Fundamentals of Inspection Practice (PD-01)

COURSE OUTLINE

Description of Construction Team

Inspector and Inspection

- Inspection policy
- Inspection practice
- Goals of testing and Inspection Plan
- Types of authority
- Inspector qualifications

Standard Specifications and Standard Special Specifications

- CSI
- Greenbook
- Caltrans
- Others

Administrative Responsibilities

- Basic Policy
- Working Relationship
- Responsibility and Authority
- Documentation
- Communication
- Changes
- Sampling and Testing
- Right to Reject
- Order to Precedence

Responsibility and Authority

- Types of Authority
- Dealing with contractors and subs
- Inspection Responsibility
- Delays
Responsibility and Authority – Cont.

- Inspector Authority
  - Limits of authority

Public Contract Laws

- Bidding Phase
- Product Substitutions
- Award of Construction Contract
- Design-Build Contracts
- Existing Underground Utilities
- Underground Construction
- Prevailing Wage
- Shoring and Bracing
- Construction Phase
  - Liquidated Damages
  - Progress Payments
  - Protection of Adjacent Property
- Post Construction Phase

Documentation – Records and Reports

- Purpose of Documentation
- Records be retained
- Progress records

Construction Schedule

- Gant Charts
- Network Diagrams

Daily Reports

- Construction Reports
- Other Reports
- Diary
Daily Reports – Cont.

- On-site records
- Contractor submittals
- Construction Photos
  - Progress Photos
  - PR Photos
  - Claims Photos
  - Safety Hazard Photos
- Other Records

Construction Safety

- Responsibilities
- Liability
- Shoring and Bracing
- Case Studies
- Risk Avoidance
- Guidelines for Trench Violations

Stormwater/NPDES

- Rules and Regulations
  - Federal
  - State
  - Local
  - Special
- Construction Activities Subject to NPDES
  - NOI’s
  - SWPPP’s
  - NOT’s
- Enforcement and Penalties
  - Administrative Actions
  - Civil Actions
  - Criminal Actions
Stormwater/NPDES – Cont.
- Sensitive Receptors – 303 (d) water bodies
- Invisible Pollutant
  - Sampling
  - Testing
- Non-Stormwater management
  - BMP’s

Earthworks
- Shoring and Bracing
  - Soldier Beams and Lagging
  - Hydraulic Shores
  - OSHA Competent Person
- Earth Fill and Blackfill
- Soil Densification (Compaction)
- Cement Treated Materials

Pipeline
- Plastic Pipe
  - PVC
  - HDPE
  - ABS
- Vitreous Clay
- Unreinforced Concrete
- Reinforced Concrete Pipe
- Mortar Lined & Coated Steel
- Corrugated Steel/Metal Pipe
- Installation
  - Excavation
  - Bedding
  - Pipeplaying
    - Basic considerations
    - Floatation
Pipeline – Cont.

- Installation – Cont.
  - Backfill
  - Compaction
  - Testing
- Special Construction
  - Pipe Lining
  - Pipe Jacking

Piling

- Pile Types
- Pile Materials
  - Timber
  - CIP
  - Precast Prestressed Concrete
  - Steel
- Installation
- Sheet Piling
- Test Piles

Portland Cement Concrete (PCC)

- Materials for PCC
- Types of Cement
- W-C ratio
- Reinforced Concrete Principles
- Structural Systems
- Joints
- Mixing
- Placing
- Consolidation
- Curing
- Reinforcing
- Inserts
- Formwork
  - Lateral forces
  - Tolerances
Portland Cement Concrete (PCC) – Cont.

- Concreting Methods
- Special Consideration
  - Hot/Cold Weather
  - Mass Concrete
  - Hydraulic Structures
  - Highway Paving
  - Prestressed Concrete
  - Shotcrete
  - Measurement for Payment
  - Sampling and Testing

Waterstops

- Use in concrete construction
- Types
- Installation details
- Sealants
- Tolerances
- Inspection and Testing

Pavement Construction

- Types
  - Rigid Pavements
  - Flexible Pavements
- Thickness design
- PCC and Bituminous Pavements
- Before paving ....
- Inspection and Duties

Structural Connections

- Structural Fasteners
  - Nails
  - Bolts
  - Special Connectors
  - Welding
Structural Connections – Cont.

- High Strength Bolding and Pipe Flange Bolting
- Welding
  - Types of welds
  - Common problems
  - Testing

Painting and Protective Coatings

- Principles of Corrosion
- Paint Prep
- Surface Conditions
- Painting and Coating
  - Inspection
  - Failures
  - Restricted Materials

Project Closeout

- Preparation for Closeout
- Beneficial Occupancy/Partial Utilization
- Liquidated Damages
- Early Completion
- Punch List
  - Contractor Obligations
  - Engineer Obligations
- Completion versus Substantial Completion
- Performance
- Liens and Stop Notices