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We will begin at 12 PM



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# INFRASTRUCTURE DESIGN MANUAL ROLL OUT



## City of Houston Houston Public Works

### Infrastructure Design Manual

**Carol Ellinger Haddock, P.E.,  
Director**

**Suhail Kanwar, P.E.,  
City Engineer**



November 2023

## City of Houston Houston Public Works

### Standard Construction Specifications for Wastewater Collection Systems, Water Lines, Storm Drainage, Street Paving, and Traffic

**Carol Ellinger Haddock, P.E.,  
Director**

**Suhail Kanwar, P.E.,  
City Engineer**



2023 Standard  
Specifications



# PURPOSE

together we create a strong foundation  
for Houston to thrive

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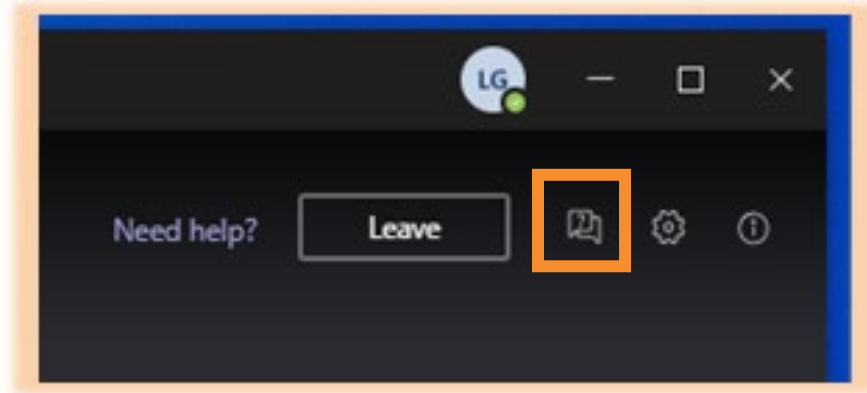


# 5 TO THRIVE VALUES

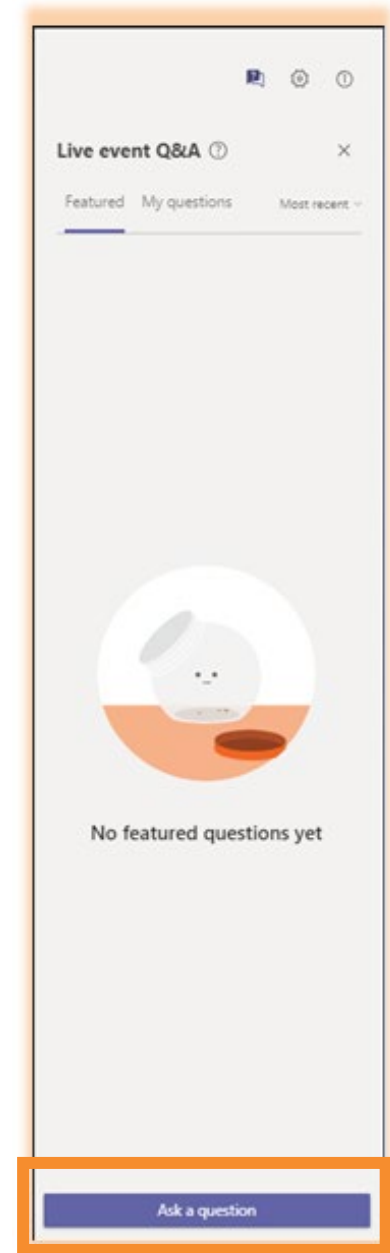
respect | ownership | communication | integrity | teamwork

# BEFORE WE BEGIN

Select **Q&A** icon on the right side of the screen.



Select **Ask a question** to reveal the text box.  
Type in your question and select Send.





# BEFORE WE BEGIN

Use the Q&A chat feature throughout the presentation:

- **Featured**—includes all attendee questions
- **My questions**—only lists your submitted questions

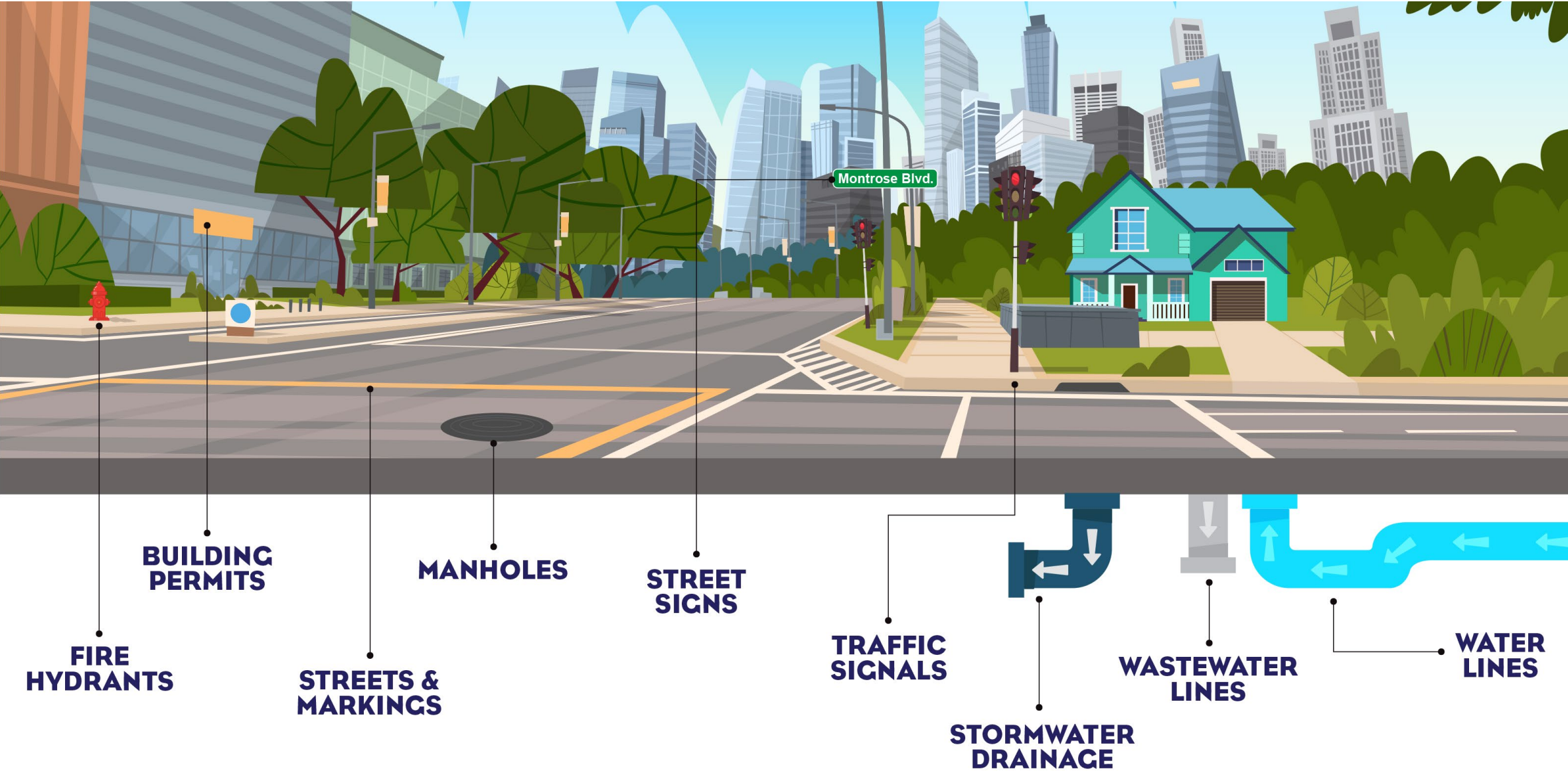
**Be specific**—note the chapter or topic in your question.

If we can't address your question today, we will respond to it on our website.

# INTRODUCTION

## DESIGN AND CONSTRUCTION STANDARDS

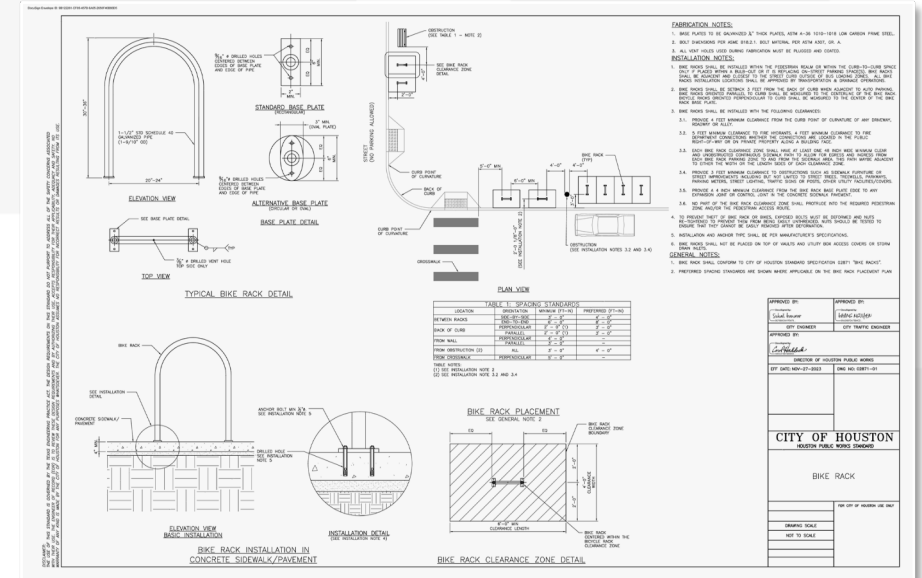
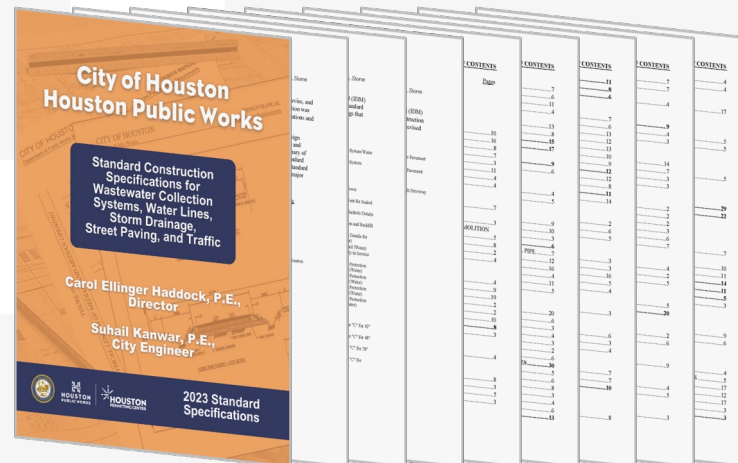
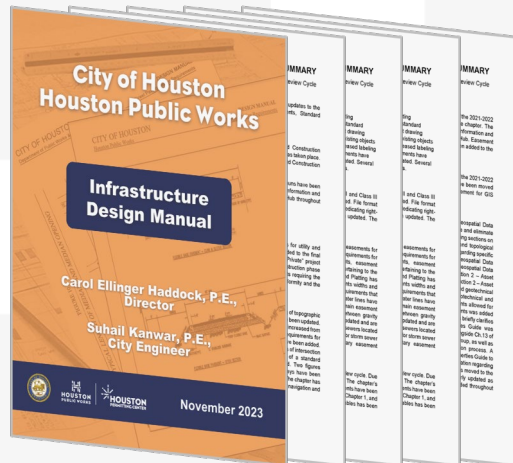
# PUBLIC INFRASTRUCTURE



# IDM

# SPECIFICATIONS

# STANDARD DETAILS





# INFRASTRUCTURE DESIGN MANUAL ROLL OUT FEBRUARY 12, 2024

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**MARY FOSTER, P.E.**

**DESIGN AND CONSTRUCTION  
STANDARDS**



# AGENDA

Time	Topic	Presenter
12:00 PM to 12:15 PM	Introductions, Overview & General Changes	Mary Foster
12:15 PM to 12:30 PM	Chapter 1, 2, 3, 5, 6, 12 and 13	Nassef Hanna
12:30 PM to 12:45 PM	Chapter 9 - Stormwater Design and Water Quality Requirements	Uttam Bhurtel
12:45 PM to 12:55 PM	Chapter 10 - Street Paving Design Requirements	Ahmed Ghaly
12:55 PM to 1:20 PM	Chapter 15 - Traffic & Signal Design Requirements	Ian Hlavacek, Ahmed Ghaly, Mazen Abdul-Razzak
1:20 PM to 1:40 PM	Chapter 16 - Communication Facility Requirements	Gilbert Portillo
<b>1:40 PM to 1:50 PM</b>	<b>BREAK</b>	<b>BREAK</b>
1:50 PM to 2:10 PM	Chapter 17 - Pedestrian, Bicycle and Transit Design Requirements	Ian Hlavacek
2:10 PM to 2:20 PM	Chapter 18 - Encroachment Requirements	Gilbert Portillo
2:20 PM to 2:35 PM	Construction Specifications	Jose Gutierrez
2:35 PM to 2:50 PM	Standard Details Updates	Sahar Beigzadeh
2:50 PM to 2:55 PM	Closing	Mary Foster
2:55 PM to 3:00 PM	Additional Questions	Sahar Beigzadeh

# OVERVIEW

2022 -2023 Review Cycle



# OVERVIEW

## 2022-2023 Review Cycle

### II. REVIEW SCHEDULE

<u>Year</u>	<u>Documents Reviewed</u>	
1	Stormwater Design and Water Quality .....	Ch 9
2	Street Paving Design.....	Ch 10
	Street Cut .....	Ch 12
	Utility Locations .....	Ch 6
3	Water Line Design.....	Ch 7
	Wastewater Collection System Design.....	Ch 8
	Geotechnical & Environmental .....	Ch 11
	Facilities.....	Ch 14
4	Ancillary .....	Ch 1-5
	Geospatial Data Deliverables .....	Ch 13
5	Traffic and Signal Design .....	Ch 15
	Communication Facilities.....	Ch 16
	Pedestrian, Bicycle, and Transit Design.....	Ch 17
	Encroachments .....	Ch 18



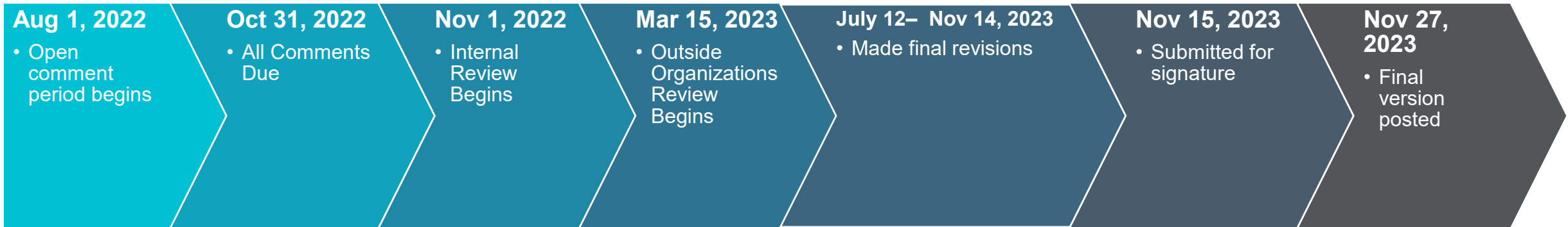
- Chapter 15 –Traffic and Signal Design Requirements
- Chapter 16 – Communication Facility Requirements
- Chapter 17 – Pedestrian, Bicycle, and Transit Design Requirements
- Chapter 18 – Encroachment Requirements
- Associated Construction Specifications and Details

# OVERVIEW

## Off-Cycle Items

- Chapter 9: Storm Water Design and Water Quality Requirements
- Chapter 10: Street Paving Design Requirements

# 2022-2023 REVIEW CYCLE TIMELINE



# IMPLEMENTATION

## New Requirements:

- No design grace period
- Effective Date: Nov. 27, 2023
- CIP Projects:
  - 60% designs
- Public/Private Sector
  - Substantially complete plans
- Plats & Easements
  - Preliminary plat review



## IMPLEMENTATION: MORE INFO

### 2023 IDM Announcement & Executive Summary

Announcement: 2023 Infrastructure Design Manual is now effective



Houston Public Works (HPW) has completed the 2022-2023 Review Cycle. The following has been updated.

- Infrastructure Design Manual (IDM).
- General Requirements
- Standard Construction Specifications
- Standard Details

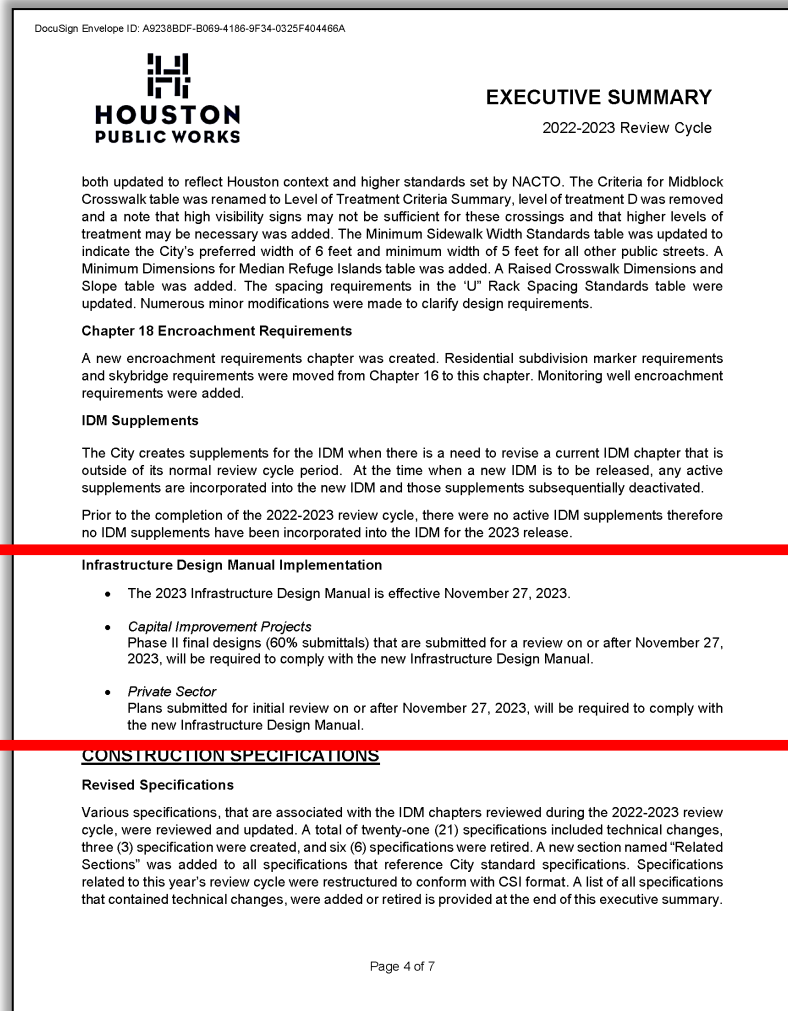
Houston Public Works capital improvement projects with 60% designs submitted on or after November 27, 2023, must comply with the NEW requirements in the 2023 Infrastructure Design Manual (IDM).

Public/private sector projects submitted for initial review on or after November 27, 2023, must comply with all requirements in the 2023 IDM. Substantially complete plans submitted for initial review prior to November 27, 2023, will be held to the 2022 requirements.

If applicants have submitted a project before November 27, 2023, and would like to use the 2023 requirements, the existing project **MUST BE CANCELED** AND a new project submitted. Reminder: All 2023 IDM requirements will be enforced. Refunds will **NOT** be given, and new fees will be applied.

### Directions on How to Cancel Your Current Project

1. Send an e-mail to [OCF@houstontx.gov](mailto:OCF@houstontx.gov) on company letterhead with
  1. Project Number
  2. Cancellation Request
2. Once completed the Office of the City Engineer will email a confirmation with any outstanding balance information.
3. Pay your balance AND email a copy of your receipt to [OCF@houstontx.gov](mailto:OCF@houstontx.gov).



# INTERNAL REVIEW REPRESENTATIVES

## OFFICE OF THE CITY ENGINEER

- SUHAIL KANWAR
- AHMED GHALY
- RAJAN SHETH

## OCE – STANDARDS

- MARY FOSTER
- LUIS GARZA
- SAHAR BEIGZADEH
- NASSEF HANNA
- JOSE GUTIERREZ

## CAPITAL PROJECTS

- MICHELLE RANDON
- ROWAIDAH AYOUB

## HOUSTON WATER

- LYNN PHIPPS
- PAUL ZAPPI

## TRANSTAR

- MAZEN ABDULRAZZAK

## TRANSPORTATION & DRAINAGE OPERATIONS

- IAN HLAVACEK

## PLANNING & DEVELOPMENT DEPT.

- MUXIAN FANG
- SUVIDHA BANDI

# EXTERNAL REVIEW MEMBERS





# **DESIGN AND CONSTRUCTION STANDARDS WEBSITE**

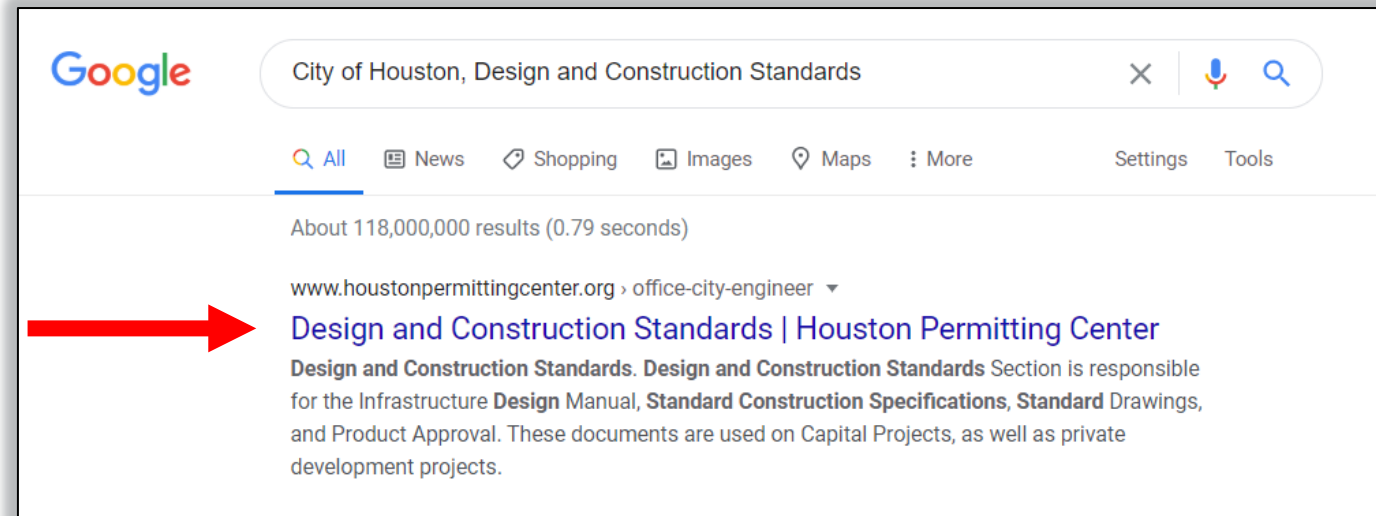
# DESIGN AND CONSTRUCTION STANDARDS WEBSITE

## Web Address

<https://houstonpermittingcenter.org/office-city-engineer/design-and-construction-standards>

Easy way to find:

Google “City of Houston,  
Design and  
Construction Standards”



# DESIGN AND CONSTRUCTION STANDARDS WEBSITE

The screenshot shows the Houston Permitting Center website. The header includes the address "1002 Washington Ave, Houston, TX 77002" and email "houston.permittingcenter@houstontx.gov". Navigation links include HOME, ABOUT US, CONTACT US, NEWS & EVENTS, REGISTER | LOG IN, PERMITS A TO Z, PROJECT PLANNER, SCHEDULE, HELP, and SERVICES. A search bar and language dropdown are also present. The main banner features the title "Design and Construction Standards" over a background of technical drawings. Below the banner is a breadcrumb trail: "About Us / Houston Public Works / Office of the City Engineer / Design and Construction Standards". A paragraph describes the Design and Construction Standards Section's responsibilities. A newsletter sign-up link is provided. On the left, a "CONTACT" sidebar lists links for STANDARDS REVIEW COMMITTEE, INFRASTRUCTURE DESIGN MANUAL, CONSTRUCTION SPECIFICATIONS, PROJECT MANUAL RESOURCES, and PRODUCT APPROVALS. On the right, contact details for the Standards Review Committee are listed, including the address, email, and hours.

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HOUSTON PERMITTING center

## Design and Construction Standards

About Us / Houston Public Works / Office of the City Engineer / Design and Construction Standards

Design and Construction Standards Section is responsible for the Infrastructure Design Manual, Standard Construction Specifications, Standard Drawings, and Product Approval. These documents are used on Capital Projects, as well as private development projects.

Would you like to receive periodic updates from the City Engineer? [Register for our newsletter.](#)

**CONTACT**

- STANDARDS REVIEW COMMITTEE
- INFRASTRUCTURE DESIGN MANUAL
- CONSTRUCTION SPECIFICATIONS
- PROJECT MANUAL RESOURCES
- PRODUCT APPROVALS

**CONTACT**

- 1002 Washington Ave, 2nd Floor  
Houston, TX 77002
- StandardsReviewCommittee@houstontx.gov
- 8 am to 3 pm

# GENERAL CHANGES

# IDM REDLINES

CONTACT
STANDARDS REVIEW COMMITTEE
INFRASTRUCTURE DESIGN MANUAL
CONSTRUCTION SPECIFICATIONS
PRODUCT APPROVALS
PROJECT MANUAL RESOURCES
CAD TOOLS AND TEMPLATES
CAPITAL PROJECTS
LIFT STATIONS
GENERAL DETAILS
STORM SEWER DETAILS
STREET PAVING AND SIDEWALK DETAILS
STREETCUT DETAILS
TRAFFIC DETAILS
TREE AND HARDSCAPE DETAILS
WASTEWATER DETAILS

## Standards Review Committee

The Standard Review Committee (SRC) was established to review, revise, and update standards and documents. Public input and participation is requested by the submittal of proposals for suggested changes, comments, recommendations and other information. The process will accomplish review of all documents within a five year cycle.

## CURRENT REVIEW CYCLE

The 2023-2024 Review Cycle will look at Chapter 9 of the Infrastructure Design Manual and its associated drawings and specifications. Revision proposals were due by **October 31, 2023**.

- [Review Cycle Public Notice](#)
- [Request Form to Change Standards](#)
- [Frequently Asked Questions for the 2023 IDM](#)



## 2022-2023 REVIEW CYCLE

The 2022-2023 Review Cycle looked at Chapters 15, 16 and 17 of the Infrastructure Design Manual (IDM) and their associated drawings and specifications. A copy of the IDM redlines, Standard Specifications redlines and Standard Details redlines is provided to the public here. The 2023 IDM is **effective on November 27, 2023**.

- [IDM Redlines from 2022-2023 Review Cycle](#)
- [General Requirements and Standard Construction Specifications Redlines from 2022-2023 Review Cycle](#)
- [Standard Details Redlines from 2022-2023 Review Cycle](#)

## Chapter 15

### TRAFFIC AND SIGNAL DESIGN REQUIREMENTS

#### SECTION 1 – TRAFFIC AND SIGNAL DESIGN OVERVIEW

##### 15.1.01 CHAPTER INCLUDES

- 15.1.01.A Criteria for the design of traffic and signal requirements.

##### 15.1.02 REFERENCES

- 15.1.02.A References listed are the latest edition, version, amendments, and recodifications unless otherwise noted.
  1. Refer to the reference lists in Chapter 1 - General Requirements and Chapter 10 - Street Paving Design Requirements.
  2. A Policy on Geometric Design of Highways and Streets ("The Green Book"), AASHTO
  3. City of Houston Code of Ordinances
    - a. Chapter 40 – Streets and Sidewalks
    - b. Chapter 42 – Subdivisions, Developments and Platting
    - c. Chapter 45 – Traffic
  4. City of Houston Construction Code Amendments, latest adopted amendments<sup>1</sup>
  5. City of Houston, Infrastructure Design Manual (IDM);
  6. City of Houston, Neighborhood Traffic Management Program (NTMP)
  7. City of Houston, Standard Details, ~~Current Edition~~
  8. City of Houston, Standard Operations Procedure (SOP) TMG – 905 Left Turn Warrants<sup>2</sup>
  9. City of Houston, Standard Specifications, ~~Current Edition~~

Refer to the weblink for reference:

<sup>1</sup> <https://www.houstonpermittingcenter.org/help/codes>

<sup>2</sup> This reference can be obtained from Transportation and Drainage Operations

15-2  
07-01-202311-27-2023

# GENERAL CHANGES:

## Change Bars

➤ Change bars on the left-hand side of the revised documents indicate a change.

Chapter 15

TRAFFIC AND SIGNAL DESIGN REQUIREMENTS

SECTION 1 – TRAFFIC AND SIGNAL DESIGN OVERVIEW

15.1.01 CHAPTER INCLUDES

15.1.01.A Criteria for the design of traffic and signal requirements.

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  - a. Chapter 40 – Streets and Sidewalks
  - b. Chapter 42 – Subdivisions, Developments and Platting
  - c. Chapter 45 – Traffic
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6. City of Houston, Neighborhood Traffic Management Program (NTMP)
7. City of Houston, Standard Details
8. City of Houston, Standard Operations Procedure (SOP) TMG – 905 Left Turn Warrants<sup>2</sup>
9. City of Houston, Standard Specifications

Refer to the weblink for reference:

<sup>1</sup> <https://www.houstonpermittingcenter.org/help/codes>

<sup>2</sup> This reference can be obtained from Transportation and Drainage Operations

# GENERAL CHANGES:

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11-27-2023		

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11-27-2023		



# GENERAL CHANGES:

## Chapter Placeholders

CITY OF HOUSTON		Traffic and Signal Design Requirements
Houston Public Works		Section 1 – Traffic and Signal Design Overview
15.1.02.A continued	10.	City of Houston Vision Zero High Injury Network (HIN) <sup>3</sup>
	11.	Highway Capacity Manual (HCM), TRB
	12.	Highway Safety Improvement Program (HSIP)

CITY OF HOUSTON		Traffic and Signal Design Requirements
Houston Public Works		Section 1 – Traffic and Signal Design Overview
15.1.02.A continued	10.	City of Houston Vision Zero High Injury Network (HIN) <sup>3</sup>
	11.	Highway Capacity Manual (HCM), TRB
	12.	Highway Safety Improvement Program (HSIP)
	13.	Houston Bike Plan <sup>4</sup>
	14.	International Building Code (IBC), edition adopted by City of Houston <sup>5</sup>
	15.	Major Thoroughfare and Freeway Plan (MTFP) <sup>6</sup>
	16.	Manual for Assessing Safety Hardware (AASHTO MASH)
	17.	National Cooperative Highway Research Program (NCHRP), Report 350
	18.	National Cooperative Highway Research Program (NCHRP), Report 812
	19.	National Electrical Code (NEC)
	20.	National Electrical Safety Code (NESC)
	21.	Roundabout Informational Guide
	22.	Standard Highway Sign Designs for Texas (SHSD)
	23.	Texas Manual on Uniform Traffic Control Devices (TMUTCD)
	24.	Traffic Signal Timing Manual
	25.	Transit-Oriented Development Map <sup>7</sup>
	26.	Transportation Impact Analyses for Site Development (An ITE Proposed Recommended Practice), ITE
	27.	Trip Generation (An ITE Informational Report, Institute of Transportation Engineers, Washington, D.C.)
	28.	Trip Generation Handbook, ITE
	29.	Trip Generation Manual

Refer to the weblink for reference:  
<sup>3</sup> <https://www.houstontx.gov/visionzero/>  
Refer to the weblink for reference:  
<sup>4</sup> <https://www.houstonbikeplan.org/>  
<sup>5</sup> <https://www.houstonpermittingcenter.org/building-code-enforcement/code-development#agency-links-416>  
<sup>6</sup> <https://www.houstontx.gov/planning/transportation/MTFP.html>  
<sup>7</sup> <https://houstontx.gov/planning/tod-standards.html>

15-3  
11-27-2023

# GENERAL CHANGES:

## Definitions and Capitalization

- We added new definitions.
- Defined terms and proper nouns were capitalized.

15.1.03.D Background Conditions – Represents the amount of traffic and geometric changes that will be on the area roadway network without any proposed development during build-out, interim, and the horizon year.

d. Scenarios for analysis will be project-specific, but should generally include:

(1) Existing Conditions

(2) Background Conditions



# CHAPTERS 1, 2, 3, 5, 6, 12 AND 13

**NASSEF HANNA, PE, ENGINEER**

OFFICE OF CITY ENGINEER,  
DESIGN AND CONSTRUCTION STANDARDS GROUP

# **GENERAL:**

## **Chapters 1, 2, 3, 5, 6, 12 and 13**

- **These chapters are not officially part of the 2022-2023 review cycle.**
- **The changes that have been made for these chapters are due to major changes in other chapters**

# UPDATES:

## Chapter 1- General Requirements

➤ Tree Protection Requirements were moved from chapter 16 to this chapter.

Chapter 1  
Table of Contents

General Requirements

SECTIONS	PAGE
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# UPDATES:

## Chapter 1- General Requirements

➤ References to related ordinance were added.

Chapter 1

GENERAL REQUIREMENTS

SECTION 1 - GERNERAL REQUIREMENTS OVERVIEW

1.1.01 CHAPTER INCLUDES

- 1.1.01.A
- Research and submittal requirements for projects inside the city limits of Houston or within Houston's Extraterritorial Jurisdiction (ETJ).
- 1.1.01.B
- Tree protection requirements.

1.1.02 REFERENCES

The following references should be reviewed in conjunction with this manual:

- 1.1.02.A
- Latest revision of the following City of Houston Code of Ordinances:
  - Chapter 33 - Planning and Development, Article IV - City Surveys.
  - Chapter 33 – Planning and Development, Article V – Trees, Shrubs, and Screening Fences.
  - Chapter 33 – Planning and Development, Article VI – Protection of Certain Trees.
  - Chapter 40 – Streets and Sidewalks, Article V - Excavation in Public Way
  - Chapter 42 - Subdivisions, Developments and Platting.
  - Chapter 47 – Water and Sewers, Article V - Industrial Wastewater.
- 1.1.02.B
- Texas Accessibility Standards (TAS) of the Architectural Barriers Act, Article 9102, Texas Civil Statutes.
- 1.1.02.C
- City of Houston Standard Specifications and Standard Details, latest revision.
- 1.1.02.D
- Rules and Regulations published by Texas Commission on Environmental Quality (TCEQ).
  - Texas Administrative Code Title 30, Part 1, Chapter 290 Public Water Drinking, latest revision.
  - Texas Administrative Code Title 30, Part 1, Chapter 217 Design Criteria for Domestic Wastewater Systems, latest revision.



# UPDATES:

## Chapter 1- General Requirements

➤ Telecommunication Geospatial data deliverable requirements also added.

### CITY OF HOUSTON

Houston Public Works

General Requirements

Section 2 – General Design Requirements

1.2.02.E.2  
continued

- b. For design contracts with the City, submit Record Drawings in accordance with requirements of the professional engineering services contract.
- c. For Publicly-Funded and Privately-Funded Projects, submit Record Drawings to the Office of the City Engineer no later than two weeks following final acceptance of the project.
- d. For projects involving waterlines, refer to Chapter 7 for specific requirements.

- 3. Geospatial Data Deliverables: Provide GIS datasets in accordance with Chapter 13 – Geospatial Data Deliverables for projects that are proposing or modifying assets identified in Chapter 13 that are or will be operated and/or maintained by the City. In addition, provide GIS datasets in accordance with Chapter 13 – Geospatial Data Deliverables for projects that are proposing or modifying the privately owned and operated telecommunications assets described in Chapter 13.

1.2.02.F Provide additional submittals as required in applicable chapters of the City of Houston Infrastructure Design Manual (IDM).

#### 1.2.03 QUALITY ASSURANCE

- 1.2.03.A Have surveying and platting accomplished under direction of a RPLS.
- 1.2.03.B Have recording documents sealed, signed, and dated by a RPLS.
- 1.2.03.C Have calculations prepared by or under the direct supervision of a Professional Engineer trained and licensed in disciplines required by the project scope.
- 1.2.03.D Have final design Drawings sealed, signed, and dated by the Professional Engineer responsible for development of the Drawings.

#### 1.2.04 RESEARCH REQUIREMENTS

- 1.2.04.A Research existing utility and right-of-way information with the City departments listed below. Present and discuss the concept of the project with these same departments.
  - 1. Houston Airport System
  - 2. Houston Public Works
    - a. Capital Projects
    - b. Customer Account Services

1-9  
11-27-2023




# UPDATES:

## Chapter 2- Survey Requirements

➤ Survey Guideline was added.

### SECTION 2 - SURVEY DESIGN REQUIREMENTS

#### 2.2.01 DESIGN REQUIREMENTS

- 
- 2.2.01.A Adhere to these guidelines for capital improvement projects designed under professional services contracts with the City of Houston, projects involving underground work greater than or equal to three (3) feet in depth and any other project in which the City requests a survey. Driveway projects do not require a survey.
- 2.2.01.B When establishing horizontal control, surveyors shall transcribe onto the pages of a standard Survey Field Book, as described in Article 2.1.03.P, all angles and distances, at the time of measurement, with an accompanying recovery sketch. When establishing vertical control, the surveyor shall use differential leveling, and transcribe the vertical data onto the pages of a standard Survey Field Book, with an accompanying recovery sketch. When establishing control using GNSS/GPS methods, record the date, time, and length of each observation. TBMs must be set where they are not likely to be destroyed during construction.
- 2.2.01.C For projects in which the horizontal control exceeds a distance of 2,000 feet from a found City of Houston monument, a Site Control Monument shall be set. Additional Site Control Monuments shall be set should the horizontal control exceed a radial distance of 2,000 feet from an existing City of Houston monument or newly set Site Control Monument. Obtain City monument designation numbers from the City Survey Office. If an existing Site Control Monument is used to reference the project, said Site Control Monument must be re-observed and re-submitted with the resultant horizontal and vertical coordinates. All recovery ties must be re-observed and present on the new recovery sheets.
- 2.2.01.D Field Work.
1. For engineering contracts with the City, field work shall be recorded in field books or electronic field books. Obtain a Survey Field Book number from the Survey Section and record this identification in the title block on drawing sheets.
  2. The traverse line and design baseline must be monumented at its beginning, end, street intersections and at angle points with markers of a permanent nature, such as iron rods, spikes, or other lasting identification. Make reference drawings for each control monument showing ties to planimetric features to allow easy recovery. Set markers at a maximum of 1000 feet on long lines. (Wherever practical, all horizontal and vertical control monuments must be marked in such a way as to identify the surveyor in responsible charge.)

# UPDATES:

## Chapter 3- Graphic Requirements

➤ Graphic requirements for aerial utilities and telecommunication facilities were added.

CITY OF HOUSTON		Graphic Requirements
Houston Public Works		Table of Contents
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# UPDATES:

## Chapter 5- Easement Requirements

➤ Requirements for combined storm and sanitary sewer easements were added in 5.2.04.F.3.b

5.2.04.F Combined Storm and Sanitary Sewer Easements:

1. Total combined Easement width shall be rounded up to the nearest multiple of 5-feet.
  2. For combined storm and sanitary sewer Easement not contiguous to the Public Right-of-Way or Semi-Public Right-of-Way:
    - a. Combined Easement width shall be as specified in Article 5.2.04.D.2.b and Article 5.2.04.E.1.b, whichever is greater.
    - b. The centerline of sanitary sewer lines or force mains shall be located not less than 10-feet from the edge of the Easement Boundary.
    - c. Minimum horizontal clearance between the exterior of any storm sewer and either Easement Boundary shall be as required by Table 5.2, Note 2.
  3. For combined storm and sanitary sewer Easements contiguous to Public or Semi-Public Right-of-Way:
    - a. Combined Easement width shall be as specified in Article 5.2.04.E.1.b or a minimum width equal to the depth of the proposed sanitary sewer line, whichever is greater.
    - b. When sanitary sewer lines are placed nearest to the Outer-Easement Boundary of combined Easements, the centerline of sanitary sewer lines or force mains shall be located not less than 10 feet from the edge of the Easement.
    - c. When storm sewers are placed nearest to the Outer-Easement Boundary of combined Easements, the minimum horizontal clearance between the exterior of any storm sewer and the Outer-Easement Boundary shall be as required by Table 5.2, Note 2.
    - d. See Figure 5.1 for an example to be used as a visual aid for these requirements. Figure 5.1 is not a substitute for the requirements in this section.
- 5.2.04.G No variances will be approved by the City Engineer unless there are extenuating circumstances.

# UPDATES:

## Chapter 6- Utility Locations

➤ **Subsurface Utility Exploration (SUE) requirements for private projects were added.**

### CITY OF HOUSTON

Utility Locations

#### Houston Public Works

#### Section 2 – Utility Locations Design Requirements

##### *6.2.01.E.1.b continued*

penetrating radar, to determine the existence and approximate horizontal position of subsurface utilities. Quality level B data should be reproducible by surface geophysics at any point of their depiction. This information is surveyed to applicable tolerances defined by the project and reduced onto plan documents.

- c. Utility quality level C – Information obtained by surveying and plotting visible above-ground utility features and by using professional judgment in correlation with this information to quality level D information.
- d. Utility quality level D – Information derived from existing records or as-builts.

#### 2. Level of SUE Required

a. For private projects, if a quality level B, C, or D SUE indicates that the proposed utility has a horizontal or vertical clearance that is less than what is required in this manual, a quality level A SUE is required to confirm location of the existing utility. In the case that the proposed utility is parallel to the existing utility, then a quality level A SUE is required at intervals of every 500 feet within the limits where there is less than sufficient horizontal clearance as indicated by the quality level B, C or D SUE. A quality level A SUE must be provided in order to be granted a variance for utility clearance.

b. For private projects in which underground trenchless construction will be performed, if a quality level C or D SUE indicates that the proposed utility will cross (above or below) an existing public utility with less than 10 feet of vertical clearance from exterior of the existing public utility to exterior of the proposed utility, a quality level A or B SUE is required to confirm the location of the existing public utility. If minimum clearances cannot be maintained, see article 6.2.01.E.2.a.

c. At a minimum, a topographical survey equivalent to a quality level C SUE is required for every project in which excavation equal to or deeper than three (3) feet is performed and any other project in which the City requests a quality level C SUE. Driveway projects do not require a quality level C SUE.

#### 6.2.02 SUBMITTALS

- 6.2.02.A Submittals are to be made according to the criteria established by the utility owner(s).

# UPDATES:

## Chapter 12- Street Cut Requirements

➤ Plan and Profiles for Excavations greater than 3 feet in depth requirements were added.

SECTION 2 – STREET CUT DESIGN REQUIREMENTS

12.2.01 DESIGN REQUIREMENTS

- 12.2.01.A
- Design project so that restoration returns public way to the same or better condition that existed prior to excavation. Minimum limits and methods for pavement restoration shall be in accordance with City Standard Details 02951-01, 02951-02, 02951-03, 02951-04, and 02951-05.
- 12.2.01.B
- Comply with requirements for all open-cut construction including excavation for auger or directional drilling insertion pits.

1.

Saw cut existing pavements along lines parallel to and perpendicular to traveled way center lines unless otherwise approved by the City Engineer.

2.

For concrete pavements and for Hot Mix Asphaltic Concrete (HMAC), conform to requirements of the City of Houston Infrastructure Design Manual, Chapter 10 – Street Paving Design, paragraph 10.2.02 and Section 3 – Geometric Design Requirements.

3.

Construction documents shall require that one lane of traffic be open at all times with a flagman and work zone signage at both ends of the construction unless otherwise provided on an approved traffic control plan.

4.

For open-cut construction in street pavement, the drawings shall call for secured steel plate to be placed over open-cut sections whenever the contractor is not working within the open-cut area so that traffic will have full use of the roadway.
- 12.2.01.C
- Prepare plan view drawings for all excavations that identify and locate existing underground facilities. If excavation is greater than or equal to three (3) feet in depth, then drawings shall also include profile view. Driveway projects do not require a profile view. The drawings, or verification statements, shall confirm that the underground facilities have been identified, located, and marked by the following organizations:

1.

Texas Underground Facility Notification Corporation

2.

City of Houston Traffic Operations Division
- 12.2.01.D
- The City may require Plan and Profile drawings for complex projects or when the constructing agency has demonstrated previous non-compliance with underground facility location procedures.
- 12.2.01.E
- Plan view drawings shall be in accordance with Chapter 3 – Graphic Requirements in the City of Houston Infrastructure Design Manual.



# UPDATES:

## Chapter 13- Geospatial Data Deliverable

➤ Geospatial data deliverables requirements for telecommunication facilities were added.

### Chapter 13 Table of Contents

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#### 13.4.05 TELECOMMUNICATIONS ASSET INFORMATION

##### 13.4.05.A Telecommunications Asset Descriptions

1. Network Node – An equipment at a fixed location that enables wireless communication between user equipment and a communications network. This includes distributed antenna system nodes.
2. Repeater Pole – A pole on which a repeater antenna (efficient antenna system that receives weak signals and widens transmission coverage) is installed.
3. Fiber Optic Cable – A line containing strands of fiber made of glass or plastic that transmit information quickly over long distances via pulses of light.

##### 13.4.05.B Telecommunications Asset Requirements

1. As applicable, all telecommunications asset features must contain the required information as depicted in Table 13.10. The information must be delivered to the City following the requirements outlined in SECTION 6 of this chapter.
2. For more detailed information regarding GIS data that must be provided for each telecommunications asset, such as field descriptions, subtypes and domain codes, or data processing workflows, refer to the Geospatial Data Deliverables Properties Guide.

Table 13.10 – INFORMATION REQUIRED FOR TELECOMMUNICATIONS ASSETS

Information	Asset		
	Network Node	Repeater Pole	Fiber Optic Cable
Cable ID			X
Company Name	X	X	X
Council District	X	X	X
Depth			X
E911 Address	X	X	
From Street			X
ILMS Number	*	*	*
Latitude	X	X	
Length			X
Longitude	X	X	
Material		X	X
Node Name	X		
Node Number	X		
Owner			X
Pole Elevation		X	
Pole ID		X	
Pole Status	X	X	

# QUESTIONS?

Enter it into the chat.

Note the chapter or topic in your question.

We will respond to unanswered questions on our website after this event.



# **CHAPTER—9 STORMWATER DESIGN AND WATER QUALITY REQUIREMENTS**

**UTTAM BHURTEL, P.E.**

**OFFICE OF THE CITY ENGINEER  
STORMWATER GROUP**



# **CHAPTER 9- STORMWATER DESIGN AND WATER QUALITY REQUIREMENTS**

**Summary of the changes and updates:**

- **Detention Volume Criteria in Tabular Form**

# CHAPTER 9- STORMWATER DESIGN AND WATER QUALITY REQUIREMENTS

## Calculation of Detention Volume

9.2.01.H.3.b

- b. Detention Volume for Criteria 1: For a tract containing only one Single family residential (SFR) home, follow Table 9.3.

Table 9.3

SFR Tract Size	Percentage/Total Impervious Area <sup>i</sup>	Detention Required (Y/N)	Detention Volume	Notes
One SFR tract ≤ 15000 SF	% Total impervious area ≤ 65% of tract	N	N/A	1-2
One SFR tract ≤ 15000 SF	% Total impervious area > 65% of tract	Y	0.75 ac-ft/ac rate × impervious area in excess of 65% of tract	1-2
One SFR tract >15000 SF	Total impervious area ≤ 9750 SF	N	N/A	1-2
One SFR tract >15000 SF	Total impervious area > 9750 SF	Y	0.75 ac-ft/ac rate × impervious area in excess of 9750 SF	1-2

<sup>i</sup>Total impervious area = (existing + proposed) impervious area.

# CHAPTER 9- STORMWATER DESIGN AND WATER QUALITY REQUIREMENTS

## Calculation of Detention Volume

9.2.01.H.3.c

- c. Detention Volume for Criteria 2: For tracts with SFR Developments with direct driveway access, joint access, shared access, courtyard access drive or multi-unit residential (MUR) Development, follow Table 9.4.

Table 9.4

Tract Size	Percentage/Total Impervious Area <sup>i</sup>	Detention required (Y/N)	Detention Volume	Notes
Tract ≤ 15000 SF	Total % impervious area within tract ≤ 65% of tract	N	N/A	1-5
Tract ≤ 15000 SF	Total % impervious area within tract > 65% of tract	Y	0.75 ac-ft/ac rate × impervious area in excess of 65% of the tract	1-5
15000 SF < Tract < 1 acre	Total impervious area within tract ≤ 9750 SF	N	N/A	1-5
15000 SF < Tract < 1 acre	Total impervious area within tract > 9750 SF	Y	0.75 ac-ft/ac rate × impervious area in excess of 9750 SF	1-5
Tract ≥ 1 acre	All proposed impervious area	Y	Refer to requirements in Table 9.5	1-5

<sup>i</sup>Total impervious area = (existing + proposed) impervious area also including direct driveway access, joint access, shared access, courtyard access drive or MUR Developments.

# CHAPTER 9- STORMWATER DESIGN AND WATER QUALITY REQUIREMENTS

## Shared Outfall

Notes for Table 9.4:

- (1) When a tract of one acre or more is divided into multiple lots; detention is required for all proposed impervious area within the lot. No residential exemption will be granted for the individual lot within this subdivision tract.
- (2) No Sheet Flow shall be permitted to an alleyway, neighboring properties, or a ditch. For projects using Table 9.4, a subsurface drainage system with one shared outfall is required. A point of connection shall be through a minimum 24-inch RCP inside diameter or equivalent cross-section described in 9.2.01.C.4.a. A separate project, plan and profile shall be submitted to OCE for storm outfall approval.

An alternative outfall option to SFR Developments that are 15,000 SF or less with direct driveway access, joint access, shared access, courtyard access drive, and MUR Developments: Storm outfall analysis to be provided by a state of Texas Licensed Professional Engineer to justify using a 4-inch schedule 40 pipe curb cut or 12-inch schedule 40 pipe connection to the roadside ditch. This option is only available if curb or ditch is directly fronting these Developments. The Professional Engineer shall confirm through storm outfall analysis that there is no negative drainage impact on the City system.

## Public Alleys

### 9.2.01.H.3.c.(4)

- (4) A public alley created with recorded plat prior to January 1st, 2023, is exempt from detention requirements.

# CHAPTER 9- STORMWATER DESIGN AND WATER QUALITY REQUIREMENTS

## Calculation of Detention Volume

**9.2.01.H.3.d** d. Detention Volume for Criteria 3: For other projects not subject to 9.2.01.H.3.b or 9.2.01.H.3.c, follow Table 9.5.

**Table 9.5**

Tract Size	Proposed Percent Impervious <sup>i</sup>	Detention Required (Y/N)	Detention Volume	Notes
Tract < 1 acre	All proposed impervious area	Y	0.75 ac-ft/ac rate × proposed impervious area of the tract	1-2
1 acre ≤ Tract ≤ 20 acre	All proposed impervious area	Y	Follow Figure 9.2/Table 9.6 Minimum Detention Rate chart/table	1-4
Tract > 20 acre	All proposed impervious area	Y	Follow the most current version of the HCFCDD PCPM; Minimum rate is 0.75ac-ft/ac	1-4

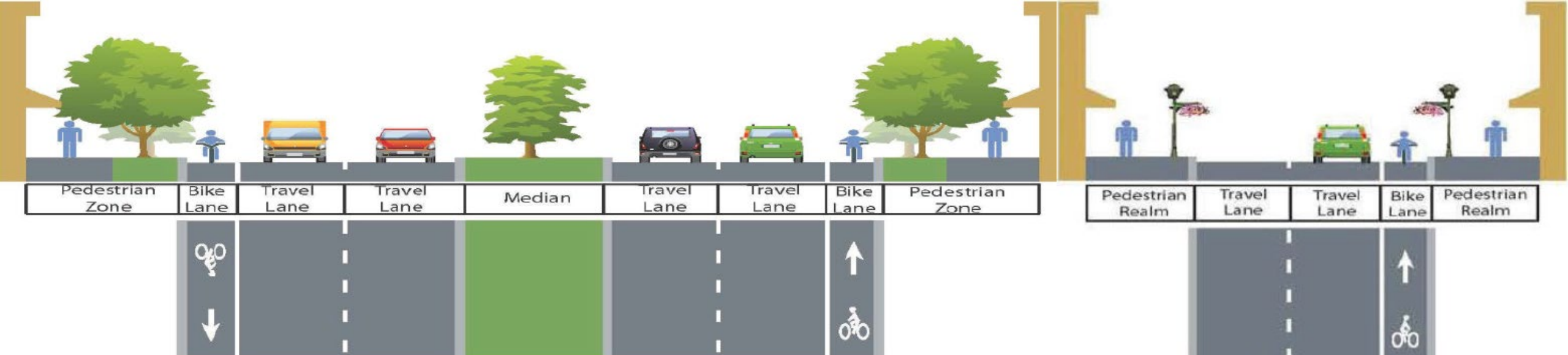
<sup>i</sup>Proposed percent impervious = proposed impervious area/Disturbed Area.

# QUESTIONS?

Enter it into the chat.

Note the chapter or topic in your question.

We will respond to unanswered questions on our website after this event.



# CHAPTER 10 – STREET PAVING DESIGN REQUIREMENTS

**AHMED GHALY, PE, PMP, MANAGING ENGINEER**  
OFFICE OF CITY ENGINEER,  
TRAFFIC ROW & MOBILITY GROUP



# CHAPTER 10 – STREET PAVING DESIGN REQUIREMENTS

## ALLEY UPDATES:

**10.1.04.E** City Maintained Alley (Existing)

**10.1.04.R** Privately Maintained Alley (Existing)

**10.1.04.Q** New Alley

# CHAPTER 10 – STREET PAVING DESIGN REQUIREMENTS

## ALLEY UPDATES (10.3.03.G):

### City Maintained Alley (Existing)

- *Alley access can be approved for **residential property**.*
- *Alley access can be approved for **commercial property** subject to City Engineer review & approval and compliance with IDM Chapter-15 requirements.*
- *Alley improvements shall meet City of Houston **Roadway Standards**.*
- *Alley Drainage must comply with **Chapter-9** IDM requirements.*
- *A **plan & profile** section signed by a PE is required to demonstrate that there are no negative impacts to **drainage and traffic flow**.*

# CHAPTER 10 – STREET PAVING DESIGN REQUIREMENTS

## ALLEY UPDATES (10.3.03.G):

### Privately Maintained Alley (Existing)

- Privately Maintained alleys are not for commercial use.
- Alley improvement shall follow City's **residential driveway** requirements for the portion of alley between right of way line to the public street.
- Alley improvements should be signed and sealed by a PE. Submittal should show plan view, surface elevations & proposed cross sections to ensure adequate drainage. **Cross sections** shall be provided at **20 feet intervals** from the property to the nearest City storm facility and any other locations requested by the City Engineer.
- A **profile** may be required if there are **proposed utilities**, or for **drainage design** per chapter-9 IDM requirements.
- Alley Drainage must comply with Chapter-9 IDM requirements.

# CHAPTER 10 – STREET PAVING DESIGN REQUIREMENTS

## ALLEY UPDATES (10.3.03.G):

### New Alley

- *Shall meet City of Houston **Roadway Standards**.*
- *Alley Drainage must comply with **Chapter-9** IDM requirements.*
- *A **plan & profile** section signed by a PE is required to demonstrate that there are no negative impacts to **drainage and traffic flow**.*

# CHAPTER 10 – STREET PAVING DESIGN REQUIREMENTS

## 10.3.03.J ROADWAY WIDENING

- For commercial developments, single family residential subdivision developments and multi-unit residential (MUR) subdivision developments, if the existing roadway is less than eighteen (18) feet in width, widen the roadway to at least twenty (20) feet in width to the nearest intersection along the fire access road. Roadway widening must also include transitions outside of the property frontage to comply with 10.3.03.I.3
- The requirements to widen a street paving does not apply to a residential development filed in a subdivision plat and recorded after January 1, 2023, if the residential development meets one or more of the following conditions:
  - a. The residential development is part of a subdivision plat that is less than or equal to 15,000sf and not out of a tract larger than 15,000 square feet; or
  - b. The residential development is less than 25% of the linear feet of the block face as defined in Chapter 42 of the Code of Ordinances (on any street side development is taking access from).

# QUESTIONS?

Enter it into the chat.

Note the chapter or topic in your question.

We will respond to unanswered questions on our website after this event.





# **CHAPTER 15–TRAFFIC AND SIGNAL DESIGN REQUIREMENTS**

**IAN HLAVACEK, PE, MANAGING ENGINEER,  
MULTIMODAL SAFETY & DESIGN BRANCH**

**AHMED GHALY, PE, MANAGING ENGINEER,  
OFFICE OF CITY ENGINEER, TRAFFIC GROUP**

**MAZEN ABDUL-RAZZAK, PE, MANAGING ENGINEER,  
HOUSTON TRANSTAR**





# **CHAPTER 15 – TRAFFIC AND SIGNAL DESIGN REQUIREMENTS (PART 1)**

---

**IAN HLAVACEK, PE, MANAGING ENGINEER**

**TRANSPORTATION AND DRAINAGE  
OPERATIONS , MULTIMODAL SAFETY &  
DESIGN BRANCH**



# CHAPTER 15 – TRAFFIC AND SIGNAL DESIGN REQUIREMENTS

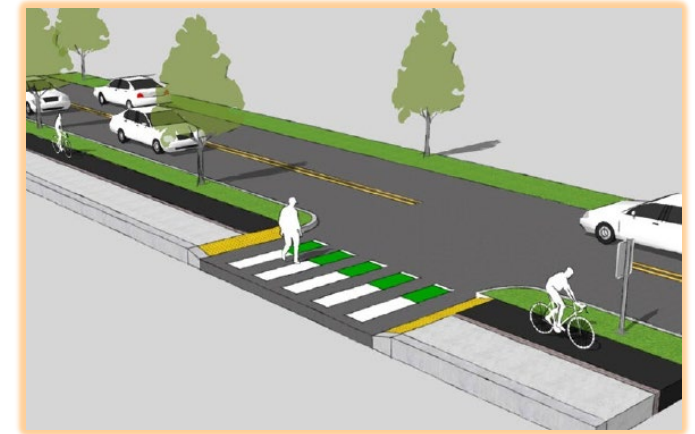
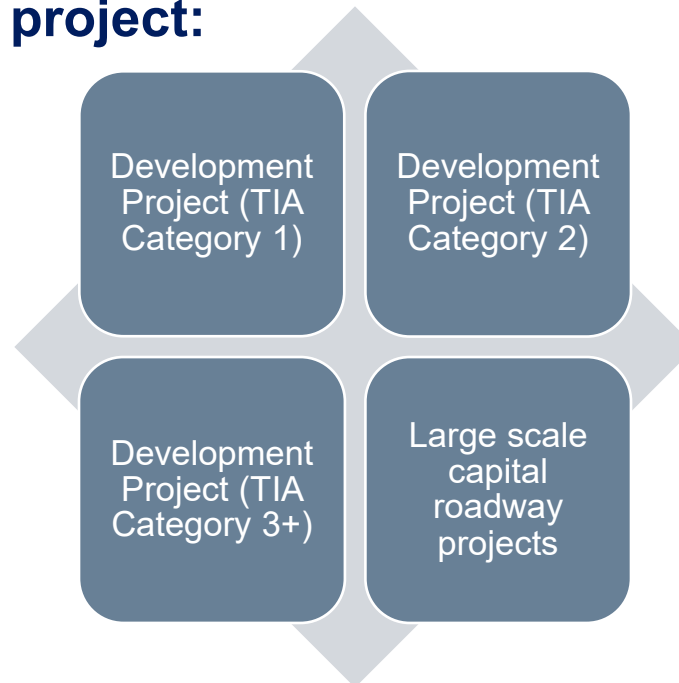
## General Updates:

- New terminology: **Vehicle Level of Service (VLOS)** is equivalent to previous Level of Service (LOS).
  - Emphasizes that vehicles are only one type of roadway user and not always or necessarily more important than others.
- Some rearrangement of sections for ease of use and emphasis

# CHAPTER 15 – TRAFFIC AND SIGNAL DESIGN REQUIREMENTS

## Multimodal Service Standards (MMSS)

- Intention: Sets priority to satisfy MMSS first, then VLOS
- No new standards introduced in this section
- Set for corridors and intersections
- Standards vary for type of project:



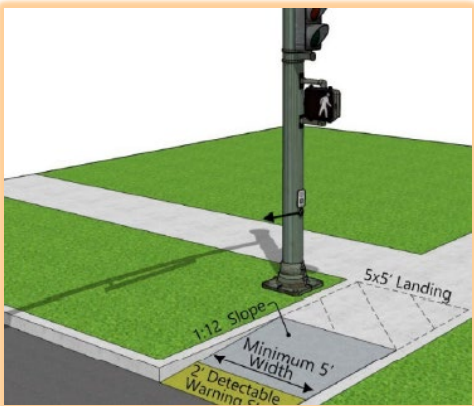
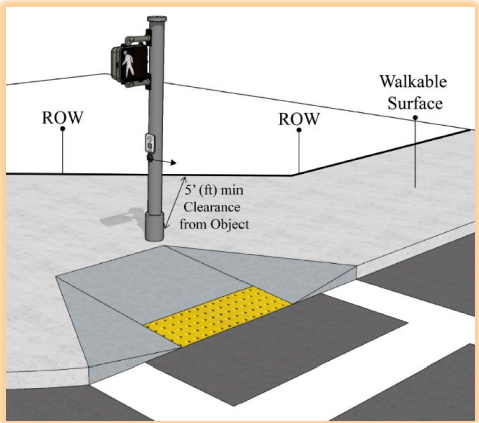
*Examples of types of streets supported by MMSS*

# CHAPTER 15 – TRAFFIC AND SIGNAL DESIGN REQUIREMENTS

## Multimodal Service Standards (MMSS)

- Design Elements:

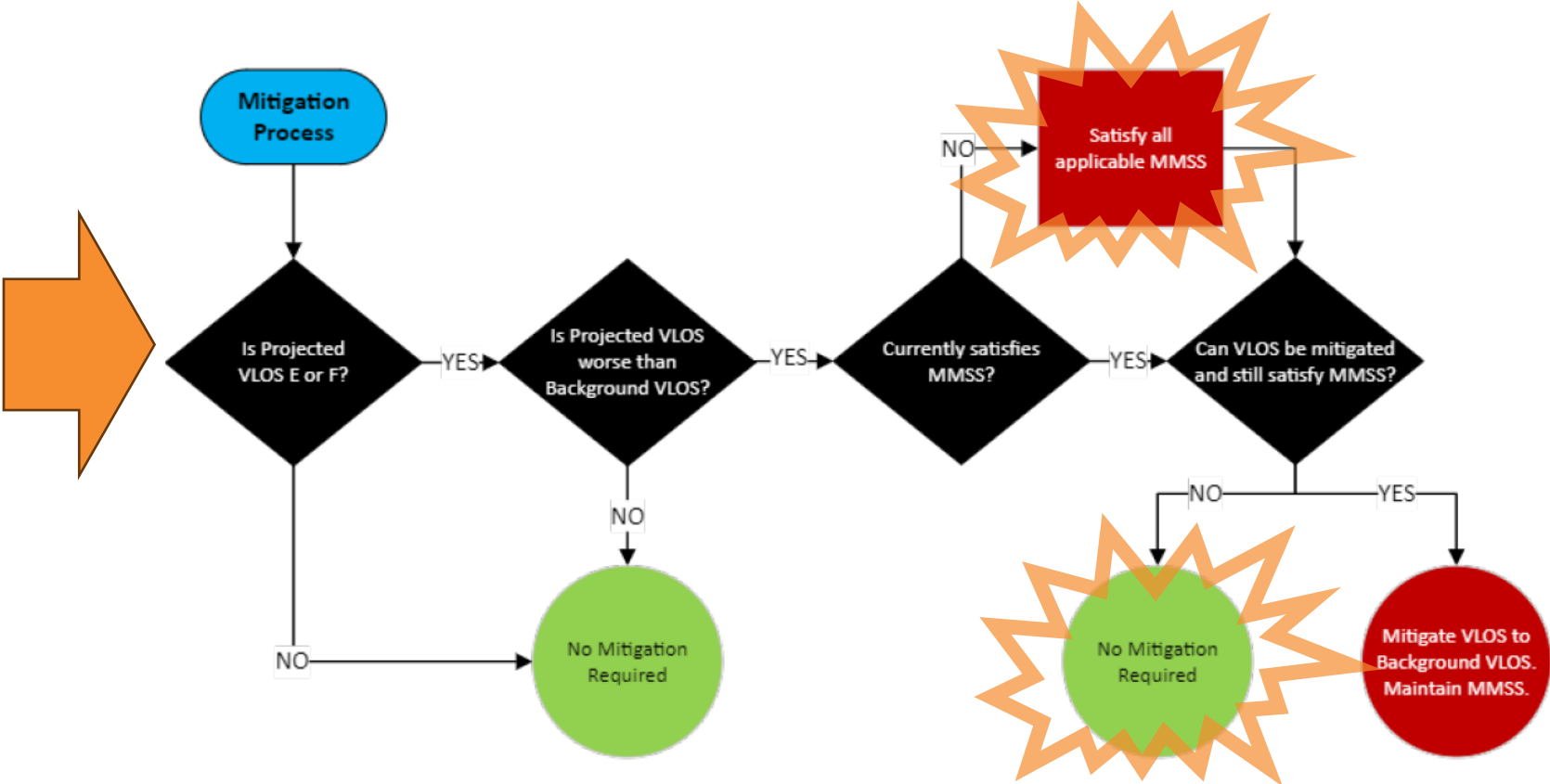
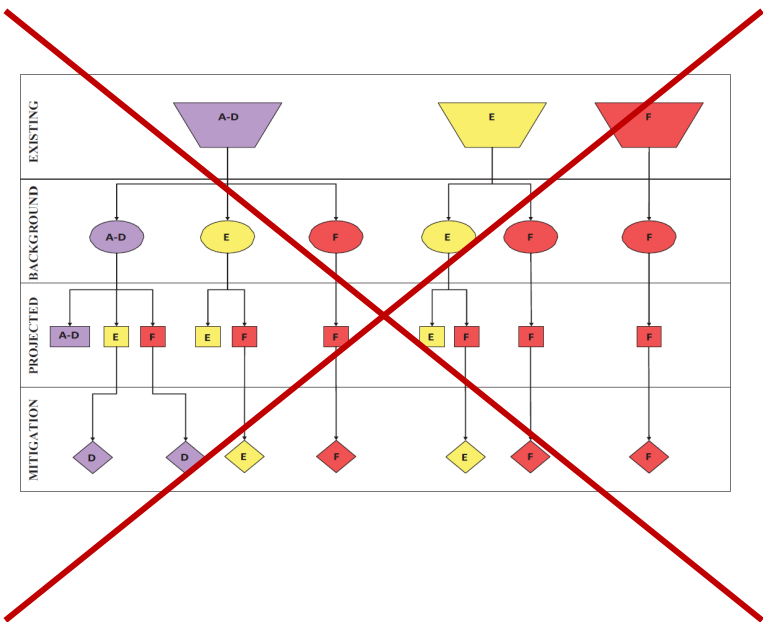
Pedestrian realm	Sidewalks	Bicycle facilities
Bus stops (along corridor)	Curb ramps	Intersection corner radii + curb extensions
Pavement markings	Pedestrian push buttons	Pedestrian signal heads
	Bicyclist signal heads	Pedestrian signal timing



Examples of types of streets supported by MMSS

# CHAPTER 15 – TRAFFIC AND SIGNAL DESIGN REQUIREMENTS

## 15.2.03.B Traffic Impact Analysis (TIA)



# CHAPTER 15 – TRAFFIC AND SIGNAL DESIGN REQUIREMENTS

## Multimodal Service Standards (MMSS)

TDO will present a training webinar for MMSS on April 17, 2024 at 11:00 AM.

Register here:

<https://bit.ly/COH-MMSS>

(or scan QR code)



# CHAPTER 15 – TRAFFIC AND SIGNAL DESIGN REQUIREMENTS

## Traffic & Design Studies

- Replaces and enhances “Traffic Engineering Study for Design” section
- Specific requirements for projects that would:
  - Build new roads
  - Install new traffic control
  - Change roadway configurations
- Complements but does not supersede TIA
- Extra focus on safety and crash analyses
- Ensures that project decisions are fully documented



# CHAPTER 15 – TRAFFIC AND SIGNAL DESIGN REQUIREMENTS

## Project Scope

Roadway corridor construction

Intersection construction

Traffic signals

Pedestrian crossings

Bike lanes

Safety studies

## Study Modules

Safety Analysis

Corridor & Access Management Analysis

Intersection Design and Traffic Control  
Analysis

Intersection VLOS Analysis

Pedestrian Crossing Analysis

Traffic Signal Warrant Analysis

# CHAPTER 15 – TRAFFIC AND SIGNAL DESIGN REQUIREMENTS

## 15.2.04 Traffic Volumes

- Requirements for traffic counts used for City analysis
- For turning movements counts (TMCs): **13-hours, including pedestrians and bicycles**
- Guidance for annual traffic growth rates: 1-2% for most of City

# CHAPTER 15 – TRAFFIC AND SIGNAL DESIGN REQUIREMENTS

## 15.2.05.C BLUE TILE STREET SIGNS

- Any impacts to Blue Tile Street Signs must be coordinated with Planning and Development Department Historic Preservation
- Existing Blue Tile Street Signs shall be preserved or reused when possible.



# CHAPTER 15 – TRAFFIC AND SIGNAL DESIGN REQUIREMENTS

## 15.2.08.B.3.C PEDESTRIAN, BICYCLE, AND TRANSIT FACILITIES (TCP)

- **All traffic control plans shall include:**
  - TCP for pedestrians, whenever a pedestrian facility is closed.
  - TCP for bicyclists, whenever a dedicated bicycle facility is closed.
  - Details for pedestrian/bicycle detours are provided in 17.2.03.



# **CHAPTER 15 – TRAFFIC AND SIGNAL DESIGN REQUIREMENTS (PART-2)**

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MANAGING ENGINEER  
OFFICE OF CITY ENGINEER,  
TRAFFIC ROW & MOBILITY GROUP**



# 15.2.07 – ACCESS MANAGEMENT STANDARDS

## SUMMARY OF CHANGES AND UPDATES:

- Driveway Categories
- Driveway Design Criteria
- Driveway Placement Criteria



# 15.2.07 – ACCESS MANAGEMENT STANDARDS

## Driveway Categories:

The Driveways are categorized as Type A, Type B and Type C :

- **Type A** - Type A Driveway is a Driveway for Single-Family Residential Houses or Duplexes.
- **Type B** - Type B Driveway is a Shared Access/Shared Driveway for Flag Staff Lots, Courtyard Style Development, Multi-unit Residential (MUR) developments.
- **Type C** - Type C Driveway is a Driveway for Commercial Developments.



# 15.2.07 – ACCESS MANAGEMENT STANDARDS

## Driveway Design Criteria:

Table 15.6 - DRIVEWAY DESIGN CRITERIA

Driveway Design Criteria <sup>(1)(2)</sup>												
Traffic Type	Type A Driveway (For Single Family Residential Houses or Duplexes)				Type B Driveway (Shared Access/Shared Driveway)				Type C Driveway (Commercial Driveway)			
	Width (ft)		Radius (ft)		Width (ft)		Radius (ft)		Width (ft)		Radius (ft)	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
One-Way	10	12	4	10	12 <sup>(5)</sup>	16 <sup>(5)</sup>	4 <sup>(5)</sup>	10 <sup>(5)</sup>	15	20	10	20
Two-Way	10 <sup>(3)</sup>	24 <sup>(4)</sup>	4	10	16 <sup>(6)</sup>	24	4	10	24	35	10	20

(1)

 See article 15.2.07.C.1.f for Driveways that require a vehicle swept path analysis.

(2)

 See 15.2.07.C.1.g.(1) and 15.2.07.C.1.g.(2) for Type 1 PAE and Type 2 PAE requirements.

(3)

 The minimum width for Joint Access Driveway is 12 ft.

(4)

 Refer to Chapter 42 of the Code of Ordinances for driveway widths for narrow lots.

(5)

 Only MURs and Courtyard Style Developments on corner lots can have one-way driveways.

(6)

 Refer to Chapter 42, Section 42-146 of the Code of Ordinances for exceptions to the minimum driveway width for Shared Driveways.

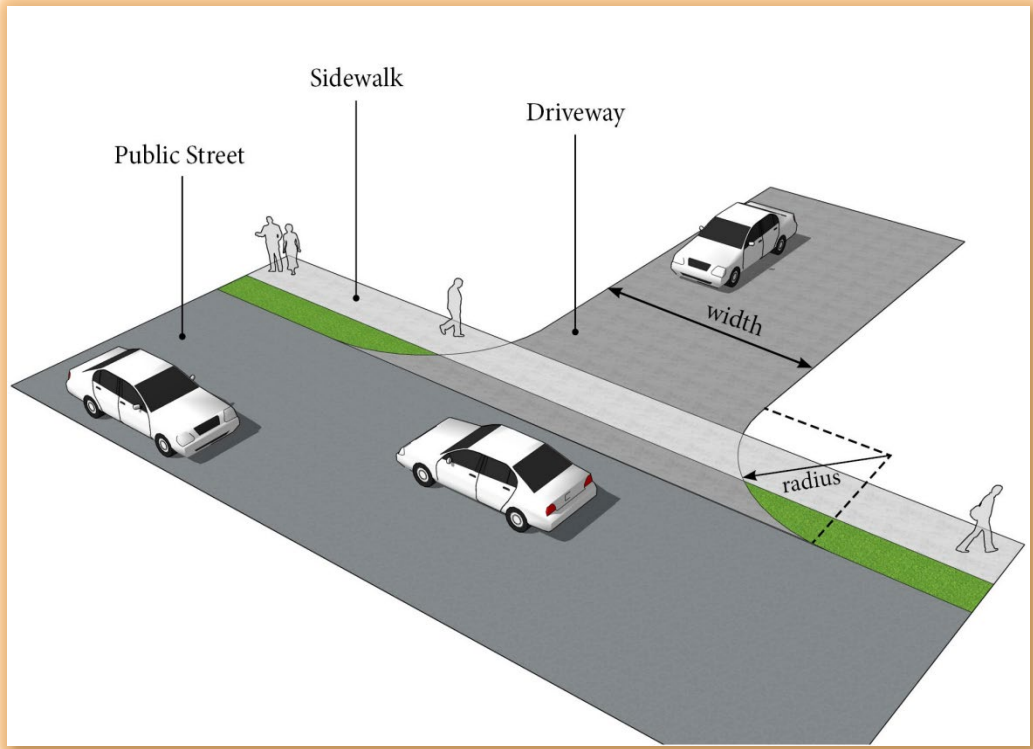
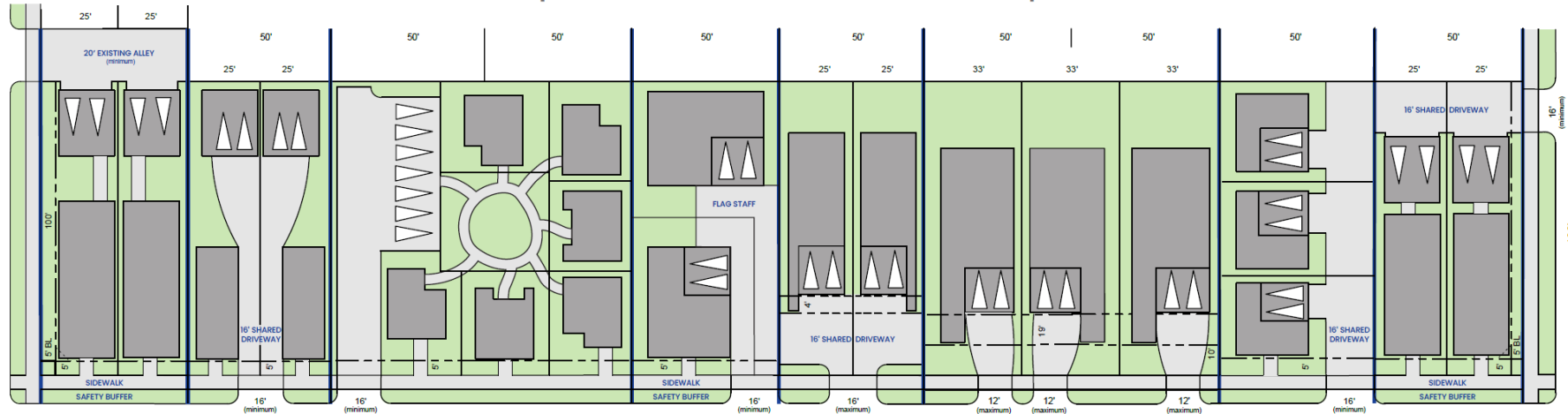


Figure 15.4 Driveway Radius and Width

# Livable Places Housing Recommendations\*

## Incentives and Requirements For Small-Lot Residential Redevelopment



### Alley Access (25' Lot)

- Increased Incentives:**
- Increased density from 27 to 35 units per acre
  - Improved ability to build an ADU
  - No visibility triangle above 10', resulting in more buildable area (corner lots)
  - Allowance of a 65% lot coverage exemption from detention requirements
  - Reduced side building line to 5' for corner lots
  - No detention required for public alley when proposing alley access
  - Reduced parking for units 1,500 sq. ft. or smaller
  - Entry feature can be within the building line
- Additional requirements:**
- Enhanced front door and windows to provide better visibility onto street

### Shared Drive (25' Lot)

- Increased Incentives:**
- Increased density from 27 to 35 units per acre
  - Improved ability to build an ADU
  - 65% lot coverage exemption from detention requirements
  - Driveway included in lot coverage calculation and no additional detention if less than 65%
  - Reduced parking for units 1,500 sq. ft. or smaller
- Additional requirements:**
- Enhanced front door and windows to provide better visibility onto street

### Courtyard Development

- New Opportunities:**
- Street frontage not required for lots fronting on a shared courtyard
  - No minimum lot size or maximum density with at least 150 sq. ft. of green space per lot
  - 65% lot coverage exemption from detention requirements on tracts 15,000 sq. ft. or less, 9,750 sq. ft. lot coverage exemption on tracts between 15,001 sq. ft. and 1 acre.\*\*
  - No detention required for the tract as a whole and not per individual lots\*\*
  - Detention calculated for the tract as a whole and not per individual lots\*\*
  - Parking may be removed from individual lots but located within the development
  - Reduced parking for units 1,000 sq. ft. or smaller
  - One guest parking space for every 6 units
- Requirements:**
- Maximum site depth from street is 150'
  - Maximum 30' tall
  - Parking on the side or rear but not in the front
  - Maximum lot size of 3,500 sq. ft. and a maximum unit size of 1,800 sq. ft.
  - Enhanced front door and windows to provide better visibility onto street and courtyard

### Flag Lots

- Increased Incentives:**
- Increased density from 27 to 35 units per acre
  - Improved ability to build an ADU
  - No visibility triangle above 10', resulting in more buildable area (on corner lots)
  - Reduced building line of 5'
  - Reduced flag staff width
  - Flag staff is included in the lot coverage calculation no separate detention is required if under 65%
  - Reduced parking for units 1,500 sq. ft. or smaller
- Additional requirements:**
- Enhanced front door and windows to provide better visibility onto street
  - All newly created lots abutting the staff take access from the staff

### Shared Drive (25' Lot)

- Increased Incentives:**
- Increased density from 27 to 35 units per acre
  - Improved ability to build an ADU
  - 65% lot coverage exemption from detention requirements
  - Driveway included in lot coverage calculation and no additional detention if less than 65%
  - Reduced parking for units 1,500 sq. ft. or smaller
- Additional requirements:**
- Balconies or windows to provide better visibility onto street

### Front Load Individual Driveway (33' Lot)

- Increased Incentives:**
- Increased density from 27 to 35 units per acre
  - Improved ability to build an ADU
  - 65% lot coverage exemption from detention requirements
  - Driveway included in lot coverage calculation and no additional detention if less than 65%
  - Reduced parking for units 1,500 sq. ft. or smaller
- Additional requirements:**
- A maximum of 12' individual driveway per lot
  - Enhanced front door and windows to provide better visibility onto street

### Shared Drive (50' Lot)

- Increased Incentives:**
- Increased density from 27 to 35 units per acre
  - Improved ability to build an ADU
  - No visibility triangle above 10', resulting in more buildable area (corner lots)
  - 65% lot coverage exemption from detention requirements
  - Driveway included in lot coverage calculation and no additional detention if less than 65%
  - Reduced parking for units 1,500 sq. ft. or smaller
- Additional requirements:**
- Enhanced front door and windows to provide better visibility onto street

### Rear Shared Driveway (25' Lots w/corner access)

- Increased Incentives:**
- Increased density from 27 to 35 units per acre
  - No visibility triangle above 10', resulting in more buildable area (corner lots)
  - Improved ability to build an ADU
  - Allowance of a 65% lot coverage exemption from detention requirements
  - Reduced parking for units 1,500 sq. ft. or smaller
- Additional requirements:**
- Enhanced front door and windows to provide better visibility onto street
  - Shared vehicular access from side street unless it is a major thoroughfare

\*To learn about all the housing recommendations visit [bit.ly/LivablePlaces](http://bit.ly/LivablePlaces) or scan the QR code.



\*\* Pending change in Infrastructure Design Manual

Livable Places Houston



PLANNING & DEVELOPMENT DEPARTMENT

# 15.2.07 – ACCESS MANAGEMENT STANDARDS

## Driveway Placement Criteria (Type A & Type B):

Table 15.7 – TYPE A & TYPE B DRIVEWAY PLACEMENT CRITERIA

Table 15.7 – Type A & Type B Driveway Placement Criteria				
Driveway Type	Between adjacent Driveways within the same property	Between adjacent street ROW	Between side property line	Maximum number of Driveways
	Spacing (Minimum dimension in ft)			
Type A	20 <sup>(1)</sup>	20	4 <sup>(5)</sup>	2 <sup>(6)</sup>
Type B (≤ 20 lots)	30	30	4 <sup>(5)</sup>	N/A
Type B (> 20 lots)	40	40		
(1) 10-ft minimum between pair of one-way Driveways.				
(2) All proposed access connections must be placed to achieve adequate intersection Sight Distance for safe and efficient departure from the proposed location (comply with AASHTO standard)				
(3) Driveway Radius cannot extend beyond property line.				
(4) Driveway Radius cannot extend into public street or other Driveway curb radius.				
(5) When spacing of Driveways result in a roadside ditch that is less than 8-ft long (e.g., less than 8-ft between culverts), options shall be considered to address maintenance challenges and may include replacement of the short roadside ditch with a long run culvert and a junction box*, which will require a submittal of plans and profiles to the Office of City Engineer.				
(6) Unless prohibited by Chapter 42 of the Code of Ordinances.				
* No gravel, no sand, no bricks, no alternative material except new sod around the junction box in the open space in right-of-way between the Driveways.				

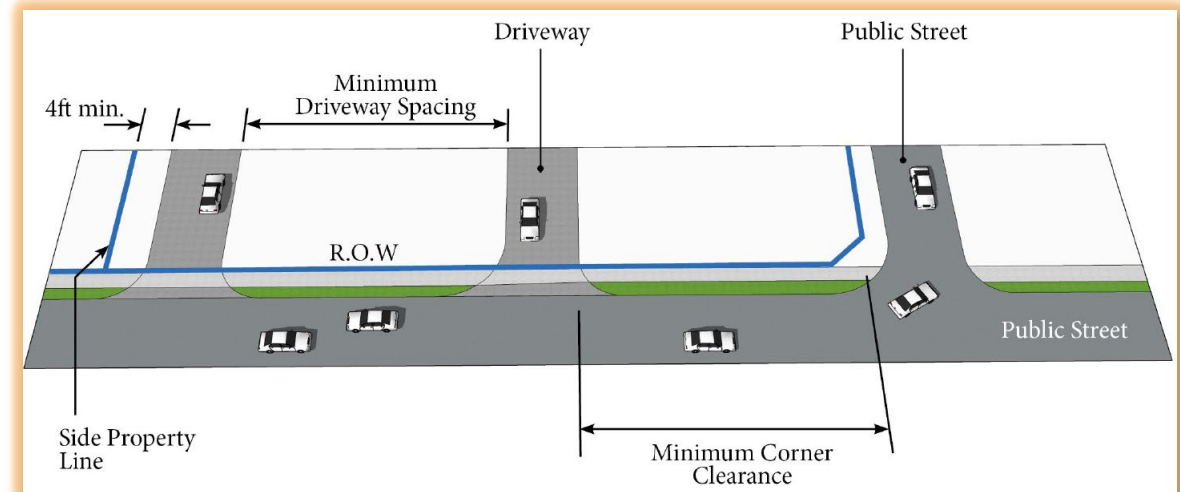


Figure 15.5 Type A & Type B Driveway Spacing

# 15.2.07 – ACCESS MANAGEMENT STANDARDS

## Driveway Placement Criteria (Type C):

Table 15.8 – TYPE C DRIVEWAY PLACEMENT CRITERIA

Table 15. 8 Type C Driveway Placement Criteria <sup>(1)</sup>				
A		B	C	D
Frontage <sup>(2)</sup>	Maximum Number of Driveways	Minimum Driveway Offset (Major Thoroughfares)	Minimum Driveway Offset <sup>(8)</sup> (Local Streets)	Minimum Spacing Between Adjacent Driveways within the Same Property
Up to 170 feet	1	100 feet	60 feet	N/A
170 to 250 feet	2	100 feet	60 feet	40 feet
250 to 450 feet	3	100 feet	60 feet	40 feet
> 450 feet	1 additional / 250' frontage	100 feet	60 feet	40 feet

(1) Applicable to Driveways designed for commercial traffic (auto, truck, and bus access).  
 (2) Where the development frontage is equal to or greater than the distance to first Median opening, at least one Driveway will be aligned with the existing and/or future location of the Median opening.  
 (3) For CBD or locations unable to comply, approval of the City Engineer required.  
 (4) All proposed access connections must be placed to achieve adequate intersection Sight Distance for safe and efficient departure from the proposed access connection (comply with AASHTO standard).  
 (5) The minimum Driveway offset for all Major Thoroughfare shall be 100 feet.  
 (6) Driveway Radius cannot extend beyond property line.  
 (7) Driveway Radius cannot extend into public street or other Driveway curb radius.  
 (8) Minimum offset will be 100' along bus routes.

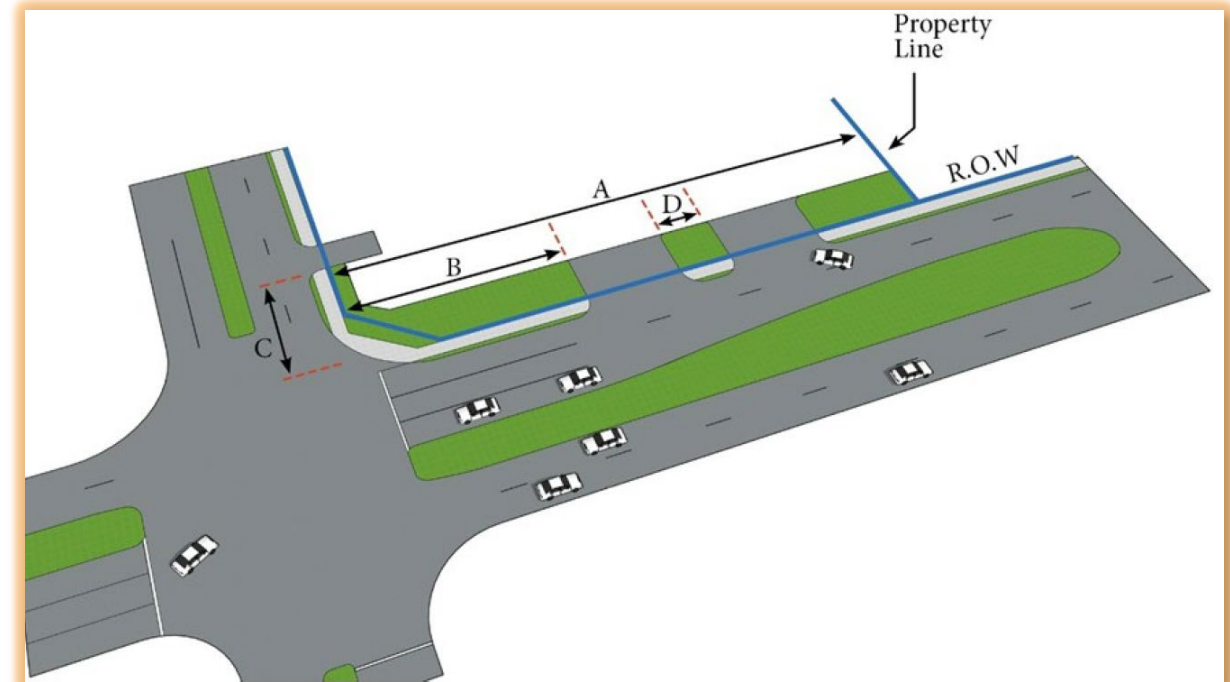


Figure 15.6 Type C Driveway Placement



# **CHAPTER 15 – TRAFFIC AND SIGNAL DESIGN REQUIREMENTS (PART-3)**

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**HOUSTON TRANSTAR**



# WHAT CHANGED?

- Left turn Phasing Guidelines- These guidelines provide a method to uniformly evaluate and install appropriate left turn phasing at traffic signal within the City of Houston. These guidelines are based on the Traffic Signal Timing Manual, 2ed edition.
- Video Detection System – The video detection system is an alternative system to be used where the installation of inductive detection loops is unfeasible. Wireless Magnetometers system is no longer acceptable to be used as a detection system.
- Leading Pedestrian Interval (LPI) – LPI is now required to be implemented in walkable districts, transit-oriented streets and streets with signalized bicycle facilities. LPI should be considered in locations with high crash rate, high volume of pedestrians and where vulnerable population, such as school-aged children or older adults are present.
- Existing Fiber Optic Cables must be extended to any new or rebuilt signalized intersection if it is within 1500 feet from the intersection.

# QUESTIONS?

Enter it into the chat.

Note the chapter or topic in your question.

We will respond to unanswered questions on our website after this event.





# **CHAPTER 16 – COMMUNICATION FACILITY REQUIREMENTS**

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**OFFICE OF THE CITY ENGINEER**

**WATER & WASTEWATER, TELECOMMUNICATIONS, PERMITS, PLAN  
REVIEW**

# CHAPTER 16 – COMMUNICATION FACILITY REQ.

## Chapter Title and Table of Contents

Chapter 16

COMMUNICATION FACILITY REQUIREMENTS

MISCELLANEOUS

CITY OF HOUSTON  
Houston Public Works

Communication Facility Requirements  
Table of Contents

Chapter 16  
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Communication Facility Requirements

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# CHAPTER 16 – COMMUNICATION FACILITY REQ.

## Summary of Changes

- Criteria defining a ‘Communication Facility’
- Article References
- Definitions
- General Requirements
- Expansion or New Requirements on:
  - ‘At’ or ‘Above-Ground’ Equipment Placement
  - Network Poles Design and Installation
  - Pole Load Analysis
  - Underground Facilities
- Submittal Requirements of:
  - Drawings, Analysis, SUE Deliverables
- Quality Assurance



# CHAPTER 16 – COMMUNICATION FACILITY REQ.

## Criteria Defining a ‘Communication Facility’

- Criteria removes Tree Protection, Residential Markers, and Sky Bridges.
- Communication Facility Criteria:
  - Wireless or radio/cable/wireline facilities, related ground equipment, and pole.

### SECTION 1 - COMMUNICATION FACILITY REQUIREMENTS OVERVIEW

~~16.2.01~~ 16.1.01 CHAPTER INCLUDES

~~16.2.01.A~~ 16.1.01.A Criteria for Communication facilities within the Public Right-of-Way including:

~~1. Tree protection~~

~~2. Residential subdivision markers~~

~~3. Sky bridges~~

1. Wireless or radio, cable and wireline facilities, Ground Equipment, and/or Licensee Pole.

# CHAPTER 16 – COMMUNICATION FACILITY REQ.

## Article References

### References from:

- AASHTO
- City of Houston Ordinances
- International Building Code
- City of Houston Construction Code Amendments
- Texas Local Government Code
- Texas Utilities Code

AASHTO



IBC  
INTERNATIONAL  
BUILDING  
CODE®



### ~~16.2.02~~16.1.02 REFERENCES

~~16.1.02.A~~ Refer to list of references in Chapter 1, General RequirementsAASHTO, Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, latest edition.

1. LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals

2. Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals

~~16.1.02.B~~ AASHTO, A Policy on Geometric Design of Highways and Streets ("The Green Book"), latest edition.

~~16.1.02.C~~ AASHTO, Roadside Design Guide, latest edition.

~~16.1.02.D~~ City of Houston Code of Ordinances, Chapter 40, Article XXI - Facilities in the Public Right-of-Way.

~~16.1.02.E~~ City of Houston Construction Code Amendments, latest adopted amendments.

~~16.2.02.A~~16.1.02.F International Building Code (IBC), edition adopted by the City of Houston.

~~16.2.02.B~~16.1.02.G Structural Standard for Antenna Supporting Structures, Antennas and Small Wind Turbine Support Structures (TIA-222), editions identified in the International Building Code (IBC).

~~16.1.02.H~~ Texas Local Government Code 283 – Management of Public Right-of-Way Used by Telecommunications Provider in Municipality.

~~16.2.02.C~~16.1.02.I Texas Local Government Code 284 – Deployment of Network Nodes in Public Right-of-Way.

~~16.2.02.D~~16.1.02.J Texas Utilities Code, Chapter 251 - Underground Facility Damage Prevention and Safety.

~~16.2.02.E~~16.1.02.K Refer to list of references in Chapter 1, General Requirements.



# CHAPTER 16 – COMMUNICATION FACILITY REQ.

## Definitions

### 16.1.03

#### ~~16.2.03~~ 16.1.03 DEFINITIONS

16.1.03.A The following terms are as defined in Chapter 284 of the Texas Local Government Code:

~~16.2.03.A.1. Antenna~~

~~4. Collocate and Collocation~~

~~2. "Design District" means an area that is zoned, or otherwise designated by municipal code, and for which the City maintains and enforces unique design and aesthetic standards on a uniform and nondiscriminatory basis.~~

~~3. "Historic District" means an area that is zoned or otherwise designated as a historic district under municipal, state, or federal law.~~

4. Micro Network Node

5. Municipal Park

6. Network Node

~~7. "Network Provider" means a) a wireless provider; or b) a person that does not provide wireless services and that is not an electric utility but builds or installs on behalf of a wireless service provider.~~

8. Node Support Pole

9. Permit

~~2.10. Public Right-of-Way~~

~~3.11. Service Pole~~

12. Utility Pole

16.1.03.B Communication Facility – Devices and equipment for wired and radio communications, including transport fiber or other transmission lines, above ground cabinets, radios, Antennas, Network Nodes, backup batteries, transmitters, wires, and support ports.

~~16.2.03.B~~ 16.1.03.C Drawings – Plans, profiles, details, and other graphic sheets to be used in a construction contract which define character and scope of the project.

16.1.03.D Professional Engineer - An engineer currently licensed and in good standing with the Texas Board of Professional Engineers and Land Surveyors (TBPELS).

16.1.03.E Repeater Device – An efficient Antenna system, that receives weak signals and widens transmission coverage.

16.1.03.F Repeater Poles – Poles on which Repeater Devices are installed.

16.1.03.G Residential Areas – Single-family, multifamily, town home, duplex, apartment, any other residential configurations, and undeveloped land that is platted for residential use.

16.1.03.H Street Right-of-Way – The Entire width between the boundary lines of every way which is held by the City, county, state or otherwise by the public in fee or dedication when any part thereof is open to the use of the public for purposes of vehicular travel.

Plan Reviews/Permits

# CHAPTER 16 – COMMUNICATION FACILITY REQ.

## General Requirements

### 16.2.01.A.1, 2, 4, & 5- Federal, State, Local

- Texas Local Code 283, 284
- COH Ordinances Chapter 40
- Americans with Disabilities Act (Visibility)

#### ~~SECTION 2 - COMMUNICATION FACILITY DESIGN REQUIREMENTS~~

#### ~~16.2.01 WIRELESS SERVICE FACILITIES DESIGN REQUIREMENTS~~

#### ~~16.2.01.A 16.2.01.A General Requirements~~

~~Definitions as follows are a partial list of those defined in Local Government Code 284 – Deployment of Network Nodes in Public Right-of-Way and are repeated here for clarity:~~

- ~~1. Wireless Service Communication Facilities shall comply with Texas Local Government Code 283 – Management of Public Right-of-Way Used by Telecommunications Provider in Municipality, Texas Local Government Code 284 – Deployment of Network Nodes in Public Right-of-Way, and City Ordinance Chapter 40, Article XXI, Chapter 40, – Facilities in the Public Right-of-Way of the City of Houston Code of Ordinances and this Infrastructure Design Manual. The most stringent requirements shall govern.~~
- ~~2. Facilities must comply with all applicable state and federal requirements, including the Americans with Disabilities Act and must not create a visibility or accessibility issue as finally configured.~~

~~2.5. The maximum dimensions measured for the Antenna components of the installation shall meet the Texas Local Government Code, Chapter 284.~~

- ~~16.2.01.A.4~~ ~~4~~ ~~6. Proposed equipment (i.e., power supply and cabinets) associated with the Wireless Service Communication Facilities can be placed in line with existing poles if the proposed node is eCo-located on the existing pole. The edge of the equipment shall not be any closer to the curb than the associated pole.~~
- ~~7. If the proposed pole(s) or equipment installation cannot meet required clearances from sidewalk, public utilities, and other public infrastructure, then the proposed pole or equipment must be relocated to a location where the clearances are met. Special circumstances need to be reviewed and approved by the Office of the City Engineer.~~

### 16.2.01.A.3 - Identification Markings

- Name, Address, Phone Number

#### 3. Communication Facility Markings:

- All Communication Facilities must have a permanent identification marking that provides the following owner information:
  - (1) Name (Pole owner or ground facility owner)
  - (2) Address
  - (3) Phone Number
- Permanent identification marking text must be legible at eye level for all poles.

### 16.2.01.A.8 - Use of Traffic Signal Equipment

- The use of City infrastructure is prohibited without the approval of the City Engineer and the City Bridge Engineer/Traffic Engineer or the Director of the operations unit responsible for its maintenance. The standard approval is dependent on the type of City infrastructure.
  - Upon request from the City, approved non-traffic related devices mounted to City infrastructure that interfere with any existing traffic signal communications or ITS equipment shall be immediately removed at the cost of the provider.



# CHAPTER 16 – COMMUNICATION FACILITY REQ.

## ‘At’ or ‘Above-Ground’ Equipment Placement

### 16.2.01.A.9 - Ground Clearances

- Distinguished requirement between:
  - curb/gutter roadway (2 ft BOC)
  - roadways with ditch
- Poles and cabinets specifically have:
  - driveway clearance
  - intersection clearance

9. ~~Wireless Service~~ At or above ground Communication Facilities and related equipment shall be placed in accordance with the following requirements:

b-a. ~~Within two (2) feet inside of the Street Right-of-Way line. If unable to place within 2 feet of right of way line, then Wireless Service Facilities shall be placed no closer than 2 feet of the back of curb of any roadway.~~

(1) Curb and Gutter Roadway Section

(a) Provide a minimum clearance of two (2) feet between the back of curb and outer surface of Communication Facilities and poles.

(2) Roadways with Ditch

e-(a) No at or above ground Communication Facilities and poles are allowed within the ditch or between the ditch and the edge of pavement.

d-b. Poles and cabinets shall ~~Not~~ be within ten (10) feet of a driveway.

e-c. Poles and cabinets shall ~~Not~~ be within fifty (50) feet (measured from the Street Right-of-Way line) of a local street intersection and one hundred (100) feet (measured from the Street Right-of-Way line) of a major street intersection.

Miscellaneous

d. Network Provider shall not install Network Nodes or Repeater Devices within two hundred and fifty (250) foot radius from a traffic signal pole or ITS equipment. Any Network Node or Repeater Device within two hundred and fifty (250) feet will require a zero (0) interference study and must be approved by the City Engineer through a variance request.

e. Not within any A clearance of one (1) foot from the edge of the sidewalk is required for Communication Facilities above ground, area or within 3 feet of the centerline of a sidewalk which is less than 5 feet in width.

f. Installing above ground Communication Facilities on Main Street in the downtown urban Design Districts is prohibited.

g. Preferred locations for poles are industrial areas, highway areas and retail/commercial areas that are not adjacent to Municipal Parks, Residential Areas, and Historic or Design Districts.

h. In Residential Areas, poles and cabinets shall be located where the shared property line between two residential parcels intersects the Public Right-of-Way.

i. In non-Residential Areas, poles and cabinets shall be located between tenant spaces, storefront bays, or adjoining properties where their shared property lines intersect the Public Right-of-Way.

j. In no instance shall any pole or cabinet be located in front of a building entrance or exit.

k. No components may obstruct any existing signage, signals or ITS devices.

l. All components must be positioned as to assure that all intersection and driveway visibility requirements are maintained.

2-10. Requirements for Communication Device Installation on Poles:

a. No penetration of the pole is allowed.

### Other Placement Clearances

- Nodes / Repeaters from ITS or traffic signal devices.
- Sidewalk edge
- Main Street Prohibition
- Pole and Cabinet Placement
- Prohibition on obstructing signs, ITS equipment, and pole penetration

# CHAPTER 16 – COMMUNICATION FACILITY REQ.

## ‘At’ or ‘Above-Ground’ Equipment Placement (continued)

### 16.2.01.B - Network Node Attachments to Poles

- 12 feet minimum above ground.
- If projecting toward street:
  - 18.5 feet minimum above ground to the bottom of the node



#### ~~16.3.02.B~~ 16.2.01.B Network Nodes:

1. Network Node attachments to all poles shall be installed at least twelve (12) feet above the ground. If a Network Node attachment is projecting toward the street, the attachment shall be installed no less than eighteen and half (18.5) feet above the ground to the bottom of the node, for the safety and protection of the public and vehicular traffic.
2. The City encourages Collocation of more than one Network Node on any one pole.

# CHAPTER 16 – COMMUNICATION FACILITY REQ.

## ‘At’ or ‘Above-Ground’ Equipment Placement (continued)

### 16.2.01.E - Ground Equipment Considerations

- Minimal, least intrusive, out of visibility triangle
- Color and material compliant
- 250 ft minimum away from Parks
- Minimal density



#### 16.2.01.E Ground Equipment:

1. Ground equipment near street corners and intersections:
  - a. Ground equipment shall be minimal and the least intrusive.
  - b. Ground equipment shall be installed outside of visibility/sight triangles for safe travel of vehicular and pedestrian traffic.
2. Ground equipment shall be neutral color, and of material compatible with the surrounding structures as determined by the City.
3. Ground equipment near public parks: The Network Provider shall not install ground equipment in a Public Right-of-Way that is within a park or within two hundred and fifty (250) feet of the boundary line of a park, unless approved by the City.
4. Minimize ground equipment density: The City may deny a request for a proposed location if the Network Provider installs Network Node ground equipment where existing ground equipment within three hundred (300) feet already occupies a footprint of twenty-five (25) square feet or more.



# CHAPTER 16 – COMMUNICATION FACILITY REQ.

## Network Poles Design and Installation

### 16.2.01.C.1 - Network and Repeater Poles

- Poles in Clear Zone
  - No wooden poles in Clear Zone.
  - New or substitution poles to be Breakaway poles weighing less than 992 lbs.
- Aesthetic
  - Style and color to match surrounding poles.
  - Meet Design District and Historic District standards, if within.
  - Approval by City, if using different types of poles (inconsistent with height or color) within 1,000 ft radius.



16.2.01.C Network Poles:  
*continued*

1. Node Support Poles and Repeater Poles:

- Wooden poles are prohibited in the clear zone as defined in AASHTO Green Book.
- All new poles and substitution poles located in the clear zone are required to be breakaway poles. All breakaway poles shall weigh less than 992 lbs. as described in Section 12 "Breakaway Supports" of AASHTO's Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signal.
- The style and color of proposed Node Support Poles and Repeater Poles shall match existing Node Support Poles and Repeater Poles in order to blend into the surrounding environment and be visually unobtrusive. The proximity of the existing pole from the proposed pole will be established by the following criteria:
  - Within Design Districts and Historic Districts:
    - Node Support Poles and Repeater Poles must meet Design District or Historic District requirements.
  - Outside Design Districts and Historic Districts:
    - Proposed Node Support Poles and Repeater Poles shall be generally consistent with color and height of existing Node Support Poles and Repeater Poles within a 1,000 foot radius and shall be subject to City approval.
    - When different types of existing poles are in the 1,000 ft radius area, type of new proposed poles within that area will be subject to City approval.
- All attachments for the Network Node shall also match the color of the Node Support Pole or Repeater Pole.
- It is preferred that Node Support Poles and Repeater Poles shall be installed along arterials or residential collectors.
- For any ~~p~~Public ~~R~~Right-of-~~w~~Way that is ~~not more than fifty (50)~~ feet wide ~~or less~~:
  - No new node support pole shall be installed on either side of the right of way that border a street that is next to a municipal park. No new ~~n~~Node ~~s~~Support Poles and Repeater ~~p~~Poles shall be installed on either side of the ~~P~~Public ~~R~~Right-of-~~w~~Way that includes a street border a street that is next to or in ~~R~~Residential ~~a~~Areas (single family, multifamily, town-

# CHAPTER 16 – COMMUNICATION FACILITY REQ.

## Network Poles Design and Installation (continued)



g. For any Public Right-Of-Way that is more than fifty (50) feet wide:

(1) Node Support Poles and Repeater Pole(s) can be installed in Residential Areas (single family, multi family, town home, duplex, apartment, or any other residential configuration) but must be installed at the lot line when the public street right of way is more than 50 feet and if both sides of the street are residential.

(2) If one side of the street is commercial, then the Node Support Poles or Repeater Poles shall be located on the commercial side of the street.

h. Node Support Poles and Repeater Poles shall be set back a minimum of fifteen (15) feet from any pedestrian ramp.

i. Node Support Poles, Repeater Poles and accessory equipment shall be located at least ten (10) feet from a driveway.

j. No Node Support Poles or Repeater Pole(s) are to be installed in front of the front door or entry way of any single-family, multi-family, town home, duplex, apartment, or any other residential configuration, either on the same side of the street or directly across from the structure's door or entry way.

k. Existing poles that are determined to be structurally inadequate, will be replaced with a new pole or reinforced by the provider at the cost of the provider.

(1) If pole reinforcement is necessary, Network Provider shall provide Drawings for the proposed alteration to the existing pole.

2. Utility Poles: Existing Utility Poles (electric and telephone poles) are the most preferred support pole for Network Nodes and related equipment.

3. City-Owned Service Poles:

a. City Service Poles can be used for installation of Network Nodes and related equipment, if approved by the City.

b. Any reinforcement or replacement of a pole shall match the color of the existing pole.

c. Any pole reinforcement or replacement shall be at Network Provider's sole cost.

### 16.2.01.C.1 - Network and Repeater Poles

• Shall be installed on commercial side of street (ROW more than 50 feet)

• 15 feet minimum from any pedestrian ramp  
• 10 feet minimum from a driveway.

• Existing poles with structural inadequacy:  
• Replaced or reinforced by the provider

• Utility Poles and City-Owned Poles:  
• Preferred support pole for network nodes.



# CHAPTER 16 – COMMUNICATION FACILITY REQ.

## Pole Load Analysis

### 16.2.01.D - Analysis Considerations

- IBC, AASHTO, or other codes.
- Structural elements
- Windspeed

#### 16.2.01.D Network Pole Load Analysis and Design Criteria:

1. Analysis and design of pole and device attachments must be according to the latest edition of any of the following applicable codes:
  - a. International Building Code (IBC) and, City of Houston Construction Code Amendments;
  - b. AASHTO Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals;
  - c. Structural Standard for Antenna Supporting Structures, Antennas and Small Wind Turbine Support Structures (TIA-222); and
  - d. Any other relevant codes required.
2. Basic wind speed used for design must be according to the adopted City of Houston Construction Code Amendments to the International Building Code (IBC).
- 2-3. The analysis and design must include all structural elements, including but not limited to, the concrete foundation, base plate, anchor bolts, pole, mast arm and device connection.

### Analysis Report

- Includes summary
- Component checks and connections
- Verify loads, stresses, fatigue

a. Include a summary of critical unity checks for all components of the structure and device connections. The reported values shall correlate with the pole analysis report and documented device specifications. Analysis must clearly show that all members have adequate size and reinforcement to withstand all imposed:

(1) Gravity and lateral loads;

(2) Bending stresses;

(3) Shear stresses;

(4) Deflection; and

(5) Fatigue due to stress fluctuations. (A dynamic analysis of structures may be performed), where applicable.

4. Summary of criteria used in pole analysis and analysis results including, at a minimum, material properties, loadings, load combinations, reactions, deflections and dimensions assumed.

# CHAPTER 16 – COMMUNICATION FACILITY REQ.

## Underground Facilities

### 16.2.01.F

#### Surveying

- IDM Chapter 2 for requirements
- Field surveys for all underground facility projects

#### 16.2.01.F Underground Facilities:

1. Perform field surveys for all underground facility projects to verify depths and horizontal locations of all utilities in the vicinity of the proposed scope of work. Refer to Chapter 2 for surveying requirements.

2. Underground installations for communications equipment, cables and conduits shall be per Texas Utilities Code, Chapter 251 - Underground Facility Damage Prevention and Safety.

3. Underground facilities must have a minimum three (3) feet of vertical clearance and four (4) feet of horizontal clearance from outside diameter of any utility lines (not centerline). Where minimum clearances in other chapters of this manual conflict, the strictest requirement shall govern. In addition, the underground facilities must be located vertically so that service connections to the public storm sewer line and public sanitary sewer line on either side of the right of way are not occluded or blocked vertically.

#### Horizontal and Vertical Clearances

- 4 feet minimum Horizontally from any nearby utilities
- 3 feet minimum Vertically from nearby/crossing utilities

#### Subsurface Utility Exploration (SUE)

- IDM Chapter 6 for requirements

~~16.3.02.C~~ 16.2.01.G Subsurface Utility Exploration (SUE): SUE is required for all underground installations of communication equipment, cables, and conduits. Refer to Chapter 6 for SUE requirements.



# CHAPTER 16 – COMMUNICATION FACILITY REQ.

## Submittal Requirements & Quality Assurance

### 16.2.02 & 16.2.03:

#### Drawings

##### 16.2.02 SUBMITTALS

16.2.02.A Installations on all City Service Poles shall be in accordance with a written agreement with the City.

##### 16.2.02.B Drawings:

1. Network Provider shall submit Drawings prior to:
  - a. Installation of proposed Network Node, Node Support Pole and Repeater Pole;
  - b. Installation, modification, or relocation of Network Node on an existing pole or structure;
  - c. Modification or relocation of an existing Node Support Pole or Repeater Pole; or
  - d. Installation of any other Communication Facility in the City's right-of-way.
2. All existing utilities must be shown on Drawings. Sources of data include survey, record drawings, graphical information systems, and field visits. Field visits must be made to verify the Drawings accurately portray the existing conditions, and the field visit date shall be listed on the Drawings. Refer to Chapter 3 for exceptions.
3. For existing poles, submit applicable design detail drawings, site plan and pictures of the specific pole and surrounding area.
  - a. Pictures shall show any existing pole damage or oxidation if it exists.
  - a-b. Pictures shall show an unobstructed view of the entire pole and mast arm.
4. Drawings must show type, height, size and location of all existing and proposed devices and signs on the pole.

#### Pole Specifications and Load Analysis

5. Identify proposed location and method of proposed installation (trench, bore, existing conduit pull) of proposed and existing Communication Facilities necessary to connect the Network Node to the public switched telephone network.
6. Provide specific location with X, Y coordinates (northing and easting) and Pole ID.
7. Identify on Drawings existing and proposed placement of Network Node, devices and equipment on pole, and any ground equipment, cabinets, and appurtenances.
8. Show vertical and horizontal distances of all existing and proposed signs and devices that are attached to the pole as measured from the bottom of the pole's baseplate.
9. Show each proposed device attachment and physical specifications. Drawings must include the device quantity, description, manufacturer, model number, azimuth, cable length, weight and dimensions.
10. Show proposed device attachment details.

##### 16.2.02.C Specifications:

1. Provide pole manufacturer drawings and specifications (height, class, material properties);
2. Provide electrical and any other device specifications upon request by the City.

##### 16.2.02.D Pole Load Analysis:

1. Pole load analysis reports must be submitted with each Permit application for proposed or replaced Network Nodes to be placed on proposed or existing poles.
2. Pole load analysis must be for the actual pole, device configuration and device attachment.
3. Engineer's cover letter, pole load analysis, design calculations and Drawings must be signed, and sealed by a Texas Registered Civil/Structural Professional Engineer.
  - a. Engineer cover letter for pole design must indicate that it is in full accordance with the analysis and design criteria as established in 16.2.01.D.
- 2-4. All codes and design criteria used for design and analysis must be indicated on Drawings, engineer's cover letter and within the pole load analysis report.

#### SUE Reports, Geospatial, Quality Assurance

##### 16.2.02.E SUE Deliverable:

1. SUE reports are required for quality level A SUE. Reports shall include general locations, photographs of test holes, test hole data sheets (x, y and z coordinates, utility type, size, and material). Refer to Chapter 6 for additional SUE requirements.

##### 16.2.02.F Geospatial Data Deliverables:

- Provide GIS datasets in accordance with Chapter 13 – Geospatial Data Deliverables.

1.

##### 16.2.03 QUALITY ASSURANCE

- 16.2.03.A Calculations, reports and Drawings must be prepared, signed, and sealed by a Texas licensed Professional Engineer.
- 16.2.03.B The City may perform visual inspections of any Micro Network Node, Network Node, Node Support Pole, Repeater Pole, or related ground equipment located in the Public Right-of-Way as the City deems appropriate without notice. If the inspection requires physical contact with the Micro Network Node, Network Node, Node Support Poles, Repeater Poles, or related ground equipment, the City will provide written notice to the Network Provider. Network Provider may have a representative present during such inspection. In the event of an emergency, the City may, but is not required to, notify Network Provider of an inspection. The City may take action necessary to remediate the emergency and the City will notify Network Provider as soon as practically possible after remediation is complete.

# QUESTIONS?

Enter it into the chat.

Note the chapter or topic in your question.

We will respond to unanswered questions on our website after this event.

**10-minute break!**  
**We will resume at 1:50 PM**



[houstonpermittingcenter.org](http://houstonpermittingcenter.org)

  @cohpermits





# CHAPTER 17–PEDESTRIAN, BICYCLE, AND TRANSIT DESIGN REQUIREMENTS

**IAN HLAVACEK, PE, MANAGING ENGINEER,**  
MULTIMODAL SAFETY & DESIGN BRANCH

# CHAPTER 17

SECTION 1 - PEDESTRIAN, BICYCLE, AND TRANSIT OVERVIEW

SECTION 2 - GENERAL REQUIREMENTS FOR PEDESTRIAN,  
BICYCLE, AND TRANSIT DESIGN

SECTION 3 - PEDESTRIAN ELEMENTS REQUIREMENTS

SECTION 4 - BIKEWAY FACILITY REQUIREMENTS

SECTION 5 - TRANSIT FACILITY REQUIREMENTS

# SECTION 1

## Pedestrian, Bicycle, and Transit Overview

### SECTION 1 - PEDESTRIAN, BICYCLE, AND TRANSIT OVERVIEW

#### 17.1.01 CHAPTER INCLUDES

- 17.1.01.A Standards and guidelines for the design of complete streets that are safe, accessible and enjoyable for Vulnerable Road Users who walk, use a mobility aid, bike, and take transit. By improving the street for its most Vulnerable Road Users, we improve safety for everyone.
- 17.1.01.B Standards and guidelines for pedestrian, bicycle and transit infrastructure including but not limited to new streets/ full street reconstruction, Retrofit projects, and street rehabilitation.

# 17.1.04 NEW OR UPDATED DEFINITIONS

- Bicycle Facility,
- Corridor Crossing Analysis,
- Crossing Treatments,
- Curb Extensions,
- Curb Management,
- Daylighting,
- Dedicated Bicycle Facility,
- Dedicated Bike Paths,
- Enhanced Crossing,
- Floating Bus Stops,
- Frontage Buffer,
- Green Infrastructure,
- High-Visibility Crosswalk,
- Houston Bike Plan,
- Houston Bike Plan Network,
- Median Refuge Islands,
- Micromobility,
- Neighborhood Bikeways,
- Off-Street Bicycle Facility,
- Off-Street Bicycle Facility Bus Stop,
- On-Street Bicycle Facility,
- On-Street Shared Bus Stop,
- Pedestrian Hybrid Beacons (PHBs or HAWKS),
- Pedestrian Realm,
- Placemaking,
- Protected Intersections,
- Raised Bike Lanes,
- Raised Crosswalks,
- Retrofit,
- Seamless Curb Extensions,
- Shared Raised Bus Stop,
- Shared Use Paths,
- Sidewalk,
- Sidewalk Easement,
- Traffic Calming,
- Transit-Oriented Development (TOD) Street,
- Two-Stage Turn Queue Boxes,
- Vulnerable Road Users,
- Walkable Places (WP) Street,
- Walkway



## SECTION 2

# General Requirements for Pedestrian, Bicycle, and Transit Design

### 17.2.01 APPLICABILITY OF CHAPTER 17 DESIGN REQUIREMENTS

- 17.2.01.A Design requirements of Chapter 17 apply to any project that builds or impacts pedestrian, bicyclist, and transit infrastructure in the public right-of-way. All pedestrian, bicyclist, and transit infrastructure shall satisfy the requirements of this chapter.
- 17.2.01.B All street projects shall submit all required reports as defined in Chapter 15, Section 15.2.02 – Traffic and Design Studies and comply with all applicable Multimodal Service Standards (MMSSs) as defined in Chapter 15, Section 15.2.01 - Multimodal Service Standards.
- 17.2.01.C Design of pedestrian, bicycle, and transit facilities must consider the users perceived safety, also known as subjective safety. Using minimum values without consideration of facility context may result in ineffective facility use. The dimensional values in this chapter fall under two categories and should be used as follows:
  - 1. In general, preferred values should be used to maximize the safety and comfort benefits for pedestrians, bicyclists and other users. Alternative values should only be used in locations where it is not possible to use preferred values due to social, economic, and environmental impacts. Where the Pedestrian Realm is wide enough to accommodate preferred values, preferred values shall be used.
  - 2. Minimum values should not automatically be considered a default for pedestrian, bicycle, and transit elements due to the inherent vulnerability of its users.
  - 3. Where ranges are presented within the chapter, the most conservative value is considered the preferred value, while the least conservative value in the range is considered the minimum value.

# 17.2.03 PEDESTRIAN AND BICYCLE TEMPORARY TRAFFIC CONTROL

**17.2.03.A Temporary traffic control** must be provided for all pedestrian and bicyclists that are impacted or obstructed.

**17.2.03.C Options** for Pedestrian and Bicycle Traffic Control  
(ordered from most to least preferred)

Maintain Existing Path  
and Protect Users

*If not  
possible*

Provide nearby  
diversion

*If not  
possible*

Provide off-site detour

**Option 1:** Provide protection for pedestrians and bicyclists from debris in their present-day path using scaffolding, fencing or other barriers.

**Option 2:** Temporary Pedestrian and Bicyclist Traffic Diversions.

**Option 3:** Pedestrian and Bicycle Detours

## SECTION 3

# Pedestrian Elements Requirements

17.3.01.A For Pedestrian Realm components see Figure 17.1.

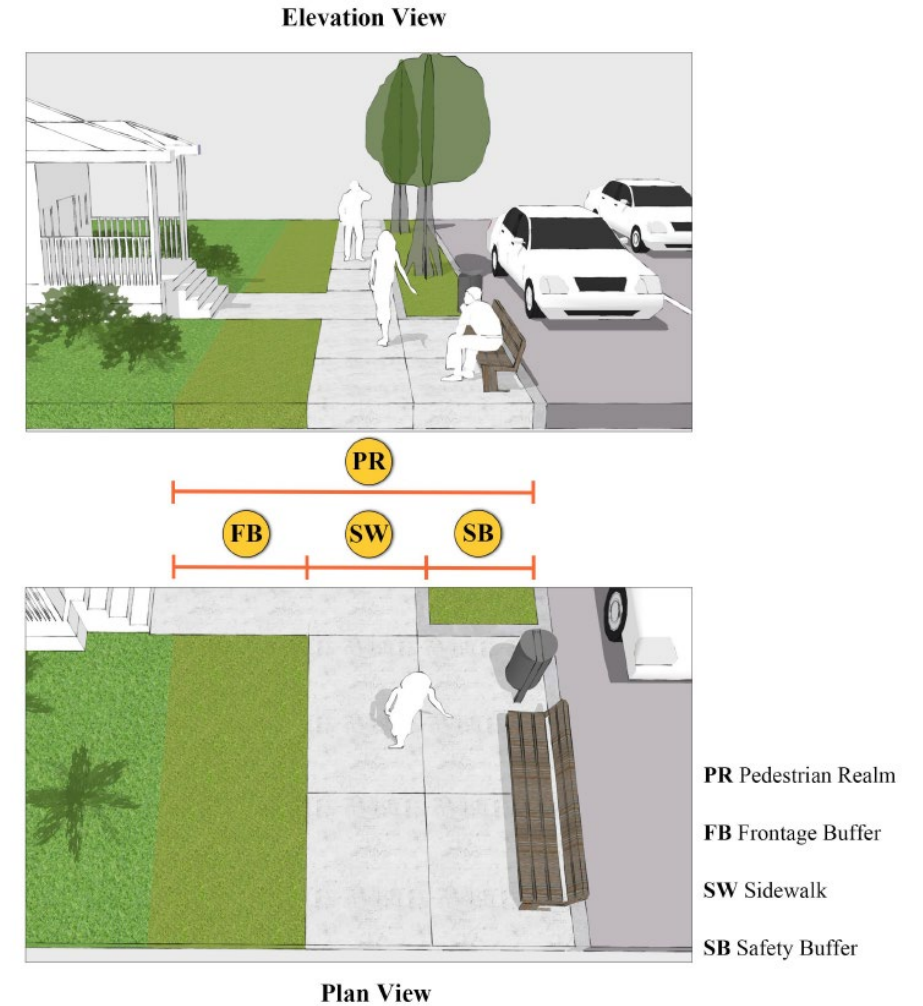


Figure 17.1 Pedestrian Realm Components

# 17.3.02.A CURB RAMPS AND CORNER TREATMENTS

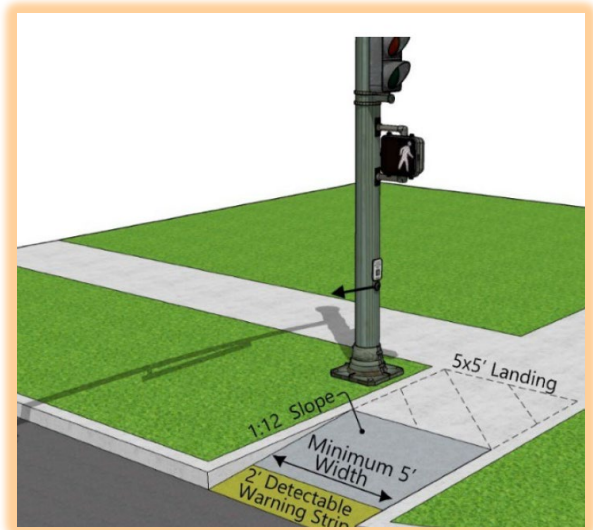


Figure 17.7 Curb Ramp Dimensions

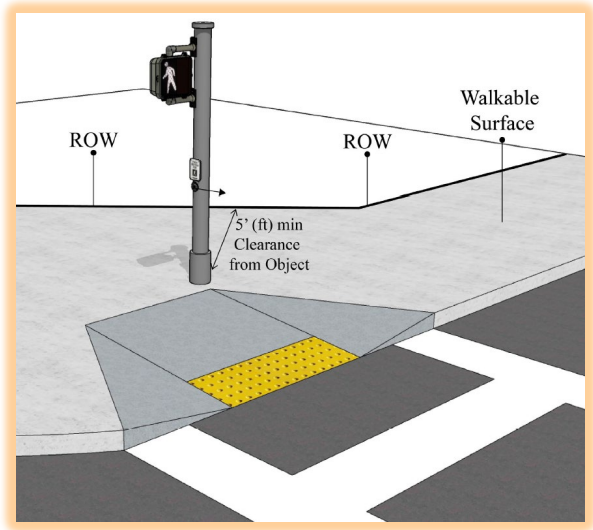
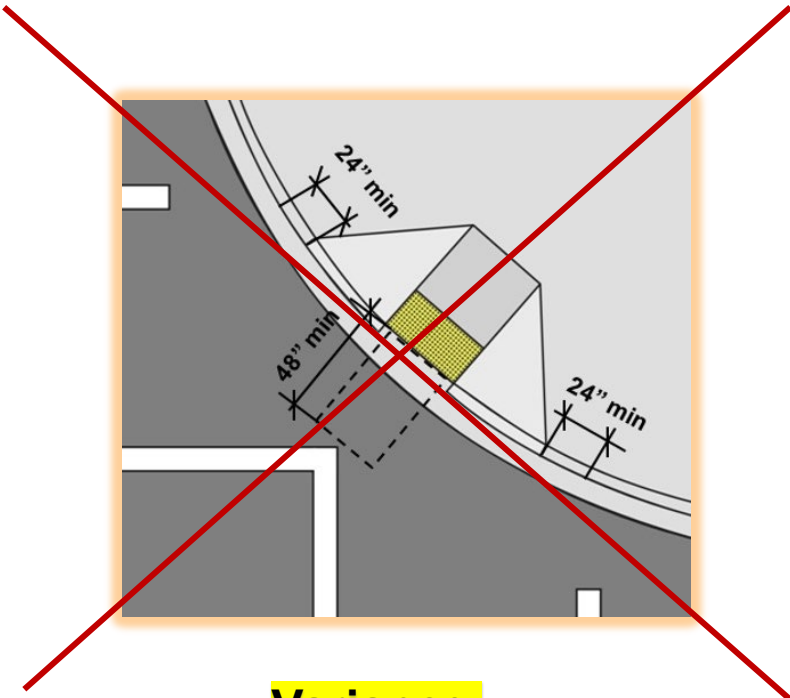


Figure 17.8 Curb Ramp Clearance Zone

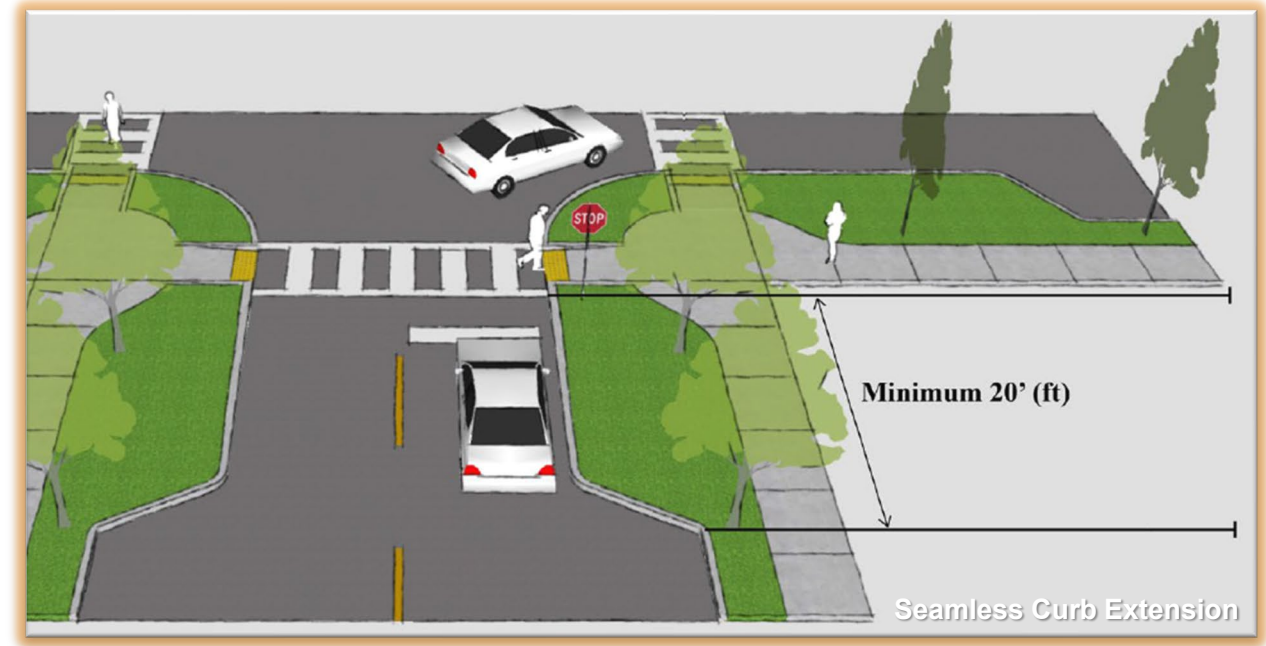


**Variance  
Required**

Diagonal (Apex) Ramp

## 17.3.02.C CURB EXTENSIONS

1. Curb extensions (also known as bulb-outs) are tools that add space for pedestrians along a roadway by extending the Pedestrian Realm from the Sidewalk into the street.
2. Curb Extensions can be added at intersections, midblock crossings, and where travel lanes are reduced or reconfigured.
  - a. Streets with 24-hour on-street parking **shall** have Curb Extensions at intersections and midblock crossings.
3. Curb Extensions should be added at all intersections with excess width where roadway geometry allows. Excess width is present when a roadway cross section meets the following condition:



$$\text{If, } x > (y \times 11) + m$$

$$\text{Then, } e = x - ((y \times 11) + m)$$

Where:

- $x$  = face of curb to face of curb width (ft)
- $y$  = number of through and turn lanes
- $m$  = median width (ft)
- $e$  = excess width (ft)

## 17.3.03 CORRIDOR CROSSING ANALYSIS & TREATMENTS

- New framework & requirements for determining **location** and **design treatment** of new pedestrian/bicycle crossings.
- Crossings may occur every 500-720ft. Any new crossing must be sited so as not to preclude other crossings on a corridor.
- The process for **design treatment** is presented in **17.3.03.C Crossing Treatments**





# 17.3.03.C CROSSING TREATMENTS

## Selection of Appropriate Crossing Treatments

Uses Highway Capacity Manual methodology for **pedestrian level of service at unsignalized locations**.



Provide **pedestrian Level of Service (LOS) E** and **pedestrian delay less than 30 seconds** for all hours of the day.



The simplest option (**lowest construction and maintenance costs**) shall be used.



Consider options to **reduce the crossing distance** with lane narrowing, lane repurposing, and curb extensions.

# 17.3.03.C CROSSING TREATMENTS

High-Visibility Signs and Markings

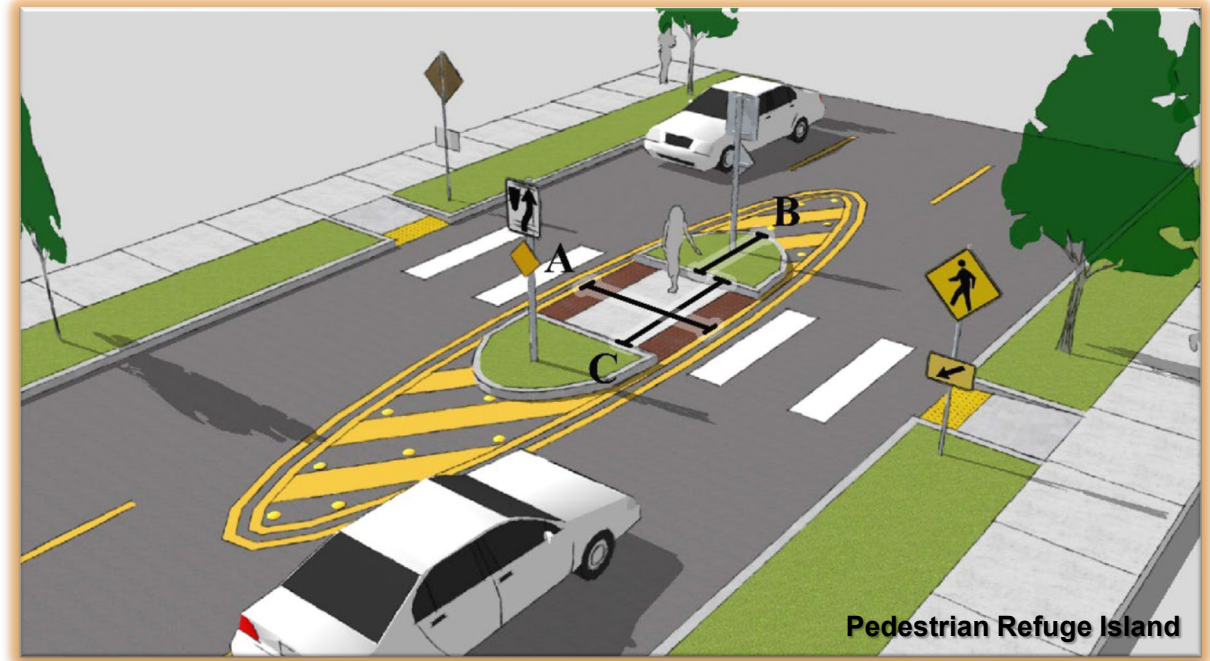
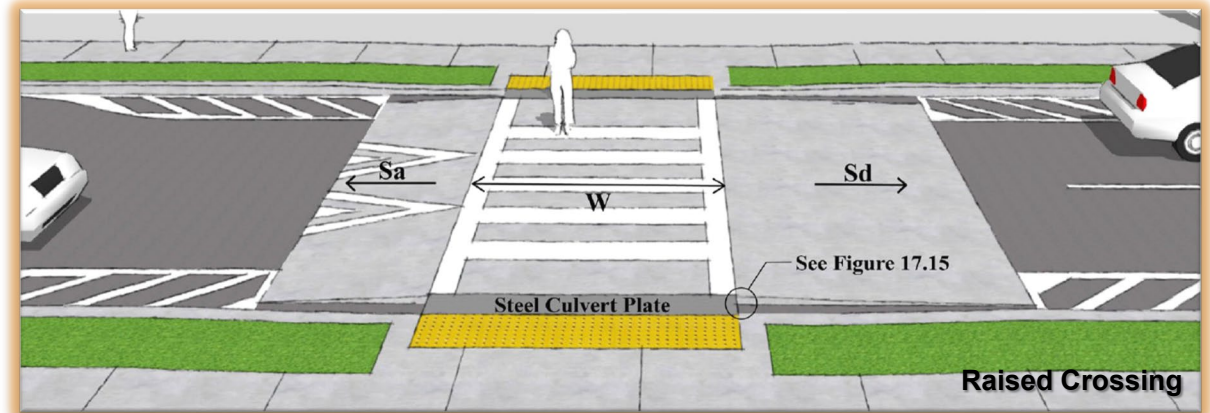
Raised Crossing

Curb Extensions

Median Refuge Islands

Rectangular Rapid Flashing Beacons (RRFBs)

Pedestrian Hybrid Beacons (PHBs or HAWKS)



## 17.3.03.B CORRIDOR CROSSING ANALYSIS

**TDO will present a training webinar for Pedestrian Corridor Crossing Analyses on April 24, 2024 at 11:00 AM.**

**Register here:**

**<https://bit.ly/COH-Ped-Crossings>**

**(or scan QR code)**



# SECTION 4

## Bikeway Facility Requirements

### SECTION 4 - BIKEWAY FACILITY REQUIREMENTS

#### 17.4.01 GENERAL BIKEWAY FACILITY REQUIREMENTS

##### 17.4.01.A Guides and Standards

1. The City of Houston uses the Houston Bike Plan as a guide to determine type and location of Bicycle Facilities. Street design should incorporate the Houston Bike Plan Network. Any street can include safe Bicycle Facilities even if not on the Houston Bike Plan Network.
2. The City of Houston encourages Bicycle Facility design standards that exceed the requirements in this section. The following standards should be utilized when designing Bicycle Facilities: AASHTO Guide for the Development of Bicycle Facilities, FHWA Separated Bike Lane Planning and Design Guide, and NACTO Urban Bikeway Design Guide.
3. The type of Bicycle Facility shall be determined using the Bicycle Facility Type Decision Matrix (see Figure 17.16).
4. Bicycle Facilities that change the number/type/width of existing lanes shall require a Traffic and Design Study as defined in Chapter 15, Section 15.2.02.

# 17.4.01 GENERAL BIKEWAY FACILITY REQUIREMENTS

## A. Guides and Standards

1. Use **Houston Bike Plan** as a **guide** to determine type and location of Bicycle Facilities.
2. Any street can include safe Bicycle Facilities **even if not on the Houston Bike Plan Network**.
3. The type of Bicycle Facility shall be determined using the **Bicycle Facility Type Decision Matrix** (see Figure 17.16).
4. Bicycle Facilities that change the number/ type/width of existing lanes shall require a **Traffic and Design Study** as defined in Chapter 15, Section 15.2.02.

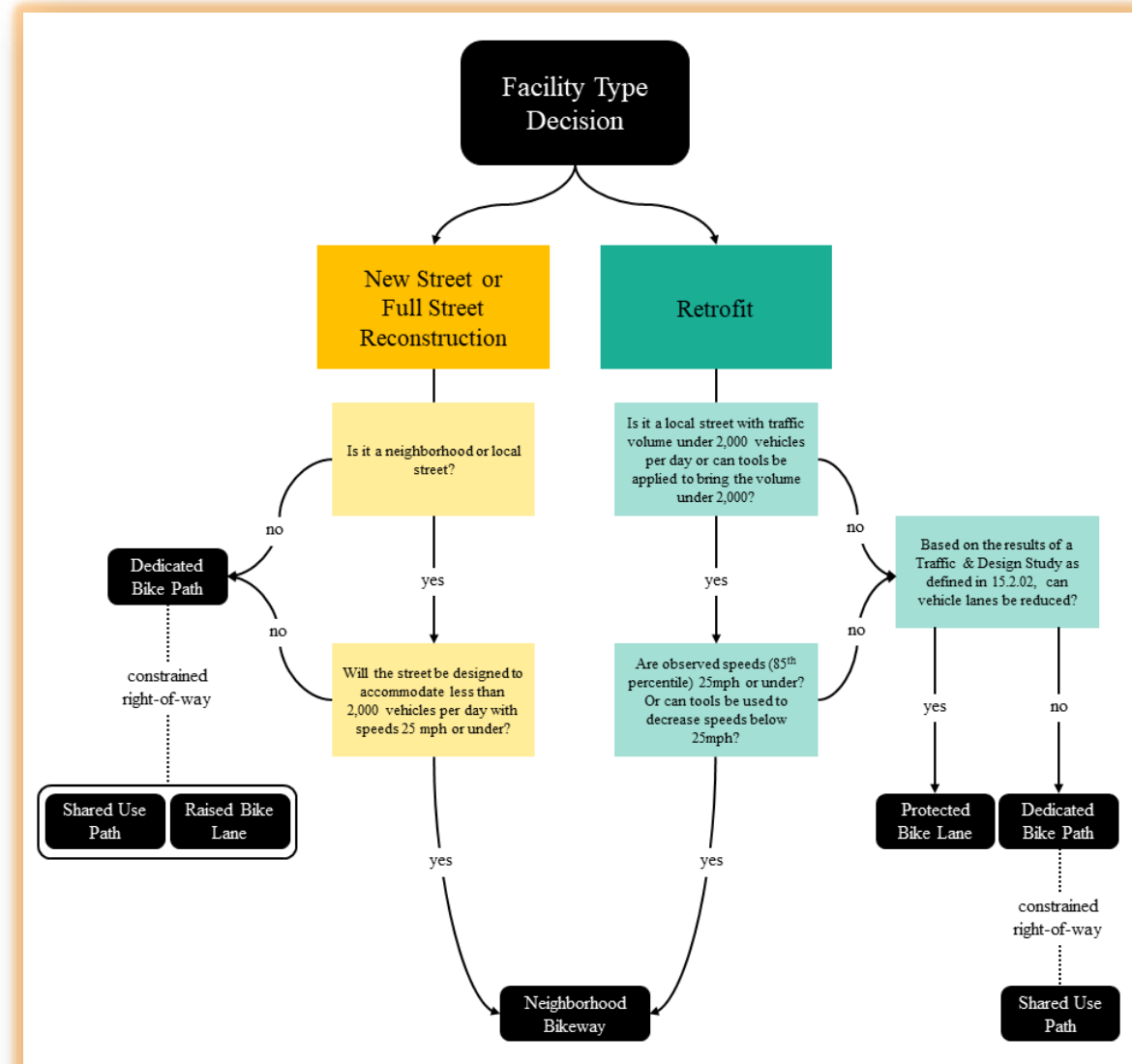
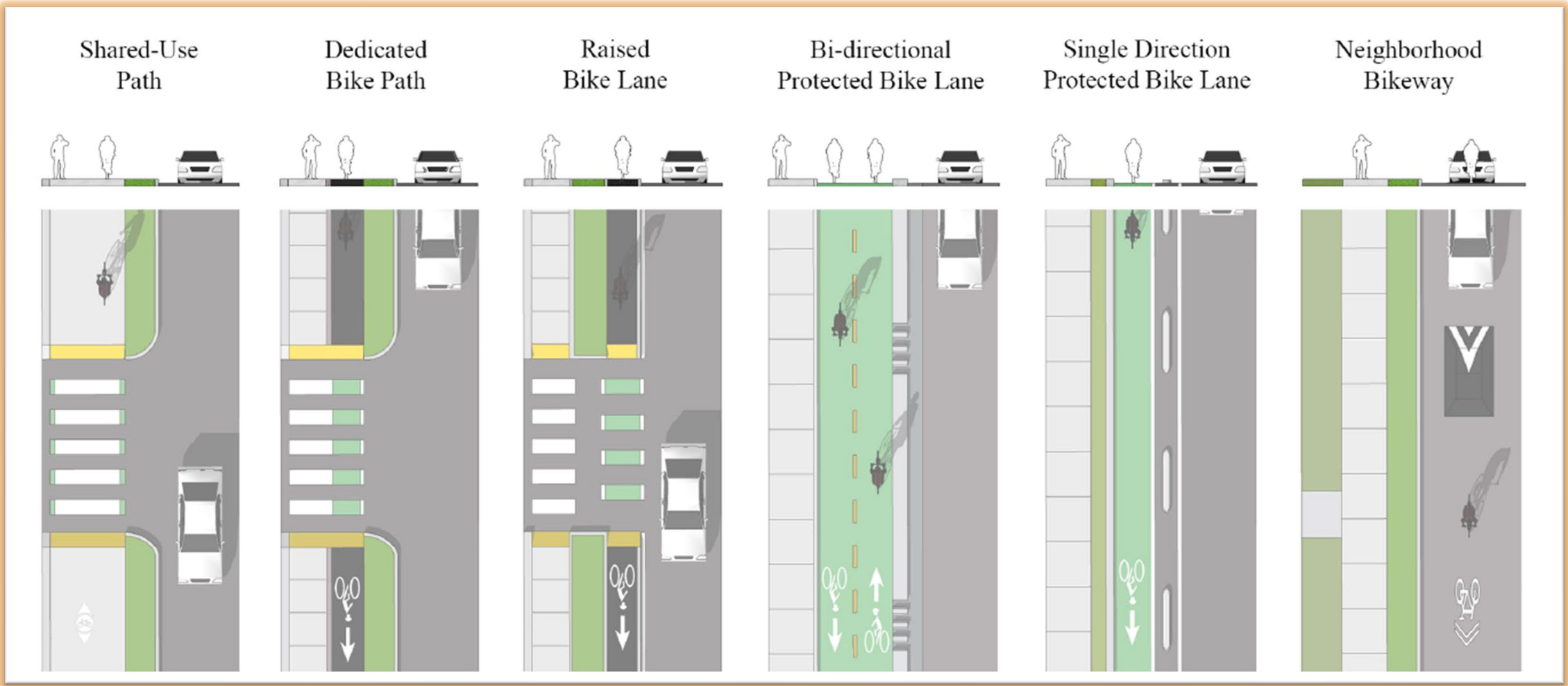


Figure 17.16 Bicycle Facility Type Decision Matrix

# 17.4.02 HIGH-COMFORT FACILITY TYPE STANDARDS





# 17.4.02 HIGH-COMFORT FACILITY TYPE STANDARDS

A. Dedicated Bike Path

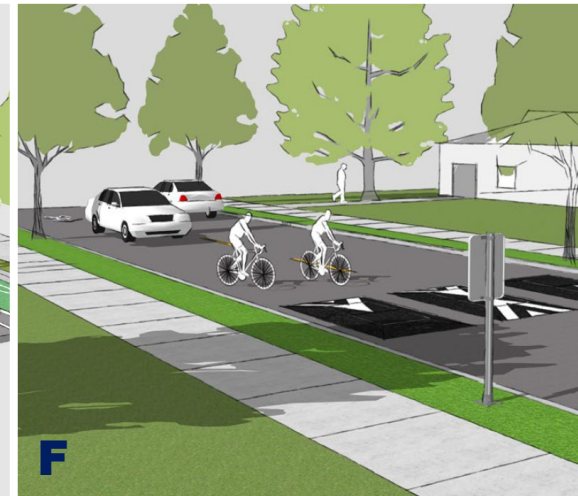
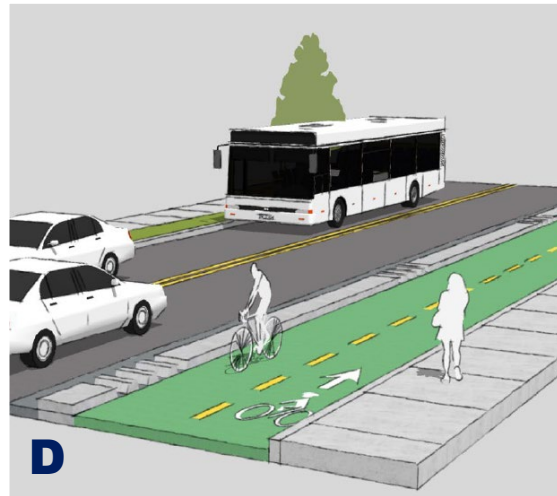
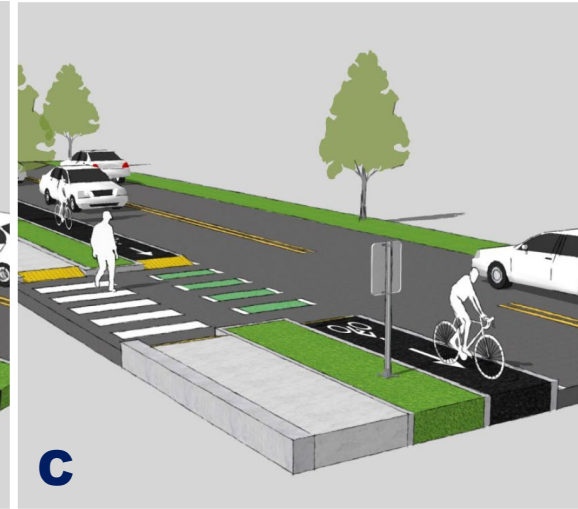
B. Shared Use Path

C. Raised Bike Lane

D. Bidirectional Protected Bike Lane

E. Single Direction Protected Bike Lane

F. Neighborhood Bikeway



## 17.4.03. BIKEWAYS AT INTERSECTIONS

- New emphasis on intersection safety for bicyclists – especially for making left-turns.
- Preferred treatment: **protected intersections** (see image at right).
- Where protected intersections are **not feasible**, may consider: green two-stage queue boxes and green bike boxes.



Figure 17.25 Protected Intersection

# 17.4.01.C BICYCLE PARKING

- New standard details for **bike racks**.
- **Bicycle parking** shall be included in the design of all Bicycle Facilities where feasible.
- **Bicycle Corrals** can be installed in-street where there is on-street parking.

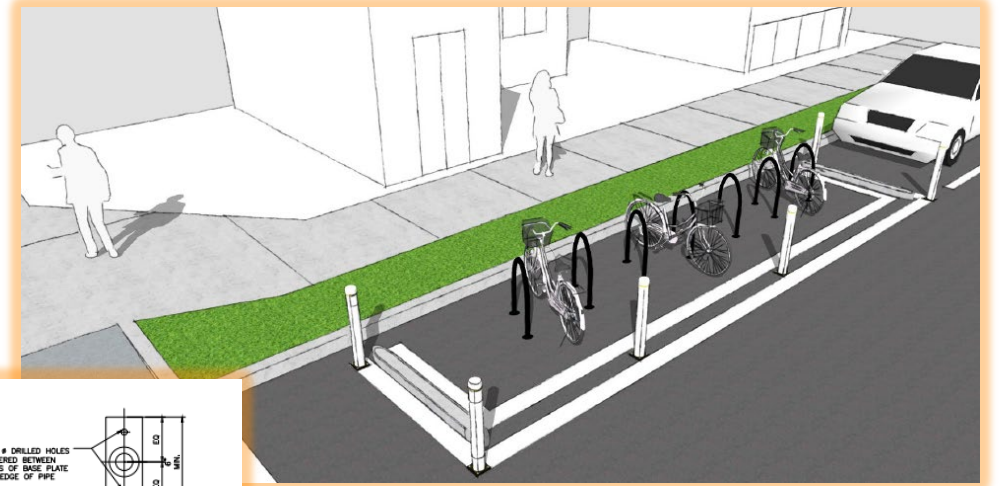
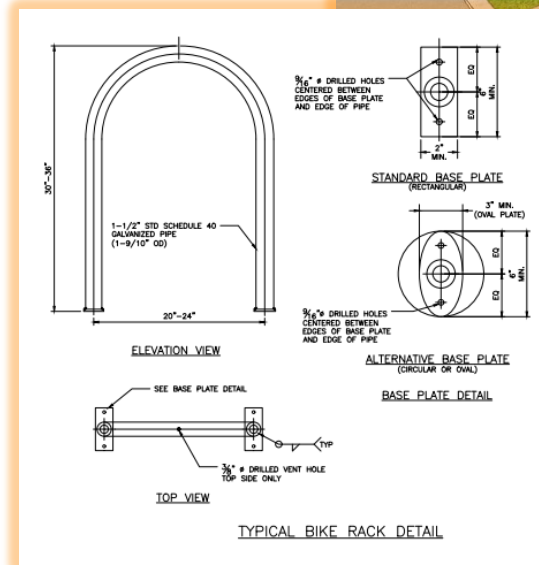


Figure 17.17 On -Street Bicycle Parking (Bicycle Corral)



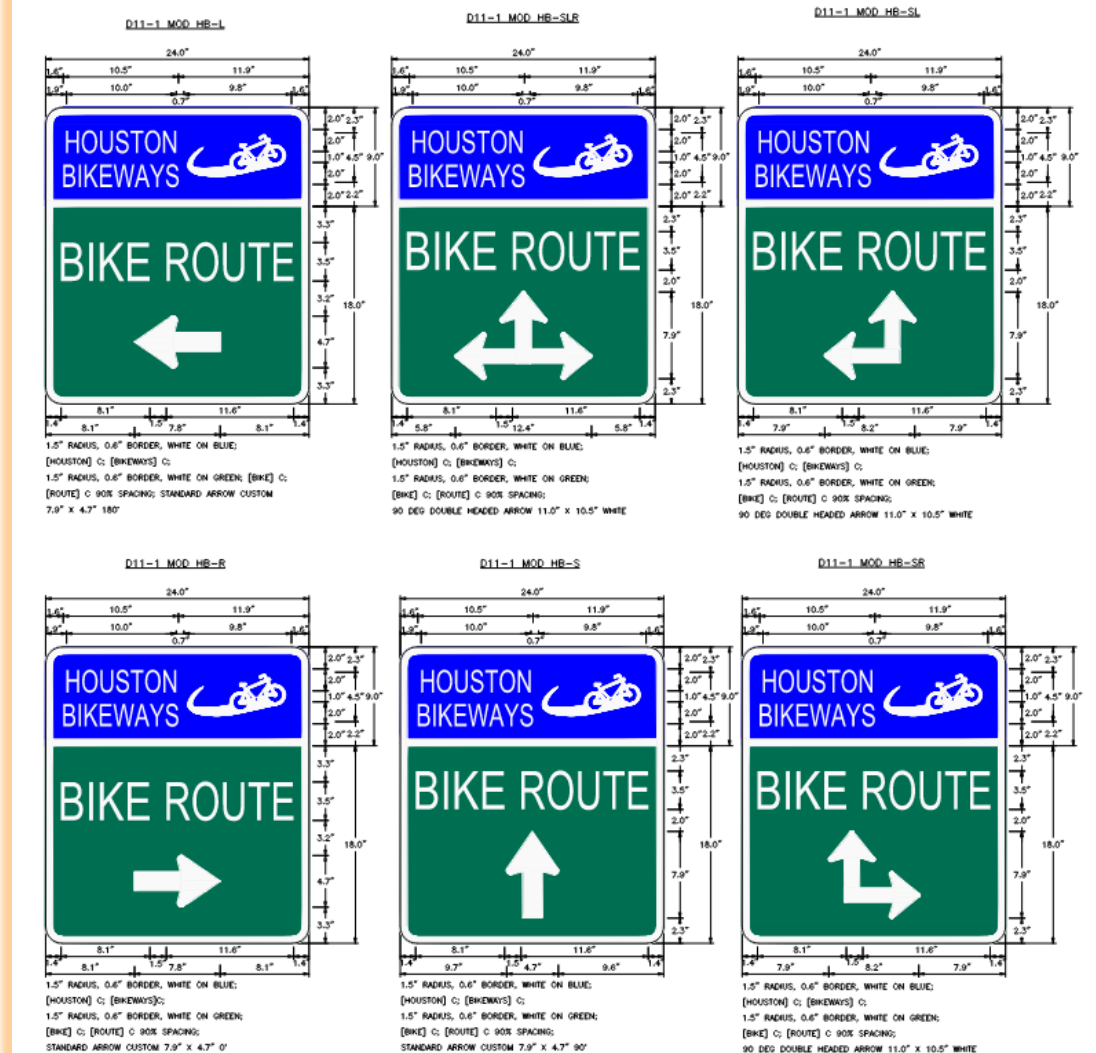
COH Standard Detail 02871-01

# 17.4.01.D WAYFINDING

- New standards for bikeway signage, including Houston Bikeways Bike Route signage to include along high-comfort bicycle facilities.
- New requirements for bikeway wayfinding signage, based on MUTCD signage.



MUTCD Destination (D1-3c) Sign





# SECTION 5

## Transit Facility Requirements

### 17.5.01 TRANSIT OVERVIEW

- 17.5.01.A In coordination with Metropolitan Transit Authority of Harris County (METRO), the City of Houston works to design safe streets that prioritize transit, improve transit service quality, and support other goals related to transit so that everyone may have safe and accessible multimodal transportation options.
- 17.5.01.B The City of Houston requires designs for city streets and multimodal transportation facilities that meet IDM standards and improve safety for all road users. The City uses other design standards and guidelines to achieve safe streets, including but not limited to, METRO transit design guidelines.
- 17.5.01.C The METRO transit design guidelines are referenced in the sections below and serve to work in tandem with the City of Houston's design standards, guidelines, and references.
  - 1. The Street-Side Guidelines and Curb-Side Guidelines should be referenced when impacting the City right-of-way.
  - 2. The whole of METRO transit design guidelines should be referenced for any project impacting an existing or future transit facility.
- 17.5.01.D All projects impacting an existing or future transit facility shall coordinate with METRO and meet design criteria and guidelines that improve safety for all road users.

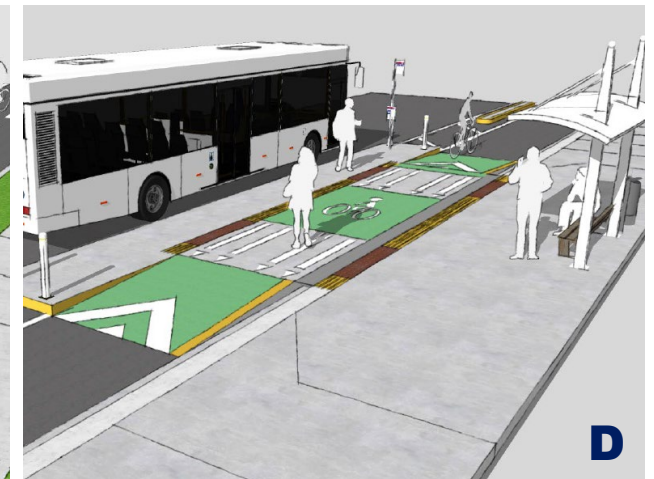
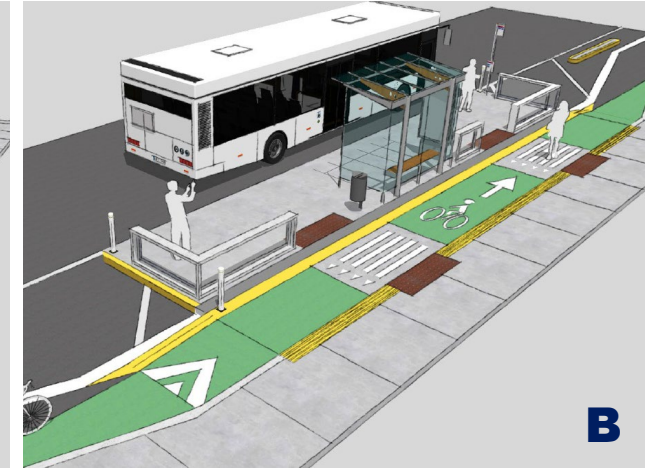
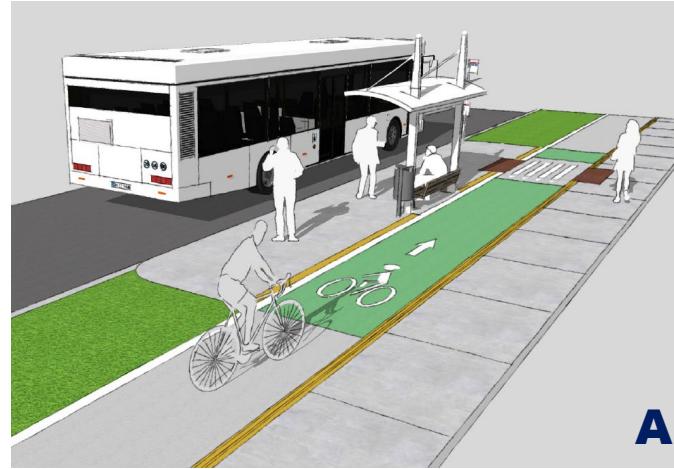
# 17.4.02.B BUS STOPS ON HIGH-COMFORT BICYCLE FACILITIES

A. Off-Street Bicycle Facility Bus Stop

B. Floating Bus Stop A

C. Floating Bus Stop B

D. Shared Raised Bus Stop





# QUESTIONS?

Enter it into the chat.

Note the chapter or topic in your question.

We will respond to unanswered questions on our website after this event.



# CHAPTER 18 – ENCROACHMENT REQUIREMENTS

**GILBERT PORTILLO, P.E., CFM**

OFFICE OF THE CITY ENGINEER

WATER & WASTEWATER, TELECOMMUNICATIONS,  
PERMITS, PLAN REVIEW

# CHAPTER 18 – ENCROACHMENT REQUIREMENTS

## Chapter Title and Table of Contents

Chapter 18

ENCROACHMENT REQUIREMENTS

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# CHAPTER 18 – ENCROACHMENT REQUIREMENTS

## What does this Chapter Cover?

### 18.1.01 CHAPTER INCLUDES

18.1.01.A General Encroachment requirements and special Encroachment requirements for residential subdivision markers, Skybridges, monitoring wells and environmental test boring Facilities in the Public Right-of-Way.

18.1.01.A18.1.01.B This chapter does not cover encroachments into City of Houston easements.

## References

### 18.1.02 REFERENCES

18.1.02.A Latest revision of the following City of Houston Code of Ordinances:

1. Chapter 40 – Streets and Sidewalks, Article I – In General
2. Chapter 40 – Streets and Sidewalks, Article XII - Monitoring Wells and Environmental Test Boring Facilities



# CHAPTER 18 – ENCROACHMENT REQUIREMENTS

## Definitions

18.1.03.A Encroachments - Private uses into, upon, over, or under the City's right-of-way. The City's Office of the City Engineer (OCE) issues an Encroachment permit including, but not limited to, tunnels, vaults, pedestrian walkways, basements, tiebacks, railroad spurs, utilities, high and low voltage circuits, cables, conduits, signs, tanks, balconies, canopies, planters, columns, sculptures, and pavers.

18.1.03.B Entrance Marker – Ornamental gate(s), column(s), or other ornamental works of wood, iron, masonry, earth, or other materials denoting the entrance to a platted and recorded single family residential subdivision.

18.1.03.C Esplanade - Unpaved area between two paved roadway sections.

18.1.03.D Facility - Any mechanical device or monitoring well and its associated apparatus, placed within a Public Right-of-Way, and designed and constructed to measure or monitor the quality or movement of foreign substances, elements, chemicals, fluids, or pollutants below the surface of the ground; or any mechanical device, method, or apparatus, placed in a Public Right-of-Way and designed and constructed to obtain a sample soil core boring from a depth of greater than one foot below the surface of the ground, for the purpose of removing soil for environmental quality testing.

# CHAPTER 18 – ENCROACHMENT REQUIREMENTS

## General Encroachment Permit Requirements

### 18.2.01 GENERAL ENCROACHMENT PERMIT REQUIREMENTS

18.2.01.A Encroachment permit requirements can be found at the Houston Permitting Center website: <https://www.houstonpermittingcenter.org/hpwoce1006>

## Special Encroachment Permit Requirements

- Residential Subdivision Markers
- Skybridges
- Monitoring Wells and Environmental Test Boring Facilities



# CHAPTER 18 – ENCROACHMENT REQUIREMENTS

## Monitoring Wells and Environmental Test Boring Facilities Design Requirements

### 18.2.02.C Monitoring Wells and Environmental Test Boring Facilities Design Requirements

#### 1. General Requirements

- a. Facilities are considered Encroachments in the Public Right-of-Way and shall meet the Encroachment requirements set out for Facilities in Chapter 40, Section 40-281 of the City of Houston Code of Ordinances.

#### 2. Location on Public Streets

- a. A Facility must not be located on, extend on to, nor intrude upon any portion of a roadway or a sidewalk unless the City Engineer determines that no reasonable alternative site exists. In any instance in which a Facility must be situated on a sidewalk or roadway, it shall be installed entirely below the surface and covered in such a manner as to allow normal use of the roadway or sidewalk.
- b. A Facility must not create any hazardous condition or obstruction of any mode of travel upon a public street, alley, sidewalk, or bikeway.
- c. The design and location of a Facility shall include all reasonable planning to minimize potential harm, injury, or interference to the public in the use of the public streets.
- d. Upon its removal, a Facility shall be properly closed by cementing or other sound engineering practice to prevent injuries to persons at the surface and underground contamination.

# CHAPTER 18 – ENCROACHMENT REQUIREMENTS

## Submittal Requirements for Encroachment Permits

This section includes submittal procedures for:

1. General Permits
2. Subdivision Marke
3. Monitoring Wells a

### 18.2.03.A General Permits Submittal Procedures

1. Complete and submit the Encroachment permit application including additional documents required for approval. The application can be submitted online and can be found at <https://www.houstonpermittingcenter.org/hpwoce1006>.

### 18.2.03.C Monitoring Wells and Environmental Test Boring Facilities Submittal Procedures

1. Each applicant shall submit detailed plans prepared under the seal of a professional engineer registered as such in Texas with the application. Each set of plans shall show the design, dimension, and depth of the Facility, and the process that will be used for its removal and closure.
2. An approved street cut/excavation permit is required prior to submitting the monitoring wells permit application. The monitoring wells permit application form and related documents can be found at <https://www.houstonpermittingcenter.org/hpwoce1003>.
3. A traffic control permit is required prior to construction of a Facility within the Public Right-of-Way or public easement. The traffic control permit can be obtained by the applicant from the Houston Permitting Center, Mobility Section.

Quality Assurance

Have drawings  
engineer respon

# QUESTIONS?

Enter it into the chat.

Note the chapter or topic in your question.

We will respond to unanswered questions on our website after this event.



# CONSTRUCTION SPECIFICATIONS

**JOSE GUTIERREZ, EIT**

**OFFICE OF THE CITY ENGINEER,  
DESIGN AND CONSTRUCTION STANDARDS GROUP**

# SPECIFICATION REDLINES

CONTACT

STANDARDS REVIEW COMMITTEE

INFRASTRUCTURE DESIGN MANUAL

CONSTRUCTION SPECIFICATIONS

STANDARD DETAILS

STORM SEWER DETAILS

PRODUCT APPROVALS

PROJECT MANUAL RESOURCES

LIFT STATIONS

CAD TOOLS AND TEMPLATES

CAPITAL PROJECTS

Standards Review Committee

The Standard Review Committee (SRC) was established to review, revise, and update standards and documents. Public input and participation is requested by the submittal of proposals for suggested changes, comments, recommendations and other information. The process will accomplish review of all documents within a five year cycle.


CURRENT REVIEW CYCLE

The 2023-2024 Review Cycle will look at Chapter 9 of the Infrastructure Design Manual and its associated drawings and specifications. Revision proposals were due by **October 31, 2023**.

- [Review Cycle Public Notice](#)
- [Request Form to Change Standards](#)
- [Frequently Asked Questions for the 2023 IDM](#)

UPDATE

2023 Infrastructure Design Manual



2022-2023 REVIEW CYCLE

The 2022-2023 Review Cycle looked at Chapters 15, 16 and 17 of the Infrastructure Design Manual (IDM) and their associated drawings and specifications. A copy of the IDM redlines, Standard Specifications redlines and Standard Details redlines is provided to the public here. The 2023 IDM is **effective on November 27, 2023**.

- [IDM Redlines from 2022-2023 Review Cycle](#)
- [General Requirements and Standard Construction Specifications Redlines from 2022-2023 Review Cycle](#)
- [Standard Details Redlines from 2022-2023 Review Cycle](#)

FUTURE REVIEW CYCLES

- 2024-2025: Pavement - Chapters 6, 10, 12
- 2025-2026: Chapters 7, 8, 11 and 14

PAST REVIEW CYCLE


The 2021-2022 Review Cycle took a look at Chapters 1, 2, 3, 4, 5, and 13 of the Infrastructure Design Manual and their associated drawings and specifications.

- [IDM Redlines from 2021-2022 Review cycle](#)
- [General Requirements and Standard Construction Specifications Redlines from 2021-2022 Review Cycle](#)

OFF-CYCLE REVIEWS

Significant issues may be considered outside of the 5-year cycle for existing standard drawings, construction specifications, and the IDM. Issues will be vetted and, if determined applicable, will be updated or saved for future review cycles.

If you would like to request changes, please fill out the Document/Detail Change Request Form and email to the SRC at [HPWStandards@houstontx.gov](mailto:HPWStandards@houstontx.gov)




2022-2023 Review Cycle

General Requirements and

Standard Construction Specifications

Redlines



November 27, 2023



# SPECIFICATION REDLINES

CONTACT	Construction Specifications
STANDARDS REVIEW COMMITTEE	2022 Specification Implementation
INFRASTRUCTURE DESIGN MANUAL	Construction specifications for wastewater collection systems, water lines, storm drainage, street paving, and traffic.
CONSTRUCTION SPECIFICATIONS	<div>Front End Documents<ul style="list-style-type: none"><li><a href="#">Division 00 Standard Front End Documents</a></li></ul><div>General Requirements and Standard Construction Specifications<ul style="list-style-type: none"><li><a href="#">Division 01 Current General Requirements Specifications</a> (effective November 27, 2023)</li><li><a href="#">Division 02-16 Current Standard Construction Specifications</a> (effective November 27, 2023)</li></ul></div><div>Additional Specifications<ul style="list-style-type: none"><li><a href="#">Guide Specifications Table of Contents</a></li></ul><div>Older Specifications<ul style="list-style-type: none"><li><a href="#">2022 Division 01 General Requirements Specifications</a></li><li><a href="#">2022 Division 02-16 Standard Construction Specifications</a></li><li><a href="#">2021 Division 01 General Requirements Specifications</a></li><li><a href="#">2021 Division 02-16 Standard Construction Specifications</a></li></ul></div></div></div>
STANDARD DETAILS	
STORM SEWER DETAILS	
PRODUCT APPROVALS	
PROJECT MANUAL RESOURCES	
LIFT STATIONS	
CAD TOOLS AND TEMPLATES	
CAPITAL PROJECTS	



# STANDARD SPECIFICATIONS

## NEW IN THE 2023 REVISION

Standard Construction Specifications for Wastewater Collection Systems, Water Lines, Storm Drainage, Street Paving, and Traffic – 2023 Revisions to the 2022 Edition

The City of Houston Standards Review Committee (SRC) was established to review, revise, and update documents and standards for Houston Public Works. Public input and participation was requested by the submittal of proposals for suggested changes, comments, recommendations and other information.

The 2022-2023 City of Houston Review Cycle Committee reviewed Infrastructure Design Manual (IDM) Chapters 15-17 along with their associated standard drawings and standard construction specifications. Refer to the IDM Executive Summary for a summary of major updates to the design requirements made this review cycle. Below is a list of Division 02-16 standard specifications and standard drawings that were revised during this review cycle. The Standard Construction Specifications have change bars on the left side of the page to indicate a major revision has taken place.

### New Standard Specifications:

- 02871 – Bike Racks
- 02890 – Pedestrian Crosswalk System Rectangular Rapid Flashing Beacon (RRFB)
- 16130 – Advanced Transportation Controller (ATC) Cabinet Assembly

### Standard Specifications Updated\*:

- 02221 Removing Existing Pavements, Structures, Wood, and Demolition Debris
- 02381 – Street Lighting Conduit
- 02382 – Traffic Pole Assemblies - Steel
- 02775 – Concrete Sidewalks
- 02893 – Traffic Signal Construction
- 02921 – Hydro Mulch Seeding
- 16711 – Traffic Signal Conduit
- 16712 – Solar Powered School Zone Field Equipment
- 16715 – Vehicle Signal Heads
- 16716 – Pedestrian Signal Heads
- 16718 – Vehicle Traffic Control Signal Heads –Light Emitting Diode (LED) Circular Signal Supplement
- 16719 – Countdown Pedestrian Signal Module
- 16727 – Traffic Signal Saw-Cut Loop Detector
- 16732 – Uninterruptable Power Supply (UPS) System for Traffic Signal Cabinets
- 16733 – Field Hardened Ethernet Switch
- 16735 – Fiber Optic Splice Enclosure
- 16750 – Accessible Pedestrian Push Button Station

### Standard Specifications Retired/Deleted:

- 16734 – WiMax
- 16738 – Wireless Communication System

RS-1

- 027
  - 027
  - Cr
  - 027
  - Cu
  - 027
  - 027
  - Co
- Standard Details
- No
- \*Only specifications changes have

RS-2

## CHANGES MADE IN THE 2022 REVISION

Standard Construction Specifications for Wastewater Collection Systems, Water Lines, Storm Drainage, Street Paving, and Traffic – 2022 Revisions to the 2021 Edition

The 2021-2022 City of Houston Review Cycle reviewed Infrastructure Design Manual (IDM) Chapters 1-5 and 13 along with their associated standard drawings and standard construction specifications. Below are the Division 02-16 standard specifications and standard drawings that were revised during 2021-2022 review cycle.

### New Specifications:

- 02445 – Jack and Bore/Jack and Mine/Pilot Tube Guided Boring Tunnels
- 02447 – Installation of Water Lines by Slurry Bore

### Specifications with major updates:

- 02441 – Microtunneling
- 02501 – Ductile Iron Pipe and Fittings
- 02504 – Fiberglass Reinforced Pipe
- 02526 – Water Meters

### Specifications Retired/Deleted:

- 02447 – Augering Pipe and Conduit

### New Standard Details:

- None

### Standard Details with major updates:

- None

### Standard Details Retired/Deleted:

- None

RS-3

## CHANGES MADE IN THE 2021 REVISION

Standard Construction Specifications for Wastewater Collection Systems, Water Lines, Storm Drainage, Street Paving, and Traffic – 2021 Revisions to the 2020 Edition

20-2021 City of Houston Review Cycle reviewed Infrastructure Design Manual (IDM) Chapters 7, 8, 11 and 14 along with their associated standard drawings and standard construction specifications. Below are the standard specifications and standard drawings that were revised 2020-2021 review cycle.

### Specifications:

- 02614 – Large Diameter Line Stop
- 02615 – Insertion Valves and Line Stops
- 16124 – Conductive Trace Wire for Non-Metallic Water Line Pipes

### Specifications with major updates:

- 02082 – Precast Concrete Manholes
- 02400 – Tunnel Shafts
- 02431 – Tunnel Grout
- 02501 – Ductile Iron Pipe and Fittings
- 02506 – Polyvinyl Chloride Pipe
- 02507 – Prestressed Concrete Cylinder Pipe
- 02511 – Water Lines
- 02512 – Water Tap and Service Line Installation
- 02513 – Wet Connections
- 02514 – Disinfection of Water Lines
- 02517 – Water Line in Tunnels
- 02518 – Steel Pipe and Fittings for Large Diameter Water Lines
- 02520 – Fire Hydrants
- 02524 – Air Release and Vacuum Relief Valves
- 02527 – Polyurethane Coatings on Steel or Ductile Iron Pipe
- 02528 – Polyethylene Encasement/Wrap
- 02613 – Bar-Wrapped Steel Cylinder Pipe

### Specifications Retired/Deleted:

- 16717 – Programmable Vehicle Signal Head

### Standard Details:

- 02082-12 – Storm Sewer Precast Box Manhole (Storm Water)
- 02082-13 – Storm Sewer Type "C" Precast Round Manhole (Storm Water)
- 16124-01 – Complete Utility Locating System Sample Plan (Water)

### New Standard Details (Continued):

- 16124-02 – Complete Utility Locating System Water Service Detail (Water)
- 16124-03 – Complete Utility Locating System Hydrant Detail (Water)

### Standard Details with major updates:

- 02091-01 – Non-Metallic Frame and Cover (Wastewater)
- 02082-06 – Sanitary Sewer Manhole Vent for Sealed Manhole (Wastewater)
- 02082-10 – Standard LDWL Access Manhole Details (Water)
- 02317-09 – Standard LDWL Excavation and Backfill Detail (Water)
- 02517-01 – LDWL Tunnel and Casing Details for Water Lines 24-Inch and Larger (Water)
- 02520-01 – Standard Fire Hydrant Detail (Water)
- 02524-03 – LDWL Air Valve Assembly in Service Manhole Detail (Water)
- 15641-01 – Standard LDWL Cathodic Protection Details for Test Stations (Sheet 1 of 3) (Water)
- 15641-02 – Standard LDWL Cathodic Protection Details for Test Stations (Sheet 2 of 3) (Water)
- 15641-03 – Standard LDWL Cathodic Protection Details for Test Stations (Sheet 3 of 3) (Water)
- 16640-01 – Standard LDWL Cathodic Protection Details for Test Stations & Anodes (Water)

### Standard Details Retired/Deleted:

- 02081-01 – Storm Sewer Manhole Type "C" for 42" Diameter RCP and Smaller
- 02081-02 – Storm Sewer Manhole Type "C" for 48" to 72" Diameter RCP
- 02081-03 Storm Sewer Manhole Type "C" for 78" Diameter RCP and Greater
- 02081-04 Storm Sewer Manhole Type "C" for Proposed Concrete Box Sewer

RS-4

# STANDARD SPECIFICATIONS

## New Standard Specifications:

- 02871 – Bike Racks
- 02890 – Pedestrian Crosswalk System Rectangular Rapid Flashing Beacon (RRFB)
- 16130 – Advanced Transportation Controller (ATC) Cabinet Assembly

## Standard Specifications Updated\*:

- 02221 Removing Existing Pavements, Structures, Wood, and Demolition Debris
- 02581 – Street Lighting Conduit
- 02582 – Traffic Pole Assemblies - Steel
- 02775 – Concrete Sidewalks
- 02893 – Traffic Signal Construction
- 02921 – Hydro Mulch Seeding
- 16711 – Traffic Signal Conduit
- 16712 – Solar Powered School Zone Field Equipment
- 16715 – Vehicle Signal Heads
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- 16727 – Traffic Signal Saw-Cut Loop Detector
- 16732 – Uninterruptable Power Supply (UPS) System for Traffic Signal Cabinets
- 16733 – Field Hardened Ethernet Switch
- 16735 – Fiber Optic Splice Enclosure
- 16750 – Accessible Pedestrian Push Button Station

## Standard Specifications Retired/Deleted:

- 16734 – WiMax
- 16738 – Wireless Communication System

## Standard Specifications Retired/Deleted (Continued):

- 16743 – Code Division Multiple Access (CDMA) Modem Assembly
- 16744 – Ethernet Video MPEG-4 Encoder
- 16745 – Ethernet Video MPEG-4 Decoder
- 16751 – Wireless Magnetometer Vehicle Detection System

## New Standard Details:

- 02760-11 – Bicycle Intersection Treatments (Sheet 2)
- 02771-02 – 14" Wide Precast Curb Stop Delineator for Bicycle Lanes
- 02775-09 – Perpendicular Curb Ramp
- 02775-10 – Retrofit Bikeway at Floating Bus Stop
- 02871-01 – Bicycle Rack Details

## Standard Details Updated\*:

- 02582-02 (prev. 02583-04A) - Traffic Signal Structures (Sheet 1 of 2)
- 02582-03 (prev. 02893-04B) - Traffic Signal Structures (Sheet 2 of 2)
- 02751-01 - Concrete Pavement Details
- 02752-01 - Pavement Expansion and Construction Joint Details
- 02752-02 - Sidewalk Expansion and Construction Joint Details
- 02754-01A - Driveway with 4"x12" Curb for Local Residential Street
- 02754-01B - Driveway Detail With 6" Curbed Streets
- 02754-02 - Driveways with Culverts on Open Ditch Type Streets
- 02754-03 - Proposed Driveway Through Sidewalk with Excessive Elevation Difference
- 02754-04 - Proposed Sidewalk Through Driveway with Minimal Elevation Difference

# STANDARD SPECIFICATIONS

## NEW SPECIFICATIONS:

02871 – Bike Racks

CITY OF HOUSTON	BIKE RACKS
2023 STANDARD SPECIFICATION	
SECTION 02871	
BIKE RACKS	

02890 – Pedestrian Crosswalk  
System Rectangular Rapid  
Flashing Beacon (RRFB)

CITY OF HOUSTON	PEDESTRIAN CROSSWALK SYSTEM RRFB
2023 STANDARD SPECIFICATION	
SECTION 02890	
PEDESTRIAN CROSSWALK SYSTEM RECTANGULAR RAPID FLASHING BEACON (RRFB)	

16130 – Advanced Transportation  
Controller (ATC) Cabinet  
Assembly

CITY OF HOUSTON	ADVANCED TRANSPORTATION CONTROLLER (ATC) CABINET ASSEMBLY
2023 STANDARD SPECIFICATION	
SECTION 16130	
ADVANCED TRANSPORTATION CONTROLLER (ATC) CABINET ASSEMBLY	

# **STANDARD SPECIFICATIONS**

## **RETIRED SPECIFICATIONS:**

**16734 – WiMax**

**16738 – Wireless Communication System**

**16743 – Code Division Multiple Access (CDMA) Modern Assembly**

**16744 – Ethernet Video MPEG – 4 Encoder**

**16745 – Ethernet Video MPEG – 4 Decoder**

**16751 – Wireless Magnetometer Vehicle Detection System**

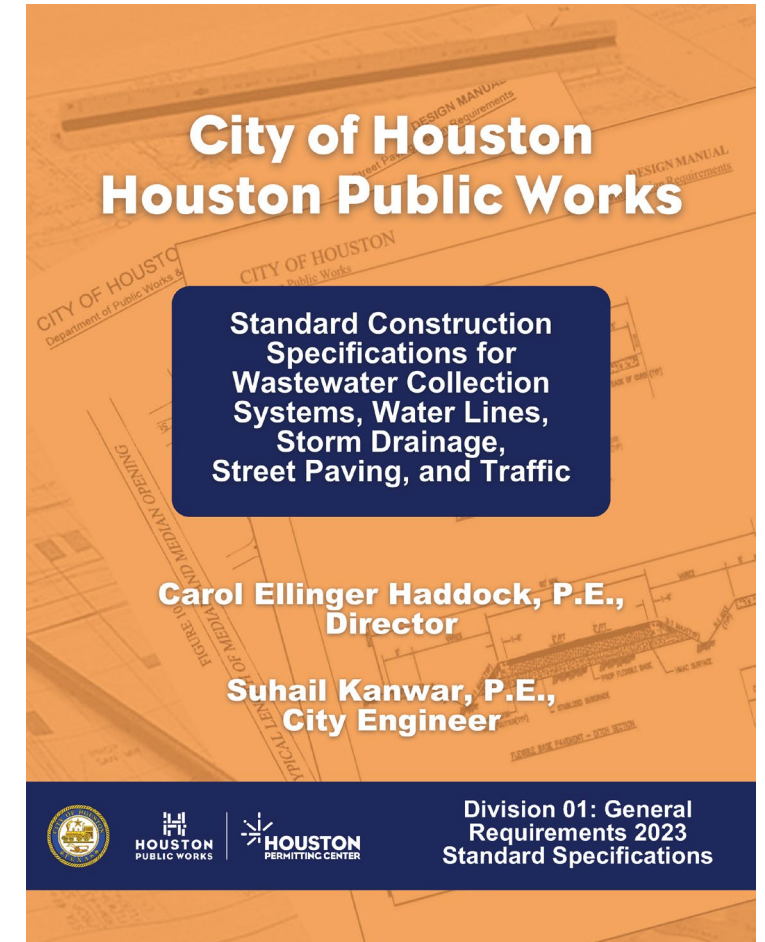
# STANDARD SPECIFICATIONS

## DIVISION 1 SPECIFICATIONS WITH MAJOR UPDATES:

**01554 – Traffic Control and Street Signs**

**01555 – Traffic Control and Regulation**

**01582 – Build Houston Forward Project Identification Signs**



# STANDARD SPECIFICATIONS

## DIVISION 2-16 SPECIFICATIONS WITH MAJOR UPDATES:

**02221 – Removing Existing Pavements, Structures, Wood, and Demolition Debris**

**02582 – Traffic Pole Assemblies – Steel**

**02775 – Concrete Sidewalks**

**02893 – Traffic Signal Construction**

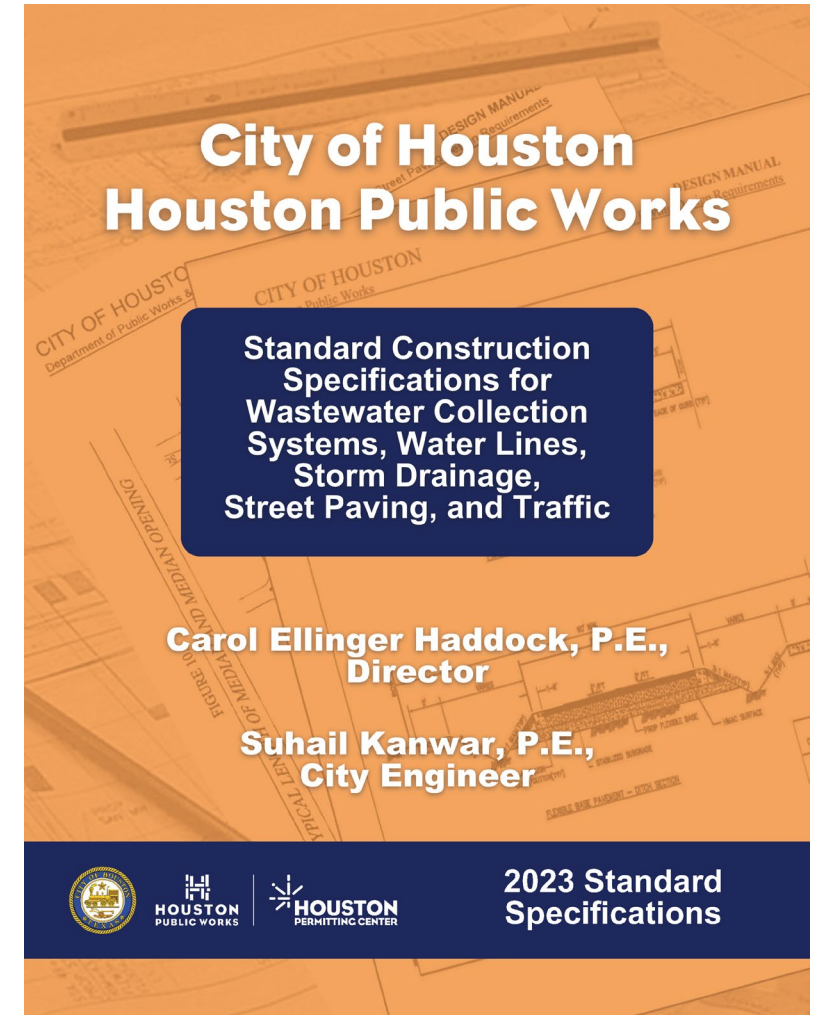
**02921 – Hydro Mulch Seeding**

**16716 – Pedestrian Signal Heads**

**16719 – Countdown Pedestrian Signal Module**

**16733 – Field Hardened Ethernet Switch**

**16750 – Accessible Pedestrian Push Button Station**





# QUESTIONS?

Enter it into the chat.

Note the chapter or topic in your question.

We will respond to unanswered questions on our website after this event.



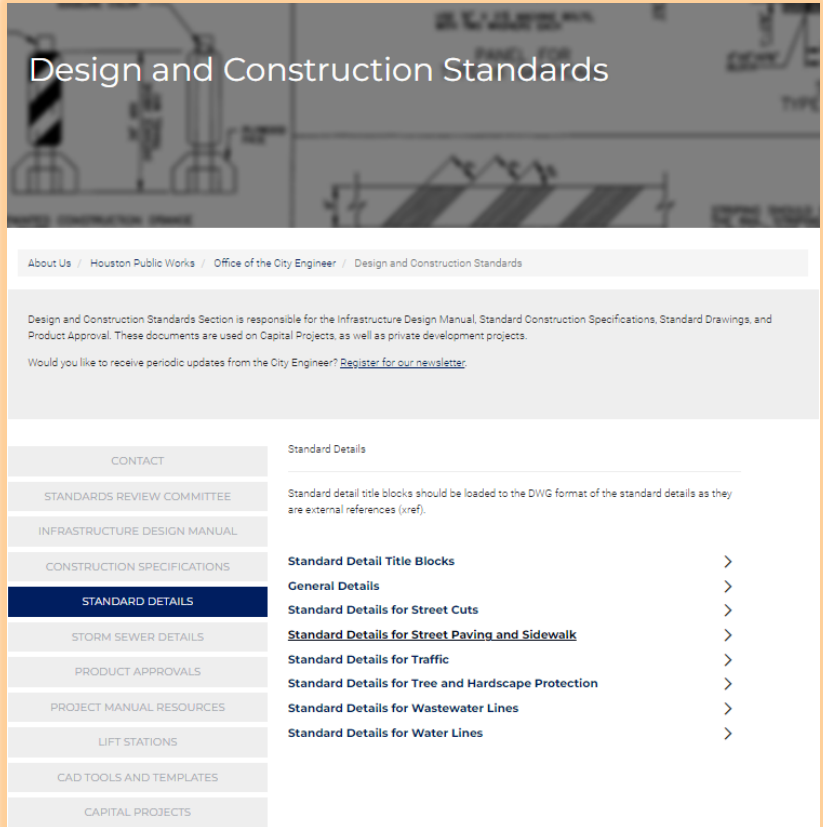
# STANDARD DETAILS

**SAHAR BEIGZADEH, P.E.**

**OFFICE OF THE CITY ENGINEER,  
DESIGN AND CONSTRUCTION STANDARDS GROUP**

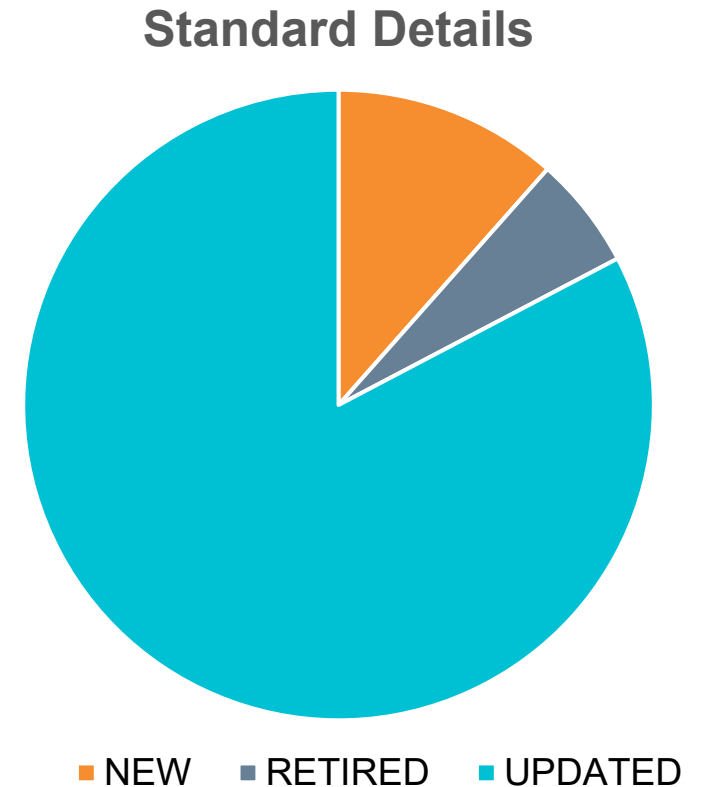
# STANDARD DETAILS

- Standard Details' Updates
- Standard Details on Our Webpage



# STANDARD DETAILS UPDATES

- **New Standard Details: 6**
- **Retired Standard Details: 3**
- **Standard Details with technical updates: 43**
- **Numerous Standard Details were renumbered/retitled;**
- **Combined Standard Details were separated;**
- **Standard Details title blocks were updated;**
- **DWG format of Standard Details standardized and are available for public use.**



# STANDARD DETAILS UPDATES

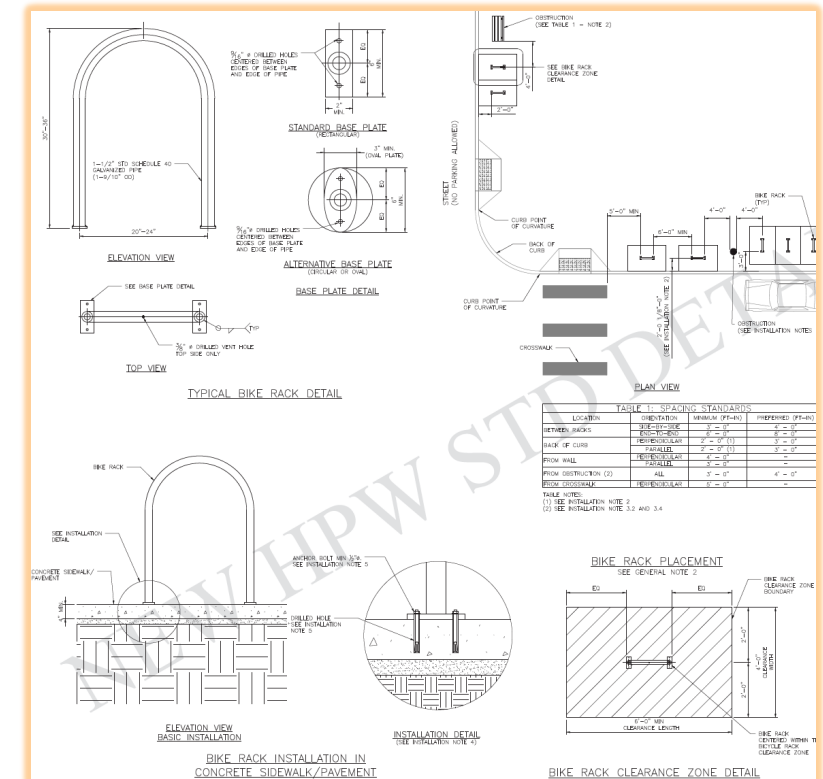
## NEW STANDARD DETAILS

### STREET PAVING AND SIDEWALK DETAILS

- 02771-02 14" Wide Precast Concrete Curb Stop Delineator for Bicycle Lanes
- 02775-09 Perpendicular Curb Ramp
- 02775-10 Retrofit Bikeway at Floating Bus Stop
- 02871-01 Bike Rack

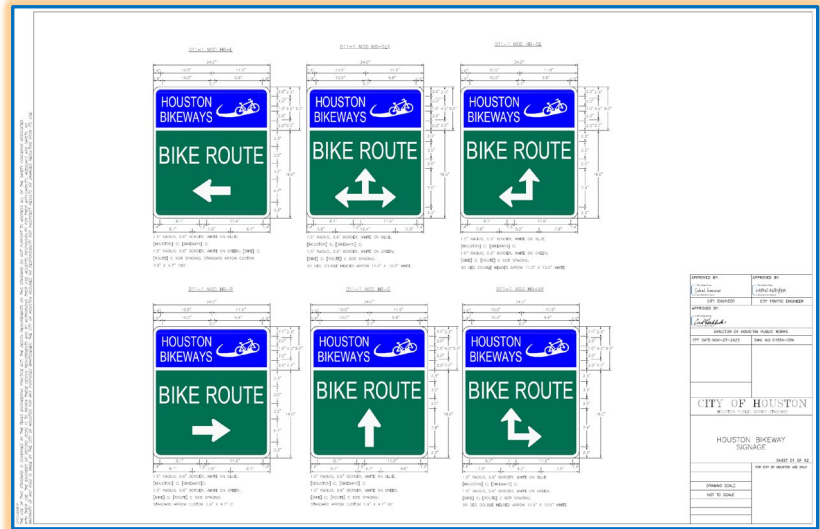
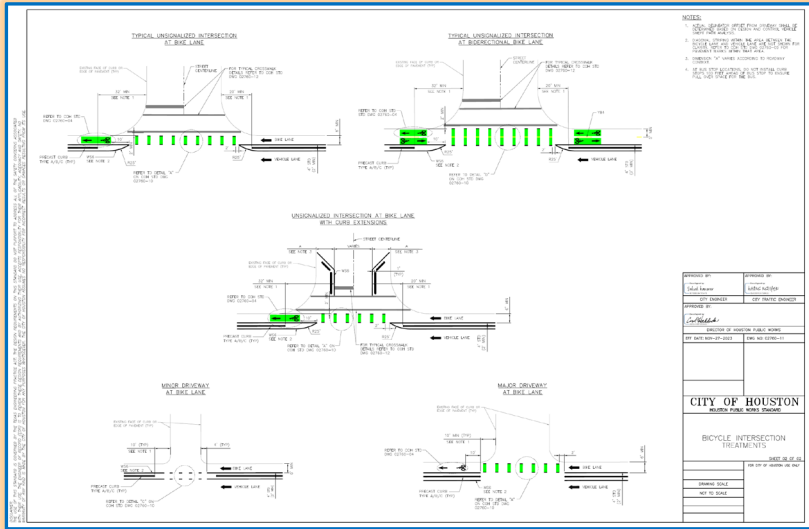
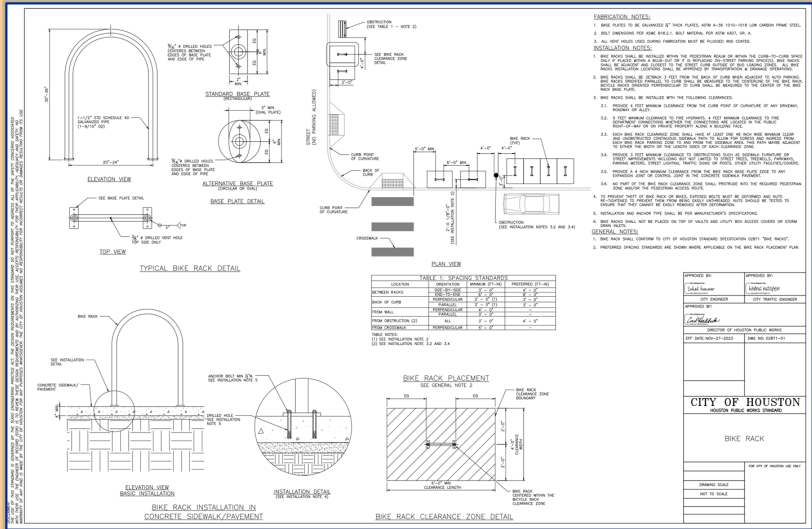
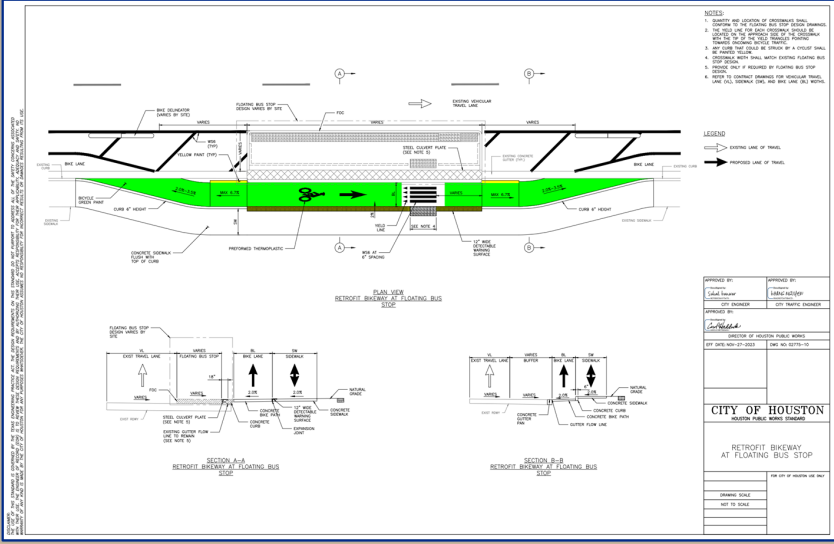
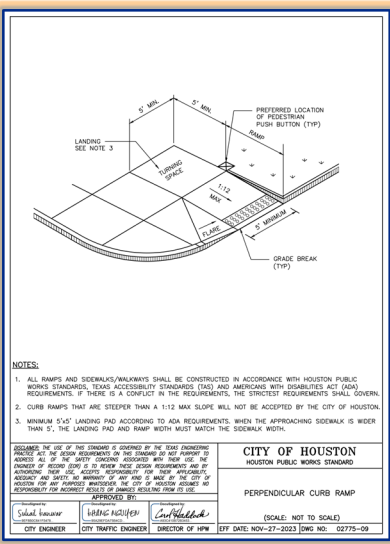
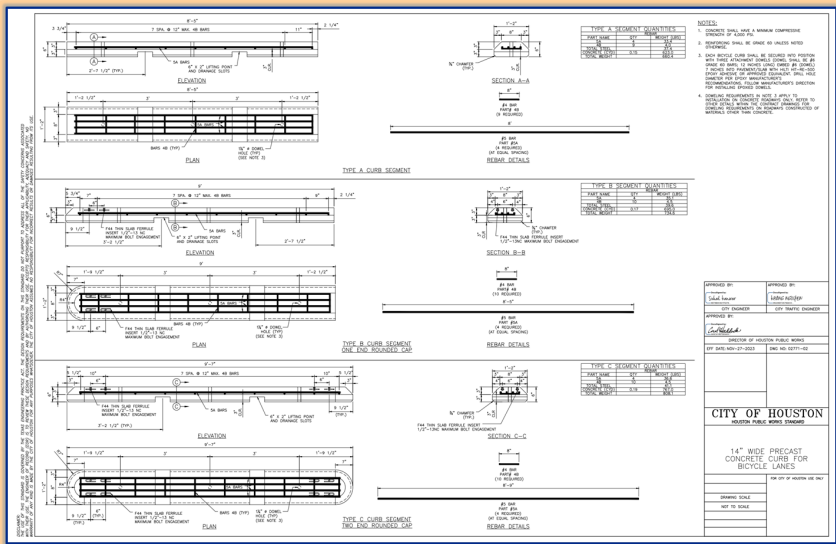
### TRAFFIC DETAILS

- 01554-05 Houston Bikeway Signage
- 02760-11 Bicycle Intersection Treatments



# STANDARD DETAILS UPDATES

## NEW STANDARD DETAILS



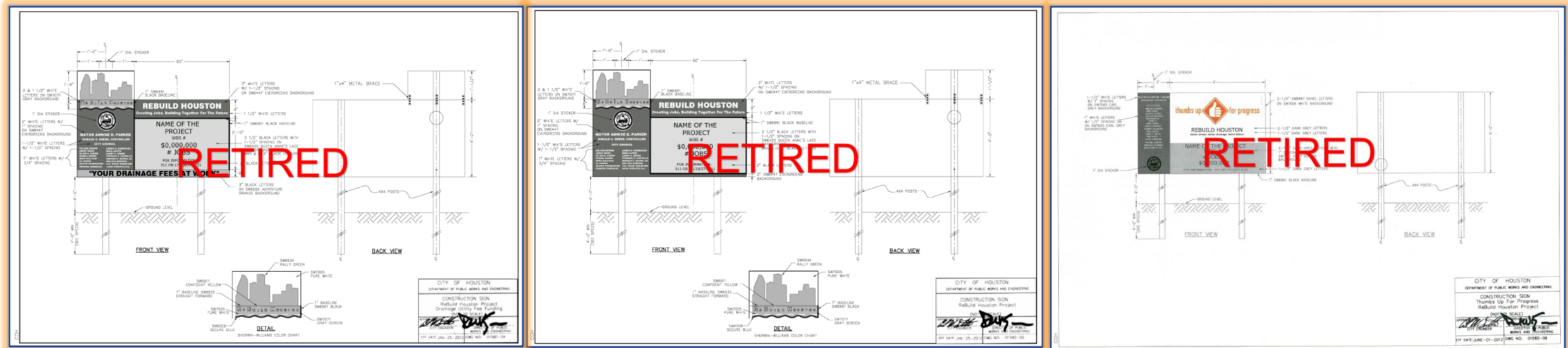


# STANDARD DETAILS UPDATES

## RETIRED STANDARD DETAILS

### General Details:

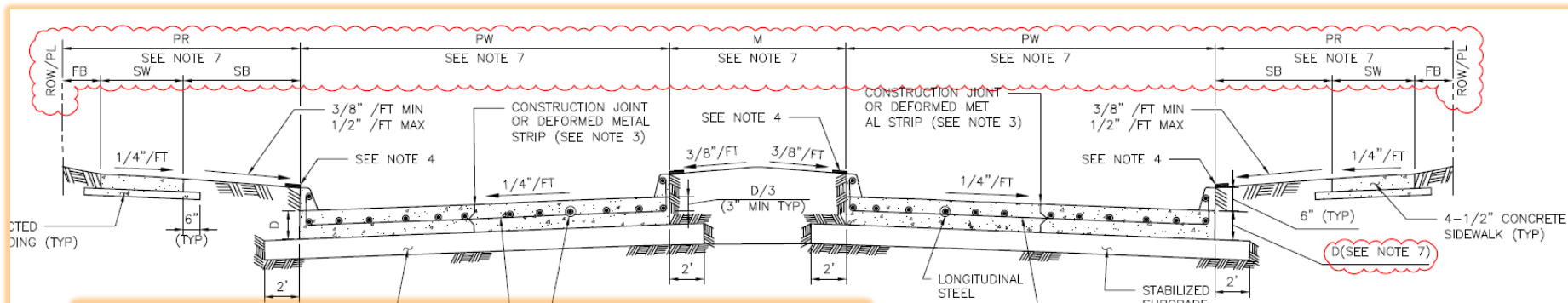
- 01580-04 Construction Sign Rebuild Houston Project Drainage Utility Fee Funding
- 01580-05 Construction Sign Rebuild Houston Project
- 01580-06 Construction Sign Thumbs Up for Progress ReBuild Houston Project



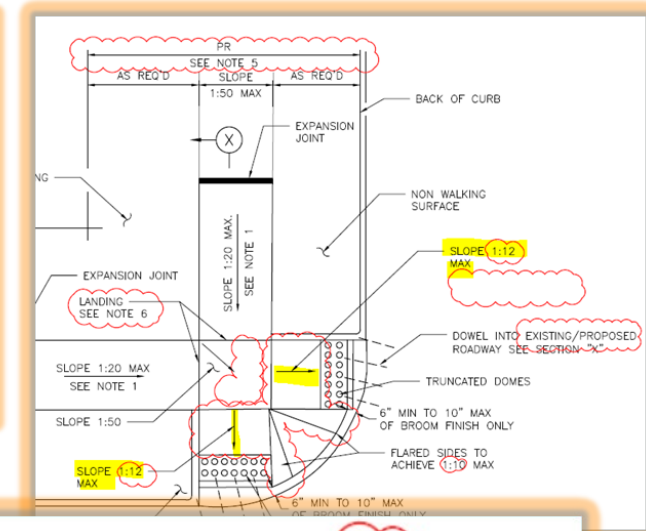
# STANDARD DETAILS UPDATES

## TECHNICAL UPDATES:

- Pedestrian realm dimensions were removed from standard details and contractors addressed to contract drawings for dimensions.
- Curb ramp slopes limited to 1:12 feet maximum to align with IDM requirements.



7. REFER TO CONTRACT DRAWINGS FOR PAVEMENT WIDTH (PW), AND PAVEMENT THICKNESS (D), MEDIAN (M), PEDESTRIAN REALM (PR), SIDEWALK (SW), FRONTAGE BUFFER (FB), AND SAFETY BUFFER (SB) WIDTHS.



4. CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON UNLESS NOTED OTHERWISE

# STANDARD DETAILS UPDATES

## TECHNICAL UPDATES:

### ➤ Driveway Details:

- Table-1: Sidewalk reinforcement Information

- Table-2: Driveway Design Criteria

### ➤ Notes:

- Requirements of section 40-551 Code of Ordinances
- Replacement of sidewalks
- Detectable warning plates

TRAFFIC TYPE	(FOR SINGLE
	WIDTH
	MIN
ONE-WAY	10
TWO-WAY	10 <sup>(3)</sup>

(1) REFER TO INFRASTRUCTURE DESIGN MANUAL  
(2) REFER TO INFRASTRUCTURE DESIGN MANUAL  
(3) THE MINIMUM WIDTH FOR TWO-WAY TRAFFIC SHALL BE 10 FEET  
(4) REFER TO CHAPTER 42  
(5) ONLY MURS AND COURTESY DRIVEWAYS  
(6) REFER TO CHAPTER 42

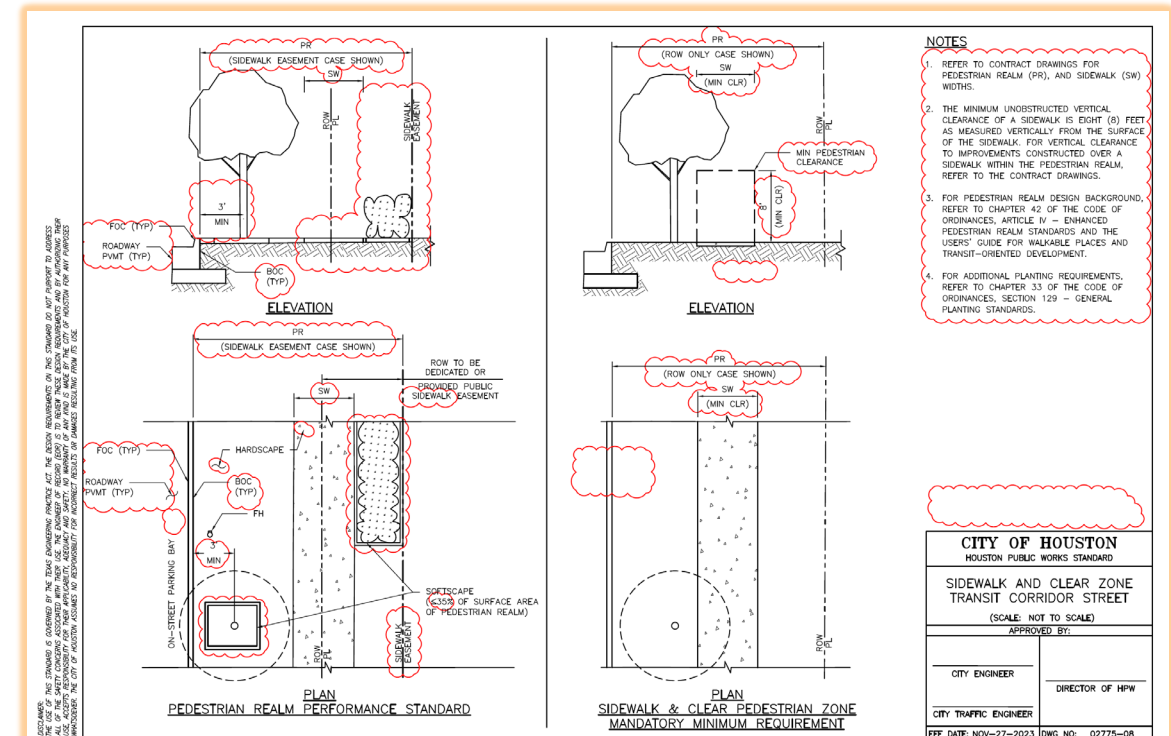
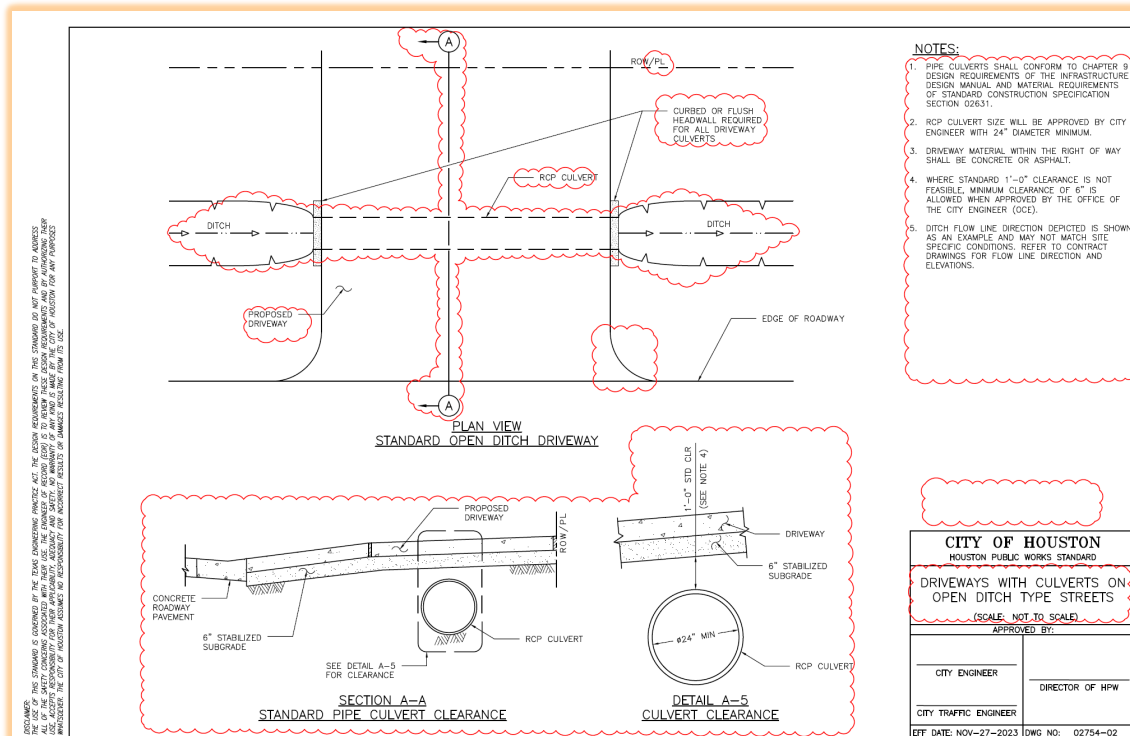
### NOTES:

- REPAIR, RECONSTRUCTION OR REPLACEMENT OF SIDEWALKS SHALL MEET PERMITTING REQUIREMENTS OF CODE OF ORDINANCES SECTION 40-552.
- FOR REPAIR, RECONSTRUCTION, OR REPLACEMENT OF EXISTING SIDEWALKS:
  - EXISTING SIDEWALKS LESS THAN OR EQUAL TO 20 FEET IN TOTAL LENGTH:
    - THE PROPOSED SIDEWALK WIDTH WILL BE ALLOWED TO MATCH THE EXISTING SIDEWALK.
  - EXISTING SIDEWALKS GREATER THAN 20 FEET IN TOTAL LENGTH:
    - THE SIDEWALK WIDTH FOR THE ENTIRE PROPERTY WIDTH SHALL BE IMPROVED TO MEET WIDTH REQUIREMENTS ACCORDING TO THE LATEST INFRASTRUCTURE DESIGN MANUAL.
  - 20 FOOT TOTAL LENGTH IS DEFINED AS:
    - UP TO 10 FEET ON BOTH SIDES OF THE DRIVEWAY; OR
    - UP TO 20 FEET WHEN SIDEWALK AFFECTED IS LOCATED ONLY ON ONE SIDE OF THE DRIVEWAY.
- ALL JOINTS ALONG THE SIDEWALK SHALL BE CONSTRUCTED ACCORDING TO DRAWING 02752-02 AND SPECIFICATION 02752.
- DRIVEWAYS SHALL BE MINIMUM 6" THICK FOR SINGLE FAMILY AND DUPLEXES. DRIVEWAYS SHALL BE MINIMUM 7" THICK FOR ALL OTHERS (I.E. COMMERCIAL, INDUSTRIAL, ETC.)
- DRIVEWAYS AND SIDEWALKS SHALL BE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE AND INCLUDE 5 1/2 SACKS OF CEMENT PER CUBIC YARD OF CONCRETE.
- ALL RAMP AND SIDEWALKS/WALKWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOUSTON PUBLIC WORKS STANDARDS, TEXAS ACCESSIBILITY STANDARDS (TAS) AND AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS. IF THERE IS A CONFLICT IN THE REQUIREMENTS, THE STRICTEST REQUIREMENTS SHALL GOVERN.
- CURB RAMPS THAT ARE STEEPER THAN A 1:12 MAX SLOPE WILL NOT BE ACCEPTED BY THE CITY OF HOUSTON.
- REFER TO CONTRACT DRAWINGS FOR PEDESTRIAN REALM (PR), SIDEWALK (SW), FRONTAGE BUFFER (FB), AND SAFETY BUFFER (SB) WIDTHS.
- DETECTABLE WARNING SURFACES:
  - SIDEWALK SHALL HAVE A DETECTABLE WARNING SURFACE WHERE:
    - SIDEWALK INTERSECTS TYPE C DRIVEWAYS (COMMERCIAL DRIVEWAYS) THAT ARE STOP, YIELD, OR TRAFFIC SIGNAL CONTROLLED; OR
    - SIDEWALK SLOPE IS GREATER THAN 1:20 AND INTERSECTS A TYPE C DRIVEWAY (COMMERCIAL DRIVEWAY)
  - DETECTABLE WARNING SURFACES ARE OPTIONAL WHERE SIDEWALKS INTERSECT TYPE A DRIVEWAYS (SINGLE FAMILY RESIDENTIAL HOUSES OR DUPLEXES) OR TYPE B DRIVEWAYS (SHARED ACCESS/SHARED DRIVEWAYS).
  - REFER TO STANDARD DETAILS 02775-06 TO 02775-07 FOR DETECTABLE WARNING SURFACE STANDARDS.

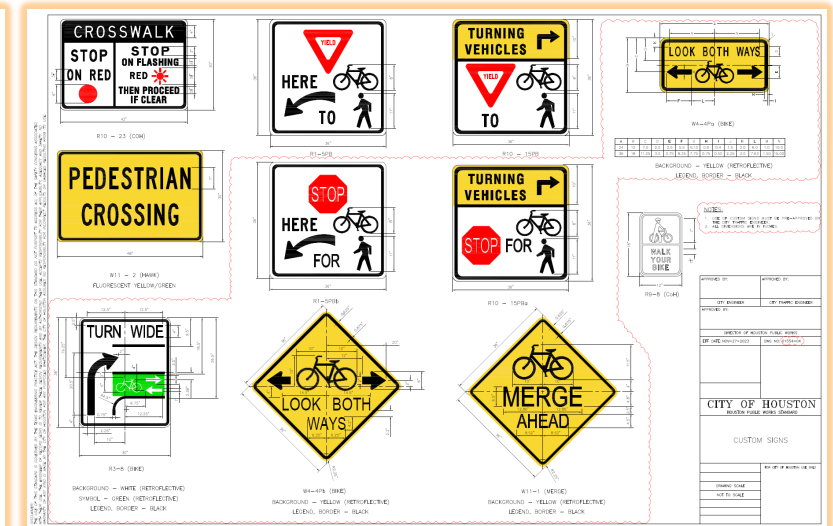
# STANDARD DETAILS UPDATES

## STANDARD DETAILS WITH TECHNICAL CHANGES

- 02754-02 Driveways with culverts on open ditch type streets
- 02775-08 Sidewalks and Clear Zone Transit Corridor Street



- **01554-01 & 02 (old 01509-01 & 01A) General Notes & Ground Mounting Sign**
- **01554-04 Custom Signs**





➤ **01555-01 through 12 TCP Standard details.**



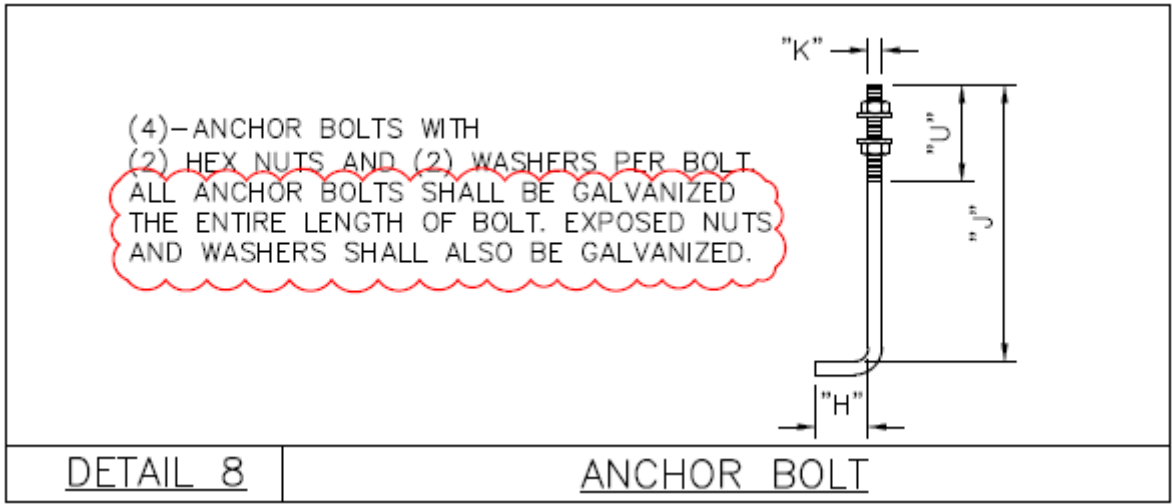


# STANDARD DETAILS UPDATES

## STANDARD DETAILS WITH TECHNICAL CHANGES

➤ 02582-02, 03 (prev. 02583-04A and B)Traffic Signal Structures:

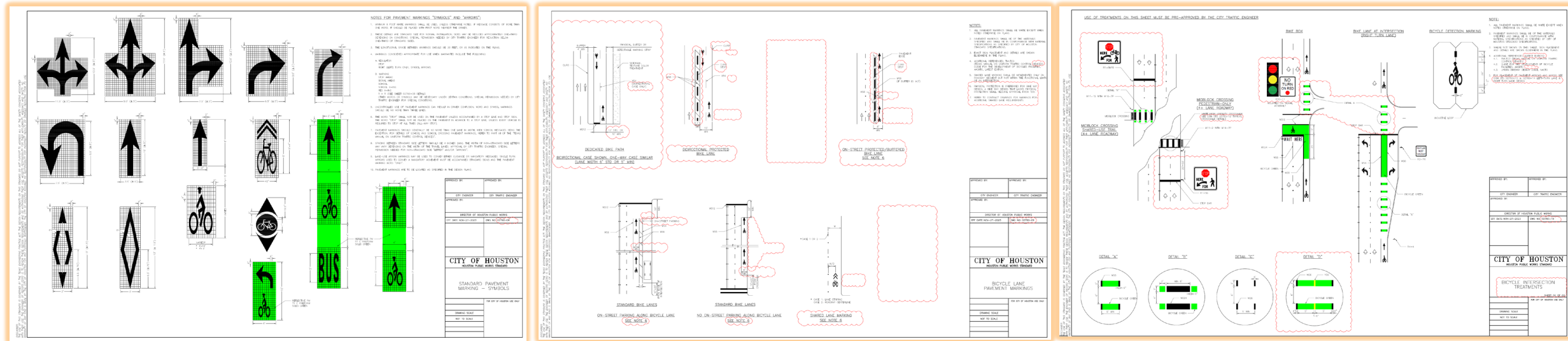
POLE AND MAST ARM DATA																														
DESIGNATION KEY			POLE TUBE						POLE BASE				ANCHOR BOLT				SIGNAL ARM TUBE													
POLE SERIES	POLE TYPE	SIGNAL ARM SPAN (FT)	BASE DIA. (IN)	TOP DIA. (IN) WITH LUM ARM	TOP DIA. (IN) WITHOUT LUM ARM	LENGTH (FT) WITH LUM ARM	LENGTH (FT) WITHOUT LUM ARM	GAUGE OR THK. (IN)	SQUARE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	HOLE / SLOT "Z" (IN)	DIA. "K" (IN)	LENGTH "J" (IN)	HOOK "H" (IN)	THREAD LENGTH "U" (IN)	FIXED END DIA. (IN)	FREE END DIA. (IN)	GAUGE OR THICK (IN)	SPAN (FT)	TIP HEIGHT "AA" (FT)									
HOU	1	25	13.00	8.80	10.00	30.00	21.50	3	19.00	18.00	2.25	2.50	2.25	89.00	7.00	9.00	8.00	3.50	7	25.00	20.2									
		30															9.00	4.80	7	30.00	20.3									
		35															10.00	5.10	7	35.00	20.3									
HOU	2	40	13.00	8.80	10.00	30.00	21.50	0.375																		10.50	4.90	7	40.00	20.3
		45																								10.14	3.84	3	45.00	20.4
		50																								11.00	4.00	3	50.00	20.4
		55																												



# STANDARD DETAILS UPDATES

## STANDARD DETAILS WITH TECHNICAL CHANGES

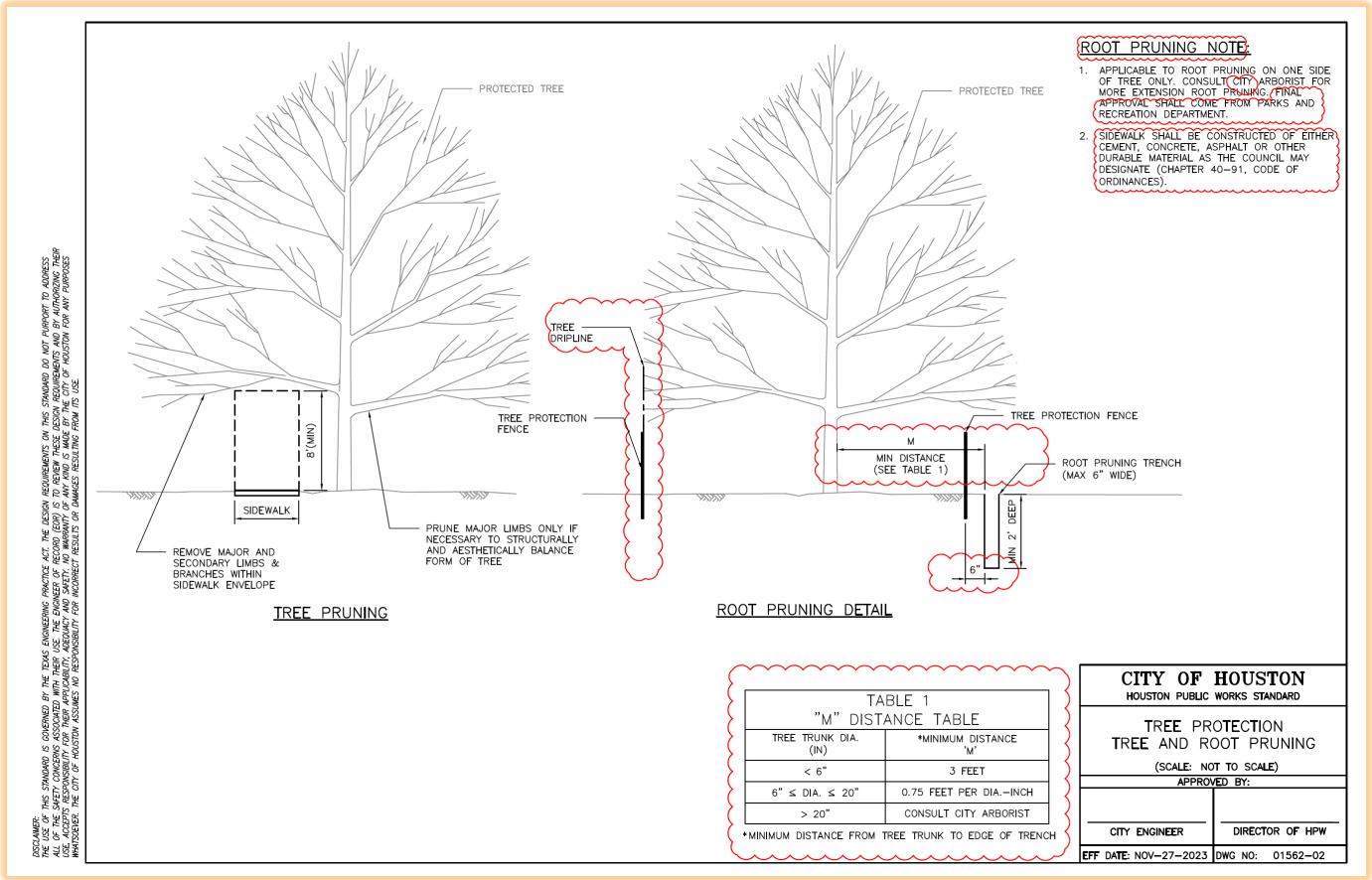
- 02760-04 (prev. 01510-04) Standard Pavement Marking – Symbols
- 02760-09 (prev. 01510-09) Bicycle Lane Pavement Markings
- 02760-10 (prev. 01510-09A) Bicycle Intersection Treatments



# STANDARD DETAILS UPDATES

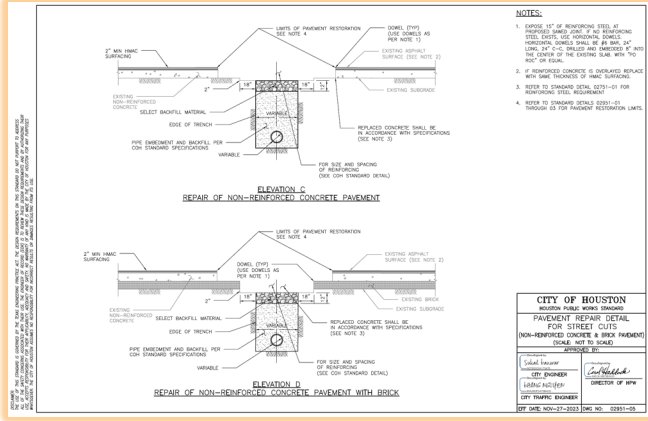
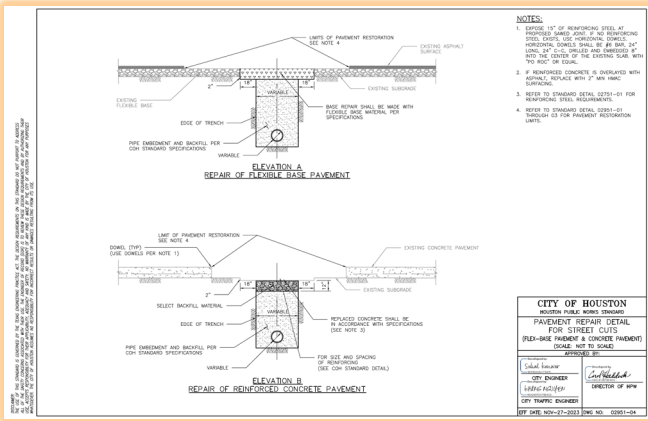
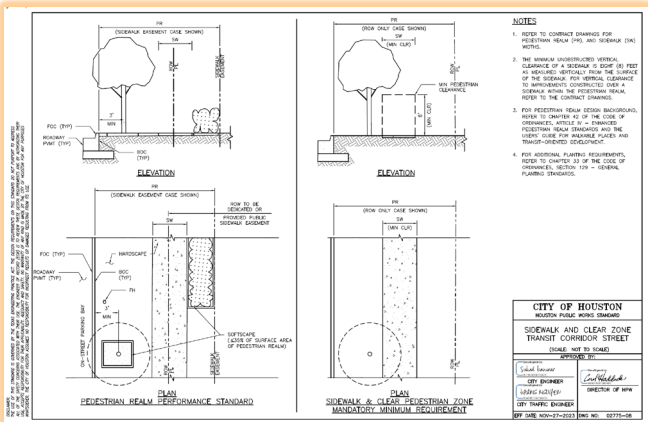
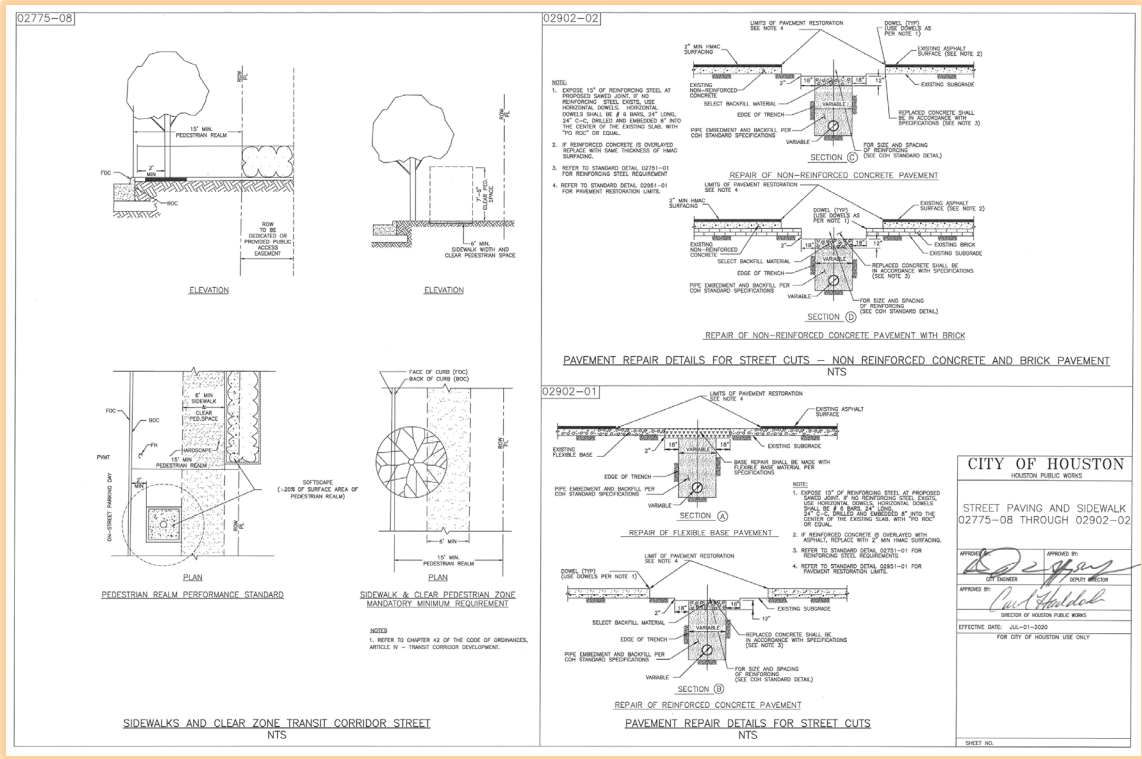
## STANDARD DETAILS WITH TECHNICAL CHANGES

### ➤ Tree & hardscape standard details



# STANDARD DETAILS UPDATES:

## ➤ Standard Details Separated



# STANDARD DETAILS ON OUR WEBPAGE:

<https://www.houstonpermittingcenter.org/office-city-engineer/design-and-construction-standards> -

CONTACT
STANDARDS REVIEW COMMITTEE
INFRASTRUCTURE DESIGN MANUAL
CONSTRUCTION SPECIFICATIONS
<b>STANDARD DETAILS</b>
STORM SEWER DETAILS
PRODUCT APPROVALS
PROJECT MANUAL RESOURCES
LIFT STATIONS
CAD TOOLS AND TEMPLATES
CAPITAL PROJECTS

Standard Details	
Standard detail title blocks should be loaded to the DWG format of the standard details as they are external references (xref).	
<b>Standard Detail Title Blocks</b>	>
<b>General Details</b>	>
<b>Standard Details for Street Cuts</b>	>
<b>Standard Details for Street Paving and Sidewalk</b>	>
<b>Standard Details for Traffic</b>	>
<b>Standard Details for Tree and Hardscape Protection</b>	>
<b>Standard Details for Wastewater Lines</b>	>
<b>Standard Details for Water Lines</b>	>

# STANDARD DETAILS ON OUR WEBPAGE:

CONTACT

STANDARDS REVIEW COMMITTEE

INFRASTRUCTURE DESIGN MANUAL

CONSTRUCTION SPECIFICATIONS

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Standard Details

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Standard Detail Title Blocks

List of Standard Details

2023 List of Standard Details

PDF

General Details

Standard Details for Street Cuts

Standard Details for Street Paving and Sidewalk

Standard Details for Traffic

Standard Details for Tree and Hardscape Protection

Standard Details for Wastewater Lines

Standard Details for Water Lines

2023 STREET PAVING AND SIDEWALK DETAILS				
Changes in number, title or effective date are bold				
Standard Detail No. (2022)	Standard Detail No. (2023)	Standard Detail Title (2022)	Standard Detail Title (2023)	Effective Date
02632-11	02632-11	Side Street Ditch Reception	Side Street Ditch Reception	10/1/2002
02741-01	02741-01	Hot Mix Asphaltic Concrete Pavement Details	Hot Mix Asphaltic Concrete Pavement Details	11/27/2023
02751-01	02751-01	Concrete Pavement Details	Concrete Pavement Details	11/27/2023
02752-01	02752-01	Pavement Expansion and Construction Joint Details	Pavement Expansion and Construction Joint Details	11/27/2023
02752-02	02752-02	Sidewalk Expansion and Construction Joint Details	Sidewalk Expansion and Construction Joint Details	11/27/2023
02754-01A	02754-01A	Driveway/Local Residential Streets	<b>Driveway Detail with 4"x12" Curb for Local Residential Street</b>	11/27/2023
02754-01B	02754-01B	Driveway Detail with 6" Curbed Streets	Driveway Detail with 6" Curbed Streets	11/27/2023
02754-02	02754-02	Driveways with Culverts or Valley Gutters on Open Ditch Type Streets	<b>Driveways with Culverts on Open Ditch Type Streets</b>	11/27/2023
02754-03	02754-03	Proposed Sidewalk Through Driveway with Excessive Elevation Difference	Proposed Sidewalk Through Driveway with Excessive Elevation Difference	11/27/2023
02754-04	02754-04	Existing/Proposed Curb Level Sidewalk Conditions	<b>Proposed Sidewalk Through Driveway with Minimal Elevation Difference</b>	11/27/2023
02771-01	02771-01	Curb, Curb and Gutter, and Header Details	Curb, Curb and Gutter, and Header Details	11/27/2023
NA	<b>02771-02</b>	NA	<b>14" Wide Precast Concrete Curb for Bicycle Lanes</b>	11/27/2023
02772-01	02772-01	Esplanade Nose and Left Turn Details	Esplanade Nose and Left Turn Details	11/27/2023
02775-01	02775-01	Concrete Sidewalk Details for Streets with Curbs	<b>Typical Sidewalk Layout and Details for Streets with Curbs</b>	11/27/2023



# STANDARD DETAILS ON OUR WEBPAGE:

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Standard Details

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Standard Detail Title Blocks

ANSI A 8.5 x 11 inCity of Houston Standard Detail Title BlockPDF | DWG

ANSI B 17 x 11 inCity of Houston Standard Detail Title BlockPDF | DWG

ANSI D 34 x 22 inCity of Houston Standard Detail Title BlockPDF | DWG

General Details

Standard Details for Street Cuts

Standard Details for Street Paving and Sidewalk

Standard Details for Traffic

Standard Details for Tree and Hardscape Protection

Standard Details for Wastewater Lines

Standard Details for Water Lines

CITY OF HOUSTON

HOUSTON PUBLIC WORKS STANDARD

EXAMPLE TITLE

EXAMPLE TITLE

EXAMPLE TITLE (MOD)

(SCALE: NOT TO SCALE)

MODIFIED STANDARD

EFF DATE: XXXX-XX-20XXDWG NO: XXXXX-XX

## 3.1.06 MODIFICATIONS TO STANDARD DETAILS

3.1.06.A

Modifications to standard details are allowed. Any modifications to a City standard detail during the project’s design phase, however minor, must follow the requirements in 3.1.06.B.

3.1.06.B

Modification Process:

1.

CAD files to be used for creating modified standard details are posted online. These CAD files have been modified to remove the City Engineer and Houston Public Works Director’s signature. City signatures will not be allowed on modified standard details.

2.

All changes in each sheet that are pertinent to each modification shall be enclosed in revision “clouds”.

3.

The letter of the modification, beginning with “A”, shall be placed inside of a triangle, commonly known as a “delta”. The letter is meant to indicate the engineer who modified the standard detail. If multiple engineers modify details on the same sheet, they shall use different revision letters. Letters shall only be used for modifications to standard details during the design phase. For modifications during the construction phase follow SECTION 5 of this chapter.

4.

Each modification delta shall be placed adjacent to the corresponding modification cloud(s) and next to the corresponding engineer’s seal. Modification deltas and clouds shall not be removed from the sheet at any time.

5.

It is acceptable to have multiple clouds with the same modification delta on a sheet if all changes are approved by the same Engineer of Record.

6.

The designation "MOD" must be appended to the standard detail title, the sheet title (if different than standard detail title) and must be reflected in the sheet index.


7.

Each modification must be documented on the title block area of each sheet.

8.

All modification information must be filled out, including the letter of the modification, date, a brief description that explains each item changed, and approver.

3.1.06.B  
continued

 HOUSTON  
PUBLIC WORKS

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# QUESTIONS?

Enter it into the chat.

Note the chapter or topic in your question.

We will respond to unanswered questions on our website after this event.



# CLOSING

**MARY FOSTER, P.E.**

**OFFICE OF THE CITY ENGINEER**

**DESIGN AND CONSTRUCTION STANDARDS**

**CHANGES WERE EFFECTIVE  
NOVEMBER 27, 2023**



# IMPLEMENTATION: MORE INFO

## 2023 IDM Announcement & Executive Summary

Announcement: 2023 Infrastructure Design Manual is now effective



Houston Public Works (HPW) has completed the 2022-2023 Review Cycle. The following has been updated.

- [Infrastructure Design Manual \(IDM\)](#).
- [General Requirements](#).
- [Standard Construction Specifications](#).
- [Standard Details](#).

Houston Public Works capital improvement projects with 60% designs submitted on or after November 27, 2023, must comply with the NEW requirements in the 2023 Infrastructure Design Manual (IDM).

Public/private sector projects submitted for initial review on or after November 27, 2023, must comply with all requirements in the 2023 IDM. Substantially complete plans submitted for initial review prior to November 27, 2023, will be held to the 2022 requirements.

If applicants have submitted a project before November 27, 2023, and would like to use the 2023 requirements, the existing project MUST BE CANCELED AND a new project submitted. Reminder: All 2023 IDM requirements will be enforced. Refunds will NOT be given, and new fees will be applied.

Directions on How to Cancel Your Current Project

1. Send an e-mail to [OCE@houstontx.gov](mailto:OCE@houstontx.gov) on company letterhead with
  1. Project Number
  2. Cancellation Request
2. Once completed the Office of the City Engineer will email a confirmation with any outstanding balance information.
3. Pay your balance AND email a copy of your receipt to [OCE@houstontx.gov](mailto:OCE@houstontx.gov).

DocuSign Envelope ID: A9238BDF-B069-4186-9F34-0325F404466A



### EXECUTIVE SUMMARY

2022-2023 Review Cycle

both updated to reflect Houston context and higher standards set by NACTO. The Criteria for Midblock Crosswalk table was renamed to Level of Treatment Criteria Summary, level of treatment D was removed and a note that high visibility signs may not be sufficient for these crossings and that higher levels of treatment may be necessary was added. The Minimum Sidewalk Width Standards table was updated to indicate the City's preferred width of 6 feet and minimum width of 5 feet for all other public streets. A Minimum Dimensions for Median Refuge Islands table was added. A Raised Crosswalk Dimensions and Slope table was added. The spacing requirements in the 'U' Rack Spacing Standards table were updated. Numerous minor modifications were made to clarify design requirements.

#### Chapter 18 Encroachment Requirements

A new encroachment requirements chapter was created. Residential subdivision marker requirements and skybridge requirements were moved from Chapter 16 to this chapter. Monitoring well encroachment requirements were added.

#### IDM Supplements

The City creates supplements for the IDM when there is a need to revise a current IDM chapter that is outside of its normal review cycle period. At the time when a new IDM is to be released, any active supplements are incorporated into the new IDM and those supplements subsequently deactivated.

Prior to the completion of the 2022-2023 review cycle, there were no active IDM supplements therefore no IDM supplements have been incorporated into the IDM for the 2023 release.

#### Infrastructure Design Manual Implementation

- The 2023 Infrastructure Design Manual is effective November 27, 2023.
- **Capital Improvement Projects**  
Phase II final designs (60% submittals) that are submitted for a review on or after November 27, 2023, will be required to comply with the new Infrastructure Design Manual.
- **Private Sector**  
Plans submitted for initial review on or after November 27, 2023, will be required to comply with the new Infrastructure Design Manual.

#### CONSTRUCTION SPECIFICATIONS

##### Revised Specifications

Various specifications, that are associated with the IDM chapters reviewed during the 2022-2023 review cycle, were reviewed and updated. A total of twenty-one (21) specifications included technical changes, three (3) specification were created, and six (6) specifications were retired. A new section named "Related Sections" was added to all specifications that reference City standard specifications. Specifications related to this year's review cycle were restructured to conform with CSI format. A list of all specifications that contained technical changes, were added or retired is provided at the end of this executive summary.



# UPCOMING REVIEW CYCLE





# **2023 – 2024 REVIEW CYCLE**

## **STORMWATER IDM CHAPTER:**

- Chapter 9 – Stormwater Design and Water Quality

## **ASSOCIATED CONSTRUCTION SPECIFICATIONS & DETAILS**

# 2023 – 2024 REVIEW CYCLE

**Public Notice was posted**

**Comment Period:**

**August 1, 2023 – October  
31, 2023**

**2024 IDM Publication:  
Estimated October 1, 2024**



# QUESTIONS ON TODAY'S WEBINAR?

Enter it into the chat.

Note the chapter or topic in your question.

We will respond to unanswered questions on our website after this event.

# **ADDITIONAL QUESTIONS?**

**SEND THEM TO:**

**HPWSTANDARDS@HOUSTONTX.GOV**

# WEBINAR AND FAQ'S AFTER THIS EVENT

1. Go to <https://houstonpermittingcenter.org/office-city-engineer/design-and-construction-standards>
2. Select “Infrastructure Design Manual” tab.
3. This webinar presentation and FAQ’s will be posted under “IDM Webinar”





# Thank you!



[houstonpermittingcenter.org](http://houstonpermittingcenter.org)



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