SIDEWALK PLANNERS BEWARE:
Lessons Learned from Recent Design & Construction Projects

2013 ANNUAL CONFERENCE
ALABAMA CHAPTER
AMERICAN PLANNING ASSOCIATION
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[Logos of SAIN associates and Gresham Smith and Partners]
A. Engineers with recent design, construction engineering and inspection (CE&I) experience of sidewalk and trail projects
B. Contrary to popular belief...sidewalk planning and design is NOT easy.
C. Challenges encountered
D. Lots of Eye Openers
Rules and Resources

- American Disabilities Act (ADA)
- Federal Highway Administration (FHWA)
- American Association of State Highway and Transportation Officials (AASHTO)
- Manual for Uniform Traffic Control Devices (MUTCD)
- Alabama Department of Transportation, Guidelines for Operation (ALDOT GFO 3-71)
ADA

- Law passed in 1990, amended with changes effective in 2009
- Wide ranging civil rights law that prohibits discrimination based on disability
- Title II – Public Entities (and Public Transportation)
Created by the Rehabilitation Act in 1973

PROWAG

Originally intended to supplement ADAAG to provide standards specific to public rights-of-way; most recently formatted as a stand-alone document

Released July 26, 2011

Extended to May 14, 2013

Next, final ruling to become enforceable standards by USDOT and DOJ
USDOT Policy Statement (2010)
The DOT policy is “to incorporate safe and convenient walking and bicycling facilities into transportation projects.”

Resource Guide:
Designing Sidewalks and Trails for Access
  - Multi-Use Paths
MUTCD (2009 Edition)

- Pedestrian Crossing Provisions
- Crosswalks
- Accessible Pedestrian Signals
Cross-Slopes
- Less than 2% acceptable
- 2%-8% can be approved by City/County
- Over 8% requires ALDOT approval

Grades
- Sidewalk follow road grade. More than 3% grade variance requires ALDOT approval

Clear Zone
- Clear zone encroachments not directly affected by construction will be allowed to remain in place
Design Practices/Elements

A. Zones
B. Typical Section
C. Crosswalks
D. Ramps
Basic Design Elements

- Zones
- Recommended Design Values from Key Resources
- Good Practices
The Zone System – Residential Street

Street Parking

Curb Zone

Furniture Zone

Pedestrian Zone

Frontage Zone
Continuous Width

- The MINIMUM continuous and unobstructed clear width of a pedestrian access route shall be 4.0 ft., exclusive of the width of the curb.
**Sidewalk/Trail Locations**

- Adjacent to Existing Streets
- Side Paths
Sidewalk/Trail Locations

- Old Railroad Beds (Rails-to-Trails)
- Flood Plain Areas
Sidewalk/Trail Locations

- Utility Rights-of-Way/Easements
Typical Sections

- Items to Consider:
  - Sidewalk against the curb
  - Sidewalk with grass strip
  - One or both sides of the road
  - Connections to existing pedestrian accommodations
  - Type of surfacing
  - Right of Way needs
5 FT. SIDEWALK, TYPE 1 ROADSIDE
Typical Section – Moderate Grading

5 FT. SIDEWALK, TYPE 2 ROADSIDE
Typical Section – Major Grading

5 FT. SIDEWALK, TYPE 3 ROADSIDE
Crosswalks

- Location of Crosswalks
  - Safety
- Signs
- Accessible Pedestrian Signals (APS)
Ramps

- Perpendicular
- Diagonal
- Parallel
- Combination
- Blended Transition
- Detectable Warning

Perpendicular Curb Ramp

Diagonal Curb Ramp

Parallel Curb Ramp

Combination Curb Ramp
Infeasible to meet standards on ramp
Planning of Sidewalks
Goals:

1. Awareness of Challenges
2. Identify Challenges in Planning ➔ Inform Clients
3. Understand Cost Impacts of Addressing Challenges
4. Develop Better Planning Documents
Walk the Sidewalk/Trail Route to Discover Challenges

- Driveways
- Terrain
- Road Crossings
- Stream Crossings

- Drainage Structures
- Utilities
- Mailboxes
Walk the Sidewalk/Trail Route to Discover Challenges

- Trees
- Fences
- Environmentally Sensitive Areas
- Right-of-Way (or lack thereof)
- Poor Soil Conditions
- Low Areas/Drainage Problems
- On-Street Parking Areas
Driveway Challenges

- Reconstruction of driveways to meet ADA? When?
  - New ALDOT GFO
  - Other Guidance

- Can the reconstruction feasibly be done?
  - Driveway slope
  - Building Setback
  - Cost? Is it a factor?
  - Technical infeasibility
Driveway Challenges
Possible Solutions

- 3’ Width – ADA Minimum
- 4’ Width – FHWA Minimum
- 3’-4’ @ 2% or less cross slope, then tie in at reasonable slope
- Retain driveway and warp sidewalk cross slope to match driveway
Steep Driveway Slope (Before)
After (Driveway at 8%)
Terrain Challenges

- Running Slopes
- Steep Side Slopes
  - Cuts
  - Fills/Drop-Offs
Terrain Challenges: Possible Solutions

- Retaining Walls
- Boardwalks
- Watch for Steps Needed to Tie In Private Sidewalks
Terrain Challenges
Terrain Challenges: Possible Solutions

- Minor Elevation Adjustments
  - Sidewalk Curbs
  - Knee Walls
  - Sidewalk Turn-Downs
Terrain Challenges - Downtown Areas

- Building Floors Higher Than Road
- Stair-Stepped Building Floors
- Plan For Wide Enough Furniture & Sidewalk Zones to Make Elevation Adjustments
Road Crossings - Where & How??

- At-grade - Crosswalk
  - Intersections
  - Mid-block crossing
Road Crossings – Where & How??

- Go Under
  - Tunnels
  - Under Existing Bridges
High Volume and Wide Roadways

- Go Over
  - Pedestrian Bridges
  - Across Existing Bridges
Road Crossings – Where & How??

Pedestrian Bridge Types
- Concrete
- Steel
- Prefabricated Steel Truss
- Prefabricated Aluminum Truss
Stream Crossing Challenges

- Extend Existing Pipe/Culvert
  - Check ROW
- New Pipe/Culvert
- Permitting
Stream Crossing Challenges

- Pedestrian Bridge
  - Constructed in Place
  - Precast
  - Prefabricated
  - Steel
  - Wood
  - Aluminum
Drainage Structure Challenges

- Inlets
- Pipe Ends/Headwalls
- Underground Boxes/Vaults
Utility Challenges

- Visible & Invisible
- Avoid or Relocate?
  - Check ROW
Utility Challenges

- Cost Impacts
  - May be cheaper & easier to move sidewalk than relocate utility

- Delays
Avoid or Remove??
- Can it be removed (legally)?

Roots
- Future hazard
- Future maintenance
Challenges – Mailboxes

- Decorative – Brick
- Avoid or Move??
  - Check ROW
- Grass Strip Width
Challenges - Fences

- Avoid or Relocate??
  - Check ROW
- Decorative Fences/Walls
Conduct Environmental Screening To Identify:

- Hazardous Materials Sites: **Current or Former**
  - Gas Stations
  - Dry Cleaners
  - Landfills
  - Auto Service
  - Industrial Sites
Challenges – Environmentally Sensitive Areas

Conduct Environmental Screening To Identify:

- Wetlands
  - Wet Areas/Ponds
  - Stream Crossings
  - Major Drainage Pipes
Challenges – Environmentally Sensitive Areas

Conduct Environmental Screening To Identify:
- Public Spaces
  - Parks
  - Schools
- Cemeteries
- Historic Areas
- Archaeological Sites
- Approvals/Permitting
  - FHWA
  - Corps of Engineers (USACOE)
  - ADEM
Challenges – Right of Way (Or Lack Thereof)

- Will ROW or Easements Be Needed?
  - ROW
  - Permanent Easements
  - Temporary Construction Easements
- Building Setbacks
- Parking
- Cost Impacts
  - Residential – Lower or No Cost
  - Commercial – Not So Low Cost
Challenges – Safety
Pedestrian, Cyclist & Vehicle

- Steep Side Slopes & Drop Offs
  - 1’ or Wider “Shoulders”
  - Fill Slopes Flatter Than 3H:1V → Slope OK
  - Fill Slopes Steeper Than 3H:1V → Need Barrier
Challenges – Safety Pedestrian, Cyclist & Vehicle

- Barriers
  - Landscaping
  - Railing
    - Metal, Wood, Cable, Composites
  - Guardrail
Challenges – Safety Pedestrian, Cyclist & Vehicle

- Roadway Clear Zone
  - Area Adjacent to Roadway That Must Be Free From Hazards

- Hazards
  - Retaining Walls
  - Light Poles
  - Tunnels
  - Steep Slopes (>3H:1V)
  - Sidewalks/Trails??
CAUTION
THIS SIGN HAS SHARP EDGES
DO NOT TOUCH THE EDGES OF THIS SIGN
ALSO, THE BRIDGE IS OUT AHEAD
Challenges – Lighting Considerations

- When To Provide Lighting?
Other Challenges

- Poor Soil Conditions
- Low Areas/Drainage Problem
  - Flood Plain Areas
- Cost Impacts
Other Challenges

- Planters
- Decorative Walls
- Subdivision Signs
- Parking Areas
Cost Impacts
Retrofitting a sidewalk into existing conditions can be costly when everything doesn’t fit quite into place.

Things that can significantly impact cost:
- Bridges
- Retaining Walls
- Boardwalks
- Handrailing
- Right-of-Way/Easements
- Utility Relocations
- Large Drainage Structures (Culverts, Inlets)
Costs

- Sidewalk
  - Concrete $45 - $50 / Sq. Yd.
  - Asphalt $14 - $18 / Sq. Yd.
- Asphalt Trail (all inclusive) ~ $90 / Sq. Yd.
- Retaining Walls
  - Depends on type (Segmental, MSE, Cast-in-Place Concrete, Stacked Stone)
  - $30 - $50 / Sq. Yd.
- Pedestrian Bridges
  - Varies Greatly Depending on Location, Type, Span Length, Height & Other Factors
  - $85 - $140 / Sq. Ft.
Costs

- Handrailing
  - Depends on type (steel, wood, fiberglass, composite, custom-built, prefabricated)
  - Decorative metal $100+ / Lin. Ft.

- Box Culverts
  - Depends on size & number of barrels
  - Contact precaster for prices

- Lighting
  - Depends on type, spacing, “extras”
  - $1500-$7500+ Per Light

- Utilities
  - Contact utility companies
Sidewalk Typical Cost Ranges

- 5’ Sidewalk (Roadside is Basically Flat and Requires Minimal Re-grading)
  - $300,000-$550,000/mile
- 5’ Sidewalk (Roadside Requires Minor Re-grading, possible Right of Way purchasing)
  - $600,000-$900,000/mile
- 5’ Sidewalk (Roadside Requires Major Re-grading, possible Right of Way purchasing)
  - $1,000,000-$1,700,000/mile
A good sidewalk is essential to meet ADA:

- Sidewalk surface must be smooth
- Sidewalk must be wide enough
- Sidewalk must be clear of obstructions
- Driveways cannot slope excessively
- Not every possible design can be anticipated in standards
- When site conditions create constraints, meeting standards part-way may be acceptable
Meeting Standards

- Meet standards as best as you can, however cost should not be a reason to not meet the standards
- Document and Disclose to client
DON'T DRINK AND DRIVE
QUESTIONS???

Presenters

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