

2006 CODE CHANGES

Adopted August 23, 2006



BUILDING CODE

117.2.1 Buildings. The following building permit fees shall be required by this code:

New buildings, additions, alterations, remodels, conversions, and repairs:

Where the valuation (rounded to the nearest dollar) is from:

\$0.01 to \$7,000	\$35.00
\$7,001 to \$150,000	\$35.00 for the first \$7000 plus \$4.00 for every additional \$1,000 valuation, or fraction thereof
\$150,001 to \$200,000	\$607.00 for the first \$150,000 plus \$3.75 for every additional \$1,000 valuation, or fraction thereof
\$200,001 to \$300,000	\$794.50 for the first \$200,000 plus \$3.50 for every additional \$1,000 valuation, or fraction thereof
\$300,001 to \$500,000	\$1,144.50 for the first \$300,000 plus \$3.25 for every additional \$1,000 valuation, or fraction thereof
\$500,001 to \$1,000,000	\$1,794.50 for the first \$500,000 plus \$3.00 for every additional \$1,000 valuation, or fraction thereof
\$1,000,001 to \$5,000,000	\$3,294.50 for the first \$1,000,000 plus \$2.75 for every additional \$1,000 valuation, or fraction thereof
\$5,000,001 and up to \$50,000,000	\$14,294.50 for the first \$5,000,000 plus \$2.50 <u>\$1.50</u> for every additional \$1,000 valuation, or fraction thereof
<u>\$50,000,001 and up</u>	<u>\$81,794.50 for the first \$50,000,000</u> <u>plus \$1.00 for every additional \$1,000 valuation, or fraction thereof.</u>

Notes:

1. New single family homes with a valuation of \$115,000 or less shall receive a 50 percent discount on permit fees.
2. A historic building that has been designated by the jurisdiction as a landmark or that is located within a historic district designated by the jurisdiction, or for which designation as a landmark or part of a historic district is pending, shall receive a 50 percent discount on permit fees provided that a certificate of appropriateness approved by the Houston Archaeological and Historical Commission pursuant to Chapter 33 of the City Code is submitted with the construction documents.
3. Towers other than sign structures shall be charged in the same manner as new buildings, as set forth in Section 117.2.1.

Demolition of any building:

For the first story	\$60.00
For each additional story	\$30.00

Stationary and floating piers:

First 100 square feet of deck area	\$20.00
Each additional square foot	\$0.15

Incinerators (other than domestic outdoor type), each	\$75.00
Bulkheads:	
For first 100 lineal feet or part thereof	\$40.00
Each additional 100 lineal feet or part thereof	\$10.00
Dredging.....	\$100.00
Prefabricated fireplaces	\$15.00
Sand blasting or water blasting	\$35.00
Grading permit	\$35.00
Loading docks (uncovered):	
First 100 lineal feet or part thereof	\$35.00
Each additional lineal foot	\$0.08
Barricades:	
First 100 lineal feet	\$55.00
Each additional 100 lineal feet or part thereof	\$15.00
Paint spray booth	\$35.00
Heliports and helistops (interdepartmental inspections--health, structure, fire and aviation safety)	\$700.00
Duplicate job card	\$55.00

[F] 307.1 High-Hazard Group H. High-Hazard Group H occupancy includes, among others, the use of a building or structure, or a portion thereof, that involves the manufacturing, processing, generation or storage of materials that constitute a physical or health hazard in excess of quantities allowed in control areas constructed and located as required in Section 414. Hazardous uses are classified in Groups H-1, H-2, H-3, H-4 and H-5 and shall be in accordance with this section, the requirements of Section 415 and the *Fire Code*.

Exceptions: The following shall not be classified in Group H, but shall be classified in the occupancy that they most nearly resemble.

1. Buildings and structures that contain not more than the maximum allowable quantities per control area of hazardous materials as shown in Tables 307.7(1) and 307.7(2) provided that such buildings are maintained in accordance with the *Fire Code*.
2. Buildings utilizing control areas in accordance with Section 414.2 that contain not more than the maximum allowable quantities per control area of hazardous materials as shown in Tables 307.7(1) and 307.7(2).
3. Buildings and structures occupied for the application of flammable finishes, provided that such buildings or areas conform to the requirements of Section 416, NFPA 33, NFPA 34 and the *Fire Code*.
4. Wholesale and retail sales and storage of flammable and combustible liquids in mercantile occupancies conforming to the *Fire Code*.
5. Closed systems housing flammable or combustible liquids or gases utilized for the operation of machinery or equipment.
6. Cleaning establishments that utilize combustible liquid solvents having a flash point of 140°F (60°C) or higher in closed systems employing equipment listed by an approved testing

agency, provided that this occupancy is separated from all other areas of the building by 1-hour fire-resistance-rated fire barriers.

7. Cleaning establishments which utilize a liquid solvent having a flash point at or above 200°F (93°C).
8. Liquor stores and distributors without bulk storage.
9. Refrigeration systems.
10. The storage or utilization of materials for agricultural purposes on the premises.
11. Stationary batteries utilized for facility emergency power, uninterrupted power supply or telecommunication facilities provided that the batteries are provided with safety venting caps and ventilation is provided in accordance with the *Fire Code* and *Mechanical Code*.
12. Corrosives shall not include personal or household products in their original packaging used in retail display or commonly used building materials.
13. Buildings and structures occupied for aerosol storage shall be classified as Group S-1, provided that such buildings conform to the requirements of the *Fire Code*.
14. Display and storage of nonflammable solid and nonflammable or noncombustible liquid hazardous materials in quantities not exceeding the maximum allowable quantity per control area in Group M or S occupancies complying with Section 414.2.4.
15. The storage of black powder, smokeless propellant and small arms primers in Groups M and R-3 and special industrial explosive devices in Groups B, F, M and S, provided such storage conforms to the quantity limits and requirements prescribed in the *Fire Code*.
16. Any building owned by the jurisdiction, located on any city airport, that is leased and used by a certificated air carrier for the in-transit storage of hazardous materials for a period of time that does not exceed seventy-two hours from the time such hazardous material is placed in the building until it is permanently removed.

NOTES:

1. Certificated air carrier is defined as: a U.S. or foreign airline operating scheduled or non-scheduled commercial services pursuant to certificates or exemptions issued by the United States Department of Transportation pursuant to 49 USC Sections 40109, 41102, 41103, or 41302, and certificates or exemptions issued by the United States Federal Aviation Administration pursuant to 14 CFR Parts 121, 125, 129 or 135.
2. City airport is defined in Chapter 9 of the City Code.
3. In-transit storage is defined as: the storage of materials which will be on-loaded onto or off-loaded from an aircraft owned, leased or operated by a certificated air carrier.

307.1.1 Hazardous materials. Hazardous materials in any quantity shall conform to the requirements of this code, including Section 414, and the *Fire Code*.

Exception: Hazardous materials stored in any building exempted pursuant to Section 307.1, Exception 16.

308.5.2 Child care facility. A facility that provides supervision and personal care on less than a 24-hour basis for more than five children 2½ years of age or less shall be classified as Group I-4.

Exception: A child day care facility that provides care for more than five but no more than 100 children 2 ½ years of age or less of age, when the rooms where such children are cared for are located on the level of exit discharge and each of these child care rooms has an exit door directly to the exterior or the fire area is sprinklered, shall be classified as Group E.

****Delete TABLE 1005.1 from code and replace with the following****

**TABLE 1005.1
EGRESS WIDTH PER OCCUPANT SERVED**

OCCUPANCY	STAIRWAYS (inches per occupant)	OTHER EGRESS COMPONENTS (inches per occupant)
All occupancies	0.3	0.2

1008.1.8.3 Locks and latches. Locks and latches shall be permitted to prevent operation of doors where any of the following exists:

1. Places of detention or restraint.
2. In buildings in occupancy Groups A, B, F, M and S, the main exterior door or doors are permitted to be equipped with key-operated locking devices from the egress side provided:
 - 2.1. A readily visible durable sign is posted on the egress side on or adjacent to the door stating: "THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED". The sign shall be in letters 1 inch (25 mm) high on a contrasting background.
 - 2.2-2.3. The use of the locking device is revokable by the building official for failure to conform to any applicable requirement of this code or other laws.
3. Where egress doors are used in pairs, approved automatic flush bolts shall be permitted to be used, provided that the door leaf having the automatic flush bolts has no doorknob or surface-mounted hardware.
4. Doors from individual dwelling or sleeping units of Group R occupancies having an occupant load of 10 or less are permitted to be equipped with a night latch, dead bolt or security chain, provided such devices are operable from the inside without the use of a key or tool.
5. In buildings in occupancy Group B that have an occupant load of 10 or less, doors may be equipped with a manually operated deadbolt in addition to a door latch.

1008.1.8.4 Bolt locks. Manually operated flush bolts or surface bolts that operate vertically are not permitted.

Exceptions:

1. On doors not required for egress in individual dwelling units or sleeping units.
2. When one active leaf of a pair of doors provides the required exit width, manually operated edge- or surface-mounted bolts may be used on the inactive leaf and a door closer need not be provided on the inactive leaf.
3. In buildings in occupancy Group B that have an occupant load of 10 or less, doors may be equipped with a manually operated deadbolt in addition to a door latch.

1603.3 Reserved. Live loads posted. ~~Where the live loads for which each floor or portion thereof of a commercial or industrial building is or has been designed to exceed 50 psf (2.40 kN/m²), such design live loads shall be conspicuously posted by the owner in that part of each story in which they apply, using durable signs. It shall be unlawful to remove or deface such notices.~~

3002.8 Elevator pits. All elevator pits shall be provided with a sump pump. The sump pump shall be hard piped and hard wired and equipped with a hose bibb located at least 36 inches (914.4 mm) above the elevator door sill inside the hoistway or elevator machinery room.

3110.5 State review of plans. The Texas Department of Transportation shall review plans for proposed construction of driveways, sidewalks, parking lots and alleys into or abutting state highways and freeway frontage roads. Evidence of the review and approval must be submitted with plans prior to obtaining the jurisdiction's approval.

Exception: ~~State highways with curb-type construction will not require the state's review.~~

NOTE: The state's concurrence to proposed construction is insufficient alone since it is conditioned upon the jurisdiction's granting final approval.

3110.6 Standards for design and construction. There are hereby approved and adopted the drawings listed below which have been prepared by the jurisdiction's Department of Public Works and Engineering setting forth in detail the standards for design and/or construction of driveways, sidewalks, parking lots and alleys. The following drawings are shown at the end of this chapter:

1. Driveway Geometrics (T&T Dwg. No. 2156).
2. Space Requirement for Off-street Parking (T&T Dwg. No. 2157).
- ~~2-3.~~ Construction Standards for Driveways and Sidewalks on Curb-type Streets (P.W. Dwg. No. 02754-01).
- ~~3-4.~~ Construction Standards for Driveways with Culverts or Valley Gutters on Open Ditch-type Streets (P.W. Dwg. No. 02754-02).
- ~~4-5.~~ Wheelchair ramp:
 - 5a. Wheelchair ramp details (P.W. Dwg. No. 02775-02), 02775-03,
 - 5b. Curb modifications for wheel chair ramps and crosswalks (P.W. Dwg. No. 02775-04),
 - 5c. Commercial curb ramp detail (P.W. Dwg. No. 02775-05).
- ~~5-6.~~ Monolithic Curb and Gutter (P.W. Dwg. No. 02771-01).
- ~~6-7.~~ Typical "D" Inlet (P.W. Dwg. No. 02632-07).
- ~~7-8.~~ Typical "D-1" Inlet (P.W. Dwg. No. 02632-08).
- ~~8-9.~~ Type "B" Inlet Relocation (P.W. Dwg. No. 02632-03).
- ~~9-10.~~ Type "B-B" Inlet Relocation (P.W. Dwg. No. 02632-05).
- ~~10-11.~~ Pavement repairs:
 - 11a. Pavement repair details for street cuts (P.W. Dwg. No. 02902-01),
 - 11b. Pavement repair details for street cuts (P.W. Dwg. No. 02902-02),
 - 11c. Concrete pavement less than 5 years in age (P.W. Dwg. No. 02951-01),
 - 11d. Concrete pavement over 5 years in age (P.W. Dwg. No. 02951-02),
 - 11e. Asphalt pavement for pavement of all ages (P.W. Dwg. No. 02951-03).
12. Storm Sewer Ring Grate for Open End of 18" to 72" RCP Stubs to Ditch (P.W. Dwg. No. 02084-11).

3110.10 Street curb and gutter replacement. Where construction of driveways and sidewalks will require the removal and replacement of curb and gutter over a continuous run in excess of 25 percent of any one block, a plan shall be submitted to the jurisdiction's Department of Public Works and Engineering. In addition to the requirements in Section 3110.7, the following shall be shown on the plans:

1. A continuous profile plotted to a scale of 1 inch equals 2 feet horizontally, containing all the existing and proposed profiles necessary for reviewing.

The proposed gutter grade shall meet the following minimum design criteria:

- 1.1. Minimum gutter grade, except at corner curb returns, shall be ~~0.3~~0.25 percent (3-inch fall per 100 feet).
 - 1.2. Minimum gutter grade around corner curb returns shall be 1.00 percent (example: 0.22-foot fall around 14-foot radius).
 - 1.3. A vertical curve with elevations given every 10 feet will be required where the algebraic difference of the proposed gutter grades exceeds 1.00 percent other than at corner curb radius grades.
2. Construction details for replacing curb and gutter and/or base shall be provided when it is necessary to remove same for realignment of curb and gutter horizontally or vertically. Method of the tie of proposed curb and gutter and/or base to existing pavement, with or without reinforcing steel, shall be given in detail. In order to provide adequate cross-slope drainage on asphalt streets, Type F asphalt must be feathered toward the crown of the street. A minimum 1/4 inch per foot slope will be required when raising proposed gutter above existing gutter line. Refer to P.W. Drawing No. 02771-01. Contact the ~~jurisdiction's~~ Office of the City Engineer of the jurisdiction's Department of Public Works and Engineering for clarification of these requirements when necessary.
 3. Curb cuts and curb penetrations are prohibited excepted when specifically approved by the Office of the City Engineer.

3110.18 Driveways prohibited. Driveways are prohibited within any of the following areas:

1. The areas set forth by the Texas Department of Transportation as "access denied."
2. The areas designated "access denied" on recorded subdivision plats or another plat required to be approved by the City of Houston Planning Commission.
3. At the end of any dead-end street not terminating in a cul-de-sac or permanent turnaround and intended to be extended in the future.
4. The limits of any intersection, with the exception that special consideration will be given to major thoroughfares with existing esplanades and streets primarily used for residential use.
5. Abutting a local street where there is less than 20 feet of unobstructed depth from the right-of-way line to any obstruction. An overhead door will not be deemed as an obstruction provided that the width of the door is equal to or greater than the width of the driveway and there is also a minimum of 20 feet unobstructed depth on the private property where vehicles can be parked.
6. An area abutting major thoroughfares where the general design of parking does not provide the necessary depth 44 feet (~~13-420 mm~~) to allow a vehicle when exiting to enter the thoroughfare in a head-out position.
7. Any area where the jurisdiction's Department of Public Works and Engineering finds that it would not provide reasonable access to the private property consistent with the safety and convenience of the traveling public.

8. Within areas of unpaved street or alley rights-of-way, except as authorized by Section 40-340 of the *City Code*.

Where the construction of any building or structure upon a property causes a driveway to no longer comply with items 6 or 7, above, the driveway shall be removed and the area restored to its original state.

Adding the latest City Engineer's drawings. SEE REFERENCED DRAWINGS AT END OF DOCUMENT

CHAPTER 35*

REFERENCED STANDARDS

This chapter lists the standards that are referenced in various sections of this document. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title, and the section or sections of this document that reference the standard. The application of the referenced standards shall be as specified in Section 102.4.

NFPA	National Fire Protection Association 1 Batterymarch Park Quincy, MA 02269-9101	
Standard reference number	Title	Referenced in code section number
11-98-2002	Low Expansion Foam	904.7
11A-99	Medium- and High-Expansion Foam Systems	904.7
12-00	Carbon Dioxide Extinguishing Systems	904.8, 904.11
12A-97-2004	Halon 1301 Fire Extinguishing Systems	904.9
13-99-2002	Installation of Sprinkler Systems507.2, 704.12, 707.2, 903.3.1.1, 903.3.2, 903.3.5.1.1, 904.11, 907.8, 1621.3.10.1, 3104.5, 3104.9	
13D-99-2002	Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes 903.1.2, 903.3.1.3, 903.3.5.1.1	
13R-99-2002	Installation of Sprinkler Systems in Residential Occupancies Up to and Including Four Stories in Height903.1.2, 903.3.1.2, 903.3.5.1.1, 903.3.5.1.2, 903.4	
14-00	Installation of Standpipe, Private Hydrants and Hose Systems	905.2, 905.3.4, 905.4.2, 905.8
16-99-2003	Installation Foam-Water Sprinkler and Foam Water Spray Systems	904.7, 904.11
17-98-2002	Dry Chemical Extinguishing Systems	904.6, 904.11
17A-98-2002	Wet Chemical Extinguishing Systems	904.5, 904.11
30-00	Flammable and Combustible Liquids Code	415.3
32-00	Drycleaning Plants	415.7.4
40-97	Storage and Handling of Cellulose Nitrate Motion Picture Film	409.1
61-99	Prevention of Fires and Dust Explosions in Agricultural and Food Product Facilities	415.7.1

72-99-2002	National Fire Alarm Code505.4, 901.6, 903.4.1, 904.3.5, 907.2, 907.2.1, 907.2.1.1, 907.2.10, 907.2.10.4, 907.2.11.2, 907.11.3, 907.2.12.2.3, 907.2.12.3, 907.4, 907.5, 907.9.2, 907.10, 907.14, 907.16, 907.17, 911.1, 3006.5
80-99	Fire Doors and Fire Windows302.1.1.1, 715.3, 715.4.6.1, 715.4.4, 715.4.7.2, 715.5, 1008.1.3.3
85-01	Boiler and Combustion System Hazards Code 415.7.1 (Note: NFPA 8503 has been incorporated into NFPA 85)
101-00-2003	Life Safety Code 1024.6.2
110-99	Emergency and Standby Power Systems 2702.1
111-01	Stored Electrical Energy Emergency and Standby Power Systems 2702.1
120-99	Coal Preparation Plants 415.7.1
231C-98	231C HAS BEEN REPLACED BY NFPA 13-Rack Storage of Materials 507.2
252-99	Standard Methods of Fire Tests of Door Assemblies715.3.1, 715.3.2, 715.3.3, 715.3.4.1
253-00	Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source 406.6.4, 804.2, 804.3
257-00	Standard for Fire Test for Window and Glass Block Assemblies715.3.3, 715.4, 715.4.1, 715.4.2
259-98	Test Method for Potential Heat of Building Materials2603.4.1.10, 2603.5.3
265-98	Standard Method of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Wall Coverings 803.6.1, 803.6.1.1, 803.6.1.2
268-96	Standard Test Method for Determining Ignitibility of Exterior Wall Assemblies Using a Radiant Heat Energy Source 1406.2.1, 1406.2.1.1, 1406.2.1.2, 2603.5.7
285-98	Standard Method of Test for the Evaluation of Flammability Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components Using the Intermediate Scale, Multistory Test Apparatus 1407.10.4, 2603.5.5
2846-00	Standard Method of Fire Test for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth 402.14.4, 803.2, 803.2.1, 803.5, 2603.4, 2603.8
409-95-2001	Standard on Aircraft Hangers 412.2.6, 412.4.5
418-01	Standard for Heliports 412.4.5.6
651-98	Machining and Finishing of Aluminum and the Production and Handling of Aluminum Powders 415.7.1
654-00	Prevention of Fire & Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids 415.7.1
655-93	Prevention of Sulfur Fires and Explosions 415.7.1
664-98	Prevention of Fires Explosions in Wood Processing and Woodworking Facilities 415.7.1
701-99	Standard Methods of Fire Tests for Flame-Propagation of Textiles and Films 802.1, 805.1, 805.2, 3102.3.1, 3105.3
704-96	Standard System for the Identification of the Hazards of Materials for Emergency Response 414.7.2, 415.2
1124-98	Manufacture, Transportation, and Storage of Fireworks and Pyrotechnic Articles 415.3.1
2001-00-2004	Clean Agent Fire Extinguishing Systems 904.10

***NOTE: ALL OTHER PORTIONS OF CHAPTER 35 TO REMAIN AS SET FORTH IN THE 2003 INTERNATIONAL BUILDING CODE.**

MECHANICAL CODE

123.0 Boiler Operator's Permit

An owner or user of any hot-water-heating boiler, ~~or~~ low-pressure hot-water-heating boiler, or steam heating boiler at pressure of 15 pounds per square inch or less used to heat water or liquid for environmental heating or commercial processing purposes or a power boiler having an aggregate heat output that does not exceed 1,676,000 Btu per hour, may apply to the board for a permit to allow the boiler to be operated by the owner or user or by a person knowledgeable in the operation of the boiler, instead of by a licensed stationary engineer. The person who is to operate the boiler or boilers shall be the owner of the boiler or his or her bona fide employee and shall demonstrate competency to do so in a manner determined by the board. The board shall establish the method of testing and the minimum knowledge, ability, and qualifications such person must demonstrate to show competency to operate the distinctive types of boilers. If a person demonstrates competency in the operation of the type of boiler for which the permit is sought, the permit shall be granted upon the payment of a permit fee of \$25.00. The permit shall expire on December 31st of each year, unless sooner suspended or revoked for cause.

Renewal of such permits shall be granted upon the payment of \$25.00 if the renewal is applied for within 30 days after the expiration of such permit. If the renewal is not applied for within 30 days, the applicant may renew the permit upon payment of a fee of \$30.00.

A permit shall be valid only for the specific location and for the boiler(s) at the location named on the permit. Separate permits may be issued for a person to operate boilers at two or more locations owned by the employer of the boiler operator listed on the permit.

When a permit is issued for boiler operation at two or more locations, the applicant must file for a separate boiler operator permit for each location and pay the fee for each boiler operator permit received.

When an operator's permit becomes lost or destroyed, the board may grant a new permit on the same basis as is set out in Section 122.2.4 for the replacement of a stationary engineer's license.

All permits issued for the operation of boilers in effect immediately preceding the adoption of this code by City Council shall expire on the 31st day of December of the year in which this code is adopted. Any such permit may be renewed as though it had been originally issued pursuant to this code.

215.0*

MECHANICAL INTEGRITY means physical installation of products, systems or equipment in accordance with their intended purpose and according to the manufacturer's specifications and manufacturer's installation instructions.

508.6 Air Velocity. Grease duct systems serving a Type I hood shall be designed and installed in a manner to provide an air velocity within the duct system of not less than ~~1500~~ 500 feet per minute (~~7.65~~ 2.54 m/s) and not to exceed 2500 feet per minute (12.8 m/s).

PLUMBING CODE

402.6 Metered Faucets. Self-closing or self-closing metering faucets shall be installed on lavatories intended to serve the transient public, such as those in, but not limited to, service stations, train stations, airports, restaurants and convention halls. Metered faucets shall deliver not more than 0.25 gallons (1.0 liter) of water per use.

807.4 ~~No domestic dishwashing machine shall be directly connected to a drainage system or food waste disposer without the use of an approved dishwasher airgap fitting on the discharge side of the dishwashing machine. Listed airgaps shall be installed with the flood level (FL) marking at or above the flood level of the sink or drainboard, whichever is higher.~~ Domestic dishwashing machines may be connected to a food waste grinder, or to a branch tailpiece if no disposal is used. The dishwasher hose shall be a minimum of 0.75 inch and must be fastened to the underside of the counter top before connecting to a tailpiece or grinder.

RESIDENTIAL CODE

R101.1 Title. These provisions shall be known as the *Residential Code for One- and Two-Family Dwellings of the City of Houston*, and shall be cited as such and will be referred to herein as “this code.”

The ~~*Building Code of the City of Houston, Texas, Construction Code*~~ collectively includes this volume and certain other codes, pamphlets, specifications and documents that are adopted in or by reference through the adopting ordinance, which appears in the preamble of the *City of Houston Building Code—General Provisions, Volume 1*.

R101.2 Scope. The provisions of the *International Residential Code for One- and Two-Family Dwellings* shall apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, removal and demolition of detached one- and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories in height with a separate means of egress and their accessory structures. Buildings that exceed three stories in height shall comply with the *City of Houston Building Code—General Provisions, City of Houston Electrical Code of the City of Houston, City of Houston Mechanical Code, and City of Houston Plumbing Code*. One- and two-family dwellings and townhouses shall be classified as Group R Division 3 Occupancies and accessory structures shall be classified as Group U Occupancies.

R102.9 Special piping and storage systems. Chapter 22 Special Piping and Storage Systems of this code is not adopted. See the *City of Houston Fire Code* regarding flammable and combustible liquids.

R102.10 Electrical Code. Part VIII—Electrical (Chapters 33 – 42) of this code is not adopted. All electrical work and licensing shall comply with the *City of Houston Electrical Code of the City of Houston*. All references made to *ICC Electrical Code* are to be considered as made to the *City of Houston Electrical Code of the City of Houston*.

R104.12 Stop orders. The building official may order work stopped hereunder in the same manner provided in Section ~~104.2.4-114~~ of the *City of Houston Building Code—General Provisions*.

R105.2 Work exempt from permit. Permits shall not be required for the following. Exemption from the permit requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or ordinances of this jurisdiction.

Building:

1. One-story detached accessory structures, provided the floor area does not exceed 120 square feet (11.15 m²).
2. Fences not over 8 feet (2438 mm) high that are not constructed of masonry or concrete.
3. Retaining walls that are not over 4 feet (1219 mm) in height measured from the bottom of the footing to the top of the wall, unless supporting a surcharge.
4. Water tanks supported directly upon grade if the capacity does not exceed 5,000 gallons (18 927 L) and the ratio of height to diameter or width does not exceed 2 to 1.
5. Sidewalks, decks and driveways, not in the public way, and not more than 30 inches (762 mm) above adjacent grade and not over any basement or story below.
6. Painting, papering, tiling, carpeting, cabinets, counter tops and similar finish work, including the repair of damaged gypsum board that is not part of a fire-rated assembly.

7. Prefabricated swimming pools accessory to a one or two family dwelling in which the walls are entirely above grade and if the capacity does not exceed 5,000 gallons (18 927 L).
8. Swings and other playground equipment accessory to a one- or two-family dwelling.
9. Window awnings supported by an exterior wall.

Electrical:

Repairs and maintenance: A permit shall not be required for ~~minor repair work, including~~ the replacement of lamps or the connection of approved portable electrical equipment to approved permanently installed receptacles.

Gas:

1. Portable heating, cooking or clothes drying appliances.
2. Replacement of any minor part that does not alter approval of equipment or make such equipment unsafe.

Mechanical:

1. Portable heating appliance.
2. Portable ventilation appliances.
3. Portable cooling unit.
4. Steam, hot or chilled water piping within any heating or cooling equipment regulated by this code.
5. Replacement of any minor part that does not alter approval of equipment or make such equipment unsafe.
6. Portable evaporative cooler.
7. Self-contained refrigeration systems containing 10 pounds (4.54 kg) or less of refrigerant or that are actuated by motors of 1 horsepower (746 W) or less.

Plumbing:

The stopping of leaks in drains, water, soil, waste or vent pipe; provided, however, that if any concealed trap, drainpipe, water, soil, waste or vent pipe becomes defective and it becomes necessary to remove and replace the same with new material, such work shall be considered as new work and a permit shall be obtained and inspection made as provided in this code.

The clearing of stoppages or the repairing of leaks in pipes, valves or fixtures, and the removal and reinstallation of water closets, provided such repairs do not involve or require the replacement or rearrangement of valves, pipes or fixtures.

R105.6 Suspension or revocation. The building official is authorized to suspend or revoke a permit issued under the provisions of this code wherever the permit is issued in error or on the basis of incorrect, inaccurate or incomplete information, or in violation of any ordinance or regulation or any of the provisions of this code. Prior to taking such action the building official shall provide notice of a right to a hearing on the matter pursuant to Section ~~404.2.11~~ 116 of the *City of Houston Building Code-General Provisions*.

R108.2 Schedule of permit fees. On buildings, structures, electrical, gas, mechanical, and plumbing systems or alterations requiring a permit, a fee for each permit shall be paid as required, in accordance with the schedule as established in Section ~~440~~ 117 of the *City of Houston Building Code-General Provisions*.

R110.2 Change in use. Changes in the character or use of an existing structure shall not be made except as specified in Sections 3405 and 3406 Chapter 34 of the *City of Houston Building Code—General Provisions*.

R112.2 Mechanical. The Air-conditioning Mechanical Code Review Board shall, in accordance with the provisions of the *City of Houston Mechanical Code*, hear and decide appeals of orders, decisions or determinations made by the building official relative to the application and interpretation of Part V of this code.

R202*

GRADE FLOOR OPENING. A window or other opening located such that the sill height of the opening is not more than 44 inches (1118 mm) above or below the finished ground level adjacent to the opening.

STAIRWAY. One or more flights of stairs, either exterior or interior, with the necessary landings and platforms connecting them, to form a continuous and uninterrupted passage from one level to another. Stairs or ladders used only to attend equipment or to access an attic or window well are not considered a stairway.

R302.1 Exterior walls. Exterior walls with a fire separation distance less than 3 feet (914 mm) shall have not less than a one-hour fire-resistive rating with exposure from both sides. Projections shall not extend beyond a point one-third the distance to the property line.

Exceptions:

1. Tool and storage sheds, playhouses and similar structures exempted from permits by Section R105.2 are not required to provide wall protection based on location on the lot. Projections beyond the exterior wall shall not extend over the lot line.
2. Roofs of open noncombustible carports may extend to a point two feet from the property line.

R310.1 Emergency escape and rescue required. Basements with habitable space and every sleeping room shall have at least one openable emergency escape and rescue window or exterior door opening for emergency escape and rescue that shall open directly into a public street, public alley, yard or exit court. Where openings are provided as a means of escape and rescue they shall have a sill height of not more than 44 inches (1118 mm) above the floor. Where a door opening having a threshold below the adjacent ground elevation serves as an emergency escape and rescue opening and is provided with a bulkhead enclosure, the bulkhead enclosure shall comply with Section R310.3. The net clear opening dimensions required by this section shall be obtained by the normal operation of the window or door opening from the inside. Escape and rescue window openings with a finished sill height below the adjacent ground elevation shall be provided with a window well in accordance with Section R310.2.

R310.1.5 Yards and courts. Yards and courts shall not be less than 3 feet in width.

R316.2 Guard opening limitations. Required guards on open sides of stairways, raised floor areas, balconies and porches shall have intermediate rails or ornamental closures that do not allow passage of a sphere 4 inches (102 mm) in diameter. Required guards shall not be constructed with horizontal rails or other ornamental pattern that results in a ladder effect.

Exception: The triangular openings formed by the riser, tread and bottom rail of a guard at the open side of a stairway are permitted to be of such a size that a sphere 6 inches (152 mm) cannot pass through.

R317.1.1 Alterations, repairs and additions. When interior alterations, repairs or additions requiring a permit occur, or when one or more sleeping rooms are added or created in existing dwellings, the individual dwelling unit shall be provided with smoke alarms located as required for new dwellings; when the cost of the alteration, repair, or addition exceeds \$5000.00, the smoke alarms shall be interconnected and hard wired.

Exceptions:

1. Smoke alarms in existing areas shall not be required to be interconnected and hard wired where the alterations or repairs do not result in the removal of interior wall or ceiling finishes exposing the structure, ~~unless there is an attic, crawl space, or basement available which could provide access for hard wiring and interconnection without the removal of interior finishes.~~
2. Repairs to the exterior surfaces of dwellings are exempt from the requirements of this section.
3. Permits involving only mechanical or plumbing work.

R321.2.2 Parapets. Parapets constructed in accordance with Section R321.2.3 shall be provided for townhouses as an extension of common exterior or walls in accordance with the following:

1. Where roof surfaces adjacent to the wall or walls are at the same elevation, the parapet shall extend not less than 30 inches (762 mm) above the roof surfaces.
2. Where roof surfaces adjacent to the wall or walls are at different elevations and the higher roof is not more than 30 inches (762 mm) above the lower roof, the parapet shall extend not less than 30 inches (762 mm) above the lower roof surface.

Exception: A parapet is not required in the two cases above when the roof is covered by a minimum class B roof covering, and there is no roof opening within 5 feet of the wall. A chimney that projects through the roof within 5 feet of the common wall is considered to be in compliance if the chimney is built of at least 1-hour rated construction and extends at least 5 feet above the roof decking.

3. A parapet is not required where roof surfaces adjacent to the wall or walls are at different elevations and the higher roof is more than 30 inches (762 mm) above the lower roof. The common wall construction from the lower roof to the underside of the higher roof deck shall not have less than a 1-hour fire resistive rating. The wall shall be rated for exposure from both sides.

R401.6 Foundation elevation. All new buildings constructed within this jurisdiction shall have the finished floor of the building not less than 12 inches above the nearest sanitary sewer manhole rim, or, where no sewer is available, the finished floor shall not be less than 4 inches above the crown of the street.

NOTE: Where a greater elevation is required by Chapter 19 of the City Code, then Chapter 19 shall control.

R401.6.1 Plans and applications. All construction plans and applications submitted for construction, sewer connections or septic systems shall reflect the elevations of the finished floor of the building and the elevation of the nearest manhole or crown of the street, whichever is applicable.

R401.6.2 Damage risk. All permits for connection shall be issued on the condition that the owner will take all the risk of damage that may result from water backing up into the premises from the sewer.

R401.6.3 Existing structures. Existing structures required to be connected with a public or private sewer shall have the finished floor a minimum of 12 inches above the nearest manhole.

Exception: Where the public or private sewer is not of sufficient depth, or where structures required to be connected to the sewer cannot meet the minimum requirements of this section and other ordinances, the building official may authorize the issuance of a permit for an alternate method of construction or installation if it will not be detrimental to the health, welfare, and safety of the public.

M1305.1.3 Appliances in attics. Attics containing appliances requiring access shall be provided with a pull down stairway with a clear opening not less than 22 inches in width and a load capacity of not less than 350 pounds and a clear and unobstructed passageway large enough to allow removal of the largest appliance, but not less than 30 inches (762 mm) high and ~~22~~ 30 inches (~~559~~ 762 mm) wide and not more than 20 feet (6096 mm) in length when measured along the centerline of the passageway from the opening to the appliance. The passageway shall have continuous solid flooring in accordance with Chapter 5 not less than 24 inches (610 mm) wide. A level service space at least 30 inches (762 mm) deep and 30 inches (762 mm) wide shall be present along all sides of the appliance where access is required. ~~The clear access opening dimensions shall be a minimum of 20 inches by 30 inches (508 mm by 762 mm), where such dimensions are large enough to allow removal of the largest appliance.~~

M1405.1 General. Electric baseboard convectors shall be installed in accordance with the manufacturer's installation instructions and the City of Houston Electrical Code of the City of Houston.

M1406.1 General. Electric radiant heating systems shall be installed in accordance with the manufacturer's installation instructions and the City of Houston Electrical Code of the City of Houston.

M1407.1 General. Electric duct heaters shall be installed in accordance with the manufacturer's installation instructions and the City of Houston Electrical Code of the City of Houston. Electric furnaces shall be tested in accordance with UL 1995

G2401.1 (101.2) Application. This chapter covers those fuel gas piping systems, fuel gas utilization equipment and related accessories, venting systems and combustion air configurations most commonly encountered in the construction of one and two-family dwellings and structures regulated by this code.

Coverage of piping systems shall extend from the point of delivery to the connections with gas utilization equipment. (See "point of delivery.") Piping systems requirements shall include design, materials, components, fabrication, assembly, installation, testing, inspection, operation, and maintenance. Requirements for gas utilization equipment and related accessories shall include installation, combustion, and ventilation air and venting.

The omission from this chapter of any material or method of installation provided for in the *City of Houston Plumbing Code* shall not be construed as prohibiting the use of such material or method of installation. Fuel gas piping systems, fuel gas utilization equipment and related accessories, venting systems and combustion air configurations not specifically covered in these chapters shall comply with the applicable provisions of the *City of Houston Plumbing Code*.

This chapter shall not apply to the following:

1. Liquefied natural gas (LNG) installations.
2. Temporary LP-Gas piping for buildings under construction or renovation that is not to become part of the permanent piping system.
3. Except as provided in Section 401.1.1, gas piping, meters, gas pressure regulators, and other appurtenances used by the serving gas supplier in the distribution of gas.
4. The regulations of this chapter shall not be applicable to liquid petroleum gas facilities regulated by the Railroad Commission of Texas pursuant to Chapter 113 of the *Texas Natural Resources Code*.

Note: All fuel oil facilities and piping shall conform to ~~Article 79~~ Chapter 34 of the *City of Houston Fire Code*.

G2424.8 Equipment not required to be vented. The following appliances shall not be required to be vented:

1. Ranges.
2. Built-in domestic cooking units listed and marked for optional venting.
3. Hot plates and laundry stoves.
4. Type 1 ~~C~~clothes dryers (Type 1 clothes dryers shall be exhausted in accordance with the requirements of Chapter 15.)
5. Refrigerators.
6. Counter appliances.
7. ~~Decorative appliances.~~

P3002.2 Building sewer. Building sewer piping shall be as shown in Table P3002.2. Plastic sewer pipe 6 inches (152 mm) and smaller shall be schedule 40 pipe.

P3108.2 Vent connections. The horizontal wet vent shall connect above the centerline of the water closet waste line. The dry vent connection to the wet vent shall be an individual vent or common vent to the lavatory, bidet, shower or bathtub.

CHAPTER 45*

REFERENCED STANDARDS

This chapter lists the standards that are referenced in various sections of this document. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title, and the section or sections of this document that reference the standard. The application of the referenced standards shall be as specified in Section 102.6.

NFPA	National Fire Protection Association Batterymarch Park Quincy, MA 02269	
Standard reference number	Title	Referenced in code section number
10-98	Portable Fire Extinguishers	Table 901.6.1, 906.2, 906.3, Table 906.3(1), Table 906.3(2), 2106.3
11-98-2002	Low Expansion Foam	904.7, 3404.2.9.1.2
11A-99	Medium- and High-Expansion Foam Systems	904.7, 3404.2.9.1.2
12-98-2000	Carbon Dioxide Extinguishing Systems	Table 901.6.1, 904.8, 904.11
12A-98-2004	Halon 1301 Fire Extinguishing Systems	Table 901.6.1, 904.9
13-96-2002	Installation of Sprinkler Systems	Table 704.1, 903.3.1.1, 903.3.2, 903.3.5.1.1, 904.11, 907.9, 2308.2, 3404.3.7.5.1, 3404.3.8.4
13D-96-2002	Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes	903.1.2, 903.3.1.3, 903.3.5.1.1
13R-96-2002	Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height	903.1.2, 903.3.1.2, 903.3.5.1.1, 903.3.5.1.2, 903.4
14-96-2000	Installation of Standpipe, Private Hydrant and Hose Systems	905.2, 905.3.2, 905.3.5, 905.4.2, 905.8
15-96-2001	Water Spray Fixed Systems for Fire Protection	3404.2.9.1.3
16-99-2003	Installation of Deluge Foam-Water Sprinkler and Foam-Water Spray Systems	904.7, 904.11
17-98-2002	Dry Chemical Extinguishing Systems	Table 901.6.1, 904.6, 904.11
17A-98	Wet Chemical Extinguishing Systems	Table 901.6.1, 904.5, 904.11
20-96-1999	Installation of Stationary Pumps for Fire Protection-Centrifugal Fire Pumps	913.1, 913.2, 913.5.1
22-98	Water Tanks for Private Fire Protection	508.2.2
24-95-2002	Installation of Private Fire Service Mains and their Appurtenances	508.2.1, 1909.5
25-98-2002	Inspection, Testing and Maintenance of Water-Based Fire Protection Systems	508.5.3, Table 901.6.1, 904.7.1, 912.6, 913.5

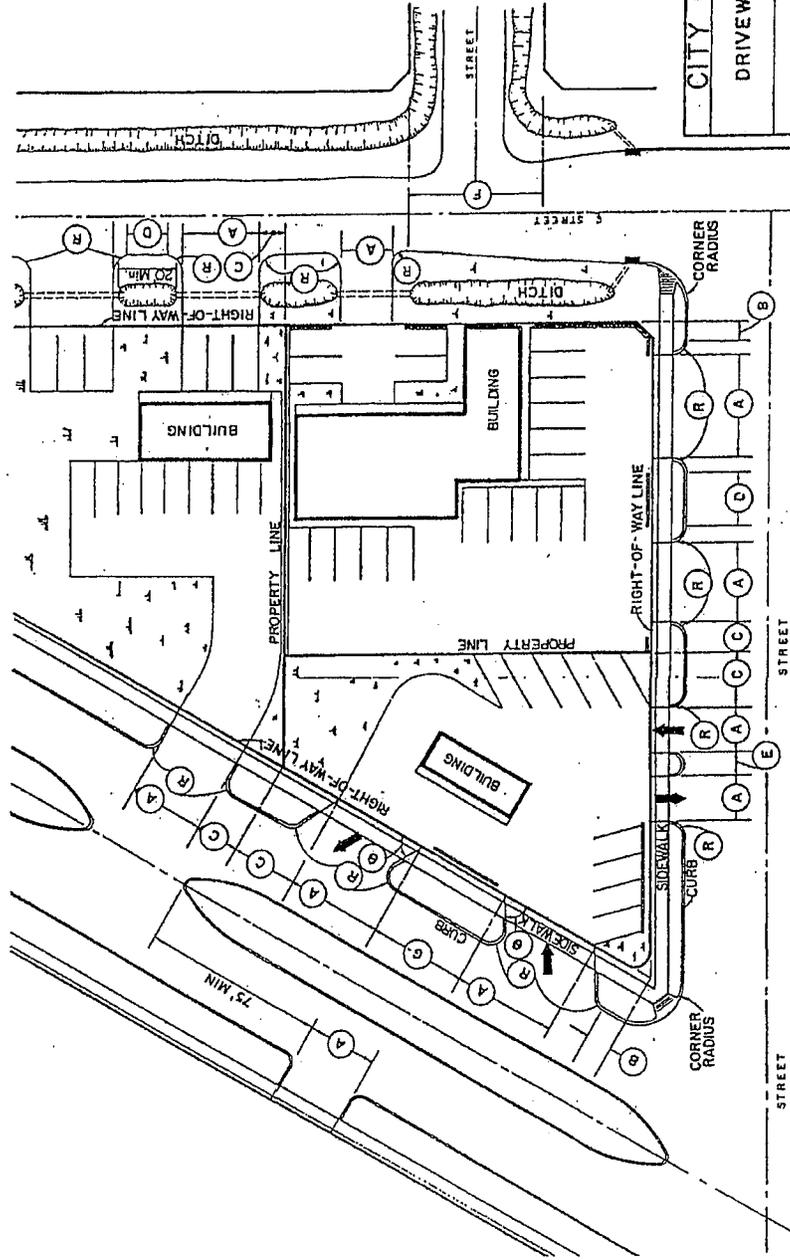
30-96-2000	Flammable and Combustible Liquids Code2804.2, 2804.5, 3403.6.2, 3403.6.2.1, 3404.2.7, 3404.2.7.1, 3404.2.7.2, 3404.2.7.3.6, 3404.2.7.4, 3404.2.7.6, 3404.2.7.7, 3404.2.7.8, 3404.2.7.9, 3404.2.9.2, 3404.2.9.3, 3404.2.9.5.1.1, 3404.2.9.5.1.2, 3404.2.9.5.1.3, 3404.2.9.5.1.4, 3404.2.9.5.1.5, 3404.2.9.5.2, 3404.2.9.6.4, 3404.2.10.2, 3404.2.11.4, 3404.2.11.5.2, 3404.2.12.1, 3404.3.1, 3404.3.6, 3404.3.7.2.3, 404.3.8.4, 3406.8.3
30A-96	Automotive and Marine Service Station Code2201.4, 2201.5, 2201.6, 2206.6.3, 2209.1
30B-98-2002	Manufacture and Storage of Aerosol Products2801.1, 2803.1, 2804.1, Table 2804.3.1, 2804.6, 2806.5, 2806.8, 2807.1, Table 2804.3.2, Table 2804.3.2.2, 2804.4.1, 2804.5.2, Table 2806.2, Table 2806.3
31-97	Installation of Oil-Burning Equipment603.1, 603.1.7, 603.3.1, 603.3.3
32-96	Plants1201.1, 1204.1, 1205.1, 1205.1.5, 1205.2, 1206.1, 1207.1, 1207.3
33-95	Spray Application Using Flammable or Combustible Materials1501.1, 1504.1.2
34-95	Dipping and Coating Processes Using Flammable or Combustible Liquids1501.1, 1505.3, 1505.6.1
35-95	Manufacture of Organic Coatings2001.3, 2005.4
40-97	Storage and Handling of Cellulose Nitrate Motion Picture Film306.2
50-96	Bulk Oxygen Systems at Consumer Sites3201.1, 4001.1
50A-99	Gaseous Hydrogen Systems at Consumer Sites3501.1
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51-97	Design and Installation of Oxygen-Fuel Gas Systems for Welding, Cutting, and Allied Processes2601.5, 2607.1, 2609.1
51A-96	Acetylene Cylinder Charging Plants2608.1
52-98	Compressed Natural Gas (CNG) Vehicular Fuel Systems3001.1
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59A-96	Production, Storage and Handling of Liquefied Natural Gas (LNG)3001.1, 3201.1
61-95	Prevention of Fires and Dust Explosions in Agricultural and Food Products FacilitiesTable 1301.1
69-97	Explosion Prevention Systems911.1, 911.3, Table 1301.1
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86-95	Ovens and Furnaces2101.1
96-98-2001	Ventilation Control and Fire Protection of Commercial Cooking Operations904.11
99-99	Health Care Facilities3006.4
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231D-98	231D IS NO LONGER USED, SEE NFPA 13 Storage of Rubber Tires 2501.1, 2505.5
241-96	Safeguarding Construction, Alteration and Demolition Operations 1401.1
255-96	Methods of Fire Tests of Roof Coverings 306.3
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261-98	Method of Test for Determining Resistance of Mock-Up Upholstered Furniture Material Assemblies to Ignition by Smoldering Cigarettes 803.5.1, 803.7.1
265-98	Fire Tests for Evaluating Room Fire Growth Contribution of Textile Wall Coverings 806.2.2
266-98	Method of Test for Fire Characteristics of Upholstered Furniture Exposed to Flaming Ignition Source 803.5.2
267-98	Method of Test for Fire Characteristics of Mattress and Bedding Assemblies Exposed to Flaming Ignition Source 803.5.3, 803.6.3, 803.7.4
385-98	Tank Vehicles for Flammable and Combustible Liquids 3406.6, 3406.6.1
407-96	Aircraft Fuel Servicing 1106.2, 1106.3
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655-93	Prevention of Sulfur Fires and Explosions Table 1301.1
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909-97	Protection of Cultural Resources, Including Museums, Libraries, Places of Worship and Historic Properties 102.5
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***NOTE: ALL OTHER PORTIONS OF CHAPTER 45 TO REMAIN AS SET FORTH IN THE 2000 INTERNATIONAL FIRE CODE.**

DRIVEWAY GEOMETRICS



CITY OF HOUSTON
DRIVEWAY GEOMETRICS

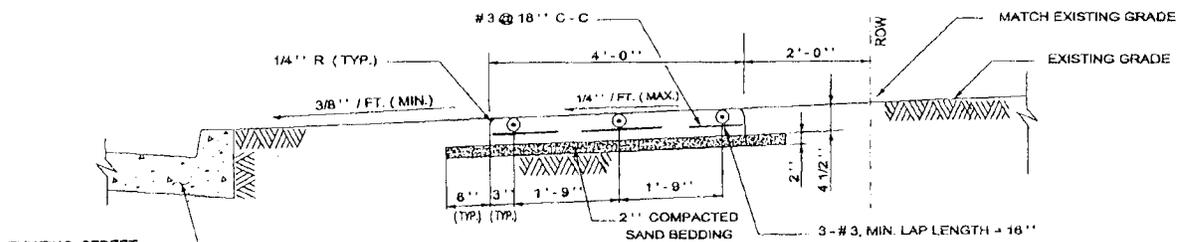
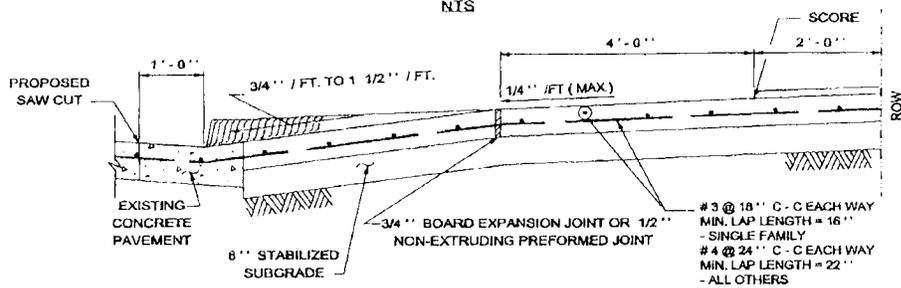
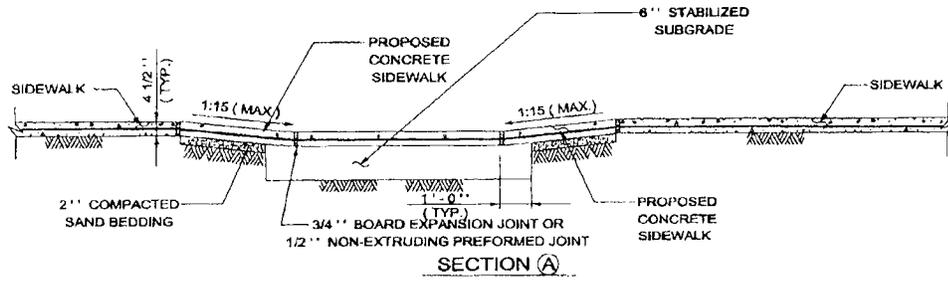
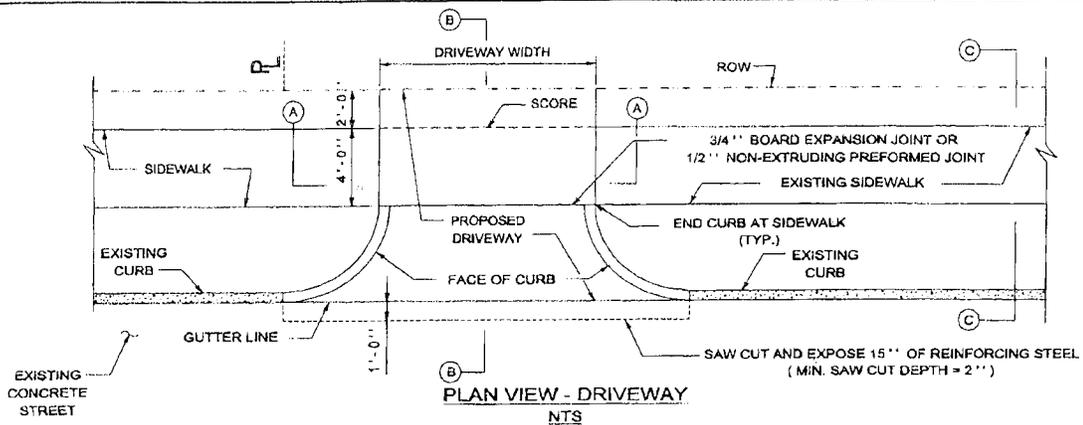
Approved: *Richard C. [Signature]*
Dept. of Traffic and Transportation
Date: May 85 Rev. May 86 DWG. 2156

Notes to Drawing 31-1

		RESIDENTIAL	ALL OTHERS
Dimension ○---	Driveway Width : (1), (2) one - way two - way	<u>10' ±2'</u> min. - 20' max. 12' min. - 24' max.	15' min. - 20' max. 24' min. - 35' max.
Dimension ○---	corner r-o-w line (3)	20' min.	30' min.
Dimension ○---	side property line (3)	- R min.	- R min.
Dimension ○---	two-way (3)	N/A	10' min.
Dimension ○---	one-way (perpendicular)	20' min. (4)	5' min. 20' max.
Dimension ○---	one-way (angular)	20' min.	30' min.
Dimension ○---	Driveway Radius	<u>24'</u> min. 15' max.	10' min. 15' <u>25'</u> max.
Dimension ○---	Minimum Angle (4)	45 deg.	45 deg.

Dimension ○--- Driveway opening shall not be permitted within the limits of any intersection with the exception that special consideration will be given to major thoroughfare with existing esplanades and streets primarily used for residential use.

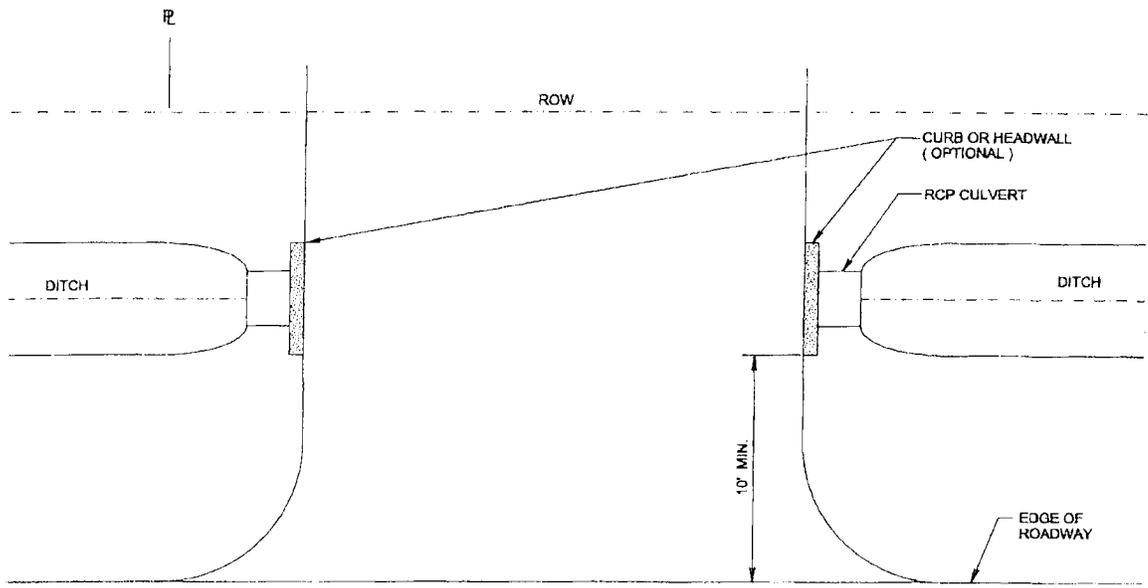
1. Where off-street "back-in" type truck loading docks/wells are constructed on local streets, the width of the driveway opening may be increased to a maximum of 50 feet.
2. The two sides of a driveway shall be parallel within the right-of-way limits.
3. In no case shall the driveway radius encroach on abutting property or corner radius.
4. Driveways may be skewed at those locations where streets are one way or divided without median opening.



NOTES:

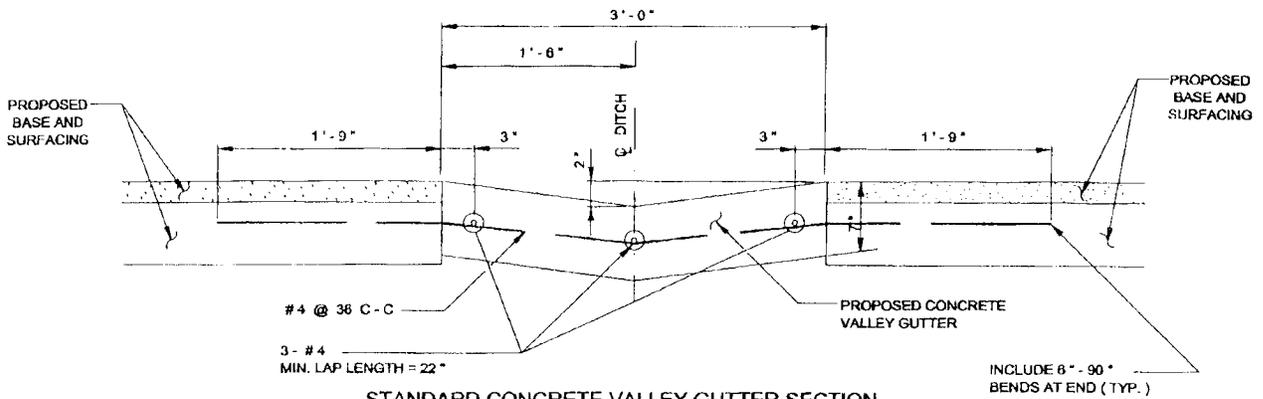
- 1 - DRIVEWAYS SHALL BE 6" THICK FOR SINGLE FAMILY USE AND 7" THICK FOR ALL OTHERS (I. E. COMMERCIAL, INDUSTRIAL, ETC.)
- 2 - DRIVEWAYS AND SIDEWALKS SHALL BE CONSTRUCTED WITH PORTLAND CEMENT CONCRETE AND INCLUDE 5 - 1/2 SACKS OF CEMENT PER CUBIC YARD OF CONCRETE.
- 3 - 6 X 6 - W 2.9 X W 2.9 WELDED WIRE FABRIC MAY BE USED IN LIEU OF THE REINFORCING STEEL.
- 4 - EXPANSION & CONSTRUCTION JOINTS ALONG SIDEWALKS SHALL BE ACCORDING TO DRAWING NO. 02752-02

CITY OF HOUSTON	
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
REINFORCED CONCRETE DRIVEWAY AND SIDEWALK DETAILS ON CURBED TYPE STREETS	
APPROVED BY: <i>[Signature]</i> CITY ENGINEER	APPROVED BY: <i>[Signature]</i> DIRECTOR OF PUBLIC WORKS AND ENGINEERING
DATE: 05 - 23 - 03	
DWG NO: 02754 - 01	



STANDARD OPEN DITCH DRIVEWAY - PLAN

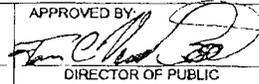
NTS

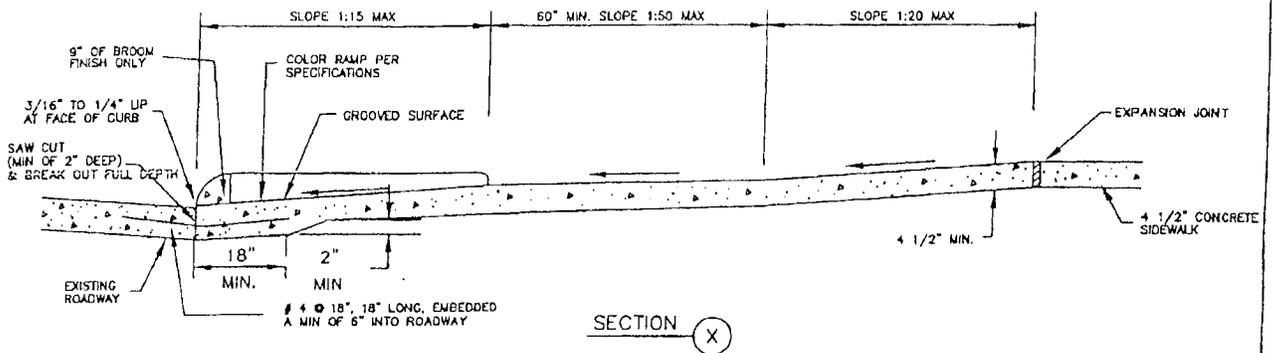


STANDARD CONCRETE VALLEY GUTTER SECTION

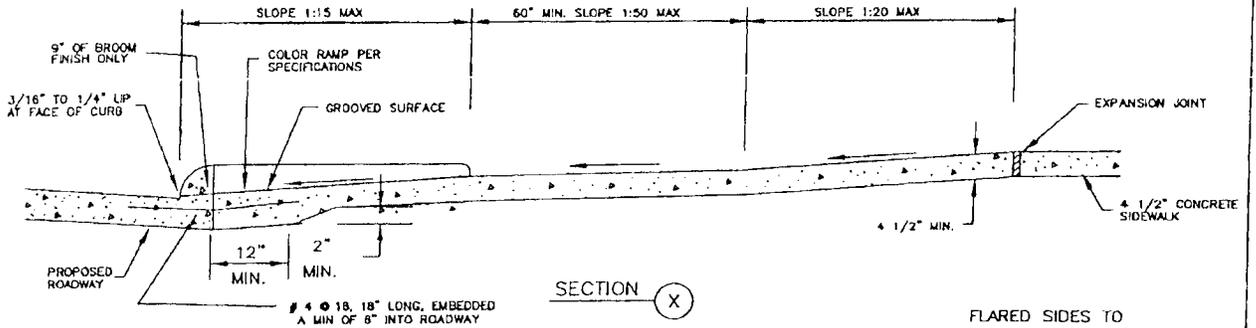
NTS

1. REINFORCED CONCRETE PIPE (RCP) CULVERTS AND CONCRETE VALLEY GUTTER GRADES SHALL BE SET BY CITY ENGINEER. PROFILE SHOWING THE PROPOSED AND EXISTING DITCH FLOWLINE WILL BE REQUIRED WHERE CONCRETE VALLEY GUTTERS ARE TO BE CONSTRUCTED IN LIEU OF CULVERTS.
2. CULVERT SIZE WILL BE APPROVED BY CITY ENGINEER WITH ⁰⁴18" DIAMETER MINIMUM.
3. SPACING OF TYPE "D" OR "D - 1" INLETS SHALL BE DETERMINED BY CITY ENGINEER. SEE DRAWING NO. 02632 - 07 FOR TYPE "D" OR DRAWING NO. 02632 - 08 FOR TYPE "D - 1".
4. DRIVEWAY MAY BE CONCRETE, ASPHALT OR ANY OTHER MATERIAL WHICH WILL NOT PERMIT WIND OR WATERBORNE EROSION.
5. A 3 - FOOT CONCRETE VALLEY GUTTER SECTION SHALL BE CONSTRUCTED THROUGH THE PROPOSED DRIVEWAY WHERE THE CITY ENGINEER DETERMINES THE INSTALLATION OF DITCH CULVERTS TO BE IMPRACTICAL DUE TO INSUFFICIENT DEPTH. THE VALLEY GUTTER SECTION WILL BE CONSTRUCTED OF 5 - 1/2 SACK CEMENT PER CUBIC YARD OF CONCRETE.

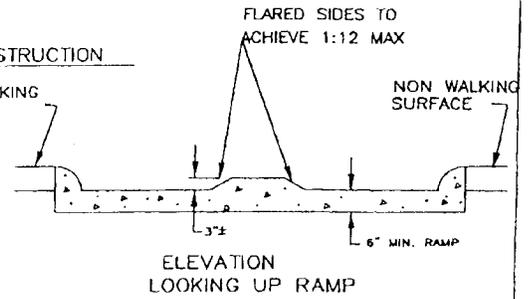
CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
DRIVEWAYS WITH CULVERTS OR VALLEY GUTTERS ON OPEN DITCH TYPE STREETS	
APPROVED BY:  CITY ENGINEER	APPROVED BY:  DIRECTOR OF PUBLIC WORKS AND ENGINEERING
DATE: 05 - 23 - 03	
DWG NO: 02754 - 02	



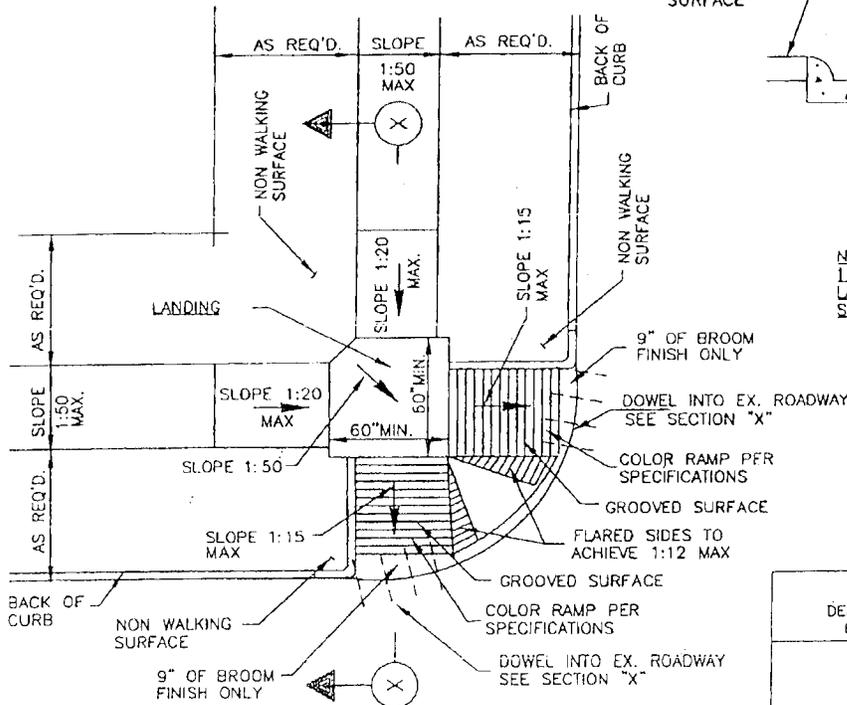
SECTION X
EXISTING CONCRETE PAVEMENT CONSTRUCTION



SECTION X
NEW CONCRETE PAVEMENT CONSTRUCTION



NOTES:
1. REPLACE EXISTING SIDEWALK FROM EL LANDING AS NECESSARY TO ACHIEVE 1:20 SLOPE



STREETS WITH NON-WALKING SURFACE BEHIND CURB

N.T.S.

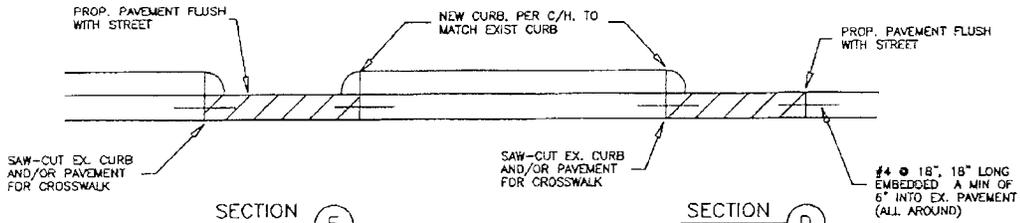
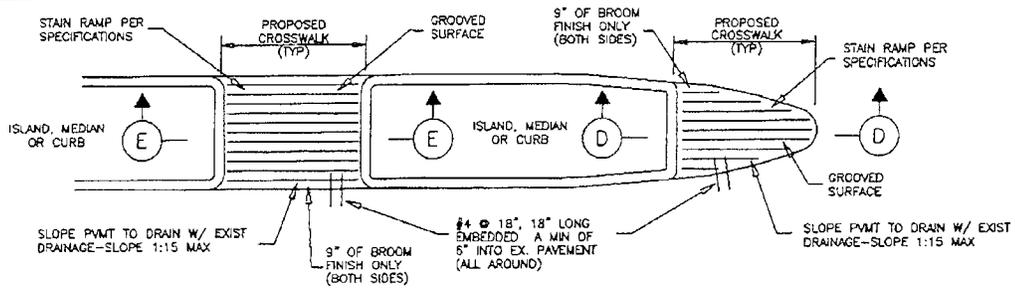
CITY OF HOUSTON

DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION

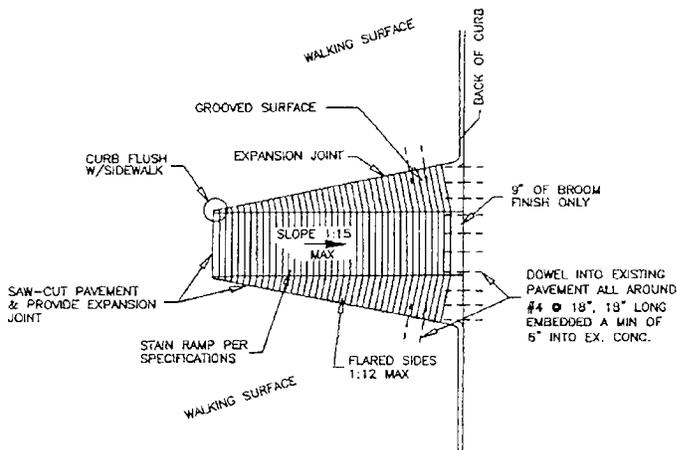
WHEEL CHAIR RAMP DETAILS

(NOT TO SCALE)

APPROVED BY: <i>Jim H. Polosky</i> CITY ENGINEER	APPROVED BY: <i>Christina M...</i> DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: Sep-15-04	DWG NO: 02775-02

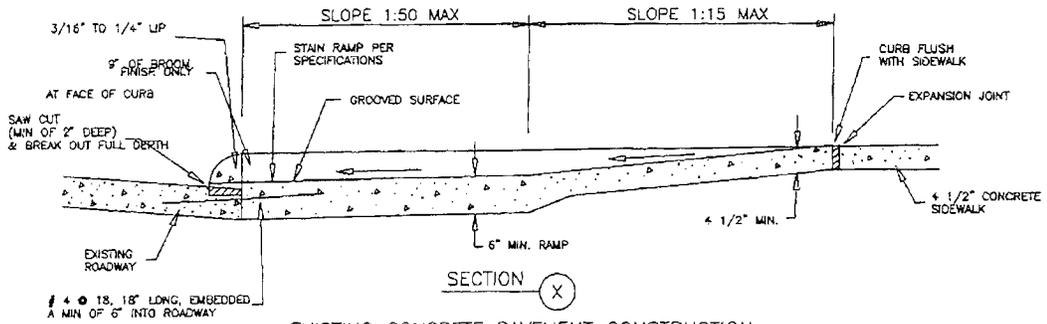


SECTION E SEE COH STANDARD DETAIL FOR PAVEMENT MARKING DETAILS SECTION D
 FOR ISLAND, MEDIAN, OR CURB MODIFICATIONS FOR CROSSWALKS

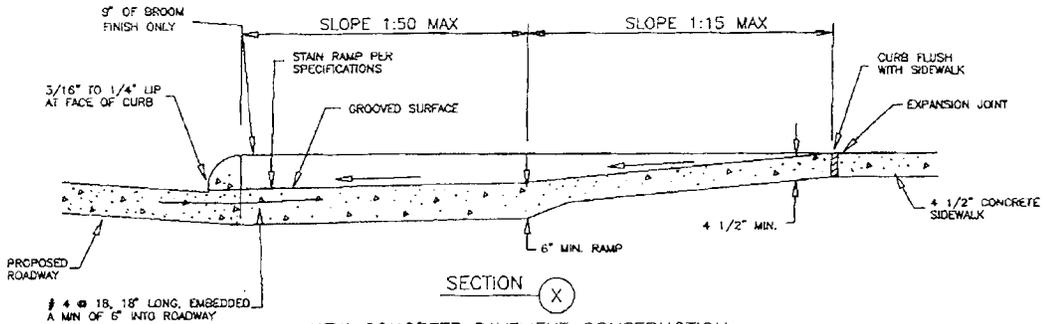


RAMP CONSTRUCTION FOR EXISTING SIDEWALK

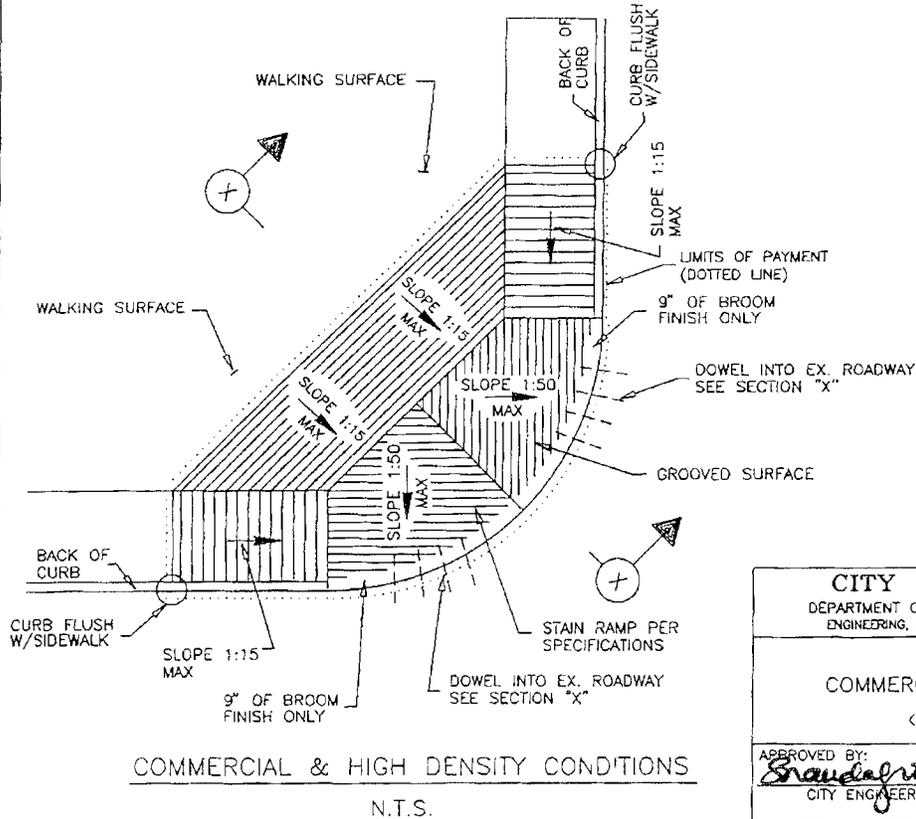
CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP	
CURB MODIFICATIONS FOR WHEEL CHAIR RAMPS & CROSSWALKS (NOT TO SCALE)	
APPROVED BY: <i>Brandagrin</i> CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: NOV-05-01	DWG NO: 02775-04



EXISTING CONCRETE PAVEMENT CONSTRUCTION



NEW CONCRETE PAVEMENT CONSTRUCTION



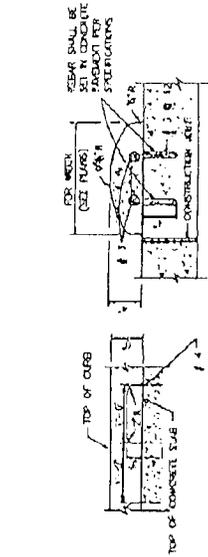
COMMERCIAL & HIGH DENSITY CONDITIONS

N.T.S.

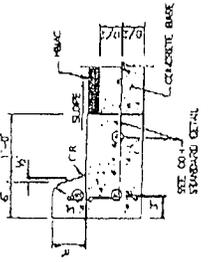
CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION	
COMMERCIAL CURB RAMP DETAIL (NOT TO SCALE)	
APPROVED BY: <i>S. S. Soudalghri</i> CITY ENGINEER	APPROVED BY: <i>[Signature]</i> DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT-01-2002	DWG NO: 02775-05

4-1/2" MONOLITHIC AND TRANSITION CURB NOTES:

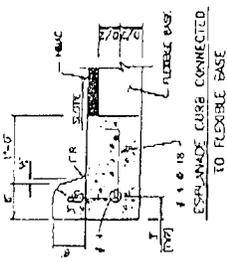
- 4-INCH CONCRETE CURBS TO BE CONSTRUCTED ON ALL SPACES, RAMPWAYS, SIDEWALKS, STREETS, AND RESIDENTIAL STREETS.
- TRANSITIONS FROM 4-INCH CONCRETE CURBS TO 12-INCH MONOLITHIC CONCRETE CURBS TO BE ACCOMPANIED WITHIN 10 FEET OF TRANSITION WITH THE 12-INCH MONOLITHIC CURB. TRANSITION CURBS IS NOT REINFORCED JOINTS/SHOULDER WITH THE TRANSITION CURB. REINFORCING STEEL AS SHOWN IN 4-1/2" MONOLITHIC CURB TO BE INSTALLED.



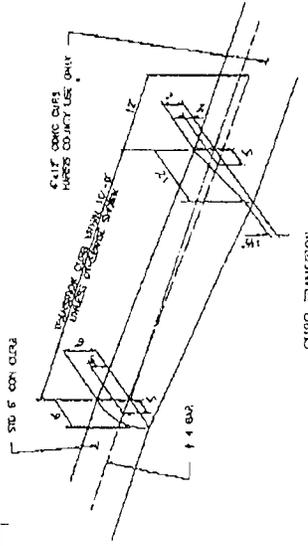
ADJUSTABLE CURB



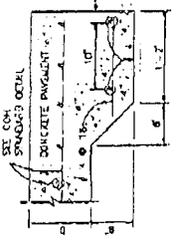
ESPLANADE CURB CONNECTED TO CONCRETE BASE



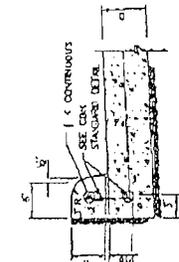
ESPLANADE CURB CONNECTED TO FLEXIBLE BASE



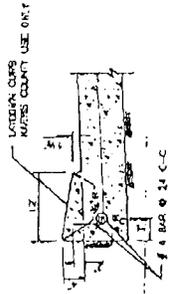
CURB TRANSITION



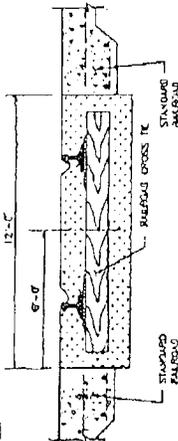
STANDARD CONCRETE PAVING HEADER



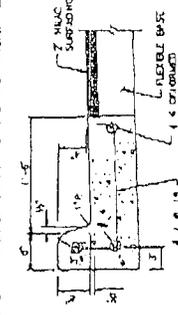
CONCRETE CURB



4-INCH x 12-INCH MONOLITHIC CURB



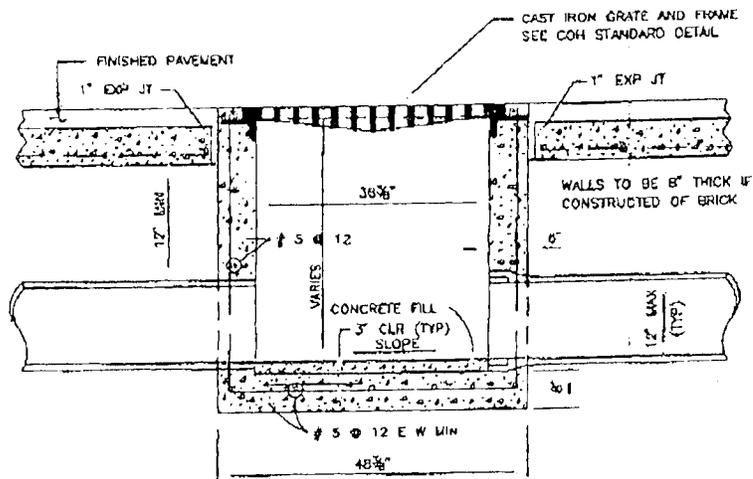
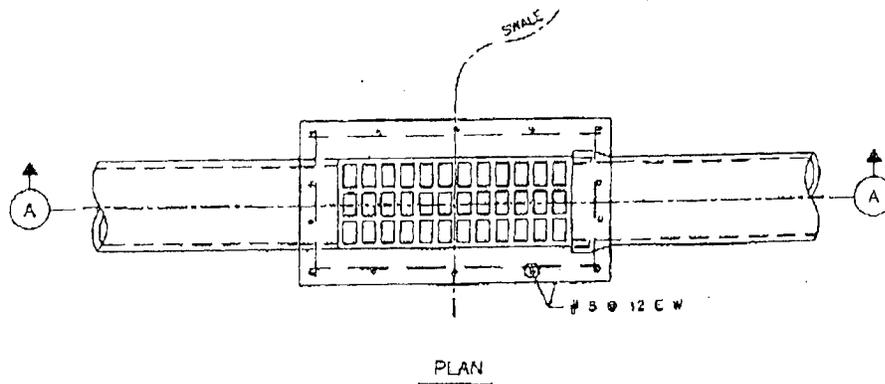
STANDARD RAILROAD CROSSING - SINGLE TRACK



MONOLITHIC CURB AND GUTTER

NOTE: CONCRETE CURBS TO BE FINISHED EXTERIOR CONCRETE USE BASE #4 @ 18" O.C. LONG, DOWNWELL AND SEE 4-EXTERIOR CURB. SET #4 DOWNWELLS 25' LONG AT 17' O.C. WITH FINISHMENT SECTION PAVERED.

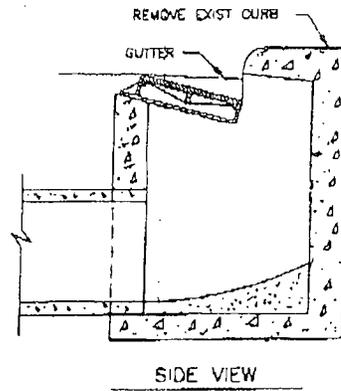
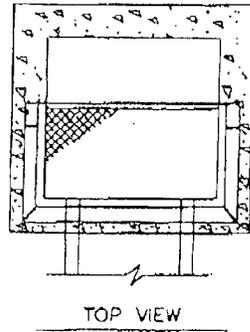
CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND EXPANSION DIVISION OF PUBLIC UTILITIES	
CURB, CURB AND GUTTER AND HEADER DETAILS (NOT TO SCALE)	
DESIGNED BY CITY ENGINEER	APPROVED BY DIRECTOR OF PUBLIC UTILITIES
DATE: OCT-01-2002 (see ref: 017771-0)	



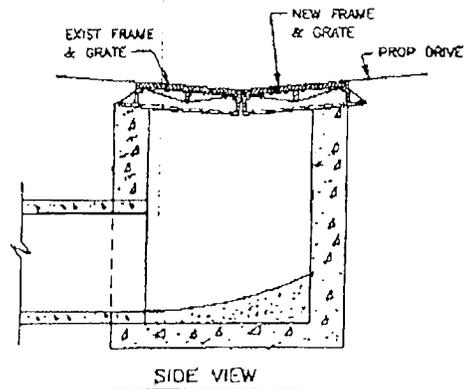
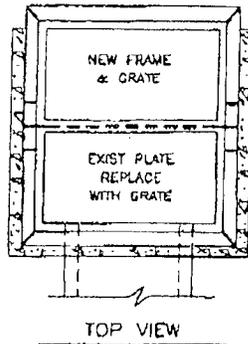
SECTION A

<p>CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION</p>	
<p>STORM SEWER TYPE "D" INLET (NOT TO SCALE)</p>	
<p>APPROVED BY: <i>Ernesto...</i> CITY ENGINEER</p>	<p>APPROVED BY: <i>[Signature]</i> DIRECTOR OF PUBLIC WORKS AND ENGINEERING</p>
<p>EFF DATE: OCT-01-2002</p>	<p>OWG NO: 02632-07</p>

STEP: 1 EXIST TYPE "B" INLET

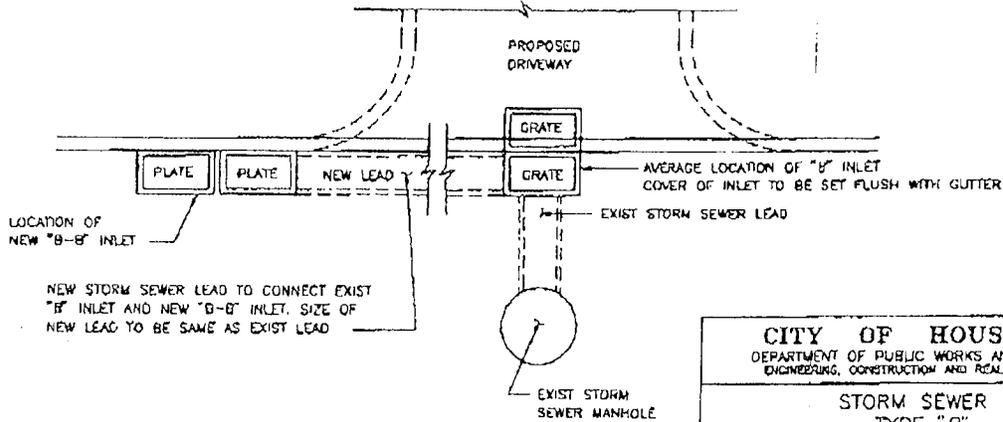


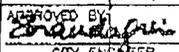
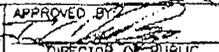
STEP: 2

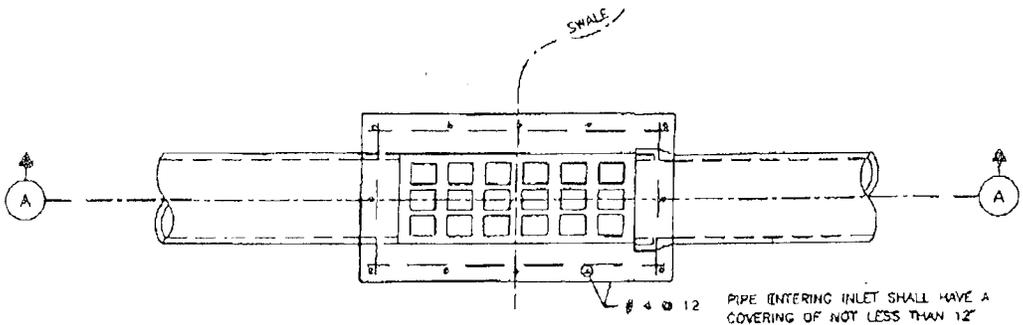


1. AFTER REMOVING EXIST CURB, RAISE EXIST FRAME TO GUTTER GRADE.
2. REPLACE EXIST PLATE WITH A GRATE.
3. ADD NEW FRAME AND GRATE NEXT TO EXIST FRAME.
4. BACKFILL INLET TO A POINT ONE FOOT BEHIND THE CURB WITH 1 SACK/TON CEMENT STABILIZED SAND.

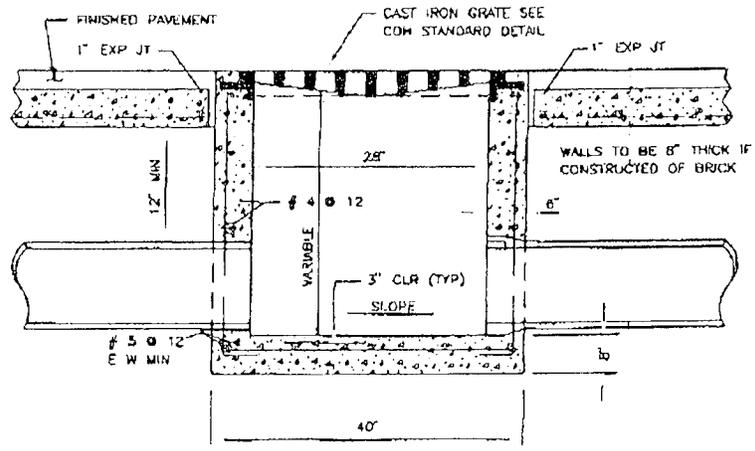
STEP: 3 CONSTRUCT NEW TYPE "B-B" INLET ON CURB RETURN OF PROPOSED DRIVEWAY



CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION	
STORM SEWER TYPE "B" INLET RELOCATION (NOT TO SCALE)	
APPROVED BY:  CITY ENGINEER	APPROVED BY:  DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT-01-2002	DWG NO: 02632-03



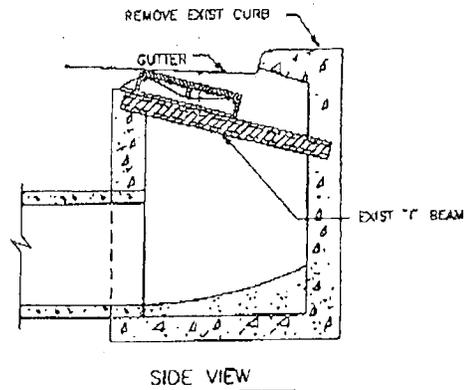
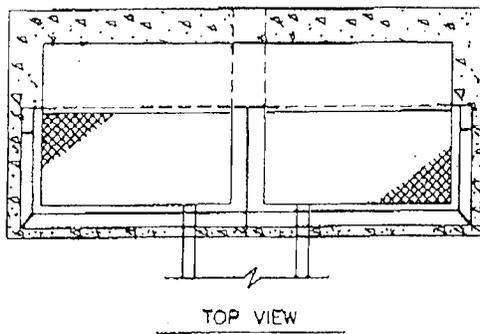
PLAN



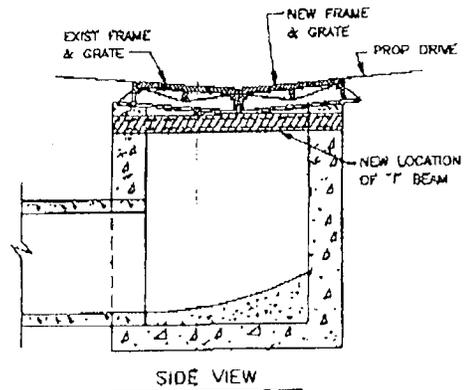
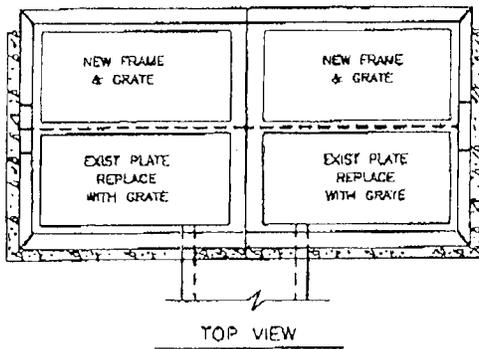
SECTION A

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION	
STORM SEWER TYPE "D-1" INLET (NOT TO SCALE)	
APPROVED BY: <i>[Signature]</i> CITY ENGINEER	APPROVED BY: <i>[Signature]</i> DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT-01-2002	DWG NO: 02632-08

STEP: 1 EXIST TYPE "B-B" INLET

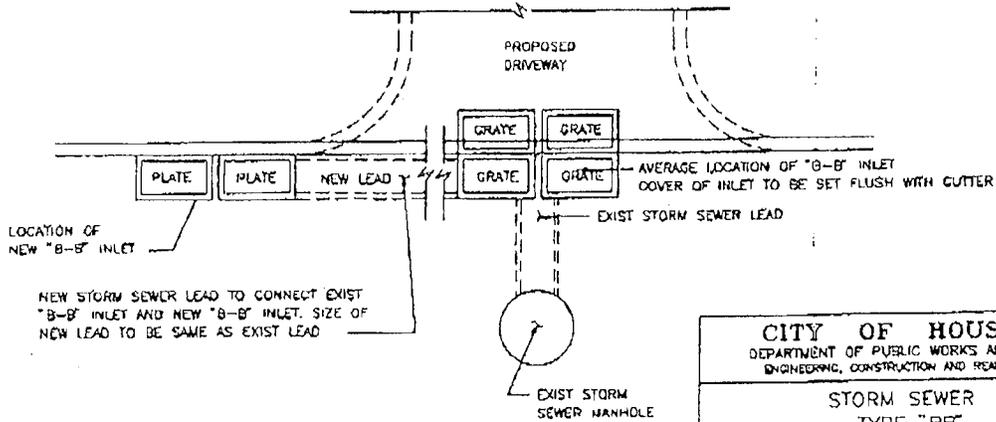


STEP: 2

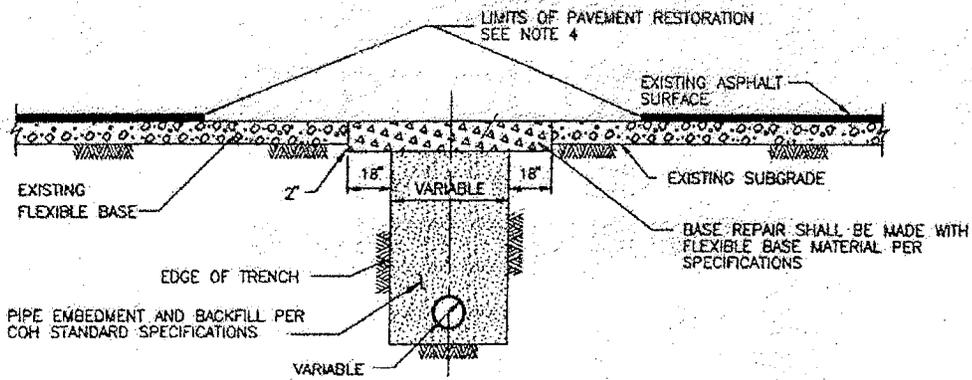


1. AFTER REMOVING EXIST CURB, RAISE EXIST "T" BEAM TO GRADE AND RESET EXIST FRAMES.
2. REPLACE EXIST PLATES WITH GRATES.
3. ADD NEW FRAMES AND GRATES NEXT TO EXIST FRAMES.
4. BACKFILL INLET TO A POINT ONE FOOT BEHIND THE CURB WITH 1 SACK/TON CEMENT STABILIZED SAND.

STEP: 3 CONSTRUCT NEW TYPE "B-B" INLET ON CURB RETURN OF PROPOSED DRIVEWAY

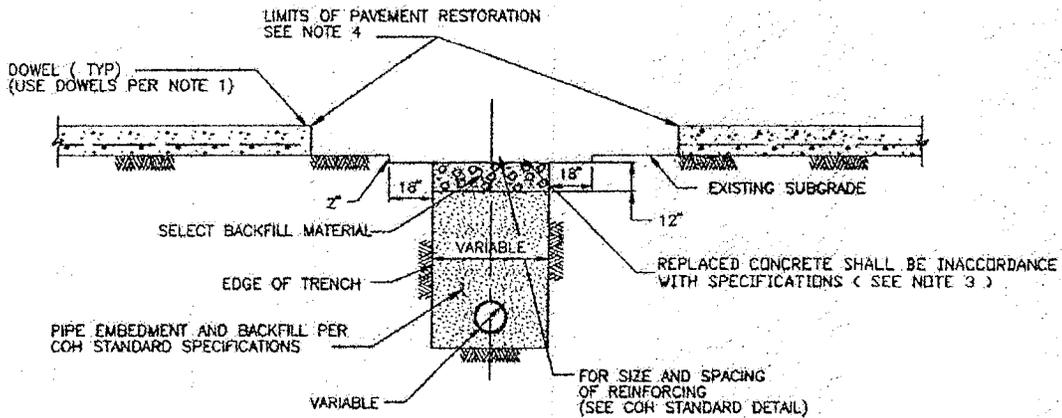


CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION	
STORM SEWER TYPE "B-B" INLET RELOCATION (NOT TO SCALE)	
APPROVED BY: <i>[Signature]</i> CITY ENGINEER	APPROVED BY: <i>[Signature]</i> DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT-01-2002	DWG NO: 02632-05



SECTION (A)

REPAIR OF FLEXIBLE BASE PAVEMENT



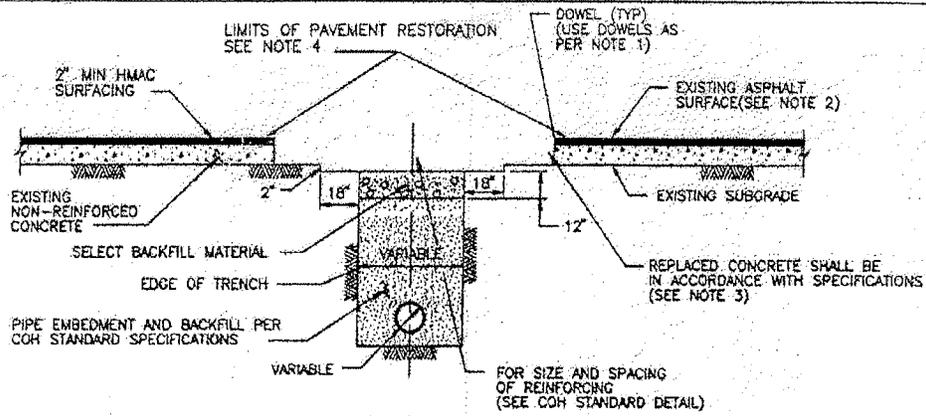
SECTION (B)

REPAIR OF REINFORCED CONCRETE PAVEMENT

NOTE:

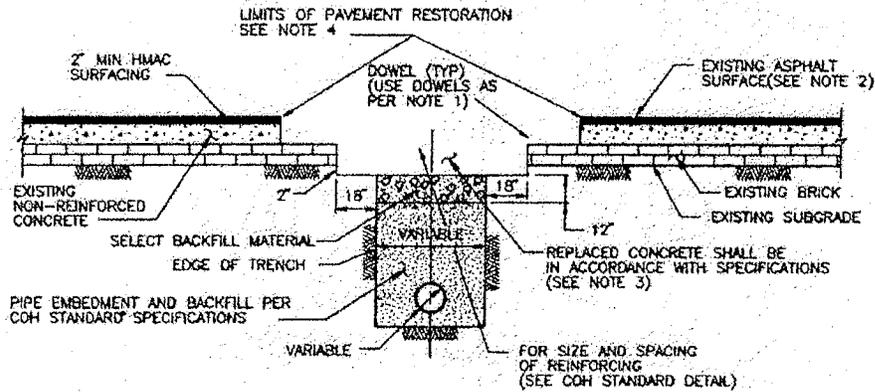
1. EXPOSE 15" OF REINFORCING STEEL AT PROPOSED SAWED JOINT. IF NO REINFORCING STEEL EXISTS, USE HORIZONTAL DOWELS. HORIZONTAL DOWELS SHALL BE # 6 BARS, 24" LONG, 24" C-C, DRILLED AND EMBEDDED 8" INTO THE CENTER OF THE EXISTING SLAB. WITH "PO ROC" OR EQUAL.
2. IF REINFORCED CONCRETE IS OVERLAYED WITH ASPHALT, REPLACE WITH 2" MIN HMAC SURFACING.
3. REFER TO STANDARD DETAIL 02751-01 FOR REINFORCING STEEL REQUIREMENTS
4. REFER TO STANDARD DETAIL 02951-01 FOR PAVEMENT RESTORATION LIMITS.

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION	
PAVEMENT REPAIR DETAILS FOR STREET CUTS (NOT TO SCALE)	
APPROVED BY: <i>[Signature]</i> CITY ENGINEER	APPROVED BY: <i>[Signature]</i> DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT-01-2002	DWG NO: 02902-01



SECTION C

REPAIR OF NON-REINFORCED CONCRETE PAVEMENT



SECTION D

REPAIR OF NON-REINFORCED CONCRETE PAVEMENT WITH BRICK

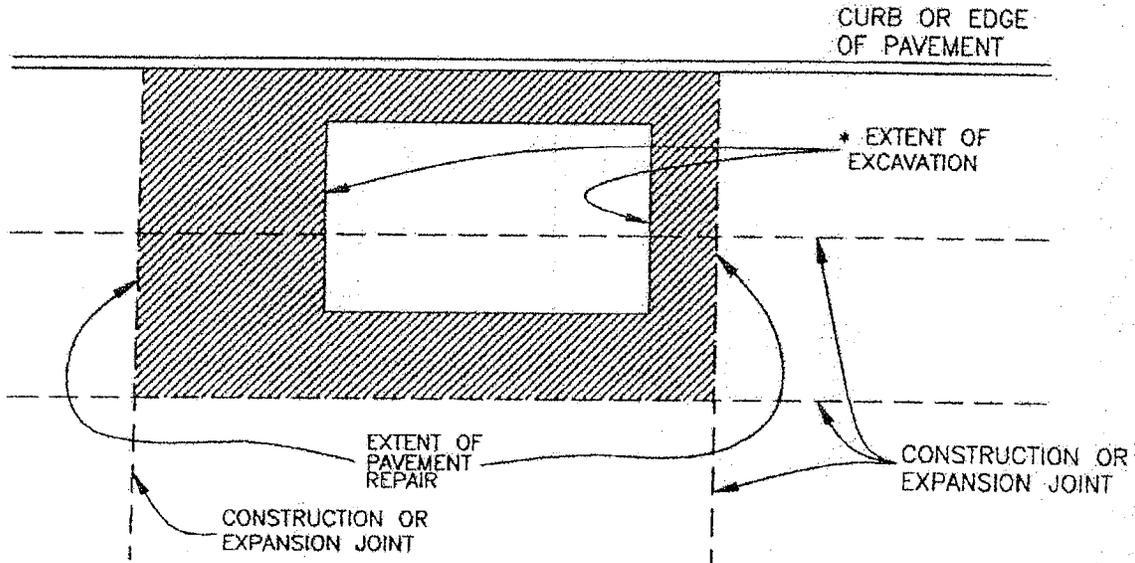
NOTE:

1. EXPOSE 15" OF REINFORCING STEEL AT PROPOSED SAWED JOINT. IF NO REINFORCING STEEL EXISTS, USE HORIZONTAL DOWELS. HORIZONTAL DOWELS SHALL BE # 6 BARS, 24" LONG, 24" C-C, DRILLED AND EMBEDDED 8" INTO THE CENTER OF THE EXISTING SLAB. WITH "PO ROC" OR EQUAL.
2. IF REINFORCED CONCRETE IS OVERLAYED REPLACE WITH SAME THICKNESS OF HMAC SURFACING.
3. REFER TO STANDARD DETAIL 02751-01 FOR REINFORCING STEEL REQUIREMENT
4. REFER TO STANDARD DETAIL 02951-01 FOR PAVEMENT RESTORATION LIMITS.

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION	
PAVEMENT REPAIR DETAILS FOR STREET CUTS NON REINFORCED CONCRETE AND BRICK PAVEMENT (NOT TO SCALE)	
APPROVED BY: <i>S. S. S. S.</i> CITY ENGINEER	APPROVED BY: <i>[Signature]</i> DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT-01-2002	DWG NO: 02902-02

CONCRETE PAVEMENT RESTORATION

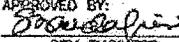
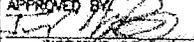
AGE OF PAVEMENT
LESS THAN OR EQUAL TO 5 YEARS



NOTES:

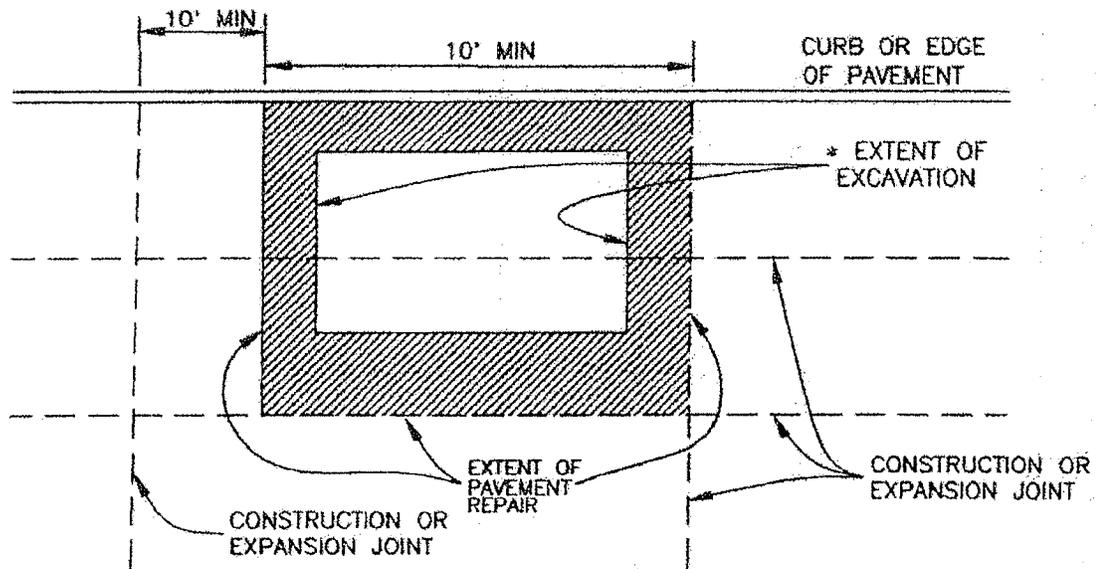
1. EXTENT OF PAVEMENT REPAIR SHALL BE PERPENDICULAR AND PARALLEL TO TRAVEL WAY.
2. REPLACE ENTIRE PANEL WIDTH AND LENGTH TO NEAREST CONSTRUCTION OR EXPANSION JOINT BEYOND EDGE OF EXCAVATION.
3. SAW CUT AND EXPOSE 15" OF REINFORCING STEEL WITHIN EXISTING PAVEMENT. PROVIDE HORIZONTAL DOWELS (PER SPECIFICATION SECTION 02902-01) IF EXISTING REINFORCING IS BROKEN OFF.
4. REPLACE CURB WHEN ADJACENT LANE IS REPLACED.
5. MAINTAIN EXPANSION JOINTS AT EXISTING LOCATIONS UNLESS OTHERWISE DIRECTED BY CITY ENGINEER.
6. SPECIALTY PAVEMENTS (IE: BRICK PAVERS) TO BE REPLACED WITH MATCHING PAVEMENT IN ALL CASES.
7. REPLACE PAVEMENT MARKINGS IN ACCORDANCE WITH CITY SPECIFICATIONS 02764 AND 02767.

* EXTENT OF EXCAVATION INCLUDES 18" OVERCUT AS SHOWN ON STANDARD DETAIL 02902-01.

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP	
Street Cut Pavement Replacement CONCRETE PAVEMENT LESS THAN 5 YRS IN AGE (NOT TO SCALE)	
APPROVED BY:  CITY ENGINEER	APPROVED BY:  DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUNE 2002	DWG NO: 02951-01

CONCRETE PAVEMENT RESTORATION

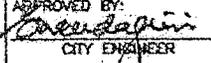
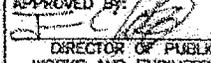
AGE OF PAVEMENT
GREATER THAN 5 YEARS



NOTES:

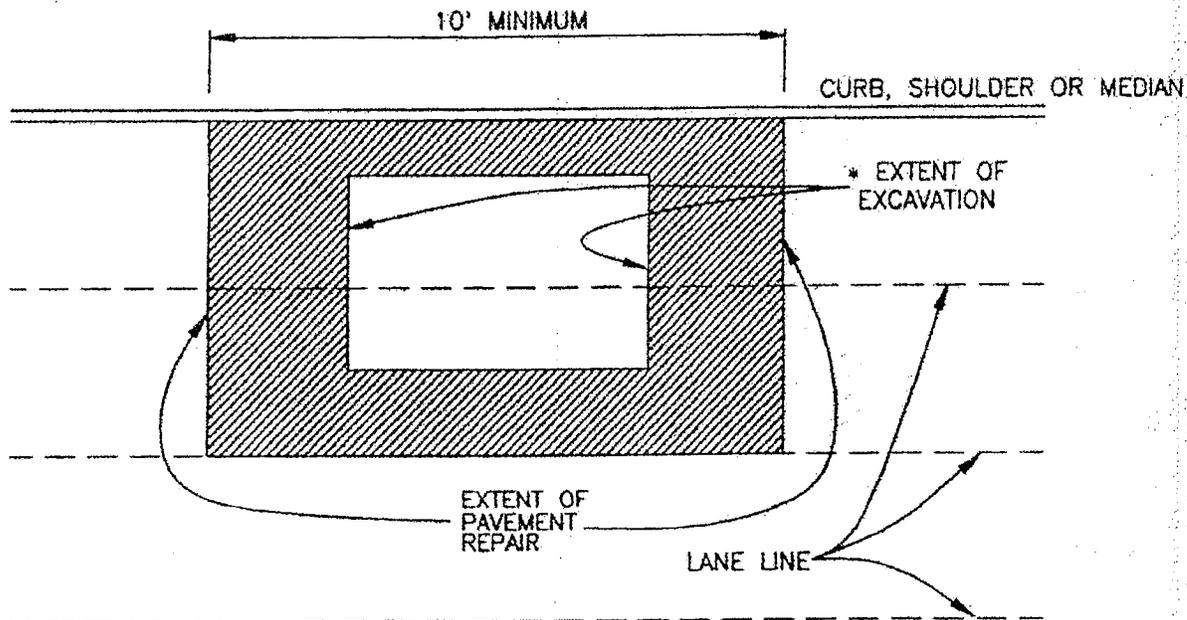
1. EXTENT OF PAVEMENT REPAIR SHALL BE PERPENDICULAR AND PARALLEL TO TRAVEL WAY.
2. WIDTH:
REPLACE PANEL WIDTH TO NEAREST CONSTRUCTION OR EXPANSION JOINT BEYOND EDGE OF EXCAVATION.
3. LENGTH:
 - a. MINIMUM LENGTH OF PAVEMENT REPAIR ALONG TRAVEL WAY IS 10' FROM THE NEAREST JOINT.
 - b. IF EDGE OF EXCAVATION IS LESS THAN 10' FROM EXISTING CONSTRUCTION OR EXPANSION JOINT, REPLACE PAVEMENT TO EXISTING JOINT.
4. SAW CUT AND EXPOSE 15" OF REINFORCING STEEL AROUND EDGE OF PANEL REPLACEMENT. PROVIDE HORIZONTAL DOWELS (PER SPECIFICATION SECTION 02902-01) IF REINFORCING IS BROKEN OFF OR DOES NOT EXIST.
5. REPLACE CURB WHEN ADJACENT LANE IS REPLACED.
6. MAINTAIN EXPANSION JOINTS AT EXISTING LOCATIONS UNLESS OTHERWISE DIRECTED BY CITY ENGINEER.
7. SPECIALTY PAVEMENTS (IE: BRICK PAVERS) TO BE REPLACED WITH MATCHING PAVEMENT IN ALL CASES.
8. REPLACE PAVEMENT MARKINGS IN ACCORDANCE WITH CITY SPECIFICATIONS 02764 AND 02767.

* EXTENT OF EXCAVATION INCLUDES 18" OVERCUT AS SHOWN ON STANDARD DETAIL 02902-01.

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP	
Street Cut Pavement Replacement CONCRETE PAVEMENT OVER 5 YRS IN AGE (NOT TO SCALE)	
APPROVED BY:  CITY ENGINEER	APPROVED BY:  DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUNE 2002	DWG NO: 02951-02

ASPHALT PAVEMENT RESTORATION

FOR PAVEMENT OF ALL AGES



NOTES:

1. EXTENT OF PAVEMENT REPAIR SHALL BE PERPENDICULAR AND PARALLEL TO TRAVEL WAY.

2. FLEXIBLE BASE:

REPLACE BASE TO SAME THICKNESS PLUS TWO INCHES (2") FOR EXTENT OF EXCAVATION. USE APPROVED BASE MATERIAL TYPE. *

3. SURFACE COURSE:

A. WIDTH:
SURFACE MILL AND OVERLAY FULL WIDTH OF LANE(S) TO NEAREST LANE DIVIDER BEYOND EDGE OF EXCAVATION.

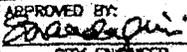
B. LENGTH:
MINIMUM LENGTH OF SURFACE MILL ALONG TRAVEL WAY IS 10'.

C. REPLACE PAVEMENT MARKINGS IN ACCORDANCE WITH CITY SPECIFICATIONS 02764 & 02767.

ADDITIONAL REQUIREMENTS FOR ASPHALT OVERLAY ON CONCRETE PAVEMENT:

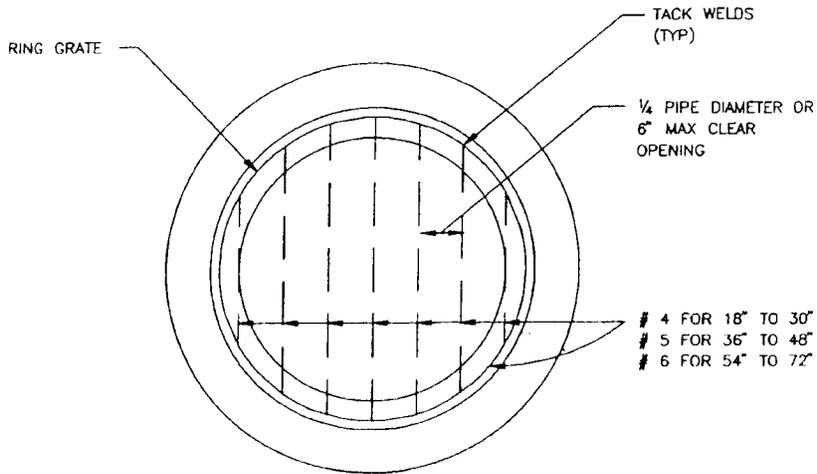
1. REPLACE CONCRETE FOR EXTENT OF EXCAVATION. REPLACE TO SAME THICKNESS PLUS TWO INCHES (2").
2. WIDTH:
IF EXCAVATION EXTENDS MORE THAN HALF OF A LANE, REPLACE ENTIRE LANE OF CONCRETE. OTHERWISE USE STANDARD DETAIL 02902-01.
3. SAW CUT AND EXPOSE 15" OF REINFORCING STEEL AROUND EDGE OF CONCRETE REPLACEMENT. IF NO REINFORCING STEEL EXISTS, USE HORIZONTAL DOWELS PER SPECIFICATION SECTION 02902.
4. REPLACE CURB WHEN ADJACENT LANE IS REPLACED.
5. MAINTAIN CONCRETE EXPANSION JOINTS AT EXISTING LOCATIONS UNLESS OTHERWISE APPROVED BY CITY ENGINEER.

* EXTENT OF EXCAVATION INCLUDES 18" OVERCUT AS SHOWN ON STANDARD DETAIL 02902-01.

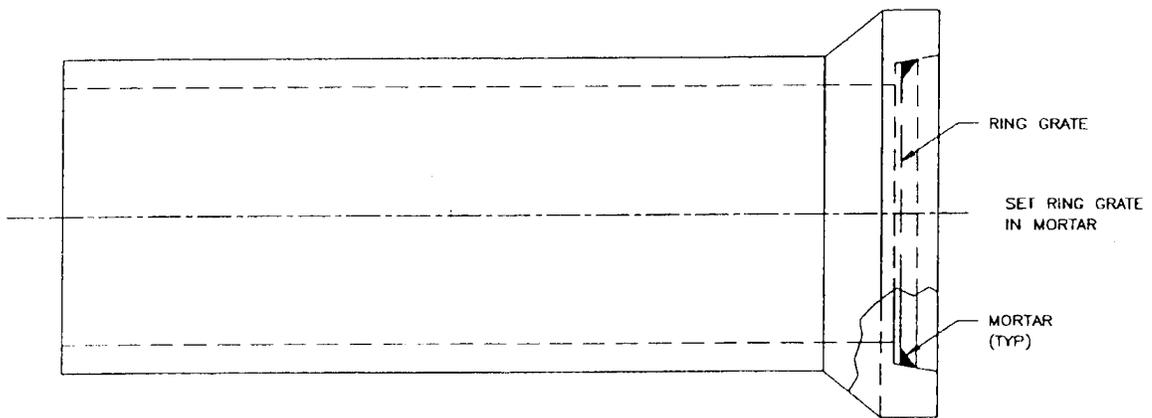
CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP	
Street Cut Pavement Replacement ASPHALT PAVEMENT FOR PAVEMENT OF ALL AGES (NOT TO SCALE)	
APPROVED BY:  CITY ENGINEER	APPROVED BY:  DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: JUNE 2002	DWG NO: 02951-03

NOTE:

1. GALVANIZE GRATE AFTER FABRICATION.



END VIEW



SIDE VIEW

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION	
STORM SEWER RING GRATE FOR OPEN END OF 18" TO 72" RCP STUBS TO DITCH (NOT TO SCALE)	
APPROVED BY: <i>[Signature]</i> CITY ENGINEER	APPROVED BY: <i>[Signature]</i> DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT-01-2002	DWG NO: 02084-11