not limited to:

3.23.1.1 Adjust irrigation schedule to ensure survival, health and growth of plant material and respond to soil conditions, climate, and seasons of site.

- 3.23.1.2 Clean sprinkler heads and adjust coverage to eliminate over watering, under watering and overspray onto adjacent surfaces.
- 3.23.1.3 Monitor and clean filtration equipment.
- 3.23.1.4 Restore grass areas, planting beds, hard surfaces and improvements affected by trench settlement and erosion.
- 3.23.1.5 Respond to requests from Contract Administrator for program adjustments, servicing, adjustments, and repairs.

3.24 MAINTENANCE – WINTERIZATION

- 3.24.1 During Maintenance Period be responsible for winterization of irrigation system at end of growing season and prior to onset of air temperatures below 0° Celsius. Be liable for any damage resulting from late or improper winterization.
- 3.24.2 Request presence of Owner at winterization at least 5 days prior to proposed winterization date.
- 3.24.3 Winterization includes but is not limited to:
 - 3.24.3.1 Saturation of soil with water to a depth of 150mm to provide deep watering of all lawn areas, planting beds and tree pits.
 - 3.24.3.2 Deactivation of controller
 - 3.24.3.3 Drainage and blow-out assembly of entire irrigation system.

3.25 MAINTENANCE – SPRING START-UP

- 3.25.1 During Maintenance Period be responsible for spring start-up of irrigation system at beginning of growing season or within 10 days of request for start-up from Owner. Be liable for any damage resulting from late or improper start-up.
- 3.25.2 Ensure Owner is present for spring start-up. Request presence of Owner at least 5 days prior to proposed start-up.
- 3.25.3 Spring start-up includes but is not limited to:
 - 3.25.3.1 Checking and testing for leaks
 - 3.25.3.2 Cycling irrigation control program through all zones to ensure proper function and performance.

- 3.25.3.3 Checking and adjusting heads and emitters to achieve even coverage with minimum overspray onto other surfaces.
- 3.25.3.4 Saturation of soil with water to a depth of 150mm to provide deep watering of all lawn areas, planting beds and tree pits

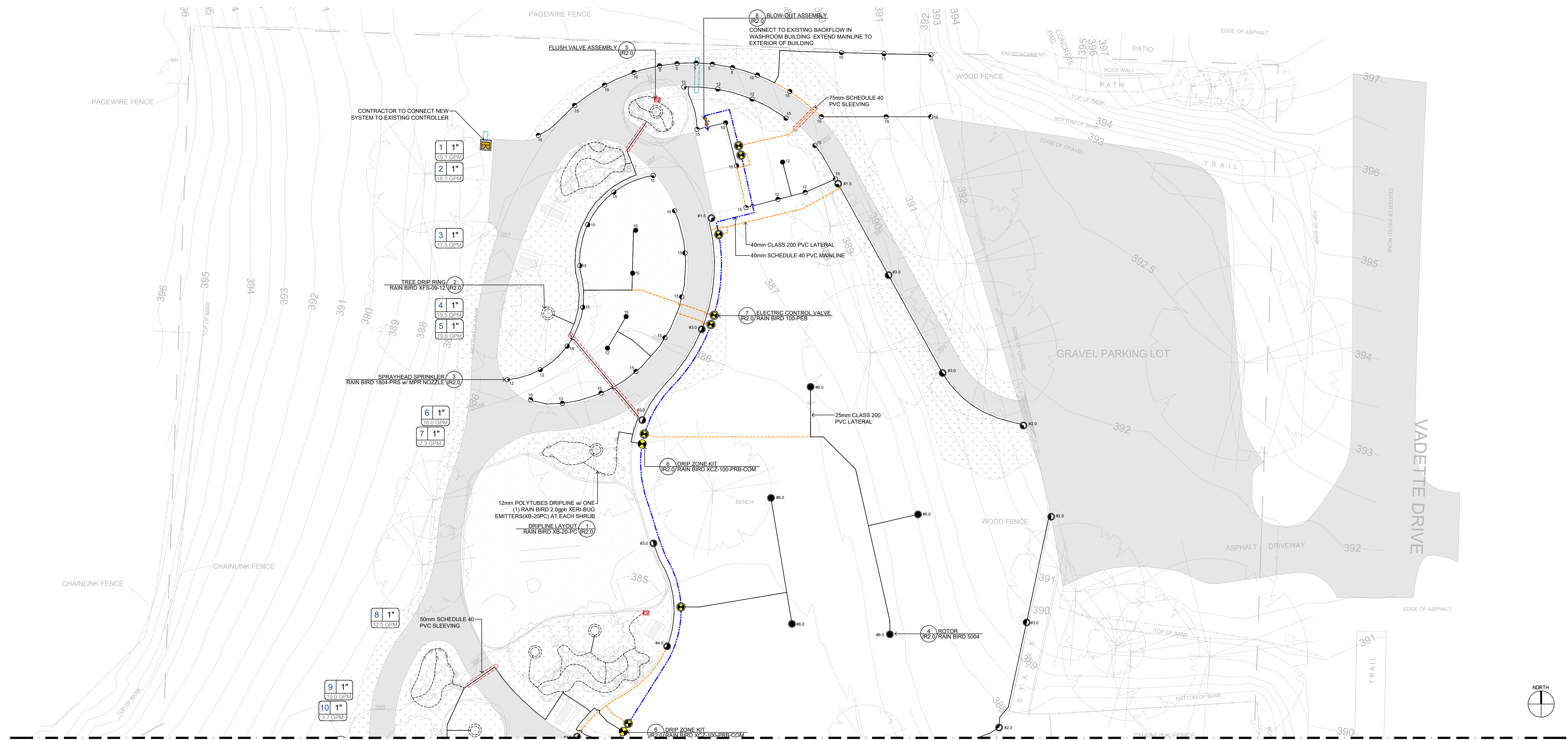
3.26 GUARANTEE

- 3.26.1 Submit written guarantee, in approved form, stating that all work showing defects in materials, workmanship or operation will be repaired or replaced at no cost to Owner for a period of one year from date of Substantial Performance.
- 3.26.2 Guarantee includes the supply of labour, materials and equipment necessary for the repair and replacement of damaged or defective materials and workmanship. Guarantee also includes spring start-up, winterization, maintenance, necessary testing, program corrections or adjustments and restoration of settled trenches.
- 3.26.3 Guarantee will not apply to materials or workmanship damaged after Substantial Performance by causes beyond the Contractor's control, such as vandalism or abuse.

END OF SECTION

APPENDIX B – DESIGN AND LAYOUT

(attached as next page)



MATCHLINE SEE DWG IR1.1

IRRIGATION LEGEND

25mm CLASS 200 PVC LATERAL	780m		7
40mm CLASS 200 PVC LATERAL	235m		50
40mm SCHEDULE 40 PVC MAINLINE	162m		55
50mm SCHEDULE 40 PVC SLEEVING	23m		4
75mm SCHEDULE 40 PVC SLEEVING	30m		2
50mm CSA APPROVED DB2 ELECTRICAL CONDUIT	22m		16
12mm POLYTUBES DRIPLINE w/ ONE (1) RAIN BIRD 2.0gph XERI-BUG EMITTERS(XB-20PC) AT EACH SHRUB	192m		1

IRRIGATION NOTES

1. ALL IRRIGATION PRODUCTS, MATERIALS AND CONSTRUCTION SHALL CONFORM TO SECTION 32.84.00 IRRIGATION SYSTEM SPECIFICATIONS, UNLESS OTHERWISE NOTED ON PLANS.
2. CONTRACTOR SHALL SLEEVE ALL IRRIGATION AND WIRES UNDER ALL WALKWAYS, DRIVEWAYS, ROCK WALLS AND RETAINING WALLS. WATER LINES AND WIRE SHALL NOT SHARE SAME SLEEVE. SLEEVE SIZING SHALL BE TWICE THE DIAMETER OF IRRIGATION PIPE.
3. THE CONTRACTOR SHALL VERIFY THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES AND SERVICES PRIOR TO CONSTRUCTION.
4. IRRIGATION PLANS ARE SCHEMATIC ONLY. ALL PLANT MATERIAL, LIGHT STANDARDS, HARD SURFACES OR AMENITIES TAKE PRECEDENCE OVER LOCATION OF IRRIGATION COMPONENTS.
5. CONTRACTOR TO CONFIRM 75psi @ 21gpm AVAILABLE AT SOURCE PRIOR TO INSTALLATION.
6. ALL ELECTRIC CONDUIT SHALL BE CSA NON-METALLIC DB2 PVC, GREY IN COLOUR.
7. INSTALL VALVES WITH MINIMUM 50mm CLEARANCE BETWEEN VALVE AND VALVE BOX, AND BETWEEN VALVE AND DRAIN RACK.
8. WIRE SPLICES SHALL BE MADE w/ DRYCONN D8RY-800 OR 3M D8RYV CONNECTORS & LOCATED AT ELECTRIC CONTROL ZONE VALVES.
9. INSTALL WIRE WITH MINIMUM 600mm LENGTH OF COILED SLACK AT ALL CHANGES OF DIRECTION. IN WIRE SPLICE BOXES AND AT CONNECTIONS TO CONTROLLED COMPONENTS.

IRRIGATION SCHEDULE

10. SPRAYHEADS AND ROTORS SHALL BE ADJUSTED TO MINIMIZE OVERSPRAY ONTO ADJACENT SURFACES.
11. IF FIXED ARC NOZZLE DOES NOT FIT THE PRESCRIBED AREA, INSTALL RAIN BIRD HE-VAN AND ADJUST AS NECESSARY.
12. CONTRACTOR SHALL MONITOR CONTROLLER SETTINGS AND ADJUST REGULARLY TO ACCOUNT FOR SEASONAL WEATHER CHANGES TO ENSURE THAT PLANT WATER REQUIREMENTS ARE MET AND NOT EXCEEDED.
13. IDENTIFY ELECTRIC CONTROL VALVE WITH PERMANENT LABEL OR TAG INDICATING ZONE NUMBER OF VALVE.
14. CONTRACTOR SHALL CONFIRM LOCATION OF POINT OF CONNECTION AND CONTROLLER PRIOR TO INSTALLATION.
15. CONTRACTOR SHALL ENSURE EACH DRIPLINE ZONE IS INSPECTED w/ COVERAGE TEST PRIOR TO BURIAL BY CONTRACT ADMINISTRATOR, IRRIGATION CONSULTANT, OR APPROVED PERSONNEL.
16. CONTRACTOR IS RESPONSIBLE TO CHECK AND CONFIRM ALL DIMENSIONS AND ELEVATIONS AND QUANTITIES ON DRAWING.

IRRIGATION SCHEDULE

BASED ON PEAK DEMAND FOR MONTH OF JULY (ET=0.23"/DAY)										
ZONE	LANDSCAPE	SPRINKLER MAKE & MODEL	VALVE SIZE	DESIGN FLOW (GPM)	DESIGN PRESSURE (PSI)	PRECIPITATION RATE (IN/HR)	SOIL TYPE	INTERVAL DAYS	CYCLES PER RUN TIME	RUN TIME (MIN)
1	TURF	RAIN BIRD 1804-PRS	25mm	19.1	30	0.97	CLAY LOAM	2	1	29
2	TURF	RAIN BIRD 1804-PRS	25mm	18.3	30	0.97	CLAY LOAM	2	1	29
3	TURF	RAIN BIRD 5004-PC	25mm	17.5	45	0.46	CLAY LOAM	2	1	61
4	TURF	RAIN BIRD 1804-PRS	25mm	19.5	30	0.97	CLAY LOAM	2	1	29
5	TURF	RAIN BIRD 1804-PRS	25mm	19.6	30	0.97	CLAY LOAM	2	1	29
6	TURF	RAIN BIRD 5004-FC	25mm	18.0	45	0.36	CLAY LOAM	2	1	77
7	SHRUB	RAIN BIRD XB-20-PC	25mm	2.3	40	0.36	CLAY LOAM	2	1	48
8	TURF	RAIN BIRD 5004-FC	25mm	18.0	45	0.36	CLAY LOAM	2	1	77
9	TURF	RAIN BIRD 5004-FC	25mm	19.0	45	0.46	CLAY LOAM	2	1	61
10	SHRUB	RAIN BIRD XB-20-PC	25mm	3.7	40	0.36	CLAY LOAM	2	1	49
11	TURF	RAIN BIRD 5004-PC	25mm	19.5	45	0.46	CLAY LOAM	2	1	61
12	TURF	RAIN BIRD 5004-PC	25mm	12.0	45	0.46	CLAY LOAM	2	1	61
13	TURF	RAIN BIRD 5004-FC	25mm	18.0	45	0.36	CLAY LOAM	2	1	77
14	TURF	RAIN BIRD 5004-FC	25mm	18.0	45	0.36	CLAY LOAM	2	1	77
15	TURF	RAIN BIRD 5004-FC	25mm	18.0	45	0.36	CLAY LOAM	2	1	90
16	TURF	RAIN BIRD 5004-PC	25mm	16.8	45	0.46	CLAY LOAM	2	1	61
17	TURF	RAIN BIRD 5004-PC	25mm	19.5	45	0.46	CLAY LOAM	2	1	61
18	TURF	RAIN BIRD 5004-FC	25mm	18.0	45	0.36	CLAY LOAM	2	1	77
TOTAL RUN TIME PER CYCLE									1055	

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1	NOV 10/22	ISSUED FOR 90% REVIEW			
2	FEB 22/23	ISSUED FOR 100% REVIEW			

PROJECT: MARIPOSA PARK, PENTICTON BC
 CLIENT: REGIONAL DISTRICT OF OKANAGAN SIMILIKAMEEN
 CONSULTANT: WATER PLAN IT IRRIGATION LTD.

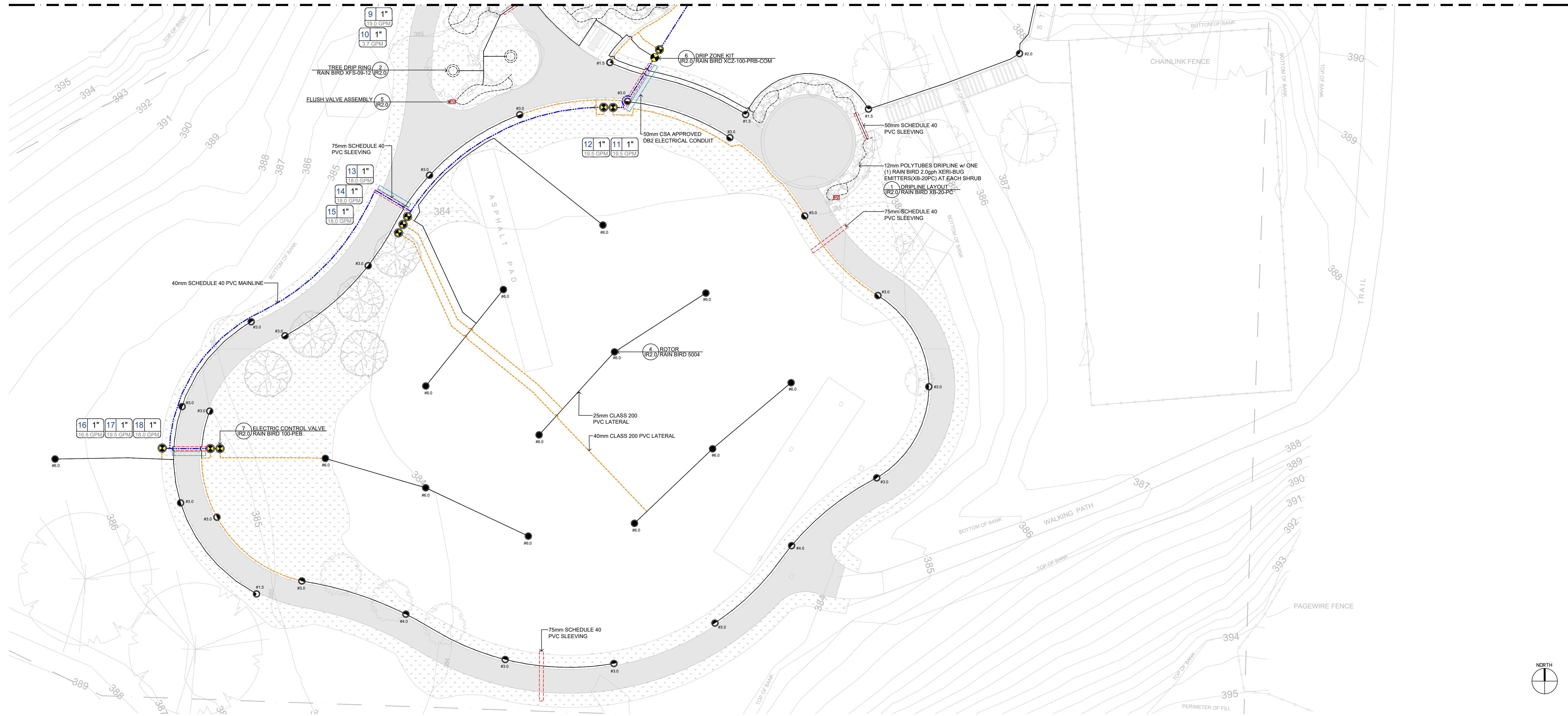
DESIGN BY: RH
 DRAWN BY: JG
 CHECKED BY: RH
 PROJECT NO: 22-079
 SCALE: 1:200

SHEET TITLE: IRRIGATION PLAN
 SHEET NO: IR 1.0

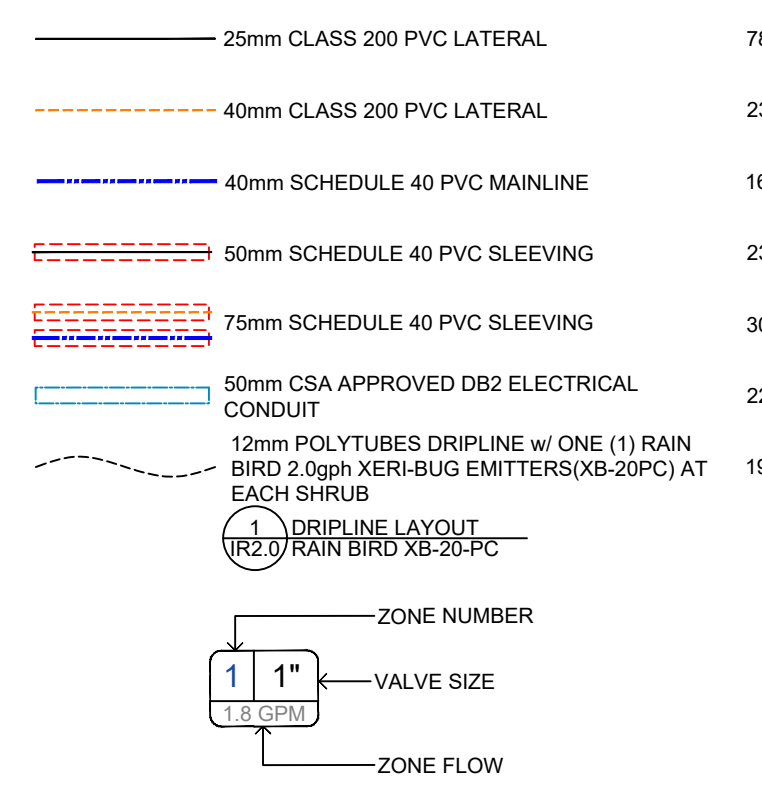
WATERPLAN IT IRRIGATION LTD.
 IRRIGATION DESIGN | CONSULTING | PLANNING | EFFICIENCY
 Kelowna BC | 250.878.8178 | www.waterplanit.ca



MATCHLINE SEE DWG IR1.0



IRRIGATION LEGEND



IRRIGATION NOTES

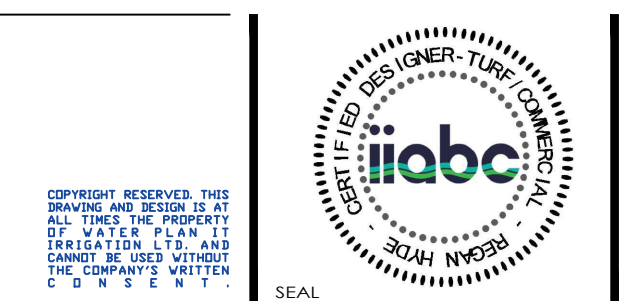
- ALL IRRIGATION PRODUCTS, MATERIALS AND CONSTRUCTION SHALL CONFORM TO SECTION 32 84 00 IRRIGATION SYSTEM SPECIFICATIONS, UNLESS OTHERWISE NOTED ON PLANS.
- CONTRACTOR SHALL SLEEVE ALL IRRIGATION AND WIRES UNDER ALL WALKWAYS, DRIVEWAYS, ROCK WALLS AND RETAINING WALLS. WATER LINES AND WIRE SHALL NOT SHARE SAME SLEEVE. SLEEVE SIZING SHALL BE TWICE THE DIAMETER OF IRRIGATION PIPE.
- THE CONTRACTOR SHALL VERIFY THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES AND SERVICES PRIOR TO INSTALLATION.
- IRRIGATION PLANS ARE SCHEMATIC ONLY. ALL PLANT MATERIAL, LIGHT STANDARDS, HARD SURFACES OR AMENITIES TAKE PRECEDENCE OVER LOCATION OF IRRIGATION COMPONENTS.
- CONTRACTOR TO CONFIRM 75psi @ 21gpm AVAILABLE AT SOURCE PRIOR TO INSTALLATION.
- ALL ELECTRIC CONDUIT SHALL BE CSA NON-METALLIC DB2 PVC, GREY IN COLOUR.
- INSTALL VALVES WITH MINIMUM 50mm CLEARANCE BETWEEN VALVE AND VALVE BOX, AND BETWEEN VALVE AND DRAIN ROCK.
- WIRE SPLICES SHALL BE MADE w/ DRYCONN DBRY-600 OR 3M DBRY CONNECTORS & LOCATED AT ELECTRIC CONTROL ZONE VALVES.
- INSTALL WIRE WITH MINIMUM 600mm LENGTH OF COILED SLACK AT ALL CHANGES OF DIRECTION. IN WIRE SPLICE BOXES AND AT CONNECTIONS TO CONTROLLED COMPONENTS.
- SPRAYHEADS AND ROTORS SHALL BE ADJUSTED TO MINIMIZE OVERSPRAY ONTO ADJACENT SURFACES.
- IF FIXED ARC NOZZLE DOES NOT FIT THE PRESCRIBED AREA, INSTALL RAIN BIRD HE-VAN AND ADJUST AS NECESSARY.
- CONTRACTOR SHALL MONITOR CONTROLLER SETTINGS AND ADJUST REGULARLY TO ACCOUNT FOR SEASONAL WEATHER CHANGES TO ENSURE THAT PLANT WATER REQUIREMENTS ARE MET AND NOT EXCEEDED.
- IDENTIFY ELECTRIC CONTROL VALVE WITH PERMANENT LABEL OR TAG INDICATING ZONE NUMBER OF VALVE.
- CONTRACTOR SHALL CONFIRM LOCATION OF POINT OF CONNECTION AND CONTROLLER PRIOR TO INSTALLATION.
- ALL WIRES SHALL BE 14 AWG DIRECT BURIAL WIRE. COMMON WIRE SHALL BE WHITE IN COLOUR. MASTER VALVE CONTROL WIRE SHALL BE RED IN COLOUR. CONTROL WIRES TO BE ORANGE, GREEN, YELLOW, BROWN OR BLACK IN COLOUR. SPARE WIRES TO BE BLUE IN COLOUR. COLOURS SHALL STAY CONSISTENT AND NOT CHANGE AT SPLICE.
- CONTRACTOR SHALL ENSURE EACH DRIPLINE ZONE IS INSPECTED w/ COVERAGE TEST PRIOR TO BURIAL BY CONTRACT ADMINISTRATOR, IRRIGATION CONSULTANT, OR APPROVED PERSONNEL.
- CONTRACTOR IS RESPONSIBLE TO CHECK AND CONFIRM ALL DIMENSIONS AND ELEVATIONS AND QUANTITIES ON DRAWING.

IRRIGATION SCHEDULE

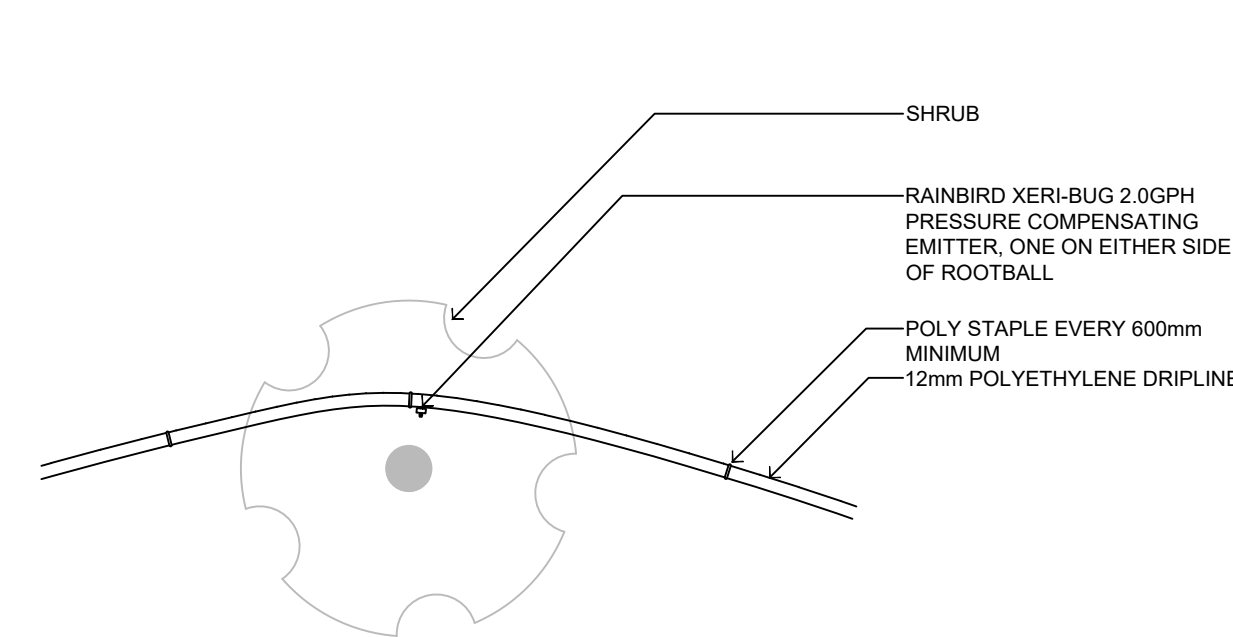
BASED ON PEAK DEMAND FOR MONTH OF JULY (ET=0.23"/DAY)										
ZONE	LANDSCAPE	SPRINKLER MAKE & MODEL	VALVE SIZE	DESIGN FLOW (GPM)	DESIGN PRESSURE (PSI)	PRECIPITATION RATE (IN/HR)	SOIL TYPE	INTERVAL DAYS	CYCLES PER RUN TIME	RUN TIME (MIN)
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16	TURF	RAIN BIRD 5004-PC	25mm	16.8	45	0.46	CLAY LOAM	2	1	61
17	TURF	RAIN BIRD 5004-PC	25mm	19.5	45	0.46	CLAY LOAM	2	1	61
18	TURF	RAIN BIRD 5004-FC	25mm	18.0	45	0.36	CLAY LOAM	2	1	77
TOTAL RUN TIME PER CYCLE:									1055	

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1	NOV 19/22	ISSUED FOR 90% REVIEW			
2	FEB 22/23	ISSUED FOR 100% REVIEW			

PROJECT: MARIPOSA PARK, PENTICTON BC
 CLIENT: REGIONAL DISTRICT OF OKANAGAN SIMILIKAMEEN
 CONSULTANT: WATER PLAN IT IRRIGATION LTD.

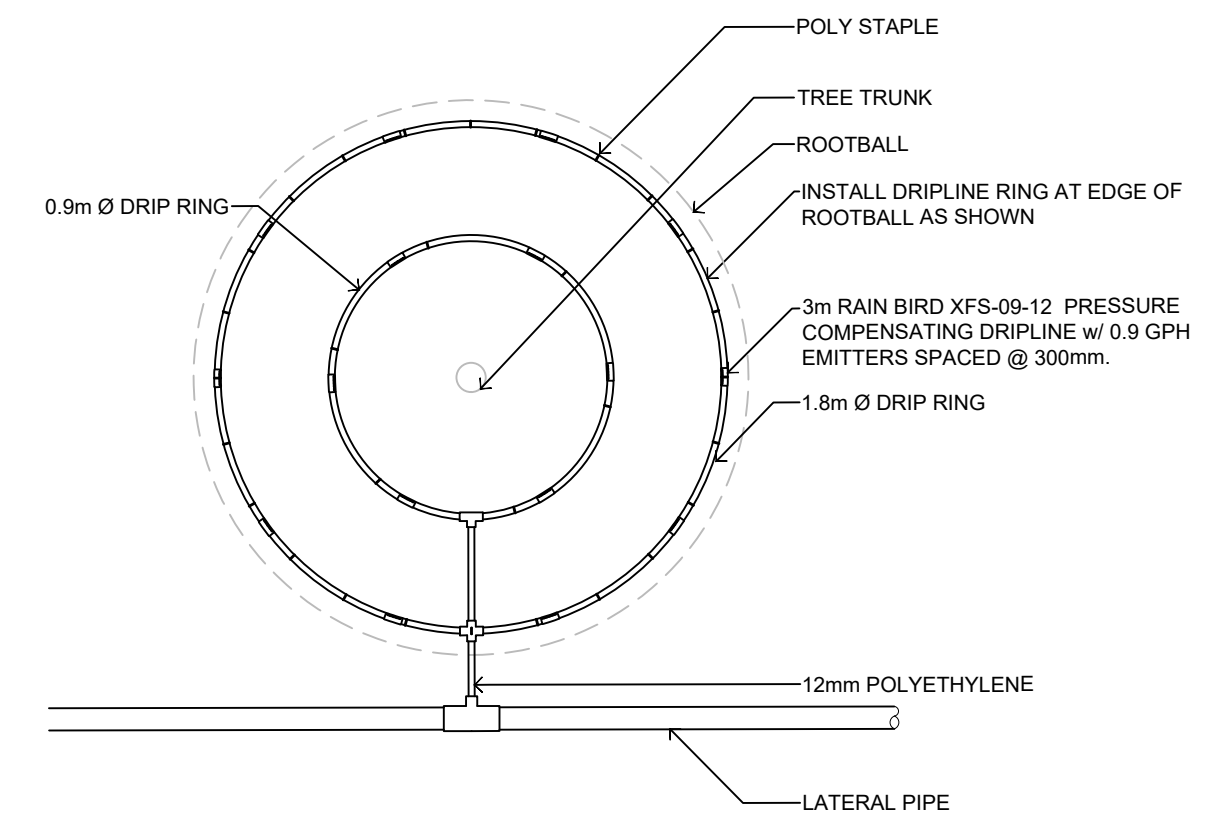


DESIGN BY: RH	SHEET TITLE: IRRIGATION PLAN
DRAWN BY: JG	
CHECKED BY: RH	
PROJECT NO: 22-079	SHEET NO: IR 1.1
SCALE: 1:200	

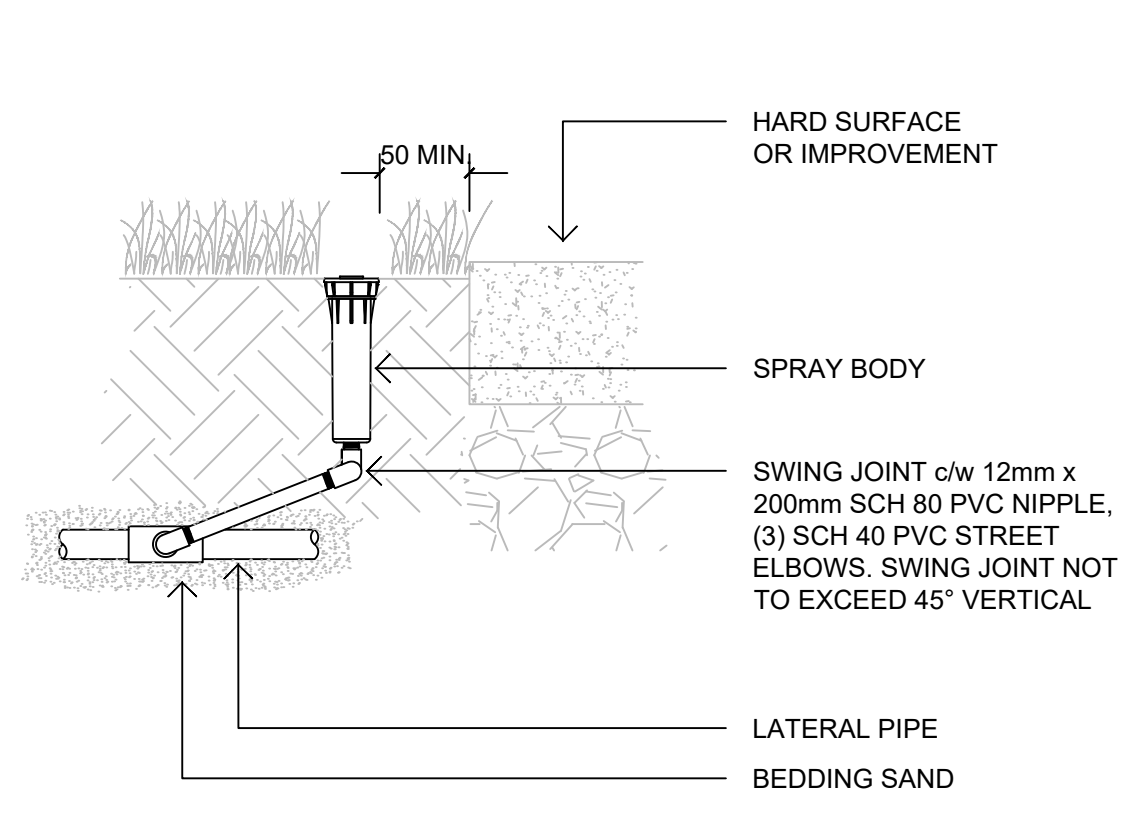


NOTES:
 -CONTRACTOR SHALL ENSURE THAT DRIPLINE IS INSTALLED 50mm BELOW SURFACE, AND NOT VISIBLE
 -ALL DRIPLINE AND EMITTERS TO BE INSTALLED ON HIGH SIDE OF PLANT
 -CONTRACTOR SHALL INSTALL DRIPLINE IN STRAIGHT ROWS WHEREVER POSSIBLE TO MINIMIZE SHARP BENDS IN PIPE

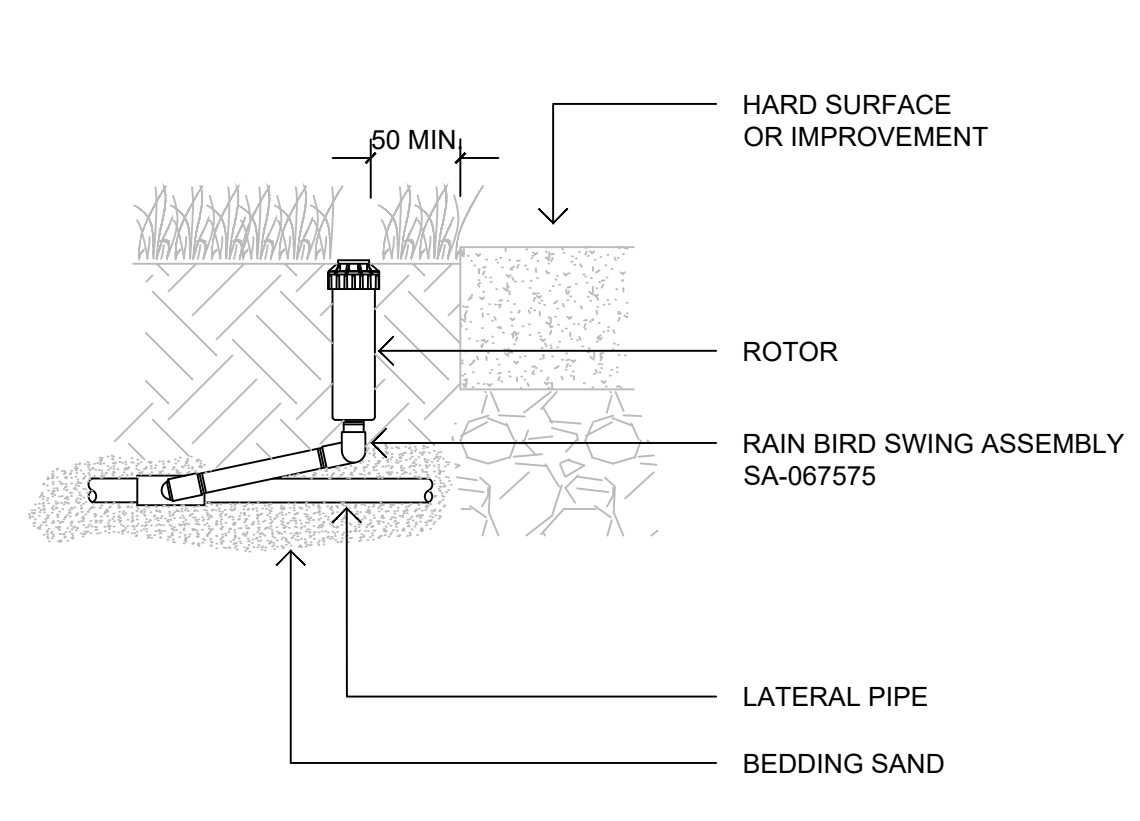
1 DRIPLINE LAYOUT
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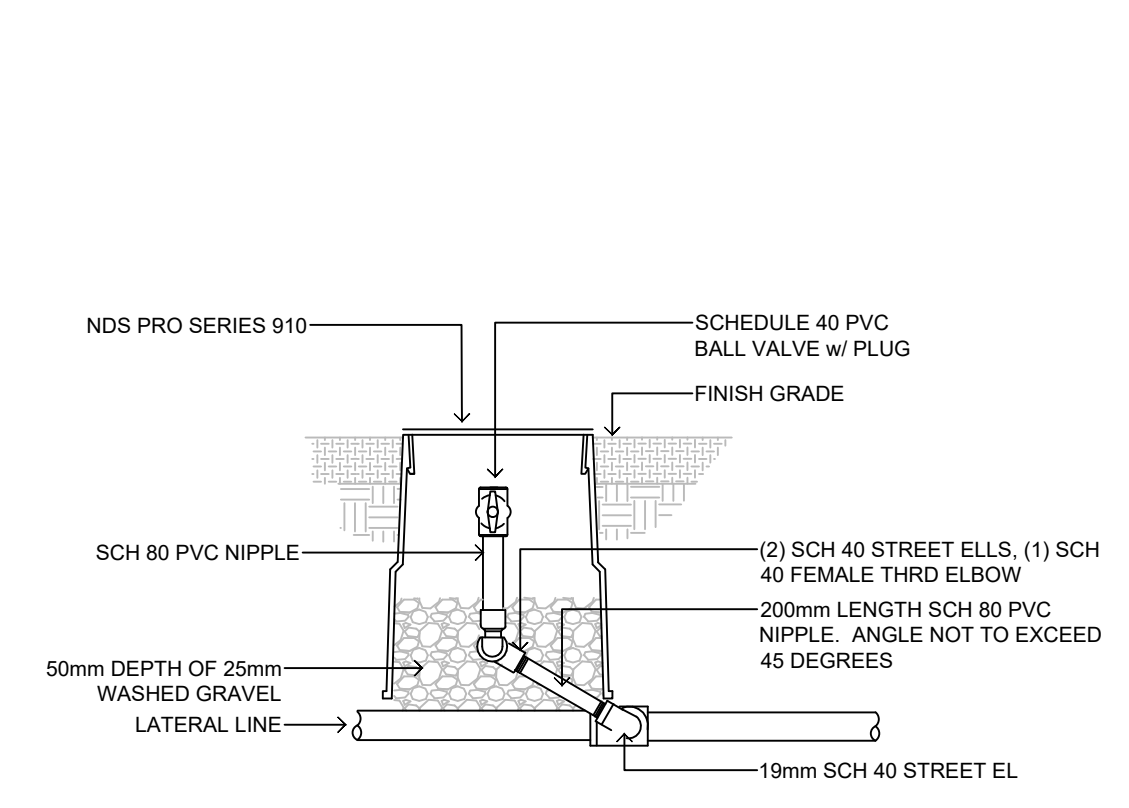
2 TREE DRIP RING
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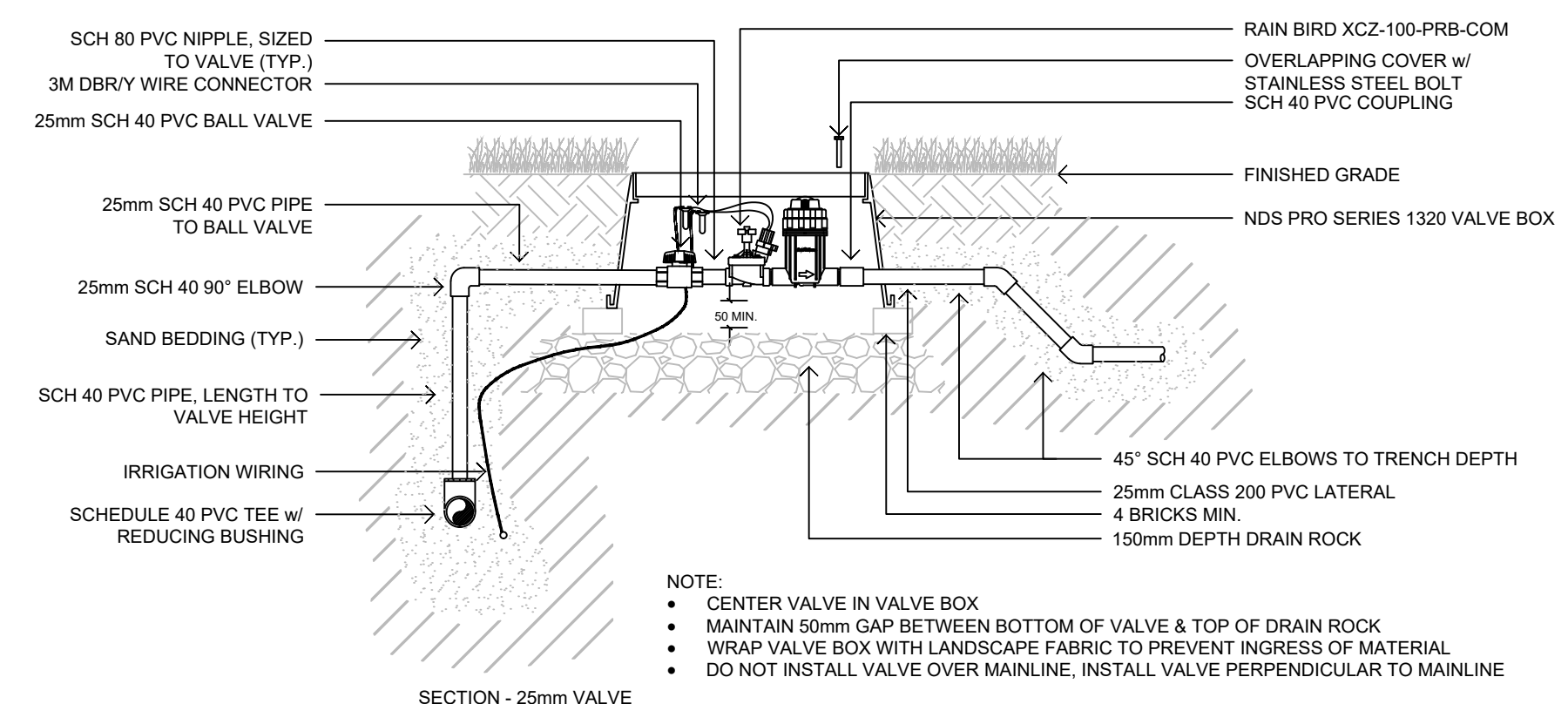
3 SPRAYHEAD SPRINKLER
 IR2.0 N.T.S.



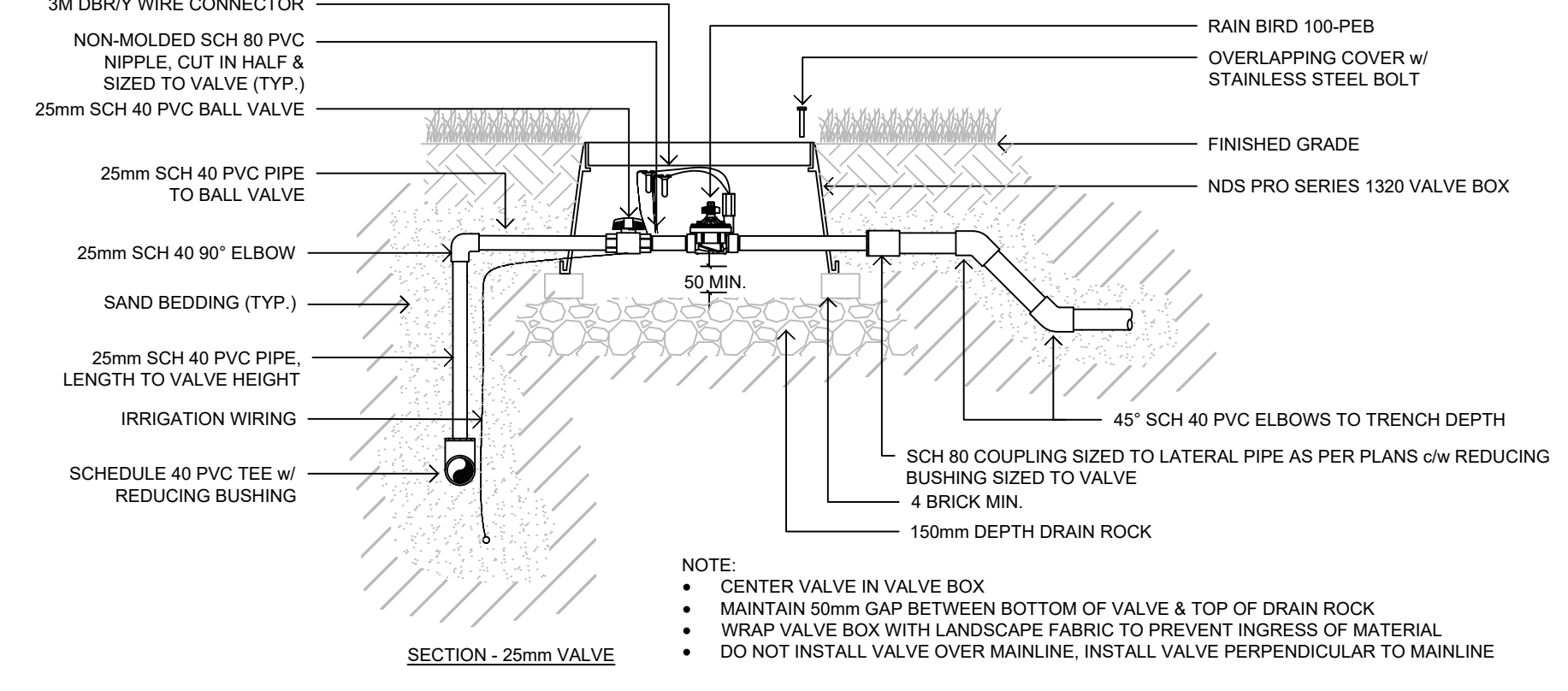
4 ROTOR
 IR2.0 N.T.S.



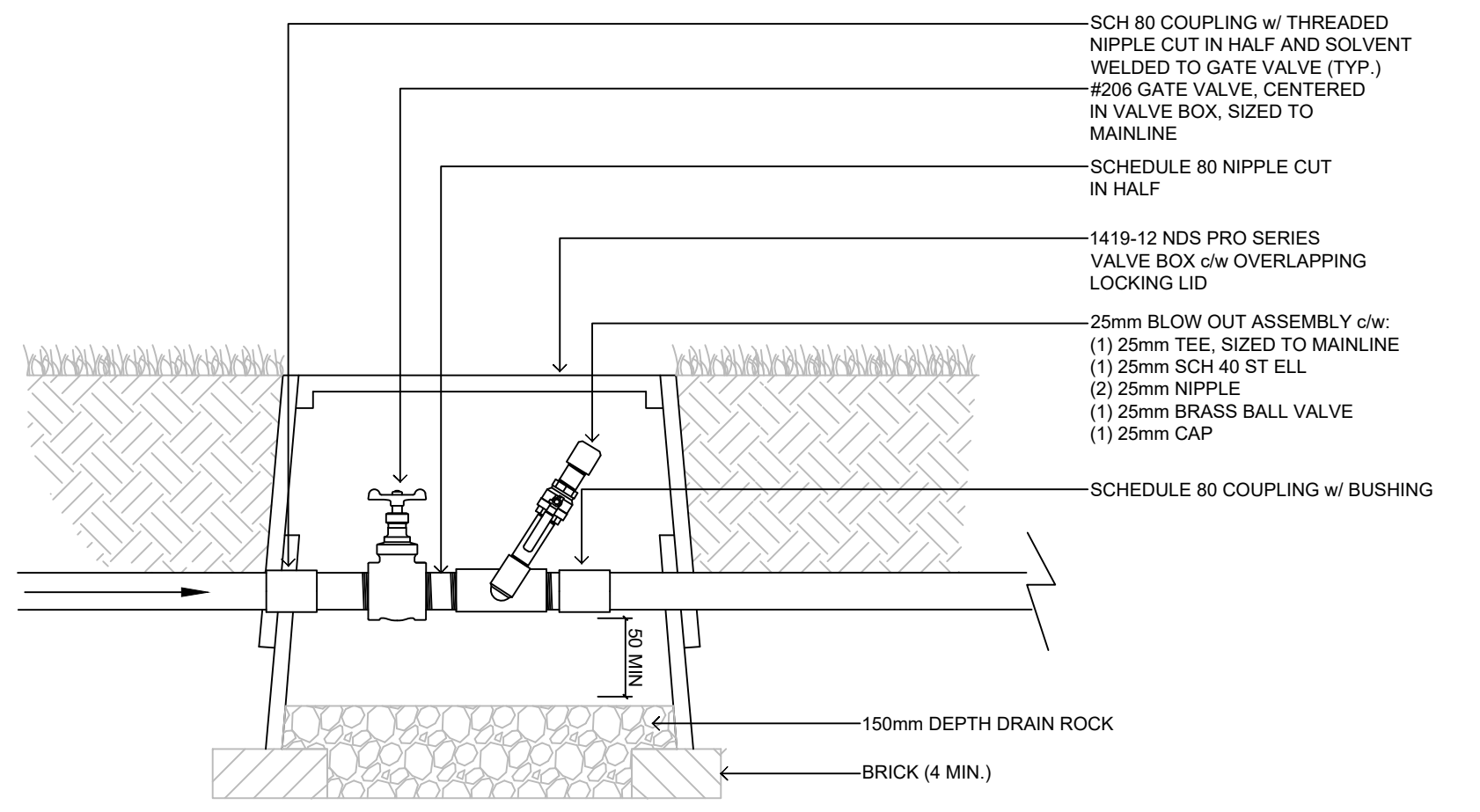
5 FLUSH VALVE
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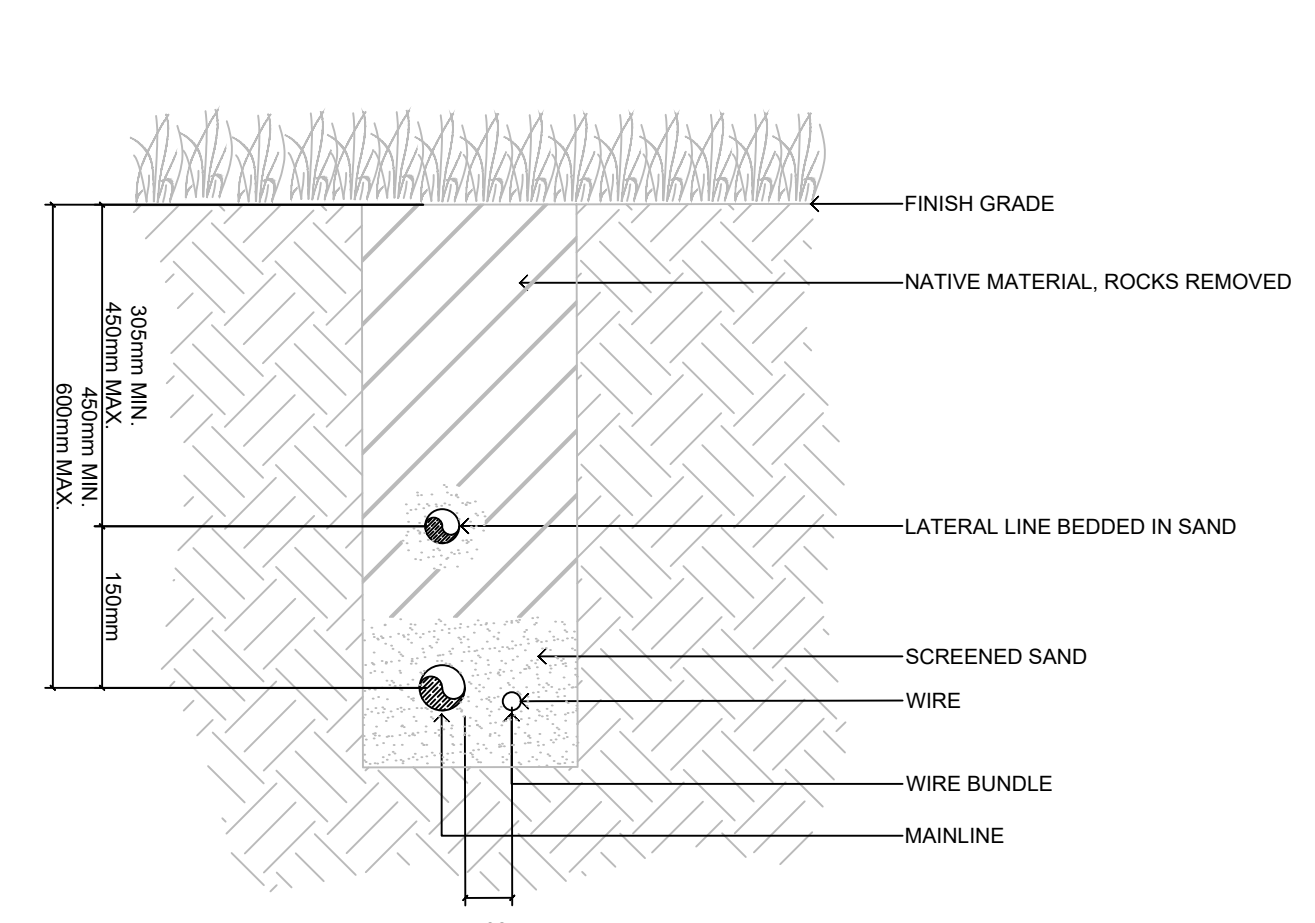
6 DRIP ZONE KIT
 IR2.0 1:15



7 ELECTRIC CONTROL VALVE
 IR2.0 1:15



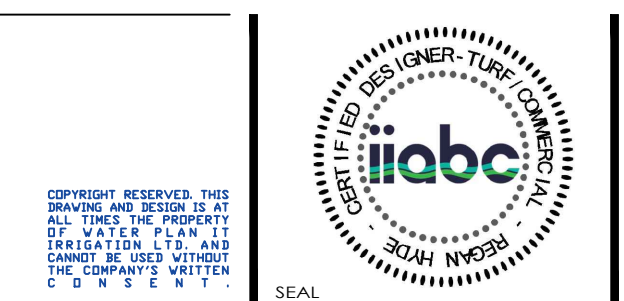
8 BLOW-OUT ASSEMBLY
 IR2.0 N.T.S.



10 TRENCH SECTION
 IR2.0 N.T.S.

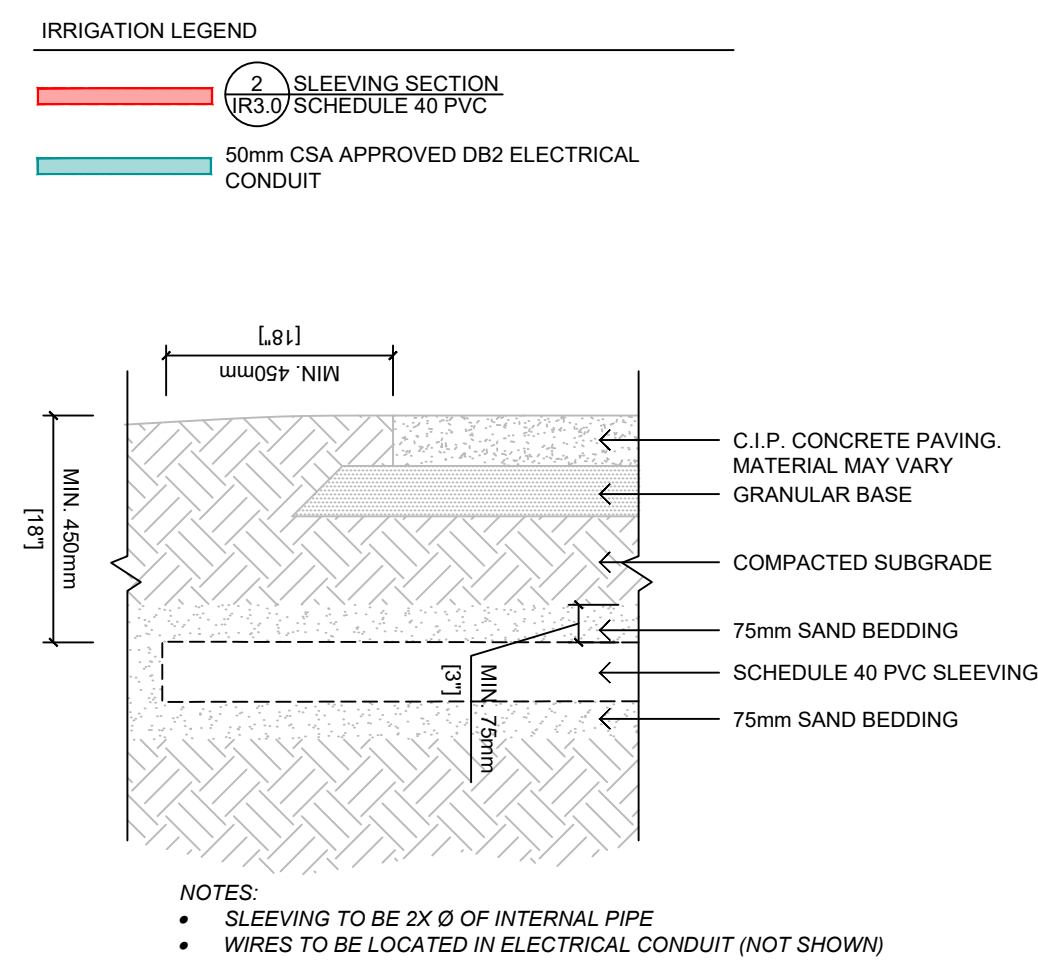
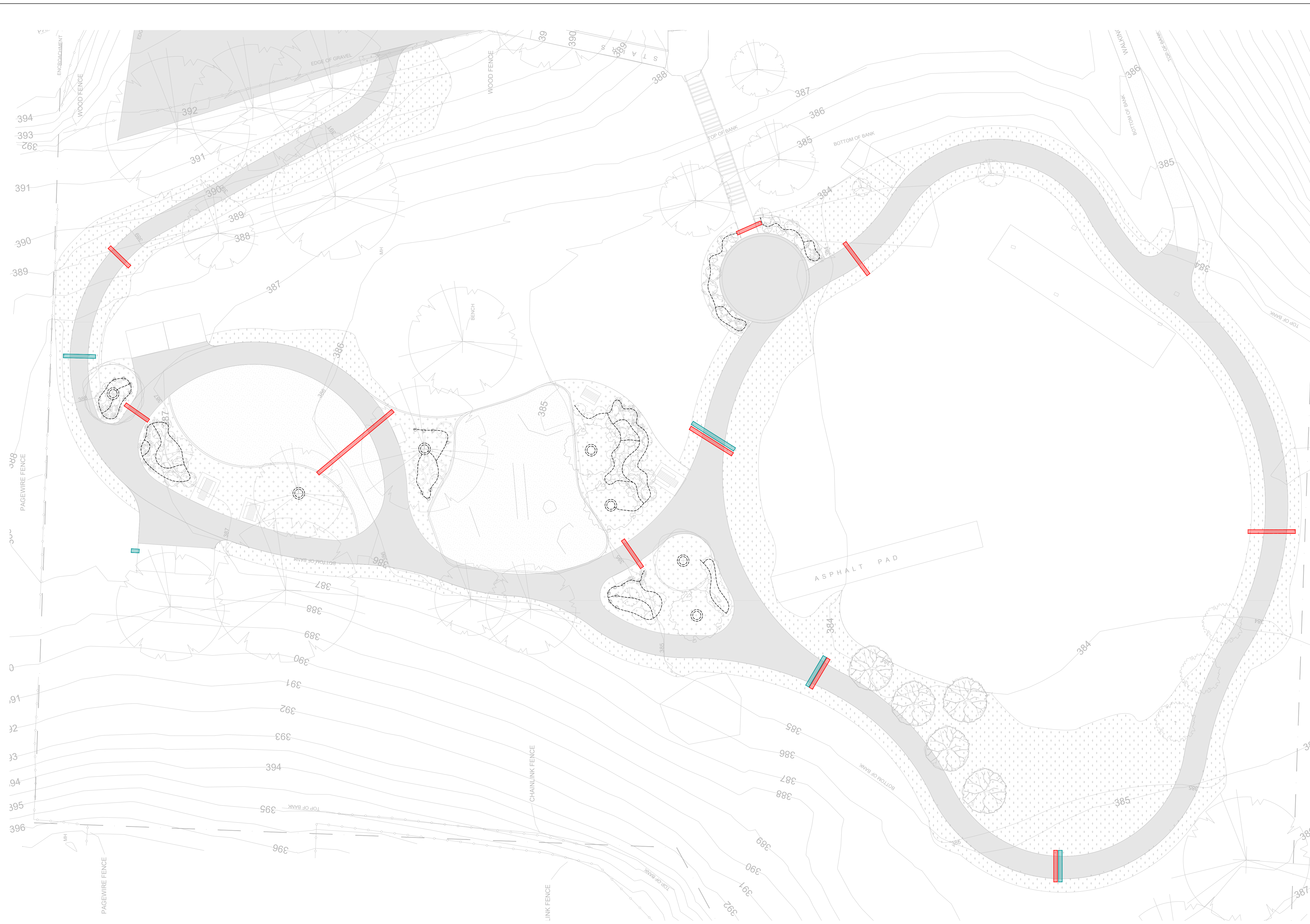
NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1	NOV 19/22	ISSUED FOR 90% REVIEW			
2	FEB 22/23	ISSUED FOR 100% REVIEW			

PROJECT
 MARIPOSA PARK, PENTICTON BC
 CLIENT
 REGIONAL DISTRICT OF OKANAGAN SIMILIKAMEEN
 CONSULTANT
 WATER PLAN IT IRRIGATION LTD.



WATERPLANIT
 IRRIGATION LTD.
 IRRIGATION DESIGN [CONSULTING] [PLANNING] EFFICIENCY
 Kelowna BC | 250.878.8178 | www.waterplanit.ca

DESIGN BY	RH	SHEET TITLE
DRAWN BY	JG	IRRIGATION DETAILS
CHECKED BY	RH	
PROJECT NO.	22-079	SHEET NO.
SCALE	AS SHOWN	IR 2.0



1 SLEEVING PLAN
IR3.0 SCALE 1:200

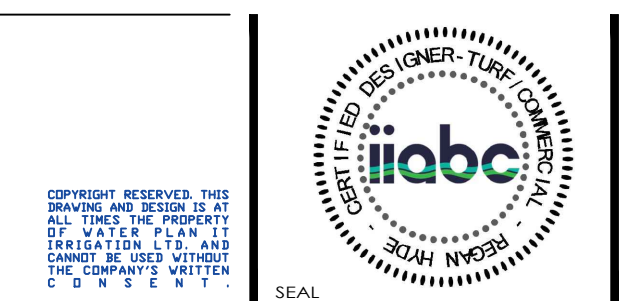
2 SLEEVING SECTION
IR3.0 SCALE 1:15

REVISIONS / ISSUED		REVISIONS / ISSUED			
NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1	NOV 10/22	ISSUED FOR 90% REVIEW			
2	FEB 22/23	ISSUED FOR 100% REVIEW			

PROJECT
MARIPOSA PARK, PENTICTON BC

CLIENT
REGIONAL DISTRICT OF OKANAGAN SIMILIKAMEEN

CONSULTANT
WATER PLAN IT IRRIGATION LTD.



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DESIGN BY	RH	SHEET TITLE	SLEEVING PLAN
DRAWN BY	JG		
CHECKED BY	RH		
PROJECT NO.	22-079	SHEET NO.	IR 3.0
SCALE	AS SHOWN		

APPENDIX C – UNIT RATES

(attached as next page)

All prices quoted are to be all inclusive, as well as:

1. In Canadian dollars;
2. FOB to construction site;
3. Exclusive of GST.

Unit Rates

Mariposa Park

Description	Units	Unit Price	Qty	Cost
25mm Class 200 PVC Lateral	m	\$	780	\$
40mm Class 200 PVC Lateral	m	\$	235	\$
40mm Schedule 40 PVC Mainline	m	\$	162	\$
50mm Schedule 40 PVC Sleeve	m	\$	23	\$
75mm Schedule 40 PVC Sleeve	m	\$	30	\$
50mm DB2 Electrical Conduit	m	\$	22	\$
12mm Polytubes Drip w/ emitters	m	\$	192	\$
Tree Drip Ring	ea.	\$	7	\$
Rain Bird 1804 PRS w/ MPR Nozzle	ea.	\$	50	\$
Rain Bird 5004	ea.	\$	55	\$
Flush Valve Assembly	ea.	\$	4	\$
Rain Bird XCZ100PRBCOM	ea.	\$	2	\$
Rain Bird 100-PEB	ea.	\$	16	\$
40mm 206A Gate Valve	ea.	\$	1	\$
Point of Connection	ea.	\$	1	\$
AsBuilt & Operations Manual	L.S.	\$	1	\$
Warranty Period	L.S.	\$	1	\$
Wiring	L.S.	\$	1	\$

Irrigation Total

\$

**APPENDIX D – INSURANCE
REQUIREMENTS**

(attached as next page)

Type of Insurance	Insurer Name and Policy Number	Policy Term yyyy/mm/dd	Limits of Liability/Amount	
Section 1 Comprehensive/Commercial General Liability (Please see Particulars on Page 1)		From: To:	Bodily Injury, Death & Property Damage \$ _____ Per Occurrence \$ _____ Aggregate \$ _____ Umbrella Limit \$ _____ Excess Limit \$ _____ Deductible MINIMUM PER OCCURRENCE \$5,000,000	
Section 2: <input type="checkbox"/> indicates that the coverage is included. Automobile Liability (owned or leased vehicles)	If insured by ICBC, attach a copy of the ICBC form APV-47	From: To:	Personal Injury & Property Damage \$ _____ Limit MINIMUM \$5,000.000 Reviewed: Broker Initials <input type="checkbox"/>	
Section 3: <input type="checkbox"/> indicates that the coverage is included. Contractor's Equipment:		From: To:	\$ _____ Limit \$ _____ Deductible Reviewed: Broker Initials <input type="checkbox"/>	
Section 4: <input type="checkbox"/> indicates that the coverage is included. Professional Liability <input type="checkbox"/> Claims Made Basis <input type="checkbox"/> Coverage Primary and not contractual		From: To:	\$ _____ Per Occurrence \$ _____ Aggregate \$ _____ Deductible Per Claim, minimum \$50,000 Reviewed: Broker Initials <input type="checkbox"/>	
Section 5: <input type="checkbox"/> indicates that the coverage is included. Builder's Risk:		From: To:	\$ _____ Limit \$ _____ Deductible <input type="checkbox"/> Regional District of Okanagan-Similkameen, added as Additional Insured Reviewed: Broker Initials <input type="checkbox"/>	
Section 6: <input type="checkbox"/> indicates that the coverage is included. Other:		From: To:	\$ _____ Limit \$ _____ Deductible Reviewed: Broker Initials <input type="checkbox"/>	

The Insurer confirms the above details are accurate and reflect the Insured's coverage. It is understood and agreed any deductible or reimbursement clause contained in the policy shall be the sole responsibility of the Named Insured.

(Authorized to Sign on Behalf of Insurers)

Date Signed

Insured's

Date Signed

APPENDIX E – SAMPLE CONTRACTING SERVICES AGREEMENT

(attached as next page)

CONTRACTING SERVICES AGREEMENT

THIS AGREEMENT made the ___ day of ____, 2021.

BETWEEN:

REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

101 Martin Street
Penticton, British Columbia, V2A 5J9

(hereinafter called the "Regional District")

OF THE FIRST PART

AND :

NAME
Address
Address

(hereinafter called the "Contractor")

OF THE SECOND PART

AND WHEREAS the parties hereto wish to set out herein their respective rights and obligations.

NOW THEREFORE, the Regional District and the Contractor in consideration of their mutual rights and obligations as hereinafter set forth do hereby agree as follows:

Article 1 Contractor's Duties

The Contractor shall provide to the Regional District all services to complete, **OR**

Proposed in Schedule A

- 1.2 In performing the Work under this agreement, the Contractor shall, at all times, act in the best interests of the Regional District and exercise that degree of skill, care and diligence required to the performance of such Work at the time and place the Works are performed.
- 1.3 It is agreed that in awarding the Work encompassed within this agreement to the Contractor, the Regional District has relied upon the Contractor's representations concerning the expertise of certain identified personnel in the employ of the Contractor. It is agreed that, in performing the Work under this agreement, the Contractor shall assign such identified personnel to the Work.
- 1.4 The Contractor shall request of the Regional District any information or data contained in Regional District files which the Contractor requires in order to perform the Work. The Regional District is only obligated to provide to the Contractor information and data that is pertinent to the work program. The Contractor may rely on such information or data as may be provided by the Regional District without independent verification.

- 1.5 The Contractor shall be responsible for the quality, completeness, accuracy, and coordination of the Work. The Contractor shall provide a cost-efficient design that meets all environmental and regulatory requirements as of the date hereof, and uses the most appropriate available materials. The Contractor shall provide for all quality control reviews required by governmental authorities having jurisdiction over the Work.
- 1.6 To ensure that the Work is processed in a timely manner, the Contractor and the Regional District will apply their best efforts to meeting the following deadlines:
- a) Phone call inquiries from the Regional District will be returned within 24 hours;
 - b) Public inquiries to the Contractor on technical issues will be returned within 48 hours;
 - c) Meetings will be scheduled within 5 working days from date of request;
 - d) Review comments for material submitted by the Contractor will be processed by the Regional District within 7 days of receipt.
- 1.7 Costs which have not been identified by the Contractor in the cost estimate will not be paid by the Regional District without prior approval and confirmation in writing. No payment shall be made to the Contractor for cost overruns that have not been the subject of prior notice and approval by the Regional District.
- Any change in the rates charged for fees and disbursements must be approved in advance, in writing, by the Regional District.

Article 2 Special Tools and Equipment

- 2.1 All necessary special tools, equipment and other things shall be acquired by the Contractor solely at the Contractor's cost and shall be the property of the Contractor unless the Regional District specifically authorizes the purchase of a specific item at the Regional District's expense.
- 2.2 The cost of special tools, equipment and other things that have not been specifically identified in detail by the Contractor or specifically authorized in writing by the Regional District during performance of the Work shall be considered to be within the overhead of the Contractor.
- 2.3 If the Regional District specifically authorizes, in writing, that the Contractor shall purchase any special tool, equipment, or other thing at the expense of the Regional District then such items shall become the property of the Regional District. The Contractor shall bear the risk of loss or damage, normal wear and tear excepted, to all such items for the time when such items are out of the possession and control of the Regional District. Upon completion of the Work, the Contractor shall deliver all such special tools, equipment and other things to the Regional District.

Article 3 Sub-Contractors

- 3.1 The Contractor may, with the prior written approval of the Regional District, engage the services of sub-contractors to perform work which the Contractor is unable to perform.
- 3.2 The Contractor shall advise the sub-contractors in writing prior to their participation in the Work of the duties and obligations arising out of this agreement between the Contractor and the Regional District.
- 3.3 The Contractor shall be responsible to the Regional District for all work carried out by sub-

contractors in connection with the Work as if such work had been performed by the Contractor.

- 3.4 The Contractor shall be responsible to the Regional District for the acts and omissions of all sub-contractors, their employees and agents, as if such sub-contractors, their employees and agents, were persons directly employed by the Contractor.

Article 4 Termination and Suspension

By the Regional District:

- 4.1 If the Regional District decides for any reason not to proceed with the Work or to end the work prior to the contract term end date, the Regional District may terminate this agreement by giving five (5) days notice to the Contractor. Upon receipt of such notice, the Contractor shall perform no further services other than those reasonably necessary to close out the Work.

In such event, the Contractor shall be paid by the Regional District for all services performed and all disbursements incurred pursuant to this agreement.

By the Contractor:

- 4.2 If the Contractor decides for any reason to terminate work prior to the contract term end date, the Contractor may terminate the agreement by giving five (5) days notice to the Regional District.

In such event, the Contractor shall be paid by the Regional District for all services performed and all disbursements incurred pursuant to this agreement.

Article 5 Compliance with Laws

- 5.1 The Contractor shall comply with all applicable bylaws and regulations of the Regional District and all applicable laws of the Province of British Columbia and the Government of Canada. Without restricting the generality of the foregoing, the Contractor shall abide by all provisions of the Workers' Compensation Act of British Columbia and provide proof of good standing upon time of contract signing to the Regional District.

- 5.2 The laws of the Province of British Columbia shall govern this agreement and any arbitration or litigation in respect thereof.

Article 6 Insurance

- 6.1 At the time of signing this Contracting Services Agreement, the Contractor shall provide, maintain, and pay for all insurance as outlined on the attached **Certificate of Insurance – Standard Contractor's Certificate Form** as provided. This form must be completed by the Contractor's insurance broker and returned to the Regional District.

- 6.2 General Liability Insurance must be obtained on an occurrence basis for the Contractor with limits of not less than \$2,000,000.00 inclusive per occurrence for bodily injury and property damage. Detailed coverage is to be as included on the Certificate of Insurance Form.

This insurance shall be maintained continuously from commencement of the Work until the date of the completion certificate.

6.3 Equipment Insurance:

Notwithstanding anything contained elsewhere herein, it is understood and agreed that the Regional District shall not be liable for any loss or damage to the Contractor's equipment, including loss or use thereof. Each and every policy insuring the Contractor's equipment to be used on the Work shall contain the following clause:

"It is agreed that the right to subrogation against the Regional District or any of its officers, employees or agents of their parent, subsidiary, affiliated or associated companies or corporations is hereby waived."

6.4 The Contractor shall, at all times, indemnify and save harmless the Regional District and its officers, directors, agents, and employees from and against all claims, damages, losses and expenses arising from personal injury, death, or damage, inclusive of claims made by third parties, to the extent directly attributable to the negligent acts, errors, or omissions of the Contractor.

The Regional District shall, at all times, indemnify and save harmless the Contractor and its officers, directors, agents, and employees from and against all claims, damages, losses and expenses arising from personal injury, death, or damage, inclusive of claims made by third parties, to the extent directly attributable to the negligent acts, errors, or omissions of the Regional District.

Article 7 Arbitration

7.1 All matters in dispute under this agreement may, with the concurrence of both the Regional District and the Contractor, be submitted to arbitration to a single arbitrator appointed jointly by them and the provisions of the Commercial Arbitration Act shall apply.

7.2 No one shall be nominated to act as arbitrator who is in any way financially interested in the Work or in the affairs of either the Regional District or the Contractor.

Article 8 Independent Contractor

8.1 Nothing in this agreement or the Contractor's performance of his duties under this agreement shall constitute or create an employer-employee relationship. The Contractor shall act solely as an independent contractor and not as an employee or agent of the Regional District and is not authorized to create obligations on the part of the Regional District to third parties.

Article 9 Waiver

9.1 Any failure of the Regional District at any time to enforce or require strict compliance with any of the terms of this agreement shall not constitute a waiver or relinquishment of any such terms and the same shall remain at all times in full force and effect.

Article 10 Records and Audit

10.1 The Contractor shall keep reasonable and proper records, accounts, statements and other relevant documents for a period of not less than twelve (12) months after completion of the Work or for such extended period as the Regional District may request in advance and in writing.

- 10.2 The Contractor shall permit the Regional District to inspect, audit and copy all records, accounts, statements and other relevant documents of the Contractor relating to the Work at all reasonable business hours in the offices of the Contractor unless otherwise agreed in writing by the parties.

Article 11 Successors and Assigns

- 11.1 This agreement shall inure to the benefit of and be binding upon the parties hereto and their respective executors, heirs, administrators, successors and assigns.
- 11.2 Neither party may assign this agreement without the prior consent in writing of the other, which consent shall not be unreasonably withheld.

Article 12 Notices

- 12.1 All notices required by this agreement to be given by either party shall be deemed to be properly given and received within two (2) business days, if made in writing to the other party, by registered mail, or facsimile addressed to the regular business address of such party.

Article 13 Term

- 13.1 The parties hereto agree that the Term of this Contracting Services Agreement will be; from _____ until _____

Article 14 Entire Agreement

- 14.1 This agreement constitutes the sole and entire agreement between the Regional District and the Contractor relating to the Work and supersedes all prior agreements and communications between them whether written or oral respecting the subject matter hereof and no other terms, conditions or warranties whether expressed or implied shall form a part hereof.
- 14.2 The Contractor will supply at time of signing of this agreement, an updated clearance letter for Worksafe BC. It is the Contractor's responsibility to keep their status up to date during the contract and notify the RDOS of any status changes.
- 14.3 Wherever the masculine gender is used in this agreement it includes the feminine and body corporate where the context so requires.

IN WITNESS WHEREOF the parties hereto have executed this agreement on the day and year first above written.

The signatures of the Signing
Authority of the
**REGIONAL DISTRICT OF
OKANAGAN - SIMILKAMEEN**
was hereto affixed:

Karla Kozakevich, Chairman

Bill Newell, Chief Administrative Officer

The signatures of the Signing
Authority of
Name of Contractor
was hereto affixed:

Authorized Signatory

Authorized Signatory