American Bar Association, Forum on Construction Law
2018 Regional Program

Infrastructure From the Ground Up: Civil Works Projects for Lawyers.

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Highways/Bridges

Presented By:
Michael W. Raubenolt, PE
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The Primary Goal

Provide safe transportation facilities to effectively move people and goods.
“10 Commandments” For a Good Road

1. Get water away from the road.
2. Build on a firm foundation.
3. Use the best soils available.
4. Place and compact the soils well.
5. Design for relevant weather and geographic maintenance.
6. Build for traffic loads and traffic volumes.
7. Pave only those roads that are ready.
8. Build it from the bottom up.
9. Maintain to protect the investment.
10. Keep good records.
Surveying & Staking

Make sure you put it where it belongs ...

... at the proper elevation.
Soil Borings & Boring Logs
Design Control

Analyze/Identify the purpose and need of the roadway.

- Speed
- Vehicle Type
- Traffic Volume
- Traffic Capacity
- Transit Activity
- Pedestrian Usage
- Parking Needs
- Access and Right of Way
- Intersections
- Drainage
- Utilities
Plans & Drawings

Follow the directions.
Specifications

Follow the instructions:

▪ They tell you how to build it.
▪ They tell you what to build it with.
▪ They tell you when to build it.
▪ They tell you how to get paid for building it.
▪ They tell you when you’re done.
Project Delivery Methods

- **Design – Bid – Build**
  - Traditional infrastructure project delivery model.

- **Design – Build**
  - Contractor-led design that is ongoing during construction.

- **P3 (Public Private Partnership)**
  - Essentially design-build jobs that include financing for design and construction and often includes long-term warranty and maintenance. (Financing payment can include tolls or other method of generating revenue.)
Staging

STAGE 1 - OUTSIDE WIDENING
STA 507+03 TO STA 530+00
(THREE PHASES)

- COMPLETE WIDENING HOLLYWOOD WAY CENTER BENT FOOTINGS
- COMPLETE WIDENING COHASSET STREET ABUTMENT 1 FOOTINGS
- COMPLETE RW513 AND RW519

PHASE 1a STA 507+03 TO STA 530+00
- COMPLETE RW509 AND RW510
- COMPLETE OUTSIDE WIDENING SOUTH OF COHASSET STREET
- COMPLETE WIDENING ASSOCIATED WITH SB ONRAMP AND NB OFFRAMP
- FIRST PORTION OF HOLLYWOOD WAY NB ONRAMP AND SB OFFRAMP

PHASE 2: STA 507+03 TO STA 530+00
- COMPLETE WIDENING

PHASE 3: STA 512+00 TO STA 530+00
- COMPLETE HOLLYWOOD NB ONRAMP AND SB OFFRAMP WIDENING
- COMPLETE OUTSIDE WIDENING

STAGE 2 - MEDIAN WIDENING
STA 508+60 TO STA 580+00
(THREE PHASES)

- COMPLETE MEDIAN WIDENING

NOTE: STAGE 2, PHASE 1 AND 2 MAY BE WORKED ON CONCURRENTLY WITH STAGE 1.
Site Safety

Keeping the site safe ...

One of the biggest hazards is from motorists who do not exercise caution while driving where highway workers are present.

... keeps your company working.
Clearing & Grubbing
Demolition

Sometimes you have to get rid of the old first.

Complete

Partial
Sometimes the earthwork is in the dirt ...
Earthwork

…and sometimes the earthwork is in the rock.
Base Course

Stabilizing the grade with a layer of crushed untreated or treated gravel provides increased integrity for the surfacing.
Surface Course

**Asphalt Concrete**
- Well Graded Aggregates
- Bituminous Asphalt Binder
- Hot Placed & Compacted
- Flexible Pavement

**Portland Cement Concrete**
- Well Graded Aggregates
- Portland Cement Binder
- Slipped or Formed
- Rigid Pavement
Bridging the Gap
Bridge Objective
Connecting Point A with Point B

Keeps the feet dry and the tires out of the water.
Common Concrete Bridge Types

- Reinforced Concrete
- Cast-in-Place Post-Tensioned
- Precast Pre-tensioned
- Hybrid (Combinations)
- Spliced Girder
- Cast in Place-Tensioned Segmental
Common Steel Bridge Types

- Multi-Girder
- Stringer/Floor Beam System
- Trusses
- Cable Supported or Suspension Bridge
- Moveable Spans
Surveying & Staking

Like roads, make sure you align it ...  

...at the proper elevation.
Demolition

Also like roads, sometimes you have to get rid of the old first.

Complete

Partial
Foundation

- Pile Driven
- Drilled Shaft
- Spread Footing
Abutments

Where the bridge meets the road.
Pier Structures

What's the hold up?
Decking the Bridge
Any Questions?
RAILROADS

Presented By:
Kenneth G. Sislak
AECOM
Purpose & Benefits

2011 Class I Railroad Tons Originated

- Chemicals & allied prod.
- Farm products
- Non-metallic minerals
- Misc. mixed shipments*
- Food & kindred products
- Metallic ores
- Metals & products
- Petroleum & coke
- Other commodities

*Miscellaneous shipments cover a variety of commodities not included in the other categories.
Regulatory Agencies

- Surface Transportation Board (STB)
- Federal Railroad Administration (FRA)
- Federal Transit Administration (FTA)
- National Transportation Safety Board (NTSB)
- State Departments of Transportation (DOTs)
Types of Tracks

- Main Line Tracks
- Secondary & Branch
- Sidings
- Spurs
- Industrial Tracks
- Yards
- Wyes
Safety of Operations

Train operations, workers, and the public.
Tracks & Authority for Movements

Main tracks and other-than-main tracks.
Locomotives & Cars

- Cars
Special Track Work
Track Geometry & Design

- Horizontal Alignment
- Vertical Alignment
- Design Considerations
  - Tangent track between curves and turnouts.
  - Overlapping horizontal and vertical curves.
  - Track centers and clearances.
Track Construction

Diagram showing the components of a railway track: Tie, Rail, Tie plate, Ballast, Subballast, Subgrade.
Earthwork
Building a solid foundation is key.

- Excavation
- Embankment
- Borrow
Track Structure

Setting Ties

Installing Rail
Bridge Types

- Timber Bridges
- Concrete Bridges
- Steel Bridges
- Moveable Bridges
Bridge Structures

Precast / Composite for speed in construction.
Bridge Structures

New construction with concrete.

Steel bridge erection.
Railway Drainage Structures
Drainage Structures

Keep the water out.
Tunnels
Environmental Regulations & Permitting

- National Environmental Policy Act
- Waters of the United States & Wetlands
- Threatened & Endangered Species
- Cultural Resources
- Hazardous Waste
- Air Quality
- Noise
Right-of-Way

Track structure, utilities, barriers, room for improvements, and drainage structures.
Communications & Signals

- Basics of Signal Systems
- Energy/Power Source
- Track Circuits
- Track Switches
- Highway Crossings
- Centralized Traffic Control (CTC)
- Positive Train Control (PTC)
- Defect Detectors
Communications & Signals
Passenger Rail

- Commuter
- Service between suburban areas and city centers
- Speed 40 – 90 mph
Passenger Rail

- Intercity
- Service between cities between 100 and 1,500 miles apart
- Speed 40 – 90 mph
Passenger Rail

- High-Speed
- Expedited intercity service with routes usually between 100 and 500 miles
- Speed 90+ mph
Passenger Rail

- Rapid Transit
- High-capacity service within urban areas – typically operates every 5 to 30 minutes
- Speed 30-70 mph
Passenger Rail

- Light Rail
- Medium-capacity service within urban areas – typically operates every 10 to 30 minutes
- Speed 30-50 mph
Passenger Rail

- Street Car
- Urban circulation and tourist routes on average 1 to 5 miles long
- Speed 15-30 mph
Track Maintenance

Track maintenance is a vital component of keeping railroads operating efficiently and safely.
Track Maintenance

- Track Disturbance Activities
- Rail Lubrication
- Rail Grinding
Track Maintenance

- Rail Defect Testing
- Geometry Measurement
- Gauge Restraint
Any Questions?
Legal Issues in Transportation Projects

Presented By:
Nora E. Loftus
Frantz Ward LLP
Eminent Domain

- Power of government to take private property for public use.
  - First recognized in *Kohl v. United States* (1876).
  - Also known as condemnation or expropriation.
- **But** requires just compensation to private owner.
  - 5th Amendment prohibits the government’s taking of property without just compensation (the “Takings Clause”).
Eminent Domain

- Two required elements:
  - It must be for public use.
    - Must be legitimate government purpose and can’t take more than is necessary for that purpose.
  - There must be just compensation.

- Unique issue for rail: Railroad may also need to condemn “access” easement in order to ensure that it can maintain the railroad conveniently.
Liquidated Damages for Delay

- Elements of an enforceable liquidated damages clause (vary among jurisdictions):
  - Parties intend the clause to liquidate damages and not be penalty to compel performance.
  - At time of contracting, damages specified are reasonable approximation of the damages envisioned from delay.
  - Difficult or impossible for the injured party to quantify actual damages to a reasonable degree.
Liquidated Damages for Delay

- Procedural issues
  - Party seeking to avoid liquidated damages provision bears the burden of proving it is an unenforceable penalty.
  - In the context of construction projects, liquidated damage clauses enjoy widespread approval and enforcement.
Liquidated Damages for Delay

Contracting issues:

- Enforceability of liquidated damage clause more certain if the three required elements are expressly stated in contract provision.
- General contractor may pass-though liquidated damages to its subcontractors when a subcontractor’s work causes LDs.
- In addition to passing through LDs, contractor may contractually include its own separate liquidated damages amount (extended overhead, etc.) or allow for additional actual damages due to a subcontractor’s delay.
Liquidated Damages for Delay

- Other issues:
  - Liquidated damages for delay are a remedy only for those delay damages that arise from a breach unless otherwise characterized.
  - When a liquidated damage clause is held to be an unenforceable penalty, it does not mean that the party protected by the clause has no remedy – it merely means the injured party must prove actual damages.
Mechanics’ Liens on Rail Projects

- Effective foreclosure usually requires joinder of all potential owners of the property at issue.
  - Ownership of rail property can be rather complex, which makes foreclosure expensive and difficult.
  - Railroads are constructed over large swaths of property with dozens (or even hundreds) of interest owners.

- Lien rights may provide no practical protection on rail projects.
  - Subcontractors and materialmen must be diligent in securing other protections.
Public Private Partnerships (P3)

• Innovative way for public entities to improve infrastructure despite having funds in hand to pay.
• Departments of Transportation are leading agencies for P3 projects.
• Small portion of total infrastructure projects, but still significant.
• Usually reserved for the “mega” projects that government alone can’t fund.
Thank You

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