CITY OF OREGON CITY

Minimum Guidelines
For Inspection/Observation and Construction of
Public Improvements

December 15, 2011
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PURPOSE:
These guidelines serve to document what is expected of the various participants involved in the process of constructing City of Oregon City public infrastructure. Proper inspection and observation of these construction projects is essential to:

- Ensure city material and construction standards are met,
- Document daily work progress and weather conditions,
- Establish a methodology for processing changes to approved plans, and
- Culminate in as-built Record Drawings being prepared and submitted to the City.

DEFINITIONS:

A. Registered Engineer – A registered engineer currently licensed by the State of Oregon to perform engineering work in Oregon.

B. Applicant – The property owner, developer, or liaison who has applied to the City of Oregon City for a land use approval

C. Inspecting/Observing Engineer – The State of Oregon-registered professional engineer or a qualified individual(s) under their supervision.

D. Contractor – Company responsible for performing the construction work for the public improvements approved in the city construction permit.

E. Engineer of Record– The consulting engineer of record, licensed by the State of Oregon as a Civil Engineer, under whose direction construction plans, profiles, and details for the work are prepared and submitted to the City for review and approval.

F. City Inspector – City employee or contracted personnel responsible for spot-checking the construction of the public improvements approved in the construction permit.

G. Project Engineer – A representative of the Development Services Group

GENERAL:

A. All public construction under a permit issued by the City of Oregon City shall be inspected/observed by Engineer of Record, who is a State of Oregon-registered engineer, or a qualified individual under the supervision of a State of Oregon-registered engineer. The City will not issue a construction permit to begin work on public improvements without designation of an Inspecting/Observing Engineer by the Applicant. In addition, both the Applicant and the engineer's authorized representative(s) must sign the City's Developer/Engineer Agreement

form before construction can begin. Usually, this form is signed at the pre-construction meeting.

B. The City shall host a preconstruction meeting, attendees to include the Applicant, contractor, Engineer of Record, Inspecting/Observing Engineer, City representatives, and any interested utility companies.

C. The Applicant shall pay all inspection/observation costs, including any testing required to confirm that the public improvements comply with project requirements. Inspection/observation costs shall also be accounted for in the computation of the contract surety amount.

D. An engineer whose firm, or any member of the firm, has any form of real property interest in the development for which the improvements are required cannot be designated Inspecting/Observing Engineer. The inspection/observing engineer's relationship to the project must be solely that of a professional service nature.

E. City policy is to <u>not</u> provide full inspection/observation services for non-public funded public improvements. However, the City may perform limited inspection/observation services, for a fee upon request, if the project scale does not warrant the retention of a private Inspecting/Observing Engineer. This method does not relieve the Engineer of Record from any responsibilities they have with regard to their final certification of completion to the City.

F. The Contractor shall notify the City at least 48 hours (two full working days) before any "milestone" inspection required by the City. The Contractor shall not make connections between existing utilities and new utilities until successfully completing required inspection(s) and testing of the new work. This new work must conform in all respects to the requirements of the plans and specifications.

G. The Inspecting/Observing Engineer should visit the job site and make contact with the contractor's foreman each day to verify that materials and construction are meeting specifications. Amount of time spent at the job site depends on the size, complexity of project, and cooperation and reliability of contractor. If the City determines the Inspecting/Observing Engineer is not keeping adequate control of the job or is not spending enough time at the job site, the City representative may issue a stop work order for the project until the Inspecting/Observing Engineer provides adequate inspection/observation. When the Engineer of Record is performing primary inspection/observation, it is their responsibility to monitor all construction and testing. However, the City Inspector has access to the foreman on the project and can require the contractor to meet job specifications.

CITY ACTIVITIES:

Inspecting services provided by the City shall include-

A. Acting as a liaison between the Inspecting/Observing Engineer and the City.

B. Attend and record notes at all project related meeting including the preconstruction meeting and any other regularly scheduled construction meeting.

C. Ensure Engineer of Record is submitting reports monitoring work progress and performance testing as necessary to establish compliance with the plans and specifications and as deemed required by the City Engineer.

D. Assist in the performance of administrative and coordinating activities as required supporting the processing and completion of the project.

E. The issuance of stop work orders upon notifying the Contractor or Inspecting/Observing Engineer of the City's intention to do so. If the City representative cannot contact the Contractor or inspecting/observing engineer verbally, then the City representative shall send a written notification to the Applicant, Contractor, and Engineer of Record, by electronic mail.

F. Inform the City Engineering Division of all proposed plan changes, material changes, stop work orders, or errors or omissions in the approved plans or specifications as soon as practical. Any revision to approved plans must be under the direction of the Engineer of Record

INSPECTING/OBSERVING ENGINEER'S ACTIVITIES:

The following minimum activities are required of the designated Inspecting/Observing Engineer.

A. * Execute Developer/Engineer Agreement form to provide engineering services including construction staking, construction inspection/observation, and as-built/record drawing preparation. Refer to item A under GENERAL.

B. Maintain a project log that contains at least the following information.

1. Job number, City Planning File No., and name of Inspecting/Observing Engineer and designee(s);

2. Date and time of site visits, including arrival and departure times;

3. Daily weather conditions, including temperature, and precipitation;

4. Daily description of construction activities;

5. Statements of directions to change plans, specification, stop work, reject materials or other work quality actions;

6. Notation of public agency contacts and conversations;

7. Perceived problems and action taken;

8. General remarks related to construction activities;

9. Inspections verifications;

10. Material Certifications and any warranty paperwork;

11. Record all project compliance testing; and

12. Citizen contact or complaints;

All active site development projects shall be required to turn in daily inspection/ observation reports to the City on a weekly basis containing information as outlined above. If the compiled reports become more than two (2) weeks overdue, the City representative may post a stop work order on the project site;

C. Obtain and use a copy of City-approved construction plans and specifications;

D. Review, inspect and certify that all pipe, aggregate, concrete, asphaltic concrete, and other construction materials comply with City or other pre-approved standards;

E. * Endorse all plan or specification changes in writing and obtain City approval (See City Activities above). All proposed changes shall be approved by the City Engineering Division before the commencement of work affected by the revision;

F. Monitor construction activities to ensure end products meet City specifications;

G. * Perform (or have performed) material, composition and other tests required to ensure City specifications are met;

H. Periodically check that curb, sanitary sewer work, storm sewer work, and pavement grades are in accordance with adopted plans;

I. In the event the Applicant requests a reduction in the contract surety amount, the Inspecting/Observing Engineer shall submit a written certification to the City certifying the amount of work completed to date. The City Inspector shall certify the amount of work completed to enable the City to justify release of monies or a reduction of contract surety amount;

J. Conduct a final project walk through and file a completion report that contains:

1. A table containing all final project punch list items as well as the final status of all listed items

2. The original project completion certification;

3. A complete copy of the Project Log, signed by the Inspecting/Observing Engineer, compiled from the contractor’s, Engineer of Record’s, and City Inspector’s records;

4. A complete set of as-built/record drawing plans compiled from the contractor's, Engineer of Record's, and City inspector's records;

5. The results of material tests, compaction tests, and soil analysis as detailed in the log.

6. Equipment operation & maintenance manuals or product warranty information.

7. A commitment letter signed by the Applicant, Contractor, and Engineer of Record acknowledging maintenance and warrantee responsibilities, that includes a maintenance schedule for any work to be completed during the required 2-year maintenance bond period.

K. Call to the City's attention, by the end of that workday, all plan changes, material changes, stop work orders, or errors or omissions in the approved plans or specifications.

L. Observe and record as-built/record drawing information on job site at time of construction. The inspector should observe, approve, and document any minor deviations from plans and specifications not requiring City approval. This could include minor changing of manhole elevations, correcting unforeseen field conditions, and so forth.

M. Ensure that contractor notifies police, fire, school bus, public transportation officials, and local affected residences and businesses of proposed utility outages, street closures, or traffic detouring or disruption.

N. Verify that traffic control signing is in place before the start of construction, and in compliance with City-approved traffic control plan and construction sign plan.

O. Verify that erosion control measures is in place before the start of construction, and in compliance with City-approved plan.

* The Inspecting/Observing Engineer must be registered to practice engineering in the State of Oregon. They must personally perform all activities marked above by an (*) and must supervise all individuals performing delegated activities. A recognized testing firm or another registered engineer must accomplish material testing not performed by the Inspecting/Observing Engineer.

CONTRACTOR ACTIVITIES:

A. Control of Work

Hours of construction are limited to between 7:00 AM to 6:00 PM, Monday through Friday, and 9:00 AM to 6:00 PM on Saturday. No work is allowed on Sunday. Construction in Oregon City Public Rights of Ways is prohibited on Saturday and Sunday. All work is prohibited on City recognized holidays. Work on private property may be approved on City recognized holidays if the Contractor makes a request within 48 hours of the holiday and the City provides written approval. Any work outside of the hourly limits may only be performed when specifically noted in the Contract Documents or approved in writing by the City. Major Inspections where City Staff are required to be present must be completed between 8:00AM and 4:00PM, Monday through Friday.

Construction vehicles shall park on the construction site or at a location approved by the City or private property owner. Contractor parking shall not interfere with the everyday operations of the businesses surrounding and/or adjacent to the project area. Construction site access shall be per approved entrances as shown in the approved erosion control plans.

The contractor shall clean up the project area and leave it in a neat and secured manner at the end of each workday. All open excavations shall be backfilled or covered with pinned steel sheets capable of supporting traffic loads.

In no way shall the Contractor's employees or subcontractors drive, step, work, or otherwise encroach upon private property, unless approved in writing by the private property owner.

The Contractor shall provide the City Inspector and Project Engineer with a 24-hour emergency contact person's name and telephone number.

B. Damages to Work

The Contractor shall perform work and furnish materials and equipment for incorporation into the project, at the Contractor's own risk, until the entire Project has been completed and accepted by the City. The Contractor shall repair (or replace) all damages to work performed, materials supplied, and equipment incorporated into the project, except as otherwise provided in this section based on deficiency lists and punch lists prepared by either the Inspecting/Observing Engineer and/or the City Inspector. Until final acceptance, the Contractor shall promptly rebuild, repair, restore, replace, and make good damages to all portions of the project. The Contractor shall perform all repairs of damage to the project at no additional cost to the City.

C. City Property

The following requirements apply to roadways and other improvements that are existing, under construction, or completed which are City owned. The Contractor shall:

- Provide adequate protection to avoid damaging City property and facilities;
- Be responsible for damage to City property and facilities caused by or resulting from the Contractor's operations; and
- Clean up and restore such damage by repair, rebuilding, replacement, or compensation, as determined by the City Engineer.

D. Private Property

The Contractor shall determine the location of properties and facilities that could be damaged by the Contractor's operations and shall protect them from damage. The Contractor shall protect monuments and property markers until the Engineer of Record has referenced their location and authorized their removal. The Contractor shall restore property or facilities damaged by its operations to the condition that existed before the damage.

The Contractor shall provide temporary facilities when needed, e.g., to maintain normal service or as directed by the Engineer of Record, until the required repair, rebuilding, or replacement is accomplished.

The Contractor shall protect specific service signs, e.g., business logos, and tourist-oriented directional signs (TODS) from damage, whether the signs are to remain in place or be placed on temporary supports. The Contractor shall repair or replace signs damaged by construction.

E. Materials

The Contractor shall incorporate into the project only materials conforming to the approved plans specifications, Oregon City Standards, and approved submittals by the Engineer of Record. The Contractor shall incorporate into the project only manufactured products made of new materials. The City may require additional testing or retesting to determine whether the materials or manufactured products installed meet specifications if they were not approved by the Engineer of Record and City through the material submittal review process. Materials or manufactured products not meeting the specifications at the time they are to be used are unacceptable and must be removed immediately from the project site.

All material submittals shall be sent to the Engineer of Record from the Contractor for review and approval. The Engineer of Record shall send the approved material submittal to the City for secondary review and approval. A material may not be installed or will be considered not meeting specifications if it is installed without written approval by the Engineer of Record and the City. The Inspecting/Observing Engineer shall provide positive determination that Material delivered to the Project is the same Material covered by the test results.

F. Work Zone Traffic Control

This work consists of providing temporary traffic control measures (TCM) and furnishing, installing, moving, operating, maintaining, inspecting, and removing traffic control devices (TCD) throughout the project area according to the standard drawings, the traffic control plan (TCP) for the project, the specifications, or as directed.

The Contractor shall provide and maintain all TCM. The Inspecting/Observing Engineer and/or City Inspector may verbally or in writing require immediate changes to the TCM being used on the project if the project is deemed to be unsafe. The Inspecting/Observing Engineer shall notify the City Inspector immediately of any concerns with the TCM. The Inspecting/Observing Engineer and/or City Inspector are not responsible for determining solutions to the TCM. Solutions are the sole responsibility of the Contractor who is fully liable for all TCM. The City Inspector may provide a Stop Work Order if the conditions are deemed unsafe until such time the conditions are deemed safe.

The Contractor may not start work on any stage of the project until the TCP has been reviewed and accepted by the City and all TCM are in place.

G. Roadway Construction

1. Delivery Tickets/Material Verification

The Contractor shall provide the Inspecting/Observing Engineer with all delivery tickets for each load of asphalt recording the source, day, time of batch, size of load, and quantity of individual constituents in the load.

The Contractor shall provide the Inspecting/Observing Engineer with all delivery tickets for each load of concrete recording the source, day, time of batch, size of load, and quantity of individual constituents in the load. Delivery tickets are not required for field-mixed concrete except when volumetric/mobile mixers are used.

The Contractor shall provide the Inspecting/Observing Engineer with all delivery tickets for each load of sub-base rock, trench backfill, or approved subbase materials recording the source, day, time of batch, size of load, and quantity of individual constituents in the load.

The Contractor shall provide the Inspecting/Observing Engineer with all delivery tickets for each load of sub-base rock, trench backfill, or approved subbase materials recording the source, day, time of batch, size of load, and quantity of individual constituents in the load.

2. No Crack Policy

The City has a zero tolerance policy for cracks in concrete. Any concrete work found to contain cracks in the finished product will be required to be removed and replaced. Cracked sidewalk is required to be

replaced as full panels from joint to joint. Cracked curb is required to be replaced as full sections from joint to joint. Cracked driveway approaches will be required to be replaced between joints. No intermediate sawcut joints will be allowed.

3. Weather Requirements

Concrete will not be allowed to be placed when the air temperature is below 35 °F without approval from the City.

Asphalt can be placed according to the following chart:

Nominal Compacted thickness	Allowed Paving dates	
	Surface temp	All Courses
Less than 2 inches	60	all year
2 inches - 2 1/2 inches	50	all year
Greater than 2 1/2 inches	40	all year
Temporary	40	all year

Controlled Low Strength Materials-Furnish the following, to the Engineer of Record, prior to using any CLSM on the Project:

• Written certification of proposed CLSM materials proportions and compressive strength.
• 28-Day cylinder reports from a trial CLSM batch based on above certification. Include evidence that compressive strength requirements for specific applications are met.

Compressive Strength - CLSM shall attain a 28-Day compressive strength of 100 psi - 200 psi.

The following Asphalt mixes are allowed within the City :

- **Level 1 ACP** - ACP for use in applications with very low traffic and only limited exposure to trucks. (Driveways)
- **Level 2 ACP** - ACP for use in applications with low traffic volumes and low volume truck traffic. (Local Roads)
- **Level 3 ACP** - ACP for use in applications exposed to moderate truck traffic. (Arterial/Collector Roads)

Any asphalt deemed insufficient by the City (not meeting the ODOT/APWA Standards) will be required to be replaced per the City's Pavement Cut Policy. Patching is not allowed. Full lane width repairs per the Pavement Cut Policy are required unless an alternative is approved by the City Engineer.

H. Utility Construction

1. Sewer/Storm Systems

This work consists of the construction of culvert, siphon, sanitary sewer, storm sewer, and irrigation pipe according to the following:

- Centerline and grade control will be reviewed and approved by the Inspecting/Observing Engineer prior to the start of construction.
- The Contractor may not from established line and grade by more than 1/32 inch per inch of pipe diameter.

The Inspecting/Observing Engineer shall inspect the pipe and fittings prior to lowering into the trench to ensure no cracked, broken or otherwise defective materials are used. The Contractor shall clean the ends of the pipe thoroughly, removing foreign matter and dirt from the inside of the pipe, and keep the pipe clean during laying and joining. The Contractor shall provide a compacted base of pipe bedding material under all tees, wyes and branch fittings, extending to the springline of the fittings per the standard detail. The maximum line or grade change accomplished with anyone fitting shall not exceed 45 degrees and shall be accomplished with long radius curves or bends.

The Contractor shall lay pipe proceeding upgrade with spigot ends in the direction of flow. Joints shall be assembled according to the recommendations of the manufacturer for the type of joint used. The trench bottom shall form a continuous and uniform bearing and support for the pipe at every point between joints. All field joints shall:

- Provide equal or greater strength than the adjoining pipe.
- Fit close and tight.
- Provide a smooth and uniform interior surface.
- Secure and hold adjoining sections to each other.
- Fasten securely to adjoining structures and special sections.

<u>Testing</u>
After completing installation of the system, including all service connections, backfilling and compaction, and prior to wearing surface paving, the Contractor shall conduct a low-pressure air test or a hydrostatic test. All tests shall be conducted during normal working hours where the City Inspector and Inspecting/Observing Engineer can witness the test.

Deflection tests shall be conducted for sanitary and storm sewers constructed of flexible pipe prior to wearing surface paving. The test shall be conducted by pulling an approved mandrel through the completed pipeline.

All pipelines between structures require pipe inspections. The test shall be conducted on a manhole-to-manhole basis after the line has been completely flushed out with water. The tests shall be conducted the tests not less than 30 days after the trench backfill and compaction have been completed. For all existing sanitary sewer and storm sewers being altered or repaired, a preconstruction video pipe inspection shall be conducted between the nearest upstream manhole where work is not being performed and the nearest downstream manhole where work is not being performed, including all lateral runs between end manholes. All videos shall be viewed and approved by the Engineer or Record with secondary approval by the City.

Manholes, Catch Basins, and Inlets

This work consists of constructing manholes, catch basins, inlets, siphon boxes, slope protectors, and other similar structures. The structures shall be constructed of commercial grade concrete, corrugated metal, or other material, with necessary frames, covers, gratings, and other fittings and hardware meeting applicable Oregon City standards.

Upon completion, each structure shall be cleaned of accumulated silt, debris or foreign matter of any kind and kept clean until final acceptance of the work. Manhole testing shall be either hydrostatic per Oregon Chapter APWA Standard Specifications for Public Works Construction, Section 306.3.03, or vacuum testing per latest industry standards. If vacuum testing is used, every manhole shall be tested. DEQ's manhole test record form or equivalent shall be used to record the test. All sanitary sewer manholes shall be tested for acceptance by vacuum testing after completion of backfilling, compaction and surface restoration, including paving. If the manhole fails the test, necessary repairs shall be made by an approved method. Repair and retest the manhole until a satisfactory test is obtained.

2. Water

The Contractor shall handle the pipe and fittings to prevent damage to or contamination of the pipe, fitting, lining, or coating. The Contractor shall load and unload pipe and fittings using hoists and slings to avoid shock or damage, and under no circumstances allow them to be dropped, skidded, or rolled against other pipe or fittings. The Inspecting/Observing Engineer shall inspect the pipe and fittings prior to lowering into the trench to ensure no cracked, broken or otherwise defective materials are used. The Contractor shall clean the ends of the pipe thoroughly, removing foreign matter and dirt from the inside of the pipe, and keep the pipe clean during laying and joining. The Contractor shall provide a compacted base of pipe bedding material under all tees, wyes and branch fittings, extending to the spring line of the fittings per the standard detail. If any part of the coating or lining is damaged, the pipe and fittings shall be repaired or replaced in a manner satisfactory to the Inspecting/Observing Engineer. Damaged or contaminated pipe and fittings will be rejected. The Contractor shall immediately separate all damaged or contaminated pipe and fittings and remove from the Project Site.

Construction

If the connection to the existing system involves temporary water system shutoff, the Contractor shall provide written notices to the residents affected by the shutoff a minimum of 72 hours before the shutoff. The Contractor shall submit a draft written notification to the Engineer of Record for approval 5 Calendar Days before providing written notice to the affected residents. The Engineer of Record will advise which property owners are to be notified. The Contractor shall not operate any valves on the existing system. City staff/operations are the only authorized operator.

No existing fire hydrants may be reused on a project. Any hydrants needing relocating will need replaced with a new fire hydrant.

Testing

All testing shall follow the approved engineering plans.

A disinfecting and chlorination plan shall be provided to the City Inspector for approval a minimum of 72 hours prior to the start of the tests. The tests must only be performed between Monday and Wednesday to allow for proper lab time to get final approval for connection. Testing should not be provided over a weekend period.

The City's Water Quality Specialist shall ensure the bacteriological tests passed and obtain approval from the City Inspector before authorizing connection of the new water system to the existing water system. Discharge of the highly chlorinated water used for disinfection shall not be discharged into surface waters. The City Inspector shall ensure Contractor disposes of flushed chlorinated water in accordance with applicable federal state and local regulations concerning said discharge. City's Water Quality Specialist shall take two water samples for bacteriological test of water purity within 24 hours and report results to City Inspector who will relay that information to the Project Engineer and/or Inspecting/Observing Engineer.

A hydrostatic test shall be scheduled with the Public Works Water Division for acceptance. The Contractor shall notify the public works inspector 72 hours prior to the desired inspection/testing. The City Public Work operations department will let the City inspector know of the test results.

PRIVATE DEVELOPMENT MINIMUM INSPECTION REQUIREMENTS
Use of this Checklist:

- *The Engineer of Record or Contractor may use this checklist at their discretion using the blanks made available to them.*
- *The City use of this checklist is to ensure the Engineer of Record understands the City required and Engineer of Record inspections. This list shall serve as a guideline.*
- *This checklist should be submitted with the Certificate of Completion*

PRIVATE DEVELOPMENT MINIMUM SUBMITTAL REQUIREMENTS
Use of this Checklist:

- *City of Oregon City Engineering will provide the checklist with the final pre-construction notes and will complete the blanks labeled "City Required". These are the minimum requirements.*
- *The Engineer of Record or Contractor may use this checklist at their discretion using the blanks made available to them.*
- *City of Oregon City Engineering will use the blanks labeled "City Approved" to determine if a submittal has been provided and is approved for installation or use or has been completed.*
- *This checklist should be submitted with the Certificate of Completion*