Cross Slopes Break Over Shift Due to Lane Restriping On Curbed Roadway

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FDOT Roadway Design – District 5

FDOT D5 Quarterly Quality Forum Meeting

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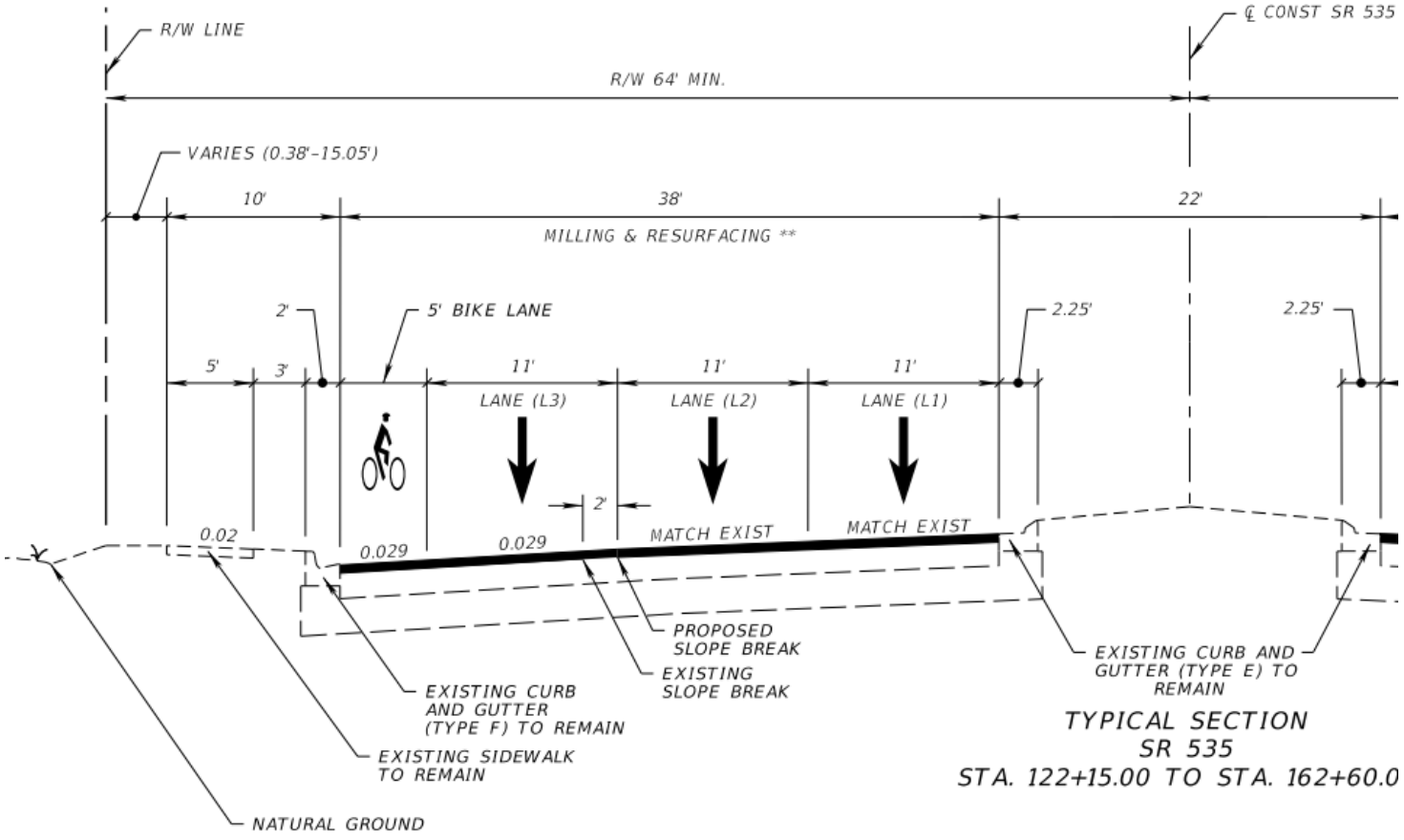
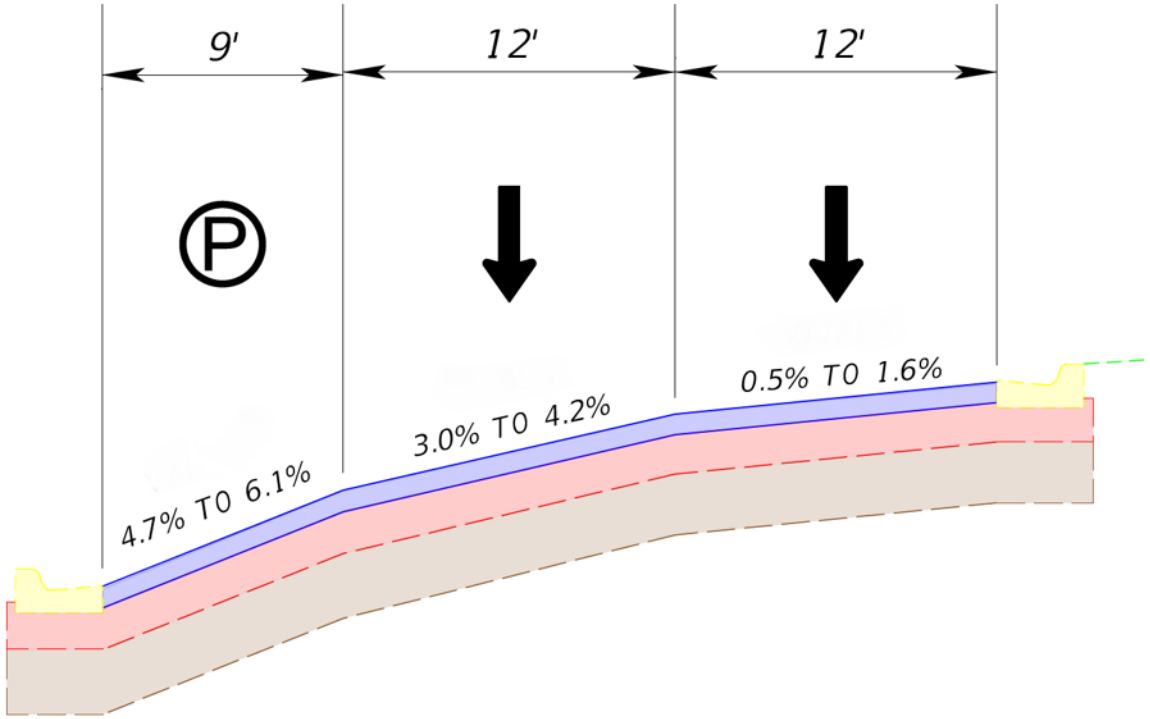
Relocating Slope Breaks



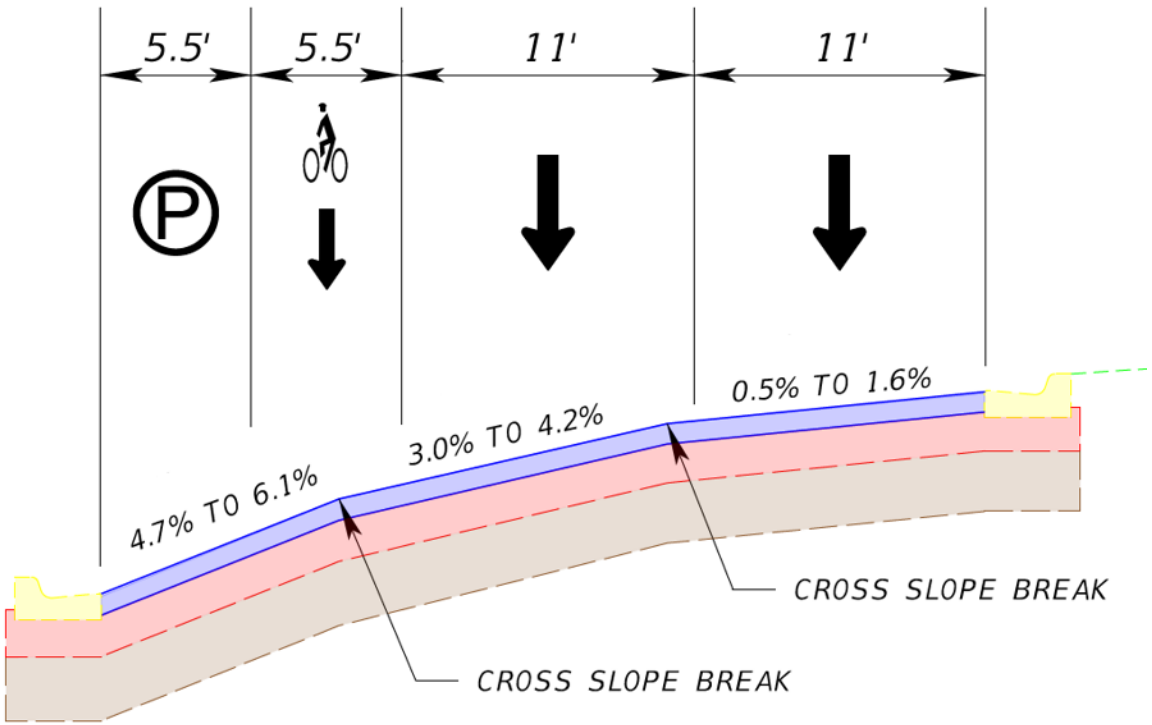
- Existing Typical Section
  - Two inside 12 ft. lanes and a 14 ft. outside lane, bounded by curb and gutter on both sides
- Proposed Typical Section
  - Three 11 ft. lanes and a 5 ft. bike lane
- Issue
  - Proposing lanes restriping, slope break will now occur on wheel path of L3
  - They are proposing moving the slope break to the outside of L2 with milling. Then resurfacing at a constant slope from that point into the existing curb.
  - Problems with this approach:
    - ✓ Is the existing L2 slope constant for the entire length? If not, Then it's a constructability issue.
    - ✓ Milling will go deeper into the pavement on L3. This may impact the base depending on the existing pavement structure. Was this considered on the pavement design?

Relocating Slope Breaks – Variable Lane Slopes

Existing Typical (Sta. 19+00 to Sta. 70+00)

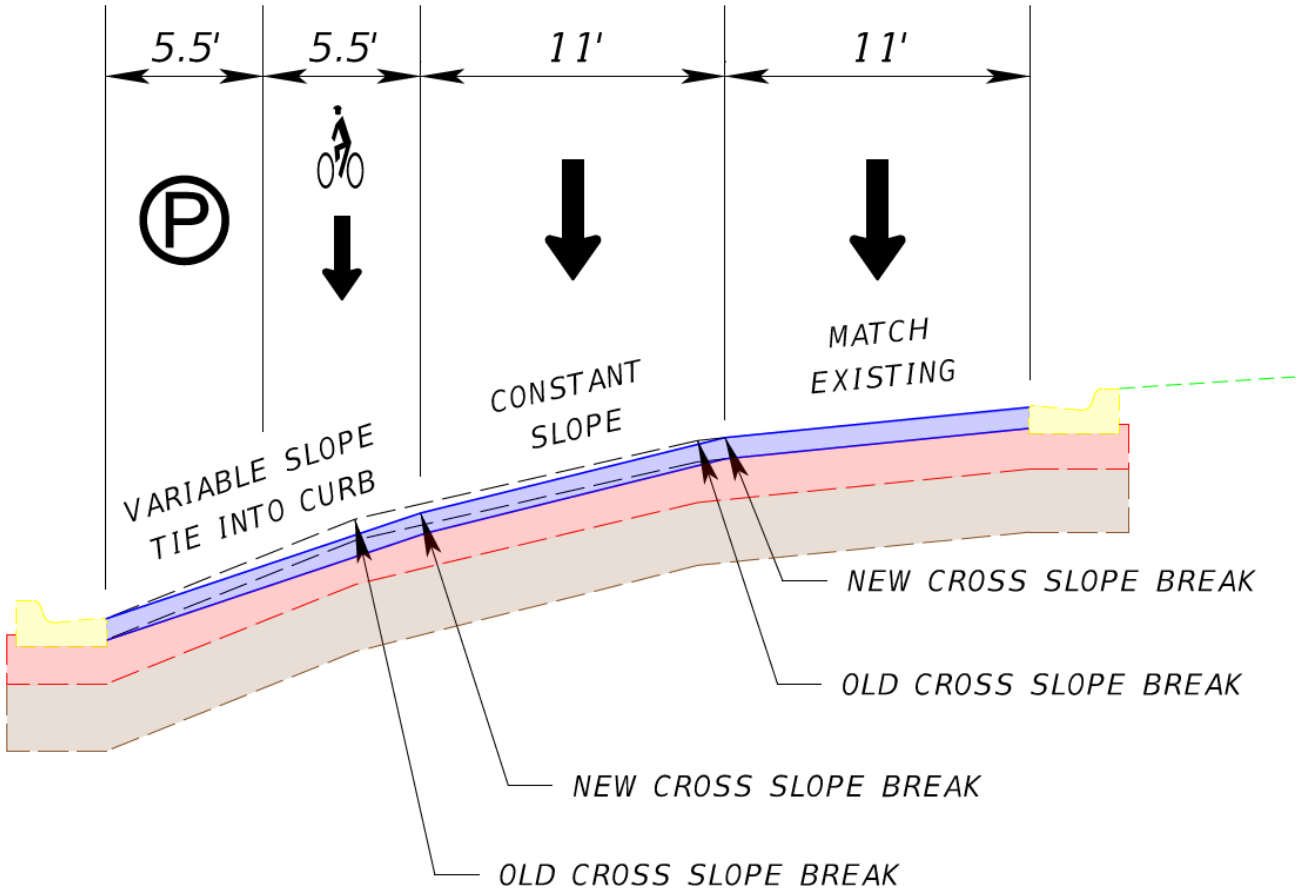


Proposed Typical



- Constrains and Issues
  - Existing Lanes cross slope varies
  - Existing Curb and Gutter on both sides.
  - Proposed typical section will have slope breaks fall within the wheel path of the outside lane and in the middle of the bike lane.

Removing Slope Break from Wheel Path



- Use the new lane lines as the begin and end points for milling and resurfacing.
- Milling may impact the pavement base. Verify pavement structural number.
- Parking/Bike lane finished pavement cross slope will vary to tie into the existing curb.

Pavement Design Considerations

EXISTING STRUCTURE

Pavement Condition: Poor

Material	Thickness (in)	SC	SN
FC-4	0.60	0.15	0.09
Type S	2.30	0.25	0.58
Binder	0.70	0.20	0.14
Limerock Base	11.00	0.18	1.98
Type B Stabilization	12.00	0.08	0.96

SN Existing **3.75**

DESIGN FACTORS

Reliability	96%	(Table 5.2)
Opening Year	2022	
ESAL	8,216,000	
Mr (PSI)	18,000	
Traffic Level	C	
Design Year	2042	
Design Speed (mph)	45	
SN Required	**3.81**	(Table A.8)

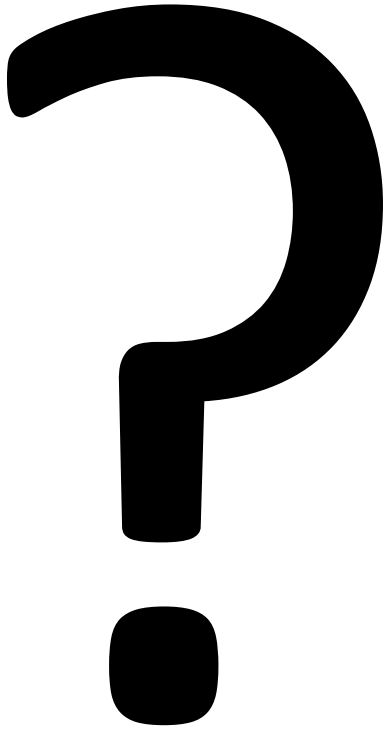
RECYCLE DESIGN - Milling Depth

Milling Average (in)	5.7
Remaining SN	**2.56**

Pavement Design - Milling and Resurfacing

Material	Thickness (in)	SC	SN
FC-9.5	1.50	0.44	0.66
Type SP	1.50	0.44	0.66

Remaining SN	2.56
SN Provided	**3.88**

- Reliability of the pavement design may have to be decreased
- Consider worst case scenario for milling depth
  - ✓ In this case, milling 2 inches into the base
- Verify SN Provided > SN Required
- Verify SN Provided > SN Existing
- Considerations in this design analysis:
  - ✓ Cross slope break location (On the wheel path?).
  - ✓ How bad is the break over?
  - ✓ Have sufficient pavement? Getting into the base?
  - ✓ Need lane reconstruction?
  - ✓ What about the pavement design? Still meeting the SN?
  - ✓ Constructability.
  - ✓ What is the cost?
  - ✓ Coordinate with the District as early as possible.

Questions?