

**RTC**

**DESIGN CRITERIA MANUAL**

Working Group Meeting  
March 18, 2026

WE'RE GOING PLACES. LET'S GO DCM

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# Welcome!

Meeting Purpose

- Update Working Group on DCM status
- Recap Chapter 4 – Streetlighting review
- Chapters 3, 5 & 7 Updates
- Introduce Chapter 6 – Storm Drainage

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# Agenda

- 1 SS4A Grant
- 2 DCM Chapter Status
- 3 Chapter 4 Recap
- 4 Chapter 3 Update
- 5 Chapter 5 Update
- 6 Chapter 7 Update
- 7 Insights from Texas
- 8 Chapter 6 Introduction
- 9 Collaboration Refresh
- 10 Next Steps

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# SS4A Safety Action Plan Supplemental Grant

## Commitments

- Safety for All Road Users
- Best Concepts, Practices, and Design Principles
- Living Document



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## Agenda



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## Activity Report

4<sup>th</sup> & 5<sup>th</sup> SME Meetings – Chapter 4



1<sup>st</sup> SME Meeting – Chapter 5



## Status Report

Ch 1 – General Roadway Design

- In progress

Ch 2 – Typical Roadway Sections

- Starting this month

Ch 3 – Traffic Signals

- SME collaboration

Ch 4 – Streetlighting

- 2<sup>nd</sup> Draft in review by SME

Ch 5 – Bus Facilities

- SME collaboration

Ch 6 – Storm Drainage

- In progress

Ch 7 – Other Utilities

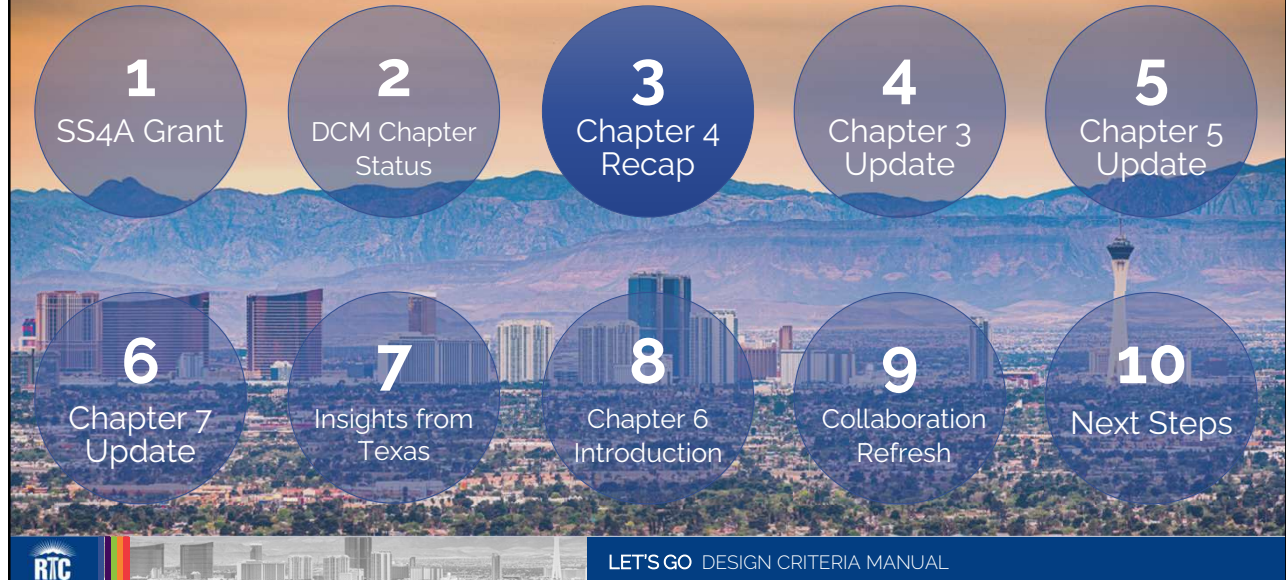
- In progress

Ch 8 – Construction Drawings

- Starting this month



# Agenda



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## SME Input Highlights – Streetlighting

### Chapter Highlights

Pedestrian Lighting

Avoiding Utility Conflicts

Median vs. Side Lighting

Clearance from Trees

Spacing vs. Photometrics

Adaptive (Dimmable) Lighting

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# SME Input Highlights – Streetlighting

Safety Topics



# Agenda



## Chapter 3 Overview

### Chapter 3: Traffic Signals & ITS Design

- 3.1 General Notes
- 3.2 Transportation Systems Management and Operations
- 3.3 Traffic Signals
- 3.4 Pedestrian Flashers
- 3.5 School Zone Flashers
- 3.6 ITS Infrastructure



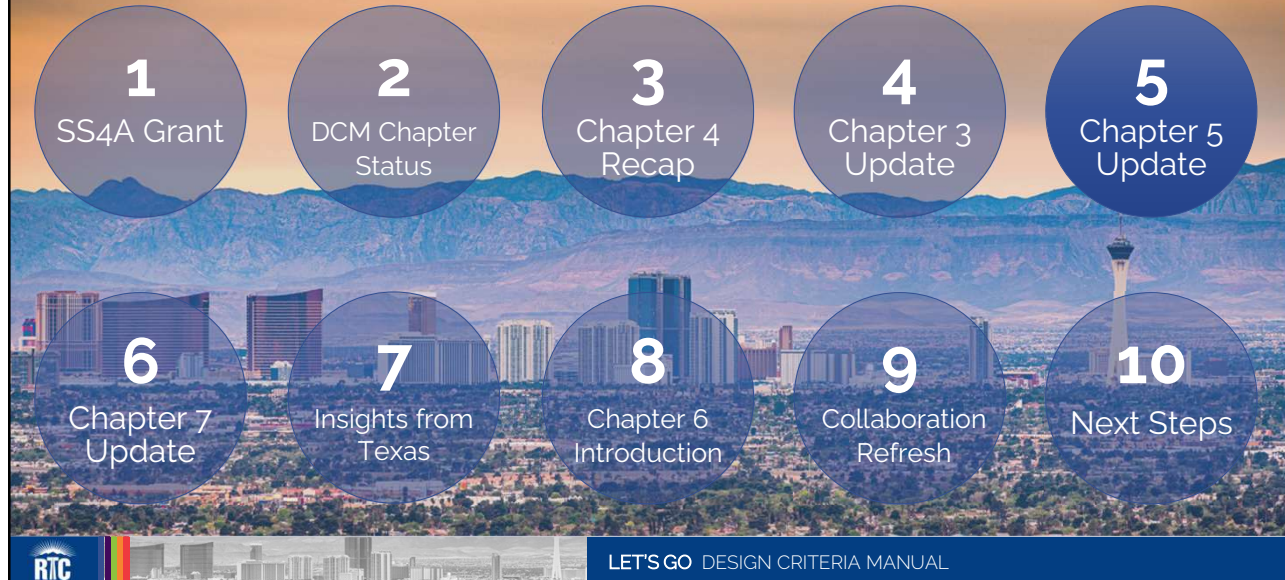
## DCM Ch 3 – Traffic Signals & ITS

### Progress Update

- Draft posted for SME review in March
- Comments due in April
  - 1<sup>st</sup> SME meeting tentatively scheduled end of April



# Agenda



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## Chapter 5 Overview

### 5.1 Bus Stop Criteria

- Intersection Selection
- Curbside Stop Location
- Stop Dimensions

### 5.2 Passenger Facilities

- Design Requirements & Amenities
- Bus Pads
- Shelter Pads
- Loading Pads
- BRT Stations

### 5.3 Bus Facilities

- Preferential Lanes
- Combo Bus and Right Turn Lane
- Bus Turnouts
- Queue Jump

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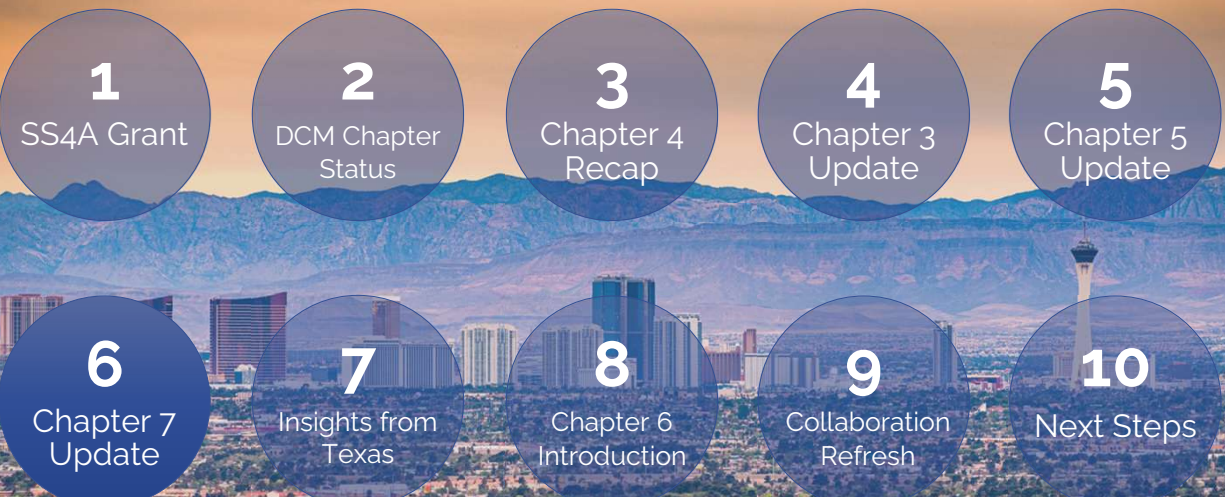
# DCM Ch 5 – Bus Facilities

## Progress Update

- SME review Feb. 11<sup>th</sup> - Feb. 25<sup>th</sup>
  - 1<sup>st</sup> SME Meeting held March 4<sup>th</sup>
  - 2<sup>nd</sup> SME Meeting scheduled for March 25<sup>th</sup>
- 2<sup>nd</sup> SME review Apr. 13<sup>th</sup> – May 1<sup>st</sup>
  - 3<sup>rd</sup> SME Meeting tentative in May



# Agenda

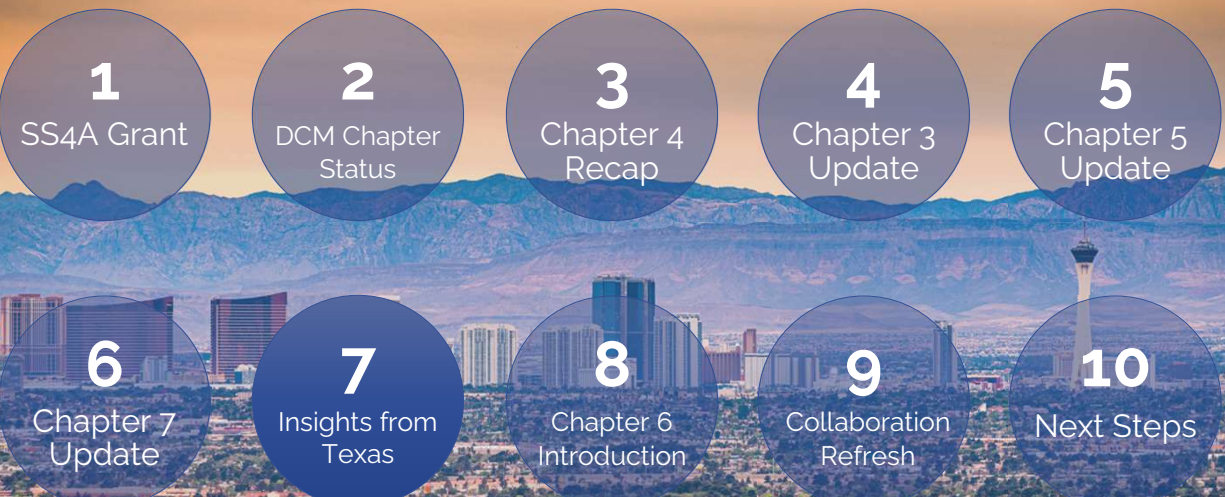


# DCM Ch 7 – Other Utilities

## Progress Update

- SME review in March
- Comments due in early April
  - 1<sup>st</sup> SME Meeting tentatively scheduled for April 15

# Agenda



# Introduction

- 11 years of experience specializing in municipal infrastructure improvements
- 7 years of experience focusing on design criteria development
  - PM Experience - 7 DCMs
  - TX Experience – over 15 DCMs
- Passionate about working on complex multidisciplinary projects and helping clients streamline their design standards material

Kimley»Horn

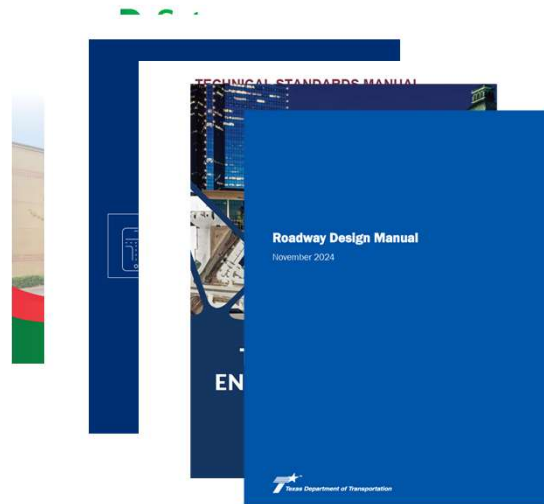
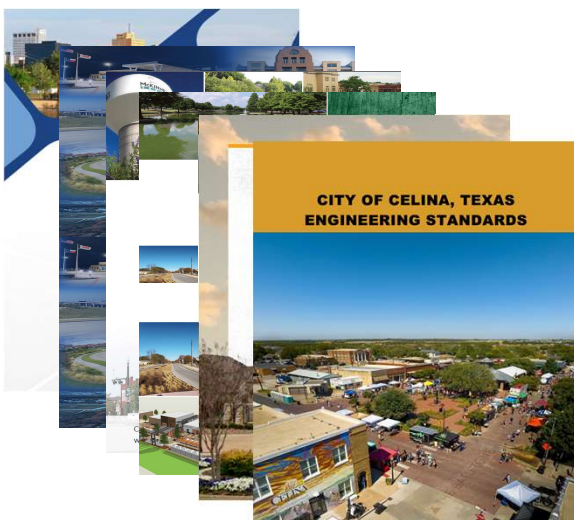
**Farwa Sultan**  
*Roadway Engineer*



# Texas Experience

TX Experience: **Over 15 DCMs**

PM Experience: **7 DCMs**



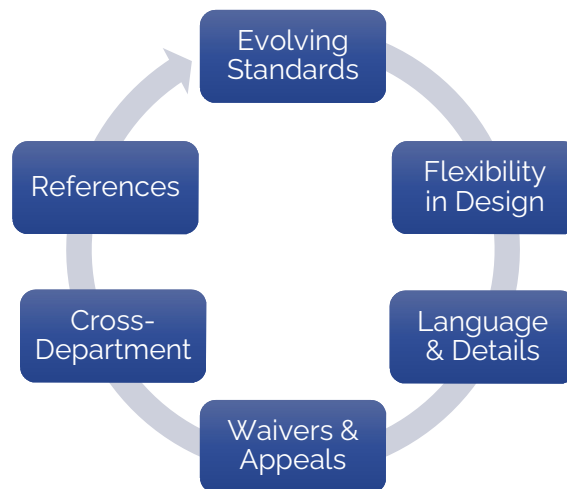
# Design Standards

## Purpose of Design Standards



# Design Standards

## Lessons Learned



# Design Standards Standards Must Evolve



The following are the effective all of its amendments:

Edition Number	Description
1-1	Adoption of Engine
1-2	Revision 1
1-3	Revision 2
1-4	Revision 3
1-5	Revision 4
1-6	
1-7	

Engineering Standards	
Record of Revisions	
JUNE 2012	Engineering Standards adopted by Council as Appendix to Subdivision Ordinance
JUNE 2017	Engineering Standards adopted by Council as Appendix to Subdivision Ordinance
AUGUST 2020	Engineering Standards adopted by Council as Appendix to Subdivision Ordinance
OCTOBER 2025	Revisions made to the Engineering Standards include, but are not limited to, the following:
SECTION 1	GENERAL REQUIREMENTS
	1.13: Added Record Drawing Requirements section.
SECTION 2	THOROUGHFARE DESIGN REQUIREMENTS
	2.02.B.7.e: Updated standard detail references.
	2.02.F.12: Updated reference to NCHRP Research Report 1043.
	2.02.F.13: Revised roundabout landscaping and monument requirements and updated reference to NCHRP Research Report 1043.
	2.02.F.19: Updated reference to NCHRP Research Report 1043 and requirement for street lights to not be restricted by new subsection 20.
	2.02.J.20: Added requirements and restrictions for artwork, monuments, and other structures in the middle of roundabouts.
	2.02.F.21: Added requirements for street lights, communication poles, and outdoor

**1.04 Amendment**

A. The City may amend the Engineering Standards. In order to ensure that the Engineer has the City's latest design standards, they are directed to the City's website to acquire the City's most current design standards. The Engineering Standards will include a Record of Revisions to identify any revisions to the Engineering Standards.

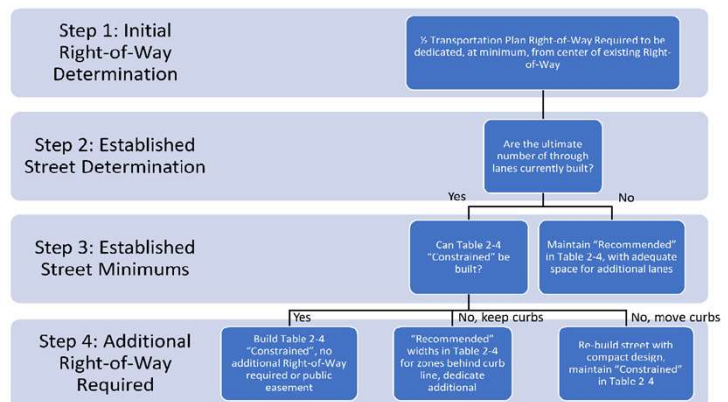
B. A formal request to modify current design criteria or add new design criteria can be submitted to the City for consideration in writing to the Director of Engineering Services.

**1.05 Variance Requests**

A. All variances from the requirements included in the Engineering Standards shall be approved by the Director of Engineering Services. A grant of an alternative material, design, or method of construction shall not affect nor relieve the Engineer of the obligation and responsibility of such material, design, or method of construction for the intended purposes.

B. In the event that specific circumstances dictate requirements not already included in the Engineering Standards, it shall be the responsibility of the Engineer to provide the additional information as deemed necessary by the Director of Engineering Services in writing for review.

# Design Standards Flexibility in Design



# Design Standards

## Flexibility in Design

	Level 2		Level 3		Level 4	
Pedestrian Zone <sup>2</sup>						
Toolbox:	Recommended ft.	Constrained ft.	Recommended ft.	Constrained ft.	Recommended ft.	Constrained ft.
Sidewalk <sup>3</sup>	6	5	7	6	7	6
Tree & Furniture Zone <sup>4</sup>	8	6.5	8	6.5	10	6.5
Setback <sup>1</sup>	2	1	2	1	2	1
Bicycle and Street Edge Zone <sup>8</sup>						
	Recommended ft.	Constrained ft.	Recommended ft.	Constrained ft.	Recommended ft.	Constrained ft.
Bicycle Facility <sup>9,10</sup>						
Protected Bike Lanes (One or Two-Sided, Raised)	7 Clear 4 Buffer <sup>11</sup>	6.5 Clear 2 Buffer <sup>11</sup>	8 Clear 4 Buffer <sup>11</sup>	7 Clear 2 Buffer <sup>11</sup>	8 Clear 4 Buffer <sup>11</sup>	7 Clear 3 Buffer <sup>11</sup>
Other Facilities						
Parallel Parking <sup>5, 10</sup>	8	7	9	7	n/a	n/a
Motor Vehicle and Transit Zone <sup>6</sup>						
Toolbox:	Recommended ft.	Constrained ft.	Recommended ft.	Constrained ft.	Recommended ft.	Constrained ft.
Outside Travel Lane Width <sup>7</sup>	12.5	11.5	12.5	11.5	12.5	11.5
Interior Travel Lanes Width <sup>1</sup>	n/a	n/a	11	10	11	10
Center-Turn Lane Width	10 <sup>1</sup>	10 <sup>1</sup>	11	10	n/a	n/a
Median Width	10	n/a	14	11	14	11

Curbed and Guttered Street Design Matrix

# Design Standards

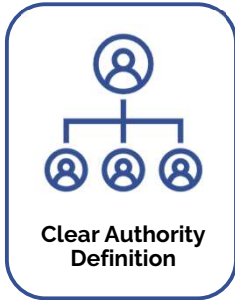
## Flexibility in Design

	Level 1		Level 2		Level 3		Level 4	
Pedestrian Zone								
Toolbox:	Recommended ft.	Constrained ft.	Recommended ft.	Constrained ft.	Recommended ft.	Constrained ft.	Recommended ft.	Constrained ft.
Open Ditch/Swale	10	8	15	12	20	15	20	15
Shared Use Path	n/a	n/a	12	10	12	10	12	10
Sidewalk	5	5	n/a	n/a	n/a	n/a	n/a	n/a
Bicycle and Street Edge Zone								
Toolbox:	Recommended ft.	Constrained ft.	Recommended ft.	Constrained ft.	Recommended ft.	Constrained ft.	Recommended ft.	Constrained ft.
Shoulder	2	2	4	2	4	2	4	2
Motor Vehicle and Transit Zone								
Toolbox:	Recommended ft.	Constrained ft.	Recommended ft.	Constrained ft.	Recommended ft.	Constrained ft.	Recommended ft.	Constrained ft.
Outside Travel Lane Width	11	10	11	10	11	10	11	11
Interior Travel Lanes Width	n/a	n/a	n/a	n/a	11	10	11	10
Median Width	n/a	n/a	n/a	n/a	12	11	14	11

Non-Curbed and Guttered Street Design Matrix

# Design Standards

## Language and Details Matter



**Engineering Standards**

A. Landscaping that is located within the median of a thoroughfare shall meet the requirements shown in Figure 6.1.

B. Refer to Section 2.07 (Thoroughfare Design Requirements) for corner visibility and sight line triangles with regards to landscaping and other obstructions.

C. A minimum behind the

D. Only mot

2. The required length of the taper shall be determined by the following equation:

$$L = \frac{WS^2}{60} \text{ (for } S \leq 40 \text{ mph)}$$

Where:  
 $C = L/2$   
 L = Length of merging taper to centerline  
 W = Width of the offset (feet)  
 S = Speed (mph)  
 C = Length of cross-over (shifting taper).

3. For a shifting taper where the cross-over transition (C) shall be equal to L, the lane reduction by merging crossover (shifting taper).

4. Reverse curves and other alternate case-by-case basis and approved by the City Traffic Engineer.

$e + f = \frac{V^2}{15R}$

Where:  
 $e$  = superelevation rate, in decimal format  
 $f$  = side friction factor  
 $V$  = vehicle speed, mph  
 $R$  = curve radius, feet

3.3.1.1 *Design Criteria*  
 The minimum radius of a roadway is based on a standard of driver comfort that is appropriate to provide a margin of safety against vehicle rollover and skidding. For layout purposes, the radius is measured to the centerline of the alignment. Typically, the City will not use superelevation on a city street. Therefore, the minimum centerline radius shall be provided based on the normal crown section. **Table 3-8** shows the minimum radii based on a normal crown with no superelevation (-2%). Smaller radii may be used with the appropriate superelevation to maintain the target speed, if approved by the City Traffic Engineer. **Figure 3-3** shows the different horizontal curve variables.

*Table 3-8. Minimum Radii for Low-Speed Urban Streets*

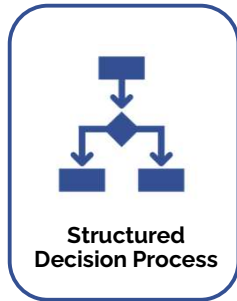
Target Speed (mph)	Minimum Radius (ft)
25	198
30	333
35	510
40	762

Source: AASHTO Green Book (2018)

Horizontal alignment shall not be designed with a reverse curve without a tangent between two curves. The minimum tangent length between two reverse horizontal curves must be a minimum of 100 feet.

# Design Standards

## Waivers and Appeals Must Be Defined



# Design Standards

## Waivers and Appeals Must Be Defined

The collage features several key documents:

- Street Design Standards:** A document with a 10-step design review process, from 'Innovation & Validation' to 'Bid Documents'.
- Request for Variance from Street Design Standards:** A form for requesting a variance, including fields for project description, location, and justification.
- REQUEST PROCESS:** A flowchart detailing the steps from initial request to final decision, including sections for 'INITIAL REQUEST', 'ENGINEERING OBSERVES TRAFFIC SAFETY CONCERNS', and 'PETITION'.
- NBU Request for Waiver of Applicable Engineering Standards:** A form for requesting a waiver, with fields for 'Requestor' information (Name, E-mail Address, Company, Phone Number, Cell Number) and a section for 'Description of Waiver Request'.

# Design Standards

## Cross-Jurisdiction Alignment

**Alignment across Jurisdictions**

**Early & Frequent Collaboration**

**Collective Endorsement**

# Design Standards – Trails

## Reference, Reference, Reference

### 5.3.1.3 - Grades.

- A. When right-of-way is shared with a street, an urban trail or shared use path shall not exceed the general grade established for the adjacent street. When an urban trail has its own right-of-way or easement, urban trails shall not exceed 5% grade. Engineers should attempt to achieve a target grade of less than 2% when practical.
- B. In some circumstances, urban trails following the running grade of a street or 5% when in its own right-of-way or easement may not be possible due to physical or regulatory constraints. Physical constraints include existing terrain or infrastructure, right-of-way availability, and notable natural features. Regulatory constraints include federal, state, or local laws with the purpose of preserving threatened or endangered species; the environment; or archaeological, cultural, historical, or significant natural features that would be adversely affected by the additional gradient. Grades shown in Table 5-5 shall be provided when physical or regulatory constraints exist.

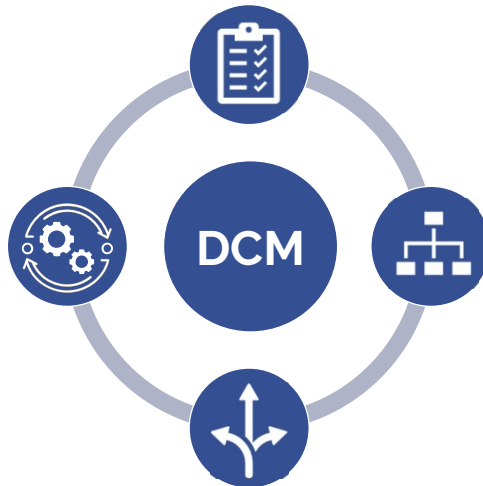
Table 5-5 — Maximum Running Slope and Segment Length

Running Slope of Trail Segment		Maximum Length of Segment (ft.)
Steeper Than	But Not Steeper Than	
1:20 (5%)	1:12 (8.33%)	200
1:12 (8.33%)	1:10 (10%)	30
1:10 (10%)	1:8 (12%)	10

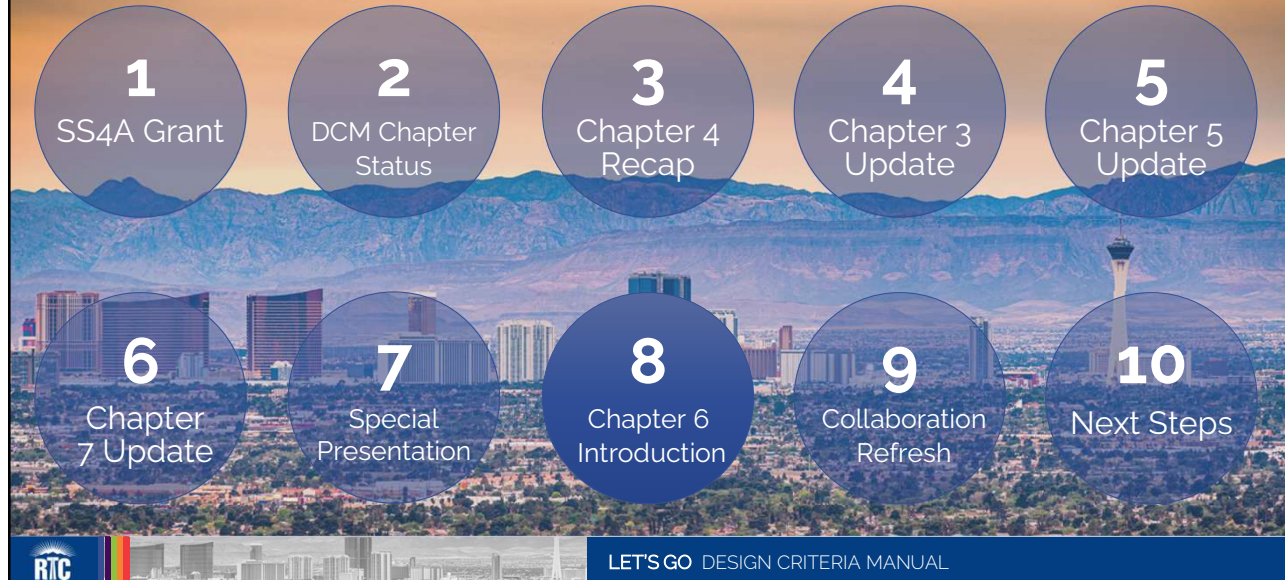
- C. If the terrain requires steep runs longer than the allowable distance shown in Table 5-5, resting intervals shall be provided at the top and bottom of each segment. Resting intervals may be provided within or adjacent to the trail. When the resting area is within the trail, it must be 5 ft. long and at least as wide as the trail. When the resting area is adjacent to the trail, it must be 5 ft. long and 3 ft. wide and provide a minimum 4 ft. by 4 ft. turning space. The surface of the resting area cannot exceed two percent slope in any direction. The City's preferred minimum longitudinal grade shall be 0.5%.

# Design Standards

## Key Takeaways



# Agenda



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## Chapter 6: Storm Drainage (1 of 2)



Provides guidance on the design of street hydraulics based on roadway classification



Standardizes criteria for dry lane and maximum depth of flow requirements



Provides guidance for the selection and design of storm drain and appurtenances



Provides criteria for the design of driveway elevations and nuisance flow conveyances



Details a list of industry standard manuals to reference for design guidance

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## Chapter 6: Storm Drainage (2 of 2)

Includes guidelines for the following:

- Drop Inlet/Manhole Selection and Placement
- Drainage Easement Requirements
- Sidewalk Underdrains
- Median and Curb Cut Drainage
- Open Channel Design in ROW
- Flow Splits at Intersections

Illustrations for design guidance in progress

- Includes Standard Drawings 401, 402, 425.S1 and others



## Small Groups – Ch 6 (Storm Drainage)

### Las Vegas

- Jeremy Leavitt
- Oh Sang Kwon

### CNLV

- Jason Calhoun

### Henderson

- Scott Fiedler
- Leah Proctor
- Kevie Remyne

### Boulder City

- Mike Grimes

### Mesquite

- **Travis Anderson**

### CCPW

- **Nicholas Warnke**
- Bryan Osborne

### CCOTS

- Andrew Bennett

### CCRFC

- **Abigail Mayrena**
- Debra Yamachika
- Brittney Duncan

### Safe Routes to School (CCSD)

- Jennifer Grube

### NDOT

- Lacey Tisler



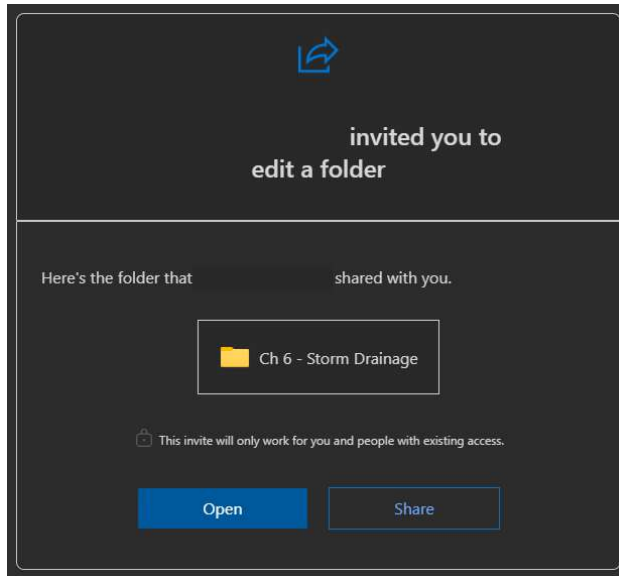
## Small Groups – Ch 6 (Storm Drainage)

Bicycle Coalition (Willdan)	NDEP	Ped Safe	ADS	LV Paving
• Kevin Futch	• Kathryn Foxworthy	• Erin Breen	• Tom Larue	• Scott Allen

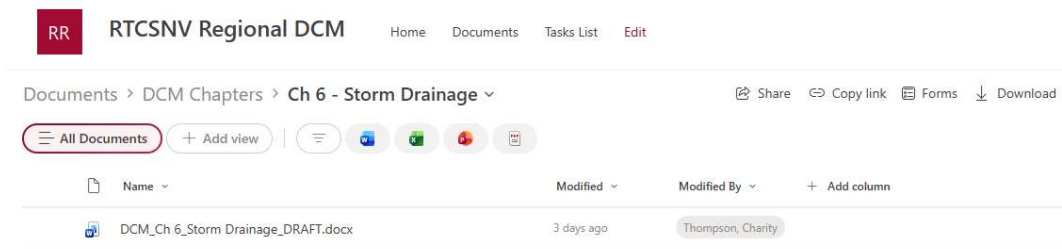
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# SharePoint Instructions



# SharePoint Instructions



# Follow-Up

Email alerts will go out once a chapter opens to the SME group

Please coordinate internally to avoid conflicting comments

Small Group meetings will begin following the review period

- RTC Conference Room 296 and 268

# Agenda



# Action Items



# Upcoming Meetings



**Next Working Group Meeting: May 20<sup>th</sup>**





# Thank You!



LET'S GO DESIGN CRITERIA MANUAL