Working on the Railroad
– What State DOTs Should Know

Kevin Keller, Vice President
HDR Engineering, Inc.
Railroads and State DOTs | An Evolving (Improving) Relationship
Outline

- Introduction
- State DOT Requirements
- Class I RR Industrial Development Guidelines
- Federal Requirements for State DOTs
  - State Rail Plans
  - State Freight Plans
- Financial Assistance
  - State Rail Programs
  - Federal Programs
- Some Lessons Learned
  - Importance of State Rail [Freight] Plans
  - What makes a Good Project
  - Rail Cost Benefit Analysis
  - Project Advocacy & Coalitions
  - Patience & Perseverance
State DOT Rail Programs

- **Improve rail access** for business in the State
- **Improve and Preserve the condition** of the State’s railroad network
- **Common State Statutes on Railroads**
  - Crossings
  - Signals
  - Inspectors (Safety)
  - Equipment
  - Right of Way/Abandonments
  - Zoning
  - Penalties
  - Grants/Loans
- **City/County Statutes on Railroads**
  - Depots; levees; railway crossings; trains; regulation of speed.
  - Quiet Zones
### Class I RR Requirements

- Industrial Development Guidelines

#### Guidelines for Rail Service to New or Modified Industry Locations

**Infrastructure Guidelines**

<table>
<thead>
<tr>
<th>Rule Description</th>
<th>Restricted Access to Multiple Companies</th>
<th>Controlled Access to Mainline Corridors</th>
<th>Railbed Access to Mainline Corridors</th>
<th>Industry Parks, Leads and Other Customer Corporates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Customer facilities must allow a full rail length to clear the mainline without stopping at line switches. This requires approximately 1,500 feet of clear mainline capacity due to train length and signal systems.</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>2. #23 mainline power turns required to enable train to clear mainline in continuous moves (applicable)</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>3. If customer operates requiring directional flow, customer facility should access mainline from both directions.</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>4. Customer operation must accommodate switching or expediting of crossover from the mainline or controlled switch. Where unit trains are handled, availability of yard at the facility may be required, depending on circumstances.</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>5. Customer must have reasonably close access to power stations to avoid excessive cost from movements in double track territory (exception)</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>6. Customer facilities handling less than 100,000 tons per year must accommodate rail access upon arrival and have sufficient capacity to accommodate both loaded and empty rail cars. Facilities set up to handle unit trains must have the ability to chamber a minimum of one complete train.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>7. Infrastructure is 365 compat. required by customer operations.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>8. Customer infrastructure complies with UP track and signal standards.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>9. Customer facilities designed for a &quot;drop and pull&quot; service. Drop - Physical delivery of load/blankets, in one continuous move, onto one track, which is sufficient in length to accommodate the entire number of load/blankets of the calling train for that location. Pull - Physical removal of load/blankets, in one continuous move, from one track which is sufficient in length to accommodate the entire number of load/blankets billed at departure at the same time from that location. Noninterchange switching performed by the Union Pacific. Train length may vary dependent upon RAIL CONDITION and manifests周刊 type. &quot;Drop and Pull&quot; may require an additional &quot;Run Around&quot; track.</td>
<td>X</td>
<td>X</td>
<td>Preferred</td>
<td></td>
</tr>
<tr>
<td>10. Customer facility designated to accommodate customer's third party switching, including Terminal Control Loadmost (TCLs)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>11. Customer facility layout does not require commodity order specific switching assignment of railcars unloading tracks in Union Pacific.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>12. Railbed access requirements determined by local conditions and specific considerations.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>13. Train operations do not block mainline.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>14. Other than required connectors, customer tracks and facilities will be designed to be separation from UP right-of-way capacity.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Preferred</td>
</tr>
</tbody>
</table>

*Note: Meeting the infrastructure guidelines may not guarantee service will be provided.*
NEW TRACK CONSTRUCTION OVERVIEW

Procedures for Development of Track Plans

The first step is for the customer to submit the Service Feasibility Questionnaire. This provides Union Pacific with the information necessary to evaluate your proposed project. If the customer is unable to process this online form, please contact the appropriate Marketing and Sales representative for assistance. If the customer has not already done so, the customer will need to select a qualified rail engineering consultant for the project. A list of consultants with experience in railroad construction projects is available for customer review at the following web site:

http://www.up.com/customer/industrial-contractor-list_construction/index.htm

Please note this list is only a compilation of available vendors, not a list of approved or endorsed vendors. Union Pacific makes no representation as to the qualifications or expertise of any of the vendors listed.

To begin the Location Analysis phase, the Regional Manager of Industrial Development (RMID) will contact the customer to evaluate the proposed project, review Union Pacific’s Industry Access Guidelines and establish an on-site meeting plan. If the customer has a consultant on hand at the time of the on-site meeting, the consultant should attend the meeting with the customer. The Manager of Industrial and Public Projects (MIPP) and representatives from UP/PIE’s local operating, maintenance, and signal departments should also attend the on-site meeting.
Class I Design Specs

I. INTRODUCTION 1
II. DEFINITIONS 2
III. SURVEYING 4
IV. INDUSTRIAL TRACK DESIGN 7
V. INDUSTRY SUBMITTED PLANS 14
VI. SITE WORK 18
VII. MATERIALS 22
VIII. GENERAL CONSTRUCTION 28
IX. CROSSINGS 29
X. BRIDGES, TRESTLES, BOX CULVERTS AND UNLOADING PITS 31
XI. SCALES 34
XII. HAZARDOUS COMMODITIES 35
XIII. ATTACHMENTS 37

PLAN NO. 1-3
PLAN NO. 1-3A
PLAN NO. 1-21
PLAN NO. 1-22
PLAN NO. 1-22A
PLAN NO. 1-23
PLAN NO. 2-4
PLAN NO. 2-6
PLAN NO. 2-7
PLAN NO. 2-17
PLAN NO. 3-26
PLAN NO. 6-14
PLAN NO. 7-1
PLAN NO. 7-3A
PLAN NO. 7-05
PLAN NO. 7-05A
PLAN NO. 7-05B
PLAN NO. 7-06
PLAN NO. 7-08
PLAN NO. 7-0A
PLAN NO. SP-701
PLAN NO. SP-1821

TABLE OF CONTENTS

General Procedure for Development of Track Plans 2
Standards for Industrial Trackage 3 – 6
Standards for Unit Train/Loop Facilities 7 – 10
Industrial Track Survey and Plan Requirements 11 – 12
Specifications for Constr. of Indust. Trackage by Private Contractor 13 – 20
Track Inspection Acceptance Checklist 21
Requirements for Contractors Working on BNSF Right of Way 22 – 23
Procedures for Continuous Welded Rail in Industry Tracks A-1 – 9
Preliminary Conceptual Sketch Example A-10
Standard Sections for Industry Track A-11 – 13
Construction Details A-14
Earth Bumper Details A-15
No. 9 Turnout Plan and Geometry A-16 – 21
No. 11 Turnout Plan and Geometry A-22 – 27
No. 15 Turnout Plan and Geometry A-28 – 33
Double Switch Point Details A-34
Switch Stand with 30 Degree Handle A-35
Crossing Panels for Wood Ties A-36 – 38
Clearance Requirements A-39 – 40
Standard Clearance Sign A-41
Vertical Curves A-42 – 43
Receipt of Design Guidelines A-44

May 2011 – revised Dec 2011, CWR revised Sept 2, 2014

NS Guidelines for Design and Construction of Privately Owned Industry Tracks
Table of Content
March, 2011
Other State DOT Requirements

- Environmental Clearance
  - NEPA
    - Categorical Exclusion (CE)
    - Environmental Assessment (EA)
    - Environmental Impact Statement (EIS)

- Land Use and Planning
- Cost Benefit Analysis
- Other financial requirements
- Contracts
State DOT Grant and Loan Programs

- Many states administer a grant and/or loan program designed to support freight rail capital needs.
- Most require a cost benefit analysis.
- Eligible applicants include rail users locating or expanding in the State and local government entities interested in helping these businesses.
- Loans are competitive, and are evaluated based on a number of factors, including the number of jobs that will be created or retained; expected impact on the local economy; and the viability of other transportation options.
- Proposed projects usually receive a site evaluation to confirm the validity of the project and estimated costs.
- Most State programs limit the project cost items that can be covered by the grant or loan (i.e. cost to purchase ties, rail, ballast, other track materials, and structural materials in sufficient quantity to construct a railroad line).
Federal Grant and Loan Programs

- Transportation Innovation & Finance (TIFIA)
- Railroad Rehabilitation & Improvement Financing (RRIF) Program
- Transportation Investment Generating Economic Recovery (TIGER)
- FASTLANE
- Railroad Safety Grants for the Safe Transportation of Energy Products by Rail Program (NEW)
- Rail Line Relocation & Improvement Capital Grant Program (RLR)
- Railroad Rehabilitation & Repair (Disaster Assistance)
- Railroad Safety Technology Grant Program
- Railway-Highway Crossing Hazard Elimination

US DOT
TIGER
DOT.GOV

U.S. Department Of Transportation
Federal Railroad Administration
State Rail Plans

- FRA Final Guidance – September 2013
- Established by the Passenger Rail Investment and Improvement Act of 2008 (PRIIA)
- Individual State rail plans must be updated at least every five years
- FRA established a standard format for State rail plans
  - Executive Summary
  - Chapter 1: The Role of Rail in Statewide Transportation (Overview)
  - Chapter 2: The State’s Existing Rail System:
    - Description and Inventory
    - Trends and Forecasts
      » Rail Service Needs and Opportunities
  - Chapter 3: Proposed Passenger Rail Improvements and Investments
  - Chapter 4: Proposed Freight Rail Improvements and Investments
  - Chapter 5: The State’s Rail Service and Investment Program
  - Chapter 6: Coordination and Review
  - Technical Appendix
State Rail Plans

- The State rail plan may be published and presented to FRA either as a stand-alone document or as an element of the State’s Long-Range Transportation Plan.
- In order to be eligible for capital grants authorized under PRIIA, States must establish or designate a State Rail Transportation Authority to develop State rail plans that set policy involving freight and passenger (intercity and commuter) rail transportation within their boundaries, establish priorities and implementation strategies to enhance rail service in the public interest, and serve as the basis for Federal and State rail investments within the State.
- No FRA-approved State Rail Plan – No federal funding for rail projects in that State!
State Freight Plans

- MAP-21 encouraged States to develop freight plans that are comprehensive and that include both immediate and long-term freight planning activities and investments.
- The FAST Act made these State Freight Plans mandatory.
- A State Freight Plan is required in order to seek the higher federal share for freight projects

State Freight Plan Outline
- Chapter 1, Introduction
- Chapter 2, Stakeholder Outreach
- Chapter 3, State’s Freight System
- Chapter 4, Freight Network Conditions and Performance
- Chapter 5, Needs Assessment and Freight Forecast
- Chapter 6, Economic Context of Freight
- Chapter 7, Freight Policies, Strategies, and Institutions
- Chapter 8, The Decision-Making Process
- Chapter 9, Strategies and
- Chapter 10, Action Plan and Implementation
- Appendices
Freight Advisory Committees (FAC)

- FAC must consist of representative public and private sector stakeholders, including:
  - the state DOT,
  - local governments,
  - freight carriers,
  - shippers,
  - ports,
  - freight industry workforce and
  - freight associations.

- Role of FAC
  - Advise state on freight-related priorities, issues, projects and funding needs.
  - Serve as a forum for state transportation decisions impacting freight mobility.
  - Communicate and coordinate regional priorities with other organizations.
  - Promote information sharing between the public and private sectors on freight issues.
  - Participate in the development of the state freight plan.
FAST Act on Rail

- Requires that state rail plans be re-submitted to USDOT every four years for acceptance instead of every five years for re-approval (Section 11315 Misc)
- Focus on “Program of Projects”
- Numerous new funding programs for rail - consolidates rail grant programs for passenger, freight, and other rail activities
- Major Amtrak reforms (i.e. State Supported Programs, OTP, Preference, etc.)
- FRA to Issue RFP for projects for the financing, design, construction, operation, and maintenance of a high-speed passenger rail system operating within federally designated high-speed rail corridors.
- National Freight Program and NSFHP
Rail Projects & States | Some Lessons Learned

- **Importance of State Rail [Freight] Plans**
  - Transformation from “Departments of Highways” to “Departments of Transportation”
  - Maintainability of Public Infrastructure
    - Metro areas now comprise more than 84 percent of the US population (2010 Census)
    - The Urban challenge faced by DOT’s and MPO’s:
      - High demand
      - High cost
      - Long delivery window
  - Rural Infrastructure
    - Better titled “Connection infrastructure between Metro Areas”?
      - Long distances
      - Wide Grid
      - High Energy Use & CO₂
  - Vital importance of cost-effective connections to national and international markets
    - Rail as an Economic Development Catalyst
  - Merger of DOT and ED Delivery
Rail Projects & States | What Makes a Good Project?

- Pre-Stress Project for Public Scrutiny & Debate

- Leverage Rail’s Fundamentals
  - Chokepoint Remedies
    - Improve livability
    - Reduce (Mitigate) community impacts
    - Improve reliability – freight and passenger
    - Trucks off road – [safety, air quality, CO₂, highway maintainability / expansion, modal cost benefits, energy savings, etc.]
  - Connectivity Extension and Preservation
    - Economic Development & Jobs – [direct & indirect]
    - Trucks off road [many benefits]

- Facilities

- Project Speed of Delivery

- Corridor Project Approaches
For Rail Projects that Pass the Stress Test, Cost Benefit Analysis (CBA) is Critical

- Utilize Best Practices and Conservative Assumptions – A Good Rail Project Can Take It
  - RTC (or Excel) Simulation as Foundation
  - A Clear Build vs. No-Build Case

- The same [Physical] Simulation outcomes drive public and private benefits
  - Delay Reduction (Rail, Vehicular, Pedestrian)
  - Capacity Increase
  - Velocity & Reliability Increase

- Monetize multi-year benefits and discount to today - Compare to CAPEX
  - Vehicular and pedestrian delay
  - Truck diversion
  - Modal cost benefits
  - Air Quality, Fuel CO₂ (including reduced rail miles)
  - Operating savings & revenue increases

- Connection Extension/Preservation & Facility Projects
  - Supplement CBA with Economic Impact Analysis
Public Funding is not an Application, it’s a Campaign

Your Reputation and Clear Public Benefits for Your Project are Paramount

Develop Clear and Defendable Premise | Why Invest Public Dollars into [Your] Private Infrastructure?
- Public cost of conventional alternative (e.g. $ / mile to construct each lane of highway | pavement maintenance) – Use local examples
- Level of Private Investment proposed for Project
- Multiplier Effect of Private Dollars ONTOP of Public Dollars
- Public Return from Each Dollar Invested
- 100% Private Maintenance after Construction
- Project Delivery Visibility and Simple Key Performance Indicators (KPI’s)

Identify Impact to Local Stakeholders | Shippers, Departments of Commerce, Mayors, Counties, Schools, MPO’s

Boil Down Cost Benefit & Economic Impacts into Simple / Direct / Actionable Bullets -> Laser WIFM Focus

Prepare Glossies, Website, Facebook, Twitter, etc.

Develop Coalitions | Most effective Projects do not have Railroads as primary Advocate(s)

Decision Maker Visits to Railroad and Customer Sites
Crude Oil and BioFuels Risk Management

- Very sensitive issue for State DOTs and Railroads!
- Define the characteristics, risks, prevention, and emergency response system for incidents involving the rail transportation of crude oil and biofuels
- Identify gaps and assist in the development of policies, procedures, and actions to further reduce risks and improve emergency response throughout the state
Rail Studies

  - Governor tasked NY state agencies with examination of prevention and preparedness regarding crude oil transportation in state

  - ND Department of Emergency Services-led study looked at preparedness related to crude transportation by rail, roadway, and pipeline within state

- Iowa Crude Oil and Ethanol by Rail Study (2015-2016)
  - Led by IA DOT and IA Homeland Security and Emergency Management Division with broad stakeholder engagement
  - Recommendations pending
Overarching Themes

- Situational awareness and realistic understanding of risk
- Informing local and state risk assessments and capability planning
- Coordination and communication
Thank You!