Presentation to the Swiss Public Transport Journalists
Agenda

- HNTB Overview
- HNTB Rail Systems Qualifications
- The Swiss Connection
- Overhead Contact System Capabilities
- Swiss Expertise
Corporate Overview

- Multidiscipline engineering firm specializing in rail/transit, aviation, DOT, toll, and water market sectors
- Architectural, engineering, consultant firm with more than 3,700 personnel in more than 70 offices nationwide
- #1 Go-To Mass Transit Design Firm (*Road & Bridges* - 2012)
- Celebrating 100 year anniversary
Local Presence

• Northeast
• New York
• New Jersey
• Pennsylvania
• Massachusetts
• Maine
• Connecticut
HNTB Rail Systems Qualifications

- 400+ professionals specializing in rail/transit and railroad design engineering and inspection
- 100+ professionals specializing in rail/transit systems engineering
- Rail resources positioned strategically throughout the country to service our clients
- Massachusetts office is the National Center for Systems Engineering
Overhead Contact Systems Capabilities
Zakim Bridge

- Leonard P. Zakim Bridge Interstate-93
- Landmark bridge and structure
- HNTB Engineer of Record
- Conceptual designer - Christian Menn of Switzerland
OCS Capabilities

- Conceptual design
- Complete detailed design
- Construction phasing plans
- Existing system evaluation and condition assessment
- Renovation and modernization of existing systems
- Feasibility studies for new lines, planned extensions and improvements to existing systems
- Value engineering for various types of OCS design
- Transmission line design
- LiDAR surveying
Major OCS Clients

- Amtrak
- MBTA
- SEPTA
- Caltrain
- MNRR
- Toronto Transit
- SANDAG
- Muni
- DART
- Baltimore MTA
- St. Louis Metro
- San Jose VTA
- Los Angeles Metro
- Milwaukee Streetcar
- Washington DC Streetcar
Swiss OCS Expertise
Toronto Transit Commission OCS Conversion

- New fleet of streetcars
- Entire system OCS conversion
  - 82km of track
- Elastic suspension
- Special low bridge suspension
- Reduction of hardware at intersections
- Sectionalizing at Grand Unions
- Aesthetic OCS
- Utilizes Kummler+Matter overhead
- HNTB leading the OCS design in conjunction with TTC engineers
Toronto Transit Commission
K+M Overhead Components

- Low bridge supports
- Aesthetic intersections
- Diode section insulator
- Pole/pantograph crossing
- Pole/pantograph curve pullovers
Elastic Arms-Union Station

K+M Elastic Arm
Toronto Transit Commission
Eglinton Tunnel Conductor Rail

- 19 km of tunnel
- Overhead system is Furrer + Frey conductor bar
- Concept designed by HNTB
Amtrak Thames River Bridge

- New bridge for Amtrak over the Thames River in Groton, Connecticut
- Bridge and OCS designed by HNTB
- Overhead system is Furrer + Frey conductor bar
- All Amtrak movable bridges use F+F Conductor Bar
Amtrak and SEPTA Section Insulators

- Electric Railroads use Sectionners
- Arthur Flury Sectionners in Use
- Excellent Results

SEPTA Regional Rail System
MBTA Boston Overhead Contact System

- Extensive use of Kummler + Matter OCS Hardware
  - Used in light rail, streetcar and trolley bus system
  - K+M hardware is use
    - Section insulators
    - Pullover arms
    - Trolley wire splices
    - Wire crossing devices
    - Door bridge devices
    - Elastic hangers
    - Elastic arms
    - Insulators

- Steady arms
- Cantilever arms-ARCAS system
- Trolley Bus switches and crossings
- Inclined Pendulum Suspension
- Balance weights and weight brakes
Meeting the needs of the client

- Modifications to Elastic Hanger
  - MBTA required articulation
  - K+M incorporated this into their standard part

- Modifications to Elastic Arm
  - MBTA required swivel end
  - K+M designed special fitting now a standard part

- Special contactor for Trolley Bus Switch
  - Designed special parts

- Diode Sectionner for pantograph
  - Designed for all pantograph operation

- Short Pendulum
  - Designed for Harvard Square Subway
K+M Components

Feed Tap Clamp

Diode Sectionner for Pantograph

Between the Tracks Balance Weight

K+M Weight Brake

Roll up Door Bridge

Balance Weight Brake

Double Beam Sectionner
K+M ARCAS Cantilevers Assemblies

MBTA Blue Line

Adjustable Steady Arm
Overlaps

Original Overlap Beacon Street Overlap

Blue Line Airport Overlap

Rebuilt Overlaps
Trolley Bus-Silver Line

Switches and Crossings

Elastic Hangers

Diode Section Insulators

Short Pendulums
Trolley Bus-Cambridge/Watertown/Belmont

- Cambridge Common
- North Portal
- Waverly Square
- West Portal

Special Switch Contactor
Cut-in Switch
Tube Switches and Crossings
Swiss OCS Engineering and Material

- Highest quality material
- Well engineered—like a “Swiss Watch”
- Ensures reliable train operation
- Minimal maintenance
HNTB Philosophy

- Quality Work
- On Time
- On Budget
- To the Client’s Satisfaction