Chapter 21
CONSTRUCTION SUPPORT

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21 CONSTRUCTION SUPPORT

Once the project has been let, the signal designer will need to provide assistance to the office administering the contract during the advertisement and construction phases. This typically consists of:

- Clarifying/interpreting information shown in the plans and specifications
- Adding, modifying or deleting information in the plans and specifications as necessary
- Providing a cost estimate for your expected amount of construction support
- Reviewing submittals
- Attending meetings as requested
- Periodic inspection of work as requested

Construction Support should be the highest priority for the Signal Designer.

21.1 Authority over the Contract Work

Once the project is let (during the advertisement phase and the construction phase) the Engineer has full authority over the work contained in the contract documents. The Engineer is defined in the specifications as the Chief Engineer of the Agency acting directly or through authorized representative (Section 00110.20). The specifications also define the Project Manager as the Engineer's representative who directly supervises the engineering and administration of a contract (Section 00110.20) and the states the duties and authorities of the project manager (Section 00150.01). One of the duties of the project manager is to address any clarification, interpretation, corrections, etc. of the contract documents. This is to ensure that clear, concise information/direction is given to the bidders or the contractor. Contract clarification or interpretation obtained from persons other than the project manager (i.e. the signal designer) are not binding on the agency and unnecessarily complicate administration of the contract.

The Engineer (Project Manager) has authority of the contract work. Always work directly with the project manager's office when providing construction support. DO NOT WORK DIRECTLY WITH THE BIDDER OR CONTRACTOR!

21.2 Addenda

Changes or corrections to the plans, special provisions or bid items may be required during the advertisement phase. These changes are made by addenda.

If the addendum includes modifying a plan sheet, the plan sheet will either need to be digitally signed again or a revised stamped and sealed mylar plan sheet is required. Revision triangles are required on ALL revised plan sheets as shown in the Contract Plans Development Guide, NO EXCEPTIONS.

In addition, Traffic Standards Section for review and design approval of the revised plan sheet is required as per Chapter 2. The T.R.S number does not change from the original plan sheet.

21.3 Pre-Construction Conference

After the contract has been awarded and prior to starting work, the contractor must meet with the Project Manager for a Pre-construction conference (pre-con). The pre-construction meeting will typically cover the following topic that can impact signal design:

- Utility relocation and potential conflicts
- Identifying known problem areas, identifying procedures to resolve those problems, and establishing a process to resolve future problems in a timely manner
- Calling attention to unique design requirements in the plans and specs
- Project schedule
- Temporary traffic control and staging
- Identification of key personnel and channels of communication

The signal designer should attend the pre-con conference if possible, especially if there are known problem areas, unique design requirements, and/or the contractor or inspector have limited traffic signal construction experience. Obtaining a copy of the agenda can maximize your efficiency as it is not necessary to stay for the entire pre-con, which can be lengthy and cover a wide array of contract topics.

21.4 Material Submittals and Shop Drawing Review

The signal designer may receive different types submittals to review, but the three main required construction submittals are pole drawings, Blue & Green Sheets, and Field Verification Forms.

21.4.1 Pole and Foundation Submittals

When you receive pole submittals, review the basic traffic features: mast arm orientation, luminaire arm orientation, and any other appurtenances that you have specified on the plans.

After reviewing the submittals, mark them as REVIEWED including your signature and the date. Keep one copy of the pole submittal for yourself and send the rest of the shop drawings with a copy of the signal plan, to the Traffic Structures Engineer for review of the pole design and foundation design.

21.4.2 Blue Sheets and Green Sheets

The Traffic Signal Standards Section maintains two lists of materials and equipment that show a list of prequalified equipment for use on signal projects. These lists are commonly referred to as the “Blue and Green Sheets”. They are updated frequently and posted on the Traffic Signal Standards Website under “Product evaluation and approval” at:

http://www.oregon.gov/ODOT/Engineering/Pages/Signals.aspx

The "Blue Sheets" contain a list of items that are normally qualified by the Project Manager according to the Non-Field Tested Materials Guide.

The "Green Sheets" contain a list of items that are normally accepted for environmental and functional testing by the Traffic Signal Services Unit (i.e. the controller cabinet and equipment contained within).

The contractor is responsible for downloading, appropriately filling-out, and submitting copies of blue and green sheets to the Project Manager prior to starting work. The second page of the blue and green sheets contains detailed instructions for how to use and process each document.

Typically the signal designer is not involved in reviewing, using, processing, or approving the green and blue sheets. However, you may be asked to help the inspector review them, usually to make sure that the contractor has included all of the necessary components as required by the plans and specifications. If this occurs, read through and follow the instructions listed on the second page of the submittal.

Always read and follow the instructions on the second page of the Blue and Green Sheets.

21.4.1 Field Verification Forms (for Signal Poles and Signal Pole Foundations)

There are two field verification forms, one for Signal Poles and one for Signal Pole Foundations. These two forms are required for each large pole on the project (not required for pedestals or pushbutton posts). Both forms contains information that is intended to verify the exact location of the pole foundation, the vertical clearance for all equipment mounted on the mast arm will meet the 18' min. to 19' max, and the anchor rod projection is installed per specification. You can download copies of the two forms, as well as get additional information about their use (flow chart and roles & responsibilities) at the Traffic Structures website under "signal supports, field verification forms":

http://www.oregon.gov/ODOT/Engineering/Pages/Structures.aspx

These forms are filled out by the Project Manager's office prior to installation of the signal pole foundations based on the information provided in the signal plan sheets and design files. However, you may be asked to help fill them out or review the content.

21.5 Cabinet Print

The cabinet print is submitted to the Traffic Signal Services Unit (TSSU) and the Region Traffic Operations Engineer during the construction phase (ideally near the pre-construction conference project milestone), prior to the signal being constructed. See Chapter 20 for more information on the cabinet print.

21.6 Requests for Information

The Project Manager's Office will contact the Engineer of Record when there is a need for interpretation of the plans or the specifications. As mentioned in Section 21.1, all requests for information should come from the Project Manager's Office. If a request from someone other than the Project Manager Office is received, do NOT answer any project specific questions and direct them to the Project Manager's Office for proper processing of the issue. This may seem overly bureaucratic and unhelpful, but the importance of this process cannot be understated; it is vital that agency communication is directed through a single official source to avoid conflicting, confusing, or inappropriate release of information that may result in time delays, unnecessary expense, or construction claims.
The construction lead will submit any contractor questions, contractor proposals, errors in the plans/specifications, etc. to the Engineer of Record for review and comment. The Engineer of Record will determine a proper response back according to the following:

- If clarification of the plans is all that is needed, the Engineer of Record will provide this information to the PM with no further action needed from the EOR.

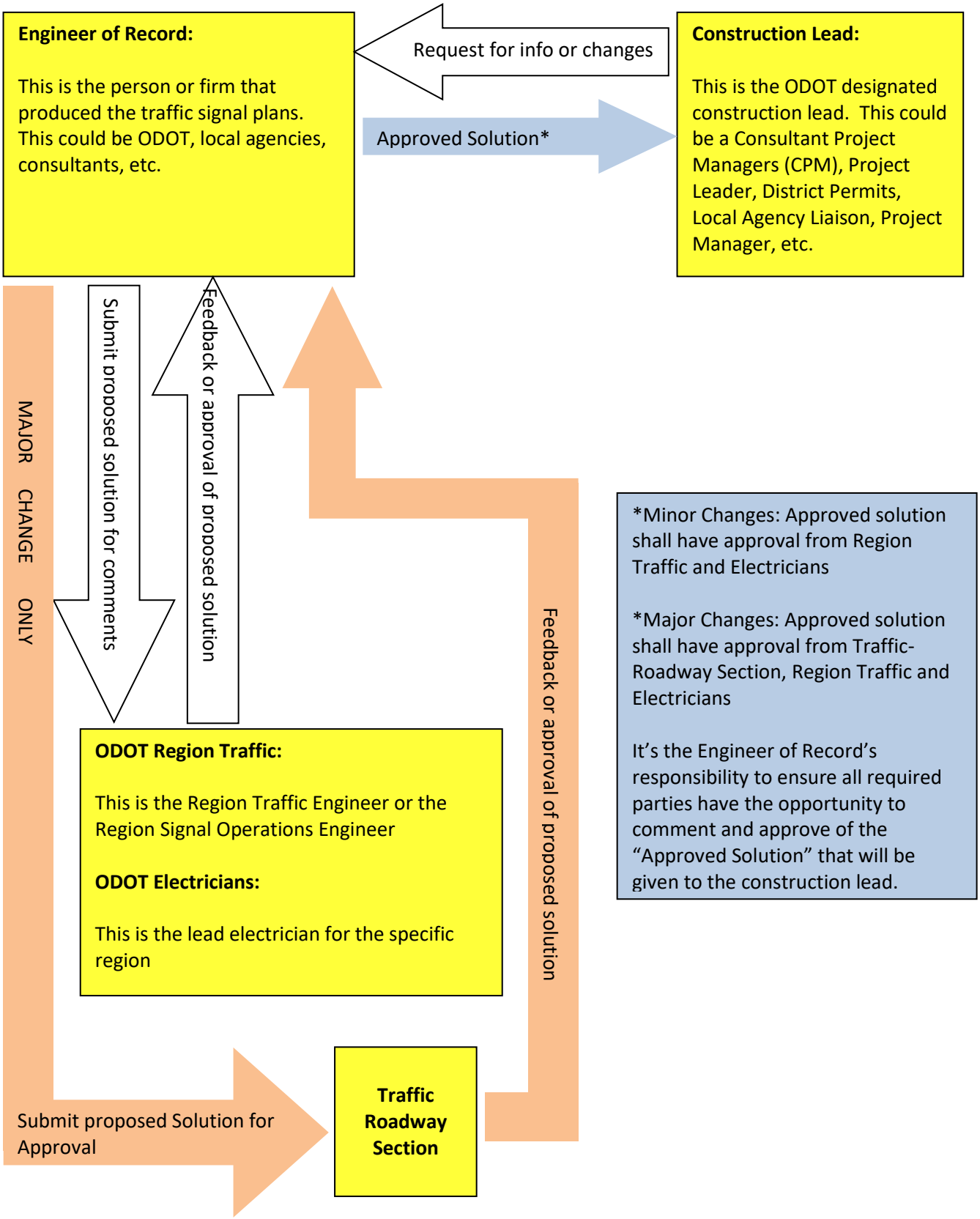
- If a minor change to plans and/or specifications is needed, the Engineer of Record will submit a proposed solution to Region Traffic and the Region Electricians for review and approval. A minor change would be anything that falls under current standard practice. The EOR will give the approved solution to the construction lead (see section 21.7) who will then direct the contractor.

- If a major change to plans and/or specifications is needed, the Engineer of Record will submit a proposed solution to the Traffic Roadway Section, Region Traffic and the Region Electricians for review and approval. A major change would involve any deviation from standards. The EOR will give the approved solution to the construction lead (see section 21.7) who will then direct the contractor.

The Engineer of Record is responsible for providing a solution to issues that arise during construction! The Construction Lead is responsible for making sure that solution is carried out.

The following flow chart, Figure 21-1, outlines this basic process for handling requests for information and resolving issues during construction.

Figure 21-1 | Changes During Construction Flow Chart



21.7 Contract Change Orders

Changes or corrections to the plans, special provisions or bid items may be required during the construction phase. These changes are made by contract change orders (CCO).

If a CCO includes modification to a plan sheet, there are two options for resolution:

- Provide written or verbal direction to the PM of the required change. This change will then be documented in the CCO paperwork and on the plan sheet as-built when the project is completed. If the change is major or includes a deviation from standards, verbal or written approval (such as e-mail) is required by the Traffic Standard Section.

- Produce either a digitally signed revised plan sheet or a revised stamped and sealed mylar for inclusion into the CCO. This option is recommended if the revision is complex enough that written or verbal directions to the construction lead would be insufficient to properly understand and implement the change. Revision triangles are required on ALL revised plan sheets as shown in the Contract Plans Development Guide, NO EXCEPTIONS. The revised plan sheet does NOT need to be submitted to the Traffic Signal Standards Section for review and design approval if the proposed change is minor and doesn't deviate from standards (i.e. adjustment or deletion of an optional lane use sign). If the change is major (i.e. deviates from the requirements stated in the operational approval) or involves a deviation from standards, the revised plan sheet shall be submitted to the Traffic Signal Standards Unit for review and Design Approval as per chapter 2. The T.R.S number does not change from the original plan sheet.

CCO plan sheet revisions are given the highest priority for Traffic Signal Standards Section review.

Verbal approval by the Traffic Standards Section for changes that deviate from standard is acceptable for moving forward during construction.

21.8 Certified Traffic Signal Inspection Certification

ODOT Traffic Standards Section provides training and certification each year for inspection of ODOT traffic signal installations. While this training is specific to inspection and NOT a requirement signal designers, it is highly recommended as it will give a better understanding of the materials and construction process related to traffic signals. Class topics include:

- Material Qualifications (Blue and Green Sheets)
- Review of the current "Field Inspectors Manual for Signal Construction"
- Exposure to basic signal design
- Standard Drawings
- Reading of plans and specifications

The training is taught in two different formats; a 2-day full class and a 1-day re-certification class for those that are more familiar with the subject topics and just need a refresher course

highlighting the recent changes. An exam is given at the end of each class and certification is given to those that pass. Certification is good for three years.

For more information on these classes, access to the current version of the "Inspector's Manual for Signal Construction", and to register for up-coming classes, visit the ODOT Inspector Certification Program website:

- http://www.oregon.gov/ODOT/Construction/Pages/Traffic-Signal-Manual.aspx
- http://www.oregon.gov/ODOT/Construction/Pages/Inspector-Certification-Program.aspx

21.9 Construction Issues

This section takes excerpts from actual construction change orders and project manager narratives, grouped into basic categories. Some of these issues could have been resolved prior to construction during the design phase by a site visit to field verify conditions or by coordinating with other disciplines. Some result from ambiguity, incomplete, or conflicting information in the contract documents. Others are the result of unexpected conditions that were uncovered during the construction process and would have been hard to predict ahead of time. While not all contract change orders can be avoided, the goal is to minimize the number of CCOs needed to build the contract by producing complete, concise, and field verified contract plans.

The Traffic Signal Standards Unit reviews contract change order and project manager narratives as they are posted on the ODOT server.

It is always more cost effective for the contractor to bid and build what's shown in the original contract documents than to issue a change order during construction for the same work.

21.9.1 Detection

April 2013

THIS CONTRACT IS HEREBY MODIFIED AS FOLLOWS (DESCRIPTION AND LOCATION OF WORK COVERED BY THIS ORDER):

This Contract Change Order will provide a method of payment to install Loops #23 and #24 at Boones Ferry Road and to be connected to existing feeder cables. However, field investigation showed the loop feeder cables did not exist.

ESTIMATED NET COST EFFECT OF THIS AGREEMENT ON THE CONTRACT:	INCREASE	X	$1,347.96
	DECREASE		

November 2012

ADDITIONAL INFORMATION THAT IS NOT INCLUDED ON ORDER (Additional Description; Who requested; Why necessary; Why cost is not a contractor responsibility; Parties other than State or FHWA that have agreed to share the costs; Emergency work prior to approval; Estimate effect on project time; Significant discussions; References to supporting and/or attached documents, including cost estimates for "Extra Work Orders" and "Force Orders"; Why contractor refuses to sign). List all previously approved overruns.

Region 1 determined that a proposed future project will reconfigure the ramp meter detector loops at the US26 EB straight on ramp and therefore, the loop replacement work shown on the project plans was deleted in this contract. ODOT Region 1 requested this change. The price for cutting loops in the sub-sub-contract for Bid Item 117, for Ramp Meter Modification: EB ON-Ramp at 185th, was $6,360 for 14 loops, which equals $454.28 per loop. At the 185th ramp to EB US26 six loops were not removed and replaced. Six loops at $454.28 each plus 17% mark-up is $3,189. Splicing the loops to the loop feeder cable would take about 1/2 day at $72/hour plus $15/hour for equipment and materials is an additional $348 for time and materials. The total associated with this work, and appropriate for credit to ODOT, is $3,537.

The attached email dialogue documents agreement from sub-contractor O'Neill Electric Inc. to credit ODOT $3,537.

ESTIMATED NET COST EFFECT OF THIS AGREEMENT ON THE CONTRACT:	INCREASE		($3,537.00)
	DECREASE	X	

Extra Work Order, August 2012

ADDITIONAL INFORMATION THAT IS NOT INCLUDED ON ORDER (Additional Description; Who requested; Why necessary; Why cost is not a contractor responsibility; Parties other than State or FHWA that have agreed to share the costs; Emergency work prior to approval; Estimate effect on project time; Significant discussions; References to supporting and/or attached documents, including cost estimates for "Extra Work Orders" and "Force Orders"; Why contractor refuses to sign). List all previously approved overruns.

There are several locations where there are old steel street loop boxes that will be impacted by the pavement grinding. The old steel street boxes will be replaced by new PVC loop pockets. There are also several locations that will require new conduit that was not shown in the contract plans. This EWO will compensate the contractor for the added electrical work as directed by the engineer.

PAY ITEM	REASON CODE	WORK TYPE	DESIGN (E OR I)	PM (E OR I)	DESCRIPTION	ESTIMATED AMOUNT
803	26	F	I	I	0900 EW 26-0 FA Compensate Contractor For Added Electrical Work.	$4,660.00

PM Narrative May 2012

SECTION I – SPECIFIC FEEDBACK FOR PROJECT DESIGNER(S) and/or PROJECT DELIVERY TEAM

Provide constructive feedback to the project Designer(s) and/or Project Delivery Team identifying project components and aspects that worked well, and which could/should be used on other projects. Identify project components or aspects which were problematic along with suggested solutions to avoid repeating on future projects. For Design-Build projects, include feedback to the DB Project Manager or Project Leader regarding contract language which was problematic, along with suggested solutions. Also identify contract language which worked well.

These type of paving projects usually do not get adequate amount of time for quality control. Perhaps for future projects, it would be good to check the existing loops and connections, quality of J-Boxes and Wiring. In most cases, the plans call for adjust boxes, extend wires, etc..., the directions in the plans for the installations are usually not specific enough, leading to conflicts, delays, and extra costs.

21.9.2 Conduits

January 2013

ADDITIONAL INFORMATION THAT IS NOT INCLUDED ON ORDER (Additional Description; Who requested; Why necessary; Why cost is not a contractor responsibility; Parties other than State or FHWA that have agreed to share the costs; Emergency work prior to approval

During the ~~the~~ installation of the new illumination conduit, the contractor encountered rock that was not shown in the geotechnical report. The contractor's HDD equipment has experienced several breakdowns due to the rocky sub-surface conditions. This CCO compensates the contractor for the added costs of drilling through the rock.

ESTIMATED NET COST EFFECT OF THIS AGREEMENT ON THE CONTRACT:	INCREASE	X	$58,752.00
	DECREASE		

May 2012

ADDITIONAL INFORMATION THAT IS NOT INCLUDED ON ORDER (Additional Description; Who requested; Why necessary; Why cost is not a contractor responsibility; Parties other than State or FHWA that have agreed to share the costs; Emergency work prior to approval

This work was required due to damaged condition of the existing conduits that were to be utilized by the project for site lighting. The conduits were damaged on a previous city project and not repaired. Our project called for these conduits to be utilized in the new lighting system.

ESTIMATED NET COST EFFECT OF THIS AGREEMENT ON THE CONTRACT:	INCREASE	X	$5,447.20
	DECREASE		

October 2011

ADDITIONAL INFORMATION THAT IS NOT INCLUDED ON ORDER (Additional Description; Who requested; Why necessary; Why cost is not a contractor responsibility; Parties other than State or FHWA that have agreed to share the costs; Emergency work prior to approval; Estimate effect on project time; Significant discussions; References to supporting and/or attached documents, including cost estimates for "Extra Work Orders" and "Force Orders"; Why contractor refuses to sign). List all previously approved overruns.

The Work to be done under this Contract consists of constructing traffic signal modifications at eleven intersections along SW Tualatin-Sherwood Road and Nyberg Street. The modifications include installing video detection and pan-tilt-zoom cameras along with fiber optic cable and associated communications hardware. During construction, the exististing conduit that was to be used for equipment and communication cables, was found to be at capacity. It was also determined additional cameras at Boones Ferry Rd needed to be installed. This CCO addresses installing conduit and junction boxes to be used for the video detection and fiber optic cables along with installing additional video detection cameras.

Flagging was not anticipated but during construction flagging was determined to be necessary.

ESTIMATED NET COST EFFECT OF THIS AGREEMENT ON THE CONTRACT:	INCREASE	X	$49,631.90
	DECREASE		

21.9.3 Utility Conflicts

February 2013

ADDITIONAL INFORMATION THAT IS NOT INCLUDED ON ORDER (Additional Description; Who requested; Why necessary; Why cost is not a contractor responsibility; Parties other than State or FHWA that have agreed to share the costs; Emergency work prior to approval; Estimate effect on project time; Significant discussions; References to supporting and/or attached documents, including cost estimates for "Extra Work Orders" and "Force Orders"; Why contractor refuses to sign). List all previously approved overruns.

During the Utility pre-construction meeting, the ODOT Electrical Crew Manager voiced concerns about the location of the existing interconnect conduit and junction boxes located in the median ditch. The existing conduit appeared to be in conflict with the plan design to regrade the median and excavate the shoulders. The Engineer verified that a locate was not performed during design and the interconnect will be in conflict and require relocation during construction. The current design only addressed the removal and new installation of the interconnect wire from Ringuette to Redwood Hwy. This change order compensates the contractor for the additional work needed to remove a portion of the existing conduit and install approximately 1000' of new conduit and required junction boxes for installing the new wire.

ESTIMATED NET COST EFFECT OF THIS AGREEMENT ON THE CONTRACT:	INCREASE	X	$10,888.00
	DECREASE		

PM Narrative, September 2012

8. Part 900 – Permanent Traffic Control & Illumination Systems

Included in the scope of this project was installing a new traffic signal on NE Columbia Blvd. and the 82nd street off ramp. One pole was relocated due to a fiber optic cable bank in the same alignment.

Extra Work Order, July 2012

ADDITIONAL INFORMATION THAT IS NOT INCLUDED ON ORDER (Additional Description; Who requested; Why necessary; Why cost is not a contractor responsibility; Parties other than State or FHWA that have agreed to share the costs; Emergency work prior to approval; Estimate effect on project time; Significant discussions; References to supporting and/or attached documents, including cost estimates for "Extra Work Orders" and "Force Orders"; Why contractor refuses to sign). List all previously approved overruns.

Several of the illumination pole sites have potential utility/structure conflicts that were not clearly shown in the plans. This EWO will compensate the contractor for potholing as directed by the engineer.

PAY ITEM	REASON CODE	WORK TYPE	DESIGN (E OR I)	PM (E OR I)	DESCRIPTION	ESTIMATED AMOUNT
801	26	F	I	I	0900 EW 26 ~~0~~ F A~~0~~ Illumination Potholing As Directed	$3,400.00

Force Order, April 2012

ADDITIONAL INFORMATION THAT IS NOT INCLUDED ON ORDER (Additional Description; Who requested; Why necessary; Why cost is not a contractor responsibility; Parties other that State or FHWA that have agreed to share the costs; Emergency work prior to approval; Estimate effect on project time; Significant discussions; References to supporting and / or attached documents, including estimates of costs for "Extra Work Orders" and "Force Orders"; Why contractor refuses to sign). List all previously approved overruns.

The $3,000 cost is for WOEC to provide electrical power for illumination on this project. This amount will come from the Construction Engineering budget as it was not included in the Anticipated Items.

21.9.4 Poles & Foundations

PM Narrative, October 2012

Section I: Specific Feedback for Project Designer(s) and/or Project Delivery Team

Provide constructive feedback to the project Designer(s) and/or Project Delivery Team identifying project components and aspects that worked well, and which could/should be used on other projects. Identify project components or aspects which were problematic along with suggested solutions to avoid repeating on future projects. For Design-Build projects, include feedback to the DB Project Manager or Project Leader regarding contract language which was problematic, along with suggested solutions. Also identify contract language which worked well.

There was no Specific Feedback on this project ☐

The traffic signal pole vendor and resulting issues in obtaining final approval of their submittals was the driving force behind project delays. The Prime Contractor and electrical Sub-contractor were advised by the Project Manager that delays to the Project may occur if the signal pole supplier was NOT a pre-approved ODOT supplier. This may have been averted to some degree if the following language had been added in the Special Provisions: "Only 'pre-approved' material suppliers will be considered for Signal and/or Luminaire Pole manufacture, purchases or installations for Oregon Department of Transportation Projects". Exceptions would require special approval of the State Structural Materials Engineer before proceeding.

August 2012

ADDITIONAL INFORMATION THAT IS NOT INCLUDED ON ORDER (Additional Description; Who requested; Why necessary; Why cost is not a contractor responsibility; Parties other than State or FHWA that have agreed to share the costs; Emergency work prior to approval; Estimate effect on project time; Significant discussions; References to supporting and/or attached documents, including cost estimates for "Extra Work Orders" and "Force Orders"; Why contractor refuses to sign). List all previously approved overruns.

While drilling Signal Pole Foundation (Pole #1) water was first encountered at a depth of 6.5 feet (Required Footing depth = 10.5'). As drilling continued, infiltrating water began to collapse the shaft wall. The contractor was directed to place a temporary steel casing in the shaft thereby protecting the shaft from collapsing further. The pour was postponed until the next day due to the water. Plans were made to rent a Vacujet, pump the shaft free of water immediately prior to concrete pour and to pull the casing slowly enough to seal the water as the concrete was poured to 6.5 feet from the bottom. Although none of the remaining three foundations encountered enough water to require sleeving, the extra costs for Pole Foundation #1 are being compensated because it is considered a 'Changed Condition' as the Geotechnical report stated the water table to be at 12 feet or deeper.

ESTIMATED NET COST EFFECT OF THIS AGREEMENT ON THE CONTRACT:	INCREASE	X	$2,215.00
	DECREASE		

PM Narrative, November 2012

SECTION I – SPECIFIC FEEDBACK FOR PROJECT DESIGNER(S) and/or PROJECT DELIVERY TEAM

Provide constructive feedback to the project Designer(s) and/or Project Delivery Team identifying project components and aspects that worked well, and which could/should be used on other projects. Identify project components or aspects which were problematic along with suggested solutions to avoid repeating on future projects. For Design-Build projects, include feedback to the DB Project Manager or Project Leader regarding contract language which was problematic, along with suggested solutions. Also identify contract language which worked well.

The two issues that caused the most problems on this project were: #1 the existing signal heads were wired incorrectly. This problem would be hard to catch unless an electrician had opened up the junction boxes and looked for problems. # 2 the signal pole was not tall enough. The 4x4 sign that was called for on this pole arm is not the norm for standard signal poles. Therefore, the use of a non-standard pole should have been considered.

Additionally, the pole was placed in the clear zone. If roadway design had been involved, they may have noticed the clear zone issue.

21.9.5 Unique Situations

Historic Bridge Issue, October 2012

ADDITIONAL INFORMATION THAT IS NOT INCLUDED ON ORDER (Additional Description; Who requested; Why necessary; Why cost is not a contractor responsibility; Parties other than State or FHWA that have agreed to share the costs; Emergency work prior to approval; Estimate effect on project time; Significant discussions; References to supporting and/or attached documents, including cost estimates for "Extra Work Orders" and "Force Orders"; Why contractor refuses to sign). List all previously approved overruns.

The signal plans show surface mounted conduit on the face of the span 4 arched curtain walls on both the upstream and downstream sides of the structure to provide power to the northbound and southbound Highway 99 traffic signals. The plans also show retaining the signal controller on the Hwy 99 face of Pier 1 along with the pedestal mounted pedestrian push button. This change will run the power through a larger 3" conduit under the center of the structure, thus eliminating the outside surface mounted conduit giving the signal installation a much cleaner look. It would also move the signal controller to the downstream face of Pier 1 next to the service cabinet and meter base. Other changes include moving the power to the under deck lighting shown on drawing #81882, note 5 to the service cabinet. The pedestrian signal push button would be moved to the Pier 1 wall face. These changes will provide a much cleaner installation on this historic bridge.

ESTIMATED NET COST EFFECT OF THIS AGREEMENT ON THE CONTRACT:	INCREASE	X	$11,642.77
	DECREASE		

21.9.6 Temporary Signals

February 2013

THIS CONTRACT IS HEREBY MODIFIED AS FOLLOWS (DESCRIPTION AND LOCATION OF WORK COVERED BY THIS ORDER):

This contract change order pays for some of the initial costs the Contractor has incurred to install a temporary traffic signal installation on this project. A contract change order to address Contractor's cost reduction proposal for use of the temporary traffic signal system instead of 24 hour flagging will be written when all costs and savings associated with the temporary signal installation can be evaluated. The initial costs paid for in this contract change order will be included in the cost reduction proposal. Removal costs will be tracked by Force Account and paid by CCO at a later date.

ESTIMATED NET COST EFFECT OF THIS AGREEMENT ON THE CONTRACT:	INCREASE	X	$52,542.09
	DECREASE		

21.9.7 Signs

December 2012

ADDITIONAL INFORMATION THAT IS NOT INCLUDED ON ORDER (Additional Description; Who requested; Why necessary; Why cost is not a contractor responsibility; Parties other than State or FHWA that have agreed to share the costs; Emergency work prior to approval

Work to be Done:

4006A: Install "Truck Route' Sign on the Mast Arm at the intersection of Lombard and St. Louis
4006B: Install additional Interconnect on N Lombard to N John

Reason for Work:

4006A: The sign was mounted in a center island that was removed. The directional sign had to stay in that area and the mast arm of the signal was the best location.
4006B: In order to provide a completed system this interconnct had to be extended.

Cost Justification:

4006A: Directional sign and Safety issue
4006B: To provide a successful project

ESTIMATED NET COST EFFECT OF THIS AGREEMENT ON THE CONTRACT:	INCREASE	X	$3,575.45
	DECREASE		

April 2013

ADDITIONAL INFORMATION THAT IS NOT INCLUDED ON ORDER (Additional Description; Who requested; Why necessary; Why cost is not a contractor responsibility; Parties other than State or FHWA that have agreed to share the costs; Emergency work prior to approval

The City of Wilsonville's Engineer, Steve Adams, requested this Contract Change Order to provide a method of payment to compensate the contractor to remove the newly installed "No Right Turn on Red" signs as shown on Plan Sheets, 15717, 15719, and 15727.

Attachment "A" Email from Scott Mansur DKS Engineer. During design it was unclear if adequate intersection sight distance would be available for cars making safe right turn maneuver from exit ramp onto Wilsonville Road (with the adjacent walls). After final construction review the sight distance has been determined there is adequate sight distance at both locations meeting AASHTO sight distance requirements.

ESTIMATED NET COST EFFECT OF THIS AGREEMENT ON THE CONTRACT:	INCREASE	X	$790.90
	DECREASE		

21.9.8 Pushbuttons

October 2012

ADDITIONAL INFORMATION THAT IS NOT INCLUDED ON ORDER (Additional Description; Who requested; Why necessary; Why cost is not a contractor responsibility; Parties other than State or FHWA that have agreed to share the costs; Emergency work prior to approval; Estimate effect on project time; Significant discussions; References to supporting and/or attached documents, including cost estimates for "Extra Work Orders" and "Force Orders"; Why contractor refuses to sign). List all previously approved overruns.

THE CONTRACTOR SUBMITTED AUDIBLE PEDESTRIAN BUTTONS FROM THE QPL WHICH WOULD HAVE WORKED. HOWEVER THE CITY OF EUGENE SAID THESE WERE NOT ACCEPTABLE BECAUSE THEY DID NOT MATCH WHAT THEY HAD ALREADY AND THEY COULD NOT WORK ON THESE. THEY CITY OF EUGENE HAS AN IGA TO WORK ON THE ODOT SIGNALS, SO WE HAD TO MAKE THIS CHANGE TO CONFORM TO CITY OF EUGENE STANDARDS.

THE NEW BUTTONS INCLUDED ADDITIONAL LABOR AND MATERIALS TO MAKE THEM WORK. THE CONTRACTOR SUBMITTED DETAILED PRICING WHICH WAS REVIEWED AND FOUND TO BE REASONABLE. COMPLETE RECORDS ARE IN THE PM FILE IN SPRINGFIELD.

ESTIMATED NET COST EFFECT OF THIS AGREEMENT ON THE CONTRACT:	INCREASE	X	$5,929.36
	DECREASE		

21.9.9 Wiring

PM Narrative, June 2012

4003 A-B	23	**$9,223.20**	**$9,223.20**
Description	On September 22, 2011, the contractor submitted a RFI requesting direction on how to proceed with wiring the new turn signals installed at the East Pine St/Peninger Rd intersection. The new signals had been installed the previous night and it was discovered that there was not sufficient wiring to properly connect the new signal. The existing signals consisted of three heads while the newly installed signals consisted of four heads. The plans did not call for the contractor to add additional signal cable. During the design phase, it was assumed (no as-built plans were available) that because the existing signals were set up with a flashing left turn arrow, a fifth cable, which is normally required for the flashing yellow, was available. Upon further inquiry, the EOR determined that the County had retrofitted the signal at some point in the past and wired them with the flashing left turn arrow using only four cables, which is not the current standard. The PM requested a phone conference on September 22, 2011, to discuss the issue with the contractor, Jackson County, the EOR, and the LAL. At the meeting, options were discussed and an acceptable resolution was agreed upon. New signal cables would be run overhead on messenger cables from the new signals to Poles 10A and Pole 11. It was understood that at pole 10A, the contractor would need to run the new signal cable down the inside of the pole, out through a new condalet, into a new 2" PVC conduit and into an existing junction box about fifteen feet away. The contractor requested an additional 20 work days to complete the remaining work including the final striping, which could not be completed until the signals were fully operational. The request was for 10 days to procure the material, and 10 days to complete the signal work including scheduling and completion of the striping. This was deemed reasonable. Thus, 28 calendar days were added to the contract.		

August 2012

ADDITIONAL INFORMATION THAT IS NOT INCLUDED ON ORDER (Additional Description; Who requested; Why necessary; Why cost is not a contractor responsibility; Parties other than State or FHWA that have agreed to share the costs; Emergency work prior to approval; Estimate effect on project time; Significant discussions; References to supporting and/or attached documents, including cost estimates for "Extra Work Orders" and "Force Orders"; Why contractor refuses to sign). List all previously approved overruns.

The Contract work to install Flashers at the Mid-Block Crossing was completed per plan and activated prior to the completion date of June 29,2012. It was later determined that one of the Flashers was not functioning independently in Alternating Rapid Flash. Investigation revealed that two (2) #14 type THHN wires were ommitted in the Flashing Beacon Plan (Sht.16155) and that these wires would need to be installed to acquire the desired flashing pattern. A price to provide and install two hundred (200) feet of #14 THHN Stranded copper wire, two (2) terminal blocks and labor to terminate in the control cabinet then test, was submitted in the amount of $596.00. After reviewing the invoice for materials and labor, it was determined the price was reasonable and that one (1) additional contract day would be granted and no Liquidated damages will be assessed.

ESTIMATED NET COST EFFECT OF THIS AGREEMENT ON THE CONTRACT:	INCREASE	X	$596.00
	DECREASE		

21.9.10 Service Cabinet

May 2012

ADDITIONAL INFORMATION THAT IS NOT INCLUDED ON ORDER (Additional Description; Who requested; Why necessary; Why cost is not a contractor responsibility; Parties other than State or FHWA that have agreed to share the costs; Emergency work prior to approval

The Contractor requested this Contract Change Order to relocate the service cabinet and cable because the current conduit location was in the excavation area on the west side of the Wilsonville northbound on ramp.

By lowering the existing conduit in the excavation area, additional communication cable would be required. The additional cable was anticipated to be bundled in the existing Junction Boxes'; no bundles of cable were found in existing Junction Boxes.

Increased cable length was required.

ESTIMATED NET COST EFFECT OF THIS AGREEMENT ON THE CONTRACT:	INCREASE	X	$15,283.09
	DECREASE		

21.9.11 Junction Boxes

September 2011

4004b - Three loop detector junction boxes need to have concrete aprons installed to protect them against potential off roadway traffic. One junction box is in a fill area and needs to be raised to correct grade.

4004b	011	1000.CC 30 Ø CDA Modifications To Loop Detector Junction Boxes	1.00	LS	$2,765.00	$2,765.00