

# **Drainage and Transportation Design Criteria Manuals Update**

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## Subject:

- ▶ Provide comments and consider recommending approval of the following updated Design Criteria Manuals to the City Council.
- ▶ Drainage Design Criteria Manual
- ▶ Transportation Design Criteria Manual

# What Are The Design Criteria Manuals?

- ▶ Design Criteria Manuals include technical engineering related details provided to allow implementation of the City of Denton Development Code
- ▶ The Development Code represents the official regulations of the City of Denton
  - ▶ Variances from the Development Code require approval by P&Z
- ▶ The Design Criteria are very specific engineering procedures, calculations, values and diagrams provided to the development community to help them follow the Development Code as interpreted by City of Denton staff
  - ▶ Variances from the Design Criteria can be approved at Staff level
- ▶ It's recommended the Design Criteria Manuals be reviewed annually with a major update at least once every 5 years.

# Criteria Manual Update Project Goals:

- ▶ Re-evaluate current drainage and transportation design criteria and update where appropriate
- ▶ Identify common development issues and find resolutions
- ▶ Clarify and consolidate design criteria
- ▶ Eliminate inconsistencies between regulatory documents (DDC, Criteria Manuals, Flood Prevention & Protection Ordinance, Standard Details, Downtown Plan, etc.)
- ▶ Provide development community an opportunity to have input into the process

# Background:

- ▶ Early in 2017, the City of Denton began an update of various design criteria manuals including:
  - ▶ Water and Wastewater Design Criteria Manual – last updated in 2002
  - ▶ Drainage Design Criteria Manual – last updated in 2013
  - ▶ Transportation Design Criteria Manual – last updated in 2013
- ▶ The design criteria manuals are being updated concurrently with the Development Code in order to eliminate conflicts and produce more seamless documents
- ▶ The Water and Wastewater Design Criteria Manual update was completed first and was adopted by City Council in October of 2017
- ▶ In August of 2017, the City selected Teague Nall and Perkins to assist in the update of the Drainage and Transportation Design Criteria Manuals

# Update Process:

- ▶ Multiple staff workshops
- ▶ Review of other local municipalities requirements
- ▶ One-on-one discussions with staff
- ▶ Public Comment
- ▶ P&Z Consideration
- ▶ Local developer input
- ▶ Adoption by City Council

# Stakeholders Involved:

- ▶ Development Review Staff
- ▶ Capital Projects Engineering Staff
- ▶ Floodplain Administrator
- ▶ City Traffic Engineer
- ▶ City Engineer
- ▶ Drainage Maintenance Staff
- ▶ Traffic Operations Staff
- ▶ Capital Projects Inspection Staff
- ▶ Environmental Services Staff
- ▶ Local Development Community

## Process:

- ▶ 9/20/17 TNP began work on manual
- ▶ 10/17/17 Workshop with City staff
- ▶ 11/28/17 First draft to staff for review
- ▶ 12/6/17 Workshop with City staff
- ▶ 12/19/17 Workshop with City staff
- ▶ 1/2/18 Final draft submitted for public comment and P&Z
- ▶ 1/4/18 Draft posted for public comment (30 days)
  - ▶ On the City of Denton website
  - ▶ At City Hall
  - ▶ To the Development Community through City Planning Department and the Denton County Development Alliance



## Remaining Steps:

- ▶ 1/24/18 P&Z consideration
- ▶ 2/6/18 Meeting with development community about DDCM
- ▶ 2/13/18 Meeting with development community about TDCM
- ▶ 3/1/18 Revised drafts complete, based on community comments
- ▶ 3/6/18 Revised draft posted for public comment (7 days)
- ▶ 3/7/18 P&Z Consideration and Approval Recommendation
- ▶ 3/15/18 Final draft completed
- ▶ 3/20/18 Council public hearing
- ▶ 3/23/18 Publish final update

## Drainage Manual – Initial Changes Proposed:

- ▶ Changed title to Stormwater Design Criteria Manual
  - ▶ More current terminology, reflects the purpose of the manual better
- ▶ Moved technical requirements from DDC to Criteria Manual
  - ▶ Specific design criteria regarding design flood frequencies, street and storm drain design, easement widths, detention pond design, etc.
- ▶ Added a decision chart related to floodplain fill requirements
  - ▶ To summarize requirements found in multiple documents
- ▶ Added Streambank Protection criteria to downstream conditions assessment
  - ▶ To supplement existing requirements related to rate of flows

## Drainage Manual – Initial Changes Proposed:

- ▶ Made allowances for limited use of detention pond for recreational structures
  - ▶ (picnic tables, playground equipment, etc.)
- ▶ Clarified the limits on floodplain development
  - ▶ No development permitted within the floodplain if contributing drainage area is greater than one square mile
- ▶ Simplified minimum finish floor elevation requirements and moved them to the DDC
  - ▶ Generally, minimum finish floor elevations are set at 18" above fully developed flood elevation

## Drainage Manual - Changes Not Made:

- ▶ No major changes to stormwater policy
  - ▶ Clarify existing policy
  - ▶ Make requirements and policy easier to understand
- ▶ No changes to design calculations
- ▶ No significant changes to floodplain criteria
- ▶ No changes to channel design criteria
- ▶ Continued use of NCTCOG iSWM™ criteria
- ▶ No change to primary design storm (100-year event)

## Drainage Manual – Additional Major Changes After Public Comment:

- ▶ Received 53 comments during the Public Comment Period
- ▶ Responses to all comments included in the backup material
  
- ▶ Clarified fence policy
  - ▶ No new fences in drainage easements or floodplains (DDC)
  - ▶ Exception if full capacity underground storm drain system is constructed in easement then any non-masonry fence with knock-out panels is allowed
  
- ▶ Added limit of overland storm water discharge from newly developed sites; requires underground system to be constructed if flow exceeds 3 cfs or is less than 300 cfs
  
- ▶ Added design criteria for flumes and easements associated with positive overflow areas; minimum 6-foot flume w/ 2-year storm capacity, and easement with 25-year storm capacity.
  
- ▶ Added FEMA Shaded Zone X areas (flood hazard areas with less than one square mile of drainage area) to the list of areas that could require FEMA map revisions as part of the development / floodplain reclamation process

# Transportation Criteria Manual

- ▶ Complete Re-organization of the Manual
- ▶ Major changes to the following Sections
  - ▶ Street Classifications and Geometric Standards
  - ▶ Traffic Impact Analysis (TIA)
- ▶ Perimeter Street guidelines added

City of Denton  
Transportation Design Criteria Manual



July 26, 2013

# Transportation Criteria Manual

- ▶ Street Classifications and Geometric Standards
  - ▶ Easier Terminology
  - ▶ Flexibility
  - ▶ Context Sensitive Design Options
  - ▶ Incorporate Complete Streets

TABLE 1.3.1 GEOMETRIC STREET STANDARDS

Roadway Class	No. of Lanes	Min Row (Ft)	Min <sup>(9)</sup> B-B Width (Ft)	Design Speed (MPH)	Min <sup>(6)</sup> Center Line Radius (Ft)	Min Horz. Curve Separation (Ft)	Min Grade %	Max Grade %	Parking	Side walk Width (Ft)
Alley Residential	1	25	15 <sup>(1)</sup>	15	100	0	0.5	8	Prohibited	N/A
Alley Commercial	1	30	20 <sup>(1)</sup>	15	100	0	0.5	8	Prohibited	N/A
Residential Lane <sup>(2)</sup>	2	55	33/31 <sup>(3)</sup>	30	200	0	0.5	10	Prohibited	5
Residential	2	55	33/31 <sup>(3)</sup>	30	200	0	0.5	10	Permitted	5
Collector	2 <sup>(5)</sup>	65	39	35	400	100	0.5	7	Permitted <sup>(8)</sup>	8
Collector	4 <sup>(5)</sup>	110	70/80 <sup>(4)</sup>	35	575	100	0.5	7	Prohibited	8
Arterial	4	110	70/80 <sup>(4)</sup>	40	575	100	0.5	7	Prohibited	5
Arterial	6	135	90/104 <sup>(4)</sup>	45	750	100	0.5	7	Prohibited	5

# Transportation Criteria Manual

- ▶ Street Section Flexibility
  - ▶ Option 1 – High Parking Demand
  - ▶ Option 2 – Low Parking Demand
  - ▶ Option 3 – Medium Parking Demand

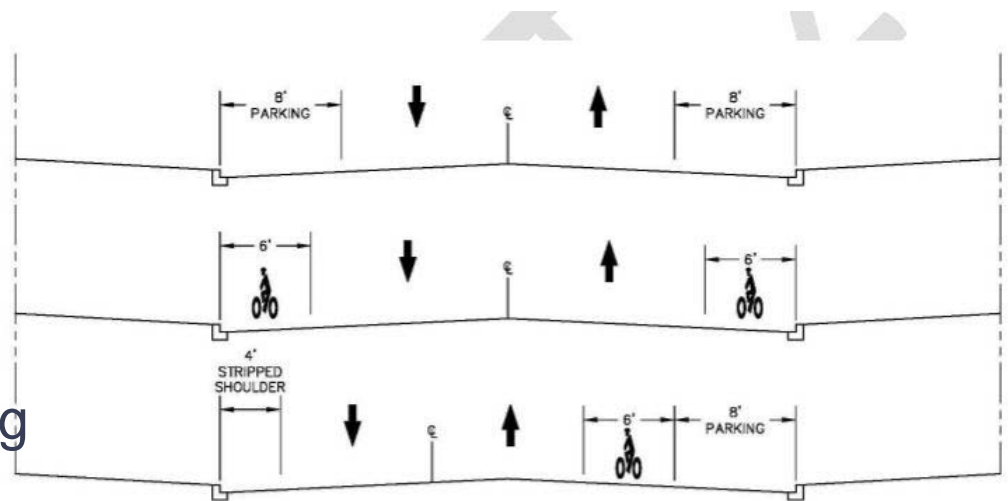


Figure 1.3.2 Two Lane Collector Options



# Transportation Criteria Manual

- ▶ **Traffic Impact Analysis**
  - ▶ Smaller Developments
    - Near term review (up to 5 years)
  - ▶ Larger Developments
    - Long term review (20 years after opening)

TABLE 1.9.3.1: Criteria for Study Requirements

<u>Analysis Category</u>	<u>Site Trips Generated at Full Build-Out</u>	<u>TIA Analysis Periods<sup>(1)</sup></u>	<u>Minimum Study Area<sup>(3)</sup></u>
I	>50 peak hour driveway trips; or  100-500 total peak hour trips	1. Existing year  2. Opening year <sup>(2)</sup>  3. Five years after opening	1. All site access drives.  2. All signalized intersections and/or major unsignalized intersections within 0.5 mile to 1 mile of site boundary, depending on total peak hour trips.
II	>500 total peak hour trips	1. Existing year  2. Opening year of each phase  3. Five years after initial opening  4. Twenty years after final opening with full build-out	1. All site access drives  2. All signalized intersections and/or major unsignalized intersections within 1.5 miles of site boundary

1. Analysis periods shall include build and no-build scenarios. Assume full occupancy when each phase opens.

2. Assume full build-out.

3. For certain projects, the City may require an enlarged study area. Land uses within the study area should include recently approved or pending development adjacent to the site.

# Transportation Criteria Manual

- ▶ Overall Simplification
  - ▶ Number of pages reduced from 131 to 51
  - ▶ Add missing information
  - ▶ Remove redundant information
    - ▶ Parking lot standards
    - ▶ Appendix A – Standard Plans
    - ▶ Appendix B – Downtown Plan



## Transportation Criteria Manual – Public Comments

- ▶ Received 37 comments during the Public Comment Period
- ▶ Responses to all comments included in the backup material
- ▶ Major changes based on public comments
  - ❖ Added truck turning radius
  - ❖ Clarification on the dimension of parking spaces
  - ❖ Additional information explaining the drive approach spacing
  - ❖ Pre Development meeting with staff
    - ❖ TIA requirements and scope
    - ❖ Added clarification on the Roundabout design

## Staff Recommendation:

- ▶ Recommend approval of the updated Stormwater Design Criteria Manual and the Transportation Criteria Manual after input from community and final revisions

# Questions?