Complete Streets at Varying Scales: Challenges and Opportunities

Purdue Road School – Session 112
Agenda

- Introduction
- Complete Streets at the Indiana Statewide Scale
- Complete Streets on an INDOT/LPA project
- Complete Streets Case Study of US 67 in Texas
- Complete Streets National Perspectives
Defining Complete Streets

- Complete Streets serve everyone. They enable safe access for all users—pedestrians, bicyclists, transit riders and drivers—and balance freight and emergency vehicle access.
- A Complete Street in a rural area is different than in an urban area; however, both balance safety and access for all users.
Complete Streets Applies to All Settings

A SINGLE SYSTEM

For any context, all travel modes need to be considered simultaneously to create complementary travel networks integrated with the communities and variety of travel needs served.
Complete Streets at the Indiana Statewide Scale
Main Objective:
Design and build roads that...

- Safely and comfortably accommodate all users (motorists, cyclists, pedestrians, transit, and freight)
- Benefit all ages and abilities
- Promote Americans with Disabilities Act (ADA) acceptable provisions

Not a funding program, but a policy to guide planners, designers, and engineers.
INDOT Active Transportation Plan

- INDOT is working on the first ever Active Transportation Plan for Indiana
- Survey was held in latter half of 2018
  - Walking most popular for less than half-mile trips
  - Driving most popular for more than half-mile trips
  - Cycling sweet spot is 1-3 miles
  - Reason people don’t bike/walk more often: SAFETY
- Bicycle and Pedestrian Facility Type Guide (draft form)
- More deliverables expected
Indiana Infrastructure Assets

35,897,597 annual unlinked passenger trips via PUBLIC TRANSIT, including bus and commuter trains

105,928 miles of PUBLIC ROADS, of which 11,169 are State-owned

19,291 BRIDGES, of which 5,747 are State-owned

4,134 miles of RAIL with 1.5B tons of cargo annually

3 PORTS & 225 MARITIME TERMINALS

117 public-use AIRPORTS

90 miles from SOUTH BEND to CHICAGO MILLENNIUM station

3,600 miles of TRAILS & BIKEWAYS

428 miles of INLAND WATERWAYS

Source: INDOT LRTP
Policy Goals

- Safe & Secure Travel
- Economic Competitiveness and Quality of Life
- Multimodal Mobility
- Environmental Responsibility

*These goals apply to Complete Streets!*
Pedestrian and Bicyclist Safety

- Continued investment in safe infrastructure also helps decrease motor vehicle-related bicycle and pedestrian injuries and fatalities.

State Advocacy Groups: Bicycle Indiana & Health by Design
Indianapolis Pedestrian and Bike Crash Data

Indianapolis Pedestrian & Pedalcyclist Crashes

- Incapacitating Pedestrian Crashes
- Fatal Pedestrian Crashes
- Incapacitating Cycle Crashes
- Fatal Cycle Crashes

Source: Indianapolis Metropolitan Planning Organization
Pedestrian and Bicyclist Safety

- Indiana Strategic Highway Safety Plan (2016)
  - Emphasis areas include Bicycles and Pedestrians
- Bicycles involved in about 1-2% of all severe crashes
- Pedestrians involved in about 10% of all severe crashes
- Strategies to improve are Complete Streets strategies
  - Speed management
  - Improve infrastructure to reduce contributing factors
    - Intersection design
    - Roadway design
    - Traffic control devices

Source: Indiana SHSP
CHAPTER 51

Special Design Elements

NOTE: This chapter is currently being re-written and its content will be included in Chapter 307 in the future.

- Pedestrian Infrastructure
  - Sidewalk
  - Shared-Use Path
  - Curb Ramps
  - Street Crossings
  - Accessible Pedestrian Signal
  - Transit Stops
- Bicycle Infrastructure
  - Bikeway
  - Bicycle Lane
  - Shared Lane/Roadway
  - Shared-Use Path
  - Bike Parking
- Transit Infrastructure
  - Bus Stop
  - Bus Turnout
  - Bus Shelter
Complete Streets on an INDOT/LPA Project
US 36 / SR 9 ATL and Pedestrian Connectivity

- **INDOT Project**
  - US 36/SR 9 Added Travel Lanes (Des. 1702936/1802854)

- **LPA Project (Town of Pendleton)**
  - US 36 Pedestrian Connectivity (Des. 2001127)

- **Project Goals**
- Leveraging the Combined Projects
  - Holistic improvement
  - Cost effective
  - Partnering between INDOT and LPA

**Corridor Users:**
- Pedestrians
- Bicyclists
- Passenger Cars
- Freight Trucks
- Emergency Vehicles
- School Buses
Project Map

North Junction
(US 36 / SR 9 Jct)

South Junction
(US 36 / SR 38 Jct)

LPA Project intermixes with both INDOT Des. Nos.
Before and After

SB Right Turn Lane

SB Thru Lane

SB Left Turn Lane

NB Thru Lane

NB Right Turn Lane

Complete Streets at Varying Scales  Challenges and Opportunities
Before and After

Complete Streets at Varying Scales  Challenges and Opportunities
Complete Streets Features Used

- New sidewalk and shared-use paths with buffers
- Accessible pedestrian signals
- ADA-compliant curb ramps
- Pedestrian refuge islands
- High visibility crosswalks
- Pedestrian lighting/signing
- Amenity areas (benches)
- Bike/Ped counter
- Traffic calming measures
  - Raised medians
  - Minimized corner radii
  - Minimized lane widths – kept one 12’ lane in each direction for NTN

Pedestrian lighting will match existing town lighting

Example Bike/Ped Counter (UrbanMULTI by ecocounter)
Complete Streets Case Study of US 67 – Implementation at the Local Scale and Recommendations

Martin Guttenplan, AICP, PMP, Complete Streets Coordinator
Complete Streets at Varying Scales - Challenges and Opportunities
La Entrada al Pacifico (2006-2008) and Trans-Pecos Pipeline (2017)

**NO TRUCKS**

FIND OUT WHAT YOU CAN DO TO KEEP LONG HAUL TRUCKS FROM RUINING OUR BIG BEND COMMUNITIES

StopTheTrucks.org

KERA News

Big Bend Gazette
Complete Streets at Varying Scales
Challenges and Opportunities
Public Outreach Approach

- Three County Judges (Pecos, Brewster, Presidio)
- Three City Mayors (Marfa, Presidio, Alpine)
- Three City Managers/Administrators
- Agencies
- Non-Profits
- Media
- Interest Groups/Individuals
- Art Community
- Landowners/Ranchers
- Environmental
- >8 others

Public Outreach Approach

Complete Streets at Varying Scales - Challenges and Opportunities
Bus Tours

Who Attended?

- Stakeholders
- Elected officials from communities along the corridor
- Representatives from transportation agencies and organizations

Why a Bus Tour?

- Build relationships
- Gather meaningful stakeholder input
- Better inform potential study champions
- Discuss location-specific concerns
- Identify community concerns
- Provide a forum for collaborative discussion and brainstorming solutions
Measures of Public Engagement

**Quantitative Outputs**
- 2,100 website views
- 467 virtual open house views
- 875 people attended public meetings
- 272,000 social media views

**Qualitative Outcomes**
- 32,000 population in three-county area; broad outreach using multiple techniques
- 900 written/survey comments; input received from public meetings
- 12 study goals established and ranked by the public
Complete Streets Case Study of US 67 – Recommendations
US 67 Complete Streets Alternatives

**URBAN SOLUTIONS**

A striped buffered bicycle lane is recommended on the existing paved shoulder in Presidio.

A two-way cycle track separated from traffic with flexible delineators and a parking lane recommended for Marfa.

**NETWORK SOLUTIONS**

Potential bicycle network improvements off US 67 in Presidio. There are similar recommendations for all three communities.

**RURAL SOLUTIONS**

Rumble strips reduce crashes for motor vehicles but can cause a bicyclist to fall. Gaps allow bicyclists avoid hazards and debris.
Urban Solutions – Marfa is Different

- Increased need and public desire for bicycle and pedestrian facilities
- Significant tourism industry
- Local bicycle share, Bike Marfa
Urban Solutions – Marfa Existing Typical Section

MARFA
Right of Way Varies 100’ - 200’

Sidewalk Varies 5’ - 12’
Shoulder Varies 12’ - 25’
Travel Lane 12’
Travel Lane 12’
Shoulder Varies 12’ - 25’
Sidewalk Varies 5’ - 12’

48’ - 74’ Roadway
Urban Solutions – Marfa Bicycle Lane with Striped Buffer
Urban Solutions – Marfa Bicycle Lane with Stripped Buffer

San Antonio Street and Highland Avenue
Alternative A: "With Bike Lanes"
Network Solutions – Designate Bicycle Network

Legend
- US 67 Corridor
- Potential Bicycle Network Connectivity
- Roadway Network Gap
- Programed Bike/Ped Improvements

To Marfa

Legend

To Mexico
Network Solutions – Presidio Enhanced Cross Section

<table>
<thead>
<tr>
<th>SIDEWALK</th>
<th>BIKE LANE</th>
<th>BUFFER</th>
<th>TRAVEL LANE</th>
<th>TURN LANE</th>
<th>TRAVEL LANE</th>
<th>BUFFER</th>
<th>BIKE LANE</th>
<th>SIDEWALK</th>
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<tbody>
<tr>
<td>6’</td>
<td>5’</td>
<td>3’</td>
<td>12’</td>
<td>12’</td>
<td>12’</td>
<td>3’</td>
<td>5’</td>
<td>6’</td>
</tr>
</tbody>
</table>

RIGHT OF WAY VARIES 100’ - 200’
Rural Solutions for US 67 - Enhanced Shoulders

**Enhanced Shoulder**

- **Travel Lane**
  - **Paved Shoulder**: 8' minimum (10' preferred)
  - **Buffer (Optional)**: 1.5' - 4' or wider
  - **8 min**: 8 min
    - (10 preferred)
Rural Solutions – Enhanced Shoulders
Key Takeaways

1. The US 67 Corridor Master Plan was developed to meet the unique needs of a rural corridor in West Texas.

2. Public outreach led to significant feedback and demand for Complete Streets.

3. Complete Streets Solutions met public demands for bicycle/pedestrian needs while balancing freight travel.

4. Used TxDOT guidelines and standards for bicycle and pedestrian facilities in rural contexts.

5. Toolbox of Complete Streets Solutions for corridor communities’ future plans and implementation.

6. TxDOT has moved forward with recommendations and several improvements are being implemented.
Complete Streets National Perspectives
Expanding Complete Streets Concepts to Apply to the Area and Corridors

- Includes multiple streets, parks, raingardens etc.
- Each serving multiple and different function
- Calls for thinking outside of silos
- Calls for multiple practices and disciplines

The word “corridor” may imply transportation or movement, but to be “complete,” consideration to area is essential.
Building Coalitions Between City Departments

- Break down silos!
- Better connect
  - Streets
  - Parks
  - Water
  - Planning
  - Other Departments

*CDM Smith’s long-term contract with the Philadelphia Water Department has required extensive collaboration with many departments and stakeholders.*
Complete Corridors Evaluate Trade-Offs and Build Consensus

Building Understanding Helps Build Consensus

Complete Streets Game: https://www.tcat.ca/resources/complete-streets-game/
Typical Profile of a Complete Street or Corridor

Establishing Context

- Multiple contexts
- Include fine-grained neighborhood context
- Acknowledges one design does not fit all

Typology might include:

- Low-volume, slow residential streets
- Shared streets
- Bicycle priority streets (bike boulevards)
- Higher-volume commercial streets
- Transit priority streets
- Greenways and multi-use trails

Elizabeth Kelly, Portsmouth, New Hampshire

FDOT: Context Classification System
Program Level: Typology of Roadway and Corridor

### Activity Corridor

**Proposed Condition**

- Minor Arterial or Collector
  - 5,000 – 10,000
- Mixed-use, predominately retail, dining & entertainment
- Both sides of street
- On-street parking on one or both sides, depending on width.

#### Functional Characteristics

<table>
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<tr>
<th>Characteristic</th>
<th>Activity Corridor</th>
<th>Prime Connector</th>
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</thead>
<tbody>
<tr>
<td>Collector</td>
<td>Collector</td>
<td>Collector</td>
</tr>
<tr>
<td>5,000 – 10,000</td>
<td>5,000 – 10,000</td>
<td>5,000 – 10,000</td>
</tr>
<tr>
<td>Mixed-use</td>
<td>Mixed-use</td>
<td>Mixed-use</td>
</tr>
<tr>
<td>Both sides</td>
<td>Both sides</td>
<td>Both sides</td>
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<tr>
<td>Parking</td>
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#### Design Parameters

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<td>Improve transit access and accessibility to businesses while slowing traffic to improve ped and bike access and safety</td>
<td>Improve functionality of streets and sidewalks by reconstructing pavements, curbs, crosswalks, street trees and lighting as needed</td>
<td>Install new traffic calming features where warranted</td>
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<td>- Reduce real and perceived operating space for vehicles</td>
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### Prime Connector

**Proposed Condition**

- 15 MPH
- Bus Shelters
- Curb Extensions
- Gateways
- Hi-Viz Crosswalks
- Intersection Radius Reduction
- Road Diet
- Movable Parklets
- Ped Refuge Islands
- Bicycle Lanes or Sharrows
- Vertical Enclosure

- 25 MPH
- Bus Shelters
- Curb Extensions
- High Visibility Crosswalks
- Intersection Radius Reduction
- Road Diet
- Ped Refuge Islands
- Sharrows
- Vertical Enclosure

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Complete Streets at Varying Scales - Challenges and Opportunities
Tiered Systems of Prioritization Within Each Mode

TRANSIT:
- Tier 1: Proposed dedicated lanes/near transit stations
- Tier 2: Mixed use lanes or express services
- Tier 3: Local bus service

BICYCLE AND PEDESTRIAN:
- Tier 1: High – Cycle tracks, shared use paths
- Tier 2: Medium – Buffered bike lanes
- Tier 3: Low – Bike lanes, paved shoulders

FREIGHT:
- Tier 1: Inter-regional transportation
- Tier 2: Last mile connection
- Tier 3: Local freight and delivery

AUTO:
- Level of service
- Traffic volumes
- Travel distances
- Consider ITS infrastructure investment levels
Project Level: Assessing Community Assets and Connectivity Needs

Complete Streets at Varying Scales - Challenges and Opportunities
Project Level: Assessing the Needs

Multimodal Gap Analysis

- Bike Ped Latent Demand
- First and Last Mile Connectivity
FHWA Complete Streets Report to Congress

- US Congress asked DOT to "review its current policies, rules, and procedures to determine their impact on safety for road users, particularly those outside automobiles"
- Moving to a Complete Streets Design Model - Submitted March 2, 2022
- Great link to resources

Getting past the design manual and thinking about how the design is utilized by the end user.
Key Takeaways from Report to Congress

- Make Complete Streets FHWA's **default approach** for funding and designing non-access-controlled roadways.

- Accelerate adoption of standards and guidance that promote safety and accessibility for all users...
  - Partner with universities and related organizations to develop education and training programs

- Reinforce **safety for all users** in the interpretation of design standards, guidelines, and project review processes.

- Encourage planning for complete and connected multimodal networks at the Statewide and regional level.
Integrated Water, Environment, and Transportation Solutions are Essential to Complete Streets/Corridors

INTEGRATE

- Make it urban center and corridor based
- Consider all modes and develop Complete Streets
- Optimize the existing system in low cost ways
- Integrate ongoing maintenance/pavement improvements
- Consider equity and environmental challenges