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 of Precedence

Responsibility and Authority
• Types of Authority
• Dealing with contractors and subs
• Inspection Responsibility
• Delays
• 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 to be retained
• Progress records

Construction Schedule
• Gant Charts
• Network Diagrams
Daily Reports
- Construction Reports
- Other Reports
- Diary

Documentation – Records and 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 – Continued
- Sensitive Receptors – 303 (d) water bodies
- Invisible Pollutants
  - Sampling
  - Testing
- Non-Stormwater Management
  - BMP’s

Earthworks
- Shoring and Bracing
  - Soldier Beams and Lagging
  - Hydraulic Shores
  - OSHA Competent Person
- Earth Fill and Backfill
- Soil Densification (Compaction)
- Cement Treated Materials
Pipeline
  • Plastic Pipe
    o PVC
    o HDPE
    o ABS
  • Vitreous Clay
  • Unreinforced Concrete
  • Reinforced Concrete Pipe
  • Mortar Lined & Coated Steel
  • Corrugated Steel/Metal Pipe
  • Installation
    o Excavation
    o Bedding
    o Pipelaying
      • Basic considerations
      • Floatation
    o Backfill
    o Compaction
    o Testing
  • Special Construction
    o Pipe Lining
    o Pipe Jacking

Piling
  • Pile Types
  • Pile Materials
    o Timber
    o CIP
    o Precast Prestressed Concrete
    o 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
    o Lateral forces
    o Tolerances
  • Concreting Methods
  • Special Consideration
    o Hot/Cold Weather
    o Mass Concrete
    o Hydraulic Structures
    o 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
  o Rigid Pavements
  o Flexible Pavements
• Thickness design
• PCC and Bituminous Pavements
• Before paving ....
• Inspection and Duties

Structural Connections
• Structural Fasteners
  o Nails
  o Bolts
  o Special Connectors
  o Welding
• High Strength Bolting and Pipe Flange Bolting
• Welding
  o Types of welds
  o Common problems
  o Testing

Painting and Protective Coatings
• Principles of Corrosion
• Paint Prep
• Surface Conditions
• Painting and Coating
  o Inspection
  o Failures
  o Restricted Materials

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