

Certification Descriptions

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Certification Descriptions

Work Zone Temporary Traffic Control Technician

Featuring: Part 6 Temporary Traffic Control from the new 2009 MUTCD Edition. This course includes flagging.

Problems of traffic control occur when traffic must be moved through or around road or street construction, maintenance operations, utility work and incidents on or adjacent to the roadway. This manual establishes principles to be observed in the design, installation, and the maintenance of traffic control devices and identifies standards where applicable. This study guide was also developed to be used as a reference. The general principles outlined in this manual are applicable to both rural and urban situations. This course on Work Zone Traffic Control and Safety was specifically developed by the principles and procedures which experience has shown to enhance the safety of motorists and the workers in the vicinity of work areas.

Printed in full color on a high quality paper, this manual comes in a sturdy 3-ring binder with tabs for easy reference.

Study Guide: 730 pages Copyright 2012
Prerequisites: None

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Traffic Signal Technician Level I

Traffic Signal Level I Certification indicates that the holder is familiar with the concepts and terminology associated with signalized traffic control devices and systems. The content is designed for the entry-level technician that has had some prior training or experience in electrical technology. Worksite safety is a primary skill area, having been covered in Work Zone Traffic Control Safety and also in this coursework. Principles of operation and the primary electrical details of cabinet wiring and components have been introduced. Equipment, methods, and materials of signal system construction have been reviewed. The basics of traffic signal design, maintenance, and legal issues have been explained and discussed. This certification holder is prepared to make a contribution on any traffic signal crew, whether involved in construction, maintenance, or design preparation with proper supervision and guidance. This certification also provides the required background information that will allow the technician to learn the material taught in the four Level II certification courses.

Study Guide: 220 pages Copyright 2011

Prerequisites: IMSA Work Zone Traffic Control Safety Certification or an approved equivalent
One (1) Year of Experience in the Traffic Signal Field

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Traffic Signal Technician Level II

Traffic Signal Bench Technician Level II

The Traffic Signal Level II Certification indicates the holder has a well-rounded background in traffic signal technology from coursework and experience. The Level II Bench certification indicates the technician has additional training on traffic signal control cabinet equipment. This training includes the programming, application, and maintenance of controllers, conflict monitors, vehicle and pedestrian detection systems, and the communication and power wiring of the cabinet. The technician is also trained in electronic circuit operation and fault diagnosis, and the use of test equipment for diagnosis and certification of control cabinet equipment. The certification holder is prepared to make a substantial contribution in the signal maintenance operation of either a private firm or a public agency by preparing signal cabinets for deployment and/or troubleshooting and repairing cabinet components that are brought in from the field.

Study Guide: 214 pages Copyright 2009
Prerequisites: IMSA Work Zone Traffic Control Safety Certification or approved equivalent
IMSA Level I Traffic Signal Technician Certification
Two (2) Years of Experience in the Traffic Signal Field

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Traffic Signal Construction Technician Level II

The Traffic Signal Level II Certification indicates the holder has a well-rounded background in traffic signal technology from coursework and experience. The Level II Construction certification indicates the technician has additional training on traffic signal control system construction, safety, materials, methods, and equipment. Activities covered include: safe operation of construction equipment (from concrete saws to cranes), planning activities, documentation, and installation of conduits, poles, mast arms, signal heads, cabinets, and inductive loops. Setup and testing of a new signal installation is also reviewed. The certification holder is prepared to make a substantial contribution in the traffic signal construction group of a private firm or a public agency where new or replacement traffic signal construction is the focus.

Study Guide: 187 pages Copyright 2009
Prerequisites: IMSA Work Zone Traffic Control Safety Certification or approved equivalent

IMSA Level I Traffic Signal Technician Certification
Two (2) Years of Experience in the Traffic Signal Field

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Traffic Signal Design/Engineering Technician Level II

The Traffic Signal Level II Certification indicates the holder has a well-rounded background in traffic signal technology from coursework and experience. The Level II Engineering certification indicates the technician has additional training on traffic signal control system planning, design, theory of operation, and legal/regulatory issues. Areas of training include industry standards, liability and regulatory considerations, traffic data collection, site inspections (prior to signal design), detection design, intersection phasing and timing plans, volume density and coordination timing, equipment selection, and project management. The certification holder is prepared to make a substantial contribution in the design of signalized intersections, whether employed by a private firm or a public agency, where new or replacement traffic signal planning and design is the focus.

Study Guide: 251 pages Copyright 2009
Prerequisites: IMSA Work Zone Traffic Control Safety Certification or approved equivalent
IMSA Level I Traffic Signal Technician Certification
Two (2) Years of Experience in the Traffic Signal Field

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Traffic Signal Field Technician Level II

The Traffic Signal Level II Certification indicates the holder has a well-rounded background in traffic signal technology from coursework and experience. The Level II Field certification indicates the technician has additional training on traffic signal control system troubleshooting, on-site repairs, and maintenance methods and equipment. Areas of training include worksite safety, maintenance of traffic, traffic signal system equipment standards and operation, installation inspection, troubleshooting, equipment repair, replacement and programming, test equipment, signal phasing and timing, detection, system communications, preventive maintenance, and documentation. The certification holder is prepared to make a substantial contribution in the maintenance and repair of signalized intersections, whether employed by a private firm or a public agency.

Study Guide: 266 pages Copyright 2009
Prerequisites: IMSA Work Zone Traffic Control Safety Certification or approved equivalent
IMSA Level I Traffic Signal Technician Certification
Two (2) years of experience in the Traffic Signal Field

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Electronics in Traffic Signal Controls

The Electronics in Traffic Signal Controls study guide covers the following basic principles:

- DC Electrical Fundamentals
- Voltage, current, circuits, source resistance, power, capacitance and inductance
- AC Circuit principles
- Frequency, capacitors, reactance, and simple filters
- Inductance, impedance, resonance and transformers
- Semiconductor electronics
- Semiconductor devices
- Semiconductor circuits
- Glossary of terms

Study Guide: 332 pages Copyright 2004

Prerequisites: None

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Microprocessors in Traffic Signals

The Microprocessor in Traffic Signals Study Guide covers the following basic subjects:

- History of the microprocessor
- Number systems and computer arithmetic
- Review of Boolean algebra
- Review of integrated circuits
- Architecture of microprocessors
- Memory
- Basics of operation
- Input and output
- Programming
- Troubleshooting

Study Guide: 401 pages Copyright 2002

Prerequisites: None

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Traffic Signal Technician Level III

Traffic Signal Technician Level III Bench

Safety is of utmost importance. Traffic signals are life safety systems and need to be operated and maintained by only qualified personnel. Technology is changing rapidly in the traffic signal industry and it takes specialized training to be able to keep up with the technology being deployed. Many state and municipal agencies are requiring that individuals be IMSA certified to operate and maintain traffic signals.

When taking the EITS exam, you must be familiar with the basic principles of:

- DC Electrical Fundamentals including Voltage, Current, Circuits, Source Resistance, Power, Capacitance and Inductance
- AC Circuit Principles including Frequency, Capacitors, Reactance, Simple Filters, Inductance, Impedance, Resonance, and Transformers
- Semiconductor Electronics
- Semiconductor Devices
- Semiconductor Circuits

Study Guide: None

Prerequisites: IMSA Work Zone Traffic Control Safety Certification or approved equivalent
 IMSA Level II Traffic Signal Technician Certification
 Microprocessor in Traffic Signals Certification

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Traffic Signal Technician Level III Electrician (Field)

What does it cover? The 100 question exam associated with the certification has been prepared to test the candidate on a wide range of topics relating to field expertise and general knowledge of the applied traffic signal technologies in the field. The following list contains reference materials that the potential IMSA Traffic Signal Level III – Field Technician must be familiar with:

- NEMA Standards (TS1 and TS2)
- 170/2070 Standards
- Various Traffic Detection Methods (Acoustic, Microwave, Radar, Loops, etc.) Setup and Configuration Manuals
- Video Detection Manufacturers Setup Manuals
- Lightning Protection Devices
- FHWA and ITE Vehicle Detection Manuals
- Data Communications Methods (Copper, Fiber Optic, Wireless, etc.)
- U.S. M.U.T.C.D. – 2009 Version
- Signal Head Types (Incandescent, L.E.D., Programmable, etc.) specifications and installation methods
- IMSA Wire and Cable Specifications
- ITE – Traffic Engineering Manual current edition
- ITE – Traffic Control Devices Handbook current edition
- Traffic Signal Preemption Devices – Various Manufacturers Operation and Setup Manuals
- Understanding of Basic Electronics and Electrical
- U.S. – National Electrical Code and/or Canadian Electrical Code

Study Guide: None

Prerequisites: IMSA Level II Traffic Signal Electrician Certification
 IMSA Traffic Signal Level III Field Certification
 Five (5) Years of Experience in Traffic Signal Field

Traffic Signal Inspection

The IMSA Traffic Signal Inspection Certification Program is designed to ensure public safety by helping individuals to understand fundamental concepts associated with the inspection for construction of traffic signal installations. Traffic Signals are a key element in our transportation system and the proper operation of these signals is of paramount importance in maintaining reasonable levels of mobility. Knowledgeable traffic signal inspection is required to ensure that proper/specified construction practices are followed during signal installation resulting in signals that operate as intended. Knowledgeable inspection is also a key element in limiting the liability exposure of governmental agencies associated with malfunctioning traffic signals. Traffic Signal Inspection Certification is recommended for all individuals involved in the inspection of traffic signal construction. It is also a valuable course for contractor personnel, since it provides an inspector's viewpoint of traffic signal construction.

Topics covered in the Traffic Signal Inspection Certification Course Manual include:

- Introduction to Traffic Signal Inspection
- Inspection of Underground Facilities
- Inspection of Traffic Signal Supports
- Inspection of Overhead Equipment
- Inspection of the Vehicular and Pedestrian Detection Systems
- Inspection of the Controller Assembly
- Safety Requirements
- Final Acceptance and Turn-On

As an addition to the printed manual an interactive version of the Traffic Signal Inspection Training Manual is also available on CD ROM.

Study Guide: 338 pages Copyright 2008

Prerequisites: None

Signs & Markings Level I

A Level I Signs & Markings Specialist should, by nature of his certification title, have mastered the basic principles behind signing and pavement marking. Although the individual who is approved to take the Level I exam may have had a lot of field experience, the exam will require that he be able to communicate this knowledge in a written format. The best way to prepare for this challenge is to begin to review the topics that will be covered on the exam. Level I review material has been derived from the

MUTCD. This manual has an overview of traffic control signs and markings, it covers applications of:

- Overview of Traffic Control Signs and Markings
- Using the MUTCD
- General Introduction to Signs and Pavement Markings
- Retroreflectivity
- Characteristics of Sign Safety
- Regulatory Signs
- Warning Signs
- Guide Signs
- Non Traditional Intersection Signs
- Sign Installation and Materials
- General Introduction to Markings
- General Environmental Safety Signs
- Pavement Marking Materials and Installation
- School Area Traffic Control
- Bicycle Traffic Control Devices
- TODS, Recreation, and Cultural Interest Sign
- Safety
- Temporary Traffic Control (TTC)
- Asset Management
- Equipment Management
- Tort Liability
- Working with the Public

Study Guide: Copyright 2016

Prerequisites: IMSA Work Zone Traffic Control Safety Certification
One (1) Year of Experience in Signs and/or Markings

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Signs Level II

This course provides the information needed to successfully apply your knowledge of practical applications and standard principles in the field. The materials will cover the role of signs in providing drivers with good regulatory, warning, and directional information and ultimately creating safer roadways. This course also presents accepted industry practices associated with the design, installation and maintenance of signs. More specifically, the following topics and their significance to day-to-day field work will be covered:

- Tort Liability
- Risk Assessment
- Regulatory Signs and General Principles
- Regulatory Signs: One Way, Ped Crossing, Intersection
- Nontraditional/Toll/Managed Lanes
- Regulatory Signs: Parking and Other
- Warning Signs
- Design and Location Considerations
- General Warning Signs
- Special Warning Signs
- Object Markers
- Maintaining Warning Signs and Object Markers
- Freeway Signs
- Guide Signs
- Route Markers and Route Signs
- Street Name Signs
- Other Signs

- General School Area Signs
- Design and Installation of School Signs
- School Signs
- Bicycle Signs
- Roadway and Rails
- Safety, TTC and Emergency Management Signs
- TODS, Recreation, and Cultural Interest Signs
- Understanding Retroreflectivity
- Applying Retroreflectivity
- Sign Shop Management
- Safety Requirements and Hazardous Materials
- Material Care and Management
- Sign Shop Equipment Management and Care
- Asset Management and Inventory Program
- Efficiency Control/Quality Control Sign Shop

Study Guide: Copyright 2016

Prerequisites: IMSA Work Zone Traffic Control Safety Certification IMSA Signs and Markings Level I Certification
Two (2) Years of Experience in Signs and/or Markings

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Markings Level II

The primary objective of the Level II Markings certification process is to recognize those individuals whose understanding of standard signing and marking principles is thorough enough to enable them to apply these principles to on-the-job situations. In order to achieve this, the Level II preparation seminar has been designed to emphasize practical application of standard principles. More specifically, the following topics and their significance to day-to-day field work will be covered:

- Tort liability
- Principles of reflectivity
- Roadways and Rails
- Pavement markings
- Route markers and trailblazer assemblies
- Equipment maintenance
- Dealing With The Public
- The future of markings

Study Guide: Copyright 2016

Prerequisites: IMSA Work Zone Traffic Control Safety Certification IMSA Signs and Markings Level I Certification
Two (2) Years of Experience in Signs and/or Markings

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Signs & Markings Level III

Signs and Marking Level III certification is the highest level of certification for signs and markings personnel. Signs and Markings Level III has no study guide, but will test your knowledge of the MUTCD. Attaining the highest level of certification in the signs and marking's operation field gives the specialist a profound sense of accomplishment as the effort required to achieve this goal is exceptional.

Study Guide: None
Prerequisites: IMSA Work Zone Traffic Control Safety Certification
IMSA Signs and Markings Level I Certification
IMSA Signs and Markings Level II Certification
A copy of the latest edition of the MUTCD
A copy of NCHRP Synthesis 157: Maintenance and Management of Street and Highway Signs
Five (5) Years of Verifiable Experience in Signs and/or Markings

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Fiber Optics for ITS Level I

This new certification program is tailored for those who design, install, and/or maintain Intelligent Transportation Systems (ITS) for city, county, and state transportation departments. The course provides a practical understanding of how fiber optics and fiber optic technology is integrated for ITS. The course includes twenty one chapters from theory to systems of which four chapters focus on video transmission, real time video, traffic control systems, and next generation systems that are key to the evolution from analog to digital ITS applications. This includes optical multiplexing (WDM, CWDM), bi-directional transmission, and bandwidth considerations for those using or considering multimode fibers.

Study Guide: None
Prerequisites: None

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Fiber Optics for ITS Level II

This new certification program covers two days of hands on instruction for those who design, install, and/or maintain Intelligent Transportation Systems (ITS) for city, county and state transportation departments.

Workstations are set up on the following topics:

- Splicing
- Cable Preparation

- OTDR Operation
- Optical Loss Testing and Systems

Study Guide: None
Prerequisites: Fiber Optics for ITS Level I Certification

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Roadway Lighting Level I

This course originally was Roadway Lighting Level II (Level I and Level II are now Level I). A new Roadway Lighting Level II is being written.

The Level 1 Roadway Lighting Certification course for qualified personnel is designed to aid individuals in the understanding fundamental aspects of Roadway Lighting. Additionally, the review material will address electrical safety and codes, basic electricity and laws, and basic construction and maintenance.

The following topics and their significance to day-to-day field work will be covered:

- Safety and Qualifications
- Lamp and Luminaire Components
- Electrical Service, Poles and Highmast Components
- Basic Lighting Design Fundamentals
- Lighting Applications
- Maintenance of Systems
- Reference Documents
- Testing, Investigation and Troubleshooting

At the conclusion of each of the seminar sections, the participant will be exposed to questions representative of the type contained in the certification examination.

Study Guide: 205 pages Copyright 2012
Prerequisites: IMSA Work Zone Traffic Control Safety Certification or approved equivalent
One (1) year of experience in the Roadway Lighting Field

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