

CITY OF UNION, OREGON
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A. DEFINITIONS

1. **City** - City of Union, Oregon, a municipal corporation and authorized City Personnel.
2. **City Engineer** - The Engineer, and his/her representative, authorized by the City of Union to act as the City's representative in engineering matters as they relate to improvements to the City's infrastructure or construction of new infrastructure to be built by developers and then dedicated to the City.
3. **Contractor** - The person, firm, or corporation that has contracted to construct City infrastructure improvements for which the City will ultimately have ownership; or a developer, and including the developer's engineer, construction inspector, etc.
4. **Drawings** - The Project Plans prepared by a Professional Engineer licensed in the State of Oregon that depict the detailed characteristics and scope of work for a particular infrastructure improvement project; and the City Standard Details.
5. **Specifications** - The detailed project specifications prepared by a registered Professional Engineer that consist of written descriptions of a technical nature of materials, equipment, construction systems, standards, and workmanship for a particular infrastructure improvement project; and the City Standard Technical Specifications.

B. PROTECTION OF WORK, PROPERTY AND PERSONS

1. The Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work. He/She shall take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury or loss to:
 - (a) All employees on the work and any other persons who may be affected thereby;
 - (b) All the work and all materials or equipment to be incorporated therein, whether in storage on or off the site; and
 - (c) Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

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2. The Contractor shall comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction. He/She shall erect and maintain, as required by the conditions and progress of the work, all necessary safeguards for safety and protection. The Contractor shall designate a responsible representative at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated in writing by the Contractor . The Contractor shall employ qualified personnel to properly handle any hazardous waste or asbestos (i.e., asbestos pipe), etc., which may be encountered in the work.

The Contractor shall notify the owners of adjacent utilities when prosecution of the work may affect the adjacent utilities . The Contractor shall remedy all damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by the Contractor, any subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them be liable.

3. In emergencies affecting the safety of persons or the work or property at the site or adjacent thereto, the Contractor, shall act to prevent threatened damage, injury or loss.
4. Cleaning up shall be a continuing process from the start of the work to final acceptance of the project. The Contractor shall, at all times, at his/her own expense and without further order, keep property on which work is in progress free from accumulations of waste material or rubbish caused by employees or by the work, and at all times during the construction period shall maintain structure sites, rights-of-way, easements, adjacent property, and the surfaces of streets and roads on which work is being done in a safe condition for the Contractor's workers and the public. Accumulations of waste materials that might constitute a fire hazard will not be permitted. Spillage from the Contractor's hauling vehicles on public and private roads shall be promptly cleaned up. The Contractor shall take appropriate action to control dust caused by his/her operations. This shall include, but not be limited to, watering of exposed areas, cleaning of roadways, etc. This is considered a normal part of the construction project. Upon completion of the work the Contractor shall, at his/her own expense, remove all temporary structures, rubbish, and waste material, equipment and supplies, resulting from his/her operations. He/She shall leave such lands in a neat and orderly condition which is at least as good as the condition in which he/she found them prior to his/her operations. Should the Contractor fail to provide said cleanup upon 24-hour written notice, the City shall have the right to perform such work at the expense of the Contractor.

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5. The Contractor shall arrange his/her work schedule such that all phases of work once started shall be diligently pursued until completed. The intent is that the work area shall not be disturbed for undue periods of time. Work shall not be left uncompleted.
6. The Contractor shall plan his/her operation, equipment, and materials storage so they do not unreasonably limit accessibility of residents, city personnel, and other persons in the construction area. Special attention shall be given to maintaining access to private residences during construction.
7. The Contractor shall be solely responsible for any trespass on adjacent property or injury thereto resulting from or in connection with his/her operations. He/She shall hold the City and the City Engineer harmless from any claims that may result because of his/her trespass or the deposit of debris upon adjacent property.
8. The Contractor shall receive prior approval from the appropriate authority or utility owner before any public or private utility service is interrupted. The Contractor shall not disconnect or interrupt any existing utility service without 24-hour notification and approval from the utility owner. The Contractor shall give a minimum of 4 hours notice to all utility customers. No utility service shall be disconnected or interrupted for more than 9 hours or as required by the utility owner, whichever is less, in any 24-hour period. When regular utility service interruption is required during the course of the work, the Contractor shall submit a written plan to the City Engineer and utility owner which details the proposed work, notification procedures, and estimated extent of service interruption. The Contractor must obtain written approval of his/her plan from the utility owner prior to interrupting the utility service. The Contractor shall make every effort possible to provide continuous utility service to all utility customers. When special conditions exist where an interruption of utility service would create an extra hardship on the utility customer or create a hazardous condition, the Contractor shall provide continuous service. Particular care and planning must be arranged to provide continuous service of existing services or temporary services as approved by the utility owner and the City Engineer. If the Contractor damages or interrupts an existing utility, the Contractor shall immediately make arrangements to provide temporary service to the parties affected and shall repair said utility as required by the utility owner and City Engineer at no cost to the City. If the Contractor fails to make immediate repairs to damaged City-owned utilities and provide service as required, the City may have said work performed by others and deduct the cost of said work from payment to the Contractor.

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9. The Contractor shall exercise care during construction to avoid damaging existing pipes, valves, manholes and other underground and above ground structures. This applies especially to heavy equipment used during street excavations, and base rock operations. The Contractor shall exercise care when operating compaction equipment over pipes. Any piping and structures damaged shall be replaced or repaired by the Contractor, as specified by the utility owner, at no cost to the City.
10. The Contractor shall take reasonable precautions to protect the work in progress from damage by vandalism, and shall, where reasonably possible, secure the premises where work is being performed from entry by unauthorized persons.
11. The Contractor shall be responsible for the protection and perpetuation of existing survey, property, or construction monuments. The Contractor shall be responsible for the expense of having the disturbed monument restored by a Professional Land Surveyor licensed in the State of Oregon.
12. A preconstruction conference shall be held prior to the Work commencing on the project. The Contractor, City, City Engineer, and other appropriate agencies, utilities, etc., shall attend. The meeting shall be held to discuss general contracting procedures, communications, roles and responsibilities, quality control, project work schedule, agency requirements, and other topics that relate to the Work as appropriate.
13. The Contractor and/or his superintendent shall meet with the City and City Engineer on a regular basis to review the progress of the Work, Work schedule, project concerns, etc., as may be appropriate. The intent of this meeting will be to keep communication channels open and to keep all parties informed as to the status of the Work. Generally, the meeting shall be held weekly; however, it may be scheduled at other times if needed.

C. SUPERVISION BY CONTRACTOR

1. The Contractor shall supervise and direct the work, and shall be solely responsible for the means, methods, techniques, quality, sequences and procedures of construction. The Contractor shall employ and maintain on the work site a qualified supervisor or superintendent who shall have been designated in writing by the Contractor as the Contractor's representative at the site. The supervisor shall have full authority to act on behalf of the Contractor and all communications given to the supervisor shall be as binding as if given to the Contractor. The

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supervisor shall be present on the site at all times as required to perform adequate supervision and coordination of the work.

If the Contractor does not have any personnel on site under his/her direct employ, but there are personnel under subcontract to the Contractor working on site, then the Contractor shall have either his/her designated Supervisor on site or the Contractor shall authorize, in writing, the Subcontractor to act as the Contractor's representative. All communications given to the Supervisor or Contractor's representative shall be as binding as if given to the Contractor.

2. The Contractor shall at all times enforce strict discipline and good order among his/her employees, and shall not employ on the job any unfit person or anyone not skilled in the work assigned to him. Any employee found to be incompetent, or to act in a disorderly or improper manner, shall be removed from the project.

D. CITY ENGINEER'S AUTHORITY

1. The City Engineer shall act as the City's representative on the project , and shall decide questions which may arise as to quality and acceptability of materials furnished and work performed. The City Engineer will make visits to the site and determine if the work is proceeding in accordance with the Drawings and Specifications. The City Engineer, however, does not guarantee the performance of the Contractor by the City Engineer's providing of such review. The City Engineer's undertaking hereunder shall not relieve the Contractor of his/her obligation to perform the work in conformity with the Drawings and Specifications and in a workmanlike manner; shall not make the City Engineer an insurer of the Contractor's performance; shall not impose upon the City Engineer any obligations to see that the work is performed in a safe manner; and shall not relieve the Contractor from his/her responsibility to adequately supervise the work.
2. The City Engineer will not be responsible for the construction means, controls, techniques, sequences, procedures, or construction safety.

E. DAILY REVIEW OF WORK

For work which will become the City's responsibility to maintain, full time Construction Observation shall be provided by either the Contractor or the City Engineer to monitor the progress of the work and to provide all material testing. Copies of all daily observation reports shall be submitted to the City weekly.

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F. MATERIALS TESTING AND QUALITY CONTROL

1. All materials and equipment used in the construction of the project shall be subject to adequate review and testing in accordance with generally accepted standards.
2. The Contractor shall provide at his/her expense the materials testing services required by the Drawings and Specifications. The Contractor shall be responsible for providing a construction monitoring and quality control program to insure the materials used on the project and in the Contractor's operations are in compliance with the Drawings and Specifications. Materials which fail to conform to the Drawings and Specifications. shall not be used in the work.
3. The City Engineer may perform certain testing and review of the work. These testing and review services are provided for the City's information and in no way relieves the Contractor from his/her responsibility to comply with the Drawings and Specifications. All materials to be tested by the City Engineer shall be provided by the Contractor at the Contractor's expense. After tests are completed, the Contractor shall be responsible for repairing test areas to match original conditions.
4. The Contractor shall provide the City Engineer with access to the project site at all times. The Contractor will provide proper facilities for such access and observation of the work.
5. The Contractor shall not cover any work until the City Engineer has been notified and has had a reasonable opportunity to observe the work. If any work is covered prior to observation by the City Engineer and, if the City Engineer considers it necessary or advisable that covered work be tested or reviewed, the Contractor, at the City Engineer's request, will uncover, expose or otherwise make available for observation, or testing as the City Engineer may require, that portion of the work in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such work is defective, the Contractor will bear all the expenses of such uncovering, exposure, observation, and testing and of satisfactory reconstruction. If, however, such work is not found to be defective, the Contractor will be paid by the City for the cost of such work directly attributable to such uncovering, exposure, observation, testing and reconstruction.

G. COOPERATION WITH AREA RESIDENTS

The Contractor shall cooperate with the residents and business owners in the area to provide good access to private property whenever possible. Sidewalks shall be kept clear at all times of any construction materials. Barricades, traffic cones, blinkers, and

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signing shall be used to direct the public through the work area safely. See Project Safety hereafter.

H. PROJECT SAFETY

The Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work, including excavation safety. The Contractor shall comply with all applicable laws, ordinances, rules, regulations, and orders of any public body having jurisdiction as it relates to project and work safety.

The Contractor shall maintain local access to area residents and emergency traffic throughout the life of the project and coordinate construction activities closely with area residents to keep them informed of operations that may impact their use of any streets or roadways.

All signs, barricades, barriers, lights, cones, trench boxes, shoring/bracing, and other such "devices" required to warn, protect, or direct the public and workmen during the life of the Contract shall be furnished, installed, moved, and removed by the Contractor. When conditions warrant their use, flagpersons shall also be provided by the Contractor. The determination of what measures are required, in addition to those specifically called for by the Drawings and Specifications, shall be solely the responsibility of the Contractor.

The City Engineer and City are not responsible for determining whether proper safety precautions, etc., are being utilized. Should the Contractor fail to furnish the necessary protective measures, the City or City Engineer may, but shall not be required to, bring to the Contractor's attention by written notice of such failure and the Contractor shall undertake such corrective measures as is proper.

All construction work shall be performed in accordance with the provisions of the Occupational Safety and Health Regulations of the Oregon Occupational Safety and Health Division, and other applicable regulations. It shall be the Contractor's responsibility to meet all requirements of Chapter 437 of the State of Oregon Administrative Rules. In addition, Oregon Revised Statutes (ORS) 757.541 through 757.571 and Oregon Administrative Rules (OAR) 860-024-0006 and 860-024-0007 administered by the Oregon Public Utilities Commission shall apply.

The materials used for and the installation of all warning and traffic control devices shall conform to the applicable provisions of The Oregon Standard Specifications for Construction - current edition, Sections 00220 and 00225, and Manual of Uniform

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Traffic Control Devices for Streets and Highways, U.S. Department of Transportation, Federal Highway Administration, current edition.

I. PRIOR APPROVAL OF ALTERNATE EQUIPMENT OR MATERIALS

The Contractor may submit to the City Engineer any request for approval of alternate equipment or materials that may be equal to, but are not specifically named as approved equipment or materials in the City Standard Specifications. Such submittals shall contain sufficient information to allow the City Engineer to fully evaluate the equipment. Any substitutions without prior approval will be rejected.

J. PERMITS, EASEMENTS, AND LICENSES

Temporary permits and licenses necessary for the prosecution of the work including building, electrical and plumbing permits, NPDES Permit 1200-C for erosion and sedimentation control, shall be obtained by the Contractor unless otherwise stated in the Drawings and Specifications. Permanent permits and licenses such as state highway permits, railroad crossing licenses, county road crossing permits, Bureau of Reclamation canal crossing permits, etc. shall be obtained by the Contractor. The Contractor shall comply with all requirements of these temporary and permanent permits and licenses as they relate to the work, i.e., insurance, traffic control, scheduling, etc. The Contractor shall pay all inspection fees, flagging costs, etc., if any, required by the permits or licenses.

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the Drawings and Specifications are at variance therewith, he/she shall promptly notify the City Engineer in writing.

For City infrastructure projects, all easements and rights-of way required for the work shall be obtained by the City. For infrastructure projects by others, all easements and rights-of way required for the work shall be obtained by the Contractor. The Contractor shall comply with all requirements of these easements and rights-of way as they relate to the work, i.e., insurance, traffic control, scheduling, restoration, etc.

K. ENVIRONMENTAL AND NATURAL RESOURCES

Pursuant to ORS 279.318, the agencies listed below may have enacted ordinances or regulations which deal with the prevention of environmental pollution or the preservation of natural resources. The Contractor shall comply with any ordinances or regulations enacted or adopted by these agencies.

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Federal Agencies:

- Department of Agriculture
 - Forest Service
 - Natural Resources Conservation Service
- Department of Defense
 - Army Corps of Engineers
- Environmental Protection Agency
- Department of Interior
 - Bureau of Sport Fisheries and Wildlife
 - Bureau of Outdoor Recreation
 - Bureau of Land Management
 - Bureau of Indian Affairs
 - Bureau of Reclamation
- Department of Labor
 - Occupational Safety and Health Administration
- Department of Transportation
 - Coast Guard
 - Federal Highway Administration

State Agencies:

- Department of Agriculture
- Department of Environmental Quality
- Department of Fish and Wildlife
- Department of Forestry
- Department of Geology and Mineral Industries
- Department of Human Resources
- Land Conservation and Development Commission
- Soil and Water Conservation Commission
- State Land Board
- Water Resources Department

Local Agencies:

- City Council
- County Court
- Rural Fire Protection District
- Other Special Districts

L. CORRECTION OF WORK

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The Contractor shall promptly remove from the premises or correct all work rejected by the City Engineer for failure to comply with the Drawings and Specifications, whether incorporated into the construction or not, and the Contractor shall promptly replace, correct and re-execute the work in accordance with the Drawings and Specifications.

M. INSURANCE

1. The Contractor shall purchase at his/her own expense, and maintain during the contract period, such insurance as necessary to provide financial protection against claims which may arise out of or result from the Contractor's execution of the contract, whether such execution be by himself or by any subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. Such insurance is to include but not be limited to that hereinafter specified. All such insurance shall remain in effect until acceptance of the work by the City and at all times thereafter when Contractor may be correcting, removing or replacing defective work. City and Contractor intend that any policies provided in response to this Section shall protect all of the parties insured and provide primary coverage for all losses and damages caused by the perils covered thereby. Accordingly, all such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any of the parties named as insureds or additional insureds. If the Contractor does not provide coverage for subcontractor(s), then the subcontractor(s) shall also provide the coverage and certifications as specified herein. Subcontractor(s) certification shall be given to the Contractor and shall be made available to the City when requested by the City.
2. The Contractor shall procure and maintain Worker's Compensation and Employer's Liability insurance as designated below:
 - (a) Coverage for injuries that are compensable under Worker's Compensation Acts and for diseases under Occupational Disease Acts and/or against liability imposed by law for injuries to employees that are not compensable, including any class of employees engaged in hazardous work under this contract not otherwise protected.
 - (b) Worker's Compensation insurance shall meet all requirements of the State in which work is being performed.
3. Contractor shall purchase and maintain such comprehensive form general liability insurance including underground, explosion, and collapse hazard and other

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insurance as is appropriate for the work being performed and furnished and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance and furnishing of the work and Contractor's other obligations under the Contract Documents, whether it is to be performed or furnished by Contractor, by any subcontractor, by anyone directly or indirectly employed by any of them to perform or furnish any of the work, or by anyone for whose acts any of them may be liable:

- (a) Claims under Workers' or Workmen's Compensation, disability benefits, and other similar employee benefit acts.
- (b) Claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees.
- (c) Claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
- (d) Claims for damages insured by personal injury liability coverage which are sustained by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or by any other person for any other reason.
- (e) Claims for damages, other than to the work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- (f) Claims arising out of operation of laws or regulations for damages because of bodily injury or death of any person or for damage to property.
- (g) Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- (h) The comprehensive form general liability insurance required above shall include coverage for not less than the limits listed in the following table, or required by law, whichever is greater.

General Liability Coverage

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Table

<u>Type of Coverage</u>	<u>Limits</u>
Comprehensive General - Aggregate	As required by the City
Products and Completed Operation Aggregate	As required by the City
Personal Injury	As required by the City
Each Occurrence	As required by the City

- (i) The comprehensive form general liability insurance policy shall include as named insureds, or additional insureds, the City and officers, agents and employees of the City, and the City Engineer and officers and employees of the City Engineer as their interest may appear.
- (j) The Contractor shall purchase and maintain an excess liability umbrella-form policy that provides excess limits of insurance for claims to which the underlying policies are applicable. The excess liability umbrella coverage shall be written for not less than the limits listed in the following table:

Excess Liability

<u>Type of Coverage</u>	<u>Limits</u>
Umbrella Form - Each Occurrence	As required by the City
- Aggregate	As required by the City

- 4. The Contractor shall procure and maintain business automobile liability insurance as designated below:
 - (a) Coverage for bodily injury and property damage arising out of the ownership, maintenance or use of any automobile, including owned, hired, and non-owned automobiles. Coverage is also to be provided for other liabilities specified under statutory requirements.
 - (b) Business automobile liability insurance limits shall be written for the limits of 1,000,000 combined single limit.
- 5. When the work is to be accomplished within the right-of-way of the State Highway or Transportation Department or on lands over which they have direct or indirect control, the Contractor's liability insurance policy shall contain endorsements as required by the respective agency.

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6. When the work is to be accomplished within the right-of-way of any railroad facility or on lands over which they have direct or indirect control, the Contractor shall provide Railroad Protective liability insurance in accordance with the railroad requirements as stated in construction permits or otherwise required by railroad company.

N. INDEMNIFICATION

1. To the fullest extent permitted by laws and regulations, the Contractor shall indemnify and hold harmless and defend at the Contractor's expense, including attorney's fees, the City and the City Engineer and their officers, agents, and employees from and against all claims, liabilities, damages, losses and expenses, direct, indirect or consequential (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) arising out of or resulting from the performance of the work. Provided that any such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself) including the loss of use resulting therefrom, and is caused in whole or in part by any alleged negligent act or omission of the Contractor, any subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the work or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder or arises by or is imposed by law and regulations regardless of the negligence of any such party. Indemnification shall also include, but not be limited, to:
 - (a) Liability or claims resulting directly or indirectly from the alleged negligence or carelessness of the Contractor or his/her agents in the performance of the work, or in guarding or maintaining the same, or from any improper materials implements, or appliances used in its construction, or by or on account of any act or omission of the Contractor or his/her agents;
 - (b) Liability or claims arising directly or indirectly from or based on the violation of any law, ordinance, regulation, order, or decree, whether by the Contractor or his/her agents;
 - (c) Liability or claims arising directly or indirectly from the use or manufacture by the Contractor, his/her agents, or the City in the performance of this contract of any copyrighted or uncopyrighted composition, secret process, patented or

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unpatented invention, article, or appliance, unless otherwise specifically stipulated in this contract;

- (d) Liability or claims arising directly or indirectly from the breach of any warranties, whether express or implied, made to the City or any other parties by the Contractor or his/her agents;
 - (e) Liabilities or claims arising directly or indirectly from the willful misconduct of the Contractor or his/her agents; and
 - (f) Liabilities or claims arising directly or indirectly from any breach of the obligations assumed herein by the Contractor.
 - (g) Liabilities or claims arising directly or indirectly from the Contractor's failure, or his/her agents, to follow and enforce required safety plans, trench excavation plans, etc.
2. In any and all claims against the City or City Engineer or any of their consultants, agents, or employees by any employee of the Contractor, any subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the work or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any such subcontractor or other person or organization under Workers' or Workmen's Compensation Acts, disability benefit acts or other employee benefit acts.

O. GUARANTY

The Contractor shall guaranty all materials and equipment furnished and work performed for a period of one (1) year, unless provided otherwise in the Technical Specifications, from the date of Final Completion. The Contractor warrants and guaranties for a period of one (1) year from the date of Final Completion of the system that the completed system is free from all defects due to faulty materials or workmanship and the Contractor shall promptly make such corrections as may be necessary by reason of such defects including the repairs of any damage to other parts of the system resulting from such defects. The City will give notice of observed defects with reasonable promptness. In the event the Contractor should fail to make such repairs, adjustments, or other work that may be made necessary by such defects, the City may do so and charge the Contractor the cost thereby incurred.

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If any corrections of the work are performed during the one-year guaranty period which requires monitoring by the City Engineer, the services of the City Engineer shall be paid for by the Contractor.

P. RECORD DRAWINGS

The Contractor shall maintain on the jobsite an up-to-date, complete, and accurate set of Record Drawings. These drawings shall include all work performed by the Contractor and shall note any changes made from the details shown on the Construction Drawings. Such changes include, but are not be limited to, dimensional changes, location, grade changes, elevation changes, material type, configuration, etc. All changes shall be neatly and accurately shown on the Record Drawings.

The Contractor shall provide ties to all buried service line taps from an above-ground reference point such as a valve, manhole, etc. At least two swing tie references shall be provided for all service line stubouts which will not be connected to an active service. Swing tie measurements shall be from some permanent reference point, i.e., house corner, fire hydrant, power pole, etc. All ties shall be provided in such a way so that the buried service line can be accurately located after construction work is complete. All buried improvements shall be described in detail including location, type, size, depth, brand name, model numbers, etc. Buried improvements shall include valves, fittings, repair clamps, connections to existing lines, etc. All offsets shall be appropriately noted on the Record Drawings.

A clear color Polaroid or digital photograph shall be taken of each improvement that would be permanently buried, such as connections to existing lines, fittings, and/or valve configurations, etc. A scale surveying rod or similar reference device shall be included in the photo to provide a scaling reference. Labels shall indicate the location and date of the photograph plus any appropriate information relative to what is shown. The photographs shall be mounted and indexed in a 3-ring looseleaf notebook. Two laser color copies of the notebook shall be provided in addition to the original color photo notebook. The intent is that items that may require future maintenance by the City be photographed so that accurate information concerning buried improvements will be known.

The Contractor shall also note the locations, types, size, depth, etc., of any existing utilities which are encountered during the performance of the work. The Record Drawings shall be available for inspection during the project by the City and City Engineer. The Contractor shall keep the record drawings current each day to avoid loss of critical or important information. Upon completion of the work, the Contractor

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shall give the record drawings and photographs to the City Engineer. The project will not be accepted by the City until the complete Record Drawings have been provided.

IT IS INTENDED THAT THE RECORD DRAWINGS BE COMPLETE AND DETAILED. EXAMPLES OF ACCEPTABLE RECORD DRAWINGS ARE AVAILABLE FOR INSPECTION AT THE CITY ENGINEER'S OFFICE. CONSIDERABLE EFFORT SHALL BE EXPENDED IN PREPARING THE RECORD DRAWINGS.

Q. OPERATION AND MAINTENANCE MANUAL

Four copies of an Operation and Maintenance Manual shall be submitted to the City Engineer prior to the Contractor completing the Work. The material shall be bound in a 3-ring looseleaf notebook with the project name, City's name, and Contractor's name printed on the cover. The material shall also be clearly indexed and grouped by the various systems in the project. This data shall be supplied for all materials, equipment, and devices and components which will require maintenance, replacement of parts, and knowledge of operation. The information furnished shall pertain specifically to the materials and equipment furnished. Manufacturers' O&M manuals that deal with more than one product line shall have the non-relevant information crossed or blocked out. The Contractor shall furnish a complete listing of all equipment supplied and each respective supplier's name, address, and telephone number. The O&M data furnished shall include detailed Manufacturer's operation and maintenance information on each component, function description of operation, a complete parts list, and a separate parts list for parts not readily available.

R. ABBREVIATIONS

The following abbreviations of Associations, units of measurement, and miscellaneous items are defined as they may be used in these Contract Documents or on the Drawings.

Associations

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AGC	Associated General Contractors of America
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute

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APA	American Plywood Association
APWA	American Public Works Association
AREA	American Railway Engineering Association
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
CRSI	Concrete Reinforcing Steel Institute
DIPRA	Ductile Iron Pipe Research Association
FHWA	Federal Highway Administration
ICEA	Insulated Cable Engineers Association
IEEE	Institute of Electrical and Electronics Engineers
IPCEA	Insulated Power Cable Engineers Associations
ITE	Institute of Transportation Engineers
MUTCD	Manual on Uniform Traffic Control Devices
NEC	National Electrical Code
NEMA	National Electrical Manufacturer's Association
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Administration
RCW	Revised Code of Washington (Laws of the State)
SAE	Society of Automotive Engineers
SEPA	State Environmental Policy Act
SSPC	Steel Structures Painting Council
UBC	Uniform Building Code
UL	Underwriter Laboratory
UPC	Uniform Plumbing Code
WWPA	Western Wood Products Association

Units of Measurement and Abbreviation
(Partial Listing)

AC	Asbestos Cement or Asphalt Concrete
ACP	Asphalt Concrete Pavement
BST	Bituminous Surface Treatment
C.I.	Cast Iron
☉	Centerline
C.O.	Clean Out
Cl.	Class
Conc.	Concrete
Culv.	Culvert

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CY or Cu.Yd.	Cubic Yard(s)
DI	Ductile Iron
Dia.	Diameter
Ea.	Each
Elev.	Elevation
EL	Elevation
Est.	Estimate or Estimated
Extg.	Existing
F	Fahrenheit
F.F.	Finished Floor
FLG	Flange
Ft.	Foot or Feet
gpm	Gallons Per Minute
HDPE	High Density Polyethylene
Hp	Horsepower
I.D.	Inside Diameter
In.	Inch or Inches
Incl.	Including
Inv.El.	Invert Elevation
Irr	Irrigation
L	Liter
Lb.	Pound(s)
L.F. or Lin.Ft.	Linear Foot (Feet)
LS	Lump Sum
Max.	Maximum
MH	Manhole
MJ	Mechanical Joint
Min.	Minimum
N.T.S.	Not to Scale
O.C.	On Center
O.D.	Outside Diameter
P	Plate
PVC	Polyvinyl Chloride
psi	Pounds Per Square Inch
Q	Flow Rate
R	Radius
REQD.	Required
R/W	Right of Way
S	Sanitary Sewer
SCH	Schedule
SD	Storm Drain

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Sht.	Sheet
Stl.	Steel
TDH	Total Dynamic Head
Typ.	Typical
W	Water
WS	Wood Stave