

GENERAL

Signal Inspector Recertification 2012

AGENDA

Scott Cramer P.E.
Oregon Department of Transportation
Salem OR 97302
(503) 986-3596

First Day

8:00 Introduction

8:30 Materials - Blue Sheets & Std Drawings

9:00 Materials - Green Sheets

10:00 Break

10:15 Inspector's Manual

12:00 Lunch

1:00 Reading Plans & Specifications

2:00 Break

2:15 Test

5:00 Adjourn

Signal Inspector Certification 2012

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8:00 Introduction
8:30 Materials - Blue Sheets
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10:15 Materials - Green Sheets
11:00 Standard Drawings
12:00 Lunch
1:00 Specifications
3:00 Break
3:15 Inspector's Manual
5:00 Adjourn

Second Day

8:00 Questions from First Day
8:30 Inspector's Manual Cont'
9:00 Reading Plans
10:00 Break
10:15 Reading Plans Cont'
12:00 Lunch
1:00 Final Chance to ask Questions
2:00 Break
2:15 Test
5:00 Adjourn

Traffic Signal Information

[Signal Operation Approvals](#)

[MicroStation Cabinet Prints](#)

[Flashing Yellow Arrows](#)

[Standard Drawings & Details](#)

[Design Review and Approval](#)

[Product Approval & Evaluation](#)

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Signal Operation Approvals

[Traffic Signal Approval List](#)

A list of traffic signals that have been approved for construction by ODOT. (in PDF format)

[Traffic Signal Approval Letters](#)

The Traffic Signal Approval Letters for each Traffic Signal installation. (in PDF format)

[Traffic Signal Approval Request Form](#)

Region Traffic Managers, use this form to request the installation, modification or removal of a Traffic Signal.



[Certified Traffic Signal Inspector Memo](#)

This memo outlines the requirements for becoming certified to inspect ODOT Traffic Signal Installations.

[Traffic Signal Policy and Guidelines](#)

The purpose of these guidelines is to encourage uniformity in the location, operation, and maintenance of traffic signals in Oregon.

[Addendum #1 - Yellow Change and Red Clearance](#)

[Addendum #2 - Bicycle Signal Phases](#)

[Emergency Vehicle Preemption and Transit Vehicle Priority Request Forms](#)

For local jurisdictions who are seeking to equip their emergency response vehicles to preempt traffic signals.

[Emergency Vehicle Operators Approved to Use Signal Preemption Devices](#)

A list of agencies that have been approved by ODOT to use signal preemption devices on their emergency response vehicles upon state highways in the state. (in PDF format)

Flashing Yellow Arrows

[Signals With Flashing Yellow Left Turn Arrows](#)

A brochure about Flashing Left Turn Arrows (in PDF format)

[Video of Flashing Yellow Left Turn Arrows](#)

ODOT and other jurisdictions across the nation have been fitting selected traffic signals with "Flashing Yellow Arrows". These new traffic signal displays are designed to help drivers understand when they need to stop, when they have the right-of-way, and when they need to yield to oncoming traffic. The link above provides a short video courtesy of Washington County that explains a driver's responsibilities

at these new signal displays.

Design Review and Approval


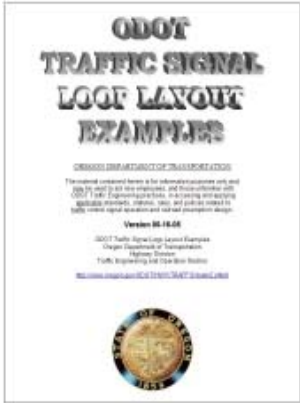
[Region Review Form for Review of Contract Documents](#)

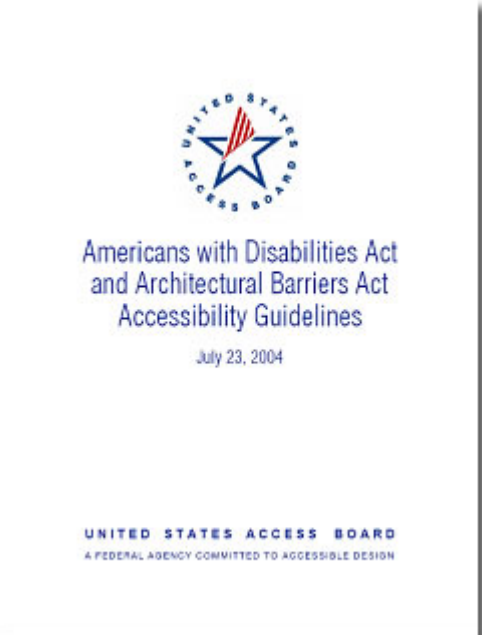
Use this document to help streamline the review process of traffic signal plans.

[Traffic Signal Design Approval Process \(Flow Chart\)](#)

This document outlines the approval process for traffic signal plans.

Design Manuals

<p>Traffic Signal Design Manual - (8 MB)</p> 	<p>Traffic Signal Loop Layout Examples</p> 
<p>The pages contained within the Traffic Signal Design Manual are current at the time of publishing. Keep in mind that the reference material will be periodically updated, so the user is cautioned against using the reference materials included in the manual indefinitely.</p> <p>Last update to the Traffic Signal Design Manual was February 1, 2007.</p> <p><i>If you have an older copy please download a new copy.</i></p>	<p>The "Traffic Signal Loop Layout Examples" This is a 7 page guide that gives an in-depth look at intersection loop layout and loop wiring diagrams.</p>

 <p>The image shows the front cover of a document. At the top center is the United States Access Board logo, which consists of a blue star with a red and white striped vertical bar inside it, surrounded by the words 'UNITED STATES ACCESS BOARD'. Below the logo, the title 'Americans with Disabilities Act and Architectural Barriers Act Accessibility Guidelines' is written in blue. Underneath the title is the date 'July 23, 2004'. At the bottom of the cover, the text 'UNITED STATES ACCESS BOARD' is printed in blue, followed by the tagline 'A FEDERAL AGENCY COMMITTED TO ACCESSIBLE DESIGN' in a smaller font.</p>	
<p>This document has been formally adopted by ODOT for all Traffic Signal designs. This document has been adopted by FHWA. ODOT will be reviewing all new, modified, and loop replacement traffic signal projects with this document as the minimum standard for approval of traffic signal plans.</p>	

Technical Advisors & Bulletins

[TECHNICAL ADVISORIES AND BULLETINS webpage](#)

Drafting Tools

The files contained in the "*Traffic_Drafting_Toolz.zip*" file will help you in designing and drafting Traffic Signal Plans to ODOT Standards.

The "*Traffic_Drafting_Toolz.zip*" file will be updated on a as needed basis. The user of these design and drafting aids shall be responsible for verifying that they are using the latest version to produce plans for the Traffic - Roadway Section.

It is important that you read the "*Read Me.doc*" This file contains valuable information on:

- Updates to the MicroStation Cell libraries and the sidebar menu
- The installation of the MicroStation sidebar menu
- How to launch the MicroStation sidebar menu

Updated - 10-24-2011

[Traffic Drafting Toolz.zip](#)

MicroStation Cabinet Prints

[332 Cabinet Print](#)

The most common controller cabinet used in new traffic signal installations (Now in 11" x 17" Format).

[332 Controller Cabinet with Video](#)

The 332 controller cabinet used in new traffic signal installations with video detection (In 11" x 17" Format).

[336 Cabinet Print](#)

This cabinet configuration is used primarily for temporary traffic signals (Now in 11" x 17" Format).

[334 Ramp Meter Cabinet Print](#)

This cabinet configuration is only used on ramp meter installations (Now in 11" x 17" Format).

[334 Count Cabinet Print](#)

This cabinet configuration is only used for traffic counting stations

[Signal Cabinet Print Guide for ODOT Traffic Signal Designers](#)

Each new, modified or updated traffic signal installation shall have a new cabinet print drawn in MicroStation format and submitted to Traffic Systems Services Unit (TSSU).

Standard Drawings & Details

[Current Traffic Signal Standard Drawings](#)

Traffic Signal Standard Drawings (TM450 Series) for ODOT Traffic Signal Projects.

[Traffic Signal Detail Drawings](#)

Traffic Signal Detail Drawings (TM4400 Series) for ODOT Projects.

Product Approval & Evaluation

[BLUE SHEETS](#)

Submittals for qualified and conditionally field qualified equipment and materials.

[GREEN SHEETS](#)

Submittals for signal controller and related equipment.

[RED SHEETS](#)

A list of certification exempt traffic management system components used by ODOT, Oregon Cities, Oregon Counties, and other applicable public agencies.

Information for Product Evaluation for The "Blue Sheets" and "Green Sheets".

[Preliminary Product Evaluation Form](#)

Blue and Green Sheet product evaluation procedure.

[Vehicle Signal LED Specification](#)

LED Traffic Signal Head Retrofit Kits.

Drawings & Database

NEW FileNet application to search for and download Traffic Plans (sign, signal, and illumination). Click on the links below to access this application.

Note:
FileNet is to be used for reference and historical drawing look-up only. <i>It is the users responsibility</i> to verify that the information is correct and accurate by verifying the information with this office before use.

[Getting Started Guide](#)

[ODOT FileNet Traffic Plans](#)

OAR Rule Making Process

[OAR Rule Making Process](#) (web page)

Contact Us

Office Info

Address	Hours of Operation	Contact
Traffic Standards 4040 Fairview Industrial Dr SE, MS 5 Salem, OR 97302-1142	8:00AM - 5:00PM	TEOS.Info@odot.state.or.us Phone: 503-986-3568 Fax: 503-986-4063

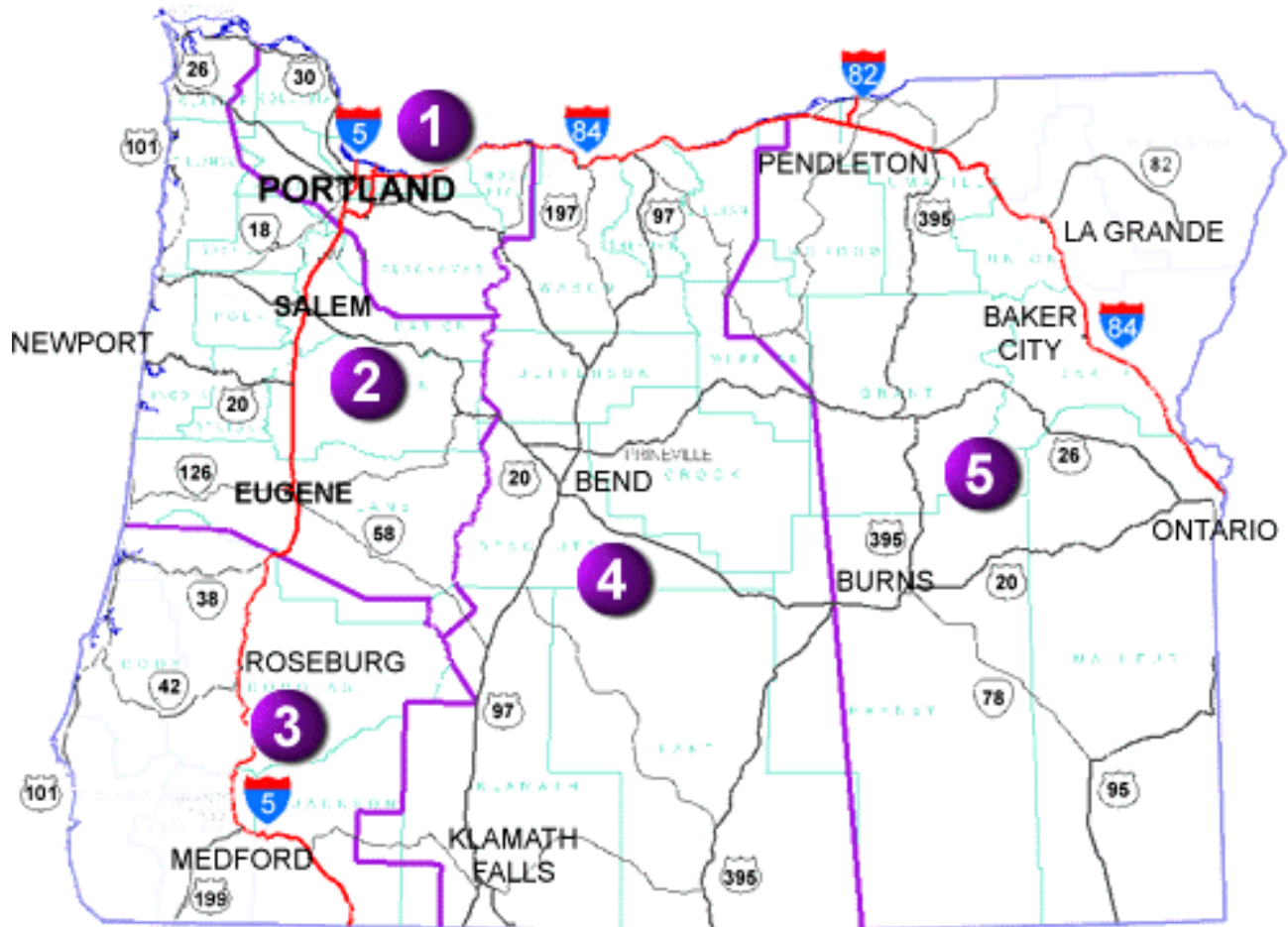
Contacts by Discipline

DISCIPLINES	PHONE NUMBER	EMAIL
Signing	503-986-3603	Heidi Shoblom, P.E.
Striping	503-986-3610	Zahidul Siddique, P.E.
Traffic Signals	503-986-3596	Scott Cramer, P.E.
Traffic Structures	503-986-3069	Scott Jollo, P.E.
Traffic Control Plans	503-986-3788	Scott McCanna, P.E.
Illumination Plans	503-986-3587	Ernest Kim, P.E.

Staff Listing

Name/Email	Phone Number	Work Title
Kimlinger, Mike	503.986.3583	Traffic Standards Manager
Colombi, Trudy	503.986.3604	Office Support Specialist
Searcy, Joe	503.986.3577	Traffic Signal Standards Specialist
Cramer, Scott	503.986.3596	Traffic Signal Engineer
Johnson, Katie	503.986.3595	Traffic Signal QC Engineer
Jollo, Scott U	503.986.3069	Sr. Traffic Structures Engineer
Kim, Ernest C	503.986.3587	Illumination Engineer
Shoblom, Heidi	503.986.3603	Sign Engineer
Klug, Martin	503.986.3586	Traffic Plans Specialist
Leaming, Eric	503.986.3493	Work Zone Traffic Analyst to staff listing
McCanna, Scott	503.986.3788	Traffic Control Plans Engineer
Rowland, Chris	503.986.3599	Sign Management Specialist
Motley, Jason	503.986.3601	Traffic Plans Specialist
Wence, Don	503.986.3791	Sr. Traffic Control Designer
King, Justin S.	503.986.3584	TCP Quality Assurance Engineer
Siddique, Zahidul	503.986.3610	Traffic Devices Engineer

ODOT TRAFFIC SIGNAL TIMING AND ELECTRICAL CONTACTS



STATE WIDE - ELECTRICAL

Laura Wilson – Lead Traffic Systems Tech

503-378-2956

STATE WIDE - TIMING

Don Wence (Interim)

503-986-3576

REGION 1 - ELECTRICAL

Dave McNeel - Manager 971-673-6201
John Sapp 503-969-1035

REGION 1 - TIMING

Doug Anderson – Signals (West) 503-731-8213
Tiffany Slauter – Signals (East) 503-731-3014
Phuong Nguyen – Ramp Meters 503-731-3004

REGION 2 - ELECTRICAL

Rich Hinkle - Manager 503-986-2705
Fred Trummel 503-986-2706

REGION 2 - TIMING

Craig Black 503-986-2766

REGION 3 - ELECTRICAL

Terri Moxley – Manager 541-474-3149
Terry Brock – North Region 3 541-957-3667
Bret Leslie – Costal Region 3 541-269-5217
Curt Duncan – South Region 3 541-621-2329

REGION 3 - TIMING

Ray Lapke (North) 541-957-3536
Dan Dorrell (South) 541-774-6354

REGION 4 - ELECTRICAL

Brad Stevens 541-388-6221

REGION 4 - TIMING

David Foster 541-388-6472

REGION 5 - ELECTRICAL

John Taylor - Upper Region 5 541-276-4675
Joe Gastanaga – Lower Region 5 541-889-4243

REGION 5 - TIMING

Don Fine 541-963-1594



**OREGON DEPARTMENT
OF TRANSPORTATION**

Traffic Engineering Operations Section
355 Capitol St. NE
Salem, OR 97301
503-986-3568

RED SHEETS

Revised 11-17-05

Pursuant to **ORS 479.540** and **OAR 918-261-0037** the following “qualified products list” now known as the “RED SHEETS” was created. The related **ORS** and **OAR** are listed at the end of this document. This list **IS NOT** used for construction qualification or approval of products during construction, but as a statewide list of certification exempt traffic management systems components used by the Oregon Department of Transportation (ODOT), Oregon Cities, Oregon Counties, and other applicable public agencies. The exemption from certification removes the UL or NRTL certification requirements of RED SHEET listed items used in traffic management systems.

Oregon Cities, Counties, and/or manufacturers seeking listing in the RED SHEETS shall submit product specifications and functional samples to ODOT for consideration. Contact the ODOT Traffic Signal Engineer at 503-986-3596 for more information on the process, any questions about the RED SHEETS in general, their use, or the items listed.

Each agency will be given a code associated with their listed products. Once yearly each agency is required to review their listed items and verify they should remain listed or be removed. Non responsive agencies will have all their listed products removed. The current version of the RED SHEETS can be found at <http://egov.oregon.gov/ODOT/HWY/TRAFFIC/Signals.shtml>

Agency Code

ODOT

COP

Agency

Oregon Department of Transportation

City of Portland

CONTROLLER CABINET

BRAND / MANUFACTURER

	<u>MODEL</u>	<u>PART#</u>	<u>CODE</u>
1. IDC	332		ODOT
2. Safetran	332		ODOT
3. Safetran	334		ODOT
4. Safetran	337		COP
5. McCain	332A	M11470	ODOT
6. McCain	334	M11476	ODOT
7. McCain	336A	M11487	ODOT
8. McCain	336S	M11498	ODOT
9. McCain	337	M30730	COP
10. PSI	332		ODOT

CONTROLLER

BRAND / MANUFACTURER

	<u>MODEL</u>	<u>CODE</u>
1. Safetran	170E, 170E/HC11	ODOT
2. PSI	170E	ODOT
3. McCain	170E, 170E/HC11	ODOT
4. IDC/Topping	170E	ODOT

CONFLICT MONITOR

BRAND / MANUFACTURER

	<u>MODEL</u>	<u>CODE</u>
1. EDI	210C	ODOT
2. PSI	210A	ODOT
3. IDC/SSD	210	ODOT
4. McCain	208	ODOT
5. Safetran	208	ODOT

LOAD SWITCH

BRAND / MANUFACTURER

	<u>MODEL</u>	<u>CODE</u>
1. TSC	200, 300	ODOT
2. GDI	LS200	ODOT
3. PDC	SSS-88, SSS-87, SSS-83	ODOT
4. IDC/SSD	200	ODOT
5. EDI	200	ODOT

FLASHER

BRAND / MANUFACTURER

1. TSC
2. PDC
3. EDI

MODEL

204
SSF-88, SSF-86
204

CODE

ODOT
ODOT
ODOT

DETECTOR AMPLIFIER

BRAND / MANUFACTURER

1. Sarasota
2. IDC/DSI
3. EDI
4. Reno A&E
5. Canoga (3M)

MODEL

222, GP7
222
LM602, LM222
222, Model C
C822

CODE

ODOT
ODOT
ODOT
ODOT
ODOT

ISOLATOR (DC and AC)

BRAND / MANUFACTURER

1. TSC
2. GDI
3. PDC

MODEL

242, 252
242, 252
DCI-82, ACI-81, ACI-88

CODE

ODOT
ODOT
ODOT

MODEM

BRAND / MANUFACTURER

1. GDI
2. US Robotics (external modem)

MODEL

400, 496, 2400
5686E

CODE

ODOT
ODOT

RELAY (FTR) Generic Model 430

BRAND / MANUFACTURER

1. Midtex
2. PDC
3. Magnecraft

MODEL

Type 136
FTR-91
W21ACPX-2

CODE

ODOT
ODOT
ODOT

PREEMPTION INTERFACE (Cabinet)

BRAND / MANUFACTURER

1. 3M Opticom
2. 3M Opticom
3. Tomar Strobecom II

MODEL

752
754
2140

CODE

ODOT
COP
ODOT

PREEMPTION DETECTOR (Field)**BRAND / MANUFACTURER**

1. 3M Opticom
2. Tomar Strobecom II

MODEL

711, 721, 722
2090

CODE

ODOT
ODOT

PROM MODULE**BRAND / MANUFACTURER**

1. McCain
2. Safetran
3. PSI

MODEL

412F, 412C
412B2, 412C
412W, 412C

CODE

ODOT
ODOT
ODOT

VIDEO DETECTION DEVICE**BRAND / MANUFACTURER**

1. Traficon
2. Iteris
3. Econolite
4. Peek traffic

MODEL

VIP3.x
Vantage Edge
SOLO
Video Trak

CODE

ODOT
ODOT
ODOT
ODOT

AUDIBLE PEDESTRIAN SIGNAL**BRAND / MANUFACTURER**

1. Novax
2. Polara – Navigator APS
3. Campbell Company

MODEL

DS-2000 w/BAT
N5X7BNO-B
IQ-HVT

CODE

ODOT
ODOT
ODOT

Oregon Administrative Rules

918-261-0037

Exemption for Traffic Management Systems

An exemption from certification is created under ORS 479.540 for traffic management systems approved by Oregon Department of Transportation (ODOT) and maintained on their qualified products list. This exemption does not apply to message boards nor does it remove the requirements of licensing, permitting and inspection for the installation of these products.

Stat. Auth.: ORS 479.540

Stats. Implemented: ORS 479.540

Hist.: BCD 4-2004, f. 3-31-04, cert. ef. 4-1-04

Oregon Revised Statutes

Chapter 479 — Protection of Buildings from Fire; Electrical Safety Law

479.540 Exemptions; rules. (1) Except as otherwise provided in this subsection, a person is not required to obtain a license to make an electrical installation on residential or farm property that is owned by the person or a member of the person's immediate family if the property is not intended for sale, exchange, lease or rent. The following apply to the exemption established in this subsection:

(a) The exemption established for a person under this subsection does not exempt the work performed by the person from having to comply with the requirements for such work under ORS chapter 455 or this chapter and rules adopted thereunder.

(b) If the property is a building used as a residence and is for rent, lease, sale or exchange, this subsection establishes an exemption for work on, alterations to or replacement of parts of electrical installations as necessary for maintenance of the existing electrical installations on that property, but does not exempt new electrical installations or substantial alterations to existing electrical installations on that property. As used in this paragraph, "new electrical installations or substantial alterations" does not include the replacement of an existing garbage disposal, dishwasher or electric hot water heater with a similar appliance of 30 amps or less, single phase, by a landlord, landlord's agent or the employee of the landlord or landlord's agent.

(2) An electrical contractor license is not required in connection with an electrical installation:

(a) Of meters and similar devices for measuring electricity by a person principally engaged in the business of generating or selling electricity in connection with the construction or maintenance of electrical lines, wires or equipment.

(b) Of ignition or lighting systems for motor vehicles.

(c) To be made by a person on the person's property in connection with the person's business.

(d) To be made by a public utility, consumer-owned utility as defined in ORS 757.270, telecommunications carrier as defined in ORS 133.721, competitive telecommunications provider as defined in ORS 759.005 or municipality for generation, transmission or distribution of electricity on property that the utility, carrier, provider or municipality owns or manages.

(3) A person whose sole business is generating or selling electricity in connection with the construction or maintenance of electrical lines, wires or equipment, is not required to obtain a license to transform, transmit or distribute electricity from its source to the service head of the premises to be supplied thereby.

(4)(a) A person is not required to obtain a license for the repair or replacement of light fixtures, light switches, lighting ballast, electrical outlets or smoke alarms in a building used for housing purposes that is owned, leased, managed or operated by a housing authority and the person doing the repair or replacement is a member of the housing authority's regular maintenance staff.

(b) A license is not required for:

(A) Temporary demonstrations;

(B) A street lighting system located on a public street or in a right of way if the system is similar to a system provided by a public utility and the installation or maintenance, or both, is performed by a qualified employee of a licensed electrical contractor principally engaged in the business of installing and maintaining such systems; or

(C) An outdoor transmission or distribution system, whether overhead or underground, if the system is similar to a system provided by a public utility and the installation or maintenance, or both, is performed by a qualified employee of a licensed electrical contractor principally engaged in the business of installing and maintaining such systems.

(c) For the purposes of this subsection, "qualified employee" means an employee who has registered with or graduated from a State of Oregon or federally approved apprenticeship course designed for the work being performed. The supervising electrician signature required under ORS 479.560 (1)(b) does not apply to contractors working under this subsection.

(5) The provisions of ORS 479.510 to 479.945 and 479.995 do not apply:

(a) To electrical products owned by, supplied to or to be supplied to a public utility as defined in ORS 757.005, consumer-owned utility as defined in ORS 757.270, telecommunications carrier as defined in ORS 133.721 or competitive telecommunications provider as defined in ORS 759.005;

(b) To electrical installations made by or for a public utility, consumer-owned utility, telecommunications carrier or competitive telecommunications provider if the electrical installations are an integral part of the equipment or electrical products of the utility, carrier or provider; or

(c) To any electrical generation plant owned or operated by a municipality to the same extent that a utility, telecommunications carrier or competitive telecommunications provider is exempted under paragraphs (a) and (b) of this subsection.

(6) A permit is not required:

(a) For the repair or replacement of light fixtures, light switches, lighting ballast, electrical outlets or smoke alarms in a building used for housing purposes that is owned, leased, managed or operated by a housing authority; or

(b) For the repair, alteration or replacement of existing electrical products or electrical installations authorized by ORS 479.560 (3) at an industrial plant, a commercial office building, a building that is owned, leased, managed or operated by the state or a local government entity or other facilities designated by the Electrical and Elevator Board when the owner, operating manager or electrical contractor of the facility meets the provisions of ORS 479.630 (1) and (2) and:

(A) Obtains a master permit for inspection under ORS 479.560 (3); or

(B) Obtains a master individual inspection permit under ORS 479.565.

(7) In cases of emergency in industrial plants, a permit is not required in advance for electrical installation made by a person licensed as a general supervising electrician, a general journeyman electrician or an electrical apprentice under ORS 479.630 if an application accompanied by appropriate fee for a permit is submitted to the Department of Consumer and Business Services within five days after the commencement of such electrical work.

(8)(a) A license or permit is not required for the installation or assembly of industrial electrical equipment by the duly authorized agents of the factory, vendor or owner.

(b) The license and permit exemptions of this subsection do not apply to activity in an area where industrial electrical equipment is installed in or enters a hazardous location or penetrates or enters a fire rated assembly or plenum rated assembly.

(c) As used in this subsection:

(A) "Duly authorized agents" means individuals trained by the factory or a vendor or by experience and who are knowledgeable in the operation, maintenance, repair and installation of industrial electrical equipment.

(B) "Installation or assembly" means the reassembly at a job site of equipment that is wired and assembled at the factory and then disassembled for shipping purposes or of existing equipment that is relocated. "Installation or assembly" does not include work involving field fabricated assemblies or any other electrical product that is not an original part of the industrial electrical equipment. "Installation or assembly" does not include the connection of industrial electrical equipment to a power source.

(9) A person is not required to obtain a license or permit to set in place and connect a certified electrical product as long as the work performed is not an electrical installation as defined in ORS 479.530.

(10) The provisions of ORS 479.510 to 479.945 and 479.995 do not apply to:

(a) Electrical installations and repairs involving communication and signal systems of railroad companies.

(b) Electrical installations and repairs involving remote and permanent broadcast systems of radio and television stations licensed by the Federal Communications Commission if the systems are not part of the building's permanent wiring.

(c) The installing, maintaining, repairing or replacement of telecommunications systems on the provider side of the demarcation point by a telecommunications service provider.

(d) The maintaining, repairing or replacement of telecommunications equipment on the customer side of the demarcation point by a telecommunications service provider.

(e) Installations, by a telecommunications service provider or an appropriately licensed electrical contractor, of telecommunications systems on the customer side of the demarcation point except:

(A) Installations involving more than 10 telecommunications outlets; and

(B) Installations of any size that penetrate fire-resistive construction or air handling systems or that pass through hazardous locations.

(f) Notwithstanding paragraph (e) of this subsection, installation of telecommunications systems on the customer side of the demarcation point in:

(A) One and two family dwellings; and

(B) Multifamily dwellings having not more than four dwelling units if the installation is by a telecommunications service provider.

(g) Notwithstanding paragraph (e) of this subsection, installation or replacement of cord or plug connected telecommunications equipment on the customer side of the demarcation point.

(h) Notwithstanding paragraph (e) of this subsection, installation of patch cord and jumper cross-connected equipment on the customer side of the demarcation point.

(11)(a) The board may grant partial or complete exemptions by rule for any electrical product from any of the provisions of ORS 455.610 to 455.630 or 479.510 to 479.945 and 479.995 if the board determines that the electrical product does not present a danger to the health and safety of the people of this state.

(b) If the board grants an exemption pursuant to subsection (1) of this section, the board may determine that the product may be installed by a person not licensed under ORS 479.510 to 479.945.

(12) ORS 479.760 does not apply to products described in this subsection that comply with the electrical product safety standards established by concurrence of the board and the Director of the Department of Consumer and Business Services as described under ORS 479.730. This subsection does not exempt any products used in locations determined to be hazardous in the electrical code of this state. The following apply to this subsection:

(a) Except as provided in paragraph (b) of this subsection, the exemption under this subsection applies to:

(A) The rotating equipment portion of power generation equipment.

(B) Testing equipment used in a laboratory or hospital.

(C) Commercial electrical air conditioning equipment.

(D) Prefabricated work performed by an electrical contractor with licensed electrical personnel in the contractor's place of business for assembly on the job site if the work is composed of parts that meet the electrical product safety standards established by concurrence of the board and the director.

(b) Notwithstanding paragraph (a) of this subsection, the board may require any of the products described in paragraph (a) of this subsection to be subject to the certification requirements under ORS 479.760 if the board determines that the product or class of products has presented a fire or life safety hazard in use. A determination under this paragraph shall be effective as to any such product or class of products sold or offered for sale after the date of the determination becomes final. The board may reinstate any exemption removed under this paragraph if the board determines that the reasons for the removal of the exemption have been corrected.

(13)(a) ORS 479.610 does not apply to industrial electrical equipment unless the board determines that the product or class of products may present a fire or life safety hazard.

(b) The board may reinstate an exemption removed under this subsection if the product qualifies for reinstatement under:

(A) An equipment safety program approved by the board;

(B) Equipment minimum safety standards established by concurrence of the board and the director;

(C) An evaluation by an approved field evaluation firm;

(D) A listing from a nationally recognized testing laboratory;

(E) An evaluation of a first model of a product by the board; or

(F) Any other method approved by the board.

(14) ORS 479.760 does not apply to electrical equipment that has been in use for one year or more and that is offered for sale.

(15) A person who holds a limited maintenance specialty contractor license or a limited pump installation specialty contractor license issued under ORS 479.510 to 479.945 or a person who is the employee of such license holder and who is listed with the board as an employee is not required to have a journeyman license or supervising electrician's license to perform work authorized under the person's license.

(16) A person is not required to obtain a permit for work on, alterations to or replacement of parts of electrical installations as necessary for maintenance of existing electrical installations on residential property owned by the person or by a member of the person's immediate family. This subsection does not establish an exemption for new electrical installations or substantial alterations to existing electrical installations.

(17) A permit is not required for those minor electrical installations for which the board has authorized an installation label.

(18) A residential home, as defined in ORS 443.580, and an adult foster home, as defined in ORS 443.705, is not a multifamily dwelling and only electrical installation standards and safety requirements applicable to single family dwellings apply to such homes.

(19) The permit requirements of ORS 479.550 and the license requirements of ORS 479.620 do not apply to cable television installations.

(20) The provisions of any electrical products code or rule adopted pursuant to ORS 479.510 to 479.945 and 479.995 apply to cable and such products installed as part of a cable television installation.

(21) As used in this section, "smoke alarm" shall have the meaning given that term under ORS 479.250. [1959 c.406 §4; 1973 c.834 §36; 1977 c.633 §1; 1981 c.815 §5; 1987 c.575 §5; 1987 c.447 §107; 1989 c.481 §1; 1991 c.251 §1; 1991 c.334 §1; 1993 c.451 §1; 1993 c.497 §1; 1993 c.744 §119; 1995 c.553 §3; 1995 c.797 §1; 1997 c.611 §§1,2; 1999 c.307 §23; 1999 c.794 §3; 1999 c.1093 §17; 2001 c.709 §1; 2003 c.14 §321; 2003 c.222 §2; 2003 c.299 §3; 2003 c.344 §1; 2003 c.675 §§65,66a]

Conductor Color Code (see TM470)

	Conductor Color Code				
	Phase	Function	Base	1st Tracer	2ed Tracer
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					