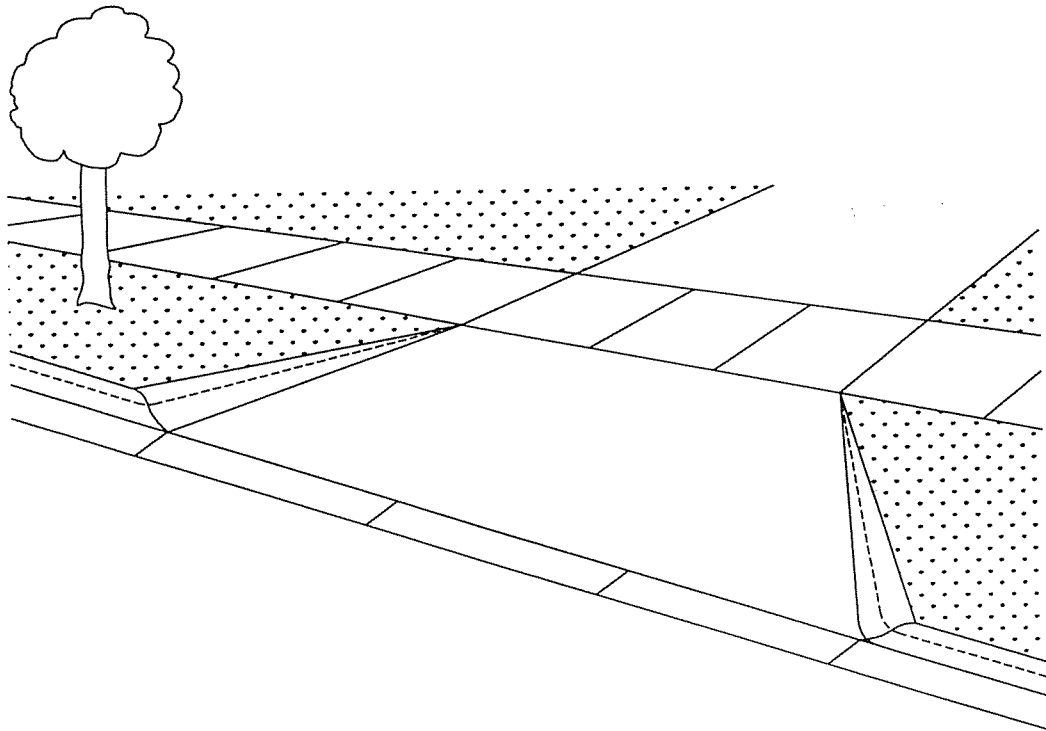


City of Monroe Sidewalk & Driveway Approach Specifications



Revised
3-2007

TABLE OF CONTENTS

Pages

CHAPTER 1028-Construction Specifications for Sidewalks, Driveways, Crosswalks and Curbs

| | | |
|--|---|-------|
| 1028.01 | Compliance required..... | 1 |
| 1028.02 | Walk grades..... | 1 |
| 1028.03 | Sidewalk thickness; concrete grade; other paving material..... | 1 |
| 1028.04 | Construction or repair; permit required; exception..... | 1 |
| 1028.05 | Permit denial or revocation; appeals..... | 1 |
| 1028.06 | Bond and insurance requirements; contractor's license required..... | 2 |
| 1028.07 | License denial or revocation; appeals..... | 2 |
| 1028.08 | Sidewalk maintenance; notification of dangerous conditions..... | 3 |
| 1028.09 | Notice to repair sidewalks; noncompliance; remedy of City; emergencies..... | 3 |
| 1028.10 | Repair of damaged sidewalks and driveways by City..... | 3 |
| 1028.11 | Construction standards..... | 3 |
| 1028.12 | Inspections..... | 3 |
| 1028.13 | Curb cut permits; condition for issuance..... | 4 |
| 1028.14 | Curb cut specifications..... | 4 |
| 1028.15 | Standards for sidewalks and driveway approaches..... | 5 |
| 1028.16 | Use of sidewalks for private driveways..... | 5 |
| 1028.17 | Driveway approaches; concrete required..... | 5 |
| 1028.18 | Permit fees; time limit on work; notice to City before commencing work..... | 5 |
| 1028.99 | Penalty..... | 5 |
| <u>Concrete Sidewalk & Driveway Approach Specifications</u> | | 6-8 |
| <u>Residential Specifications</u> | | |
| Removals for Driveway Approach Curb Drop..... | | 9 |
| Driveway Approach Detail..... | | 10-11 |
| Driveway Openings, Approaches, & Concrete Sidewalks..... | | 12-14 |
| <u>Commercial & Industrial Specifications</u> | | |
| Curb Removal for Drive Approach..... | | 15 |
| Driveway Openings & Approaches..... | | 16 |
| Driveway Approach Details..... | | 17 |
| Concrete Curb & Concrete Curb & Gutter Details..... | | 18 |
| Driveway Approach Details..... | | 19-21 |
| <u>Sidewalk Ramp Specifications</u> | | |
| Concrete Sidewalk Ramps..... | | 22-29 |
| Supplemental Specifications..... | | 30-33 |

**CHAPTER 1028-Construction Specifications for
Sidewalks, Driveways, Crosswalks and Curbs**

1028.01 COMPLIANCE REQUIRED.

All sidewalks, driveways, crosswalks and curbing (except when constructed in connection with paving) shall be constructed strictly according to the specifications of this chapter.
(1989 Code §18-29)

1028.02 WALK GRADES.

All walks shall, when completed, conform accurately to grade and lines given by the Engineering Department and shall have a slope toward the curb of three-sixteenths inch to the foot, unless otherwise approved by the City Engineer.

1028.03 SIDEWALK THICKNESS; CONCRETE GRADE; OTHER PAVING MATERIAL.

(a)All sidewalks shall be constructed to a minimum thickness of four inches. Sidewalks crossing driveway approaches shall be constructed to a minimum thickness of six inches.

(b)All sidewalks shall be constructed with an approved grade of concrete.

(c)If a citizen desires a sidewalk to be constructed of other paving material, i.e. paving bricks, cut stone, etc., prior approval by the City Engineer shall be obtained.

1028.04 CONSTRUCTION OR REPAIR; PERMIT REQUIRED; EXCEPTION.

(a)No person shall construct or repair any sidewalk, except in accordance with the line, grade, slope and specifications established by the City Engineer, and without first procuring a permit therefor from the Department of Building, Zoning and Environmental Compliance. Permits may be revoked for failure to comply with the line, grade, slope or specifications of the City Engineer.

(b)No person shall construct or alter any crosswalk, driveway, driveway approach or opening in or through any curb in any street or other public way without first procuring a permit therefor from the Department of Building, Zoning and Environmental Compliance.

(c)This section shall not apply to a property owner who himself or herself constructs or repairs not more than fifty square feet of the sidewalk abutting his or her property.
(Ord. 76-015. Passed 8-16-76.)

1028.05 PERMIT DENIAL OR REVOCATION; APPEALS.

(a)The Department of Building, Zoning and Environmental Compliance shall refuse to issue a permit for any crosswalk, sidewalk, driveway, driveway approach or curb cut that does not conform to the requirements of this chapter. In addition, the Department may refuse to issue a permit for any crosswalk, sidewalk, driveway, driveway approach or curb cut if, in the discretion of the Department, the crosswalk, sidewalk, driveway, driveway approach or curb cut will unduly interfere with the movement of traffic or pedestrian safety.

(b)All work done pursuant to any permit shall be inspected by the City Engineer or his or her authorized representative. Any permit so granted may be revoked where either the workmanship or materials used do not conform to the plans and specifications approved or required upon issuance of the permit, or when the terms of any work authorized by any permit cause any such work to be performed while that permit is suspended or revoked by the City Building Official.

(c)If the Department of Building, Zoning and Environmental Compliance shall refuse to issue any permit, the applicant may appeal to the Building and Housing Board of Appeals, which shall grant a hearing thereon, and the decision of such Board shall be final. In granting a permit after such hearing, the Board may impose such conditions therefor as it may deem desirable to protect the safety of persons and property.

1028.06 BOND AND INSURANCE REQUIREMENTS; CONTRACTOR'S LICENSE REQUIRED.

(a) Excluding the exception of an abutting property owner who is doing not more than fifty square feet of work, and licensed and registered contractors, every applicant shall provide the Building Official's office with a cash bond, surety bond or affidavit from his or her insurance carrier stating that his or her insurance policy in effect covers the costs of the following requirements:

- (1) Completing the crosswalk, driveway, driveway approach or sidewalk or restoring the curb to its original state.
- (2) Relaying cables and moving hydrants, poles and other objects displaced by construction.

(b) Contractors shall comply with the following:

- (1) All contractors or subcontractors, including concrete brick pavers, who are not licensed or regulated by the City as general contractors and who are engaged in activities covered by this chapter, shall be licensed.
- (2) By January 10 or whenever they start engaging in business, and every January 10 thereafter, contractors and subcontractors shall apply to the Department of Building, Zoning and Environmental Compliance for a license.
- (3) The license shall designate the name, address and telephone number of the contractor and such other information as is required by the Department of Building, Zoning and Environmental Compliance. It shall also designate the responsible person for contact by the Department of Building, Zoning and Environmental Compliance.
- (4) The contractor shall provide a certificate of insurance, indicating insurance coverage in an amount to be established, from time to time, by resolution of Council, unless otherwise set by ordinance of Council.
- (5) The annual license fee shall be ten dollars (\$10.00), payable to the Clerk/Treasurer.

1028.07 LICENSE DENIAL OR REVOCATION; APPEALS.

(a) A license may be denied or revoked where the Department of Building, Zoning and Environmental Compliance finds:

- (1) Noncompliance with the requirements of this chapter.
- (2) Within one year, a series of three or more verified complaints against the contractor involving improper workmanship.

(b) Any contractor denied a license by the Department of Building, Zoning and Environmental Compliance may immediately appeal to the Building and Housing Board of Appeals.

(c) A fee of fifty dollars (\$50.00) shall be charged for such appeal. The fee shall be returned if the contractor wins his or her appeal. If the license denial is upheld, then the fee shall go to pay the costs of the Building and Housing Board of Appeals.

(d) The Building and Housing Board of Appeals shall conduct a hearing, listen to evidence and record testimony, and its decision will be the final administrative remedy.

1028.08 SIDEWALK MAINTENANCE; NOTIFICATION OF DANGEROUS CONDITIONS.

(a) No person shall allow any sidewalk which adjoins property owned by him or her to fall into a state of disrepair or be unsafe. If any owner shall neglect to keep and maintain the sidewalk along the front, rear or side of the land owned by him or her in good repair and safe for the use of the public, such owner shall be liable to any injured party for damage sustained by reason of this failure. In any event, the owner shall be liable to the City for damages recovered, if any, against the City because of injury sustained by any person by reason of the sidewalk being unsafe and out of repair.

(b) It shall be the duty of the owner of abutting property to notify the Engineering Department of any defect, depression, crack or other dangerous condition, immediately if during the working day, or the next working day if after working hours.

(Ord. 76-015. Passed 8-16-76.)

1028.09 NOTICE TO REPAIR SIDEWALKS; NONCOMPLIANCE; REMEDY OF CITY; EMERGENCIES.

Whenever the Engineering Department shall determine that a sidewalk is unsafe for use, written notice thereof shall be given to the owner of the abutting premises by mail, addressed to the last known address of said owner, or if the owner or his or her address is unknown, by delivering the notice and leaving the same with a person of suitable age and discretion at the premises, or if such person is not found, by posting such notice in some conspicuous place on the premises. The notice shall specify the construction of the sidewalk required and specifications therefor, in order for the condition to be repaired, and the nature of the repairs to be made. In the event such owner fails to repair or construct the sidewalk in thirty days, the City Engineer shall report the same to the Council, with the request that the Council pass a resolution directing the owner to repair the sidewalk within ten days and stating that if such repair is not made within such period it will be done by the City and the expense thereof will be charged to the premises and the owner thereof and collected as provided in Section 253 of the City Charter. The City Engineer may dispense with the notice and report and request the City Council for authority to repair a sidewalk if, in his or her opinion, the sidewalk condition is unsafe and dangerous and requires immediate repair to assure public safety and to prevent the possibility of City liability for personal injury or property damage. Before the Council shall grant such authority to the City Engineer, it shall follow the procedure set forth in Sections 252 and 253 of the City Charter. The cost of repairs or construction hereunder, made by the City, shall be charged against the premises abutting such sidewalk and the owner thereof, in accordance with the provisions of the Charter relative to sidewalks. (Ord. 76-015. Passed 8-16-76.)

1028.10 REPAIR OF DAMAGED SIDEWALKS AND DRIVEWAYS BY CITY.

The City shall repair any sidewalks and/or driveways damaged by trees that lie within the City right of way, or where the City has installed water service and damage results therefrom.

1028.11 CONSTRUCTION STANDARDS.

Material and construction specifications for sidewalks, driveway approaches, driveways and private sidewalks and driveways utilizing concrete brick pavers shall conform to the current edition of a pamphlet entitled City of Monroe Sidewalk, Driveway and Driveway Approach Specifications, a copy of which shall be available for public inspection in the office of the Building Official of the City of Monroe. Further, concrete paver and concrete brick paver specifications shall be those standards utilized by the National Concrete Masonry Association and the National Precast Concrete Association. (Ord. 90-008. Passed 5-14-90.)

1028.12 INSPECTIONS.

Prior to the placement of concrete or concrete brick pavers on the prepared subgrade of any sidewalk, crosswalk, driveway or private sidewalk or driveway, there must first be an inspection by the City. Any person exempted under Section 1028.04 from the requirement of obtaining a permit shall also be exempted from the inspection requirement of this section. (Ord. 90-008. Passed 5-14-90.)

1028.13 CURB CUT PERMITS; CONDITION FOR ISSUANCE.

No permit to cut any curb along a paved street shall be issued unless the applicant shall agree, as a condition of the issuance of the permit, to install a driveway apron of concrete or an alternative material within ninety days after the completion of the cut. (Ord. 76-015. Passed 8-16-76.)

1028.14 CURB CUT SPECIFICATIONS.

(a)The maximum cut for a residential driveway shall be thirty feet and the minimum cut shall be fourteen feet, except as otherwise approved by the City Engineer.

(b)No curb cut shall extend beyond the property line (as extended to the curb of the street) unless written approval is obtained for encroachment on the adjacent property frontage from the owner.

(c)The necessary adjustments to utility posts, light standards, fire hydrants, catch basins, street or railway signs, signals or other public improvements or installations shall be made at the expense of the property owner whose construction or repair has necessitated such adjustments.

(d) For trees located within twelve inches of the proposed driveway approach:

- (1) Upon request of the property owner, the Department of Public Services shall investigate for the best alternative routes or other possible placement of the driveway. This investigation and report shall be in conjunction with the Engineering Department.
- (2) If, after due investigation, an alternative route or routes for the driveway placement are not found, and due to the necessity of the placement agreed upon between the property owner and the City as represented by the Department of Public Services and the Engineering Department, the homeowner may request that the City share equally in the cost of the removal.

(e) For trees located within twelve inches of existing driveway approaches, in City-owned parkway terraces:

- (1) Upon the request of the homeowner, such trees may be removed by the Department of Public Services with the concurrence of the Engineering Department.
- (2) The property owner shall, if the tree removal is at his or her request, pay a fee to be determined from time to time by resolution of Council.
- (3) Said fee shall be paid to the Clerk/Treasurer prior to removal.

(f) The minimum distance between curb cuts, except those serving residential property, shall be twenty feet.

(g) The maximum number of linear feet of sidewalk driveway crossings permitted for any lot, parcel of land, business or enterprise shall be forty-five percent of the total abutting street frontage.

(h) The minimum distance between any curb cut and a public crosswalk shall be twenty feet.

1028.15 STANDARDS FOR SIDEWALKS AND DRIVEWAY APPROACHES.

(a) All sidewalks and driveway approaches to be constructed shall conform to the following standards:

- (1) Sidewalk width shall be a minimum of four feet, unless otherwise required by State law.
- (2) Residential driveway approaches shall be tapered three feet in width from the curb to the sidewalk on each side of the driveway.
- (3) Residential driveways shall be a minimum of eight feet (8') in width on property side of sidewalk.
- (4) Residential driveway approaches shall be constructed so that they do not adversely affect the roadway drainage, and they shall conform to current Engineering Department standards, a copy of which shall be available for public inspection.
- (5) A curved curb return may be used on residential driveway approaches upon approval of the City Engineer.
- (6) Residential driveway approaches where the roadway is not curbed shall be paved without curbs.
- (7) Commercial driveways shall be constructed in conformance with the standards of the Michigan Department of State Highways and Transportation.
- (8) Any variation in standards must be approved by the City Engineer.

(b) All driveways installed after the passage of this chapter, extending from the City's right-of-way line onto private residential property, shall be constructed according to the requirements of Section 1028.11.

1028.16 USE OF SIDEWALKS FOR PRIVATE DRIVEWAYS.

Every person who intends or plans to use any portion of the sidewalk as a private driveway shall, if the Department of Development Services certifies that the sidewalk area is inadequate for vehicular traffic, reconstruct the sidewalk in such a manner that the sidewalk is capable of carrying vehicular traffic without creating pedestrian hazards and is in accordance with the specifications of this chapter in respect to slope, drainage, reinforcement, finish and other construction features.
(Ord. 76-015. Passed 8-16-76.)

1028.17 DRIVEWAY APPROACHES; CONCRETE REQUIRED.

Any driveway approach abutting upon a paved street shall be paved with concrete, provided that driveway approaches presently paved with asphalt do not need to be repaved with concrete. All newly constructed driveway approaches shall be paved with concrete, unless alternatives are approved by the Engineering Department.

(Ord. 76-015. Passed 8-16-76.)

1028.18 PERMIT FEES; TIME LIMIT ON WORK; NOTICE TO CITY BEFORE COMMENCING WORK.

(a)The fee for a sidewalk, driveway or driveway approach permit shall be at the rates stated in the Uniform Building Code, as adopted in Chapter 1420 of the Building and Housing Code. A summary of these rates and schedules shall be included in the pamphlet described in Section 1028.11.

(b)Work contemplated under any permit must be completed within sixty days of the issuance of the permit.

(c)The Department of Building, Zoning, and Environmental Compliance must be notified at least twenty-four hours in advance of the commencement of any construction under the permit.

(Ord. 76-015. Passed 8-16-76.)

1028.99 PENALTY.

(EDITOR'S NOTE: See Section 202.99 for general Code penalty if no specific penalty is provided.)SECTION 1

CONCRETE SIDEWALK & DRIVEWAY APPROACH SPECIFICATIONS

GENERAL REQUIREMENTS:

These specifications apply to concrete sidewalk and driveway approaches in residential, business, and other districts. The specifications apply to the preparation of the sub-base, the pouring and finishing of the concrete, and its protection during early hardening.

EXCAVATION:

The excavation shall be made to a depth of not less than four (4") inches below the finished surface of the walk, or six (6") inches below the finished surface of the driveway approach as established by the City Engineer.

SUB-GRADE:

The sub-grade shall be compacted to a firm, unyielding surface by rolling or hand tamping. All soft or spongy areas shall be removed and all depressions filled with suitable material which shall be thoroughly compacted in layers not exceeding six (6") inches in thickness. Where deep fills are encountered the top of fill shall extend beyond the sidewalk extents on each side of at least one (1') foot and the sides shall have a slope of at least 1:1-1/2 ratio. The sub-grade shall be kept moist while being compacted and shall be wet when the concrete is deposited, but shall show no pools of water.

FORMS:

Material: Forms shall be free from warp and of sufficient strength to resist springing out of shape.

Setting: The forms shall be well staked or otherwise held to the established lines and grades and their upper edges shall conform to the established grade of the finished concrete. Forms for sidewalk shall be set to effect a transverse grade of three-sixteenths (3/16") inch per foot towards the street (2% maximum).

Treatment: All wood forms shall be thoroughly wetted and metal forms oiled or coated with soft soap or whitewash before depositing any concrete against them. All mortar and dirt shall be removed from forms previously used.

MATERIALS:

Concrete: The materials used for concrete shall conform to the City of Monroe General Material Specifications.

All concrete shall contain a minimum of six (6) sacks of Portland Cement per cubic yard, shall have a maximum slump of three and one-half (3-1/2") inches, and shall attain a compressive strength in twenty-eight (28) days of thirty-five hundred (3,500) pounds per square inch (psi.) The concrete shall be air-entrained and shall contain 6.5% entrained air. Local aggregates may be utilized upon approval of the City Engineer.

Joint Filler: Expansion joint material shall be one-half (1/2") inch or one (1") inch in thickness and shall consist of preformed strips of suitable fibers of a cellular nature securely bound together and then uniformly saturated with asphalt to at least 35 percent weight of the finished product. The joint material shall extrude the full depth. Drive approaches shall have one (1") inch strips placed at the curblin where one-half (1/2") inch strips used in the sidewalks (see detail sheets.)

Reinforcement: Welded steel wire fabric may be used optionally for concrete reinforcement and shall conform to the requirements of ASTM A82 and A185. The weight of the reinforcement shall equal eighty-three (83) pounds per one hundred (100) square feet unless specified otherwise by the City Engineer.

CONSTRUCTION:

Size of Slab: The slabs or independently divided blocks, when not reinforced, shall have an area of not more than one hundred (100) square feet. Length of slab shall be equal to the width and all slabs exceeding one hundred (100) square feet in area shall be reinforced.

Thickness: Minimum thickness of sidewalks shall be four (4") inches. Minimum thickness of driveway approach shall be six (6") inches. Where a driveway approach crosses a sidewalk the sidewalk shall be six (6") inches thick.

JOINTS:

Construction Joints: Sidewalk construction joints shall be spaced at a distance equal to the width of the sidewalk.

Expansion Joints: Spacing of the expansion joints in the sidewalk shall be of not more than fifty (50') feet apart in the length of the sidewalk section and shall be filled with a preformed strip (see **Joint Filler** Specifications and/or details.) A similar joint shall be provided where sidewalks abut curbs, driveways, or other rigid structures. The joint material shall extend to the full depth of the joint and the top shall be slightly below the finished surface of the concrete.

PROTECTION OF EDGES:

The upper edges of slabs shall be rounded to a radius of one-quarter (1/4") inch.

PLACING OF REINFORCEMENT:

Reinforcement, if used, shall be placed two (2") above the sub-grade surface. The reinforcement shall not cross expansion joints and shall lap sufficiently to develop the full strength.

PLACING OF CONCRETE:

After mixing, concrete shall be deposited rapidly and successive batches placed in a continuous operation to complete individual sections. Forms shall be filled and concrete brought to established grade by means of a straight edge. The concrete shall be thoroughly spaded along the faces of the forms and before finishing operations are started. In no case shall concrete be placed upon a frozen sub-grade or sub-base.

CONCRETE FINISHING:

The surface shall be floated just enough to produce a smooth surface free from irregularities. The surface shall then be broomed transversely too slightly roughen the surface and remove the finished tool marks.

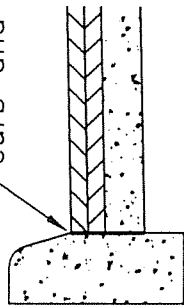
PROTECTION:

Treatment and Curing: As soon as the finished concrete has hardened sufficiently to prevent damage, the surface shall be sprinkled with water, covered with a waterproof cover, or a chemical curing agent may be used unless temperatures are expected to fall below 40° Fahrenheit. No vehicular traffic will be permitted on the concrete for 10 days or until the concrete has reached 70 percent of the design strength. When desired by the Engineer, a high early strength or quick setting cement may be used and the curing period reduced to twenty-four hours.

Additional Protection: The freshly finished concrete shall be protected from hot sun and drying winds until it can be sprinkled or covered as specified above. The concrete surface must not be damaged or pitted by raindrops, and the contractor shall provide and use, when necessary, sufficient tarpaulins to completely cover all sections that have been within the preceding twelve hours. The contractor shall erect and maintain suitable barriers to protect the concrete from traffic and any section damaged from traffic or other causes occurring prior to its official acceptance shall be repaired or replaced by the contractor at his or her own expense in a manner satisfactory to the Engineer. Reference the Michigan Manual Uniform Traffic Control Device (MMUTCD) for further information on protection with signage. Before the sidewalk or drive approach is opened to traffic the covering shall be removed and disposed of by the contractor. The sidewalk or drive approach shall not be opened to traffic until directed by the Engineer.

Temperature Below 35 ° Fahrenheit: If at any time during the progress of the work the temperature is, or in the opinion of the Engineer will, within twenty-four (24) hours, drop to or below 35 ° Fahrenheit, the water and aggregates shall be heated and precautions taken to protect the work from freezing for at least five (5) days.

Sawcut full depth along face of curb and remove entire curb



See Page 10 (Detail A) For Replacement

①

ASPHALT PAVEMENT WITH STRAIGHT CURBING

Remove entire curb & gutter

Sawcut existing joint full depth



See Page 10 (Detail B) For Replacement

②

ASPHALT PAVEMENT WITH CURB AND GUTTER

Sawcut full depth and remove curb & gutter

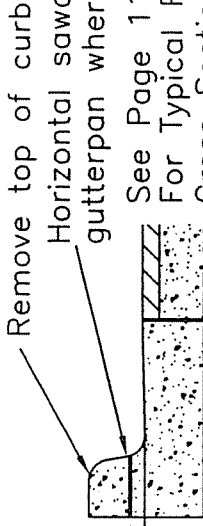


See Page 10 (Detail C) For Replacement

③

CONCRETE PAVEMENT WITH INTEGRAL CURB AND GUTTER

1 1/2" Max. For Drive Approach (See Drop Curb Detail Pg. 14)

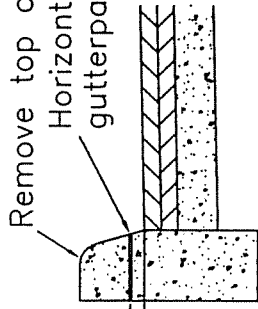


Remove top of curb
Horizontal sawcut to tip toward gutterpan wherever possible
See Page 11 (Detail D) For Typical Replacement Cross Section

④

CURB TOP REMOVAL FOR CURB & GUTTER

1 1/2" Max. For Drive Approach (See Drop Curb Detail Pg. 14)



Remove top of curb
Horizontal sawcut to tip toward gutterpan wherever possible
See Page 11 (Detail E) For Typical Replacement Cross Section

⑤

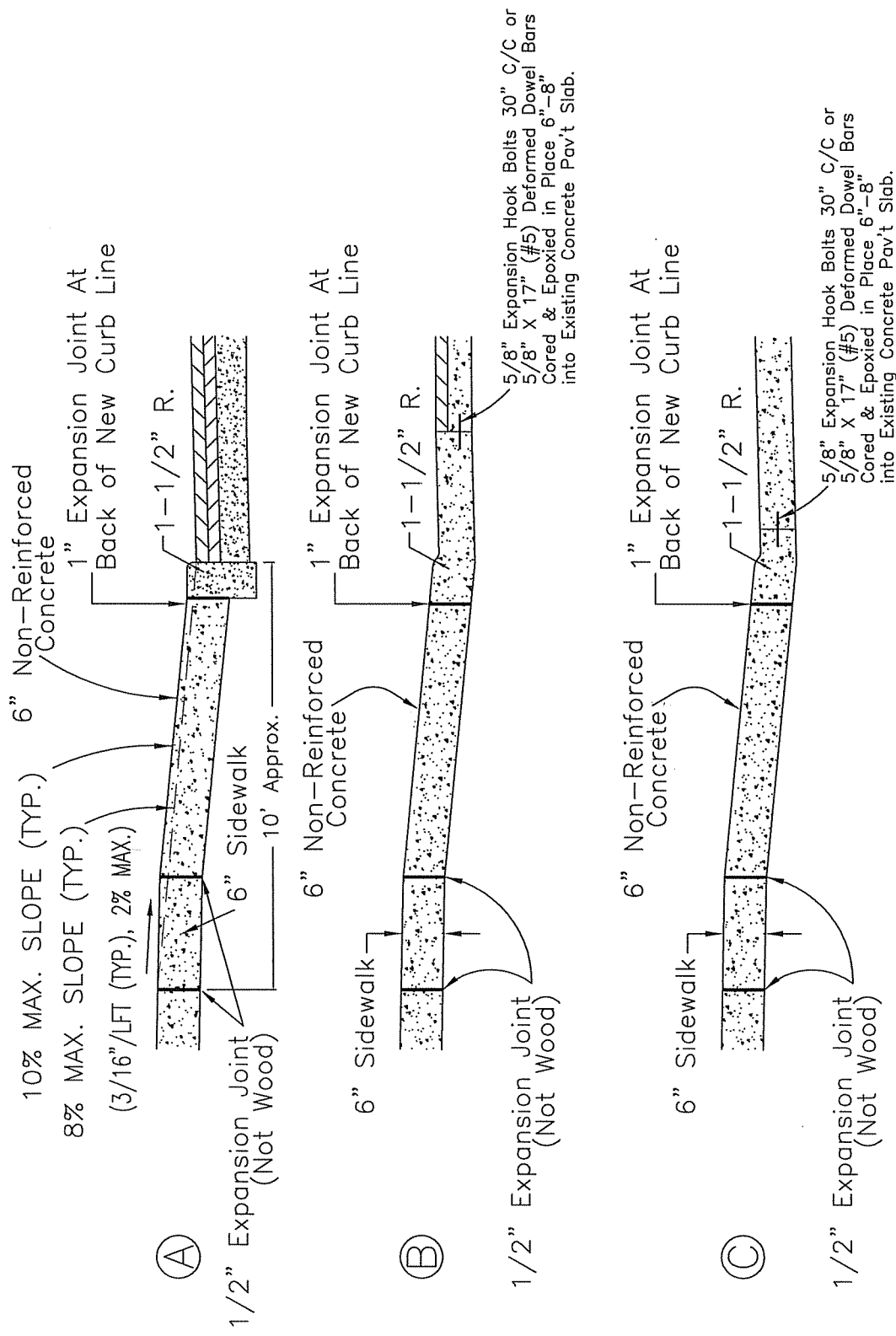
REMOVE TOP OF CURB TOP REMOVAL STRAIGHT CURBING

Remove top of curb
Horizontal sawcut to tip toward gutterpan wherever possible
See Page 11 (Detail F) For Typical Replacement Cross Section

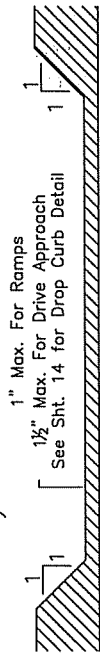
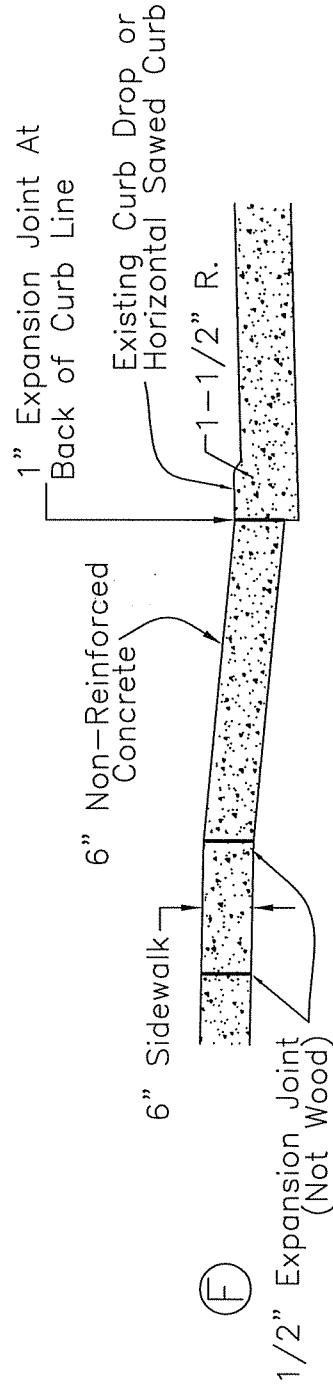
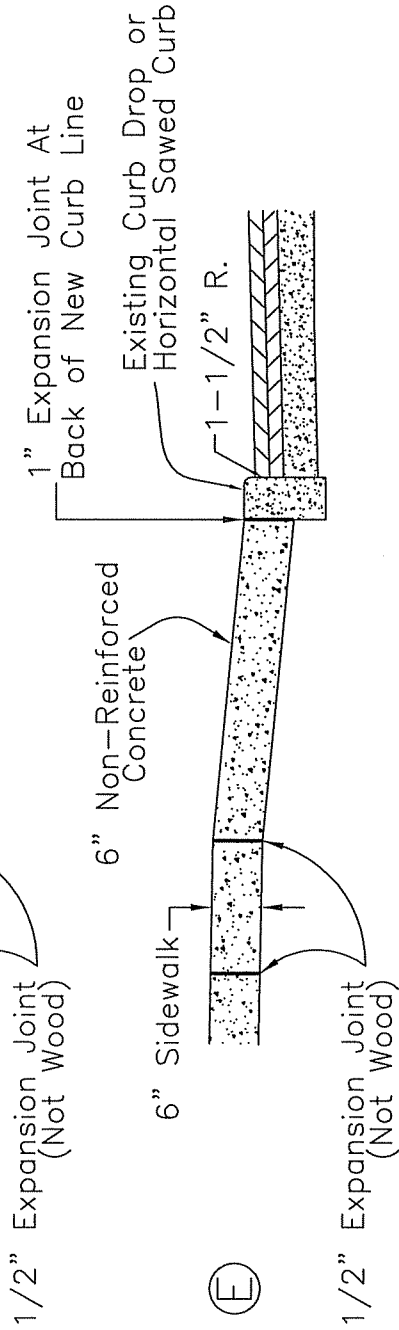
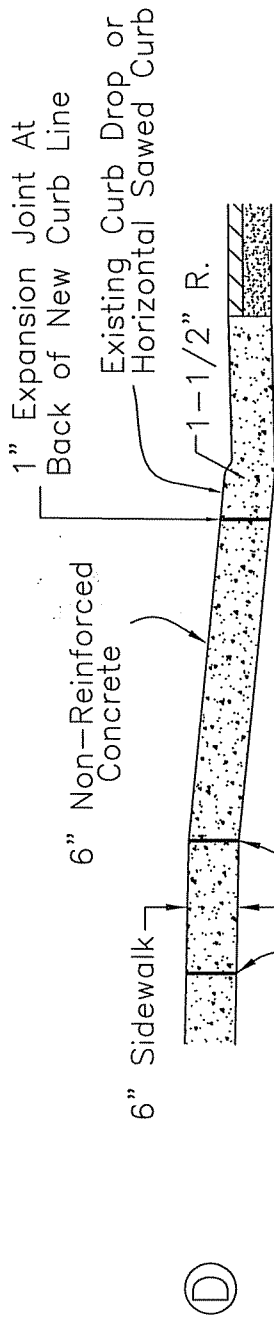
⑥

CURB TOP REMOVAL FOR CONCRETE PAVEMENT

CITY OF MONROE
RESIDENTIAL
REMOVALS FOR DRIVEWAY
APPROACH CURB DROPS



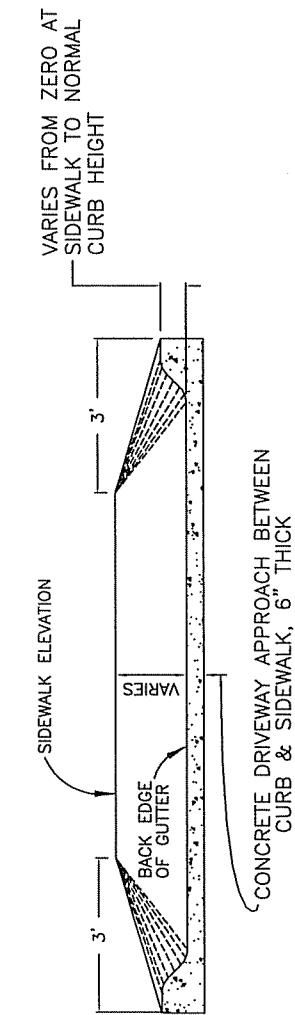
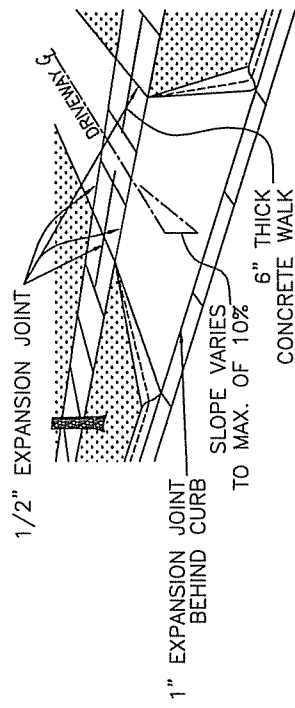
| |
|---|
| CITY OF MONROE |
| RESIDENTIAL DRIVEWAY APPROACH DETAIL NEW OR REPLACEMENT |



**VIEW FACING CURB END
OF HORIZONTAL CURB DETAIL**

CITY OF MONROE

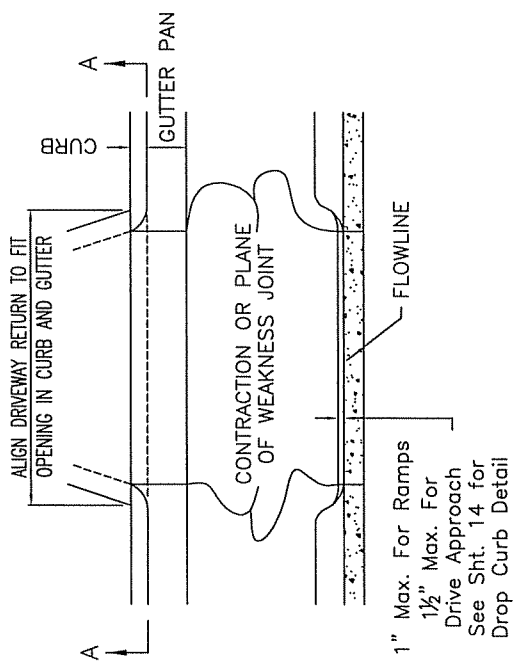
RESIDENTIAL
DRIVEWAY APPROACH DETAIL
NEW OR REPLACEMENT



CONCRETE DRIVEWAY APPROACH

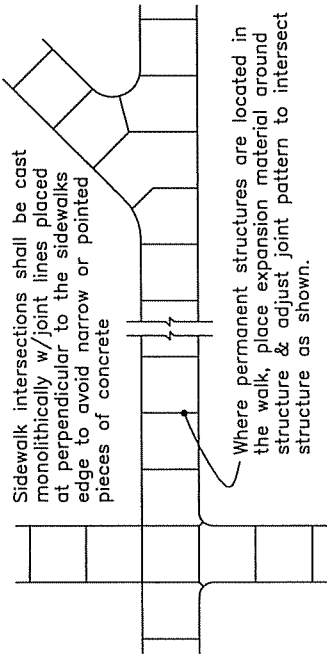
Note:

- For curb and gutter details, see page 18 & standard plan MDOT R-30-D series
- Reinforcement is not required in driveway approaches
- When a proposed driveway approach exceeds 300 sq ft, it must be poured in 2 or more pours
- Materials other than concrete are not permitted for approaches
- Monolithic curb is included in the driveway approach quantity
- Reinforcement is not required unless specified on the plans
- Sidewalk transverse slope may vary from zero to 2% maximum
- When transverse slope is less than 3/16" per foot, longitudinal drainage must be provided
- In setting grades for commercial drives the types of vehicles using the drive should be considered.

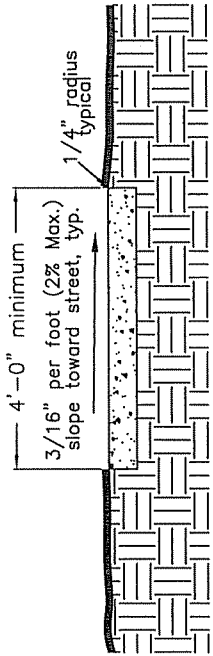


SECTION A-A
CONCRETE DRIVEWAY
OPENING

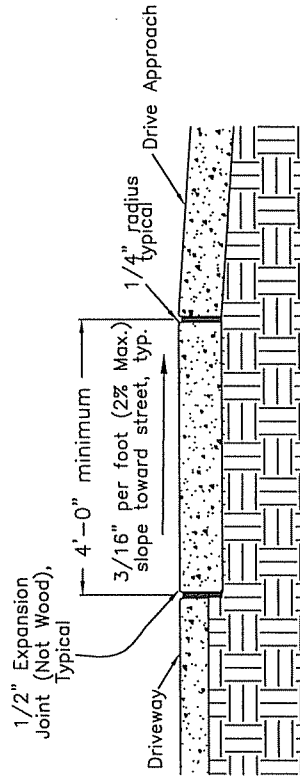
CITY OF MONROE
RESIDENTIAL DRIVEWAY
OPENINGS, APPROACHES
AND CONCRETE SIDEWALK



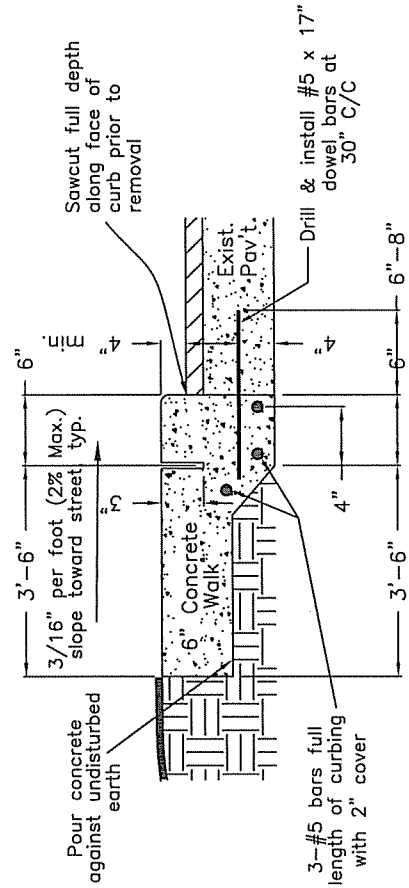
TYPICAL SIDEWALK LAYOUTS



4" CONCRETE SIDEWALK



6" CONCRETE SIDEWALK AT DRIVEWAY APPROACH



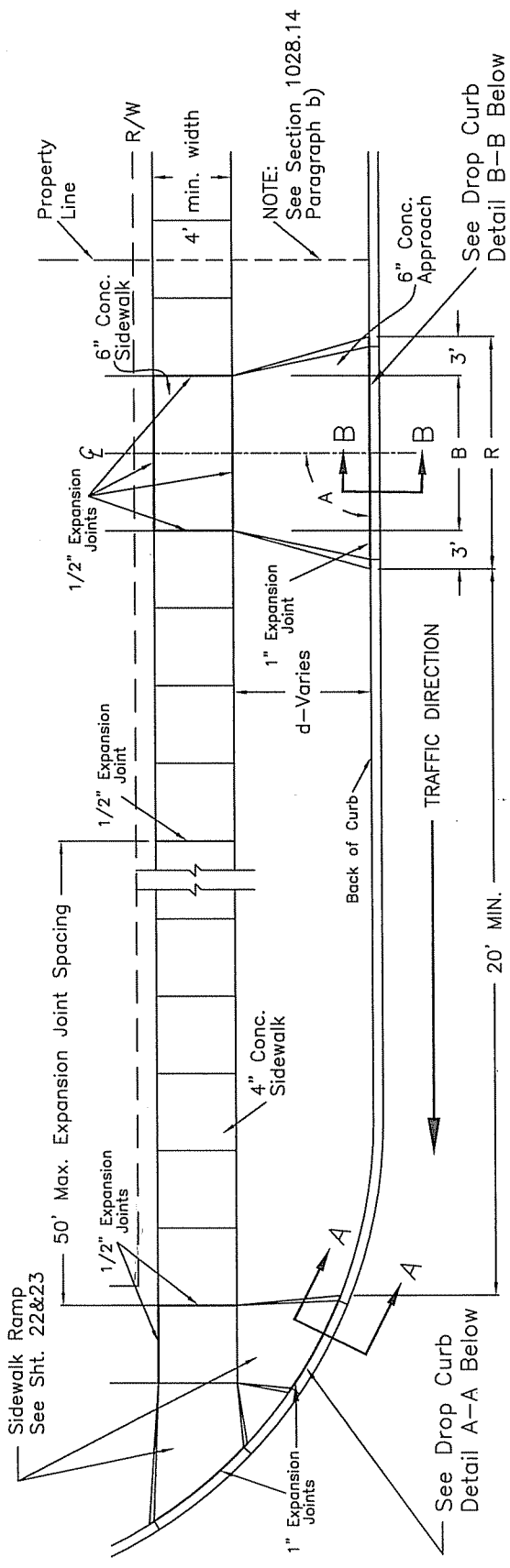
INTEGRAL CURB & WALK

NOTE:

Sidewalk transverse slope may vary from zero to 2% maximum. When transverse slope is less than 3/16" per foot, longitudinal drainage must be provided.

CITY OF MONROE

DRIVEWAY OPENINGS & APPROACHES AND CONCRETE SIDEWALKS



TYPICAL SIDEWALK & DRIVEWAY LAYOUT

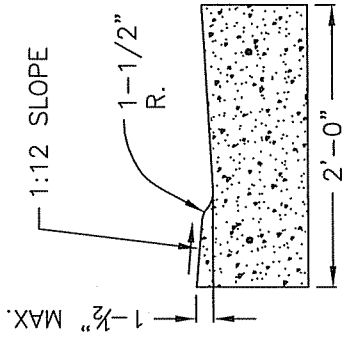
NOTE: Wood shall not be utilized as a material for expansion joints.

| RESIDENTIAL DRIVEWAYS & APPROACHES | |
|------------------------------------|----------|
| DESIGN FEATURES | STANDARD |
| A INTERSECTING ANGLE | 90° |
| B DRIVEWAY WIDTH | 10 ft |
| C CURB CUT/WIDTH AT PAVT | 16 ft |

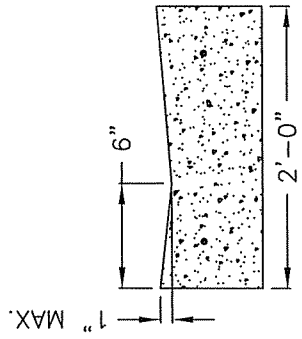
The standard shall be used unless engineering judgement determines an alternative solution within the range.

CITY OF MONROE

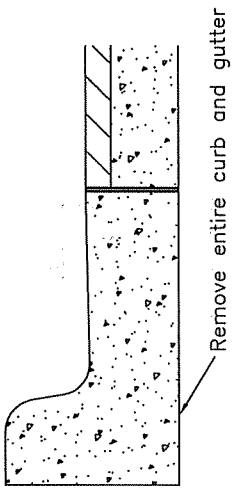
RESIDENTIAL DRIVEWAY OPENINGS, APPROACHES AND CONCRETE SIDEWALKS



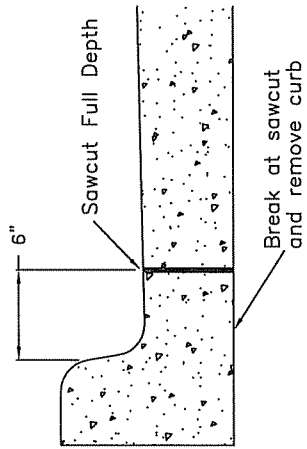
DRIVE APPROACH DROP CURB DETAIL SECTION B-B



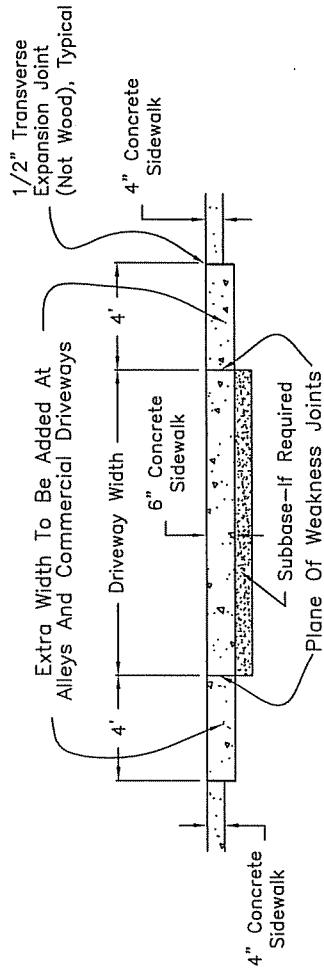
RAMP DROP CURB DETAIL SECTION A-A



ASPHALT PAVEMENT WITH CURB AND GUTTER



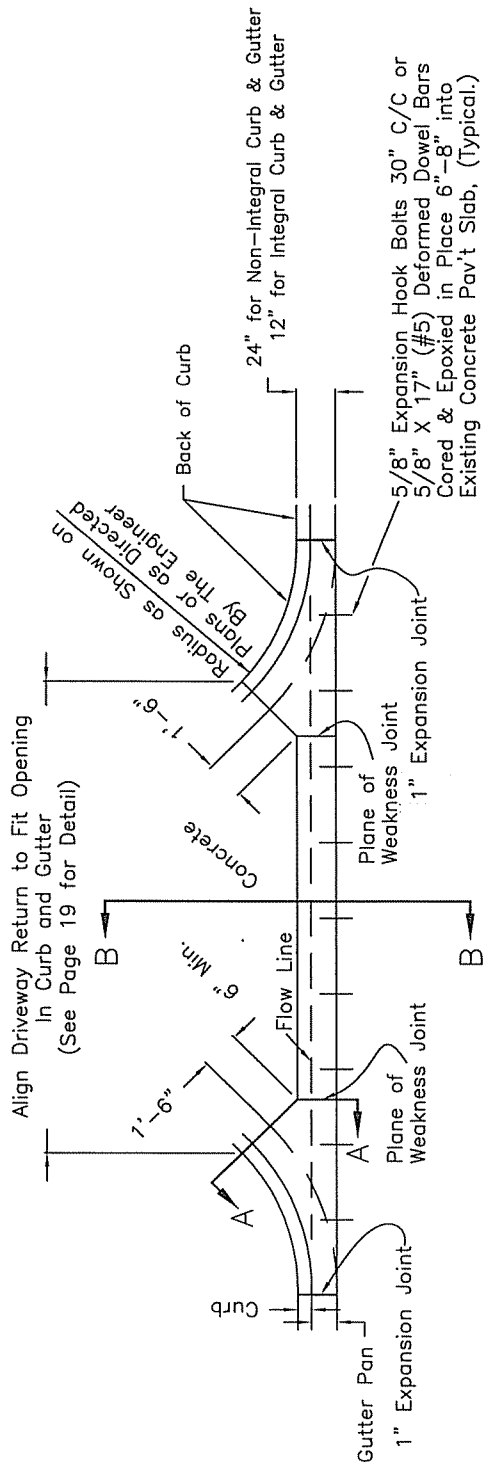
CONCRETE PAVEMENT WITH INTEGRAL CURB AND GUTTER



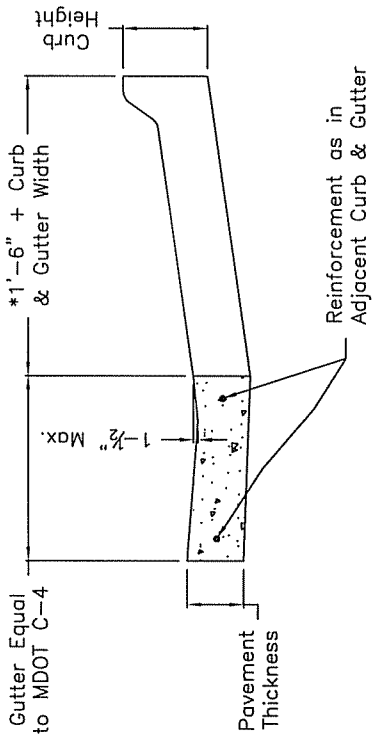
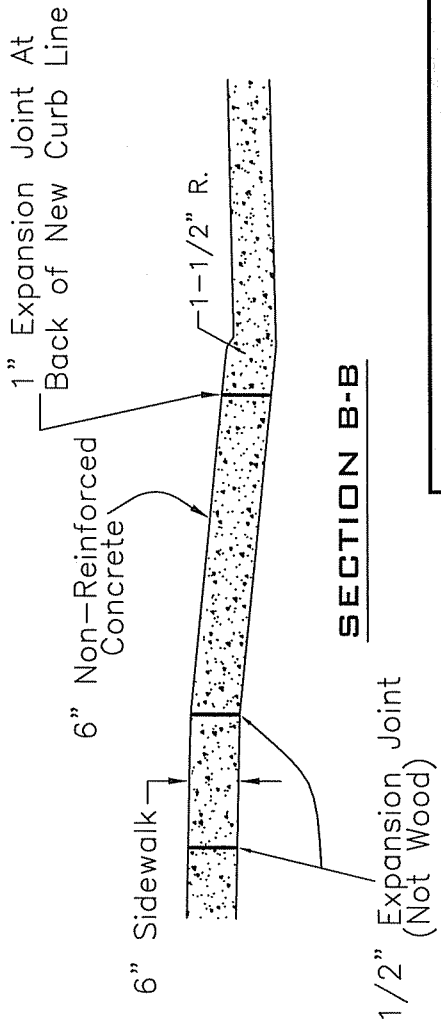
**TYPICAL ALLEY & COMMERCIAL
SIDEWALK THICKNESS**

CITY OF MONROE

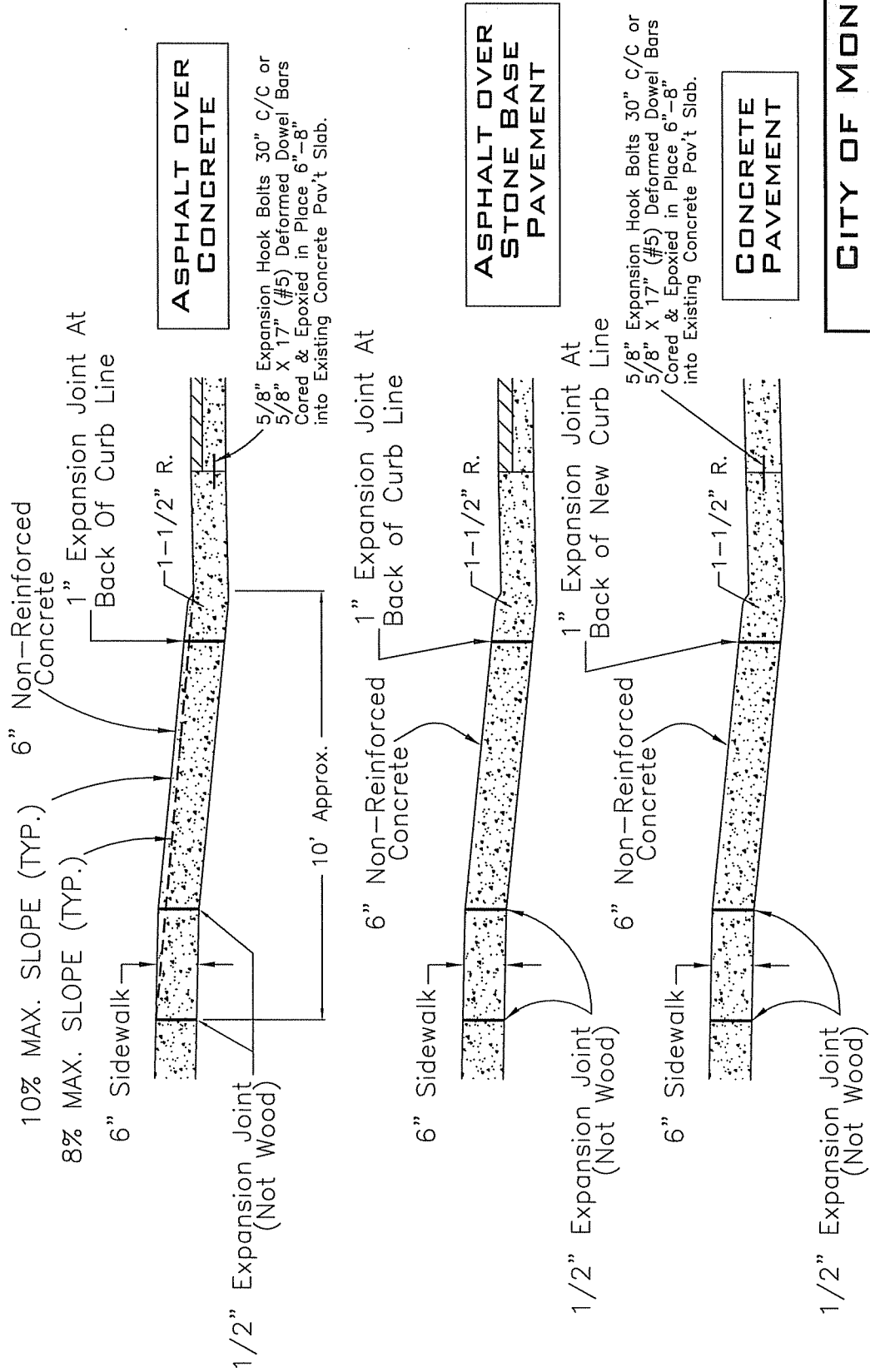
**CURB REMOVAL FOR
DRIVE APPROACH
COMMERCIAL & INDUSTRIAL**



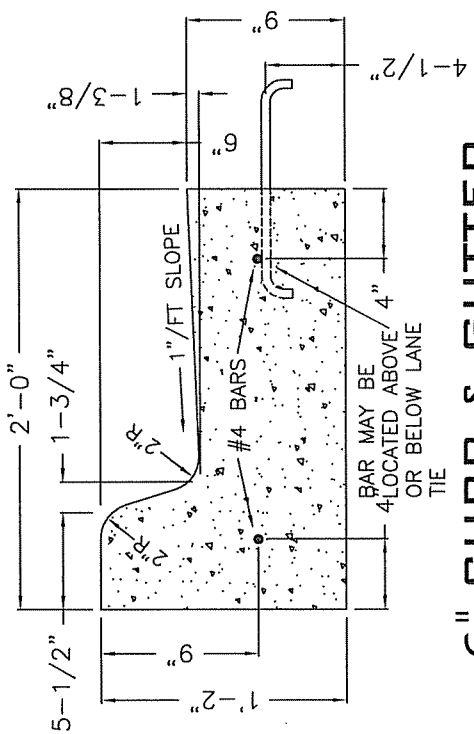
CONCRETE DRIVEWAY OPENING-DETAIL M



CITY OF MONROE
 DRIVEWAY OPENINGS
 AND APPROACHES
 COMMERCIAL & INDUSTRIAL

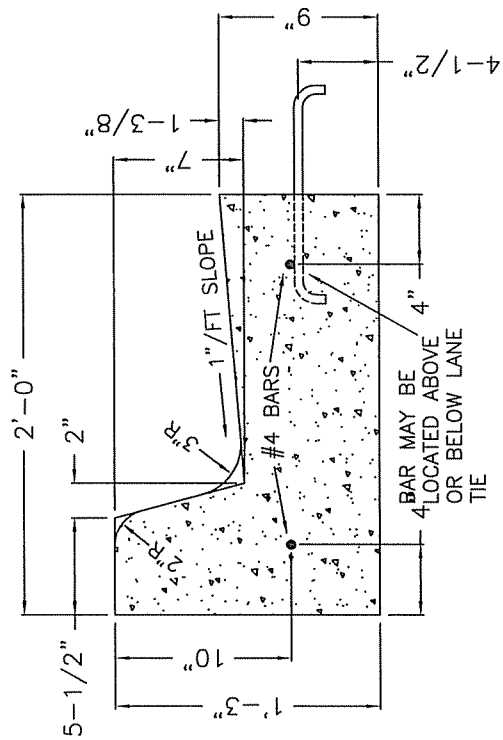


CITY OF MONROE
 DRIVEWAY APPROACH
 DETAILS
 COMMERCIAL & INDUSTRIAL



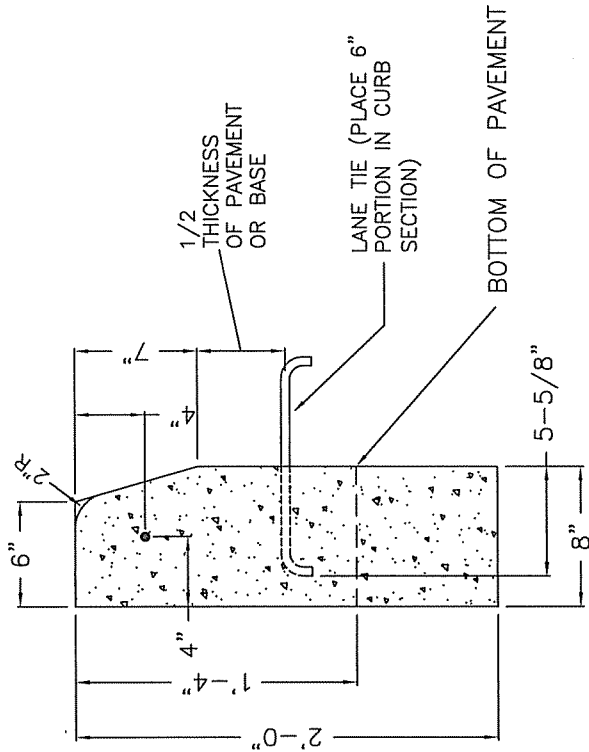
6" CURB & GUTTER

(MDOT F-4)



7" CURB & GUTTER

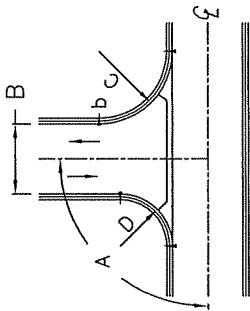
(MDOT C-4)



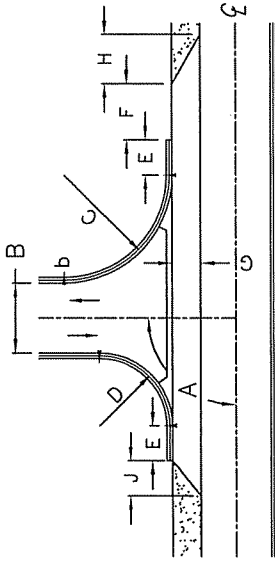
STRAIGHT CURB

(MDOT E-2)

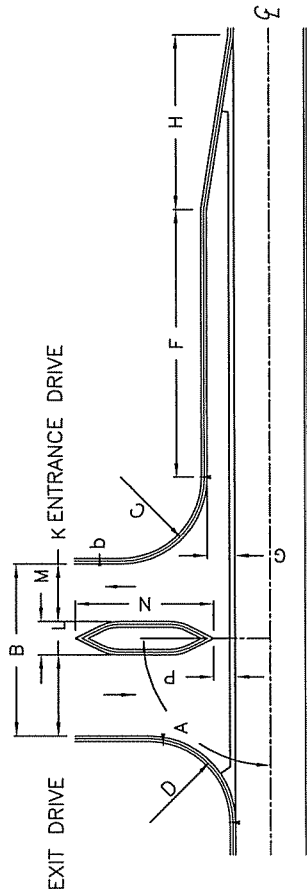
CITY OF MONROE
 CONCRETE CURB &
 CONCRETE
 CURB & GUTTER



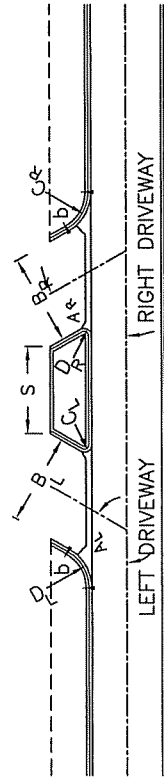
SINGLE TWO-WAY COMMERCIAL DRIVEWAY ON CURBED HIGHWAY



SINGLE TWO-WAY COMMERCIAL DRIVEWAY ON UNCURBED HIGHWAY



DIVIDED COMMERCIAL DRIVEWAY ON CURBED HIGHWAY



DUAL SERVICE DRIVEWAYS ON CURBED HIGHWAY

CITY OF MONROE

DRIVE APPROACHES
COMMERCIAL & INDUSTRIAL

TABLE 1

| COMMERCIAL RIGHT-TURN LANE & TAPERS | | | | | |
|---|---|---------------------------------|--------------|------------------|--------------|
| Design Features | | Curbed Highway | | Uncurbed Highway | |
| | | Standard | Range | Standard | Range |
| Curb ending | E | Not applicable | | 10 ft | No range |
| Right-turn Lane Length | F | As determined by the department | | | |
| Right-turn lane Width | G | 12 ft | 10 to 15 ft | 12 ft | 10 to 15 ft |
| Entering Taper | H | 150 ft* | 50 to 150 ft | 150 ft | 50 to 150 ft |
| Exiting Taper | J | not applicable | | 50 ft | 50 to 150 ft |
| *If a right turn lane is used, the Entering Taper standard shall be 50 ft. Without a right-turn lane, the Entering Taper standard shall be 150 ft. | | | | | |

TABLE 2

| TWO-WAY COMMERCIAL DRIVEWAY | | | | | |
|-----------------------------|---|----------------|-------------|------------------|-------------|
| Design Features | | Curbed Highway | | Uncurbed Highway | |
| | | Standard | Range | Standard | Range |
| Intersecting Angle | A | 90° | 60 to 120° | 90° | 60 to 120° |
| Driveway Width | B | 30 ft | 12 to 50 ft | 30 ft | 15 to 50 ft |
| Entering Radius | C | 20 ft | 5 to 50 ft | 30 ft | 5 to 50 ft |
| Exiting Radius | D | 15 ft | 5 to 50 ft | 20 ft | 5 to 50 ft |

TABLE 3

| ONE-WAY COMMERCIAL DRIVEWAY | | | | | | |
|-----------------------------|-----------------|----------------|--------------|------------------|--------------|-------------|
| Design Features | | Curbed Highway | | Uncurbed Highway | | |
| | | Standard | Range | Standard | Range | |
| Distance Between Driveways | S | not applicable | 40 to 500 ft | not applicable | 40 to 500 ft | |
| Intersecting Angle | A | 90° | 60 to 120° | 90° | 60 to 120° | |
| Driveway Width | B | 16 ft | 16 to 30 ft | 16 ft | 16 to 30 ft | |
| One-Way In | Entering Radius | C _i | 20 ft | 15 to 50 ft | 20 ft | 15 to 50 ft |
| | Exiting Radius | D _i | 10 ft | 5 to 15 ft | 5 ft | 5 to 15 ft |
| One-Way Out | Entering Radius | C _o | 10 ft | 5 to 15 ft | 5 ft | 5 to 15 ft |
| | Exiting Radius | D _o | 20 ft | 15 to 50 ft | 20 ft | 15 to 50 ft |

The standard shall be used unless engineering judgement determines that another dimension within the range is more suitable for a particular site or special condition and is approved by the department.

TABLE 4

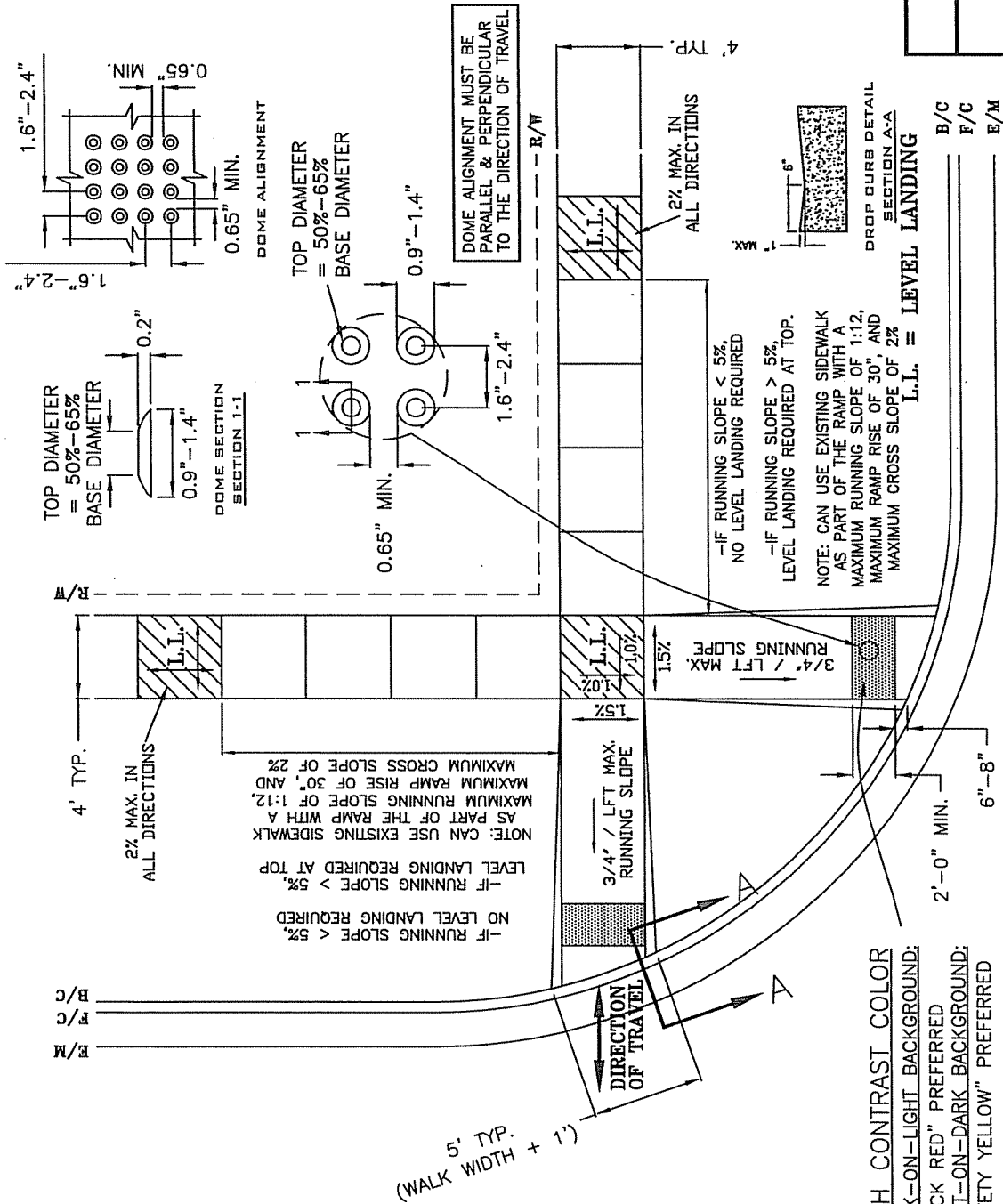
| DIVIDED COMMERCIAL DRIVEWAY | | | | | |
|-----------------------------|---|----------------|--------------|------------------|--------------|
| Design Features | | Curbed Highway | | Uncurbed Highway | |
| | | Standard | Range | Standard | Range |
| Intersecting Angle | A | 90° | 75 to 105° | 90° | 75 to 105° |
| Driveway Width | B | 48 ft | 42 to 90 ft | 48 ft | 42 to 90 ft |
| Entering Radius | C | 25 ft | 5 to 50 ft | 25 ft | 5 to 50 ft |
| Exiting Radius | D | 25 ft | 5 to 50 ft | 20 ft | 5 to 50 ft |
| Entrance Drive Width | K | 16 ft | 16 to 30 ft | 16 ft | 16 to 30 ft |
| Exit Drive Width | L | 22 ft | 16 to 30 ft | 22 ft | 16 to 30 ft |
| Island Width | M | 10 ft | 10 to 30 ft | 10 ft | 10 to 30 ft |
| Nose Offset | P | 8 ft | 2 to 10 ft | 14 ft | 12 to 17 ft |
| Island Length | N | 35 ft | 20 to 150 ft | 35 ft | 20 to 150 ft |

TABLE 5

| DUAL SERVICE DRIVEWAYS | | | | | | |
|----------------------------|--------------------|----------------|-------|------------------|-------|--------------|
| Design Features | | Curbed Highway | | Uncurbed Highway | | |
| | | Standard | Range | Standard | Range | |
| Right Driveway | Intersecting Angle | A _R | 60° | 45 to 90° | 60° | 45 to 90° |
| | Entering Radius | C _R | 15 ft | 5 to 50 ft | 20 ft | 5 to 50 ft |
| | Exiting Radius | D _R | 10 ft | 5 to 25 ft | 5 ft | 5 to 25 ft |
| Left Driveway | Intersecting Angle | A _L | 120° | 90 to 135° | 120° | 90 to 135° |
| | Entering Radius | C _L | 10 ft | 5 to 25 ft | 5 ft | 5 to 25 ft |
| | Exiting Radius | D _L | 15 ft | 5 to 50 ft | 20 ft | 5 to 50 ft |
| Driveway Width | | B | 30 ft | 12 to 50 ft | 30 ft | 15 to 50 ft |
| Distance Between Driveways | | S | 20 ft | 10 to 150 ft | 20 ft | 10 to 150 ft |

The standard shall be used unless engineering judgment determines that another dimension within the range is more suitable for a particular site or special condition and is approved by the department.

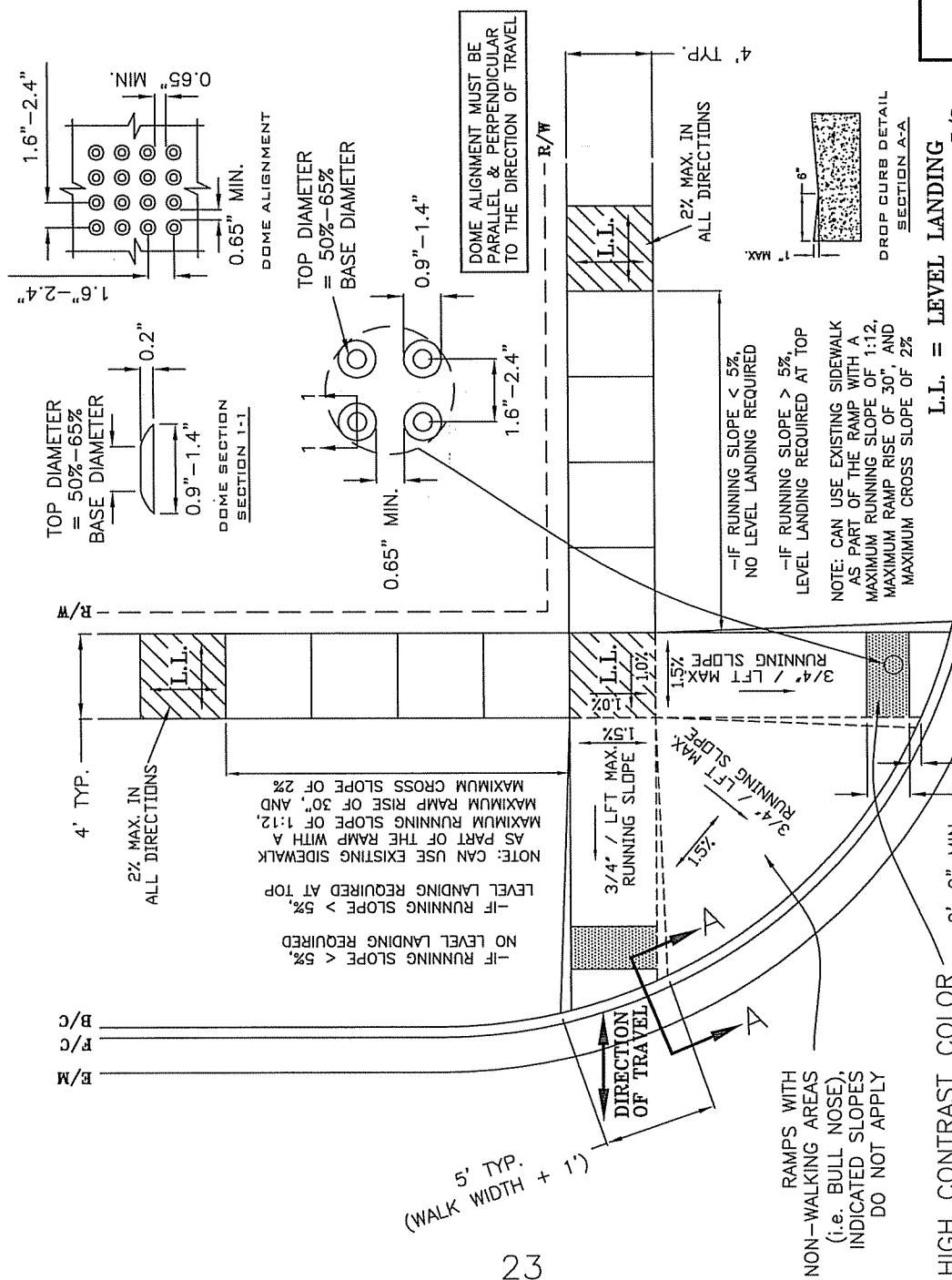
ADA SIDEWALK RAMP SPECIFICATIONS - EXHIBIT 2 (A)



HIGH CONTRAST COLOR
 DARK-ON-LIGHT BACKGROUND:
 "BRICK RED" PREFERRED
 LIGHT-ON-DARK BACKGROUND:
 "SAFETY YELLOW" PREFERRED

CITY OF MONROE
 CONCRETE SIDEWALK
 RAMPS
 RESIDENTIAL

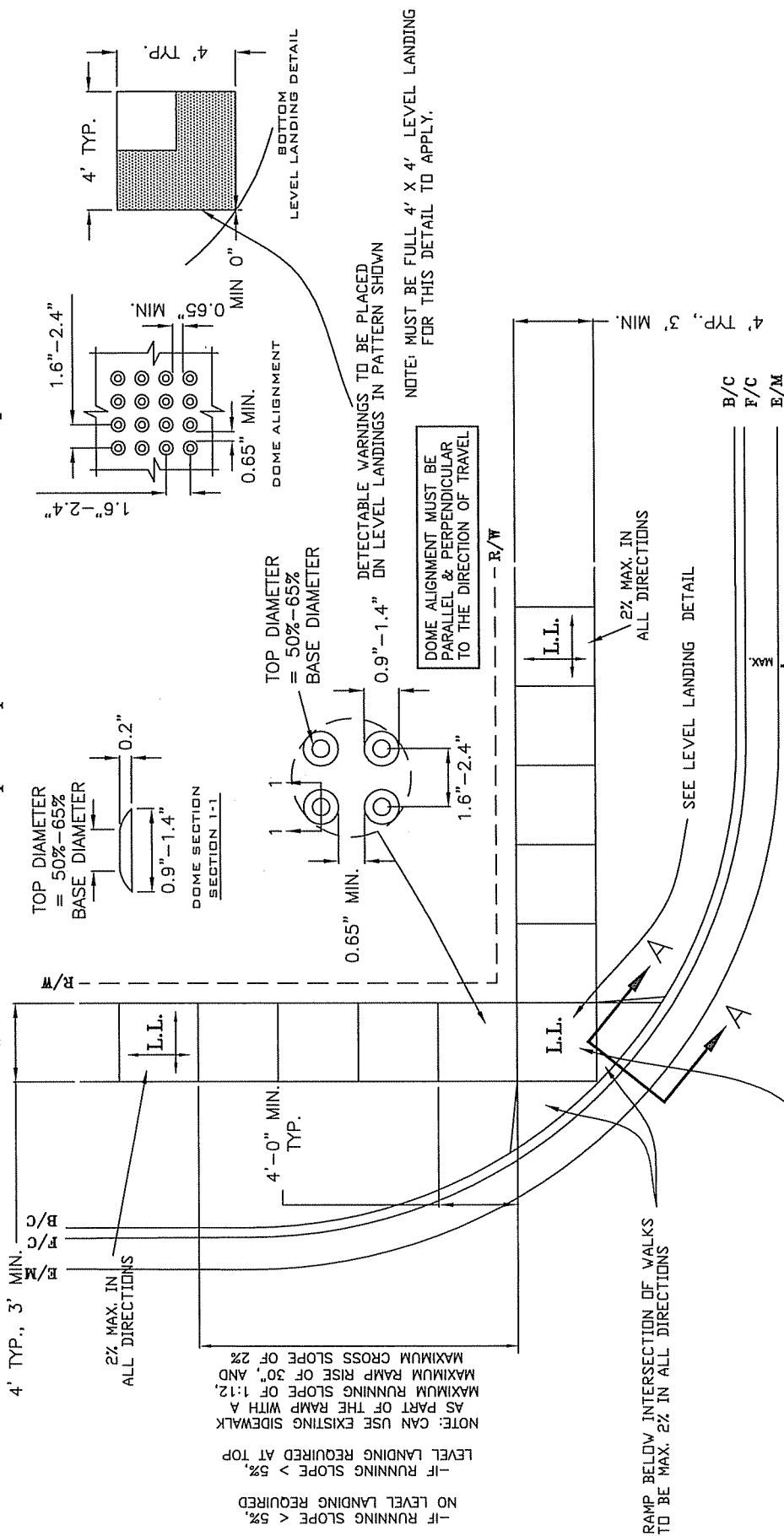
ADA SIDEWALK RAMP SPECIFICATIONS - EXHIBIT 2 (B)



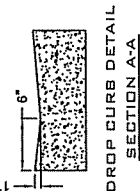
CITY OF MONROE
CONCRETE SIDEWALK RAMPS
RESIDENTIAL

EXHIBIT 2C: MODIFIED MDOT TYPE 1 RAMP Variation A

For use where inadequate space for 2 distinct ramps.



L.L. = LEVEL LANDING



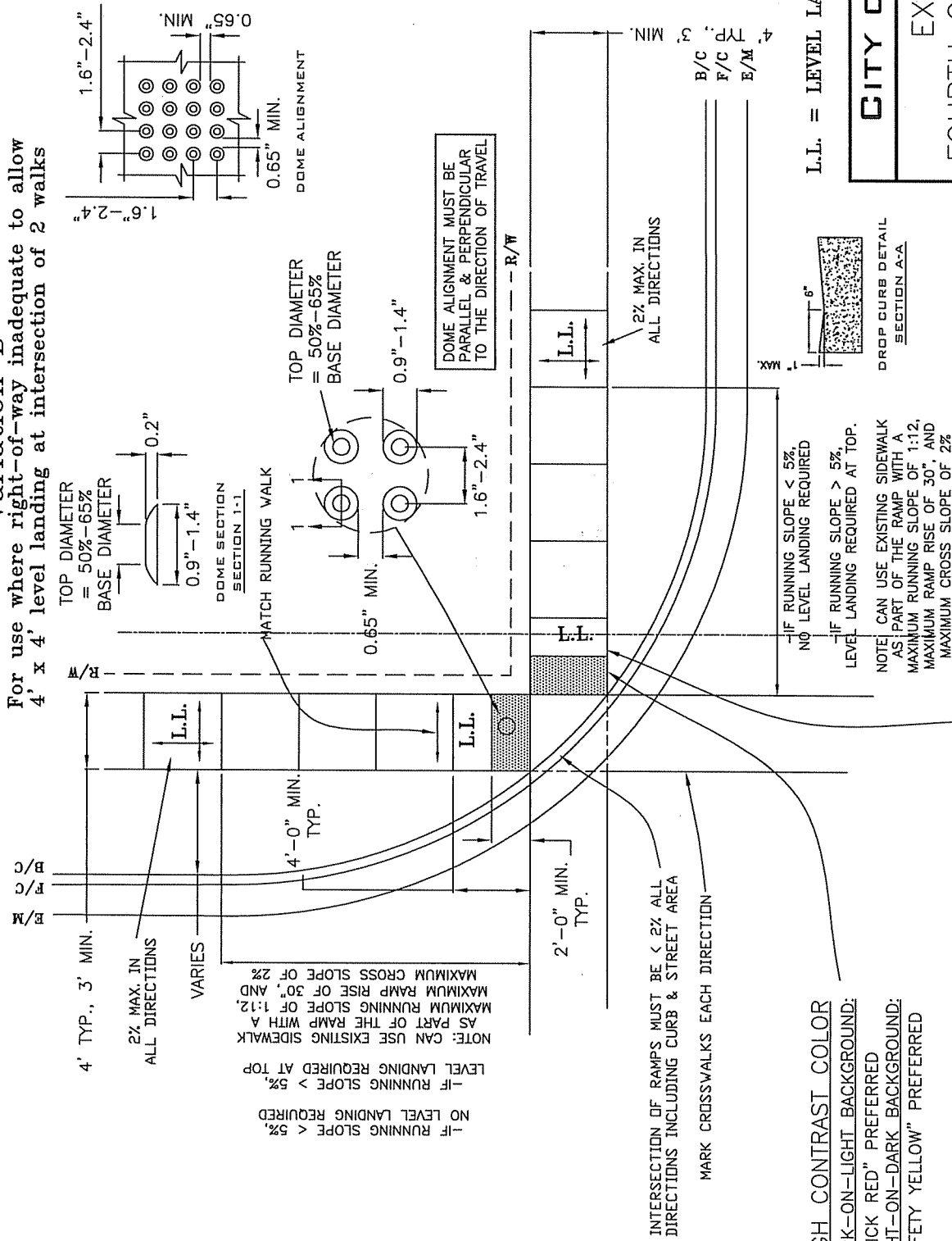
HIGH CONTRAST COLOR
 DARK-ON-LIGHT BACKGROUND:
 "BRICK RED" PREFERRED
 LIGHT-ON-DARK BACKGROUND:
 "SAFETY YELLOW" PREFERRED

CITY OF MONROE
 EXHIBIT 2C
 FOURTH CONSENT DECREE
 NOVEMBER, 2006

EXHIBIT 2D: MODIFIED MDOT TYPE 1 RAMP

Variation B

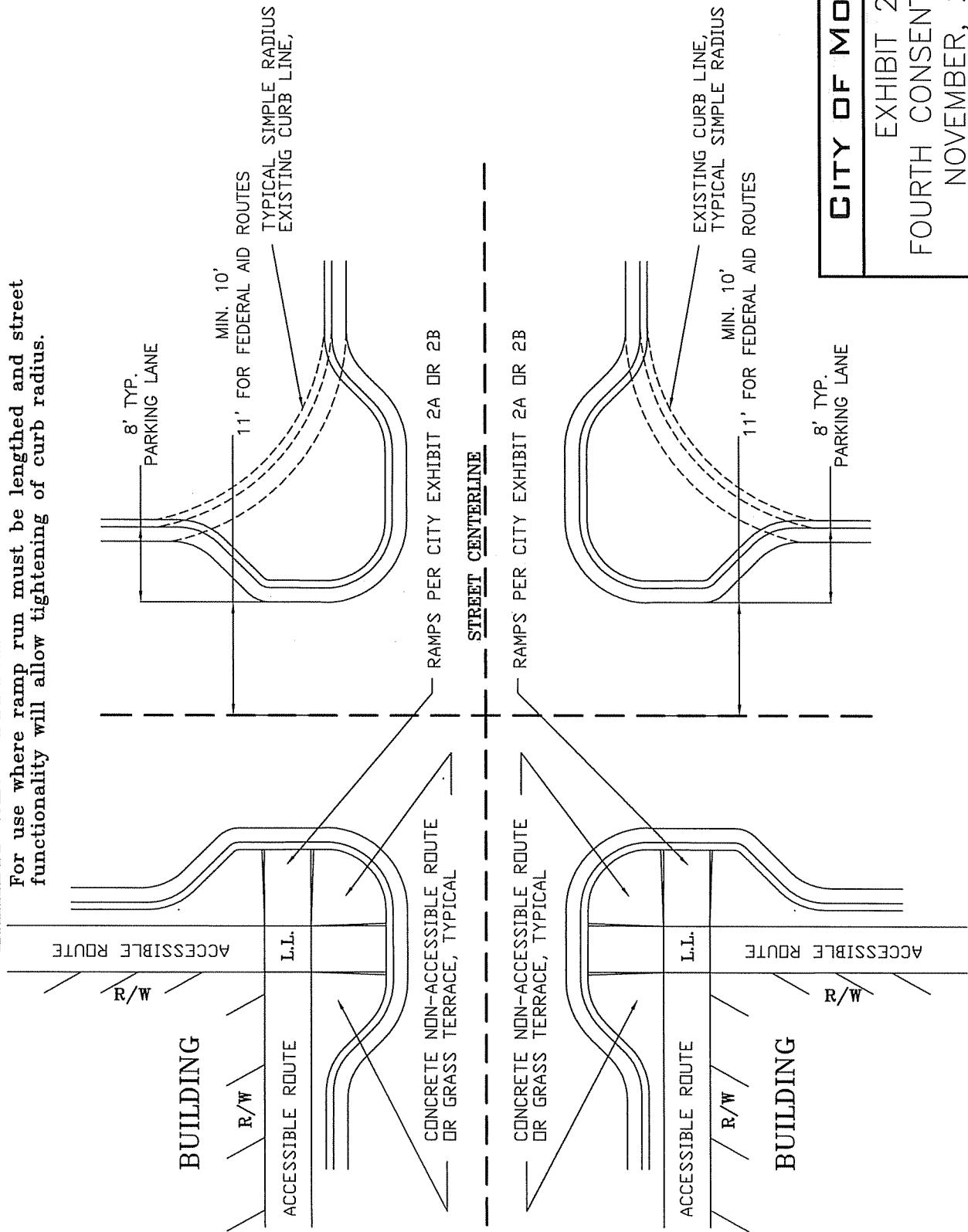
For use where right-of-way inadequate to allow 4' x 4' level landing at intersection of 2 walks



CITY OF MONROE
EXHIBIT 2D
FOURTH CONSENT DECREE
NOVEMBER, 2006

EXHIBIT 2E: TYPICAL "BUMP OUT" DESIGN

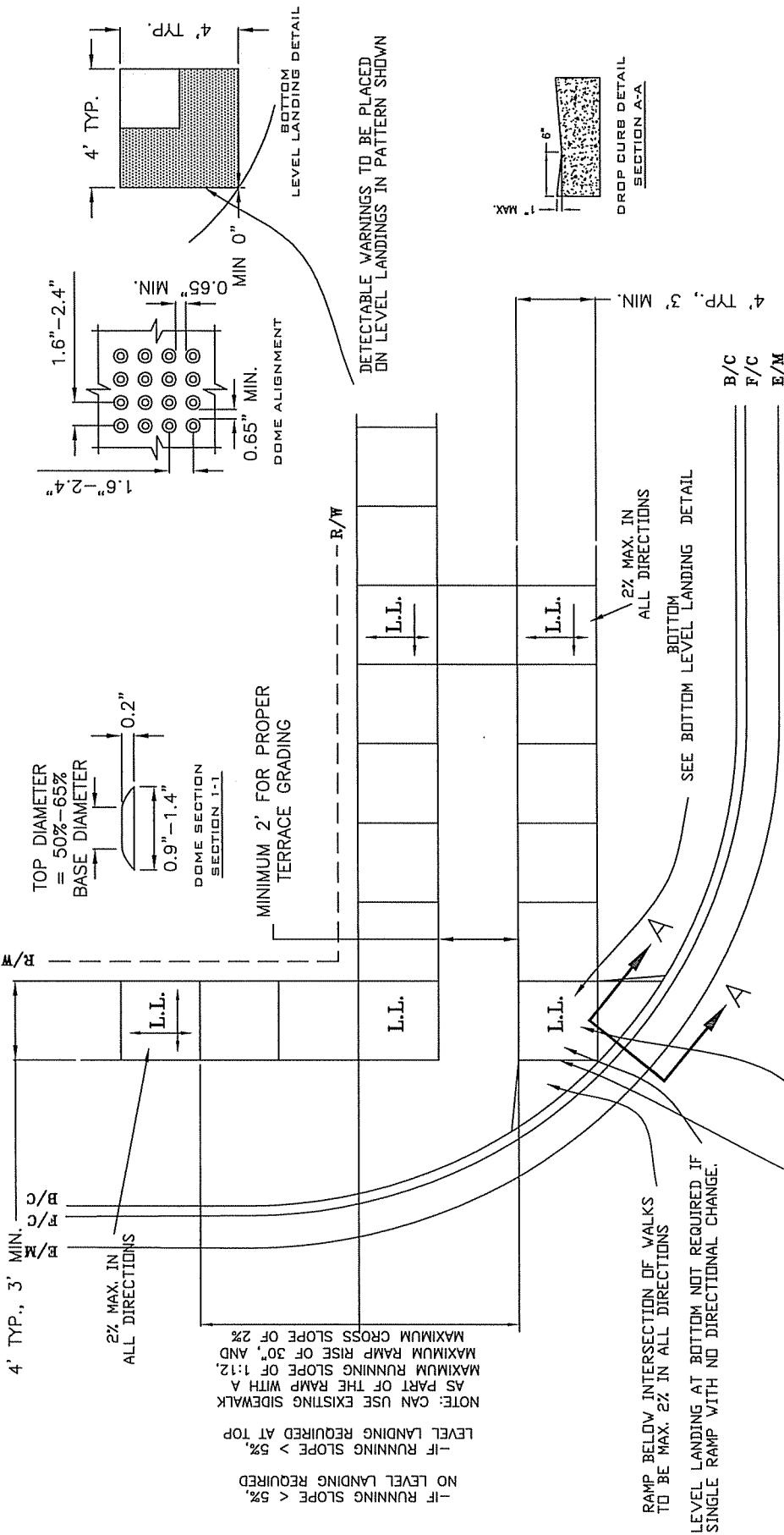
For use where ramp run must be lengthened and street functionality will allow tightening of curb radius.



CITY OF MONROE
 EXHIBIT 2E
 FOURTH CONSENT DECREE
 NOVEMBER, 2006

EXHIBIT 2F: MODIFIED MDOT TYPE 1 RAMP WITH PARALLEL JOG

For use where adjacent property height does not allow compliant ramps.



HIGH CONTRAST COLOR
 DARK-ON-LIGHT BACKGROUND:
 "BRICK RED" PREFERRED
 LIGHT-ON-DARK BACKGROUND:
 "SAFETY YELLOW" PREFERRED

L.L. = LEVEL LANDING

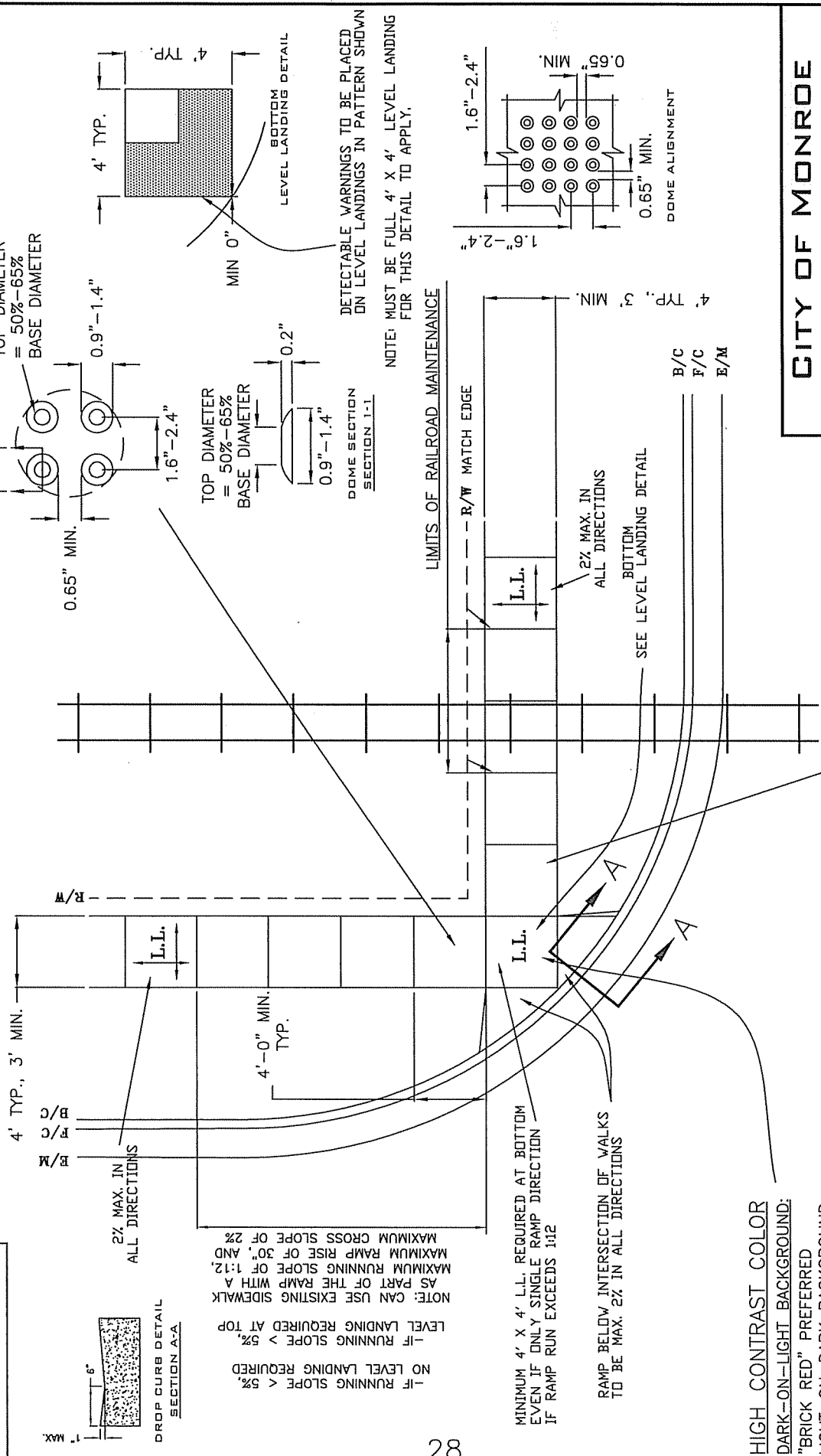
CITY OF MONROE
 EXHIBIT 2F
 FOURTH CONSENT DECREE
 NOVEMBER, 2006

DOMES ALIGNMENT MUST BE PARALLEL & PERPENDICULAR TO THE DIRECTION OF TRAVEL

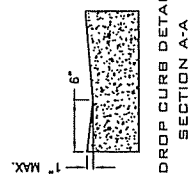
NOTE: MUST BE FULL 4' X 4' LEVEL LANDING FOR THIS DETAIL TO APPLY.

EXHIBIT 2G: RAILROAD DETAIL

For use where railroad tracks within 50 feet of an intersection



DOME ALIGNMENT MUST BE PARALLEL & PERPENDICULAR TO THE DIRECTION OF TRAVEL



NOTE: CAN USE EXISTING SIDEWALK AS PART OF THE RAMP WITH A MAXIMUM RUNNING SLOPE OF 1:12 MAXIMUM RAMP RISE OF 30", AND MAXIMUM CROSS SLOPE OF 2%

LEVEL LANDING REQUIRED AT TOP

- IF RUNNING SLOPE > 5%
- IF RUNNING SLOPE < 5% NO LEVEL LANDING REQUIRED

MINIMUM 4' X 4' L.L. REQUIRED AT BOTTOM EVEN IF ONLY SINGLE RAMP DIRECTION IF RAMP RUN EXCEEDS 102

RAMP BELOW INTERSECTION OF WALKS TO BE MAX. 2% IN ALL DIRECTIONS

HIGH CONTRAST COLOR

DARK-ON-LIGHT BACKGROUND: "BRICK RED" PREFERRED

LIGHT-ON-DARK BACKGROUND: "SAFETY YELLOW" PREFERRED

CITY OF MONROE

EXHIBIT 2G

FOURTH CONSENT DECREE

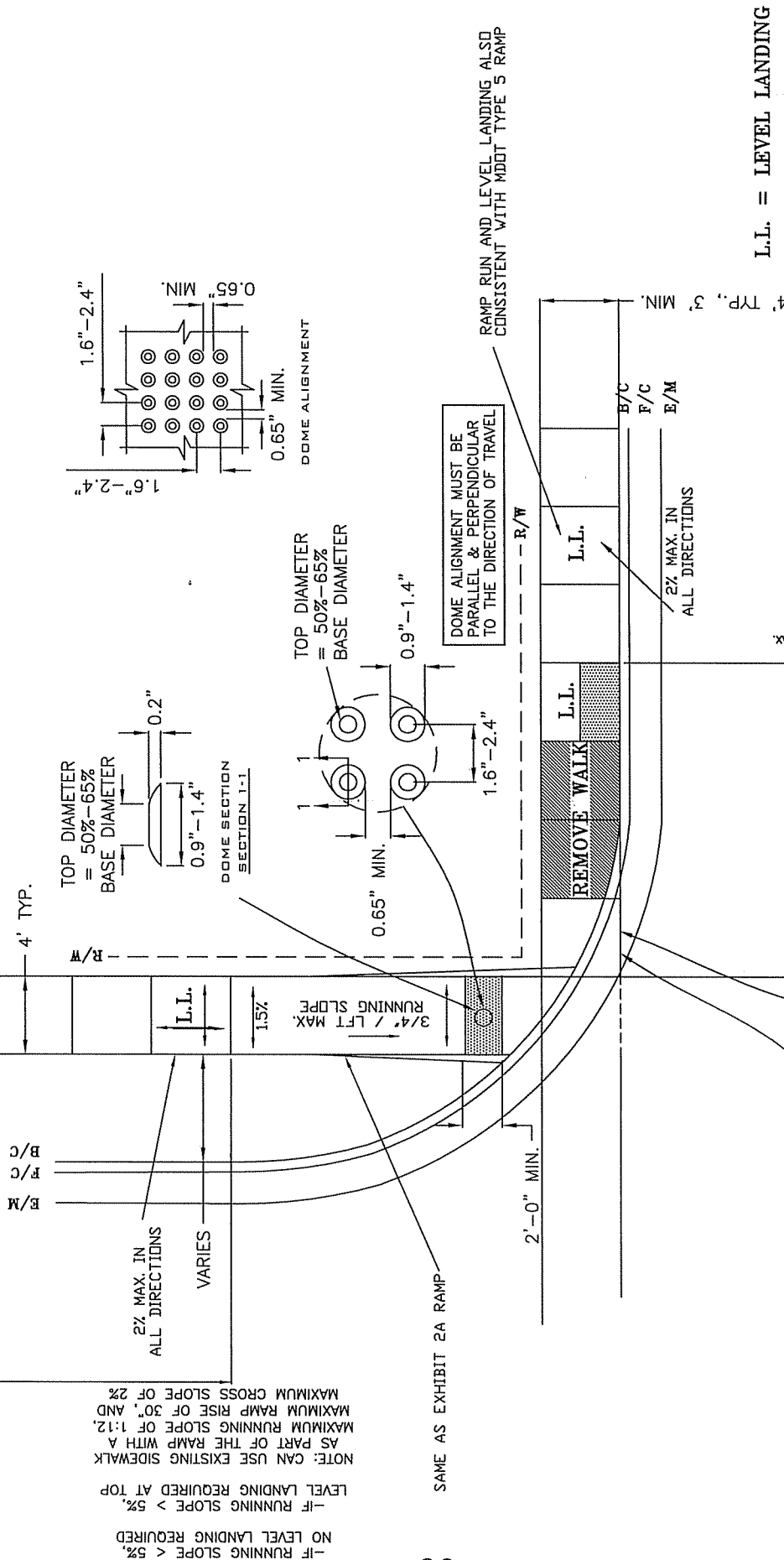
NOVEMBER, 2006

RAMP RUNS MAY EXCEED 102 IF LEVEL LANDINGS PLACED AT TOP AND BOTTOM

L.L. = LEVEL LANDING

EXHIBIT 2H: MODIFIED MDOT TYPE 5 RAMP

For use where site features adjacent to intersection require sidewalk to terminate prior to intersection.



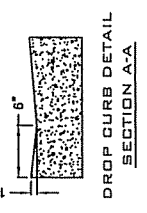
L.L. = LEVEL LANDING

CITY OF MONROE
 EXHIBIT 2H
 FOURTH CONSENT DECREE
 NOVEMBER, 2006

HIGH CONTRAST COLOR
 DARK-ON-LIGHT BACKGROUND:
 "BRICK RED" PREFERRED
 LIGHT-ON-DARK BACKGROUND:
 "SAFETY YELLOW" PREFERRED
 LEVEL LANDINGS @ MIN. 4' LONG BY WIDTH OF WALK
 FIRST SQUARE ABOVE PROJECTED WALK INTERSECTION

-IF RUNNING SLOPE < 5%
 NO LEVEL LANDING REQUIRED
 -IF RUNNING SLOPE > 5%
 LEVEL LANDING REQUIRED AT TOP
 NOTE: CAN USE EXISTING SIDEWALK
 AS PART OF THE RAMP WITH A
 MAXIMUM RUNNING SLOPE OF 1:12
 MAXIMUM RAMP RISE OF 30" AND
 MAXIMUM CROSS SLOPE OF 2%

-IF RUNNING SLOPE < 5%
 NO LEVEL LANDING REQUIRED
 -IF RUNNING SLOPE > 5%
 LEVEL LANDING REQUIRED AT TOP.
 NOTE: CAN USE EXISTING SIDEWALK
 AS PART OF THE RAMP WITH A
 MAXIMUM RUNNING SLOPE OF 1:12,
 MAXIMUM RAMP RISE OF 30", AND
 MAXIMUM CROSS SLOPE OF 2%



CITY OF MONROE
ENGINEERING DEPARTMENT

SUPPLEMENTAL SPECIFICATIONS
FOR ADA RAMPS
INCLUDING DETECTABLE WARNING DEVICES

1. Description:

This work shall consist of furnishing all material, equipment, and labor necessary for the placement of ADA Ramps with detectable warning devices at curb ramps or other walking surfaces, complete and ready for service at locations shown on the plans. All work shall be in accordance with City of Monroe Sidewalk & Driveway Approach Specifications Sheets 22 & 23 and with Section 1108 of the Architectural and Transportation Barriers Compliance Board's "Draft Guidelines for Accessible Public Rights-of-Way", dated June 17, 2002 as amended, supplemented, and adopted.

2. Materials:

All products and materials for the concrete to be used for the ADA Ramp shall be in accordance with the City of Monroe Sidewalk & Driveway Specifications or as approved by the City Engineer.

All detectable warning device products shall receive prior approval by the City Engineer and be included in the City of Monroe listing of approved materials and suppliers for detectable warning surfaces (attached).

Detectable warning surfaces shall be textured to provide slip resistance and shall contrast visually with adjacent walking surfaces, either light-on-dark or dark-on-light. The preferred color for a light background shall be brick red. The preferred color for a dark background shall be safety yellow or light granite. Other colors may be specified or approved by the City Engineer provided that samples are submitted to and approved by the City Engineer at least three (3) working days prior to installation. Color submittals shall include manufacturer's statement of percentage of visual contrast provided according to ADAAG A4.29.2. Color shall be integral with the detectable warning device and shall not be surface applied. Paints or other surface coatings shall not to be used.

Detectable warning surfaces shall be classified by type of material and/or application method:

TYPE "A": Dimensional Pavers – approved for new construction ramp installations.

TYPE "B": Armor-Tile – approved for new construction only.

TYPE "C": Stamped, Color Dyed Concrete – approved for new construction only.

3. Dimensions:

ADA Ramps shall follow the dimensional and slope requirements set forth in the City of Monroe Sidewalk and Driveway Approach Specification Sheets 22 & 23.

Truncated domes in a detectable warning surface shall have a base diameter of 0.9 inches (23 mm) minimum to 1.4 inches (36 mm) maximum, a top diameter of 50% of the base diameter minimum to 65% of the base diameter maximum, and a height of 0.2 inches (5 mm).

Truncated domes in a detectable warning surface shall have a center-to-center spacing of 1.6 inches (41 mm) minimum and 2.4 inches (61 mm) maximum, and a base-to-base spacing of 0.65 inches (16 mm) minimum, measured between the most adjacent domes on a square grid.

Detectable warning surfaces shall extend 24 inches (610 mm) minimum in the direction of travel and full width of the curb ramp, landing, or blended transition.

The detectable warning surface shall be located so that the edge nearest the back of curb line is 6 inches (150 mm) from the back of curb line.

Domes shall be aligned on a square grid, aligned in rows parallel and perpendicular to the predominant direction of travel. Domes must not be skewed diagonally to the direction of travel.

4. Application

ADA ramps shall be installed in accordance with the CIL vs. City of Monroe Sidewalk & Driveway Approach Specification Sheets 22 & 23.

Detectable warning devices shall be installed in accordance with manufacturer's specifications and in accordance with this specification, or as otherwise specified on the plans. The finished surface shall be uniformly profiled to match the adjoining surfaces without lips, obstructions, and shall drain completely.

The contractor and manufacturer shall jointly warrant the installed surface without losing more than two percent (2%) of the truncated domes due to delaminating as a result of product failure within the first year against fading, chipping, peeling, cracking, or loss of original share due to sunlight, salt, or exposure to weathering for duration of the contract's obligations.

TYPE "A" - DIMENSIONAL PAVERS:

1. Brick pavers (exclusive of domes) shall be flush with the surrounding concrete.

2. Brick pavers shall be laid so that the center of domes align with a straight-edge placed both perpendicular and parallel with the direction of travel.
3. Joints between brick pavers and surrounding concrete surface shall be mortared and shall not exceed 1/4" in width.
4. Joints between brick pavers shall be sand-filled. Sand shall be washed, non-plastic, well-graded angular material, free from deleterious or foreign matter, with maximum particle size not larger than the specified joint spacing. Gradation shall conform to MDOT 2NS Sand fine aggregate concrete. Sweep this material to fill the joints and water with a fine mist. Repeat as necessary to achieve a sand-filled joint. When requested by the Engineer, the Contractor shall submit gradation analysis of the proposed joint material performed in accordance with ASTM C-136.
5. Pavers shall be laid on an unreinforced concrete base. Thickness of the bed shall be the greater or 4" of the specified thickness of the curb ramp.
6. Pavers shall be set in a 1/2" thick bed of latex modified cement mortar.

TYPE "B" - ARMOR-TILE

1. Cast-in-place system 24"x48", red in color, installed in accordance with manufacturer's specifications as approved by the City Engineer.

TYPE "C" – STAMPED, COLOR DYED CONCRETE:

1. Stamped, Color dyed Concrete shall be installed in accordance with manufacturer's specifications as approved by the City Engineer.

5. Method of Payment

The pay item for ramp replacement shall be paid for as ADA Ramp and includes all concrete, detectable warning devices, labor, materials, and equipment to install the ramp per City of Monroe Sidewalk & Driveway Approach Specification Sheets 22 & 23. This item shall include but not be limited to: layout, sawcutting, removals, earth excavation, concrete and cement base materials, bedding, surface preparation, surface sealant, and repair of adjoining areas disturbed by the installation of the ADA Ramp and detectable warning surface.

DETECTABLE WARNING SURFACE MANUFACTURERS

- TYPE "A" – Dimensional Pavers – approved both new construction and retrofit to pre-existing ramp installations.

Whitacre-Greer Fireproofing Company

1400 S. Mahoning Avenue

Alliance, Ohio 44601

(Detectable warning ADA Brick)

Phone: (800) WGPAPER, (330) 823-1610

Fax: (330) 823-5502

E-mail: Info@wpaver.com

Web: www.wgpaver.com

Hanover Architectural Products, Inc.

240 Bender Rd.

Hanover, PA 17331

(Reconstructed pressed limestone & granite Detectable Warning Paver)

Phone: (717) 637-0500

Fax: (717) 637-7145

Web: www.hanoverpavers.com

- TYPE "B" – Armor-tile - Cast-in-Place approved for new construction only

The Boomer Co.

1940 E. Forest

Detroit, Michigan 48207

Phone: (800) 482-6422, (313) 832-5050

Fax: (313) 832-0520

- TYPE "C" – Stamped, Color Dyed Concrete –approved for new construction only

Increte Systems

Inco Chemical Supply Co., Inc.

8509 Sunstate St., Tampa, FL 33634

(Stamping tools and concrete colored surface hardener for ADA Tactile Detectable Warning Systems)

Phone: (800) 752-4626, (813) 886-8811

Fax: (813) 886-0188

Web: www.increte.com