ENGINEERING DESIGN STANDARDS

DRAFT June 19, 2026

Foreword

The Engineering Design Standards are intended to apply to all new, expanded and altered, development projects, including redevelopment of properties within the City Limits of Cape Coral. The Standards are intended to implement the applicable sections of the City of Cape Coral Comprehensive Plan and other standards as referenced.

The Standards herein adopted include all of those standards specifically referenced in this document including those contained in the latest edition of the "Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways for the State of Florida" (Florida Greenbook). The Standards herein adopted also include the latest edition of the FDOT Design Standards, FDOT Standard Specifications for Road and Bridge Construction, the American Disability Act (ADA) Standards, South Florida Water Management District, and the Manual on Uniform Traffic Control Devices. The most recent edition of each document shall be used at the time of development.

These Standards are intended to present those most frequently employed standards in municipal engineering and site development projects. A deviation to the Standards may be approved, provided the deviation, as proposed, is based on acceptable engineering practice and meets or exceeds the applicable Standard. Deviations that pertain to Building Permits shall be approved by the Building Division. Deviations that pertain to single family on-site drainage pattern shall be approved by the Development Services Director or designee. All other deviations shall be approved by the Public Works Director or designee.

Requests for deviations to these Standards are to be made on forms provided by the City and filed with the Development Services Department, DSD, during the appropriate development review process.

Where the requirements for any developments are not specified in these Standards, such requirements will be approved by the Public Works Director, or the Development Services Director, or Building Division in the action approving or conditionally approving the development plan, or, if not specified in such action, by the Public Works Department.

All applications for development approvals and permits authorizing construction or land development activities, other than single family homes or duplexes, shall be prepared by a Florida licensed professional engineer and shall be reviewed Public Work Director or designee to assure compliance with the applicable standards contained herein.

To minimize development planning costs, avoid misunderstandings, misinterpretation, and ensure compliance with the requirements of the City, a pre-application consultation between the developer and/or the developer's consultant and City engineering staff is encouraged. Requests for pre-applications meetings may be made through DSD. All developers are advised that upon formal submittal, the City charges a plan review and inspection fee. Other fees such as impact fees, Mobility fees, Contribution on Aid of Construction fees (CIAC), utility connection fees or other fees may also be applicable to certain projects. For further information on the fee schedule, please consult the Development Services Department..

All work within the Public Right of Way requires an approved Right of Way Permit. All approved permit requirements of other City's departments and agencies shall also be met.

ENGINEERING DESIGN STANDARDS

TABLE OF CONTENTS

H. Seawalls

J. Roadway Signs, Mail Boxes, and Street Lighting

K. Traffic

L. Storm Drainage

M. Erosion Control

U. Utilities (Water, Sewer, Irrigation)

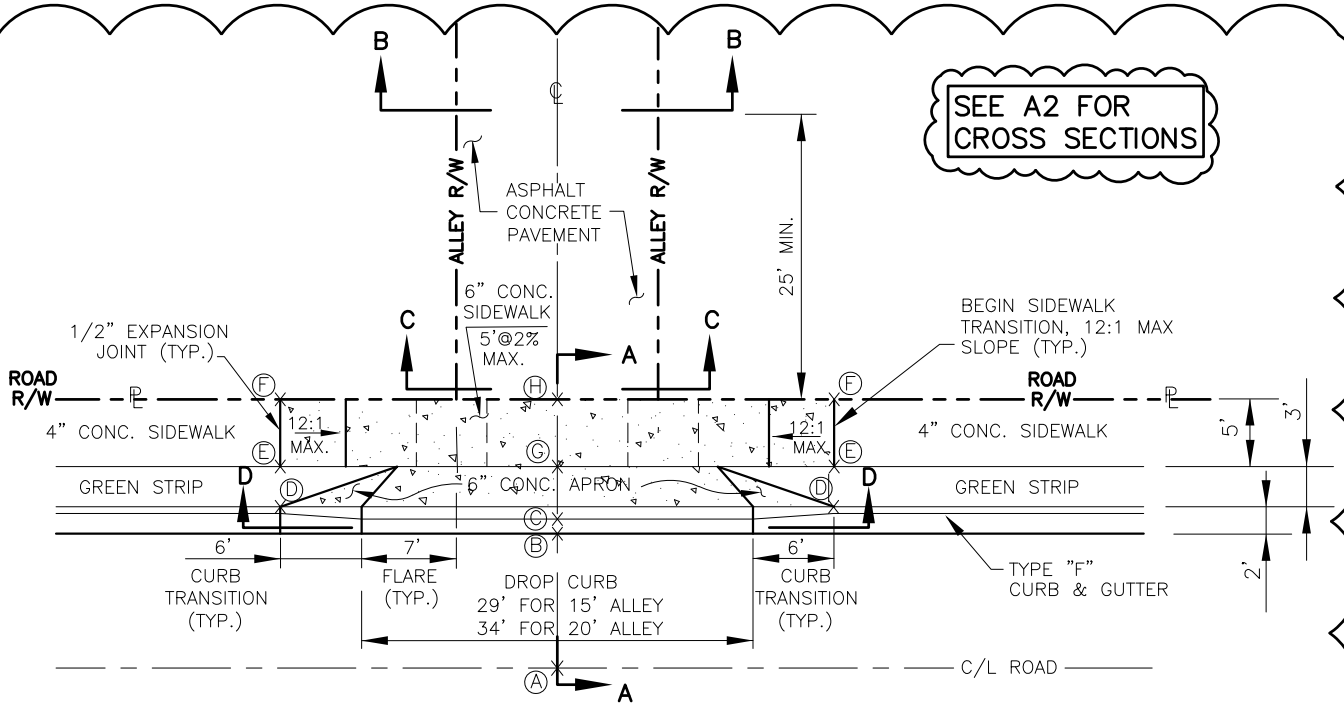
Appendices:

**The most recent edition shall be used at time of development for design information only.*

INFRASTRUCTURE INSPECTIONS

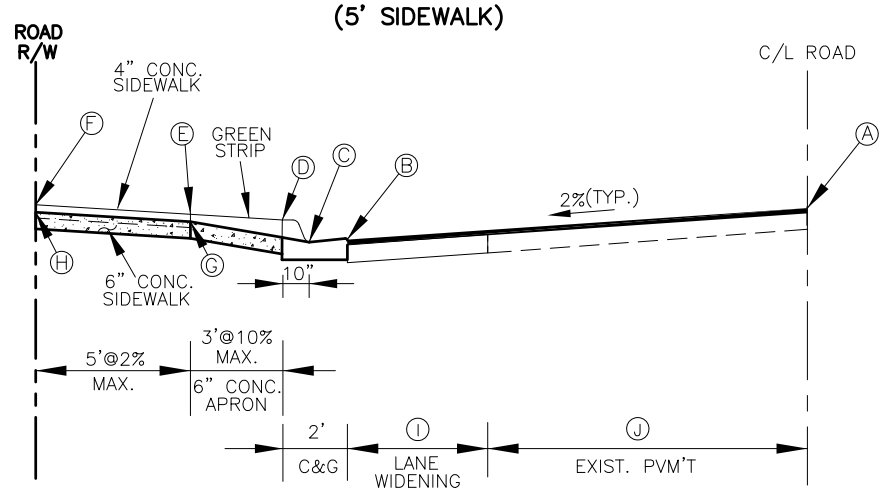
The City shall have the right to inspect the installation of all roadways, curbing, gutters, sidewalks, storm water drainage improvements, lighting, landscaping, utilities and all other infrastructure improvements installed by a developer or a developer's contractors, which are proposed to be transferred to the City for ownership, operation and control. The inspection is designed to assure the City that these improvements are installed in accordance with approved designs and are consistent with the criteria and specifications governing the methods and quality of the installation. The City shall have the right to require and be present at tests of component parts of these improvements and systems for the purpose of determining that the improvements, as constructed, conform to the City's criteria. The tests are the responsibility of and will be performed by the developer or the developer's contractor at their expense, but only under the direct supervision of the Director of the City's Public Works Department or his or her designated representative.

The City may charge the developer an inspection fee, as established by City Council, for those facilities which are to be transferred to the City for ownership, operation and maintenance.



ALL 6" THICK CONCRETE SIDEWALK AND CONCRETE APRON SHALL BE MINIMUM 5000 P.S.I. IN 28 DAYS.
ALL 4" THICK CONCRETE SIDEWALK SHALL BE MINIMUM 3000 P.S.I. IN 28 DAYS.

ALLEY PLAN
(5' SIDEWALK)



SECTION A–A

DESIGN ELEVATIONS

** R/W WIDTH	(A) EXISTING SURVEY ELEVATION	(B) EDGE OF PAVEMENT (E.O.P.)	(C) INVERT OF DROP CURB (FLOWLINE)	(D) BACK OF TYPE "F" CURB	(E) BACK OF GREEN STRIP	(F) BACK OF SIDEWALK @ CURB TRANSITION	(G) BACK OF APRON @ ALLEY ℄	(H) BACK OF SIDEWALK @ ALLEY ℄	(I)	(J)
60'	A'	B'	B'–0.12'	B'+0.38'	B'+0.44' MAX.	B'+0.54' MAX.	B'+0.26' MAX.	B'+0.36' MAX.	10' (TYP.)	10' (TYP.)
70'	A'	B'							15' (TYP.)	10' (TYP.)

** FOR R/W WIDTH NOT SHOWN ON SHEETS A–1 OR A–1A, CONTACT THE PUBLIC WORKS DEPARTMENT.

NOTE: DESIGN ELEVATIONS AT (B) CAN BE ESTIMATED AS: (A) –0.02((I)+(J))

(CONTACT THE PUBLIC WORKS DEPARTMENT TO VERIFY IF BLOCK DESIGN ELEVATIONS AT (B) ARE AVAILABLE FOR YOUR SITE.)

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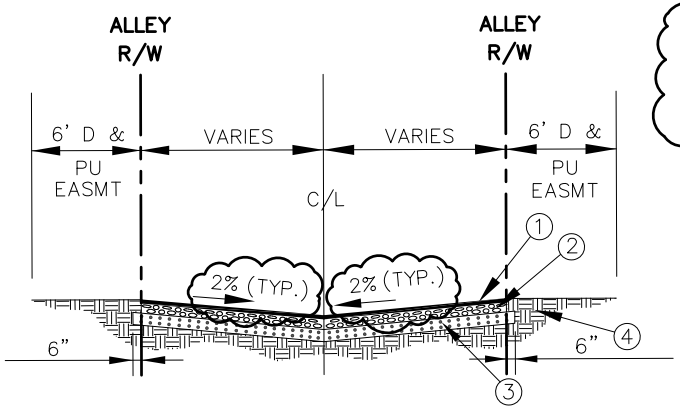
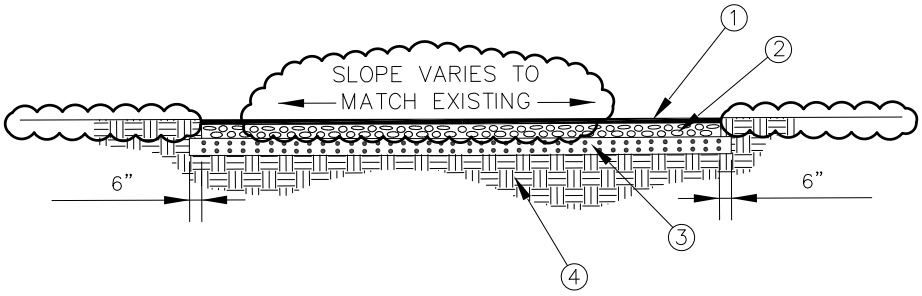
ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE: ALLEY DRIVEWAY DETAILS (60' & 70' R.O.W. ROADS)	SHEET NO. A-1
		REVISIONS: 03–31–2026	

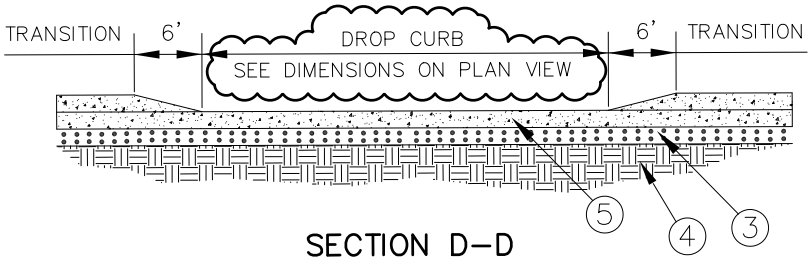
REFER TO A1
FOR CROSS SECTION
DETAILS



SECTION B–B



SECTION C–C



SECTION D–D

MATERIAL LIST

1. ASPHALTIC CONCRETE: 2" SP12.5
2. MIN. 8" LIMEROCK, MIN. LBR 100 COMPACTED TO 98% AASHTO T–180
3. MIN. 12" STABILIZED SUB–GRADE, MIN. LBR 40 COMPACTED TO 98% AASHTO T–180, MUST EXTEND 6" PAST LIMEROCK BASE.
4. EXISTING SOIL, COMPACTED IN PLACE
5. 6" CLASS I CONCRETE, 5000 PSI, 28 DAY, MIN. STRENGTH
6. OPTIONAL DESIGN SECTIONS WILL BE REVIEWED BY THE PUBLIC WORKS DEPARTMENT
7. ALL CONSTRUCTION IN THE CITY R.O.W. SHALL HAVE AN APPROVED PERMIT FROM THE PUBLIC WORKS DEPARTMENT.
8. ALTERNATE PAVEMENT AND BASE MATERIALS WILL BE CONSIDERED FOR USE. REQUESTS MUST BE SUBMITTED AND APPROVED BY THE PUBLIC WORKS DIRECTOR.
9. ALLEYS CONSTRUCTED ADJACENT TO UNIMPROVED LOTS MUST PROVIDE 2' OF CONTINUOUS SOD STRIP ALONG THE LENGTH OF THAT PROPERTY.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE: TYPICAL ALLEY CROSS SECTIONS	SHEET NO.: A-2
		REVISIONS: 03–31–2026	

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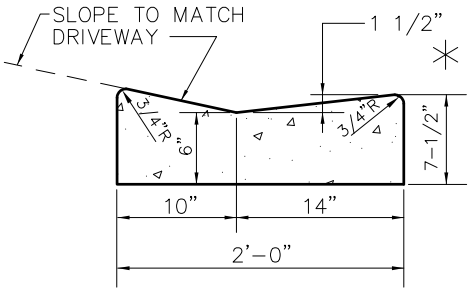
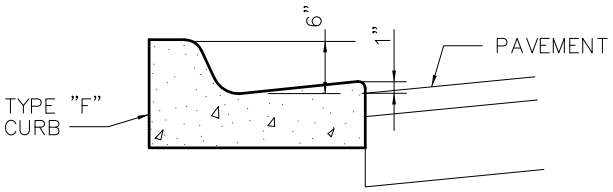


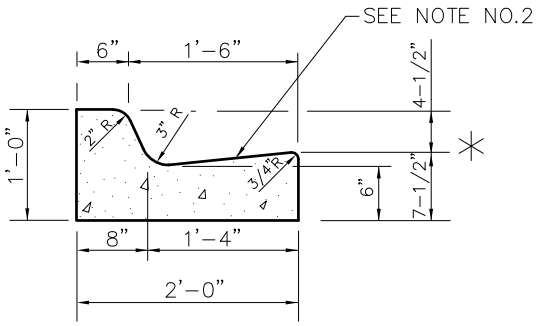
DROP CURB

AREA = 1.27 SQ.FT.
VOL.= 0.0471 C.Y./ LIN.FT.



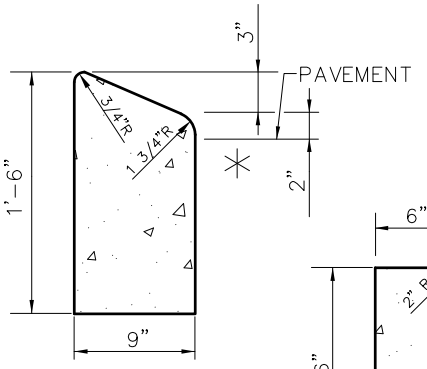
CURB REVEAL DETAIL

(SEE NOTE NO.6)



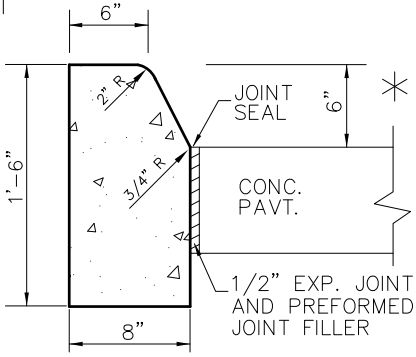
TYPE "F" CURB

AREA = 1.379 SQ.FT.
VOL.= 0.0511 C.Y./ LIN.FT.

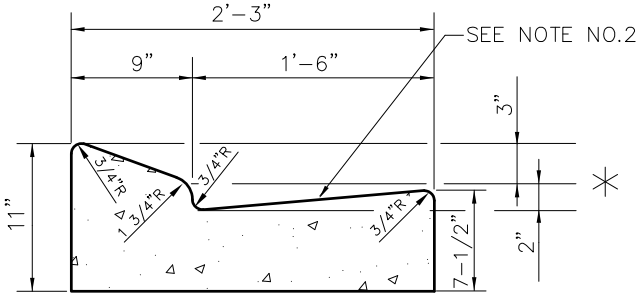


TYPE "B" CURB

AREA = 1.0275 SQ.FT.
VOL.= 0.0381 C.Y./ LIN.FT.



TYPE "D" CURB



TYPE "E" CURB

AREA = 1.434 SQ.FT.
VOL.= 0.0531 C.Y./ LIN.FT.

✳ = PAVEMENT SIDE OF CURB

NOTES

1. MINIMUM COMPRESSIVE STRENGTH OF CONCRETE SHALL BE 3,000 P.S.I.
2. WHEN USED ON HIGH SIDE OF ROADWAY, THE CROSS SLOPE OF THE GUTTER SHALL MATCH THE CROSS SLOPE OF THE ADJACENT PAVEMENT AND THE THICKNESS OF THE LIP SHALL BE 6"MIN. UNLESS OTHERWISE SHOWN ON PLANS.
3. CONSTRUCT 1/2" EXPANSION JOINTS AT 100' O.C. AND SAWCUT CONTRACTION JOINTS AT 10' O.C.
4. REF. FDOT STANDARD PLANS FOR ADDITIONAL CURB AND GUTTER DETAILS.
5. SEE PARKING LOT STANDARDS FOR INTERNAL CURBING DETAIL.
6. LOCATIONS FOR USE OF REVEAL WILL BE DETERMINED BY THE ENGINEERING DIV. AT TIME OF STAKEOUT.
7. MIN. SAWCUT DEPTH IS 1/4 THE DEPTH OF THE MIN. CURB DEPTH.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
DRAFT		TYPICAL CURB SECTIONS	B-1
		REVISIONS: 08-31-2020	

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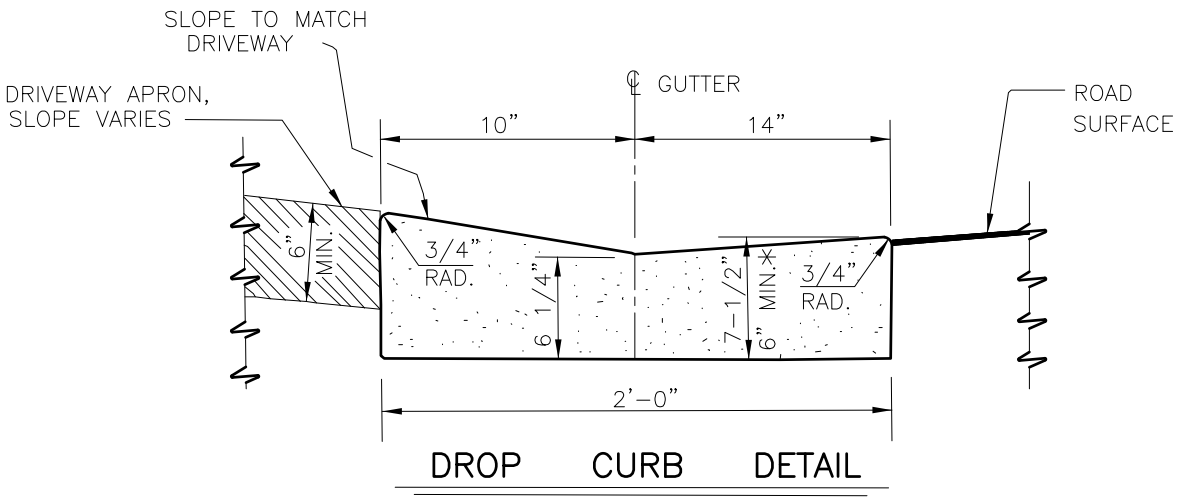

DROP CURB DETAIL

* WHEN USED ON HIGH SIDE OF SUPER ELEVATED ROADWAYS, THE CROSS SLOPE OF THE GUTTER SHALL MATCH THE CROSS SLOPE OF THE ADJACENT PAV'T. THE THICKNESS OF THE LIP SHALL BE 6", UNLESS OTHERWISE SHOWN ON PLANS.

NOTES:

1. MINIMUM COMPRESSIVE STRENGTH OF CONCRETE SHALL BE 3000 P.S.I.
2. WHERE THERE IS AN EXISTING SIDEWALK, IT SHALL BE REMOVED TO THE NEAREST JOINT AND REPLACED WITH A 4" THICK MINIMUM SIDEWALK AND A 6" THICK MINIMUM DRIVEWAY.
3. WHERE THERE IS NO EXISTING SIDEWALK, THE DRIVEWAY APRON SHALL EXTEND A MINIMUM OF 6' OR TO THE RIGHT OF WAY LINE, WHICHEVER IS LESS AND SHALL RISE A MINIMUM OF 4" ABOVE THE GUTTER ELEVATION.
4. WHERE THE LOT IS LOWER THAN THE STREET, THE DRIVEWAY APRON MUST RISE 4" FROM THE GUTTER FLOW LINE TO THE R/W LINE, THEN SLOPE DOWN TO LOT.
5. REF. FDOT STANDARD PLANS FOR ADDITIONAL DROP CURB DETAILS.
6. DROP CURB TO BE PAID PER FDOT STANDARD PLANS.
7. FOR CONSTRUCTION OF DRIVEWAY WHERE THERE IS EXISTING CURB & GUTTER, REMOVE CURB & GUTTER AND INSTALL DROP CURB.
8. WHEN CURB & GUTTER TO BE REMOVED IS 3' OR CLOSER TO THE NEAREST JOINT, THE SECTION SHALL BE REMOVED ENTIRELY.

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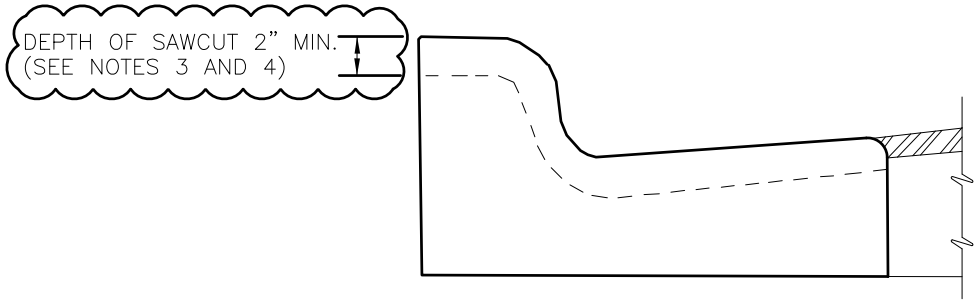
ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
		DRIVEWAY DROP CURB DETAIL	B-2
		REVISIONS: 03-31-2026	



REMOVAL OF EXISTING CURB & GUTTER (TYPE F) OR CURB ONLY (NO GUTTER)

NOTES:

1. FOR CONSTRUCTION OF DRIVEWAY WHERE THERE IS EXISTING CURB & GUTTER (TYPE F) OR CURB ONLY, REMOVE CURB & GUTTER (REFER TO NOTES 2 AND 3) OR REMOVE CURB ONLY (REFER TO NOTES 2 AND 4) IN ACCORDANCE WITH DETAILS SHOWN.
2. WHEN CURB & GUTTER TO BE REMOVED AND REPLACED IS 3' OR CLOSER TO THE NEAREST JOINT OR WHEN CURB TO BE REMOVED AND REPLACED IS 1' OR CLOSER TO THE NEAREST JOINT, THAT END OF THE SECTION SHALL BE ENTIRELY REMOVED.
3. WHEN THE END OF THE EXISTING CURB & GUTTER IS NOT TO BE REMOVED (COMPLIES WITH NOTE 2) THE CURB & GUTTER SHALL HAVE A 2" DEEP (MIN.) VERTICAL SAW CUT PERPENDICULAR TO THE BACK OF CURB EXTENDING FROM THE TOP BACK OF CURB TO THE FRONT OF THE GUTTER.
4. WHEN THE END OF THE EXISTING CURB IS NOT TO BE REMOVED (COMPLIES WITH NOTE 2) THE CURB SHALL HAVE A 2" DEEP (MIN.) VERTICAL SAW CUT PERPENDICULAR TO THE BACK OF CURB EXTENDING FROM THE TOP BACK OF CURB TO THE 2" DEEP (MIN.) LONGITUDINAL SAW CUT.

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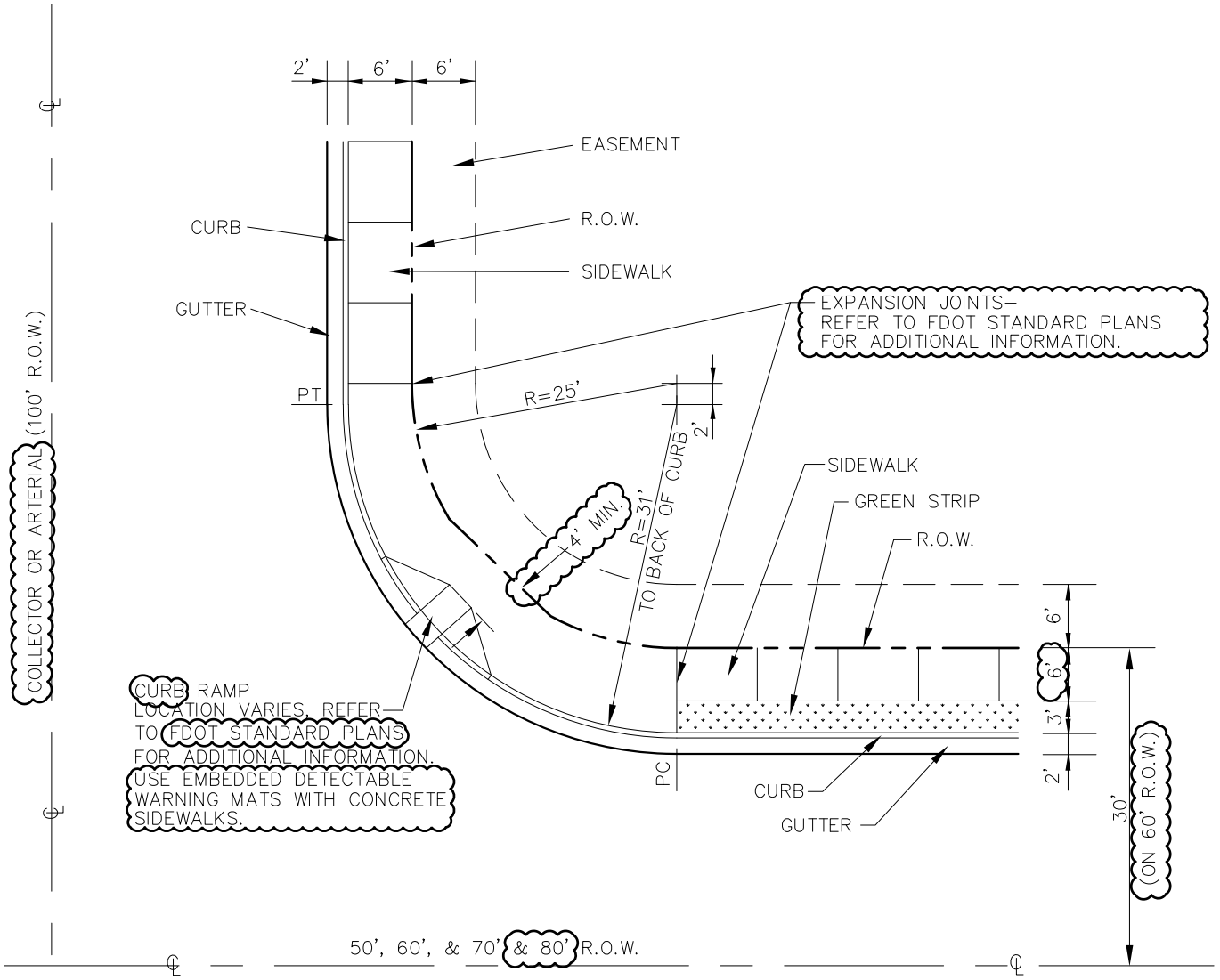
ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
		DRIVEWAY REMOVAL OF EXISTING CURBING	B-3
		REVISIONS: 03-31-2026	



NOTE:

1. 3' GREEN STRIP IS TO BE ELIMINATED ON ALL 50' R.O.W. OR AS DIRECTED BY THE PUBLIC WORKS DEPARTMENT. SEE SHEET G–15.
2. IN ACCORDANCE WITH THE FLORIDA GREENBOOK RECOMMENDATION, PROVIDE TWO RAMPS PER CORNER (ONE PER CROSSWALK) WHERE POSSIBLE.
3. CONCRETE SIDEWALK SHALL BE MINIMUM 3000 P.S.I. IN 28 DAYS.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE: CURB, GUTTER, SIDEWALK, & FDOT RAMP AT LOCATION OF ADJOINING COLLECTORS AND ARTERIALS	SHEET NO. B-4
		REVISIONS: 03–31–2026	

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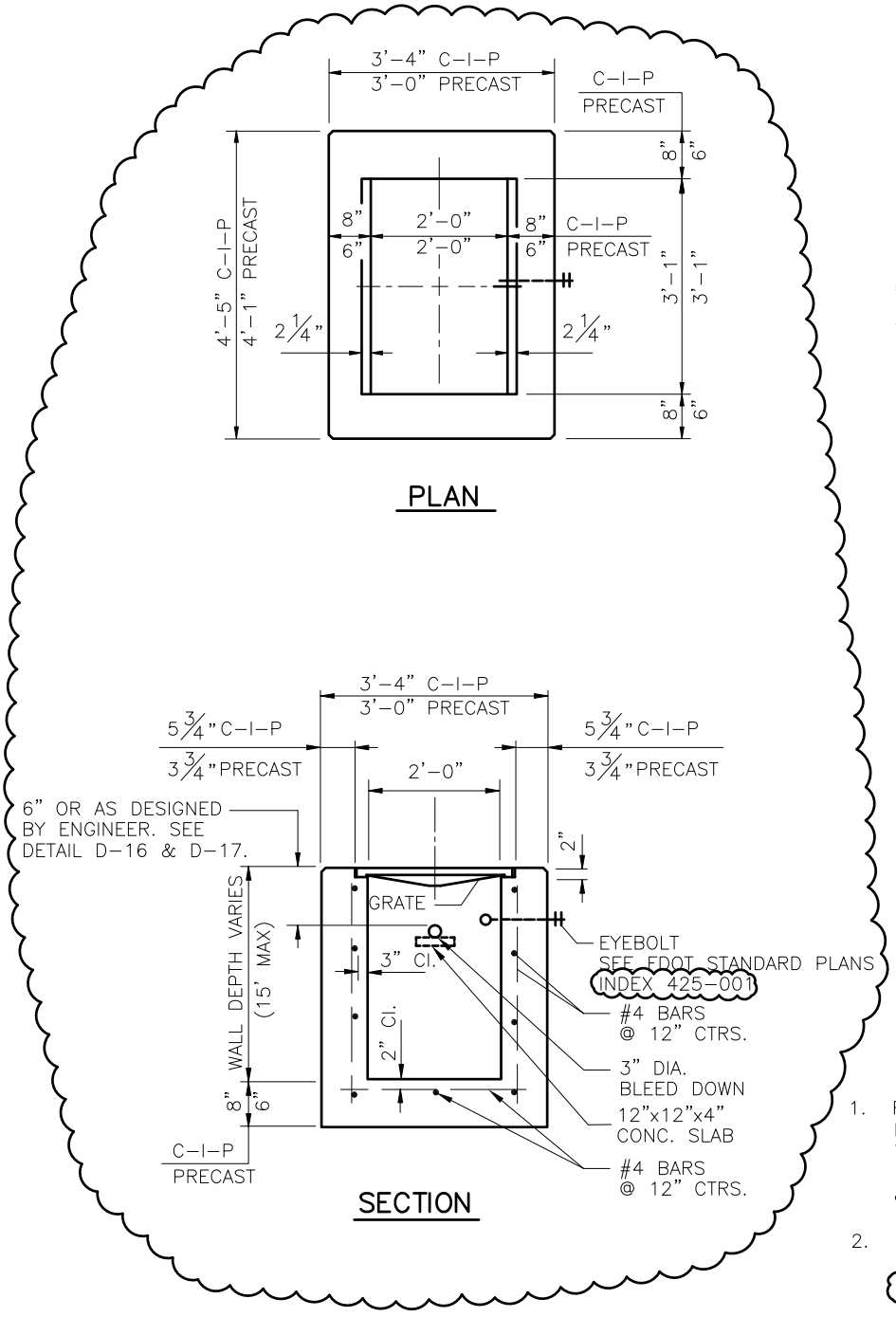
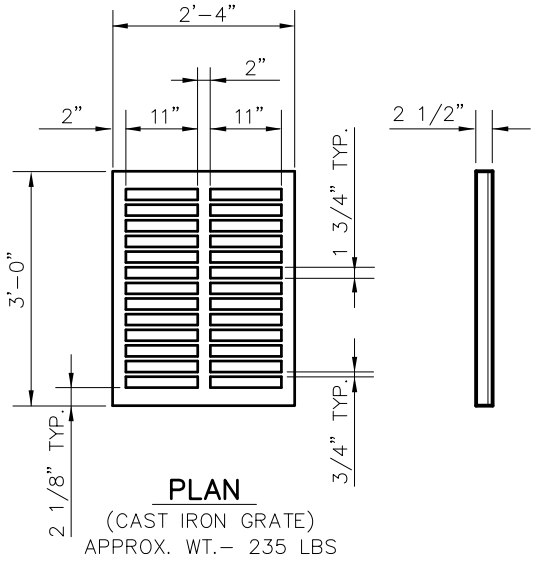
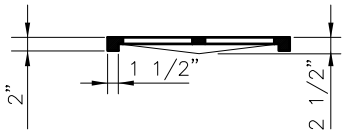




PLAN
(CAST IRON GRATE)
APPROX. WT.- 235 LBS



SECTION

MAXIMUM PIPE SIZE:
2'-0" WALL - 18" PIPE
3'-1" WALL - 24" PIPE
(18" PIPE WHERE ANOTHER 18" ENTERS ADJACENT 2'-0" WALL)

NOTES:

1. FOR TRAFFIC AREAS - USE USF 6611 DITCH BOTTOM INLET STEEL GRATE TYPE "C" WITH H-20 RATING, AS MANUFACTURED BY THE U.S. FOUNDRY & MANUFACTURING CORP.,OR EQUAL.
2. FOR STEEL REINFORCEMENT DETAIL, REFER TO FDOT STANDARD PLANS, INDEX 425-052.
3. FOR ADDITIONAL DETAILS, REFER TO FDOT STANDARD PLANS INDEX 425-052.
4. PROVIDE 12"X12"X4" CONCRETE SLAB UPSLOPE OF 3" DIA. BLEED DOWN FOR MAINTENANCE.

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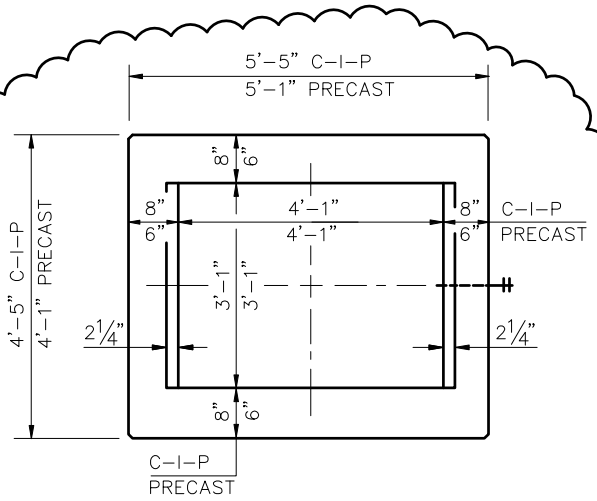
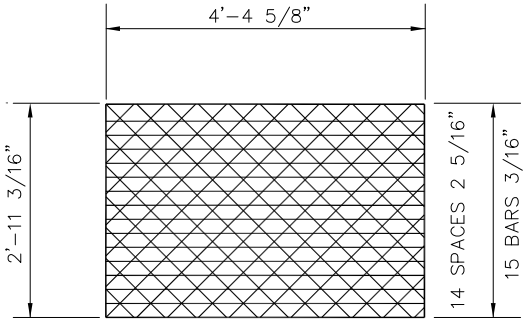
ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
		FDOT TYPE "C" INLET WITH GRATE	C-1
		REVISIONS: 03-31-2026	

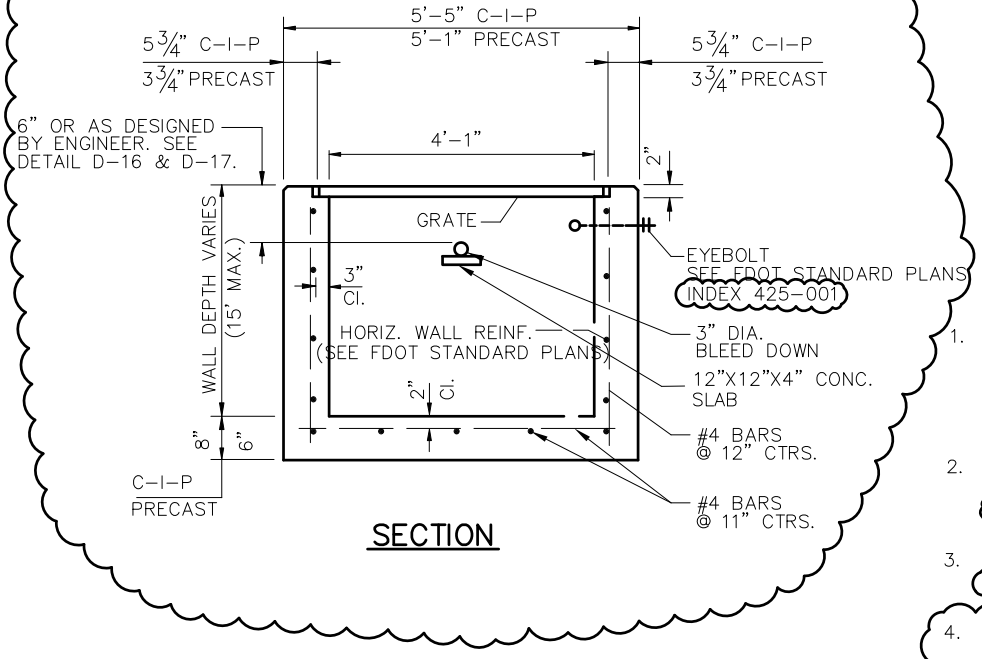


PLAN



PLAN

(STEEL GRATE / H–20 RATED FOR TRAFFIC AREAS)
STRAIGHT BARS – 2" X 3/16"
RETICULINE BARS – 1 1/4" X 3/16"
BANDS – 1 1/2" X 1/4"
APPROX. WT.– 235 LBS



SECTION

MAXIMUM PIPE SIZE:

3'–1" WALL – 24" PIPE
4'–1" WALL – 36" PIPE

NOTES:

1. FOR TRAFFIC AREAS – USE USF 6626 DITCH BOTTOM INLET STEEL GRATE TYPE "D" WITH H–20 RATING, AS MANUFACTURED BY THE U.S. FOUNDRY & MANUFACTURING CORP.,OR EQUAL.
2. FOR STEEL REINFORCEMENT DETAIL, REFER TO FDOT STANDARD PLANS INDEX 425–052.
3. FOR ADDITIONAL DETAILS, REFER TO FDOT STANDARD PLANS INDEX 425–052.
4. PROVIDE 12"X12"X4" CONCRETE SLAB UPSLOPE OF 3" DIA. BLEED DOWN FOR MAINTENANCE.

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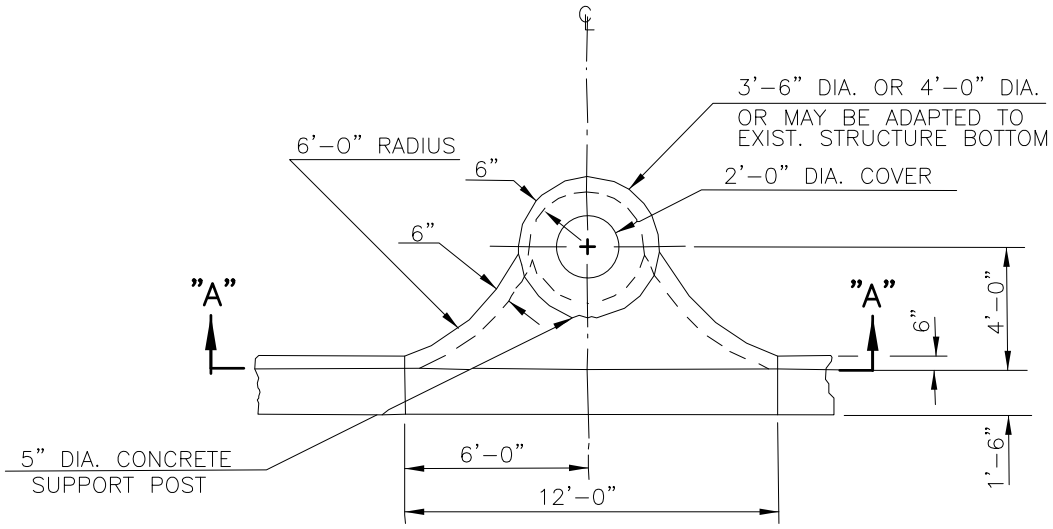
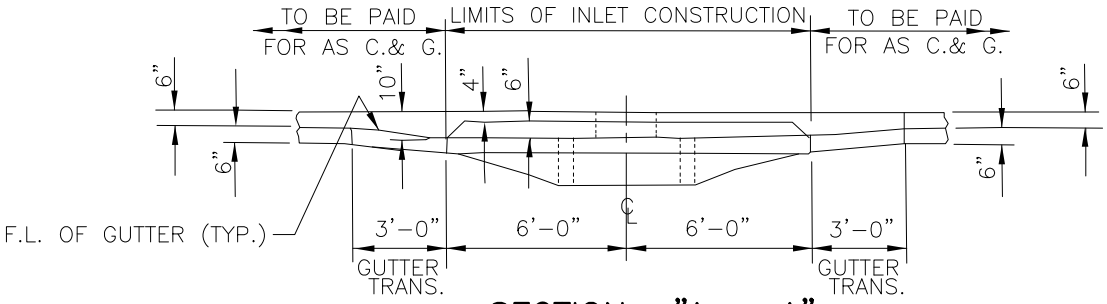
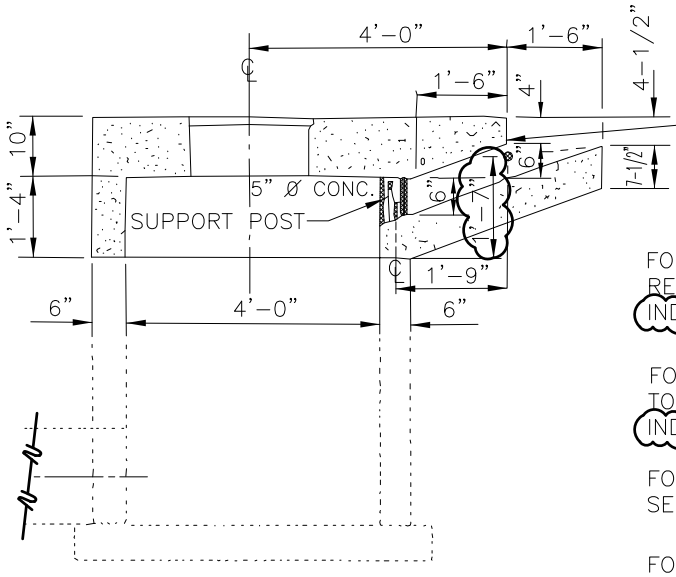
		FDOT TYPE "D" INLET WITH GRATE	C-2
		REVISIONS: 03–31–2026	



INLET TYPE 4



SECTION "A – A"



SECTION

FOR STEEL REINFORCEMENT DETAIL, REFER TO FDOT STANDARD PLANS INDEX 425–020.

FOR STRUCTURE BOTTOMS, REFER TO FDOT STANDARD PLANS INDEX 425–010.

FOR FACE PLATE DETAIL SEE SHEET C–9

FOR ADDITIONAL DETAILS, REFER TO FDOT STANDARD PLANS INDEX 425–020.

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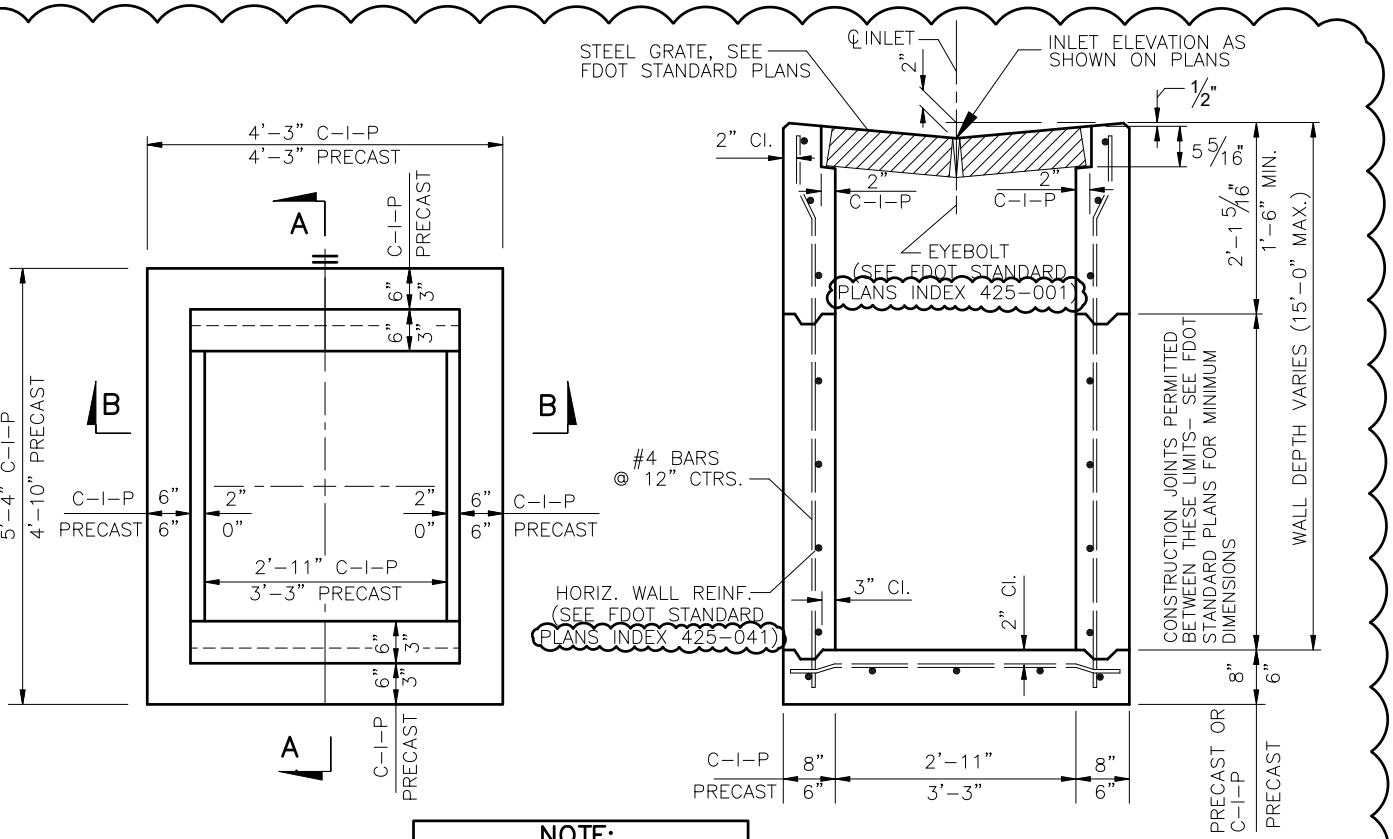
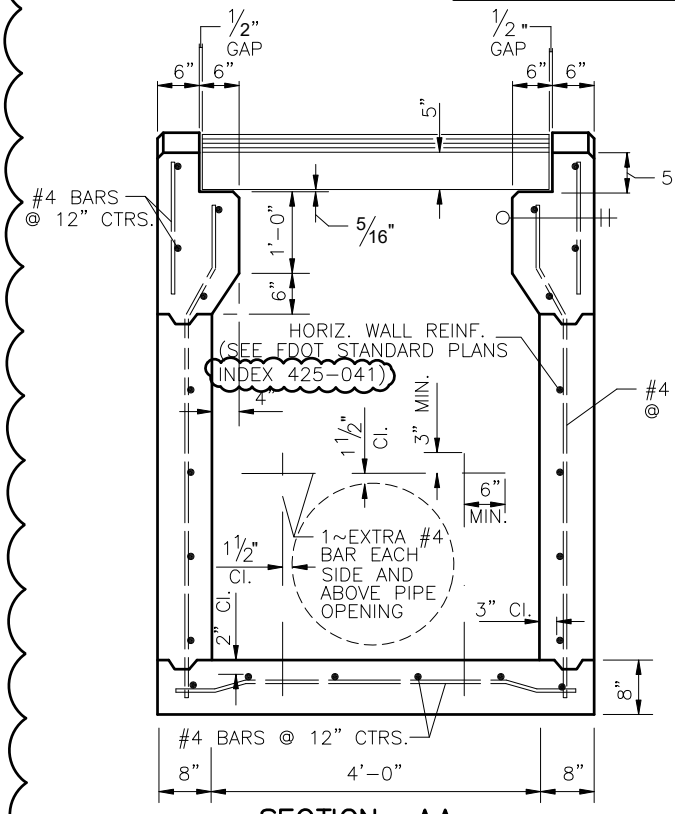
ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
		FDOT CURB INLET TOP TYPE 4	C-3
		REVISIONS: 03–31–2026	



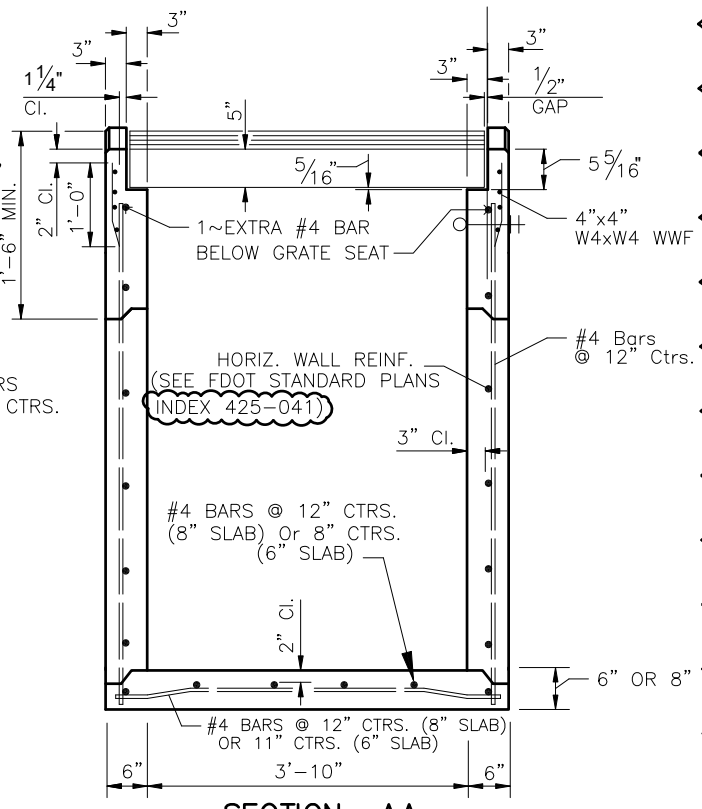
PLAN

SECTION BB
(FOR PIPE 24" DIA. AND UNDER)

NOTE:
FOR ADDITIONAL DETAILS, REFER TO FDOT INDEX 425-001



SECTION AA
(CAST-IN-PLACE INLET)
(FOR PIPE 30" DIA. AND UNDER)



SECTION AA
(PRECAST INLET)
(FOR PIPE 30" DIA. AND UNDER)

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE: FDOT GUTTER INLET TYPE V	SHEET NO.: C-4
		REVISIONS: 03-31-2026	

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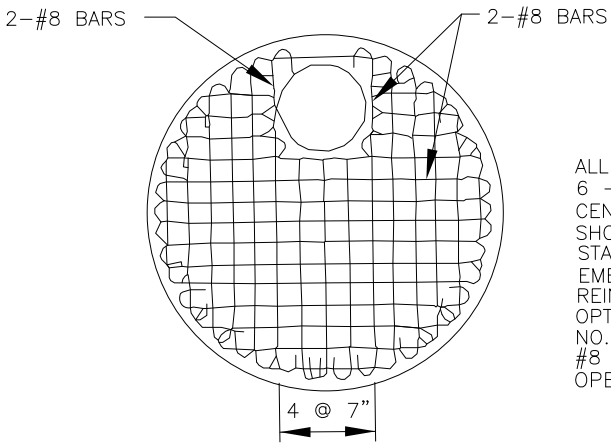
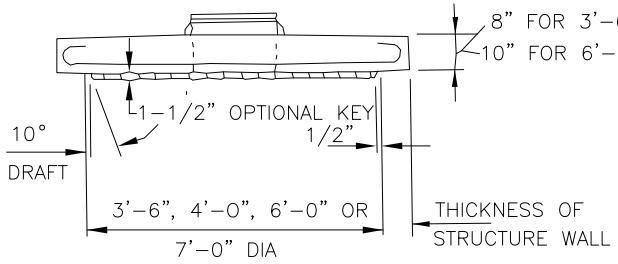


ALL REINFORCEMENT – #6 BARS EXCEPT 6 – #8 BARS SHOWN. BARS SPACED AT 6" CENTERS BOTH WAYS EXCEPT MIDDLE BARS SHOWN AT 7" CENTERS. ALL BARS WITH A.C.I.* STANDARD HOOKS CANTED APPROX. 45°, OR EMBEDDED IN ACCORDANCE WITH THE SLAB REINFORCEMENT DETAIL SHOWN UNDER OPTIONAL CONSTRUCTION JOINTS, SHEET NO. 3 OF FDOT STANDARD PLANS INDEX 425–001, EXCEPT ALL #8 BARS AND #6 BARS AROUND MANHOLE OPENING SHALL BE HOOKED.

REINFORCEMENT PLAN

* A.C.I. – AMERICAN CONCRETE INSTITUTE



SECTION

TYPE 7–T (TRAFFIC)(H–20)

NOTES (TOPS, FRAMES, AND COVER):

1. ALL STEEL BARS SHALL HAVE 1–1/4" MINIMUM COVER UNLESS OTHERWISE SHOWN AND SHALL BE HOOKED WHERE INDICATED.
2. MANHOLE TOP TYPE 7 SLABS SHALL BE OF CLASS II CONCRETE AS SPECIFIED IN ASTM C–478 MAY BE USED FOR PRECAST UNITS.
3. MANHOLE TOP TYPE 7 SLABS MAY BE OF CAST–IN–PLACE OR PRECAST CONSTRUCTION. THE OPTIONAL KEY IS FOR PRECAST TOPS AND IN LIEU OF DOWELS. FRAME AND SLAB OPENINGS ARE TO BE OMITTED WHEN TOP IS USED OVER A JUNCTION BOX. FRAMES CAN BE ADJUSTED A MAXIMUM 12" HEIGHT WITH BRICK OR PRECAST ASTM C478 GRADE RINGS.
4. MANHOLE TOPS SHALL BE SECURED TO STRUCTURES BY OPTIONAL CONSTRUCTION JOINTS AS SHOWN ON SHEET 3 OF FDOT STANDARD PLANS INDEX 425–001.
5. ALL COVERS TO BE TACK WELDED TO FRAMES AT THIRD POINTS OR GROUTED AT THIRD POINTS WITH EPOXY (TOTAL ELEVEN (11) OUNCES OF MIXED EPOXY).
6. THE 212 LB. COVER IS THE REPLACEMENT FOR ALL PREVIOUS 1–1/2"DEEP FRAMES (TRAFFIC TYPE). THE 185 LB. COVER IS THE REPLACEMENT FOR ALL PREVIOUS 1/2" DEEP FRAMES (NON–TRAFFIC TYPE).
7. FOR STRUCTURE BOTTOMS, REFER TO FDOT STANDARD PLANS
8. FOR ADDITIONAL DETAILS, REFER TO FDOT STANDARD PLANS
9. ALL REQUIREMENTS SHALL MEET FDOT STANDARD PLANS.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
		STRUCTURE TOPS FOR MANHOLES OR JUNCTION BOXES - TRAFFIC	C-5
		REVISIONS: 03–31–2026	

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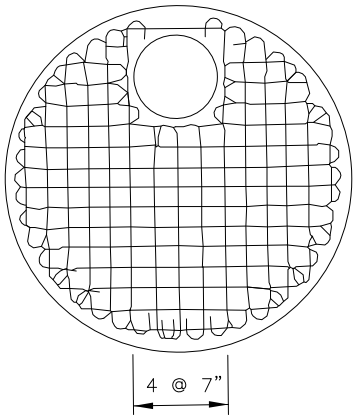
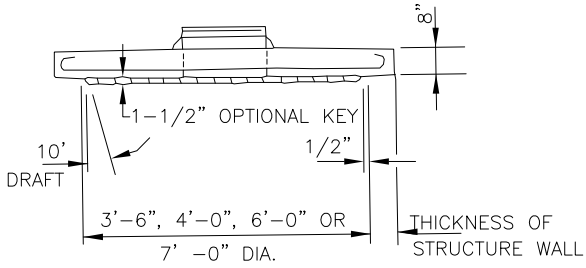


REINFORCING BARS @ 6" CENTERS BOTH WAYS EXCEPT MIDDLE BARS SHOWN 7" CENTERS. ALL BARS WITH A.C.I. * STANDARD HOOKS CANTED APPROX, 45°, OR EMBEDDED IN ACCORDANCE WITH THE SLAB REINFORCEMENT DETAIL SHOWN UNDER OPTIONAL CONSTRUCTION JOINTS, SHEET NO. 3 OF FDOT STANDARD PLANS INDEX 425-001, EXCEPT BARS AROUND MANHOLE OPENING SHALL BE HOOKED.

BAR SIZE	TOP DIA.
NO. 4	3'-6", & 4'-0'
NO. 5	6'-0"
NO. 6	7'-0"

REINFORCEMENT PLAN

* A.C.I. – AMERICAN CONCRETE INSTITUTE



SECTION

TYPE 7-NT (NON-TRAFFIC)

NOTES (TOPS, FRAMES, AND COVER):

1. ALL STEEL BARS SHALL HAVE 1-1/4" MINIMUM COVER UNLESS OTHERWISE SHOWN AND SHALL BE HOOKED WHERE INDICATED.
2. MANHOLE TOP TYPE 7 SLABS SHALL BE OF CLASS II CONCRETE AS SPECIFIED IN ASTM C-478 MAY BE USED FOR PRECAST UNITS.
3. MANHOLE TOP TYPE 7 SLABS MAY BE OF CAST-IN-PLACE OR PRECAST CONSTRUCTION. THE OPTIONAL KEY IS FOR PRECAST TOPS AND IN LIEU OF DOWELS. FRAME AND SLAB OPENINGS ARE TO BE OMITTED WHEN TOP IS USED OVER A JUNCTION BOX. FRAMES CAN BE ADJUSTED A MAXIMUM 12" HEIGHT WITH BRICK OR PRECAST ASTM C478 GRADE RINGS.
4. MANHOLE TOPS SHALL BE SECURED TO STRUCTURES BY OPTIONAL CONSTRUCTION JOINTS AS SHOWN ON SHEET 3 OF FDOT STANDARD PLANS INDEX 425-001.
5. ALL COVERS TO BE TACK WELDED TO FRAMES AT THIRD POINTS OR GROUTED AT THIRD POINTS WITH EPOXY (TOTAL ELEVEN (11) OUNCES OF MIXED EPOXY).
6. THE 212 LB. COVER IS THE REPLACEMENT FOR ALL PREVIOUS 1-1/2" DEEP FRAMES (TRAFFIC TYPE). THE 185 LB. COVER IS THE REPLACEMENT FOR ALL PREVIOUS 1/2" DEEP FRAMES (NON-TRAFFIC TYPE).
7. FOR STRUCTURE BOTTOMS, REFER TO FDOT STANDARD PLANS
8. FOR ADDITIONAL DETAILS, REFER TO FDOT STANDARD PLANS

ADOPTED BY CITY COUNCIL		TITLE	SHEET NO.
DRAFT	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	STRUCTURE TOPS FOR MANHOLES OR JUNCTION BOXES - NON-TRAFFIC	C-6
		REVISIONS: 08-31-2020	

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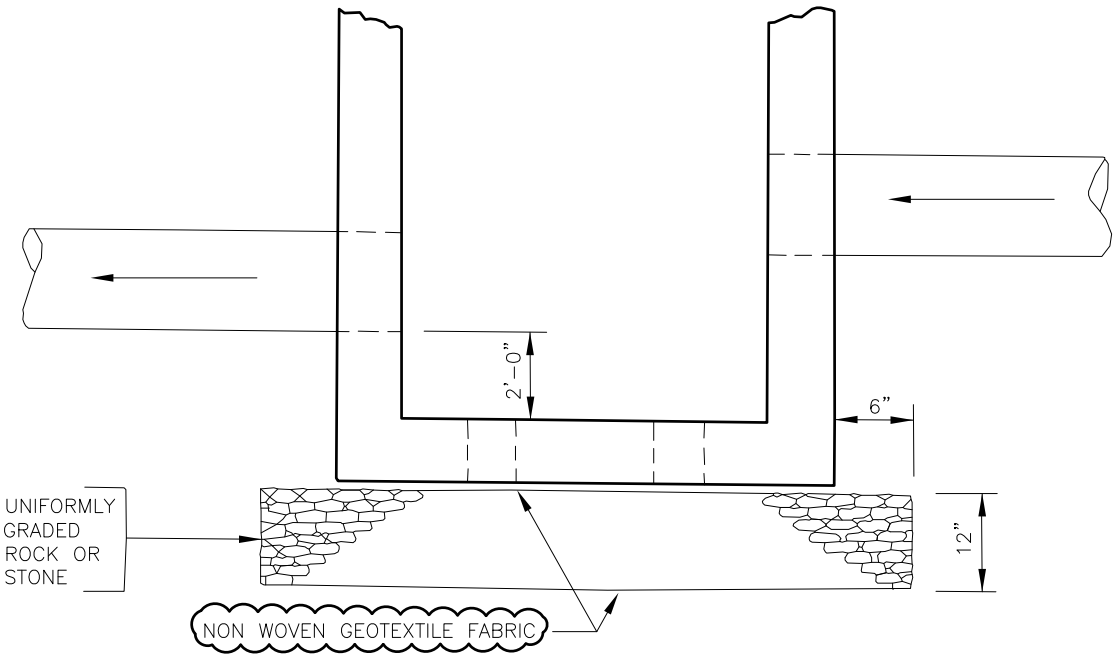
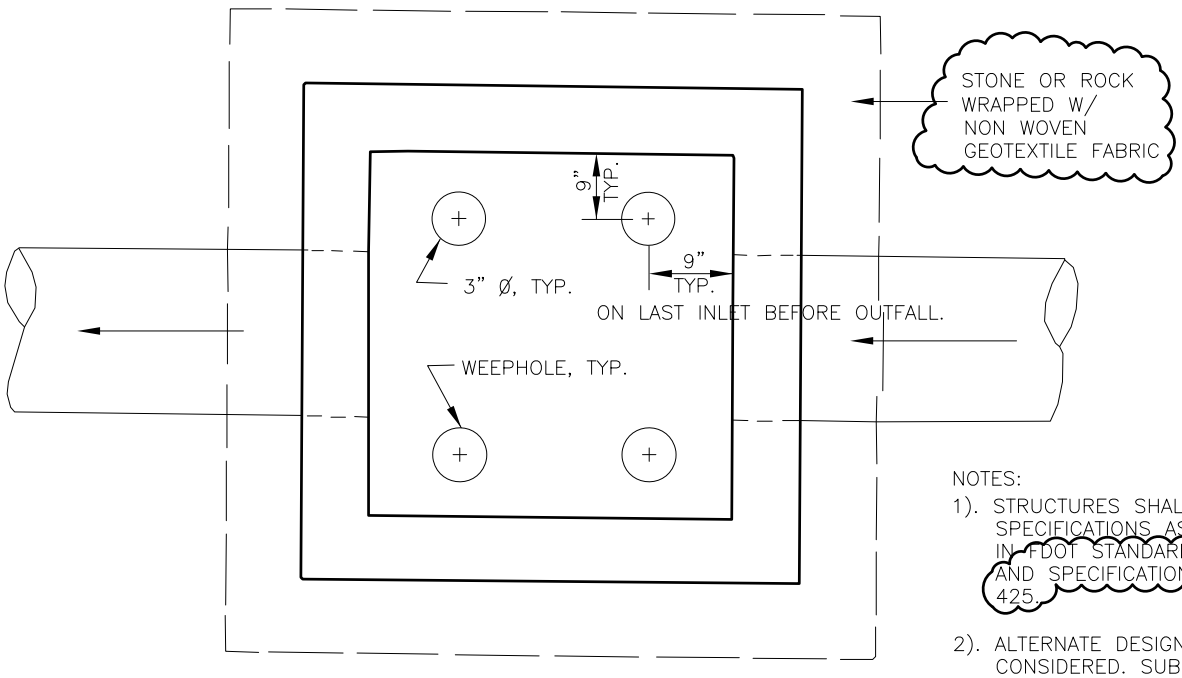
SUMP CROSS SECTION

N.T.S.



SUMP PLAN VIEW

N.T.S.



NOTES:

1). STRUCTURES SHALL MEET SPECIFICATIONS AS DETAILED IN FDOT STANDARD PLANS AND SPECIFICATIONS SECTION 425.

2). ALTERNATE DESIGNS WILL BE CONSIDERED. SUBMIT SHOP DRAWINGS TO PUBLIC WORKS DIRECTOR.

NOTE: A SUMP MUST BE INSTALLED ON LAST INLET BEFORE OUTFALL. FOR NEW INSTALLATION OR WHERE EXIST. STRUCTURE MUST BE REPLACED.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
DRAFT		CATCH BASIN SUMP DETAIL	C-7
		REVISIONS: 08-31-2020	

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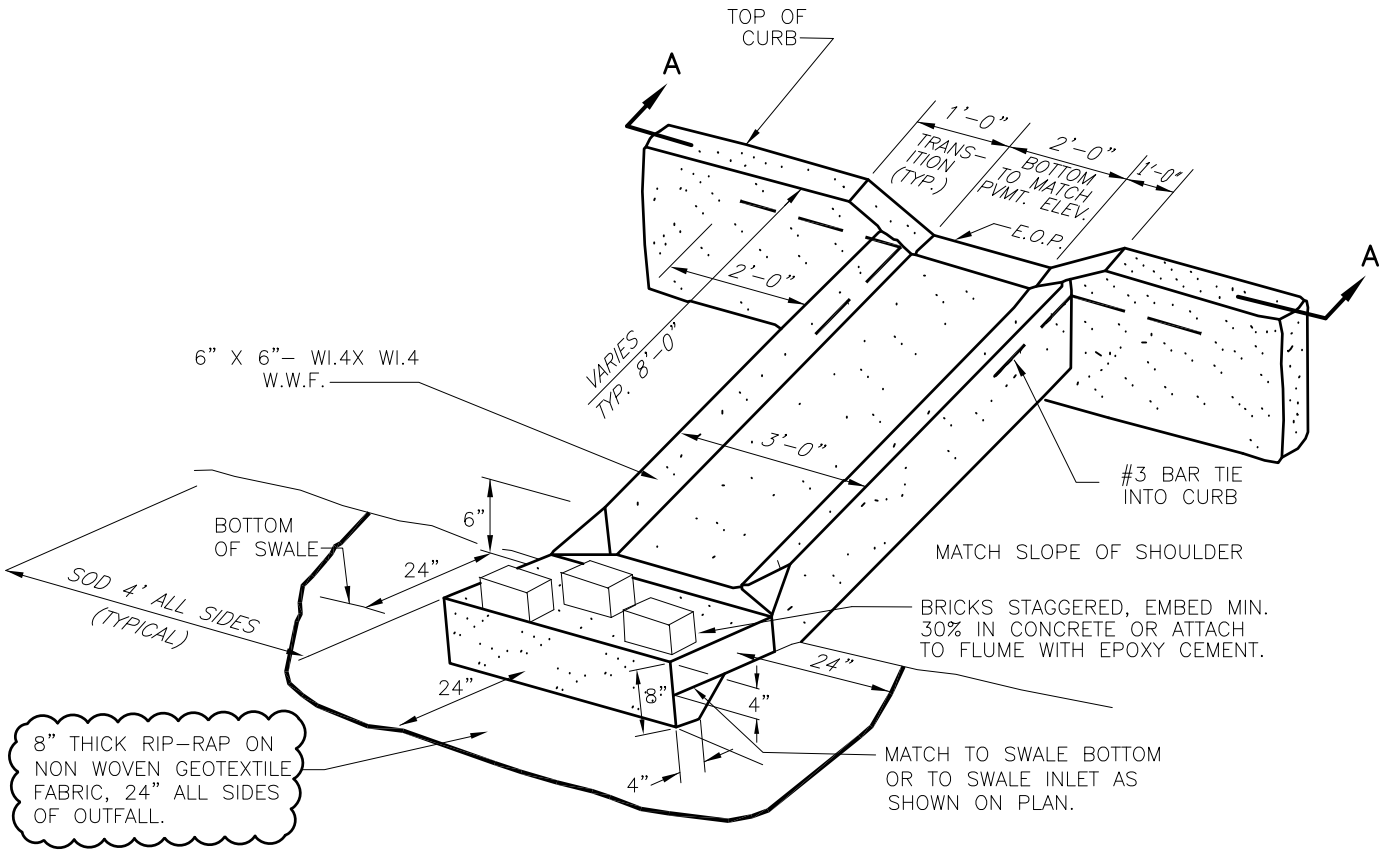
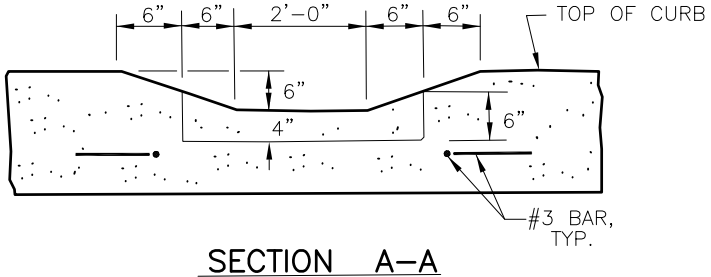


ISOMETRIC



SECTION A-A

CONCRETE FLUME DETAIL

N.T.S.

NOTES:

1. FLUME MAY OR MAY NOT ALIGN WITH THE DITCH BOTTOM INLET.
2. MINIMUM COMPRESSIVE STRENGTH OF CONCRETE SHALL BE 3000 P.S.I.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
DRAFT		CONCRETE FLUME DETAIL	C-8
		REVISIONS: 08-31-2020	

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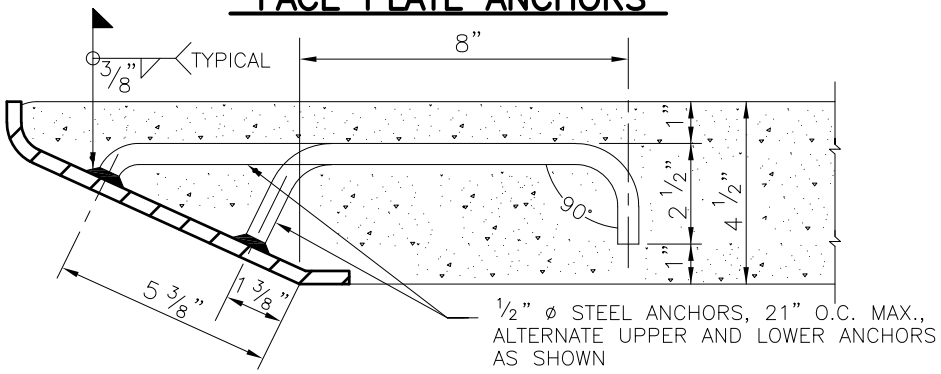
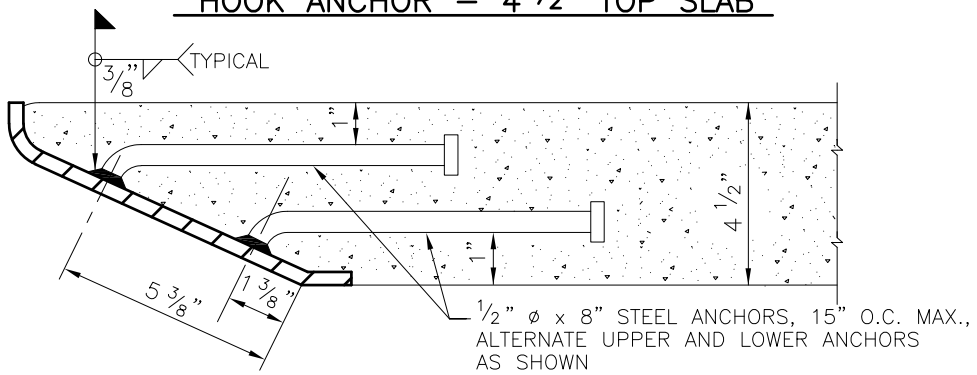
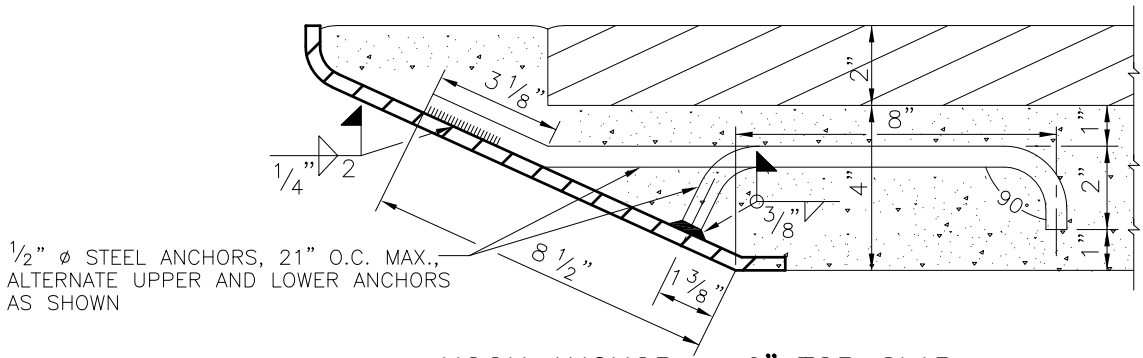
FACE PLATE ANCHORS



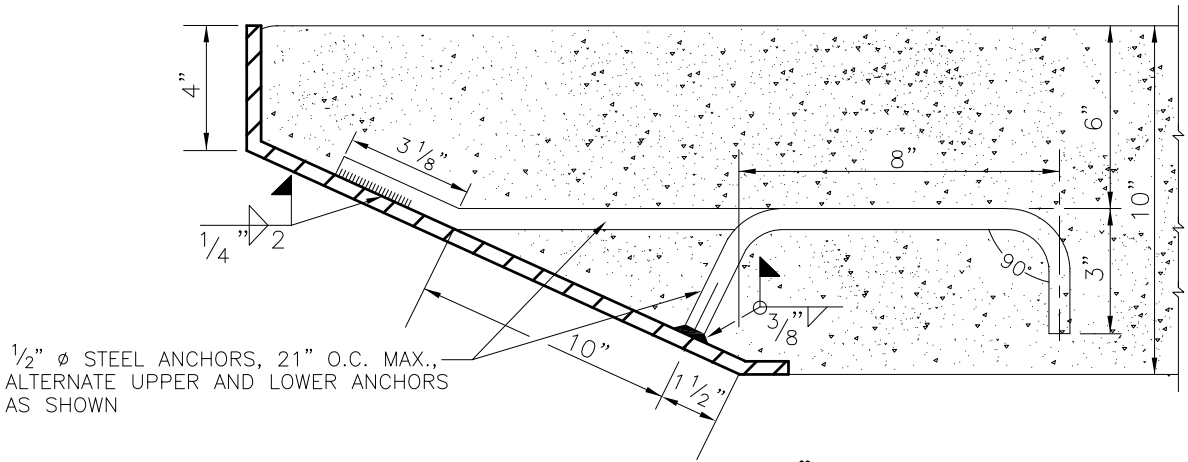
HOOK ANCHOR – 4 1/2" TOP SLAB



ROUND HEAD ANCHOR – 4 1/2" TOP SLAB



HOOK ANCHOR – 6" TOP SLAB



HOOK ANCHOR – 10" TOP SLAB

ADOPTED BY CITY COUNCIL		TITLE	SHEET NO.
DRAFT	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	STEEL FACE PLATE DETAIL FOR CURB INLET TOPS	C-9
		REVISIONS: 08–31–2020	

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DRIVEWAY CONTROL

The Public Works Department must approve the design, number, and location of all driveways. The location of commercial driveways will be determined during the development review process upon submission of an application with DSD). Approvals are subject to current access control plans adopted by the City, County, and State for new driveways or existing driveways when their use or operation is changed. The number of driveways, particularly on arterial and collector roads, must be kept to a minimum. FDOT and Lee County standards must be met when driveway access is proposed on a State or County roadway. No driveways will be approved without a Site Development Plan.

Driveway Maneuvers Driveways will not be approved for parking or loading areas that require backing maneuvers in a public street right-of-way or common access drive except for single family residential uses on local streets. Such single family residential uses on other class streets are required to utilize circular driveways provided with a turnaround area. See sheets D-10 and D-12. Duplex driveways are to be consistent with LDC Section 5.10.3. and 6.2.3.

COMMERCIAL DRIVEWAYS – All Uses, Except Single Family Homes and Duplexes

Driveway Location – If a property has frontage on more than one street, driveway access will be permitted only on those street frontages where driveway location standards contained in these Standards can be met. If a property cannot be serviced by a driveway access meeting those standards, the City will designate access points based on traffic safety, operational needs and conformance to as many of the requirements of these guidelines as possible.

Joint Driveways – Joint driveways must be constructed for two adjacent developments. The joint driveway must be constructed as shown on Sheets D-8 and D-9. A cross access agreement and easement to provide access to the adjoining property will be required at the time of Site Development Plan approval. A similar cross access agreement and easement will be required from the adjoining property owner at such time as that property develops.

Restriction of Turning Movements – Where necessary for the safe and efficient movement of traffic, the City may require driveways to have certain turn movements restricted. The City reserves the right to alter turning movements at any time to address safety concerns.

Number of Driveways – One driveway per property ownership will be permitted. If more than one access point is required a variance or deviation will be required, unless the spacing requirements set forth on sheet D-5 can be met, or as necessary for traffic safety.

Abandoned Driveways – Existing driveways, even if not in use, must not be relocated, altered or reconstructed without approval from the City.

Speed Change Lanes - For arterial and collector roads, the City requires the provision of left turn lanes at all public intersections and private driveways, at which median openings exist or are being permitted. In addition, right turn lanes will be required at high volume

driveways in accordance with the Lee County Turn Lane Policy (See AC 11-4, Appendix #1 for design information only).

DRIVEWAY DESIGN

This section describes width, alignment, driveway island design, driveway corner radii, and sight distance requirements for commercial development.

The Florida Department of Transportation and Lee County regulate driveways onto State and County roads respectively. Driveway permits on these roads must be obtained directly from the appropriate agency. Access roads and driveways for PDP and PUD's will be constructed in accordance with approved by the Public Works Department.

Repair and maintenance of all driveways, driveway culverts and full culvert installations is the responsibility of the property owner, including the portion in the Public Right of Way. As per the Land Development Code 5.1.10 All property owners shall be responsible to either maintain or construct the city-owned right of way lying between their property boundaries and the city pavement. All work within the Public Right of Way requires an approved Driveway permit or Right of Way Permit.

Sidewalk crossings meeting the American with Disability Act (ADA) are required on driveways along collectors, arterials, and roads with existing or future sidewalks. See details on Sheets D-13A (residential) and D-13B (commercial).

COMMERCIAL DRIVEWAYS – All Uses, Except Single Family Homes and Duplexes
These standards apply to all commercial driveways. Commercial driveways must be designed to all street intersection design requirements.

Spacing – Commercial driveway details are shown on sheets D-3, D-3A, D-4, D-5, D-6. Spacing on Del Prado Blvd. between Pine Island Road (S.R. 78) and U.S. 41 only is shown on sheet D-5 - Notes 4 and 5. Where driveways are in closer proximity than the distances shown, joint driveways will be required per sheets D-8 and D-9.

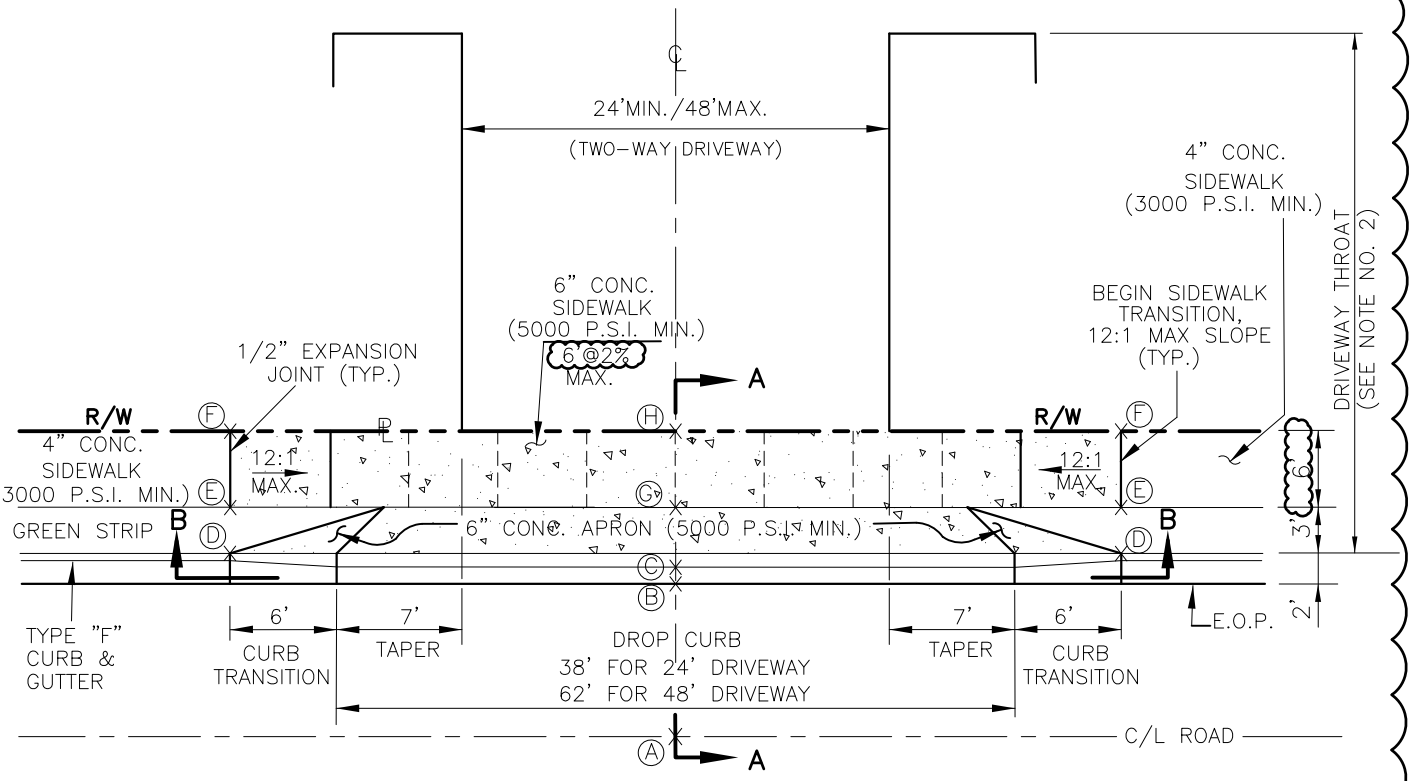
Alignment – Minimum intersection sight distance must be provided at all access points as described in the Florida Greenbook, which applies to both public streets and private driveway intersections. Driveways should intersect a public street at no less than 80 degrees.

Driveway Grades – For maximum grades, see sheet D-13.

RESIDENTIAL DRIVEWAYS – Single Family Homes and Duplexes
Back-out driveways are prohibited along collectors, arterials, and other specified roadways. It is, therefore, required that when new or rebuilt single family development facing these roadways are permitted, circular drives be provided. On properties with septic field or other conflicts as determined by the City, hammerhead driveways with turnaround area may be substituted for circular drives. Driveway widths greater than 25' are exempt from required turnaround area (Sheet D-12). Standard residential driveway spacing criteria are shown on Sheet D-10. Details for Duplex driveways are to be consistent with LDC Section 5.10.3. and 6.2.3.

Restoration

Whenever an area in the Public Right of Way adjacent to the work is disturbed, the area shall be restored to pre-project conditions and as shown on Sheets F-1 to F-5, including the installation of sod or alternate approved methods. A Right of Way Permit is required for all work within the City Right of Way. Restoration will be inspected and accepted by the Public Works Department.



PLAN VIEW

(5' SIDEWALK)

NOTES:

1. ALL 6" THICK CONCRETE SIDEWALK AND CONCRETE APRON SHALL BE MINIMUM 5000 P.S.I. IN 28 DAYS. ALL 4" THICK CONCRETE SIDEWALK SHALL BE MINIMUM 3000 P.S.I. IN 28 DAYS.
2. THE DESIRED THROAT LENGTH IS 50' THE MINIMUM THROAT LENGTH IS 20'
3. SAWCUT SIDEWALK AT 5' ON CENTERS. SAWCUT CURB AT 10' ON CENTERS.
4. MAXIMUM COMBINED DRIVEWAY SLOPE MAY NOT EXCEED 12%. SEE SHEET NO. D-13 FOR DETAILS & DEFINITIONS
5. MINIMUM WIDTH FOR ONE-WAY DRIVE IS 15'.
6. MINIMUM BASE SHALL BE 6" COMPACTED LIMEROCK LBR 100 COMPACTED TO 98%, AASHTO T-180
7. THE CITY RESERVES THE RIGHT TO REQUIRE ADDITIONAL TRAFFIC CONTROL AT THE DRIVEWAY.

DESIGN ELEVATIONS (SEE SHEET D-4)

** R/W WIDTH	(A) EXISTING SURVEY ELEVATION	(B) EDGE OF PAVEMENT (E.O.P.)	(C) INVERT OF DROP CURB (FLOWLINE)	(D) BACK OF TYPE "F" CURB	(E) BACK OF GREEN STRIP (@ CURB TRANSITION)	(F) BACK OF SIDEWALK (@ CURB TRANSITION)	(G) BACK OF APRON (@ DRIVE'S ℄)	(H) BACK OF SIDEWALK (@ DRIVE'S ℄)	(I) LANE WIDENING	(J) EXIST. PVM'T
60'	A'	B'	B'-0.12'	B'+0.38'	B'+0.44' MAX.	B'+0.54' MAX.	B'+0.26' MAX.	B'+0.36' MAX.	10' (TYP.)	10' (TYP.)
70'	A'	B'							15' (TYP.)	20' (TYP.)

** FOR R/W WIDTH NOT SHOWN ON SHEETS D-3 OR D-3A, CONTACT THE PUBLIC WORKS DEPARTMENT.

NOTE: DESIGN ELEVATIONS AT (B) CAN BE ESTIMATED AS: (A) - 0.02((I) + (J))

(CONTACT THE PUBLIC WORKS DEPARTMENT TO VERIFY IF BLOCK DESIGN ELEVATIONS AT (B) ARE AVAILABLE FOR YOUR SITE.)

ADOPTED BY CITY COUNCIL

CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD

TITLE: COMMERCIAL DRIVEWAYS LOCAL ROADS (60' & 70' R.O.W.)

REVISIONS: 03-31-2026

SHEET NO. D-3

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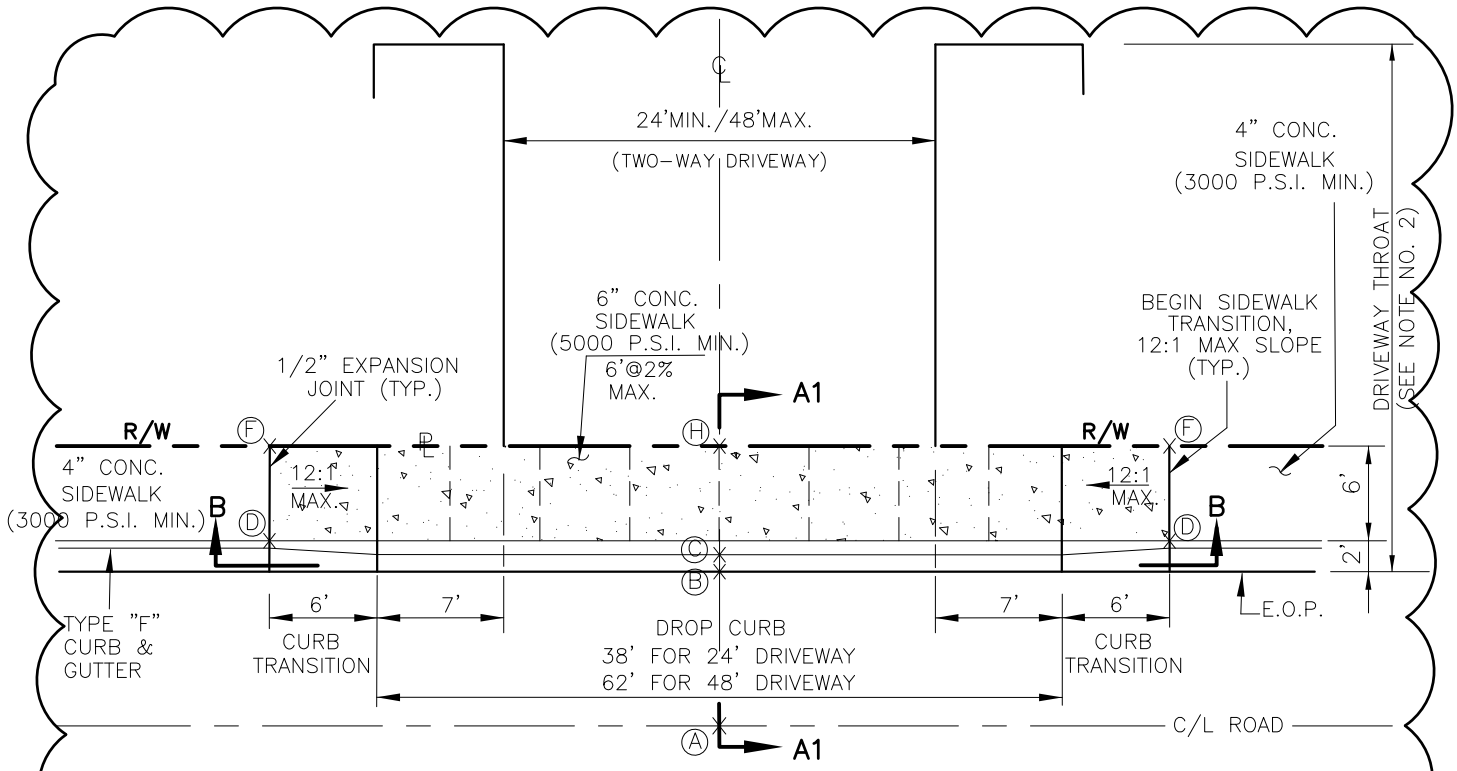

PLAN VIEW
(6' SIDEWALK)

NOTES:

1. ALL 6" THICK CONCRETE SIDEWALK SHALL BE MINIMUM 5000 P.S.I. IN 28 DAYS.
   ALL 4" THICK CONCRETE SIDEWALK SHALL BE MINIMUM 3000 P.S.I. IN 28 DAYS.
2. THE DESIRED THROAT LENGTH IS 50'
   THE MINIMUM THROAT LENGTH IS 20'
3. SAWCUT SIDEWALK AT 5' ON CENTERS.
   SAWCUT CURB AT 10' ON CENTERS.
4. MAXIMUM COMBINED DRIVEWAY SLOPE MAY NOT EXCEED 12%.
   SEE SHEET NO. D-13 FOR DETAILS & DEFINITIONS
5. MINIMUM WIDTH FOR ONE-WAY DRIVE IS 15'.
6. MINIMUM BASE SHALL BE 6" COMPACTED LIMEROCK
   LBR 100 COMPACTED TO 98%, AASHTO T-180
7. THE CITY RESERVES THE RIGHT TO REQUIRE ADDITIONAL TRAFFIC CONTROL AT THE DRIVEWAY.

DESIGN ELEVATIONS (SEE SHEET D-4)								
** R/W WIDTH	(A) EXISTING SURVEY ELEVATION	(B) EDGE OF PAVEMENT (E.O.P.)	(C) INVERT OF DROP CURB (FLOWLINE)	(D) BACK OF TYPE "F" CURB	(F) BACK OF SIDEWALK (@ CURB TRANSITION)	(H) BACK OF SIDEWALK (@ DRIVE'S ℄)	(I) LANE WIDENING	(J) EXIST. PVM'T
50'	A'	B'	B'-0.12'	B'+0.38'	B'+0.50' MAX.	B'+0.12' MAX.	7' (TYP.)	10' (TYP.)

** FOR R/W WIDTH NOT SHOWN ON SHEETS D-3 OR D-3A, CONTACT THE PUBLIC WORKS DEPARTMENT.

NOTE: DESIGN ELEVATIONS AT (B) CAN BE ESTIMATED AS: (A) -0.02((I)+(J))

(CONTACT THE PUBLIC WORKS DEPARTMENT TO VERIFY IF BLOCK DESIGN ELEVATIONS AT (B) ARE AVAILABLE FOR YOUR SITE.)

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE: COMMERCIAL DRIVEWAYS LOCAL ROADS (50' R.O.W.)	SHEET NO. D-3A
		REVISIONS: 03-31-2026	

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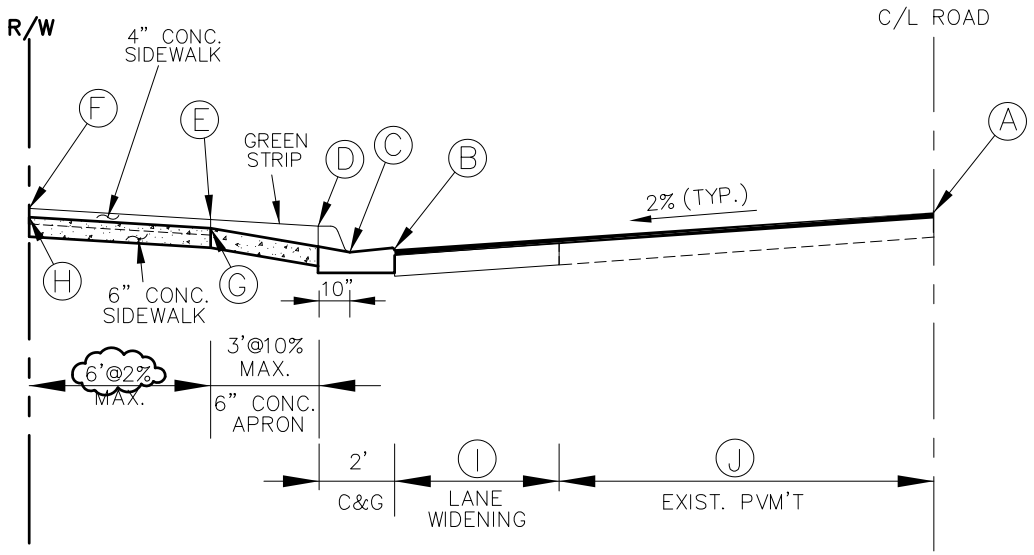
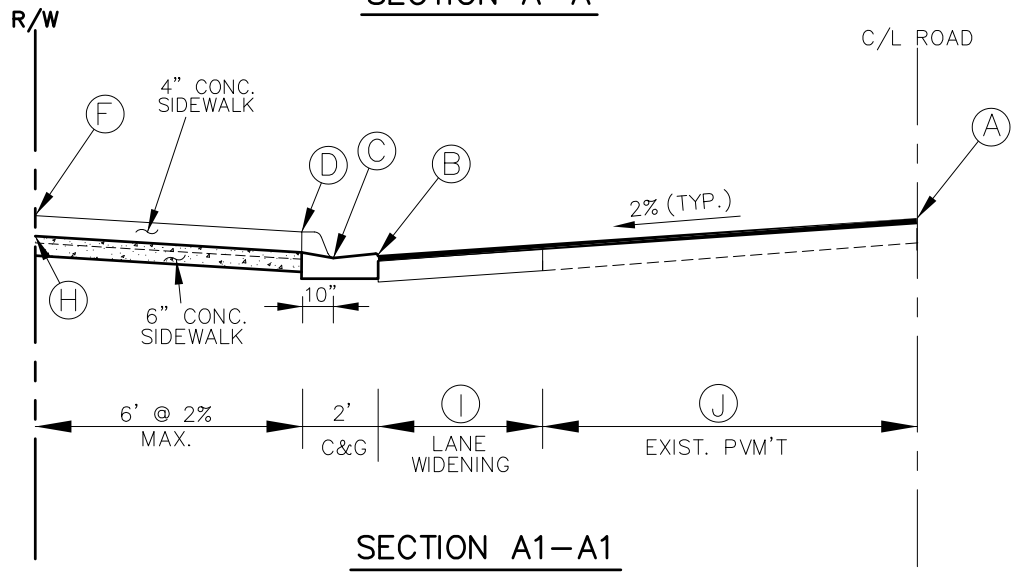
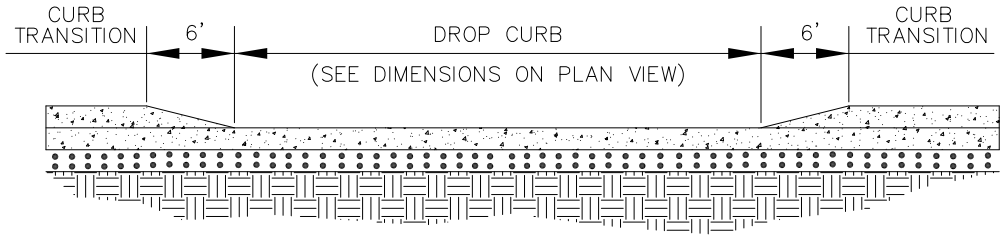


SECTION A–A



SECTION A1–A1



SECTION B–B

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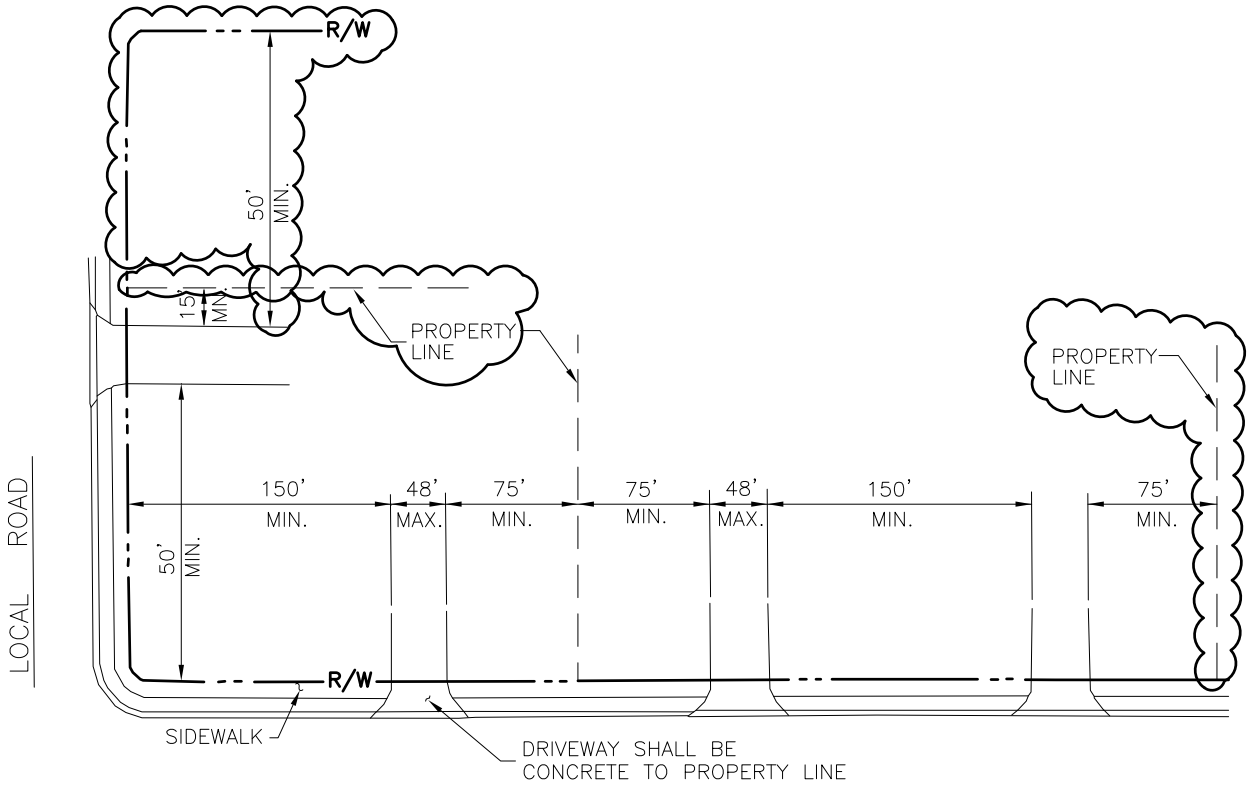
ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE: COMMERCIAL DRIVEWAYS LOCAL ROADS - SECTIONS	SHEET NO. D-4
		REVISIONS: 03–31–2026	



ARTERIAL/COLLECTOR ROAD

NOTES:

1. IF COMMERCIAL PROPERTY CANNOT MEET THESE MINIMUM DISTANCES, THEN A JOINT COMMERCIAL DRIVE MUST BE USED.
2. THE CITY WILL DETERMINE THE APPROPRIATE DRIVEWAY LOCATION IF PROPERTY ON BOTH SIDES OF THE PROJECT ARE DEVELOPED.
3. FOR OTHER ALTERNATIVES ON LOCAL STREETS, CONSULT WITH PUBLIC WORKS DEPARTMENT FOR APPROVAL.
4. FLORIDA DOT ACCESS CLASSIFICATION #3 GREATER THAN 45 MPH AT 660' SPACING. (DEL PRADO BLVD. FROM KISMET PKWY. TO US 41)
5. FLORIDA DOT ACCESS CLASSIFICATION #2 (MODIFIED) MINIMUM DRIVEWAY CONNECTION 1320' WITH MEDIAN OPENINGS AT N.E. 10TH TER., N.E. 14TH ST., DIPLOMAT PKWY, N.E. 20TH ST., AND KISMET PKWY. (DEL PRADO BLVD. FROM S.R. 78 TO KISMET PKWY)

MAJOR INTERSECTIONS (ARTERIAL / COLLECTOR INTERSECTIONS)

MUST MEET FDOT'S MINNIMUM SPACING REQUIREMENTS (FDOT DESIGN MANUAL CHAPTER 214; F.A.C. RULES 14-96 AND 14-97).

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
DRAFT		COMMERCIAL DRIVEWAYS COLLECTORS AND ARTERIALS EASEMENT & SPACING	D-5
		REVISIONS: 08-31-2020	

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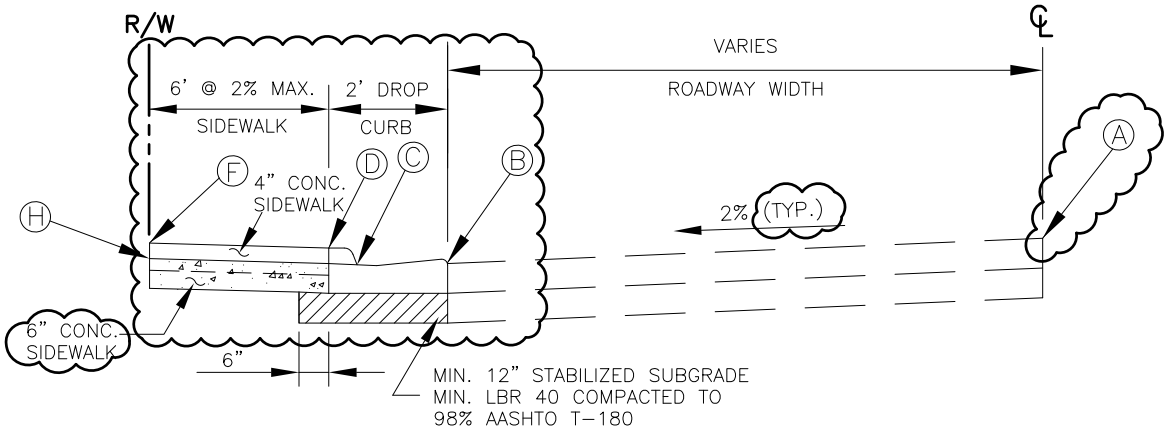
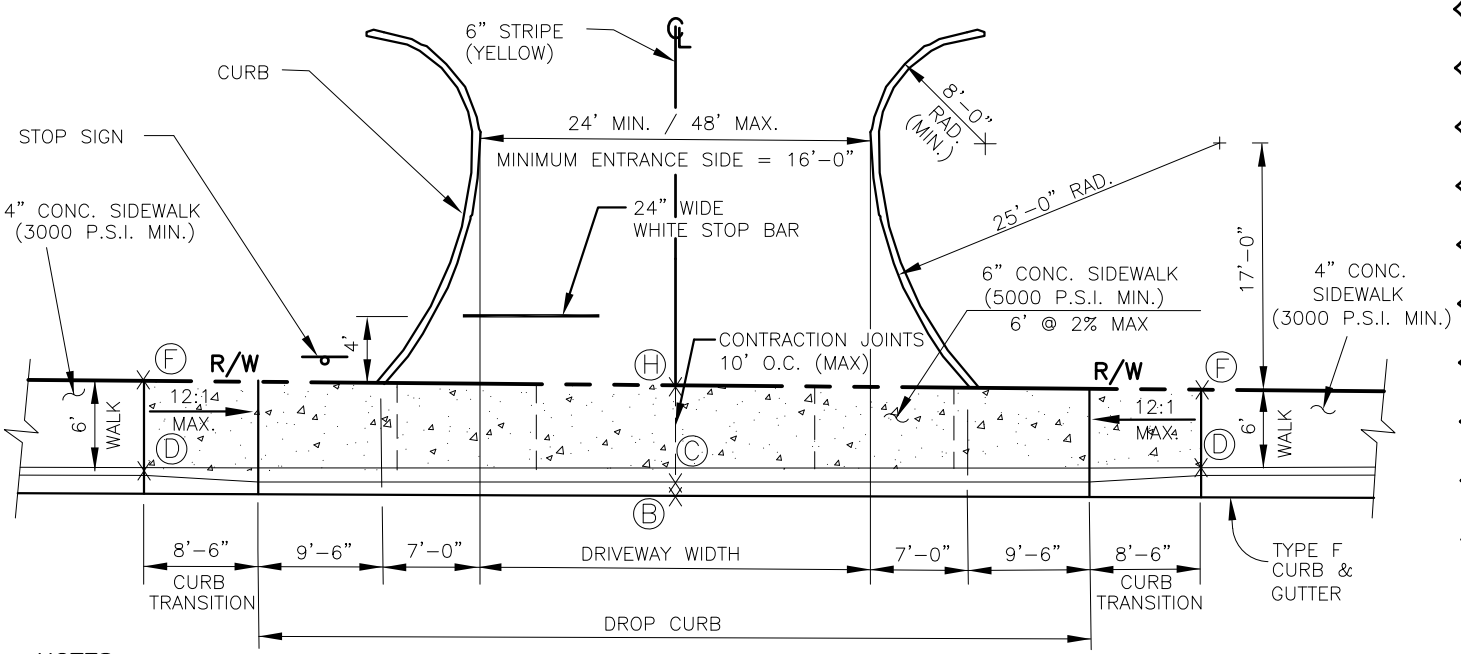


NOTES:

1. CONTRACTOR SHALL HAVE DRIVEWAY FORMING INSPECTED FOR COMPLIANCE BEFORE PLACING CONCRETE.
2. THE SIDEWALK FOUNDATION SHALL BE COMPACTED TO A FIRM EVEN SURFACE AND BE FREE OF SOD AND OTHER ORGANIC MATERIAL. SIDEWALK SAWCUT JOINTS SHALL BE ON 5' CENTERS AND 1/3 THE SLAB THICKNESS.

DRIVEWAY CROSS SECTION DETAIL



NOTES:

1. ALL 6" THICK CONCRETE SIDEWALK SHALL BE MINIMUM 5000 P.S.I. IN 28 DAYS. ALL 4" THICK CONCRETE SIDEWALK SHALL BE MINIMUM 3000 P.S.I. IN 28 DAYS.
2. MAXIMUM COMBINED SLOPE SHALL NOT EXCEED 12%. SEE SHEET D-13
3. A STOP BAR AND STOP SIGN ARE REQUIRED AT THE EXIT SIDE OF THE DRIVEWAY. SIGNS TO BE INSTALLED PER MUTCD.
4. SIDEWALK DESIGN TO MEET ADA REQUIREMENTS.
5. THIE CITY RESERVES THE RIGHT TO REQUIRE ADDITIONAL TRAFFIC CONTROL AT THE DRIVEWAY.

DESIGN ELEVATIONS					
(A) EXISTING SURVEY ELEVATION	(B) EDGE OF PAVEMENT (E.O.P.)	(C) INVERT OF DROP CURB (FLOWLINE)	(D) BACK OF TYPE "F" CURB	(F) BACK OF SIDEWALK (@ CURB TRANSITION)	(H) BACK OF SIDEWALK (@ DRIVE'S ℄)
A'	B'	B'-0.12'	B'+0.38'	B'+0.50' MAX.	B'+0.12' MAX.

DESIGN ELEVATIONS AT (B) CAN BE ESTIMATED AS: (A) -0.02 (ROADWAY WIDTH)
(CONTACT THE PUBLIC WORKS DEPARTMENT TO VERIFY IF BLOCK DESIGN ELEVATIONS AT (B) ARE AVAILABLE FOR YOUR SITE.)

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE: COMMERCIAL DRIVEWAYS COLLECTORS AND ARTERIALS DETAILS	SHEET NO.: D-6
		REVISIONS: 03-31-2026	

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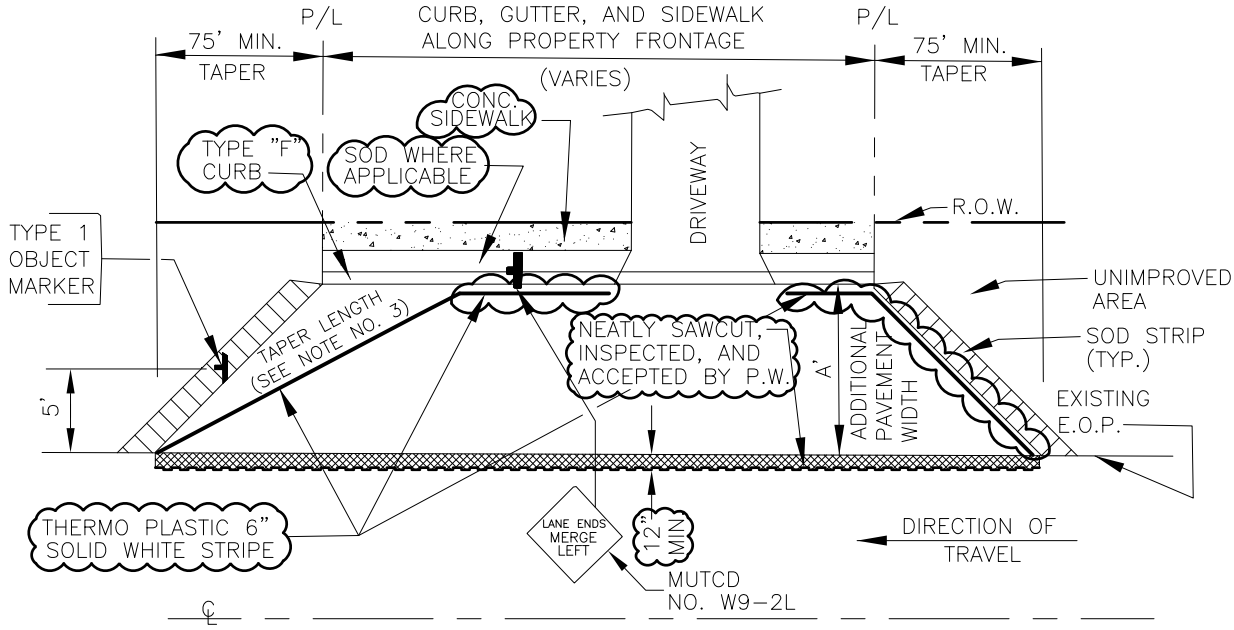


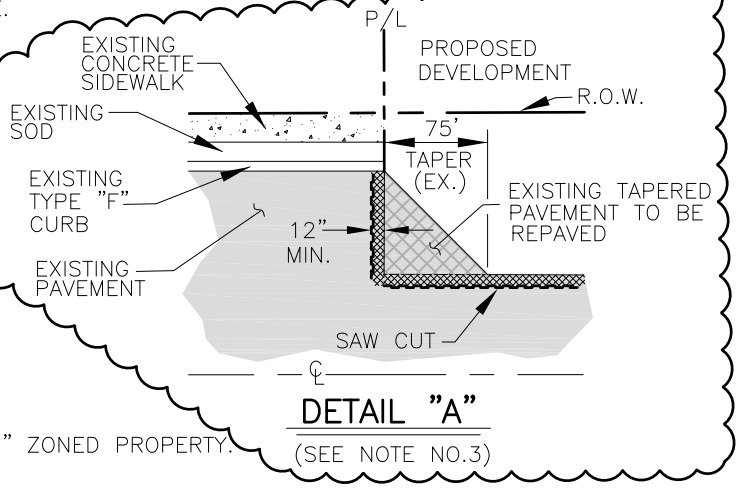
COMMERCIAL LANE WIDENING / RIGHT-OF-WAY IMPROVEMENTS

NOTES:

1. SEE TYPICAL CROSS SECTION SHEETS G-15 THROUGH G-17A FOR PAVEMENT REQUIREMENTS.

2. THE EXISTING PAVEMENT SHALL BE SAW CUT TO PROVIDE A STRAIGHT, NONDAMAGED EDGE AND SHALL BE PARALLEL TO ROADWAY CENTERLINE.

3. IF EXISTING ROADWAY ADJACENT TO THE PROPOSED DEVELOPMENT HAS PREVIOUSLY BEEN WIDENED, THE PROPOSED LANE WIDENING IN FRONT OF THE DEVELOPMENT SHALL ALSO INCLUDE REPAVING OF THE EXISTING 75' TAPERED PAVEMENT TO PROVIDE SMOOTH TRANSITION BETWEEN EXISTING AND PROPOSED LANE WIDENING. SEE DETAIL "A".



DETAIL "A"
(SEE NOTE NO.3)

4. STRIPED TAPER LENGTH SHALL BE:
   A.) 30 MPH ≤ DESIGN SPEED < 45 MPH, L = A' X 8.
   B.) DESIGN SPEED ≥ 45MPH, L = A' X 12.

5. TAPER IS NOT TO BE CONSTRUCTED ON ADJACENT "R-1" ZONED PROPERTY.

6. AT COMMENCEMENT OF WORK IN THE R.O.W., BARRICADES SHALL BE PLACED ALONG EXISTING PAVEMENT EDGE UNTIL WIDENING IS COMPLETE.

7. REQUIREMENTS FOR COMMERCIAL LANE WIDENING IMPROVEMENTS IN RIGHT-OF-WAYS SHALL NOT RESTRICT, IMPEDE OR IMPACT EXISTING STORM WATER DRAINAGE ON THE THE ADJACENT CITY RIGHTS-OF-WAYS. THE OWNER/DEVELOPER WILL BE RESPONSIBLE FOR ALL NEW INSTALLATION AND NECESSARY ADJUSTMENTS TO EXISTING DRAINAGE FACILITIES AND RIGHTS-OF WAYS TO ENSURE PROPER, ADEQUATE AND CONTINUOUS FUNCTION. THIS MAY INVOLVE BUT IS NOT LIMITED TO SWALE REGRADING, MODIFICATION OR INSTALLATION OF PIPES, DRAINAGE STRUCTURES, CURB AND CURB INLETS.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE: COMMERCIAL LANE WIDENING / RIGHT-OF-WAY IMPROVEMENTS	SHEET NO.: D-7
		REVISIONS: 03-31-2026	

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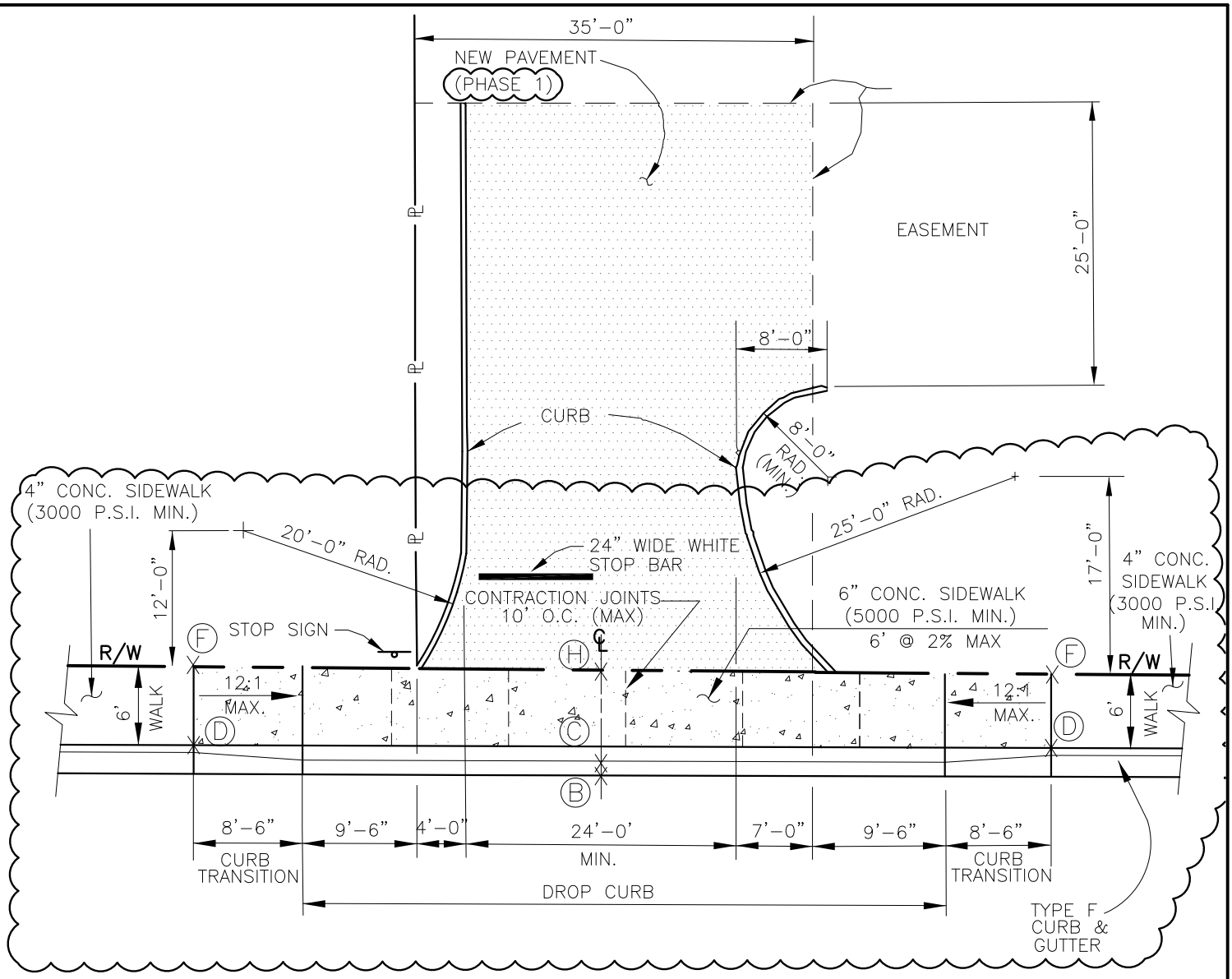

INITIAL JOINT DRIVEWAY

NOTES:

1. ALL 6" THICK CONCRETE SIDEWALK SHALL BE MINIMUM 5000 P.S.I. IN 28 DAYS. ALL 4" THICK CONCRETE SIDEWALK SHALL BE MINIMUM 3000 P.S.I. IN 28 DAYS.
2. MAXIMUM COMBINED SLOPE SHALL NOT EXCEED 12%. SEE SHEET D-13
3. A STOP BAR AND STOP SIGN ARE REQUIRED AT THE EXIT SIDE OF THE DRIVEWAY. SIGNS TO BE INSTALLED PER MUTCD.
4. SIDEWALK DESIGN TO MEET ADA REQUIREMENTS.
5. REFER TO SHEET D-9.

DESIGN ELEVATIONS					
(A) EXISTING SURVEY ELEVATION	(B) EDGE OF PAVEMENT (E.O.P.)	(C) INVERT OF DROP CURB (FLOWLINE)	(D) BACK OF TYPE "F" CURB	(F) BACK OF SIDEWALK (@ CURB TRANSITION)	(H) BACK OF SIDEWALK (@ DRIVE'S ℄)
A'	B'	B'-0.12'	B'+0.38'	B'+0.50' MAX.	B'+0.12' MAX.

SEE D-6 FOR DRIVEWAY CROSS SECTION DETAIL

DESIGN ELEVATIONS AT (B) CAN BE ESTIMATED AS: (A) -0.02 (ROADWAY WIDTH)
(CONTACT THE PUBLIC WORKS DEPARTMENT TO VERIFY IF BLOCK DESIGN ELEVATIONS AT (B) ARE AVAILABLE FOR YOUR SITE.)

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
		COMMERCIAL JOINT DRIVEWAYS PHASE 1 & EASEMENT	D-8
		REVISIONS: 03-31-2026	

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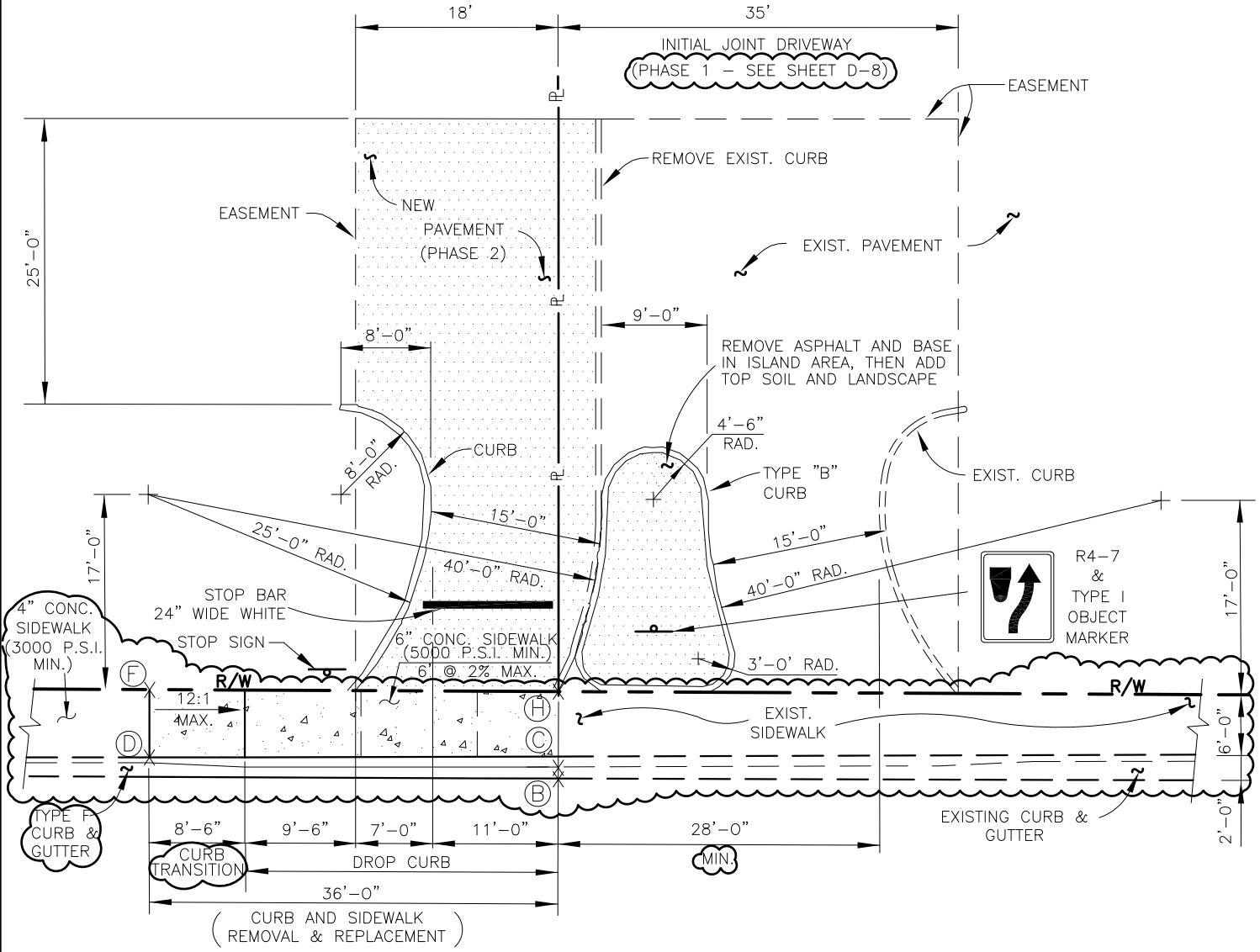

NOTES:

1. ISLAND IS REQUIRED TO ISOLATE EXISTING UTILITY CONFLICTS FROM TRAFFIC AND IS OPTIONAL IN ALL OTHER CASES.
2. ISLAND LANDSCAPING SHALL CONFORM TO HEIGHT REQUIREMENTS AS SPECIFIED ON PAGE G–12 OF THE CITY of CAPE CORAL ENGINEERING DESIGN STANDARDS. DESIGN SHALL BE IN ACCORDANCE WITH FDOT INTERSECTION SIGHT DISTANCE CRITERIA.
3. DEVIATIONS FROM THIS STANDARD WILL BE REVIEWED BY THE CITY PUBLIC WORKS DEPARTMENT AT TIME OF PLAN SUBMITTAL.
4. MAXIMUM COMBINED SLOPE SHALL NOT EXCEED 12%. SEE SHEET D–13.
5. A STOP BAR AND STOP SIGN ARE REQUIRED AT THE EXIT SIDE OF THE DRIVEWAY. SIGNS ARE INSTALLED PER MUTCD.
6. SIDEWALK DESIGN TO MEET ADA REQUIREMENTS.
7. ALL 6" THICK CONCRETE SIDEWALK SHALL BE MINIMUM 5000 P.S.I. IN 28 DAYS. ALL 4" THICK CONCRETE SIDEWALK SHALL BE MINIMUM 3000 P.S.I. IN 28 DAYS.

ULTIMATE JOINT DRIVEWAY

DESIGN ELEVATIONS					
(A) EXISTING SURVEY ELEVATION	(B) EDGE OF PAVEMENT (E.O.P.)	(C) INVERT OF DROP CURB (FLOWLINE)	(D) BACK OF TYPE "F" CURB	(F) BACK OF SIDEWALK (@ CURB TRANSITION	(H) BACK OF SIDEWALK (@ ℄)
A'	B'	B'–0.12'	B'+0.38'	B'+0.50' MAX.	B'+0.12' MAX.

SEE D–6 FOR DRIVEWAY CROSS SECTION DETAIL

DESIGN ELEVATIONS AT (B) CAN BE ESTIMATED AS: (A) –0.02 (ROADWAY WIDTH)
(CONTACT THE PUBLIC WORKS DEPARTMENT TO VERIFY IF BLOCK DESIGN ELEVATIONS AT (B) ARE AVAILABLE FOR YOUR SITE.)

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE: COMMERCIAL JOINT DRIVEWAYS PHASE 2 & EASEMENT	SHEET NO.: D-9
		REVISIONS: 03–31–2026	

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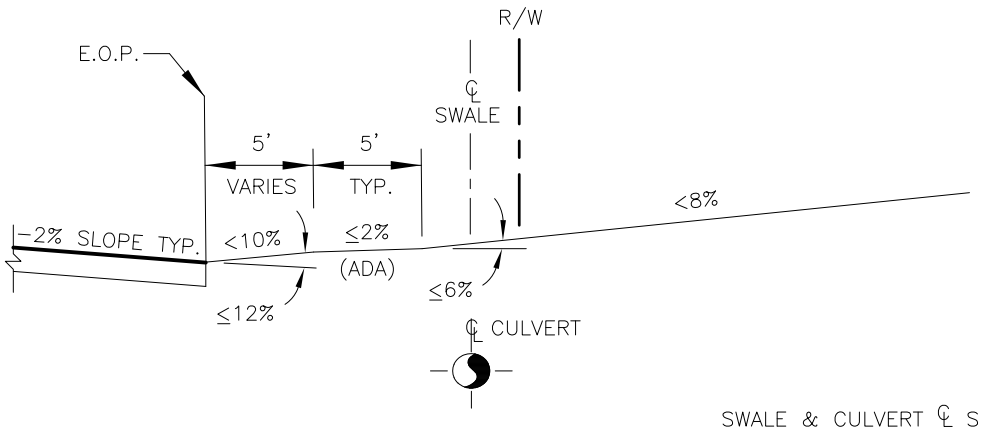
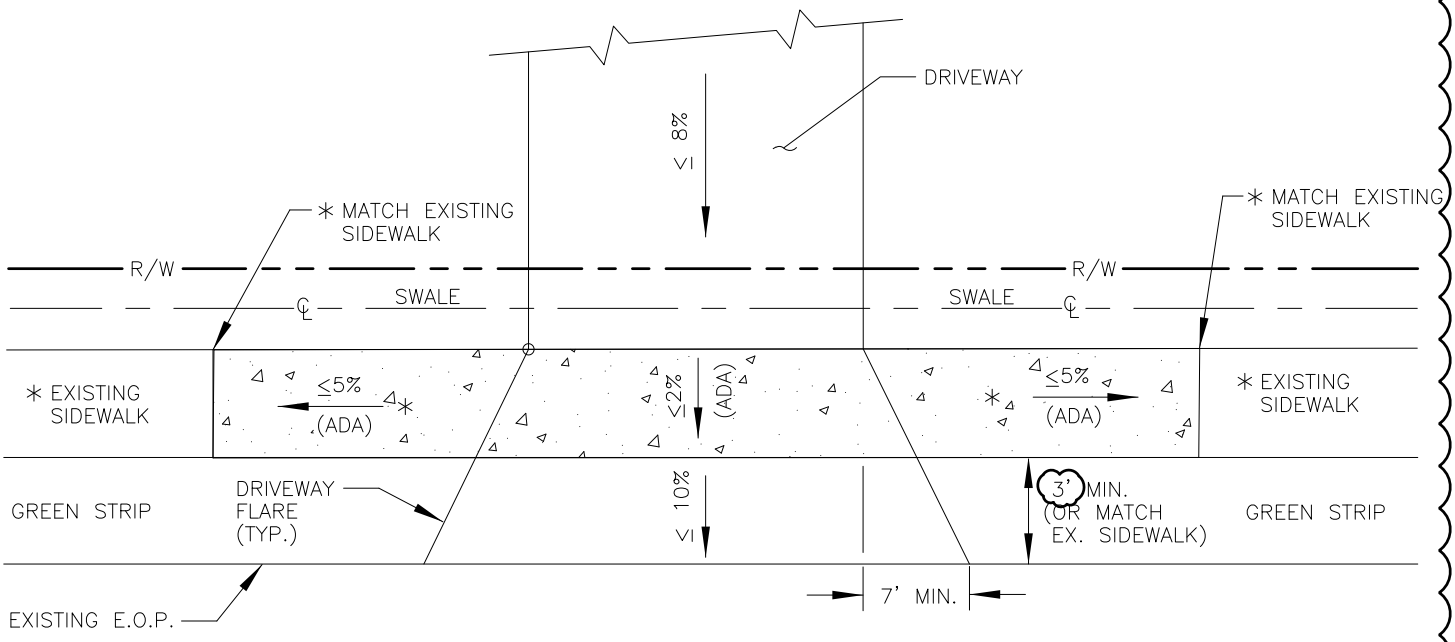


SWALE & CULVERT ℄ SHALL BE FIELD DETERMINED BY PUBLIC WORKS DEPT.

COMMERCIAL DRIVEWAYS (OPEN DRAINAGE – NO CURB & GUTTER) REQUIRING ADA COMPLIANCE



* APPLICABLE WHERE THERE IS AN EXISTING SIDEWALK

ADA COMPLIANCE REQUIREMENTS

NOTE: ADA = AMERICAN WITH DISABILITIES ACT

SIDEWALK CROSSINGS (MEETING ADA) ARE REQUIRED ON DRIVEWAYS

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE: COMMERCIAL DRIVEWAYS WITH OPEN DRAINAGE & ADA COMPLIANCE	SHEET NO.: D-9A
		REVISIONS: 06–31–2026	

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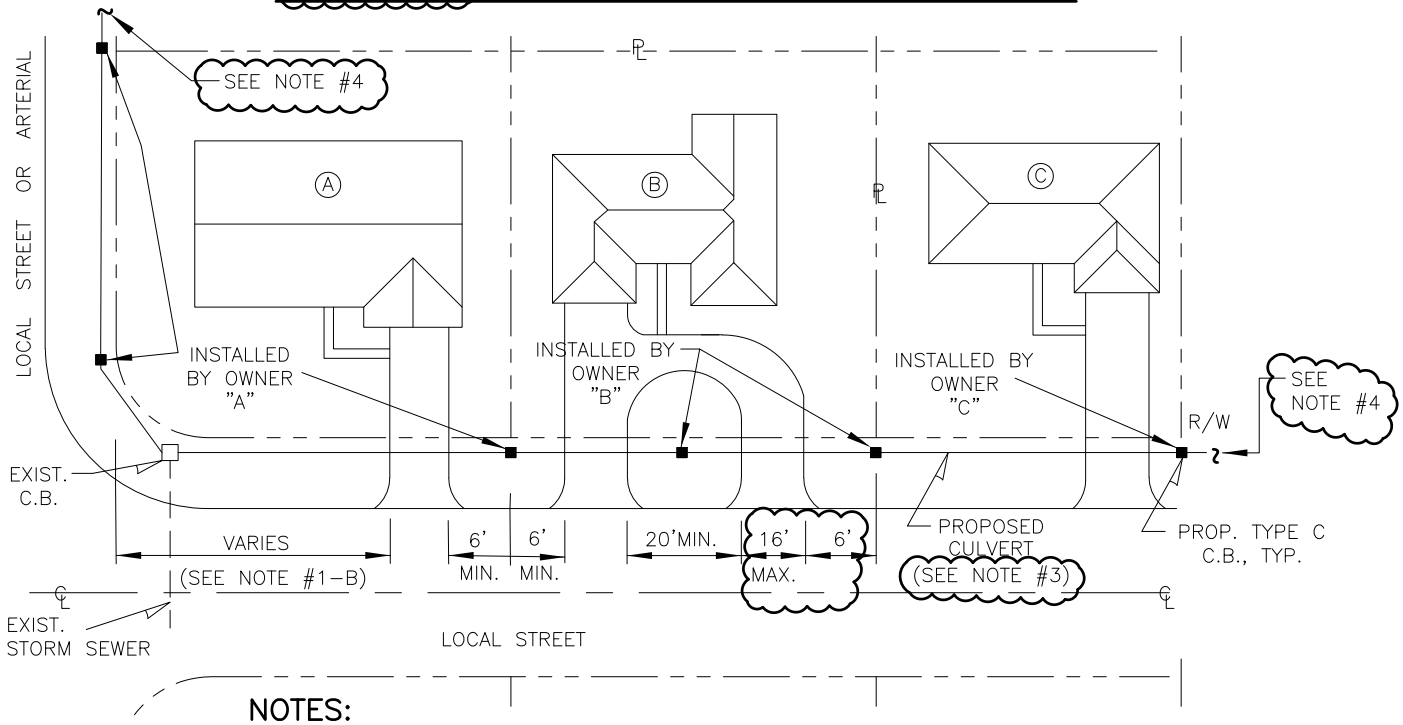
RESIDENTIAL DRIVEWAYS AND FULL CULVERT PLAN



NOTES:

1. MINIMUM DRIVEWAY SEPARATION:
   - A. 20' MIN. BETWEEN CIRCULAR DRIVEWAY WHERE THE DRIVEWAY(S) CROSSES THE RIGHT-OF-WAY LINE.
   - B. LOCAL STREET/LOCAL STREET INTERSECTION: 25' MIN. FROM THE PROPERTY LINE POINT OF INTERSECTION OF THE BLOCK CORNER. ALL OTHER INTERSECTION TYPES: 45' MIN. FROM THE POINT OF INTERSECTION OF THE BLOCK CORNER. DEVIATION MAY BE GRANTED DEPENDING ON DEVELOPMENT SITE CONDITIONS.
   - C. 6' MIN. OFFSET AT PROPERTY LINE BETWEEN INDIVIDUAL DRIVEWAYS.
2. CIRCULAR DRIVEWAY SHALL BE INSTALLED ON COLLECTORS AND ARTERIALS EXCEPT IN CASES WHERE SEPTIC OR OTHER UNAVOIDABLE SITE RESTRAINTS MAKE IT INFEASIBLE. WHERE INFEASIBLE, REFER TO D-12 FOR TURNAROUNDS.
3. ELIMINATION OR REDUCTION OF SWALE SHALL REQUIRE CULVERT CAPACITY DESIGN. MINIMUM PIPE SIZE SHALL BE 12"x18" ERCP OR EQUIVALENT. FULL CULVERTS SHALL USE PERFORATED OR SLOTTED PIPE WRAPPED IN FILTER FABRIC TO PROVIDE EXFILTRATION, UNLESS ADJACENT TO SEPTIC FIELD. SEE SECTION L FOR STORM DRAINAGE REQUIREMENTS.
4. TERMINATING CATCH BASIN OR INLET MAY REQUIRE AN ADDITIONAL FOUR (4) FEET OF STUB-OUT ON SWALE SIDE, AS DETERMINED BY THE PUBLIC WORKS DEPARTMENT.
5. THE PUBLIC WORKS DEPARTMENT WILL DETERMINE THE DRIVEWAY LOCATION IN CASES WHERE THE SPACING REQUIREMENTS CANNOT BE MET.
6. TEMPORARY EROSION CONTROL FEATURES SHALL BE USED DURING CONSTRUCTION TO PREVENT HARMFUL RUNOFF FROM LEAVING THE CONSTRUCTION SITE AND/OR ENTERING THE STORM DRAINAGE SWALE AND INLET SYSTEM. THE TEMPORARY EROSION CONTROL MUST BE INSPECTED AFTER EVERY RAIN EVENT. THE TEMPORARY EROSION CONTROL SHALL BE MAINTAINED BY THE CONTRACTOR AND REMAIN OPERATIONAL DURING ALL CONSTRUCTION AND UNTIL THE PERMANENT EROSION CONTROL IS IN. SEE SECTION M FOR EROSION CONTROL DETAILS.
7. ADDITIONAL DRIVEWAY(S) TO A HOME MAY BE APPROVED BY THE PUBLIC WORKS DEPARTMENT. REQUESTS WILL BE ASSESSED ON A CASE BY CASE BASIS WITH SPECIAL CONSIDERATION TO THOSE SITUATIONS WHERE ADDITIONAL DRIVEWAY(S) WILL PROMOTE THE SAFETY OF THE TRAVELING PUBLIC AND WILL SUPPORT THE THE PROPER FUNCTIONING OF THE SWALE AREA WITHIN THE RIGHT OF WAY. IF APPROVED, THE WIDTH OF ADDITIONAL DRIVEWAY(S) SHALL NOT EXCEED 16' AND SHOULD BE DESIGNED MINIMIZING THE ADDITION OF IMPERVIOUS AREA WITHIN THE PRIVATE PROPERTY.
8. THE PROPOERTY OWNER WILL BE RESPONSIBLE FOR MAINTENANCE OF INLETS, AND PIPE RUNS INSTALLED THEIR PROPERTY.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE: RESIDENTIAL DRIVEWAYS AND FULL CULVERT PLAN	SHEET NO.: D-10
		REVISIONS: 03-31-2026	

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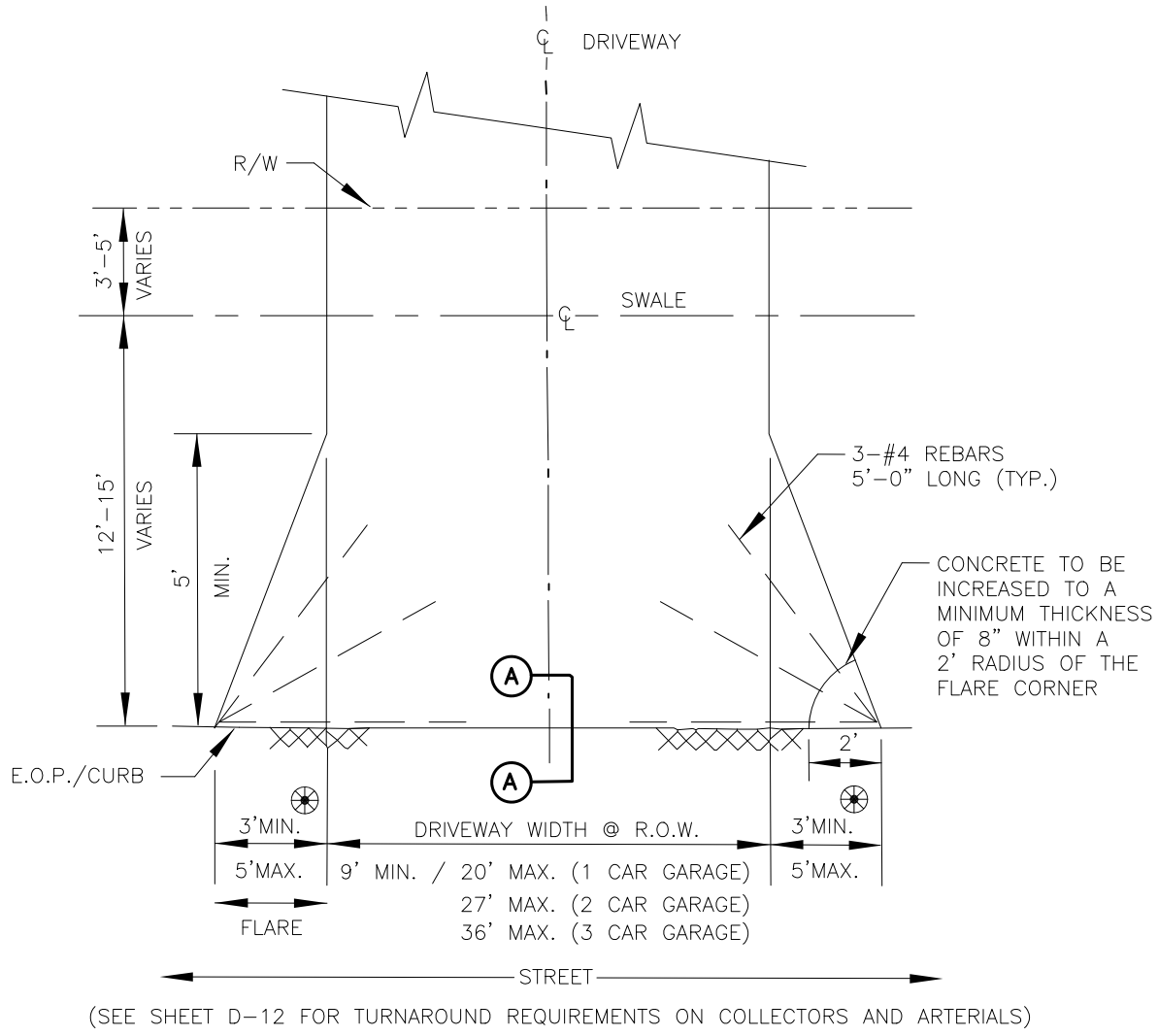
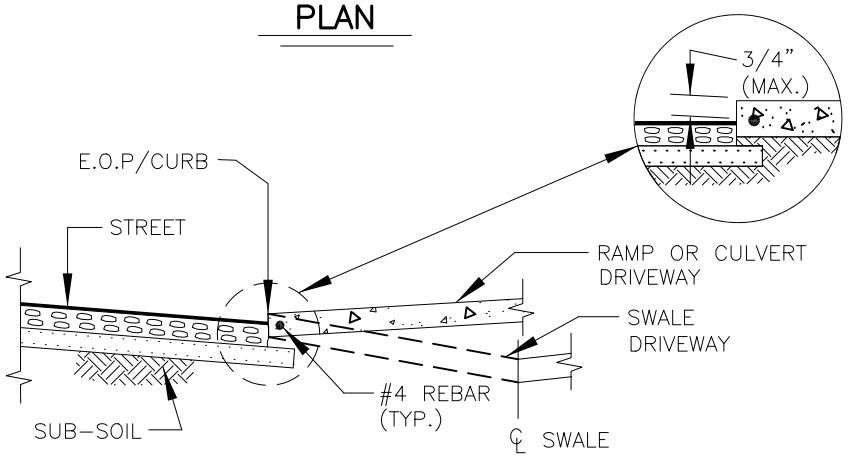
RESIDENTIAL DRIVEWAYS



(SEE SHEET D-12 FOR TURNAROUND REQUIREMENTS ON COLLECTORS AND ARTERIALS)

PLAN

⊛ THE FLARE IS NOT TO EXCEED THE PROPERTY LINE EXTENDED TO THE EDGE OF PAVEMENT.



SECTION "A-A"

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
12-07-2022 ORD. 87-22		RESIDENTIAL DRIVEWAY DETAILS	D-11
		REVISIONS:	

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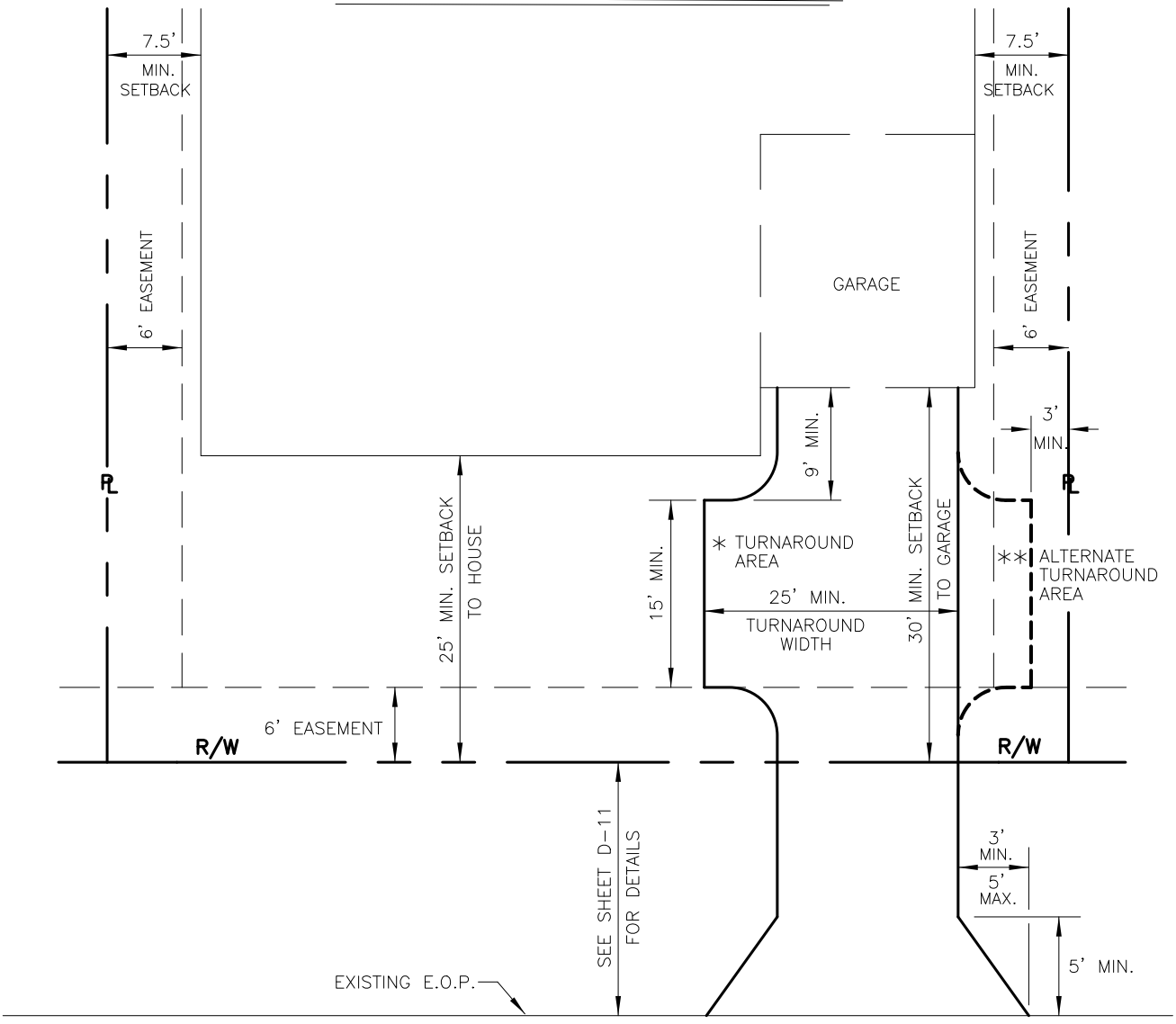
RESIDENTIAL DRIVEWAYS
TURNAROUND REQUIREMENTS ON COLLECTORS AND ARTERIALS

NOTES

1. CIRCULAR DRIVES ARE REQUIRED ON ALL COLLECTORS AND ARTERIALS.
2. ON PROPERTIES WITH SEPTIC FIELD, HAMMERHEAD DRIVEWAYS WITH TURNAROUND AREA MAY BE SUBSTITUTED FOR CIRCULAR DRIVES. TURNAROUND AREA WILL NOT BE REQUIRED FOR DRIVES EQUAL TO OR IN EXCESS OF 25' IN WIDTH.
3. SEE EXAMPLE / OPTION OF TURNAROUND AREA BELOW. TURNAROUND AREA USING A DESIGN DIFFERENT FROM THE EXAMPLE SHOWN BELOW WILL BE REVIEWED BY THE PUBLIC WORKS DEPARTMENT AT THE TIME OF PLAN SUBMITTAL.
4. REFER TO LAND DEVELOPMENT CODE SECTION 5.10.3 FOR DUPLEX DRIVEWAY DETAILS.

EXAMPLE OF RESIDENTIAL DRIVEWAY TURNAROUND AREA



* TURNAROUND AREA MAY BE CONSTRUCTED ON EITHER THE LEFT OR RIGHT SIDE OF DRIVEWAY.

** ALTERNATE TURNAROUND AREA ENCROACHING INTO THE 6' EASEMENT MUST ALSO COMPLY WITH LOT DRAINAGE DESIGN AND SLIDE SLOPE REQUIREMENTS UNDER SECTION L.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE: RESIDENTIAL DRIVEWAY TURNAROUND REQUIREMENTS ON COLLECTORS AND ARTERIALS	SHEET NO.: D-12
		REVISIONS: 01-31-2025	

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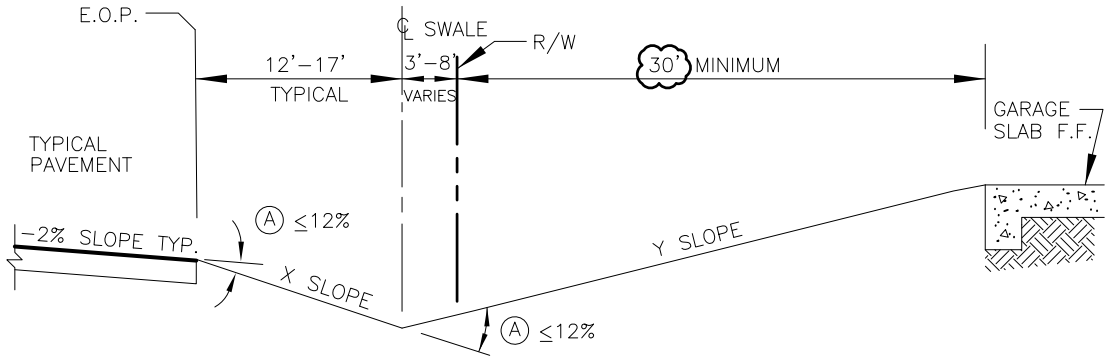
CASE #1

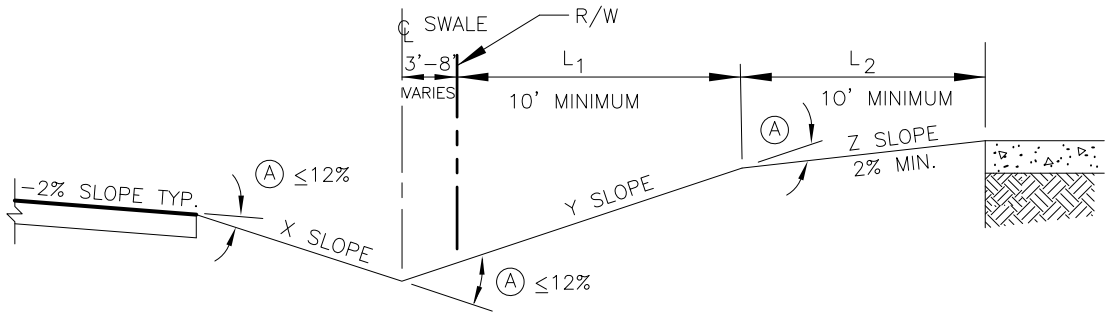
$X \leq -14\%$
&
$|X| + |Y| \leq 12\%$



SWALE DRIVE

CASE #2

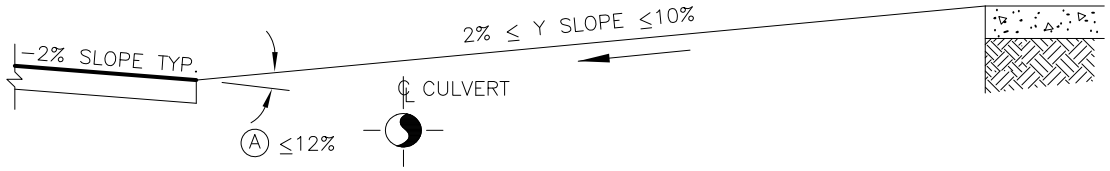
$X \leq -14\%$
&
$|X| + |Y| \leq 12\%$
&
$|Y| - |Z| \leq 12\%$



SWALE DRIVE

CASE #3

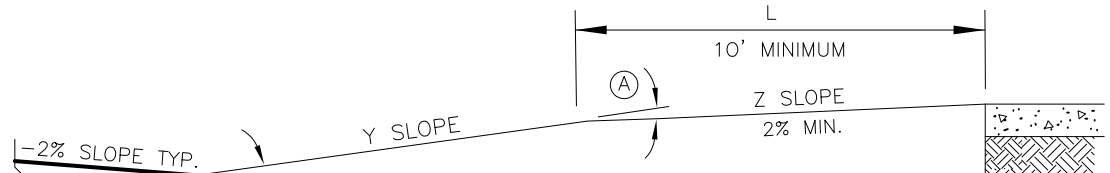
$2\% \leq Y \leq 10\%$



CULVERT DRIVE

CASE #4

$Y \leq 10\%$
&
$|Y| - |Z| \leq 10\%$



CULVERT DRIVE

Ⓐ MAXIMUM SLOPE CHANGE AT ANY VERTICAL ANGLE POINT NOT TO EXCEED 12%.
SWALE & CULVERT ℄ SHALL BE FIELD DETERMINED BY PUBLIC WORKS DEPT.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
DRAFT		RESIDENTIAL DRIVEWAY PROFILE GRADELINES	D-13
		REVISIONS: 08–31–2020	

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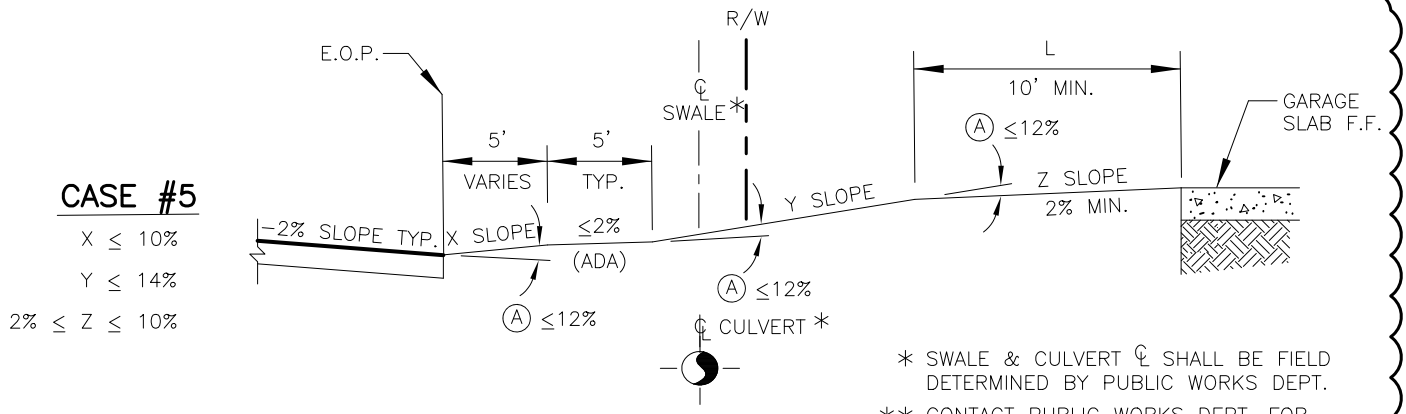


CASE #5

X ≤ 10%

Y ≤ 14%

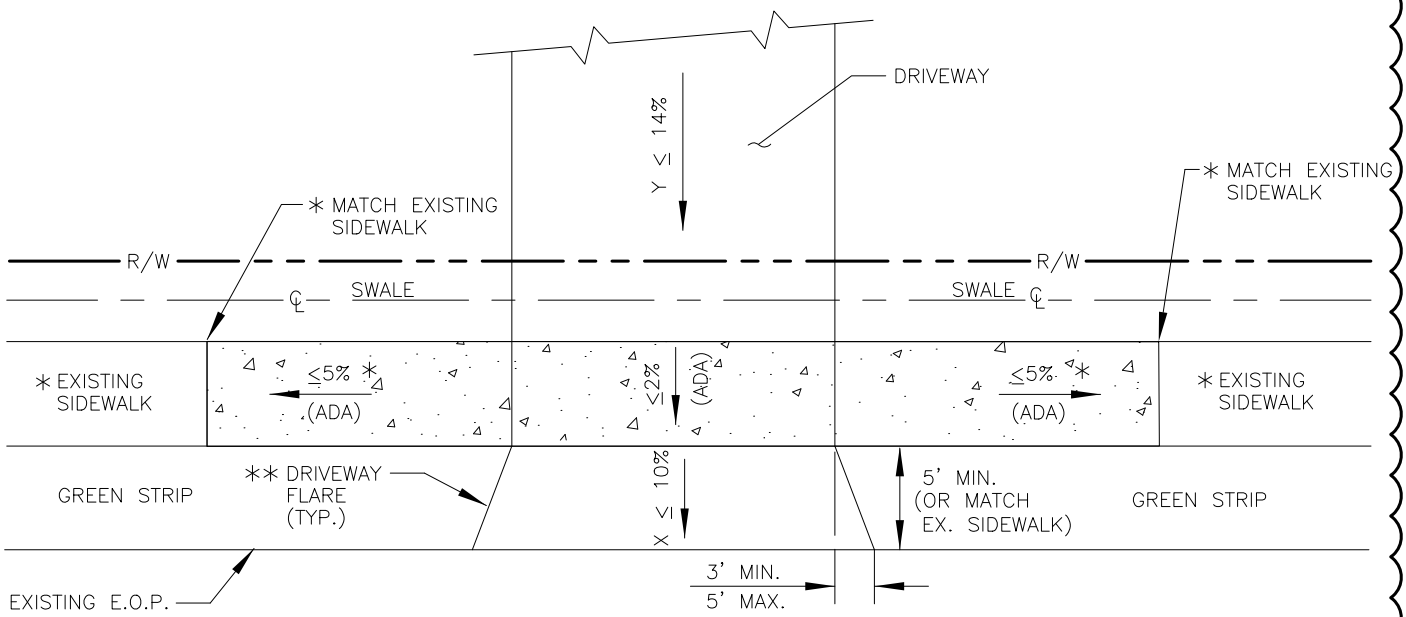
2% ≤ Z ≤ 10%

* SWALE & CULVERT ℄ SHALL BE FIELD DETERMINED BY PUBLIC WORKS DEPT.

** CONTACT PUBLIC WORKS DEPT. FOR GUIDANCE ON SWALE DRIVES (NO CULVERT)

RESIDENTIAL DRIVEWAYS (CULVERT DRIVE**) REQUIRING ADA COMPLIANCE

Ⓐ MAXIMUM SLOPE CHANGE AT ANY VERTICAL ANGLE POINT NOT TO EXCEED 12%. SWALE & CULVERT ℄ SHALL BE FIELD DETERMINED BY PUBLIC WORKS DEPT.



* APPLICABLE WHERE THERE IS AN EXISTING SIDEWALK

** SEE SHEET D-11

ADA COMPLIANCE REQUIREMENTS

NOTE: ADA = AMERICAN WITH DISABILITIES ACT

SIDEWALK CROSSINGS (MEETING ADA) ARE REQUIRED ON DRIVEWAYS

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE: RESIDENTIAL DRIVEWAYS WITH OPEN DRAINAGE & ADA COMPLIANCE	SHEET NO.: D-13A
		REVISIONS: 01-31-2025	

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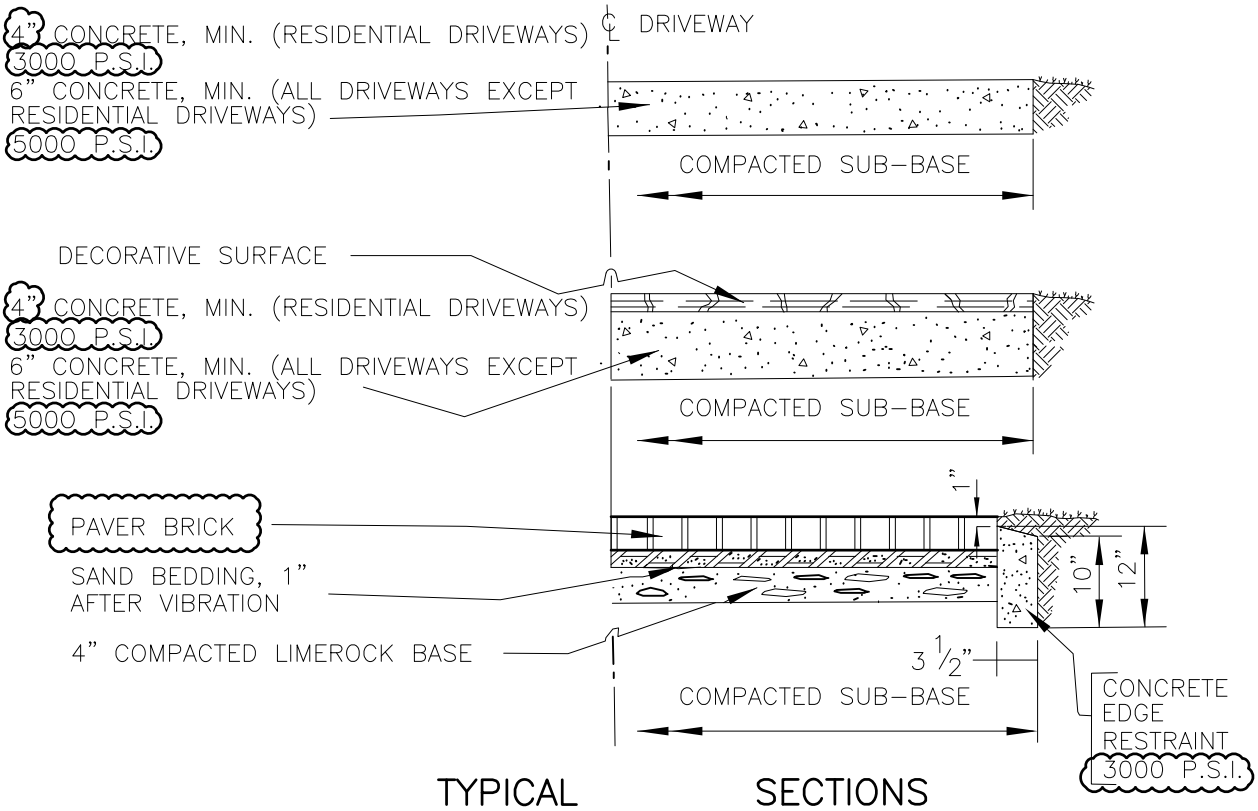

TYPICAL SECTIONS

NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR ATTAINING SUFFICIENT COMPACTION AND STABILIZATION BY EITHER VIBRATION OR ROLLER FOR DRIVEWAY PORTION INSIDE THE RIGHT OF WAY.
2. ALL OTHER DRIVEWAY CONSTRUCTION MATERIALS SHALL BE SUBMITTED TO THE PUBLIC WORKS DEPARTMENT FOR APPROVAL.
3. ALL DRIVEWAYS SHALL RECEIVE A PERMIT AND THE PUBLIC WORKS DEPARTMENT SHALL ESTABLISH GRADES.
4. AN INSPECTION MAY BE REQUIRED FOR THE BASE PRIOR TO PAVER INSTALLATION. EDGE RESTRAINTS WILL BE INSPECTED AT DRIVE FINALS.
5. OPTIONAL CONC. REINFORCEMENT SHALL BE 6" x 6" #10/10 W.W.M.
6. PRIOR TO DRIVEWAY CONSTRUCTION, THE CONTRACTOR MUST SAW CUT @ EXISTING E.O.P. (MIN. 4" DEPTH) AND PROTECT EDGE WITH 1" x 4" COMMON BOARD.
7. DRIVEWAY FINISHED POUR ELEVATION MUST EITHER MATCH E.O.P. OR UP TO 3/4" MAX. REVEAL. FINISHED POUR ELEVATION MUST NEVER BE LOWER THAN EXISTING E.O.P. SEE SHEET D-11.
8. CONCRETE DRIVE ENTRANCE MUST EXTEND OUT TO MATCH EXISTING SAW CUT E.O.P.
9. PAVER BRICK DRIVE ENTRANCE MUST EITHER EXTEND OUT TO MATCH EXISTING SAW CUT E.O.P. OR INSTALL CONCRETE EDGE RESTRAINT (MAX. 4") FLUSH WITH EXISTING E.O.P.
10. NO CONCRETE OR PAVER BRICK ARE ALLOWED TO EXTEND PAST EXISTING E.O.P.
11. ANY DAMAGE TO ASPHALT ROADWAY SURFACE SHALL BE REPAIRED FOLLOWING CITY'S STANDARDS (SEE SHEETS F-1 TO F-5).

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
DRAFT		DRIVEWAY DETAILS	D-14
		REVISIONS: 08-31-2020	

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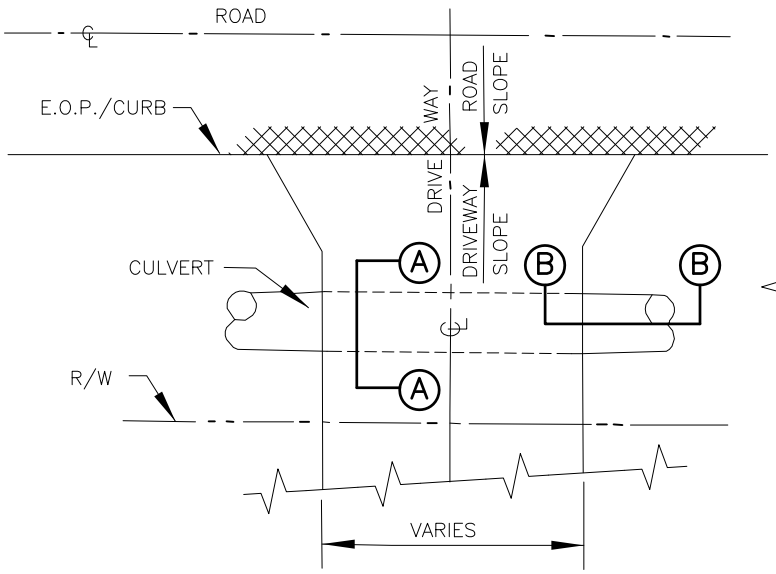
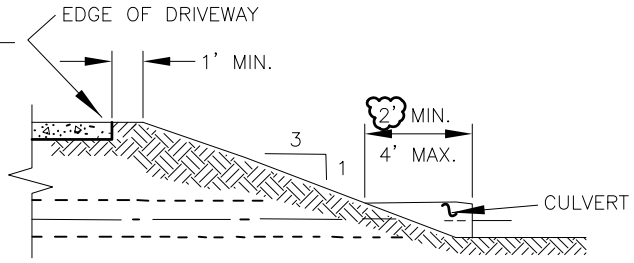
DRIVEWAYS



DRAINAGE PLAN

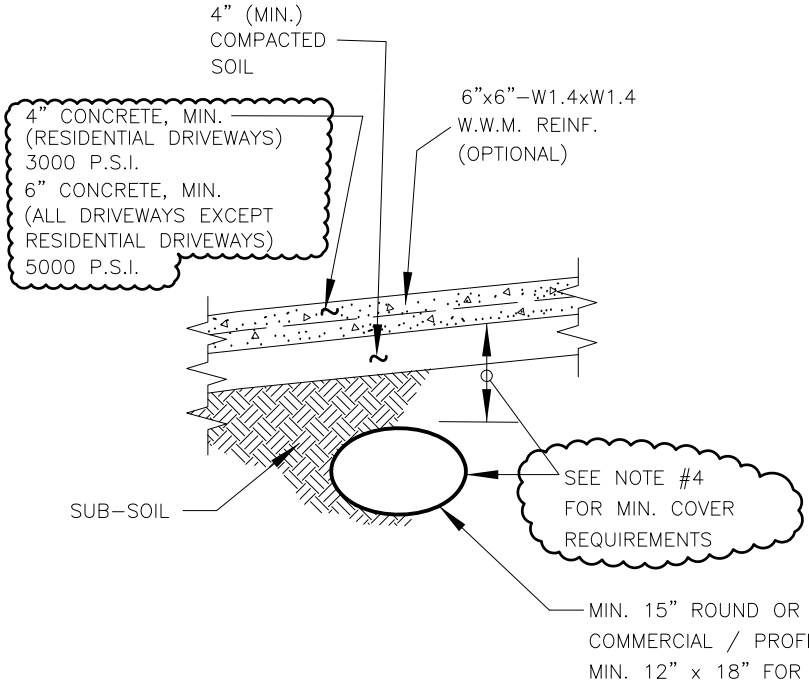


SECTION "B–B"

NTS

NOTES:

1. MINIMUM CROSS SLOPE GRADIENT OF DRIVEWAY SWALE IS 0.2%, OR MUST MATCH SWALE SLOPE.
2. IF COMBINED DRIVEWAY SLOPES EXCEED 12%, THEN A CULVERT DRIVE SHALL BE CONSTRUCTED.
3. CULVERT MAY BE ADDED TO ANY DRIVEWAY WHEN APPROVED BY THE CITY.
4. CULVERT COVER
   CONCRETE PIPE, MIN. 4" COVER (PREFERRED)
   OR 6" FOR OTHER THAN RESIDENTIAL DRIVEWAYS.
   SPIRAL RIB ALUM. PIPE, MIN. 12" COVER.
   CORRUGATED ALUM. PIPE, MIN. 15" COVER.
   POLYETHYLENE PIPE, MIN. 15" COVER.
5. MITERED END WITH CONCRETE MAY BE INCLUDED FOR ANY CULVERTS INSTALLED, REVIEW AND APPROVAL BY THE PUBLIC WORKS DIRECTOR.
6. THIS SHEET APPLIES WHERE EVER INSTALLATION OF CURBS AND/OR WIDENING IMPROVEMENTS ARE NOT REQUIRED.



TYP. SECTION AT "A–A"

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
DRAFT		DRIVEWAY DETAILS	D-15
		REVISIONS: 02–28–2022	

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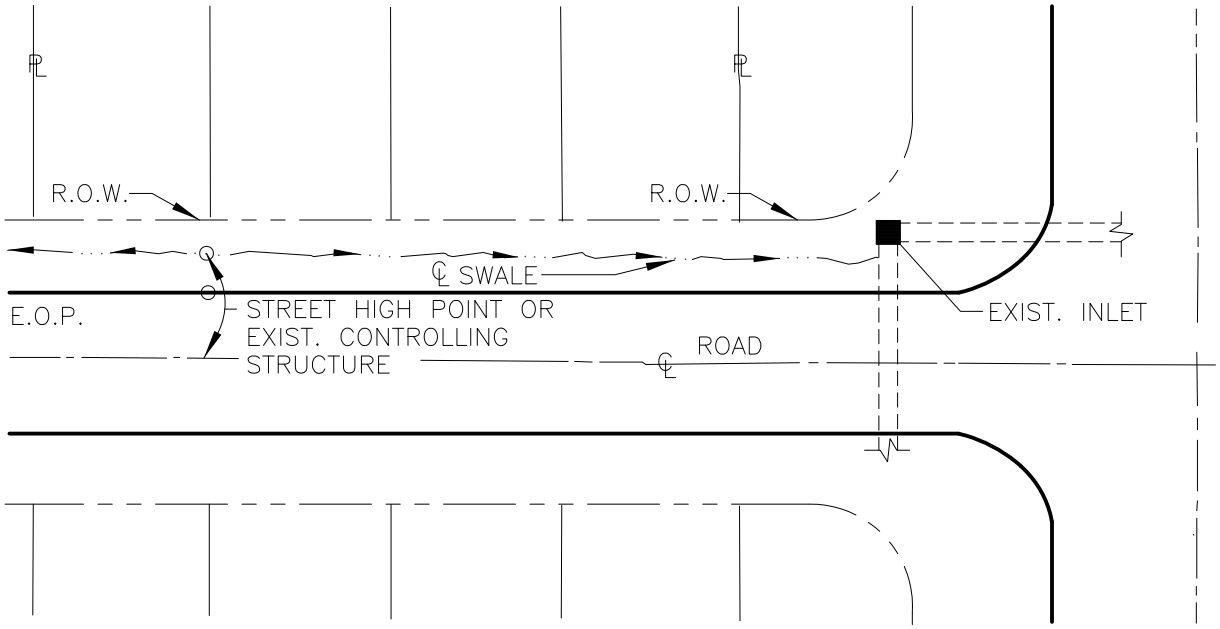
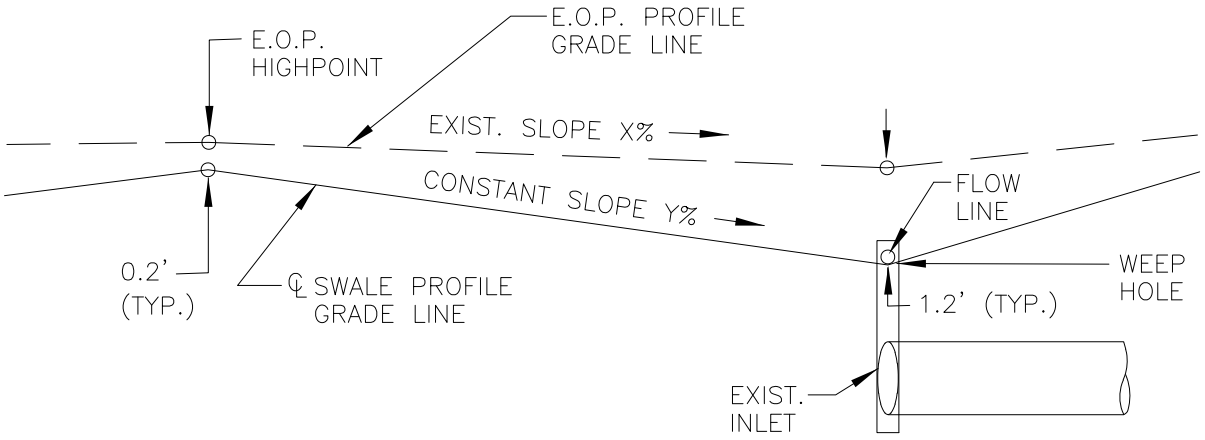


PLAN VIEW



PROFILE VIEW

NOTE: REFER TO D-17 FOR ADDITIONAL DETAILS

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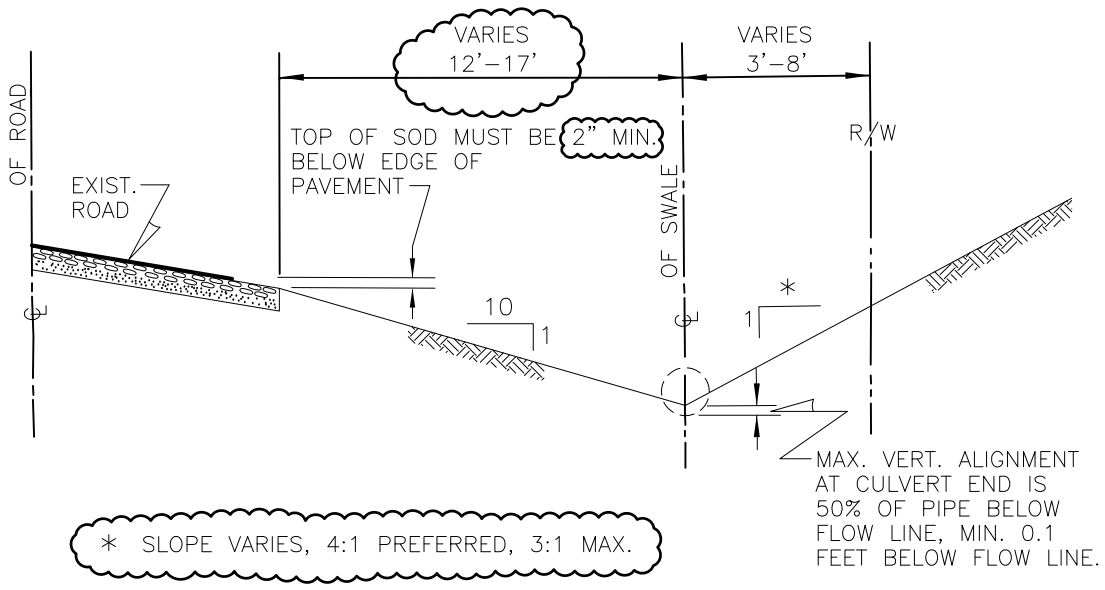
ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
		TYPICAL SWALE GRADIENT DESIGN PROCEDURE	D-16
		REVISIONS: 03-31-2026	



NOTES:

1. SWALE FLOWLINE MUST MATCH BLEED DOWN ORIFICE ELEVATION AT EXISTING CATCH BASIN. ALLOWABLE VARIANCE = 0.0 FT. TO −0.1 FT.

2. MAXIMUM ALLOWABLE DEVIATION FROM DESIGN DIMENSIONS;
   A = VERTICAL ALIGNMENT OF SWALE FLOW LINE −0.0 FT. HIGH TO −0.1 FT. LOW.
   B = HORIZONTAL ALIGNMENT OF SWALE FLOW LINE ±1.0 FT. OFF CENTERLINE.

3. MINIMUM LONGITUDINAL DESIGN GRADIENT IS 0.20% SLOPE, RECOMMENDED IS 0.40% SLOPE OR 0.3 FT. PER 80 FT.

4. MAXIMUM ALLOWABLE VERTICAL ALIGNMENT DEVIATION FOR FINISHED GRADE OF THE SOD SHALL BE +0.1 FT. TO −0.2 FT.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
DRAFT		SOD SWALES	D-17
		REVISIONS: 02–28–2022	

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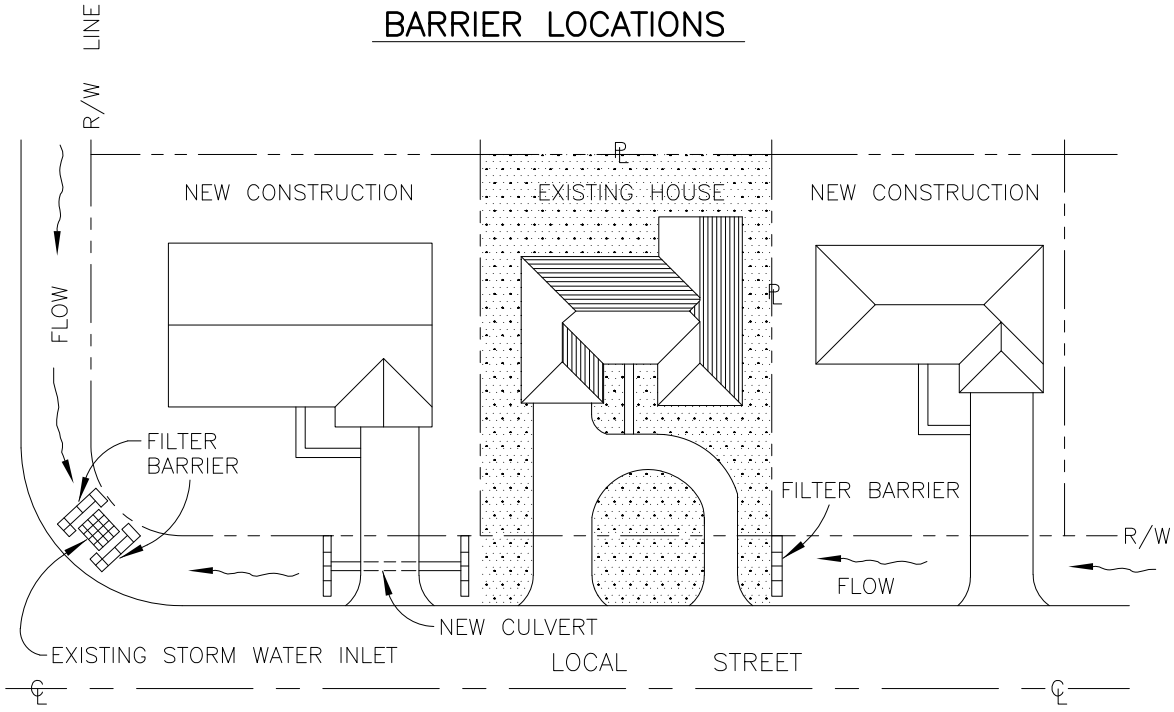
TYPICAL SILT AND SEDIMENT BARRIER LOCATIONS



NOTES:

1. PRIOR TO CONSTRUCTION OR RECONSTRUCTION, WITHIN THE RIGHT-OF-WAY, NONWOVEN GEOTEXTILE FABRIC, SILT SCREENS, STRAW BALES OR OTHER APPROVED EROSION CONTROL DEVICES SHALL BE INSTALLED ACROSS THE SWALE AT THE LOWEST DISTURBED POINT TO PREVENT EROSION MATERIAL FROM LEAVING THE CONSTRUCTION AREA, INCLUDING ANY VACANT AREAS USED FOR INGRESS AND EGRESS. SEE SECTION M FOR DETAILS.

2. ALL AFFECTED STORMWATER PIPES, INLETS, AND CATCH BASINS SHALL BE PROTECTED BY EROSION CONTROL DEVICES TO PREVENT CONSTRUCTION RELATED EROSION MATERIAL FROM ENTERING THE STORMWATER SYSTEM.

3. THE EROSION CONTROL DEVICES SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION PROCESS AND SHALL REMAIN IN PLACE UNTIL THE RIGHT-OF-WAY IS STABILIZED WITH SOD AND THE VACANT AREAS ARE SEEDED AND MULCHED.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
DRAFT		EROSION CONTROL DEVICES	D-18
		REVISIONS: 08-31-2020	

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PARKING LOTS

A. GENERAL

This section is established to provide minimum requirements for off-street parking, loading, access and circulation for new or enlarged land uses.

Space Requirements – All structures built or erected, and all uses established after the effective date of these Engineering Design Standards shall provide parking and circulation facilities in accordance with this section. The Land Development Code shall be used to determine the number of spaces for each land use type.

Stall Layout – Conventional stall layouts are shown on sheet E-5. Other angled parking layouts meeting the approval of the City will be permitted where possible. For 90-degree parking, the minimum stall width shall be 9 feet and the minimum stall length shall be 18 feet.

Parking areas shall be designed so vehicles can proceed safely without posing a danger to pedestrians or other vehicles. Lots shall be designed so that, without resorting to extraordinary movements, vehicles may exit from all spaces (when all spaces are filled) without backing out of the parking lot.

Parking lots shall have internal vehicular circulation and storage. Vehicle circulation shall be completely contained within the facility, and vehicles located within one portion of the facility shall have access to all other portions without using the adjacent street system. Projects with unavoidable site constraints may provide employee parking in a separate parking area when clearly marked for employees only. Parking lot curbing and paving requirements are shown on sheets E-6 through E-7.

Drainage – All parking areas must be designed by a Florida registered professional engineer and constructed to meet these standards and all applicable South Florida Water Management District requirements for water quality and stormwater management. All parking areas shall be designed and graded such that runoff from the property is intercepted and prevented from entering onto adjoining properties or right-of-way(s) prior to treatment. Compensating storage must be provided for any areas where it is impractical to intercept runoff prior to discharging to the City right of way.

Lot Signing & Striping – the developer shall provide all traffic signs and pavement marking stipulated on the approved plans. State law requires traffic control devices, in public access areas including signs and pavement markings on private property, to meet state standards. These standards are contained within

the Manual Of Traffic Control Devices (MUTCD.) Parking signing and striping must be maintained to be clearly visible at all times in accordance with this section.

Accessible Parking – Refer to Americans with Disabilities Act (ADA), current standards.

All accessible spaces shall be a minimum of 12 feet in width and be located in close proximity to the use and/or building. The location shall be free from standing water and in a location where disabled persons will not have to walk or maneuver behind other parked vehicles. Special signing and striping requirements for accessible parking are found in the accessibility requirement manual. These parking spaces shall have easy access to accessible sidewalk ramps. Parking access aisles must be no less than 5 feet wide. All accessible infrastructure shall comply with the ADA to the maximum extent feasible as provided by the ADA. Wheel stops are prohibited at all accessible spaces.

In Business, Commercial or Residential Districts – The horizontal and vertical clearance of all signs shall meet or exceed the requirements of the Florida Greenbook and the MUTCD.

Truck loading where the use of a parking lot includes a truck (including garbage truck) loading, unloading, parking or service facility – Adequate space shall be provided as such that truck maneuvering is performed off the street, coordinate with trash hauler.

Road features, which are required on both public right-of-ways and private property, include traffic signs and pavement markings. These features are shown in Sheets E-4 and E-5.

Emergency Access Lanes – Special emergency access lanes must be provided in accordance with Fire Department requirements. Appropriate turning radius must be provided for all emergency access lanes as determined by the Fire Department. These lanes may be used for maneuver of vehicles, but cannot be used for parking or storage of vehicles. All such lanes should be signed per the Manual of Uniform Traffic Control Devices (MUTCD) and the NFPA Life Safety Code.

B. CITY DEDICATED PARKING LOTS

In addition to the requirements set forth herein, and the adopted Land Development Code of the City of Cape Coral the following required improvements shall be applicable to any City Dedicated Parking Lot to be either constructed or reconstructed. The applicant is responsible for all improvements required by this Standard.

1) Lighting –All lighting areas shall follow the standards set forth in the City Code of Ordinances.

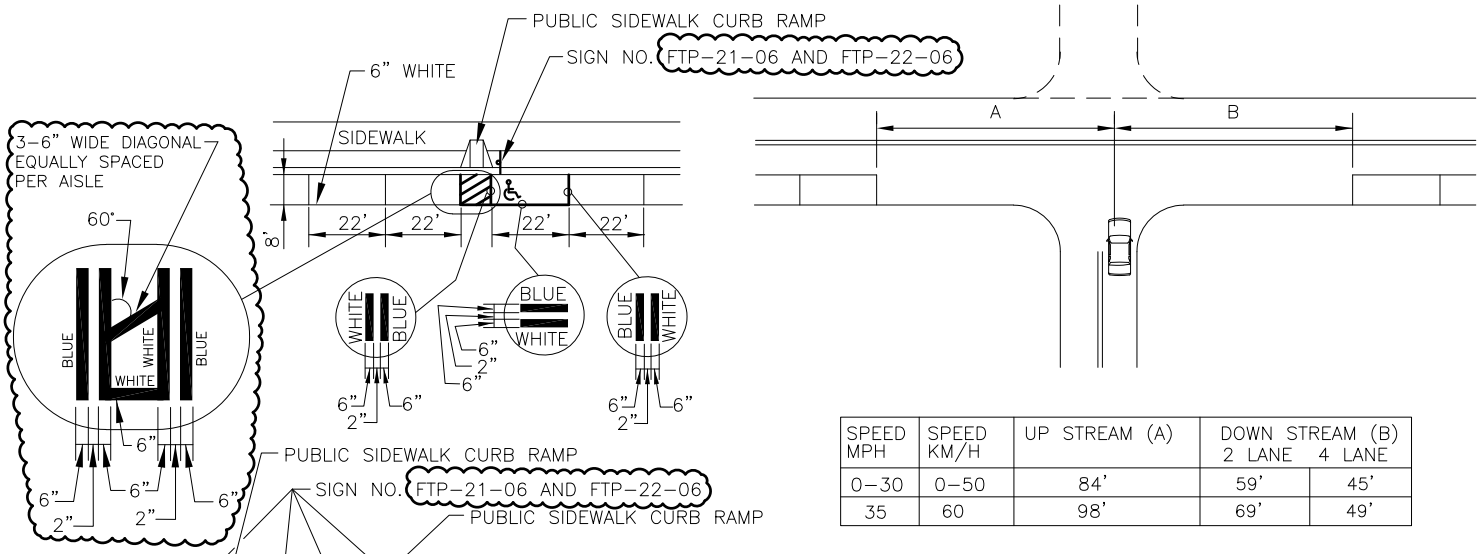
2) Storm Water Management – Current City and South Florida Water Management District (SFWMD) rules for storm water system design shall be followed to compensate for the addition of impervious surfaces.

3) Landscaping –All landscaping shall meet the minimum standards set forth in the Land Development Code.

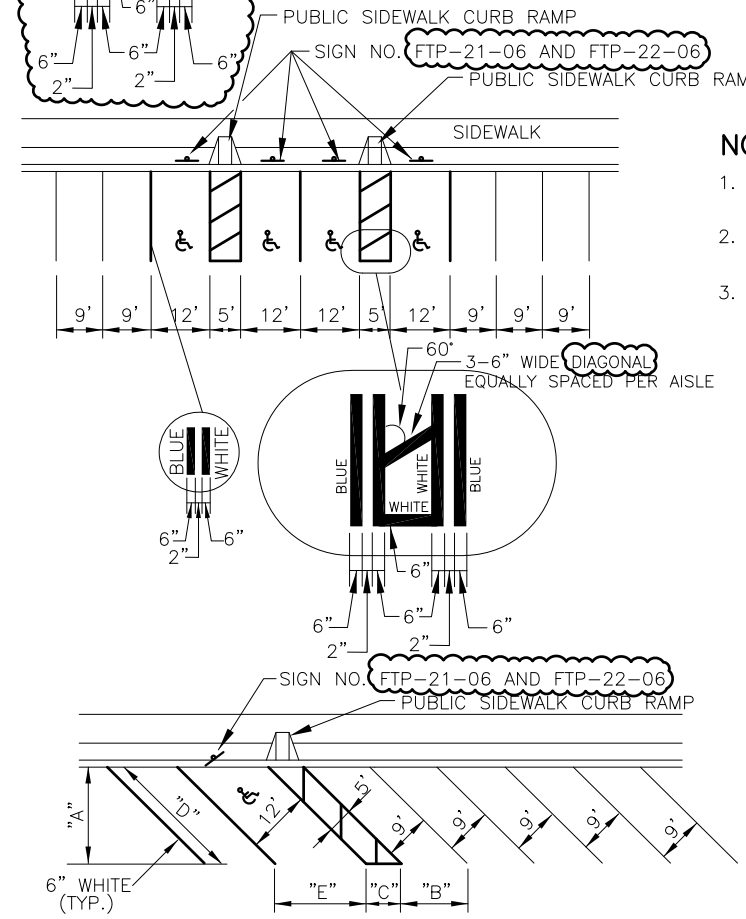
4) Irrigation – All landscaped areas shall be provided with automatic underground irrigation system equipped with a rain sensor.

5) Capacity - In the event the City's dedicated parking lot has reached parking space capacity, the property owner shall pay to the City an amount equal to the current cost to construct his required parking spaces and related required improvements. This payment shall be placed into a dedicated parking lot fund to be utilized to either maintain, construct, reconstruct or bond improvements thereto.

6) Maintenance – Whenever a property owner has either constructed or paid to the City an amount equal to his off-street parking requirements, the City shall maintain the completed portion(s) of the City Dedicated Parking Lot to these design standards.



SPEED MPH	SPEED KM/H	UP STREAM (A)	DOWN STREAM (B) 2 LANE	DOWN STREAM (B) 4 LANE
0-30	0-50	84'	59'	45'
35	60	98'	69'	49'

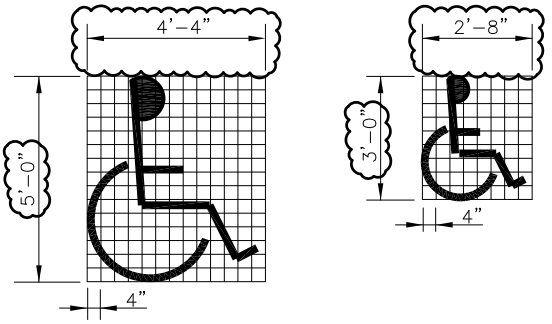


△ °	"DIMENSIONS" "A"	"B"	"C"	"D"	"E"
45°	19	13	7.5	26.9	17.4
60°	20	10.6	6.2	23.3	14.1

NOTES:

1. DISTANCES MEASURED LONGITUDINALLY ALONG THE STREET FROM DRIVER LOCATION OF ENTERING VEHICLE TO END OF PARKING RESTRICTION.
2. DISTANCES APPLICABLE TO INTERSECTING STREET, MAJOR DRIVEWAYS AND OTHER DRIVEWAYS TO THE EXTENT PRACTICAL.
3. FOR NON-SIGNALIZED INTERSECTIONS, THE VALUES ABOVE SHALL BE COMPARED WITH THE VALUES FOR SIGNALIZED INTERSECTIONS AND THE MAXIMUM RESTRICTIONS IMPLEMENTED. THESE RESTRICTIONS APPLY TO BOTH ACCESSIBLE AND NON-ACCESSIBLE PARKING.

MINIMUM PARKING RESTRICTION FOR NON-SIGNALIZED INTERSECTIONS



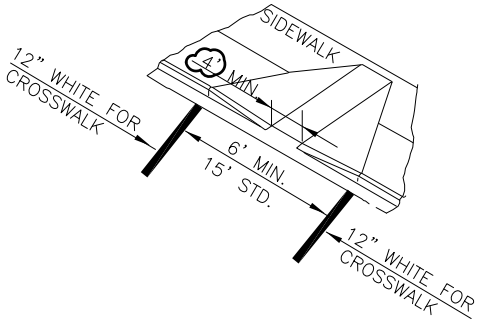
USE OF PAVEMENT SYMBOL IN ACCESSIBLE PARKING SPACES IS OPTIONAL, WHEN USED THE SYMBOL SHALL BE 3' OR 5' HIGH AND WHITE IN COLOR.

"UNIVERSAL SYMBOL OF ACCESSIBILITY"

NOTES:

1. DIMENSIONS ARE TO THE CENTERLINE OF MARKINGS.
2. AN ACCESS AISLE IS REQUIRED FOR EACH ACCESSIBLE SPACE WHEN ANGLE PARKING IS USED.
3. CRITERIA FOR PAVEMENT MARKINGS ONLY, NOT PUBLIC SIDEWALK CURB RAMP LOCATIONS, FOR RAMP LOCATIONS REFER TO PLANS.
4. BLUE PAVEMENT MARKINGS SHALL BE TINTED TO MATCH SHADE 15180 OF FEDERAL STANDARDS 595A.
5. THE FTP-22-06 PANEL SHALL BE MOUNTED BELOW THE FTP-21-06 SIGN.

PAVEMENT MARKING FOR PUBLIC SIDEWALK CURB RAMPS IN REST AREAS



TYPICAL MARKINGS FOR CROSSWALKS

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
		PARKING MARKINGS AND STRIPING	E-4
		REVISIONS: 03-31-2026	

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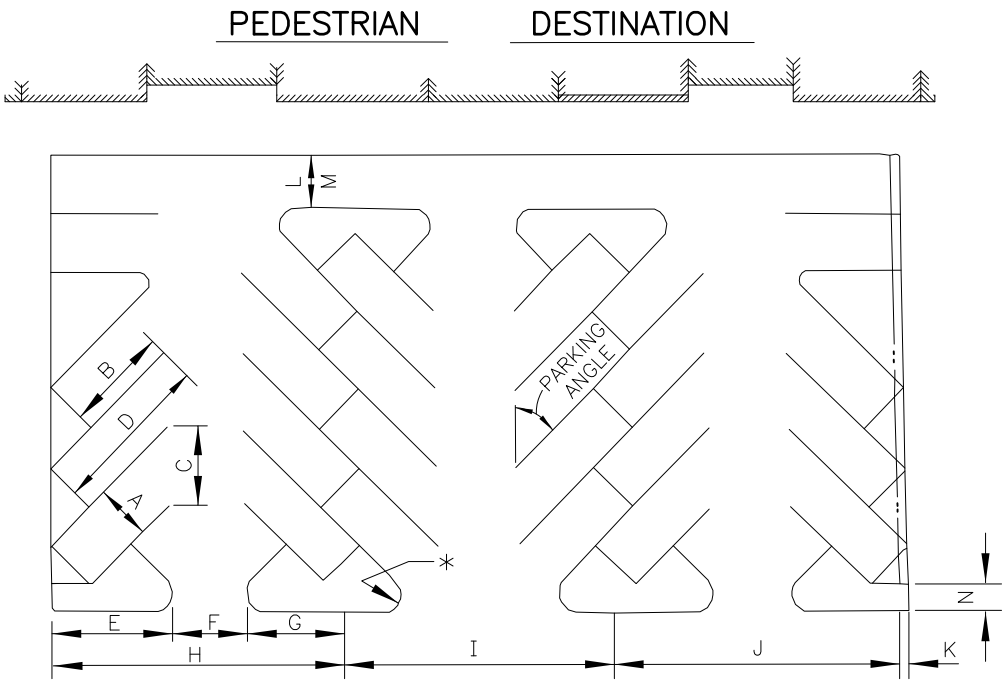

* = MIN. DESIRED RADIUS –3.0'
TYP.

DIMENSION DESCRIPTION	ON DIAGRAM	PARKING ANGLE 30°	45°	60°	90°
STALL WIDTH	A	9.0'	9.0'	9.0'	9.0'
STALL LENGTH	B	18.0'	18.0'	18.0'	18.0'
STALL WIDTH, PARALLEL TO AISLE	C	18.0'	12.7'	10.4'	9.0'
STALL LENGTH OF LINE	D	33.6'	27.0'	23.2'	18.0'
STALL DEPTH TO WALL	E	16.8'	19.1'	20.1'	18.0'
AISLE WIDTH BETWEEN STALLS	F	12.0'	14.0'	20.0'	24.0'
STALL DEPTH, INTERLOCK	G	12.9'	15.9'	17.8'	18.0'
MODULE, WALL TO INTERLOCK	H	41.7'	49.0'	57.9'	60.0'
MODULE, INTERLOCKING	I	37.8'	45.8'	55.7'	60.0'
MODULE, INTERLOCK TO CURB FACE	J	39.2'	46.5'	55.4'	57.5'
BUMPER OVERHANG (TYPICAL)	K	2.5'	2.5'	2.5'	2.5'
CROSS AISLE WIDTH, ONE–WAY	L	14.0'	14.0'	14.0'	14.0'
CROSS AISLE WIDTH, TWO–WAY	M	24.0'	24.0'	24.0'	24.0'
SET BACK, MINIMUM	N	12.0'	10.0'	8.0'	6.0'

NOTES:

1. PARKING SPACE STRIPING SHALL BE 4" WIDE WHITE STRIPES.
2. LANE LINES BETWEEN TRAFFIC LANES IN THE SAME DIRECTION SHALL BE WHITE.
3. CENTER LINES BETWEEN TRAFFIC IN OPPOSING DIRECTIONS SHALL BE YELLOW.
4. CROSSWALKS SHALL BE 6' WIDE WITH 12" WIDE WHITE STRIPES.
5. STOP LINES SHALL BE 24" WIDE WHITE.
6. SIGNS SHALL HAVE 4" HIGH LETTERING.
7. STRIPES CAN BE PAINTED WITH LATEX PAINT OR THERMOPLASTIC MATERIAL.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
DRAFT		PARKING LOT STANDARDS	E-5
		REVISIONS: 08–31–2020	

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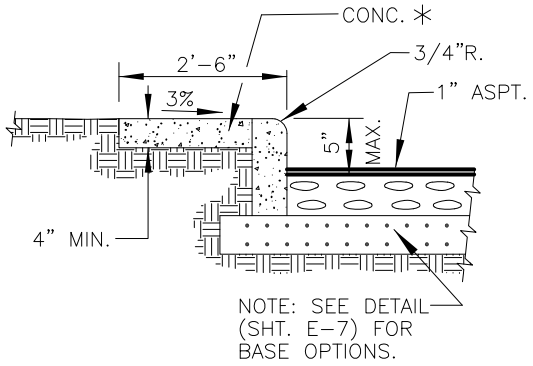
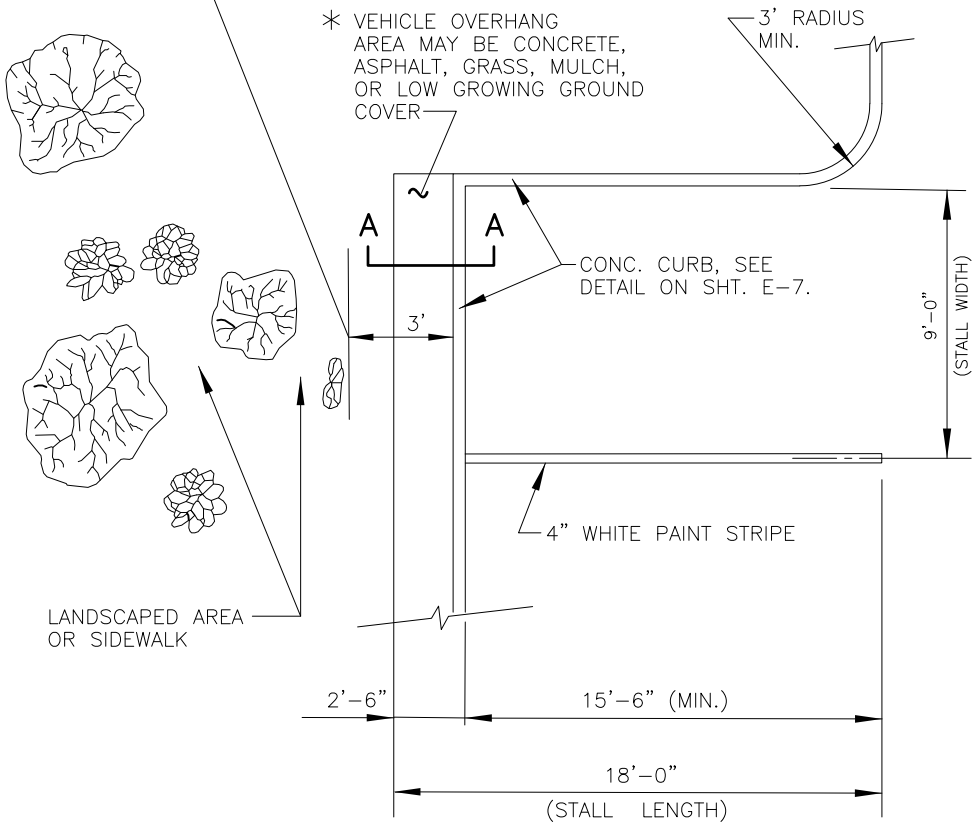


SECTION A–A



ALTERNATE STALL LAYOUT WHERE PARKING STALL ABUTS LANDSCAPED AREA OR SIDEWALK

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
DRAFT		PARKING LOT STANDARDS	E-6
		REVISIONS: 08–31–2020	

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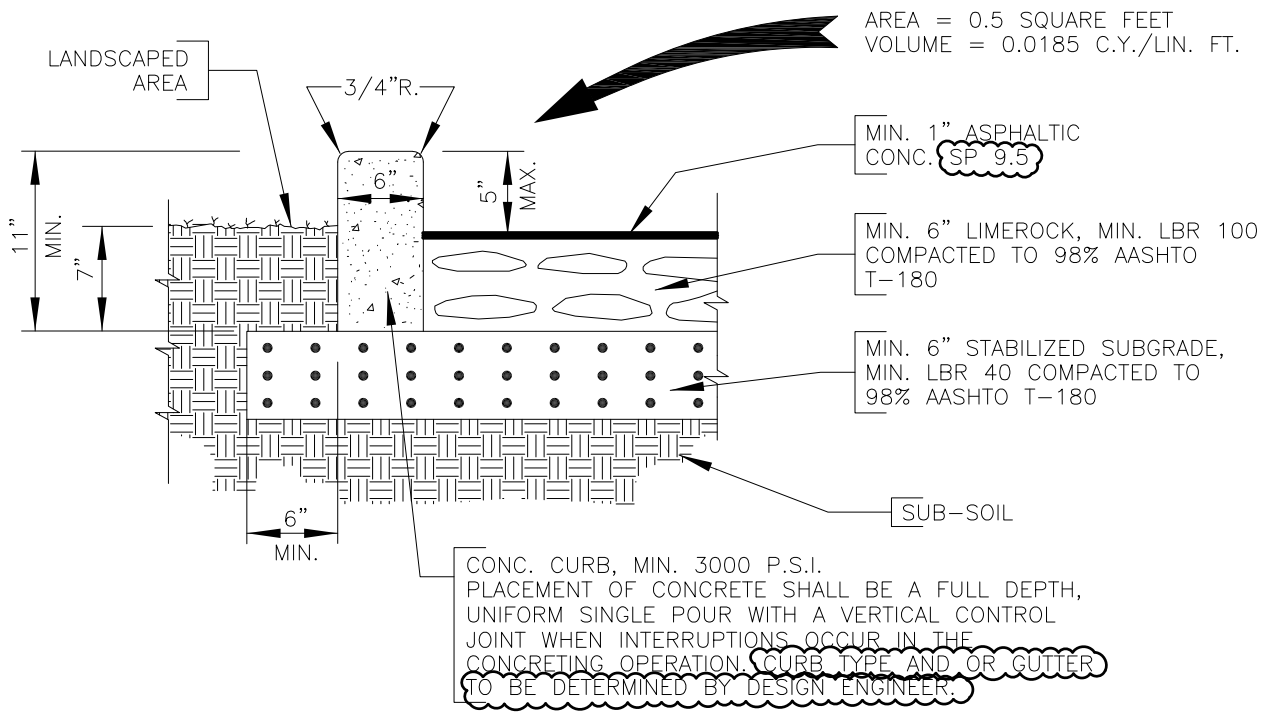
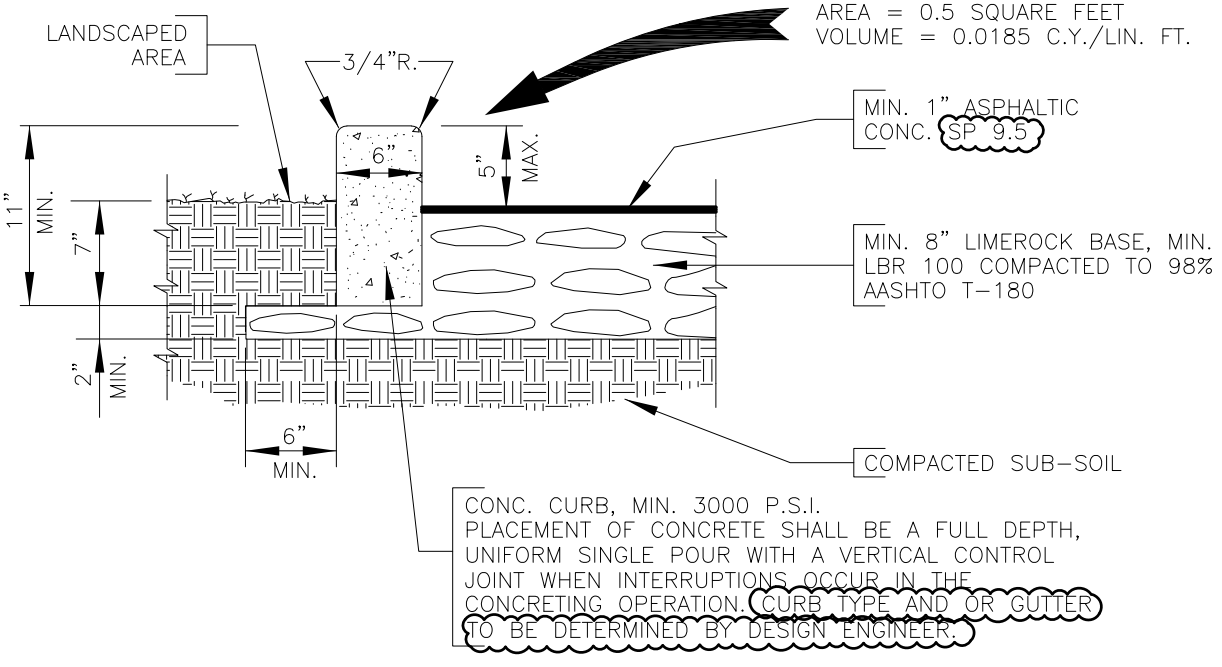


STANDARD BASE



ALTERNATE BASE

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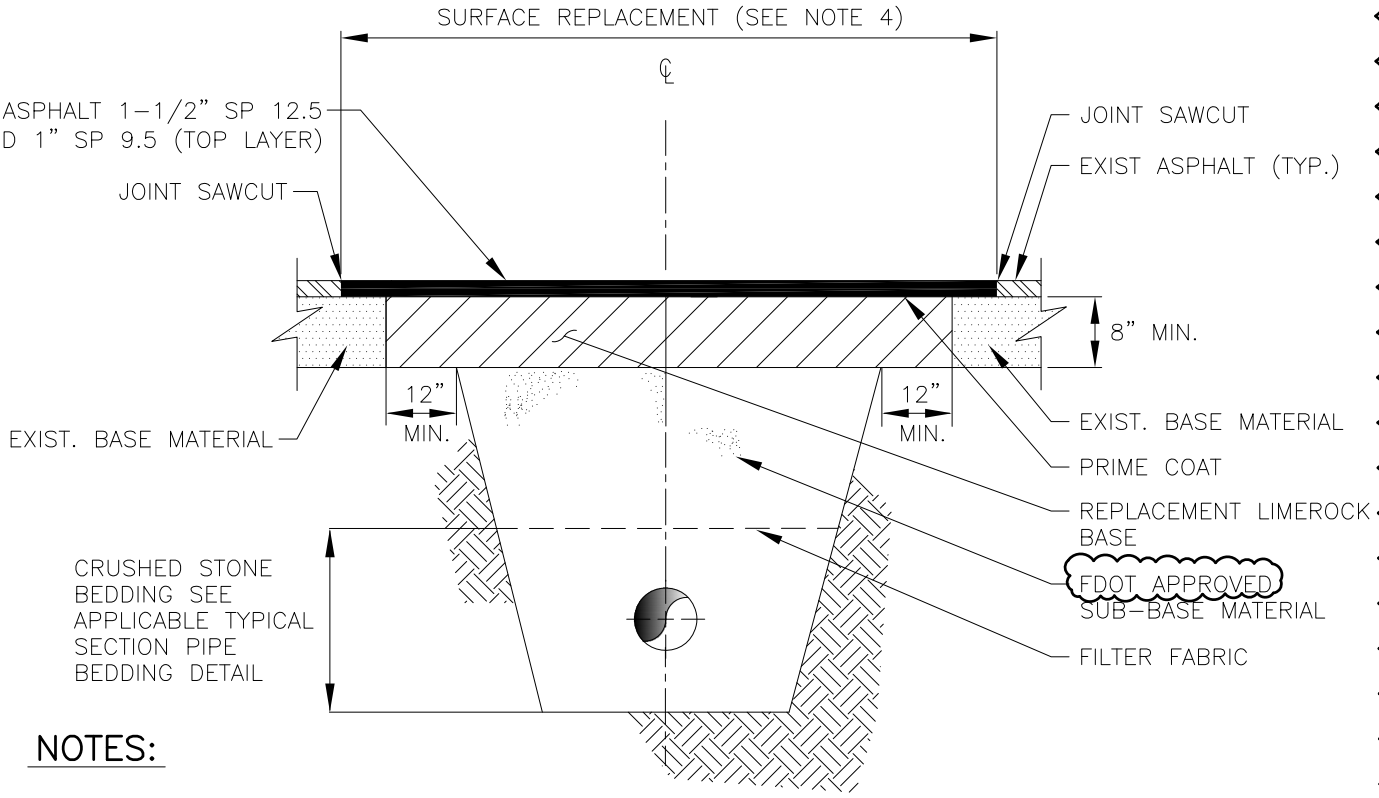
ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
		INTERNAL CURB & BASE OPTIONS	E-7
		REVISIONS: 03-31-2026	



NOTES:

1. BASE AND SUB–BASE MATERIAL SHALL BE REPLACED IN KIND.
2. LIMEROCK MATERIAL (MIN. LBR 100) FOR BASE SHALL BE COMPACTED TO AT LEAST 98% MAXIMUM DENSITY (AASHTO T–180).
3. SUB–BASE MATERIAL (MIN. LBR 40) SHALL BE COMPACTED TO AT LEAST 98% MAXIMUM DENSITY (AASHTO T–180 IN MINIMUM 6" LIFTS).
4. TYPICALLY, ASPHALT REPLACEMENT SHALL INCLUDE ONE FULL LANE WIDTH AND EXTEND A MINIMUM OF 10 FT. LONGITUDINALLY ON EITHER SIDE OF THE REPAIR ON LOCAL ROADS AND A MINIMUM OF 50 FT. LONGITUDINALLY ON EITHER SIDE OF THE REPAIR ON MAJOR ROADS (COLLECTORS & ARTERIALS). PUBLIC WORKS SHALL APPROVE THE REPAIR DIMENSIONS ON ALL ASPHALT REPLACEMENT PROJECTS.
5. APPLY TACK COAT TO ALL VERTICAL FACES OF ASPHALT AND IN BETWEEN ASPHALT LIFTS. ALL TACK SHALL BE TRACKLESS.
6. FLOWABLE FILL (PER FDOT SPECIFICATION SECTION 121) MAY BE USED IN LIEU OF FILTER FABRIC AND APPROVED SUB–BASE.
7. ALL TESTING TO BE COMPLETED AT CONTRACTOR EXPENSE AND SUBMITTED TO CITY FOR APPROVAL.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
		PAVEMENT RESTORATION	F-1
		REVISIONS: 03–31–2026	

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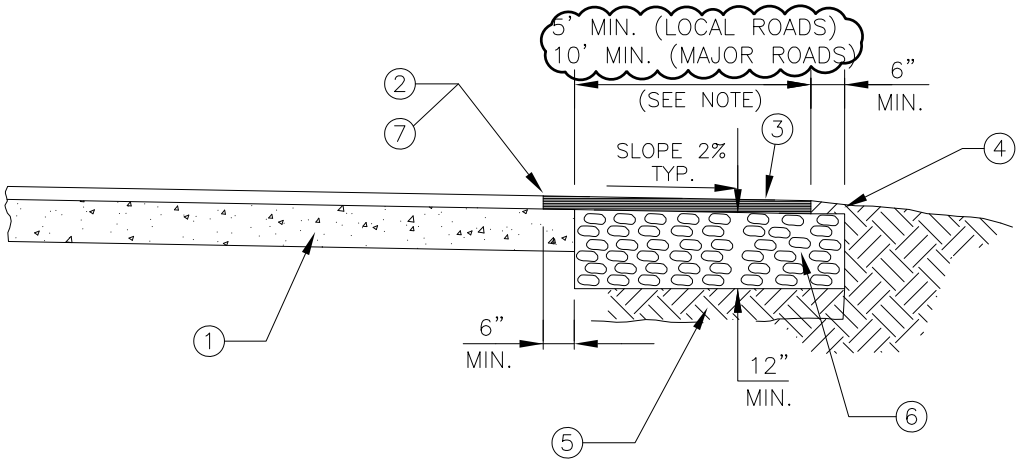

LEGEND

1. EXISTING BASE AND PAVEMENT.
2. STRAIGHT SAWCUT JOINT.
3. ASPHALTIC CONCRETE, 1–1/2" SP 12.5 AND 1" SP 9.5 (TOP LAYER)
4. MIN. 12" SOD STRIP (SOD NOT TO BE HIGHER THAN E.O.P.)
5. COMPACTED SUBGRADE.
6. 12" MIN. LIMEROCK BASE MATERIAL (MIN. LBR 100) SHALL BE COMPACTED TO 98% DENSITY IN 4" LIFTS, AASHTO T–180 OR OPTIONAL BASE GROUP 11. FOR LOW TRAFFIC VOLUME RESIDENTIAL STREETS USE FDOT STANDARD SPECIFICATION.
7. ASPHALT JOINT AND BASE MATERIAL SHALL BE TACK COATED PRIOR TO INSTALLING NEW ASPHALT.

NOTE:

MINIMUM WIDTH AND LENGTH OF STRUCTURAL REPAIR TO BE AS FOLLOWS:

LOCAL ROAD

5' MINIMUM WIDTH AND EXTEND A MINIMUM OF 5' IN LENGTH FROM EACH END OF DAMAGE.

MAJOR ROAD (COLLECTORS & ARTERIALS)

10' MINIMUM WIDTH AND EXTEND A MINIMUM OF 25' IN LENGTH FROM EACH END OF DAMAGE.

ADDITIONAL REPAIR WIDTH MAY BE REQUIRED IF MORE BASE MATERIAL IS DAMAGED OR OTHERWISE FAILED. FINAL DETERMINATION ON ALL REPAIR LIMITS SUBJECT TO CITY OF CAPE CORAL PUBLIC WORKS APPROVAL.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE: TYPICAL STRUCTURAL REPAIR (LOCAL OR MAJOR ROAD) AND PAVEMENT RESTORATION	SHEET NO. F-2
		REVISIONS: 03–31–2026	

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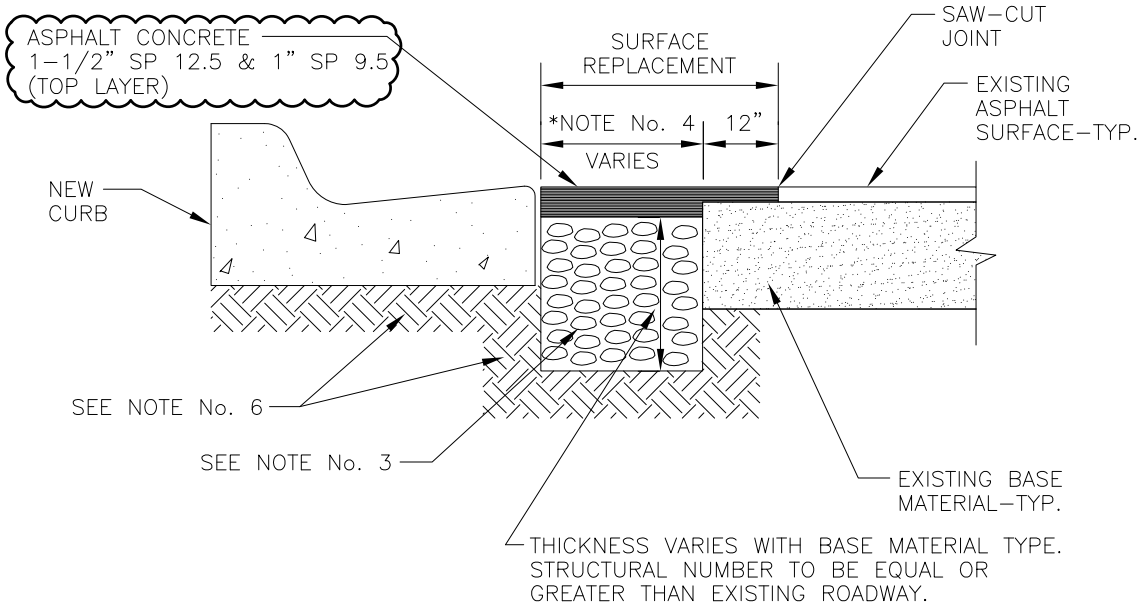

NOTES:

1. REMOVE EXISTING ROAD AS NEEDED TO INSTALL FORMS FOR EDGE OF CURB.
2. FOR BASE MATERIAL OPTIONS, USE GROUP 11 (FDOT SPECIFICATION SECTION 285).
3. LIMEROCK BASE MATERIAL (LBR 100, MIN.) SHALL BE COMPACTED TO 98% DENSITY, AASHTO T–180.
4. ASPHALT CONCRETE JOINT SHALL BE MECHANICALLY SAW CUT IN A STRAIGHT CONTINUOUS LINE.
5. ASPHALT JOINT AND BASE MATERIAL SHALL BE TACK COATED PRIOR TO INSTALLING NEW ASPHALT.
6. MIN. 12" STABILIZED SUBGRADE MIN. LBR 40 COMPACTED TO 98% AAHTO T–180. ADDITIONAL REPAIR WIDTH MAY BE REQUIRED IF MORE BASE MATERIAL IS DAMAGED OR OTHERWISE FAILED.
7. FINAL DETERMINATION ON ALL REPAIR LIMITS SUBJECT TO CITY OF CAPE CORAL PUBLIC WORKS APPROVAL.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
DRAFT		NEW CURB ALONG EXISTING ROAD PAVEMENT	F-3
		REVISIONS: 02–28–2022	

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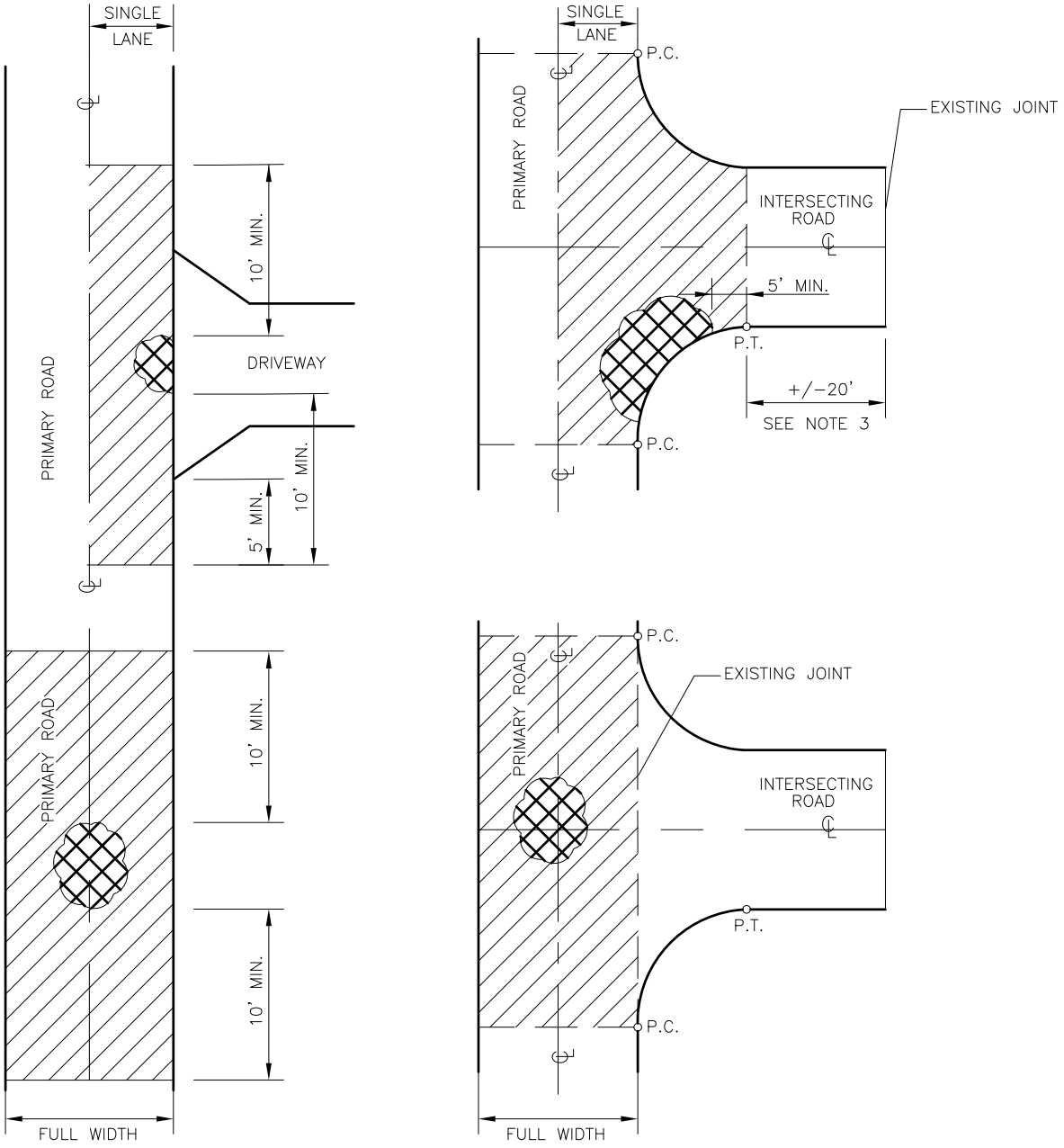

NOTES

1. RESTORATION MUST EXTEND A MINIMUM OF 10' FROM EACH END OF DAMAGE REGARDLESS OF OTHER CRITERIA.
2. IF DAMAGE IS IN FRONT OF A DRIVEWAY, RESTORATION MUST EXTEND A MINIMUM OF 5' FROM DRIVEWAY.
3. IF PRESCRIBED REPAIR LIMITS WOULD BE WITHIN 20' OF AN EXISTING JOINT, REPAIR MUST BE EXTENDED TO EXISTING JOINT.
4. RESTORATION MUST EXTEND A MINIMUM OF 10' FROM A MANHOLE IN ALL DIRECTIONS.
5. RESTORATION WIDTHS MUST BE A MINIMUM OF ONE LANE WIDTH.
6. REFERENCE MAJOR ROAD (COLLECTORS & ARTERIALS) DETAIL FOR RESTORATION AT AN INTERSECTION OF A LOCAL AND MAJOR ROAD.
7. FINAL DETERMINATION ON ALL RESTORATIONS SUBJECT TO CITY OF CAPE CORAL PUBLIC WORKS APPROVAL.
8. ALL ASPHALT SHALL MEET FDOT STANDARDS.

LEGEND

DAMAGE/CUTS

RESTORATION EXTENTS

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
DRAFT		LOCAL ROAD PAVEMENT RESTORATION	F-4
		REVISIONS: 02-28-2022	

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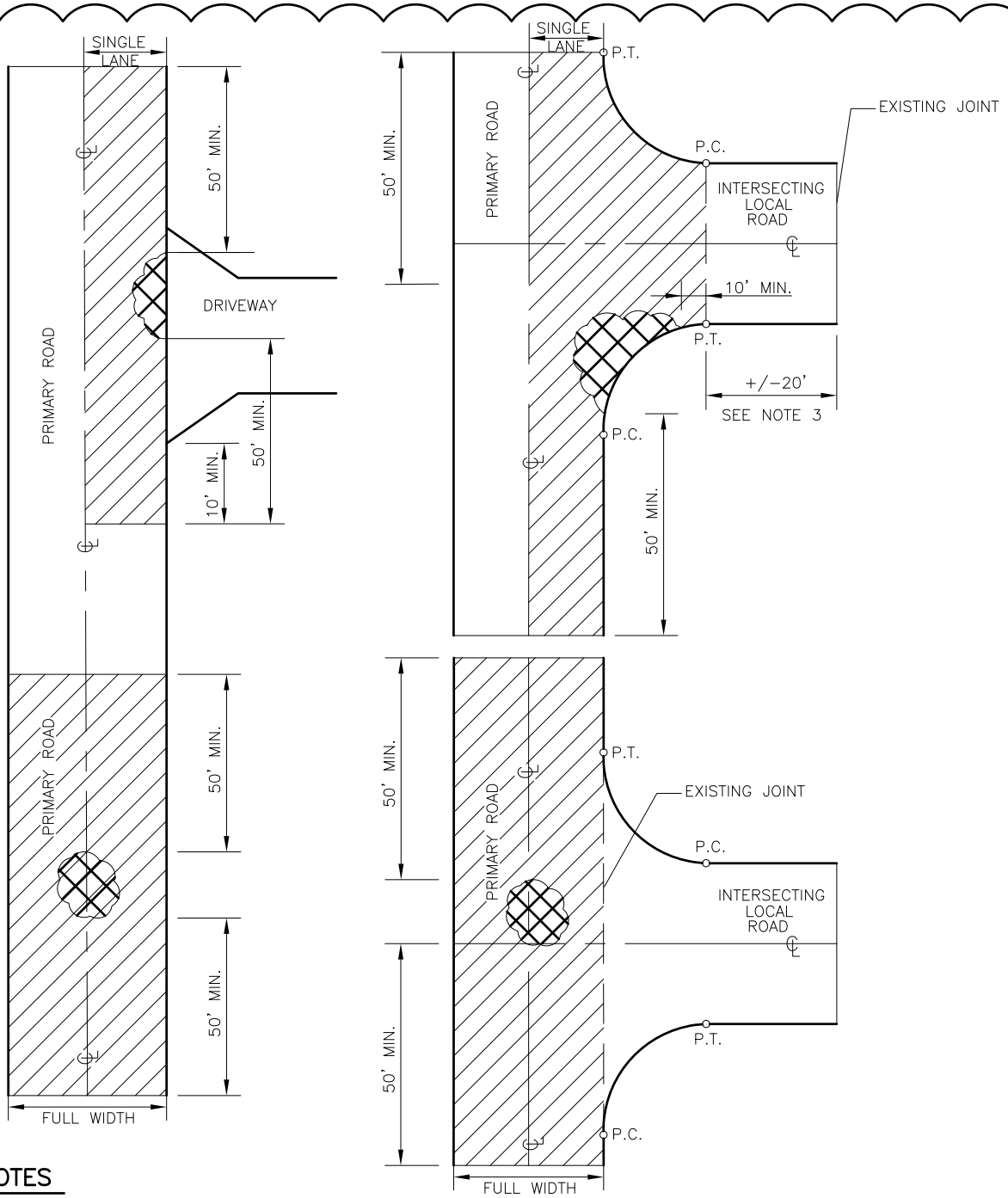

NOTES

1. RESTORATION MUST EXTEND A MINIMUM OF 50' FROM EACH END OF DAMAGE REGARDLESS OF OTHER CRITERIA.
2. IF DAMAGE IS IN FRONT OF A DRIVEWAY, RESTORATION MUST EXTEND A MINIMUM OF 10' FROM DRIVEWAY.
3. IF PRESCRIBED REPAIR LIMITS WOULD BE WITHIN 20' OF AN EXISTING JOINT, REPAIR MUST BE EXTENDED TO EXISTING JOINT.
4. RESTORATION MUST EXTEND A MINIMUM OF 10' FROM A MANHOLE IN ALL DIRECTIONS.
5. RESTORATION WIDTHS MUST BE A MINIMUM OF ONE LANE WIDTH.
6. RESTORATION OF TWO INTERSECTING MAJOR ROADS (COLLECTORS & ARTERIALS) WILL BE ON A CASE BY CASE BASIS.
7. FINAL DETERMINATION ON ALL RESTORATIONS SUBJECT TO CITY OF CAPE CORAL PUBLIC WORKS APPROVAL.
8. ALL ASPHALT SHALL MEET FDOT STANDARDS.

LEGEND

DAMAGE/CUTS

RESTORATION EXTENTS

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
DRAFT		MAJOR ROAD (COLLECTORS & ARTERIALS) PAVEMENT RESTORATION	F-5
		REVISIONS: 02-28-2022	

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ROADWAY STANDARDS

This section deals with the construction of all new projects, private access ways serving multiple units, new roads, widening of existing roads, curve radii, left turn storage, typical sections and intersections.

All streets are required to have a paved surface and comply with the "Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways for the State of Florida" (Florida Greenbook), in addition to the specific design considerations herein. Design conditions, which are noted as permissive in the Florida Greenbook, may be approved by the Public Works Director if determined to provide equal or improved engineering.

All roadways constructed within the Public Right of Way shall meet the minimum requirements of the Florida Greenbook for but not limited to roadside clear zones, intersection sight distance, lateral offset picture window maximum, tree caliber and tree spacing.

The locations of all streets are required to be in compliance with the Comprehensive Plan. Where, in the opinion of the City it is desirable to provide street access to adjoining properties, proposed new streets being platted shall be extended by dedication to the boundaries of such properties.

Right-Of-Way, Street and Lane Width – The minimum required right-of-way or easement width for a street is based on the required width of paving plus an additional width on each side of the paving to accommodate curbs, sidewalks, drainage, and utilities. These minimum requirements are shown below and on the following sheets.

Street Type	Minimum Dedicated ROW	Engineering Standard Sheet #
6 Lane Urban Section	120 FT	G-6
6 Lane Urban Section – Ltd	100 FT	G-7
4 Lane Urban Section	100 FT	G-8
Lane Widening Existing Roads	Varies (50 FT to 100 FT)	G-15 to G-17A
Local Roads (public or private)	60 FT (MIN.)	G-5
Local Roads Private Alternative	50 FT	G-5A

Right-Of-Way Dedication – Minimum ROW dedication shall be 60 feet. The City may require additional width for needed through lanes, turn lanes, speed change lanes and where it is necessary to accommodate drainage structures.

When new development is on an existing street with substandard right-of-way, the minimum required right-of-way width of 60' shall be dedicated to the City.

New projects and subdivisions platted along existing streets shall dedicate additional right-of-way, if necessary, to meet the minimum street width regulations, and the turn-lane requirements associated with the development.

Parallel Access Roads – Where a new project abuts or contains an existing or proposed arterial street or highway on which traffic volumes and vehicular speeds warrant special safety, the City may require that parallel access roads or cross access easements be provided in order that no lots will have direct access onto the existing or proposed arterial street or highway.

The City may require the reservation of additional width for needed through lanes, turn lanes, speed change lanes and where it is necessary to accommodate drainage structures.

Horizontal Alignment – Street locations must conform to the pattern of thoroughfares designated in the Comprehensive Plan. Proposed streets with widths different from existing streets to which they are being connected must be transitioned using transition tapers required by the Florida Greenbook. Minimum horizontal curve design criteria must comply with the Florida Greenbook.

Vertical Alignment – Grades and vertical sight distance must conform to State standards as outlined in the Florida Greenbook. All streets shall be designed to provide for the discharge of surface water from the pavement and from the right-of-way per South Florida Water Management District criteria. The minimum street grade required shall be approved by the Public Works Director or designated representative.

Drainage openings shall be designed so as not to restrict the flow of water and thereby unduly increase flood heights.

Superelevation on Horizontal Curves – maximum superelevation rates for arterials and collectors are 0.05 ft/ft. Superelevation is not recommended for use on local street curves and discouraged on others as well. For design details, the Florida Greenbook should be consulted.

Turn Lanes – The City will require the minimum criteria specified in the Lee County Turn Lane Policy (See AC 11-4, Appendix #1 for design information only). Right turn lanes may be required for high traffic generation projects. All commercial developments will, at a minimum, be required to provide lane widening adjacent to their properties and provide a 75-foot taper between the edge of pavement and existing pavement (see sheet G-18). Driveways at new approved median openings will be required to provide a left turning lane. Driveways at existing median openings, serving 10 or more new vehicles per hour will be required to provide a left turning lane. That policy contains both signalized and unsignalized storage lane length calculations. The minimum turn lane length and width may be based on the signalized criteria, provided the common cycle length of the roads signalized

intersections, is used. Nothing in this policy shall be construed to place an obligation upon the City to permit left turns into or out of any development, via either any existing or proposed street or access point driveway from any street, or highway facility where the Public Works Director has determined it is not in the best interest of the health, safety and general welfare of the traveling public to allow such left turn movement. The City reserves the right to restrict turning movements at existing median openings at any time to address safety concerns.

Requirements for tapers and reductions in these lengths under limiting conditions are the same as outlined below for right turn lanes.

Left Turn Lanes

Typically, only those developments generating a minimum of 40 left turning vehicles per hour will be subject to Public Work approval and must meet Access Management requirements for new median openings. New median openings that meet the median opening requirements and are approved by the City, shall be provided with a left turn lane and median improvements.

Projects that utilize an existing approved median opening at the proposed driveway or nearest intersection with a multi-lane road and generate traffic volumes for left turns equal or in excess of 10 new vehicles per hour, shall require the installation of a left turn lane and associated median improvements.

For Directional Left Turns refer to Sheet G-19.

All left turn lane construction shall be designed to conform to Lee County Turn Lane Policy

Right Turn Lanes

In addition to the requirements for commercial, professional & industrial, lane widening, curb & gutter, etc.; driveways that access roadways built with a posted speed limit of 35 miles per hour or greater, and generate right turns equal or in excess of 30 vehicles per hour (either in am or pm peak hours) shall be provided with a right turn lane.

All right turn lane construction shall be designed to conform to Lee County Turn Lane Policy

Medians –Where median openings with turn lanes are provided, the minimum width of the concrete separator is 3 feet. All designs must conform with the Florida Greenbook. No fixed objects - not meeting breakaway standards – will normally be permitted in medians. Plantings must be trimmed so that sight distance requirements specified herein (see Sheets G-12 and G-22) or in the Florida Greenbook are met.

For median spacing refer to FDOT Access Management. Streets for which access control plans have been prepared, such as SR 78, Del Prado Boulevard, Santa

Barbara Boulevard, Cultural Park Boulevard, Country Club Boulevard, Hancock Bridge Parkway, Chiquita Boulevard, Nicholas Parkway Veterans Memorial Parkway, Burnt Store Road, and Cape Coral Parkway, may have more stringent requirements.

Bicycles – The bicycle is a design vehicle and, therefore, the provision bicycle feature requirements are specified in the Florida Greenbook.

Mailboxes – As mailboxes are within the public right-of-way, and specifically roadside shoulders, they must conform to State safety standards. The box supports must be standardized to ensure that they will "break away" if struck by a vehicle. See sheet J-3

Clear Zone –The unobstructed, traversable area beyond the edge of the traveled way for the recovery of errant vehicles. The clear zone includes shoulders and bicycle lanes.. For those roadside appurtenances and features that cannot be removed or located outside the clear zone must meet breakaway criteria to reduce impact severity. These requirements are specified in the Florida Green Book. Florida Greenbook. Fire hydrants, utility junction boxes and poles may not be located in the "clear zone." Planting within the median or clear zone shall be spaced based on criteria shown on sheet G-12 and conform with FDOT Design Manual. Intersection sight distance, stopping sight distance, and passing sight distance requirements of the Florida Greenbook must be met.

Dead-End Streets – Cul-de-sacs or dead-end streets which are designed so as to have one end permanently closed, shall not be longer than 500 feet and shall be provided at the closed end with a turn around having a radius at the outside of the pavement of a least 45 feet, and a radius at the outside of the right-of-way of at least 55 feet.

Reserve Strips – There shall be no reserve strips in a subdivision except where their control is definitely vested in the City under conditions approved by City Council as authorized in the provisions of this resolution.

Street Lights – Street lights shall be provided at appropriate locations to maintain City determined levels of illumination in conformance with the Florida Greenbook requirements.

Signing & Marking - Signing and marking on public streets shall conform to the requirements of the Manual on Uniform Traffic Control Devices.

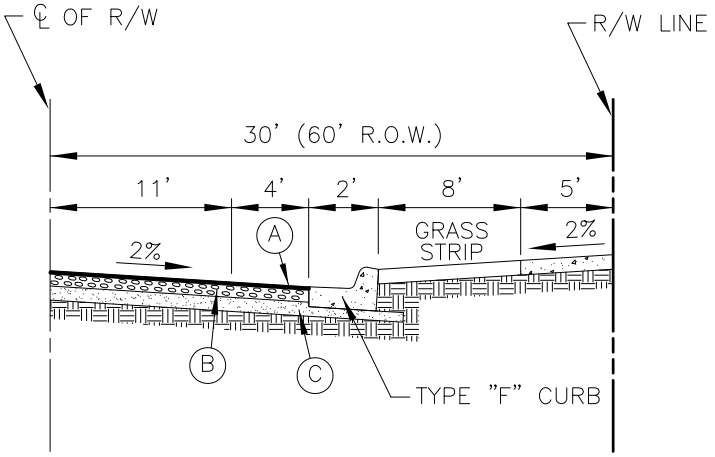
Construction Zone Traffic Control - Problems arise when traffic must be moved through roadway construction, maintenance operations or utility work. In order to minimize these problems, the City has adopted the FDOT Standard Plans for Streets and Highway. In order to insure compliance with these procedures a Public Works Department Right of Way Permit is required for all work within the public right-of-way.

The contractor performing the work is required to submit a Traffic Control Plan (TCP) when applying for the Permit (prior to start work) and is required to provide appropriate work zone control and is subject to work stoppage if the required safety requirements are not fully implemented. See FDOT Standard Plans for additional information and examples.

Restoration

Whenever an area in the Public Right of Way adjacent to a work site is disturbed, the area shall be restored to pre-existing conditions and as shown on Sheets F-1 to F-5. The restoration work shall be inspected and accepted by Public Works upon completion.

LOCAL ROADS



(A) ASPHALTIC CONCRETE 1–1/2" SP 12.5 AND 1" SP 9.5 (TOP LAYER).

(B) MIN. 8" LIMEROCK – MIN. L.B.R. 100 COMPACTED TO 98% AASHTO T–180.

(C) MIN. 12" STABILIZED SUBGRADE – MIN. L.B.R. 40 COMPACTED TO 98% AASHTO T–180.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
DRAFT		TYPICAL SECTION NEW CONSTRUCTION	G-5
		REVISIONS: 08–31–2020	

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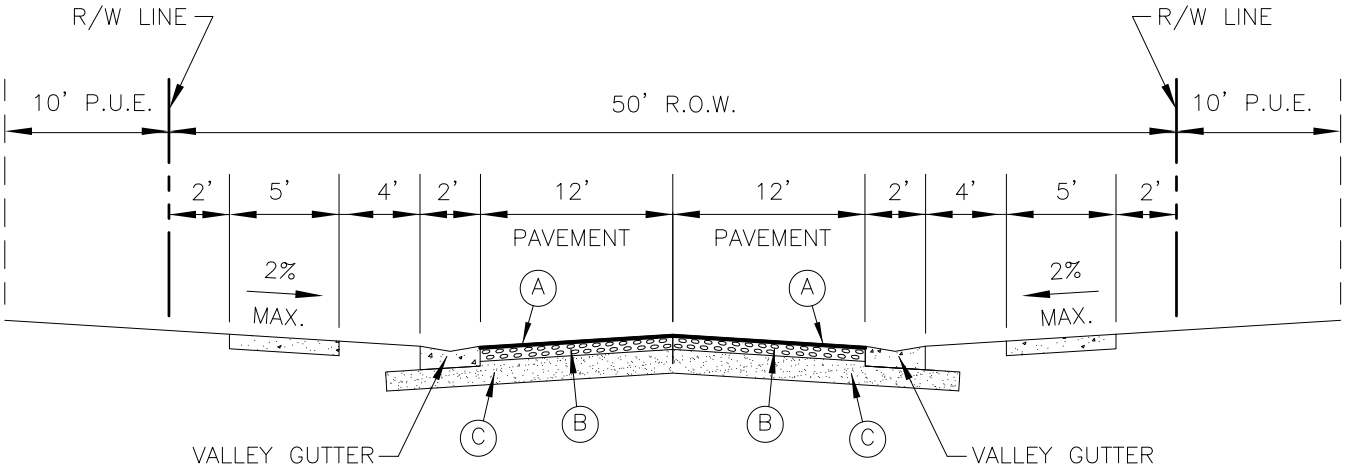
LOCAL ROADS
PRIVATE ALTERNATIVE



(A) ASPHALTIC CONCRETE 1–1/2" SP 12.5 AND 1" SP 9.5 (TOP LAYER).

(B) MIN. 6" LIMEROCK – MIN. L.B.R. 100 COMPACTED TO 98% AASHTO T–180.

(C) MIN. 12" STABILIZED SUBGRADE – MIN. L.B.R. 40 COMPACTED TO 98% AASHTO T–180.

ADOPTED BY CITY COUNCIL		TITLE	SHEET NO.
DRAFT	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TYPICAL SECTION NEW CONSTRUCTION	G-5A
		REVISIONS: 02–28–2022	

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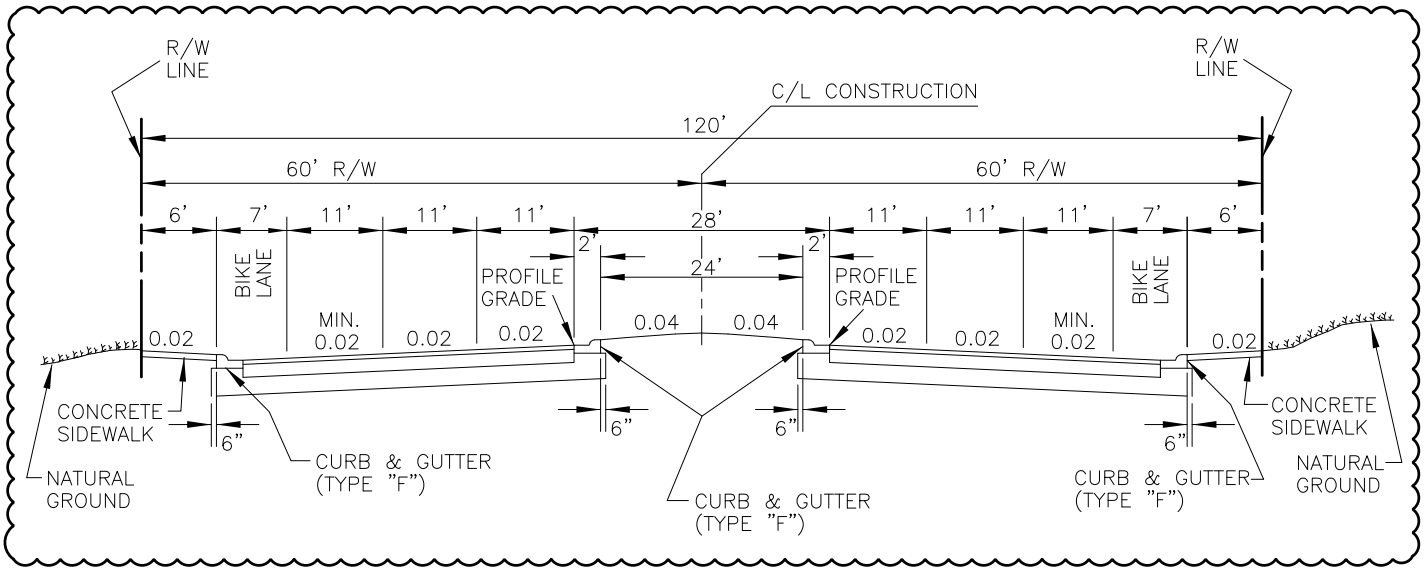
120' R.O.W.

6–LANE URBAN SECTION



ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
DRAFT		TYPICAL SECTION NEW CONSTRUCTION	G-6
		REVISIONS: 08–31–2020	

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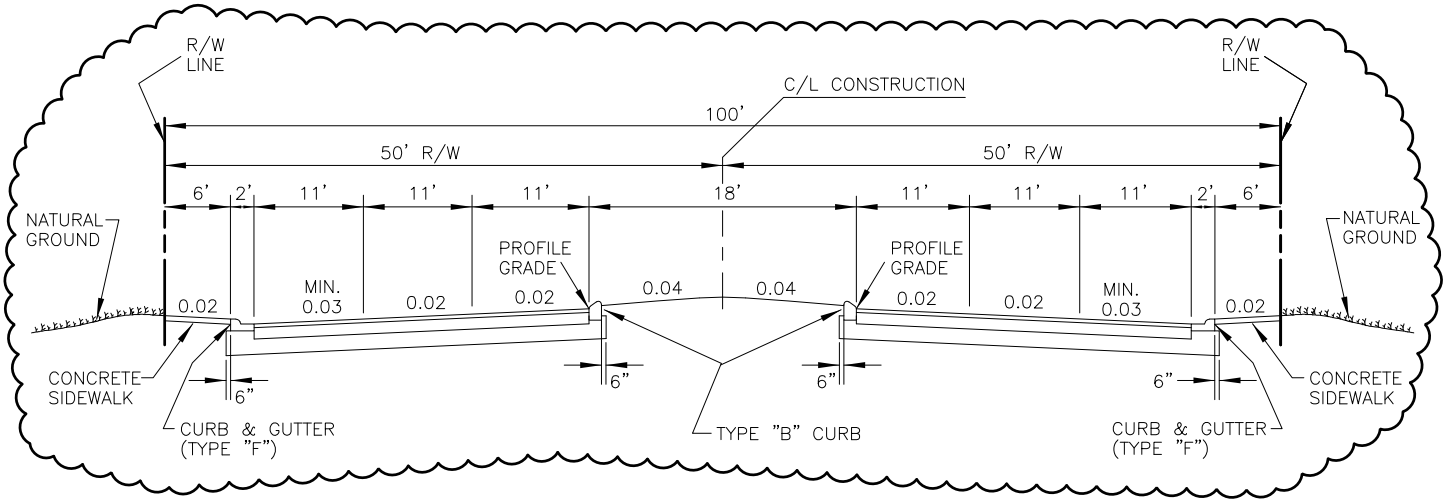
100' R.O.W.

6–LANE URBAN SECTION

LIMITED



NOTE:

FOR NEW CONSTRUCTION WITHIN EXISTING RIGHT–OF–WAY

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
DRAFT		TYPICAL SECTION NEW CONSTRUCTION	G-7
		REVISIONS: 08–31–2020	

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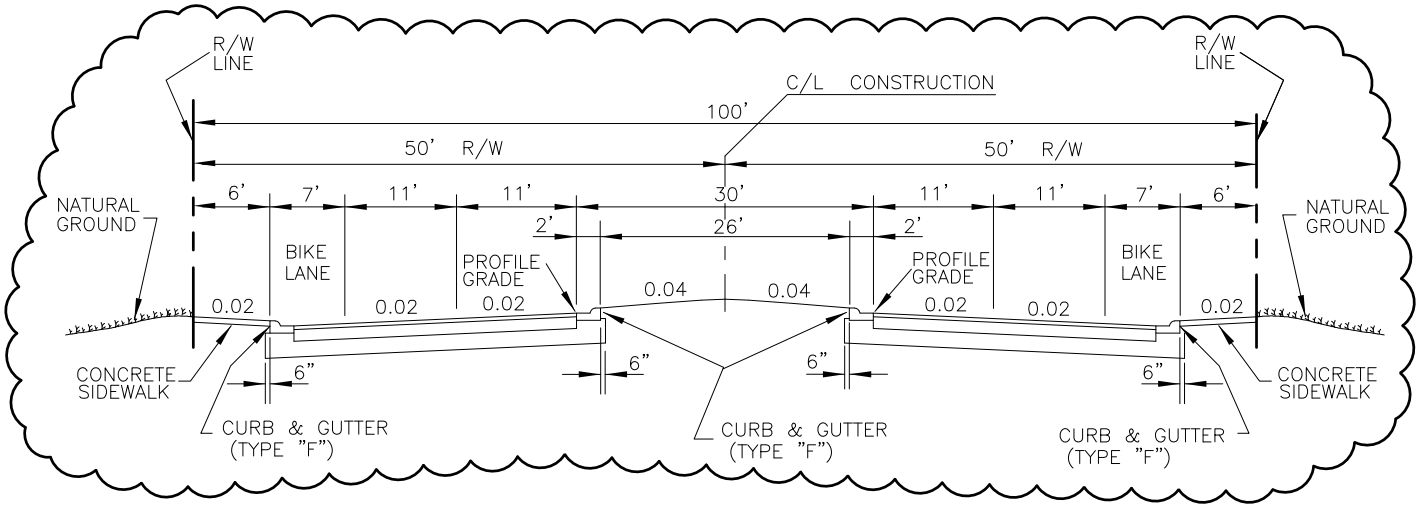
100' R.O.W.

4–LANE URBAN SECTION



ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
DRAFT		TYPICAL SECTION NEW CONSTRUCTION	G-8
		REVISIONS: 08–31–2020	

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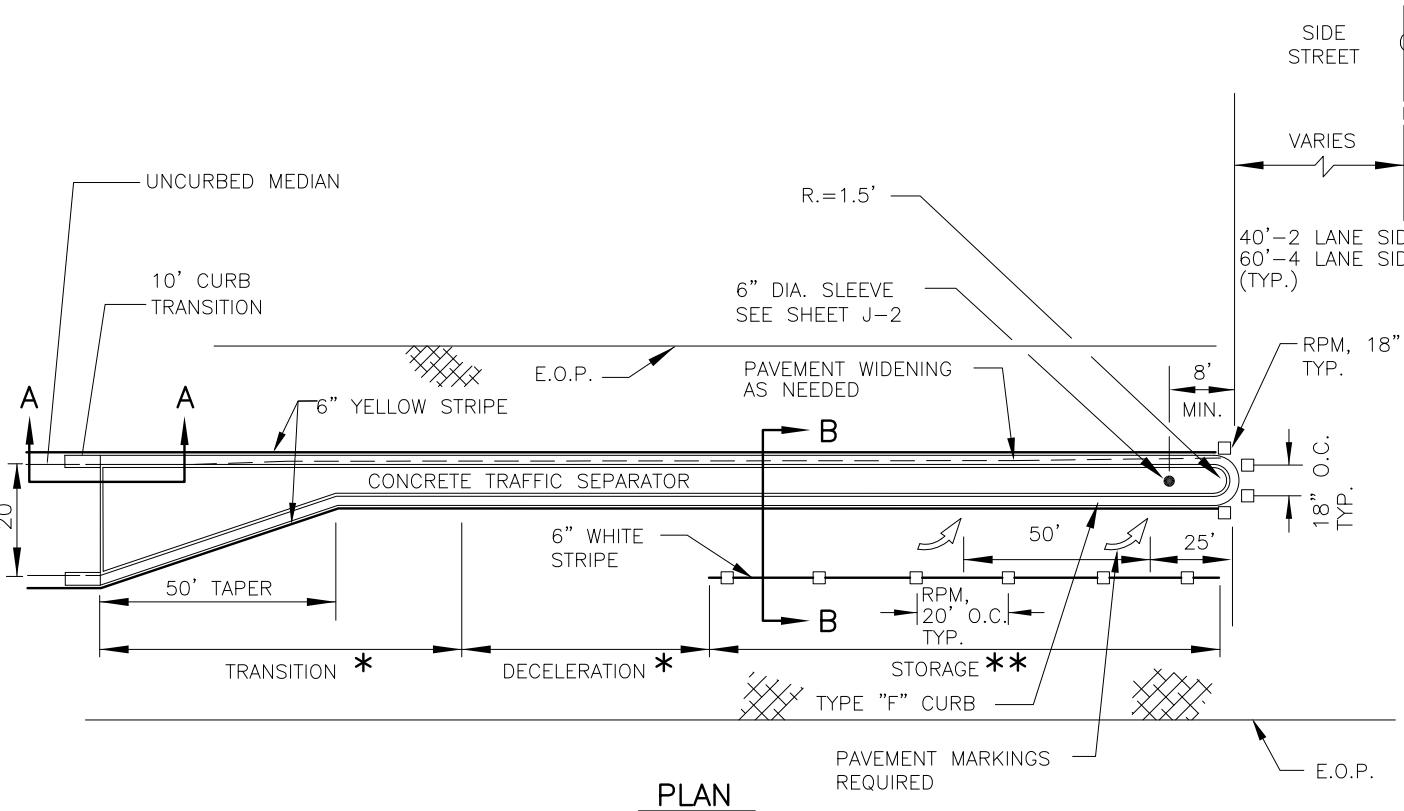
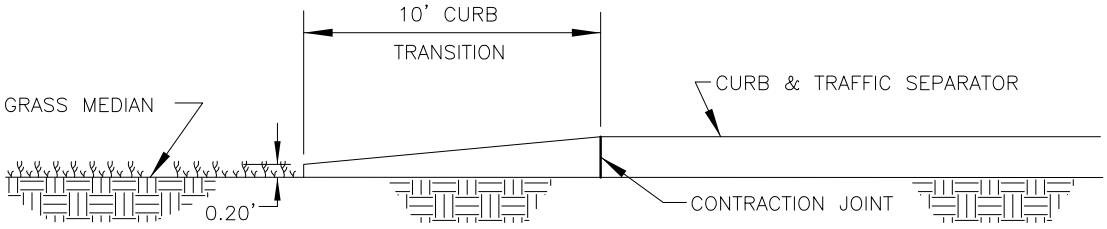


PLAN



SECTION A–A

* USE CHART ON PAGE 7 OF 17 FROM LEE COUNTY TURN LANE POLICY LATEST EDITION – SEE APPENDIX NO. 1.

** SEE LATEST EDITION OF FDOT DESIGN MANUAL.

NOTE:

1. CONSTRUCT TYPE "F" CURB AT BEGINNING OF 50' TURN LANE TAPER. CURB SHALL TRANSITION TO MATCH EXISTING GRADE.
2. FOR SECTION B–B, SEE SHEET G–14
3. DEVELOPER SHALL CURB ADJACENT MEDIAN IF DIVIDED.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
		LEFT TURN STORAGE LANE FOR 20' MEDIAN	G-13
		REVISIONS: 03–31–2026	

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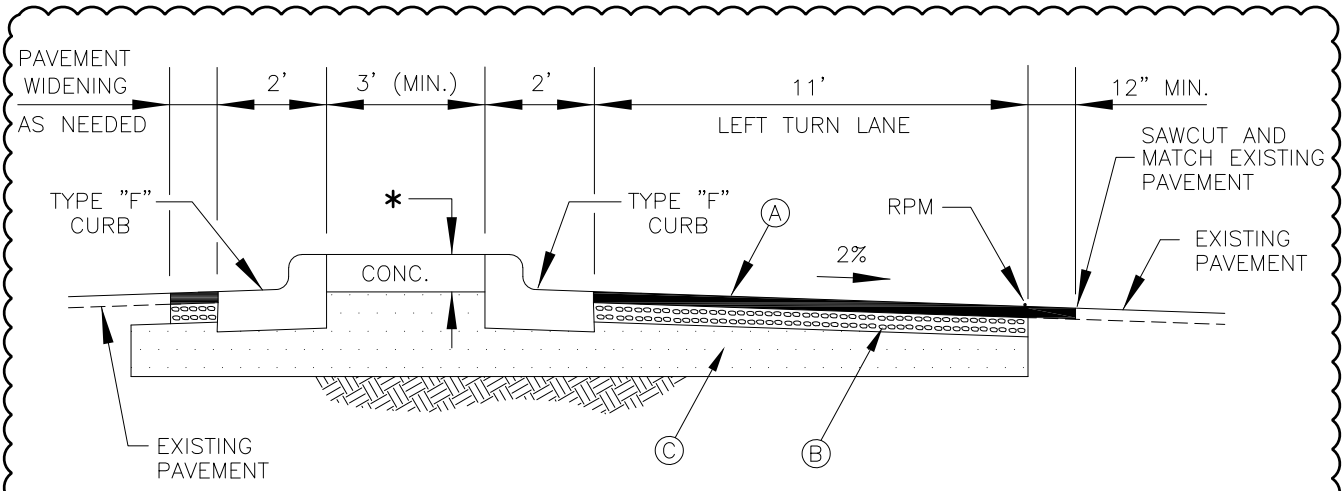

* THICKNESS AS INDICATED ON THE FDOT STANDARD PLANS–TRAFFIC SEPARATORS INDEX 520–020.

SECTION B–B

* REFER TO FDOT STANDARD PLANS INDEX 520–020.

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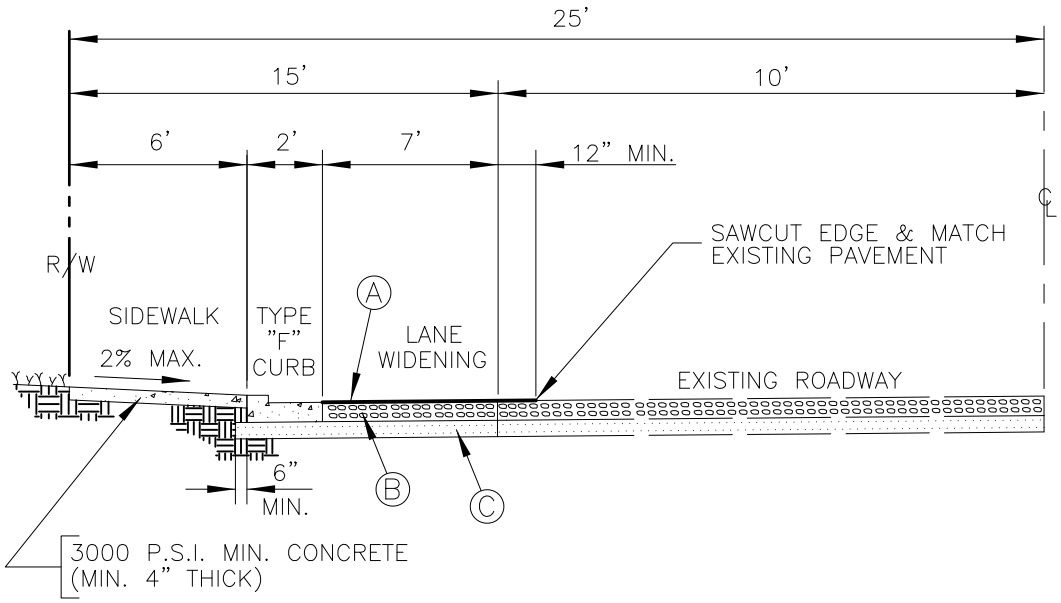
ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
		LEFT TURN STORAGE LANE FOR 20' MEDIAN - SECTION VIEW	G-14
		REVISIONS: 03–31–2026	



(A) MIN. 2–1/2" ASPHALTIC CONCRETE SP 12.5.

(B) MIN. 8" LIMEROCK – MIN. L.B.R. 100 COMPACTED TO 98% AASHTO T–180.

(C) MIN. 12" STABILIZED SUBGRADE – MIN. L.B.R. 40 COMPACTED TO 98% AASHTO T–180.

NOTES:

1. THE SIDEWALK FOUNDATION SHALL BE COMPACTED TO A FIRM EVEN SURFACE AND SHALL BE FREE OF SOD AND OTHER ORGANIC MATERIAL. SIDEWALK SAWCUT JOINTS SHALL BE ON 5' CENTERS. MIN. SAWCUT DEPTH IS 1/4 THE DEPTH OF THE SIDEWALK.
2. REFER TO THE FLORIDA DESIGN MANUAL FOR SPECIFICATION ON ROAD WIDENING AS WELL AS NEW CONSTRUCTION.
3. CONTACT THE PUBLIC WORKS DEPARTMENT TO VERIFY THE APPROPRIATE LANE WIDENING FOR YOUR SITE DESIGN.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
		LANE WIDENING 50' R.O.W.	G-15
		REVISIONS: 03–31–2026	

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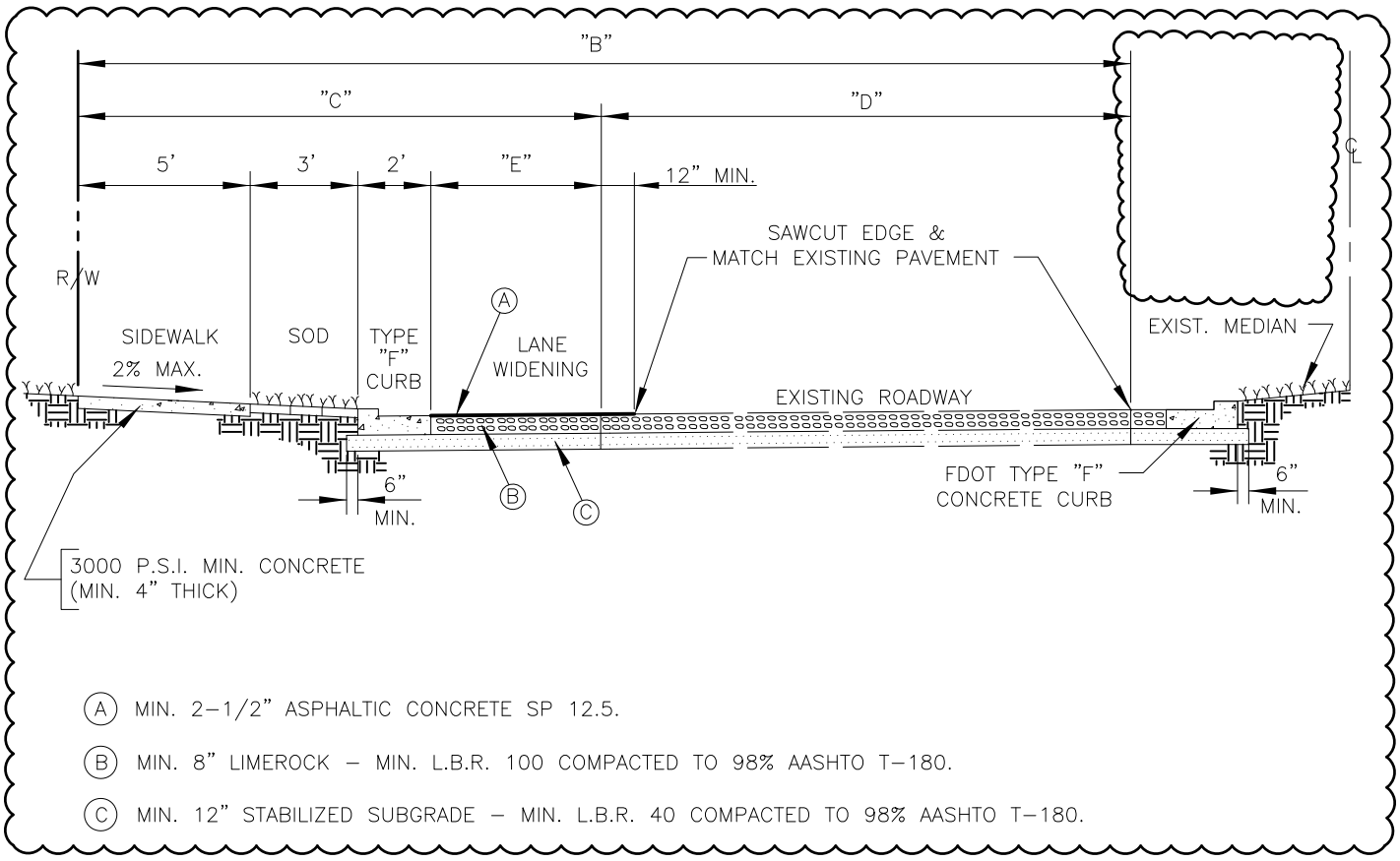

(A) MIN. 2–1/2" ASPHALTIC CONCRETE SP 12.5.

(B) MIN. 8" LIMEROCK – MIN. L.B.R. 100 COMPACTED TO 98% AASHTO T–180.

(C) MIN. 12" STABILIZED SUBGRADE – MIN. L.B.R. 40 COMPACTED TO 98% AASHTO T–180.

NOTES:

1. THE SIDEWALK FOUNDATION SHALL BE COMPACTED TO A FIRM EVEN SURFACE AND SHALL BE FREE OF SOD AND OTHER ORGANIC MATERIAL. SIDEWALK SAWCUT JOINTS SHALL BE ON 5' CENTERS. MIN. SAWCUT DEPTH IS 1/4 THE DEPTH OF THE SIDEWALK.
2. THESE SPECIFICATIONS ARE FOR ROAD WIDENING ONLY. ALL NEW CONSTRUCTION WILL MEET CURRENT DESIGN CRITERIA.
3. CONTACT THE PUBLIC WORKS DEPARTMENT TO VERIFY THE APPROPRIATE LANE WIDENING FOR YOUR SITE DESIGN.

R/W WIDTH		"B"	"C"	"D"	"E"
60'		30'	20'	10'	10'
70'		35'	25'	10'	15'
80'		34'	14'	20'	4'

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
		LANE WIDENING 60', 70', & 80' R.O.W.	G-17
		REVISIONS: 03–31–2026	

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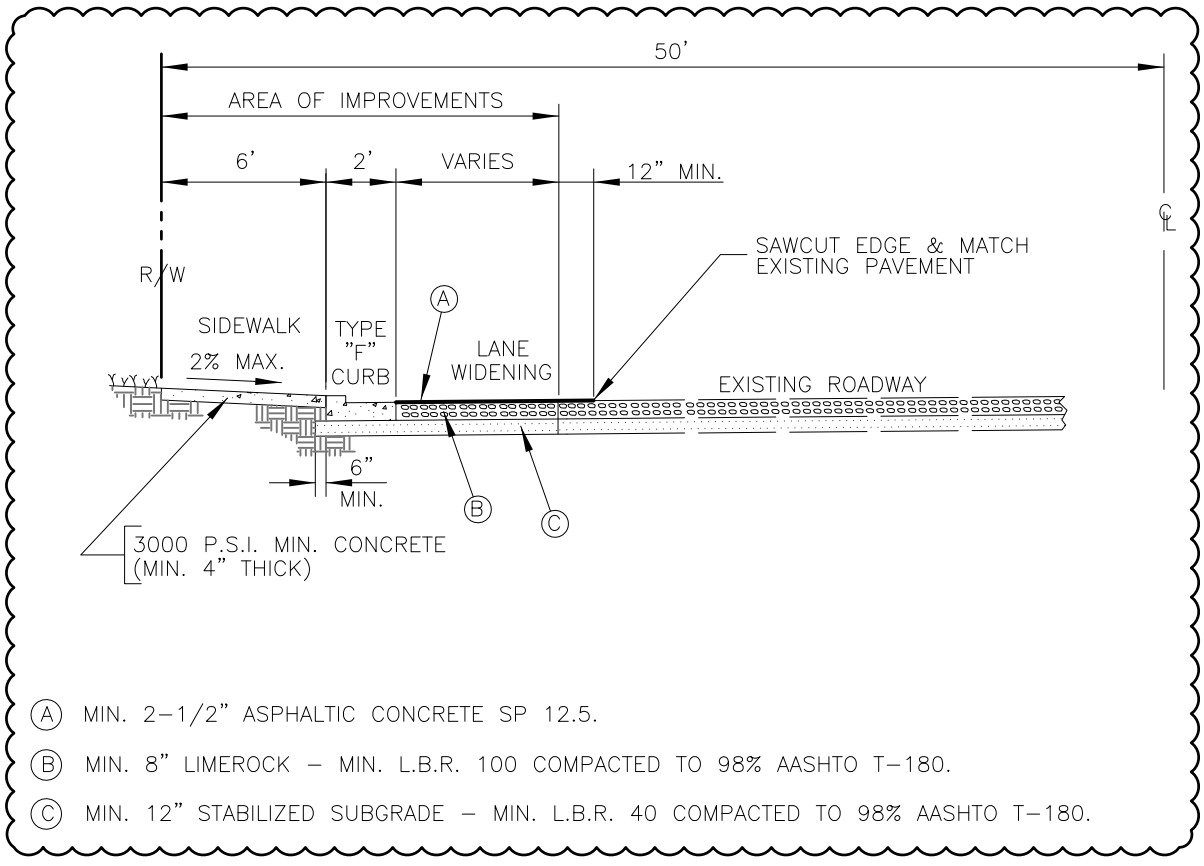
100' R.O.W.



(A) MIN. 2–1/2" ASPHALTIC CONCRETE SP 12.5.

(B) MIN. 8" LIMEROCK – MIN. L.B.R. 100 COMPACTED TO 98% AASHTO T–180.

(C) MIN. 12" STABILIZED SUBGRADE – MIN. L.B.R. 40 COMPACTED TO 98% AASHTO T–180.

NOTES:

1. THE SIDEWALK FOUNDATION SHALL BE COMPACTED TO A FIRM EVEN SURFACE AND SHALL BE FREE OF SOD AND OTHER ORGANIC MATERIAL. SIDEWALK SAWCUT JOINTS SHALL BE ON 5' CENTERS. MIN. SAWCUT DEPTH IS 1/4 THE DEPTH OF THE SIDEWALK.
2. THESE SPECIFICATIONS ARE FOR ROAD WIDENING ONLY. ALL NEW CONSTRUCTION WILL MEET CURRENT FDOT DESIGN CRITERIA.
3. CONTACT THE PUBLIC WORKS DEPARTMENT TO VERIFY THE APPROPRIATE LANE WIDENING FOR YOUR SITE DESIGN.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
		LANE WIDENING 100' R.O.W.	G-17A
		REVISIONS: 08–31–2020	

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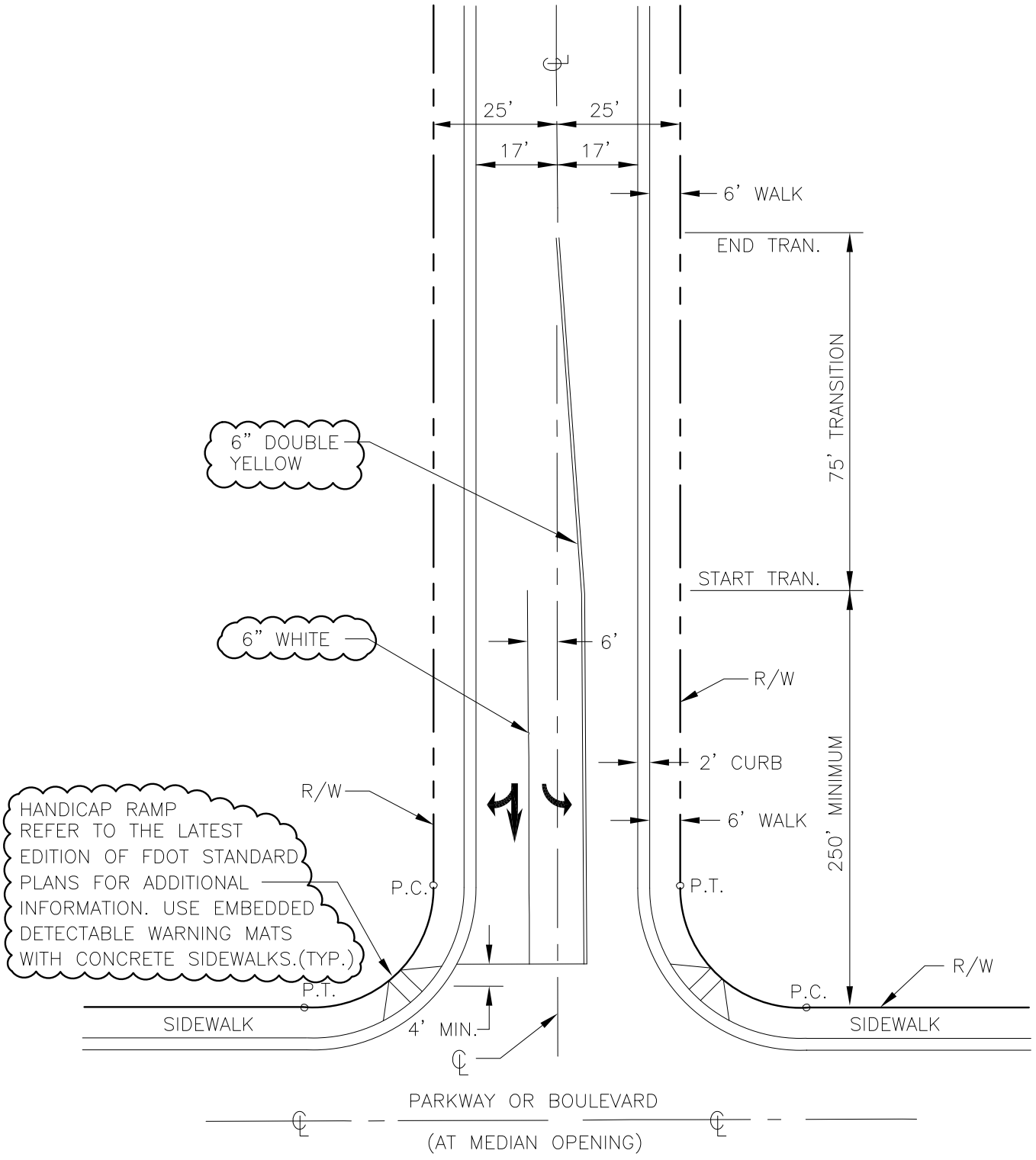

REFER TO FDOT STANDARD PLANS AND FLORIDA GREENBOOK FOR ADDITIONAL PAVEMENT MARKING DETAILS.

LANE WIDTH SHALL MEET REQUIREMENTS OF FLORIDA GREENBOOK.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
		LANE WIDENING	G-18
		REVISIONS: 03-31-2026	

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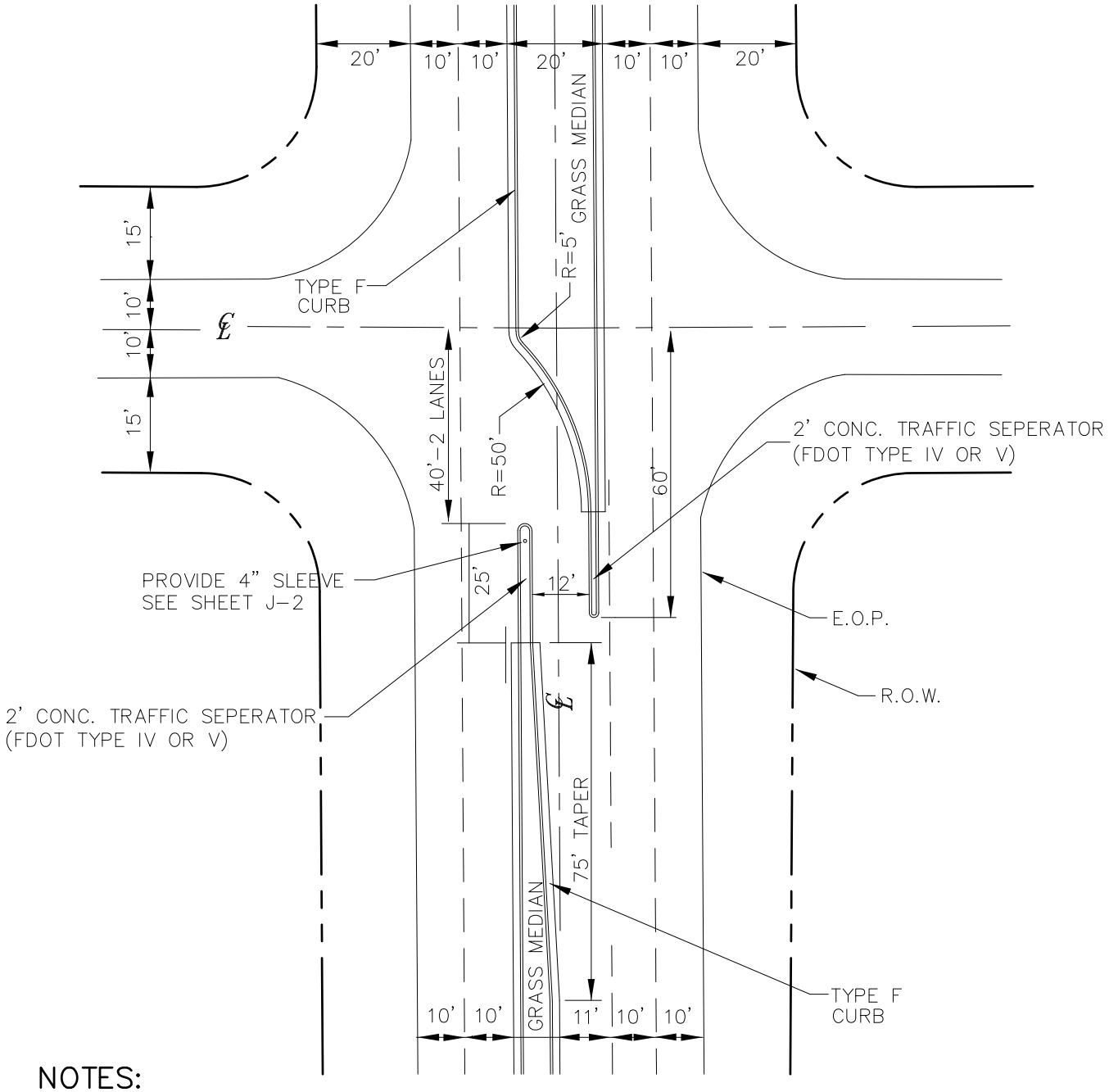

NOTES:

1. DESIGN FOR 20' MEDIANS. FOR OTHER MEDIAN WIDTHS REFER TO THE FLORIDA INTERSECTION GUIDE.
2. IF MEDIAN IS NOT CURBED, PROVIDE MINIMUM OF 40' CURB ON BOTH SIDES OF LEFT TURN.
3. CHECK WITH CITY PUBLIC WORKS FOR REQUIREMENTS TO INSTALL DIRECTIONAL TURNS.
4. BULL NOSES TO BE PAINTED YELLOW.
5. REFER TO FDOT STANDARD PLANS FOR ADDITIONAL PAVEMENT MARKING DETAILS.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
		DIRECTIONAL LEFT TURN DETAIL	G-19
		REVISIONS: 03-31-2026	

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INTERSECTIONS

This section on intersections describes the criteria for street spacing, signalization and median openings. For road functional classifications consult with the City Department of Community Development. Arterial roads serve major traffic generators, have the highest traffic and service the longest trips. Collector roads serve traffic travelling between the arterials and the local streets that provide direct access to properties.

Angles Proposed streets must intersect one another at 90 degrees or as close to 90 degrees as possible. (No less than 80 degrees in any event.)

Spacing along arterials (Principal 4 Lane Parkways and Boulevards) Signalized intersections along arterials will normally be spaced no closer than every half mile unless a traffic signal progression study has established alternate signal spacing. Such studies must conform to City criteria and will generally assume no less than a 40% minimum off peak progression band, 40/45 miles per hour, and no more than a 120-second cycle length. In the event that an existing side street does not conform to these standards, its turning movements will be restricted or its median opening closed.

Non-signalized arterial street intersections and median openings should be spaced a minimum of 660 feet apart for full intersections and 330 feet for directional. Such openings will be limited to public streets and major traffic generators. All median openings on City arterials are examined to potential impact on signal progression by a special intergovernmental committee of the Metropolitan Planning Organization.

Spacing along Collectors Signalized intersections along collectors will normally be spaced no closer than every quarter mile unless a traffic signal progression study has established an alternate signal spacing. Non signalized, four-way intersections and median openings on collectors and commercial local streets must be spaced 660 feet apart. Three-way intersections must be spaced at least 300 feet apart.

Spacing along Local Streets Four-way intersections will normally be spaced at least 300 feet apart. Where three-way intersections are used, the centerlines of streets not in alignment must normally be offset a minimum of 150 feet.

Corner Radii At public street intersections the minimum flowline radii will be 35 feet to provide a minimum of 10 feet from the road's edge/curb flowline to the property line. Due to existing conditions along Del Prado Boulevard and Cape Coral Parkway, a 30' radius is to be used in all cases.

Traffic Control Devices Standards for traffic control devices shall be as specified in the Manual on Uniform Traffic Control Devices (MUTCD.) In accordance with that standard, no traffic signals are to be installed that do not comply with the

warrants of the MUTCD. Positive offset on left turn lanes are required to the maximum extent feasible.

Signals serving exclusively private development shall be paid for by the affected developer. The developer will be responsible for a signal if traffic to the development triggers a need.

Modification or relocation costs of existing traffic control device equipment such as signals on State highways and City streets, will be the responsibility of the developer.

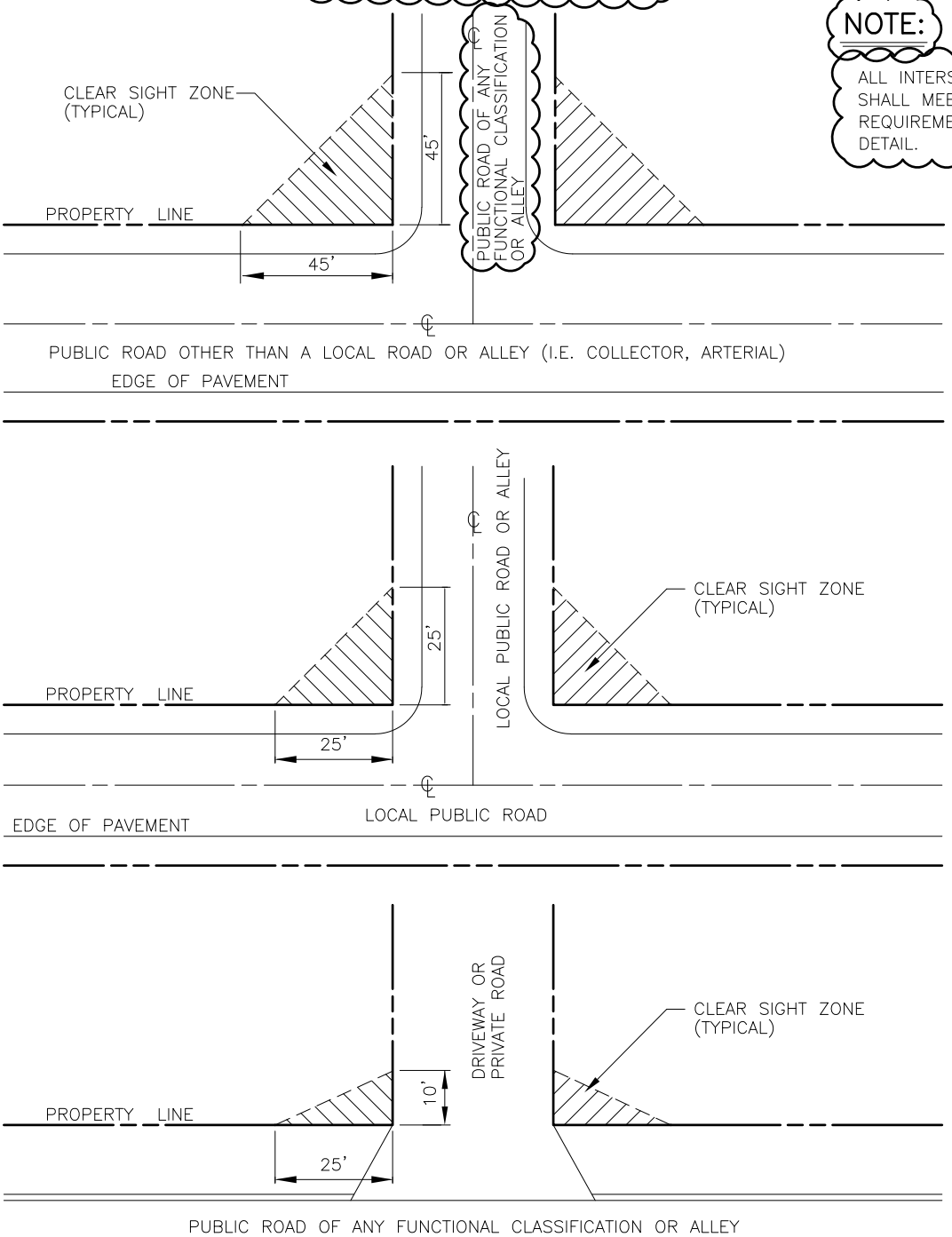
Intersection Sight Distance At any intersection of a public road right-of-way with an alley, driveway, or other public or private road, no wall, fence, sign, foliage, or other appurtenance shall obstruct the intersection sight visibility, as shown in the Florida Greenbook and FDOT Design Manual. Further, no outdoor display or parking space, except a parking space lawfully existing at the time it was approved, shall be located within the sight triangle. Objects that may be located in the triangular area include, but are not limited to, items necessary for public infrastructure such as hydrants, utility poles, utility junction boxes, traffic control devices, and septic mounds, where required by the Department of Health (DOH). These must be located to minimize visual obstruction. Requirements for sight triangles shall be in compliance with the Florida Greenbook or FDOT Design Manual. In addition to the intersection sight distance, clear sight triangles shown on G-12 and G-22 must be maintained.

Median Landscaping Guidelines As illustrated on sheet G-12, median landscaping needs to be planted so as not to obscure visibility at intersections. All plantings shall conform with FDOT Design Manual and the City of Cape Coral Median Landscaping Design Template.

CORNER SIGHT DISTANCE

SPEED LIMIT (MPH)	DISTANCE FROM EDGE OF MEDIAN LIMITED TO GROUND COVER (FT)	INTERSECTION SIGHT DISTANCE TRIANGLE DIMENSIONS	TREE SPACING AND CALIPER	CLEAR SIGHT WINDOW
30	50	TABLE 16-2 FLORIDA GREEN BOOK	FDOT DESIGN MANUAL	EDS DETAIL G-12 (FDOT DESIGN MANUAL)
35	50	FIGURE 3-12 FLORIDA GREEN BOOK	FDOT DESIGN MANUAL	EDS DETAIL G-12 (FDOT DESIGN MANUAL)
40	50	FIGURE 3-12 FLORIDA GREEN BOOK	FDOT DESIGN MANUAL	EDS DETAIL G-12 (FDOT DESIGN MANUAL)
45	FDOT DESIGN MANUAL	FDOT DESIGN MANUAL	FDOT DESIGN MANUAL	EDS DETAIL G-12 (FDOT DESIGN MANUAL)
45+	FDOT DESIGN MANUAL	FDOT DESIGN MANUAL	FDOT DESIGN MANUAL	EDS DETAIL G-12 (FDOT DESIGN MANUAL)

CORNER SIGHT DISTANCE



NOTE:

ALL INTERSECTIONS SHALL MEET APPLICABLE REQUIREMENTS OF THIS DETAIL.

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ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE: CLEAR ZONES FOR INSTALLATION OF FUTURE TRAFFIC OPERATION EQUIPMENT	SHEET NO.: G-22
		REVISIONS: 03-31-2026	

PRECAST CONCRETE SEAWALL GENERAL NOTES

1. THESE SPECIFICATIONS SHOW TYPICAL DETAILS FOR PRECAST CONCRETE SEAWALLS WHICH ARE TO BE CONSTRUCTED IN THE CITY OF CAPE CORAL. INDIVIDUAL SEAWALL DESIGN IS THE RESPONSIBILITY OF THE PERMITTEE AND MUST BE PERFORMED BY A FLORIDA REGISTERED PROFESSIONAL ENGINEER WHO SHALL BE THE ENGINEER OF RECORD FOR THE PROJECT. THESE SPECIFICATIONS ARE TYPICAL DETAILS ONLY AND ARE NOT INTENDED TO BE A FINAL DESIGN RELATING TO A SPECIFIC SITE.

2. THE ENGINEER OF RECORD (EOR) SHALL BE RESPONSIBLE FOR CERTIFYING THE FOLLOWING AS PART OF THE FINAL SEAWALL DESIGN:

   a. EOR OR THEIR REPRESENTATIVE VISITED THE PROJECT SITE, AND INCORPORATED ALL SITE–SPECIFIC CONDITIONS, METHOD OF CONSTRUCTION, AND LOADS INTO FINAL DESIGN.

   b. FINAL SEAWALL DESIGN CALCULATIONS AND CONSTRUCTION DOCUMENTS MUST BE SIGNED AND SEALED BY A FLORIDA REGISTERED PROFESSIONAL ENGINEER WITH STRUCTURAL EXPERIENCE.

   c. IN ADDITION TO FINAL SEAWALL DESIGN, THE EOR SHALL CERTIFY THAT THE FOLLOWING SEAWALL ELEMENTS WERE CONSTRUCTED IN ACCORDANCE WITH THEIR PLANS AND SPECIFICATIONS:

      c.1. ALIGNMENT OF SEAWALL

      c.2. PENETRATION OF SEAWALL INTO SEABED

      c.3. SEAWALL CAP REINFORCING AND PLACEMENT

      c.4. DEADMAN ANCHORS, REINFORCING, AND TIE–BACK PLACEMENT

3. SEAWALL DESIGN CRITERIA:

   a. THE FOLLOWING DESIGN CRITERIA IS APPLICABLE FOR A NEW PRECAST CONCRETE SEAWALL WITH A 6' EXPOSED HEIGHT ABOVE THE MUDLINE. THESE SPECIFICATIONS MAY NOT BE USED TO PLACE A NEW PRECAST CONCRETE SEAWALL IN FRONT OF AN EXISTING SEAWALL.

   b. DESIGN SPECIFICATIONS: DESIGN SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF FLORIDA BUILDING CODE RESIDENTIAL, ASCE/SEI 24 FLOOD RESISTANT DESIGN AND CONSTRUCTION, ASCE 7 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES, ACI 318 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, AND U.S. ARMY CORPS OF ENGINEERS ENGINEERING AND DESIGN MANUAL EM 1110–2–2504 DESIGN OF SHEET PILE WALLS.

   c. DESIGN LOAD COMBINATIONS: (OR AS APPROVED BY THE EOR)

      c.1. LOW TIDE CANAL WATER (WATERWARD OF WALL) AT 4.5' BELOW SEAWALL CAP, PLUS WATER LEVEL LANDWARD OF WALL AT 2' BELOW SEAWALL CAP, PLUS EARTH PRESSURE, PLUS 200 psf SURCHARGE LOAD.

      c.2. CANAL WATER (WATERWARD OF WALL) AT MUDLINE (6' MAXIMUM BELOW SEAWALL CAP), PLUS WATER LANDWARD OF WALL AT 2' BELOW SEAWALL CAP, PLUS EARTH PRESSURE, AND NO SURCHARGE LOAD.

   d. SOIL ASSUMED AS LOOSE FINE SAND. ALTERNATE SOIL TYPES MAY BE CONSIDERED IF A SITE SPECIFIC GEOTECHNICAL SOILS ENGINEERING REPORT IS PERFORMED AND PROVIDED.

   e. SEABED (WATERWARD OF WALL) SLOPING DOWN AND AWAY FROM WALL AT 1:5 (V:H) SLOPE MAXIMUM.

   f. FINISHED GRADE (LANDWARD OF WALL) SLOPING UP AND AWAY FROM SEAWALL CAP AT 1:4 (V:H) SLOPE MAXIMUM.

   g. PRECAST CONCRETE SEAWALL PANEL:

      g.1. DEPTH = 5"

      g.2. PANEL WIDTH = 5'

      g.3. CONCRETE COMPRESSIVE STRENGTH = 5,000 psi

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11–03–2021		PRECAST CONCRETE SEAWALL GENERAL NOTES	H-1A
		REVISIONS:	

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g.4. REBAR = LOW–CARBON CHROMIUM STEEL REBAR ASTM A1035 CS, GRADE 100 (DO NOT WELD OR FIELD BEND), –OR– GLASS FIBER REINFORCED POLYMER (GFRP) REBAR ASTM D578 (NO FIELD FABRICATION, BENDING, COUPLING, THERMAL CUTTING, OR SHEAR CUTTING PERMITTED EXCEPT FIELD CUTTING PER ACI 440.5) (OR AS APPROVED BY THE EOR)

g.5. COLOR = GRAY

g.6. INSTALLED VERTICAL ALIGNMENT TOLERANCE = ¼ PER FOOT

g.7. PROJECTION ABOVE MUDLINE = 6' (TOP OF CAP) (SEE SEAWALL MATRIX)

g.8. EMBEDMENT BELOW MUDLINE = 50% PENETRATION OF PANEL (OR AS APPROVED BY THE EOR)

g.9. IF LIMESTONE ROCK IS ENCOUNTERED PRIOR TO FULL EMBEDMENT DEPTH, EMBED PRECAST CONCRETE SEAWALL PANEL 2' INTO LIMESTONE ROCK AFTER EXCAVATING LIMESTONE ROCK TO FORM A KEYWAY FOR NEW PRECAST CONCRETE SEAWALL PANEL. IF LIMESTONE ROCK IS LESS THAN 2' THICK, PANEL MUST BE ADVANCED DOWN TO FULL 50% PENETRATION.

g.10. ALTERNATE PINNING IN ROCK MAY BE ALLOWED AS FOLLOWS. LIMESTONE ROCK MUST BE EXCAVATED TO FORM A 1' KEYWAY AND BE LEVEL ACROSS BOTTOM OF EACH 5' PRECAST PANEL TO WITHIN ± 3". DRILL 2 ¼" ø HOLES x 3'–0" DEEP VERTICALLY INTO ROCK TIGHT AGAINST BASE OF PANEL, SET 1'–0" IN FROM EACH SIDE OF PANEL. PLACE #18 CARBON STEEL ASTM A615, GRADE 60, REBAR x 5'–0" MIN INTO HOLES AND HAMMER TIGHT FULLY DOWN INTO PRE–DRILLED HOLES (2 REBAR PINS PER 5' PANEL). REBAR PINS SHALL NOT EXTEND ABOVE MEAN LOWER LOW WATER LEVEL (MLLW).

g.11. SEAWALL ELEVATION OPTIONS PER SEAWALL MATRIX. IN CASES WHERE NEW SEAWALL ELEVATION IS HIGHER AT PROPERTY LINE, NEW SEAWALL ENDS SHALL BE LEVEL WITH A SITE SPECIFIC DESIGN RETURN.

g.12. WORK TO BE PERFORMED IN ACCORDANCE WITH ARMY CORPS OF ENGINEERS (ACOE) PERMITTING GUIDELINES.

4. CONSTRUCTION IS TO CONFORM TO CURRENT FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. FDOT SPECS APPLY WHERE REFERENCE IS MADE TO A SPECIFIC LOCATION.

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PRESERVATION OF ALL CONSTRUCTION STAKES UNTIL THE SEAWALL IS INSTALLED AND APPROVED.

6. CONCRETE IS TO HAVE THE FOLLOWING MINIMUM COMPRESSIVE STRENGTHS AT 28 DAYS AND COMPLY WITH FDOT SPECIFICATION PORTLAND CEMENT CONCRETE:

   a. SEAWALL PANEL = 5,000 psi (TYPE II CEMENT, CLASS III CONCRETE)

   b. SEAWALL CAP = 5,000 psi (TYPE II CEMENT, CLASS III CONCRETE)

   c. DEADMAN = 5,000 psi (TYPE II CEMENT, CLASS III CONCRETE)

7. REINFORCING STEEL SHALL BE AS FOLLOWS AND SHALL BE PLACED IN ACCORDANCE WITH FDOT SPECIFICATION REINFORCING STEEL.

   a. SEAWALL PANEL: LOW–CARBON CHROMIUM STEEL REBAR ASTM A1035 CS, GRADE 100 (DO NOT WELD OR FIELD BEND), –OR– GLASS FIBER REINFORCED POLYMER (GFRP) REBAR ASTM D578 (NO FIELD FABRICATION, BENDING, COUPLING, THERMAL CUTTING, OR SHEAR CUTTING PERMITTED EXCEPT FIELD CUTTING PER ACI 440.5). (OR AS APPROVED BY THE EOR)

   b. SEAWALL PANEL LIFTING RINGS: LOW–CARBON CHROMIUM STEEL REBAR ASTM A1035 CS, GRADE 100 (DO NOT WELD OR FIELD BEND), –OR– STAINLESS STEEL REBAR ASTM A995, GRADE 60. (OR AS APPROVED BY THE EOR)

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11–03–2021		PRECAST CONCRETE SEAWALL GENERAL NOTES	H-1B
		REVISIONS:	

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c. SEAWALL CAP AND DEADMAN: LOW–CARBON CHROMIUM STEEL REBAR ASTM A1035 CS, GRADE 100 (DO NOT WELD OR FIELD BEND), –OR– GLASS FIBER REINFORCED POLYMER (GFRP) REBAR (ASTM D578) (OR AS APPROVED BY THE EOR).

d. TIE–RODS: LOW–CARBON CHROMIUM STEEL REBAR ASTM A1035 CS, GRADE 100 (DO NOT WELD OR FIELD BEND), –OR– STAINLESS STEEL REBAR ASTM A995, GRADE 60, –OR– STAINLESS STEEL THREADED ROD 316 L (UNS S31603). (OR AS APPROVED BY THE EOR)

e. TIE REINFORCING USING PLASTIC, POLYMER, OR NYLON COATED PLIABLE STEEL WIRE THAT READILY BENDS AND TWISTS WITHOUT BREAKING.

8. ALL EXPOSED SURFACES SHALL HAVE A CLASS 3 FINISH IN ACCORDANCE WITH FDOT SPECIFICATION FINISHING CONCRETE. ALL UNEXPOSED SURFACES ARE TO BE FREE OF HONEYCOMBING AND MAJOR IMPERFECTIONS.

9. BACK FILL BELOW TIE–RODS SHALL BE HAND–COMPACTED TO PROVIDE FULL SUPPORT OF THE TIE–RODS TO PREVENT BENDING OR FRACTURING DURING COMPACTION. BACK FILL IS TO BE COMPACTED TO A STABLE DENSITY SUCH THAT NO APPRECIABLE SETTLEMENT OCCURS AFTER COMPLETION OF WALLS.

10. THE DEAD MAN ANCHORS ARE TO BE CONSTRUCTED BY PLACING CONCRETE INTO THE SPECIFIED SIZE HOLE EXCAVATED IN UNDISTURBED GROUND. ALTERNATIVELY, ENGINEERED SOIL ANCHOR SYSTEMS MAY BE CONSIDERED IF SITE–SPECIFIC ENGINEERED AND SUBMITTED FOR APPROVAL. ENGINEERED SOIL ANCHOR SYSTEMS MAY BE GALVANIZED STEEL SYSTEMS BEYOND 5' UPLAND OF THE SEAWALL. THE FIRST 5' OF TIE–ROD UPLAND OF THE SEAWALL SHALL BE REBAR TIE–ROD (WITH PVC SLEEVE) OR STAINLESS STEEL (NO SLEEVE REQUIRED). THREADED ROD TIE–RODS SHALL BE PROVIDED WITH SUBSTANTIAL ANCHORS IN SEAWALL CAP DESIGNED IN ACCORDANCE WITH ACI 318 (OR AS APPROVED BY THE EOR).

11. THE CANAL FACE OF THE SEAWALL SLABS IS TO BE PLACED ON THE PROPERTY LINE (+/– 6") UNLESS INSTRUCTED OTHERWISE BY PERMIT.

12. ROCK 6" NOMINAL DIAMETER AND LESS MAY BE LEFT IN BACKFILL. ALL OTHER ROCK IS TO BE REMOVED.

13. THE CONTRACTOR WILL BE RESPONSIBLE TO COMPLETE THE CONSTRUCTION OF THE SEAWALL IN ACCORDANCE WITH THE PERMIT CRITERIA.

14. THE CONTRACTOR WILL BE RESPONSIBLE TO PEG THE TOP ROW OF THE SOD AT TOP OF SLOPE WITH STANDARD SURVEY STAKES AT LEAST 12" LONG SPACED 24" APART.

15. CONTRACTOR TO SEED ALL DISTURBED AREAS UNLESS A BUILDING PERMIT IS POSTED ON SITE.

16. ALL JOB SITES SHALL HAVE SEAWALL PERMITS POSTED ON AN APPROVED PERMIT BOARD WITH RAIN SHIELD PRIOR TO BEGINNING ANY CONSTRUCTION.

17. THE CONTRACTOR SHALL BE RESPONSIBLE TO INSTALL APPROVED TURBIDITY SCREENS IN PLACE DURING ANY AND ALL CLEARING, EXCAVATING, JETTING, AND BACK FILLING OPERATIONS WHICH TOTALLY ENCLOSES THE CONSTRUCTION SITE. SCREENS ARE TO REMAIN IN PLACE 24 HOURS MINIMUM AFTER CONSTRUCTION CEASES OR UNTIL TURBIDITY LEVEL IS 20 OR LESS NTU ABOVE THE PRE–CONSTRUCTION TURBIDITY LEVEL. SCREENS MUST EXTEND FROM THE WATER SURFACES TO THE BOTTOM AND BE ADEQUATELY WEIGHTED TO KEEP THEM IN PLACE DURING ALL OPERATIONS. THERE SHALL BE ADEQUATE FLOATATION AT THE SURFACE TO PREVENT OVERFLOW. THIS FLOATATION MUST BE BRIGHTLY COLORED TO MAXIMIZE VISIBILITY.

18. ANY LOOSE DIRT OR STOCK PILES SHALL BE SURROUNDED BY SILT SCREENS AND MAINTAINED IN GOOD WORKING ORDER (AT THE EDGE OF THE TOE OF THE SLOPE) TO PREVENT RUNOFF INTO CANAL.

19. CULVERT PIPE WHERE APPLICABLE SHALL NOT PROJECT MORE THAN 6" FROM THE WATER–FACE OF THE SEAWALL OR AS APPROVED BY THE CITY.

20. REFER TO THE FDOT SPECIFICATION ON EROSION CONTROL FOR PROTECTION OF SLOPES.

ADOPTED BY CITY COUNCIL		TITLE	SHEET NO.
11–03–2021	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	PRECAST CONCRETE SEAWALL GENERAL NOTES	H-1C
		REVISIONS:	

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TABLE 1

RIVER SEAWALL MATRIX

ENGINEERING DESIGN STANDARDS (EDS)

Seawall System			Seawall Construction	Seawall Height Increases Allowed (Inches)		
				24	12	Match
1	New or Replacement	Precast Concrete Panels & Cast-In-Place Concrete in Flat Vinyl Forms	New house - New seawall construction	M		
			Existing house - Replacement of existing seawall - full property	M		V
			Existing house - Replacement of existing seawall - partial property			X
2	Repair in front of existing seawall	Cast-In-Place Concrete in Flat Vinyl Forms or Corrugated Vinyl Sheeting	Existing house - Repair in front of existing seawall - full property	M	V	V
			Existing house - Repair in front of existing seawall - partial property			X

M = Mandatory

V = Variance

X = Allowed

TABLE 2

SALTWATER CANAL SEAWALL MATRIX

ENGINEERING DESIGN STANDARDS (EDS)

Seawall System			Seawall Construction	Seawall Height Increases Allowed (Inches)		
				24	12	Match
1	New or Replacement	Precast Concrete Panels & Cast-In-Place Concrete in Flat Vinyl Forms	New house - New seawall construction	X		X
			Existing house - Replacement of existing seawall - full property	X		X
			Existing house - Replacement of existing seawall - partial property			X
2	Repair in front of existing seawall	Cast-In-Place Concrete in Flat Vinyl Forms or Corrugated Vinyl Sheeting	Existing house - Repair in front of existing seawall - full property		X	X
			Existing house - Repair in front of existing seawall - partial property			X

X – ALLOWED

NOTES:

1. FRESH WATER CANALS – MATCH EXISTING SEAWALL ELEVATIONS.
2. SEAWALL CAPS WHICH ARE RAISED 24" ABOVE ORIGINAL SEAWALL CAP ELEVATION, CONCRETE RETURNS SHALL BE CONSTRUCTED JUST INSIDE OF EACH PROPERTY LINE EXTENDING A MINIMUM OF 5 FEET FROM THE LANDWARD EDGE OF THE REINFORCED CONCRETE SEAWALL CAP, AT AN ANGLE OF 90 DEGREES FROM THE CAP. RETURNS AND CAPS SHALL BE CONSTRUCTED IN A NEAT AND WORKMANLIKE MANNER WHICH RETAINS ALL MATERIALS FROM WASHING AWAY INTO ADJOINING PROPERTIES AND WATERWAYS. RETURNS AND CAPS SHALL HAVE A UNIFORM, SOLID, AND CONTINUOUS EXTERIOR APPEARANCE WHEN VIEWED FROM THE ADJOINING PROPERTIES AND WATERWAYS.
3. FINISHED TOP SURFACE ELEVATION OF NEW OR REPAIRED SEAWALL CAPS AND RETURNS SHALL BE LEVEL AND ELEVATED 24" ABOVE ORIGINAL CAP ELEVATION FOR NEW AND 12" ABOVE THE ORIGINAL CAP ELEVATION FOR A REPAIR.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11–03–2021		PRECAST CONCRETE SEAWALL GENERAL NOTES	H-1C-A
		REVISIONS:	

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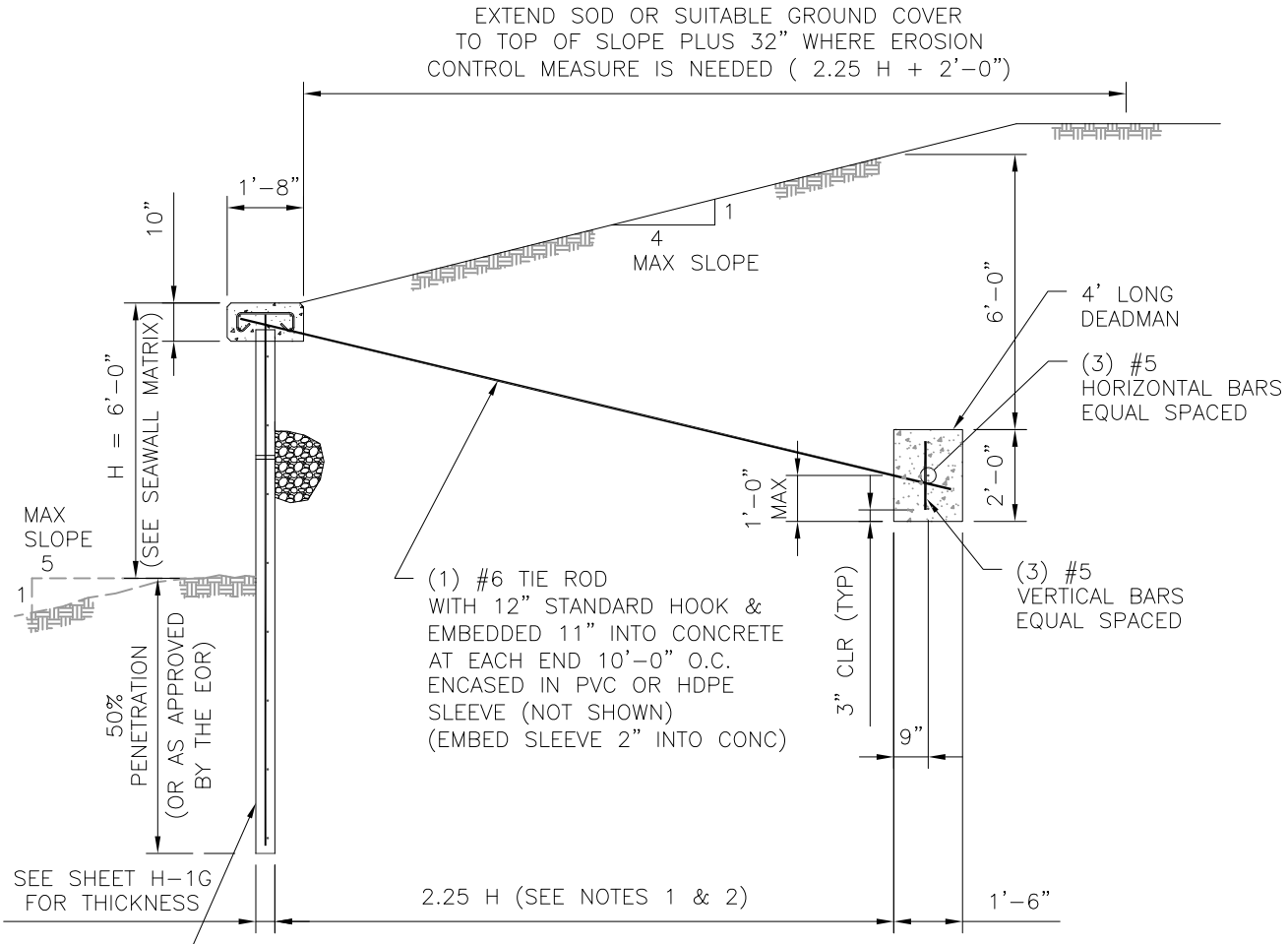

NOTES:

1. ALTERNATE TIE–ROD (STAINLESS STEEL) AND SOIL ANCHOR SYSTEMS MAY BE CONSIDERED IF ENGINEERED FOR A HORIZONTAL COMPONENT WORKING LOAD OF 1030 PLF (SPACED AT 10'–0" O.C.) AND EMBEDDED 2.25 H BEHIND SEAWALL.
2. ANCHORS EMBEDDED BEHIND SEAWALL MUST BE SITE–SPECIFIC ENGINEERED.

PRECAST CONCRETE SEAWALL ELEVATION

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11–03–2021		PRECAST CONCRETE SEAWALL TYPICAL ELEVATION	H-1D
		REVISIONS:	

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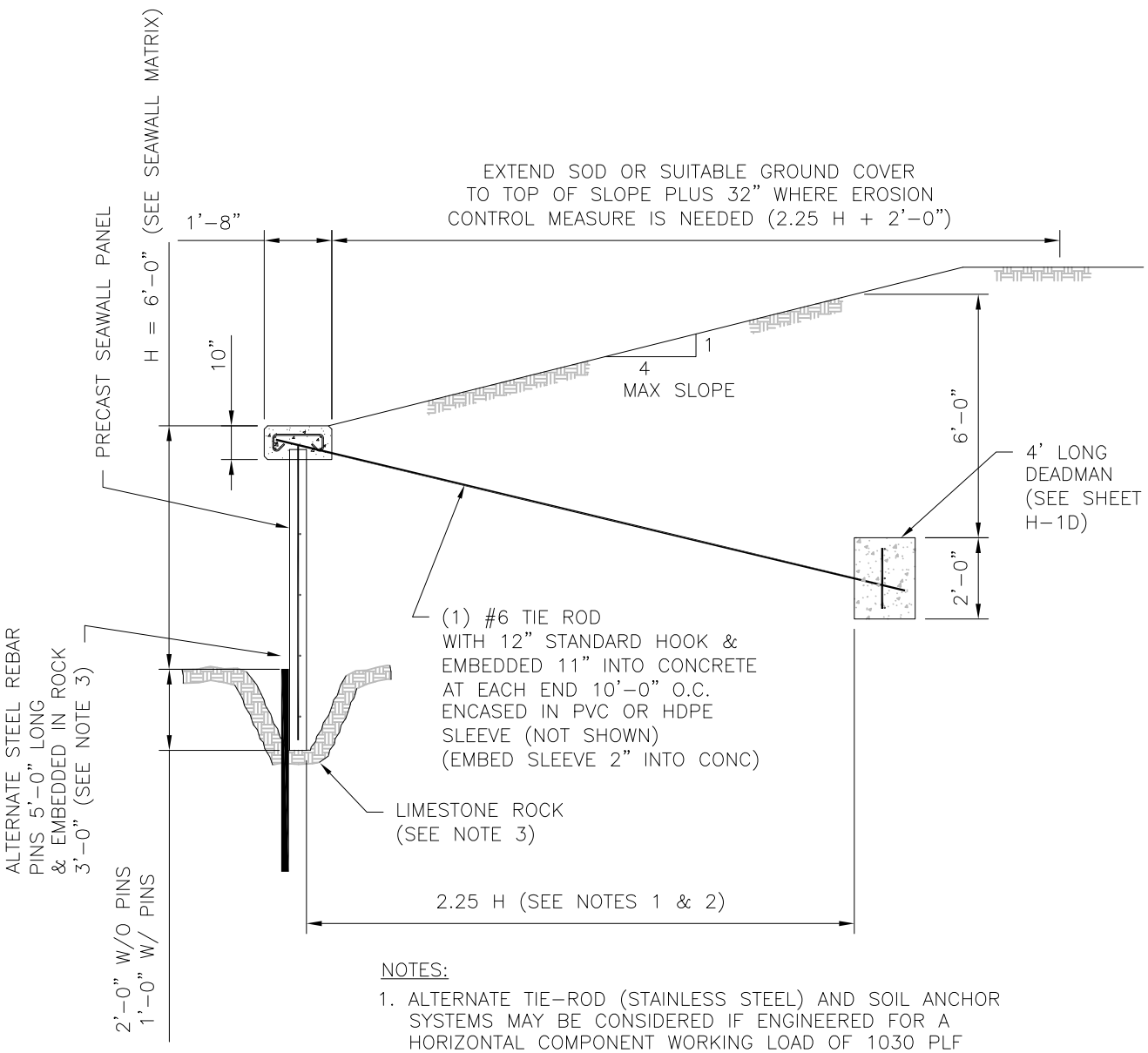

NOTES:

1. ALTERNATE TIE-ROD (STAINLESS STEEL) AND SOIL ANCHOR SYSTEMS MAY BE CONSIDERED IF ENGINEERED FOR A HORIZONTAL COMPONENT WORKING LOAD OF 1030 PLF (SPACED AT 10'-0" O.C.) AND EMBEDDED 2.25 H BEHIND SEAWALL.
2. ANCHORS EMBEDDED BEHIND SEAWALL MUST BE SITE-SPECIFIC ENGINEERED.
3. REFERENCE PRECAST SEAWALL GENERAL NOTES 3.g.9 & 3.g.10.

PRECAST CONCRETE SEAWALL EMBEDDED IN ROCK DETAIL

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11-03-2021		PRECAST CONCRETE SEAWALL TYPICAL DETAIL	H-1E
		REVISIONS:	

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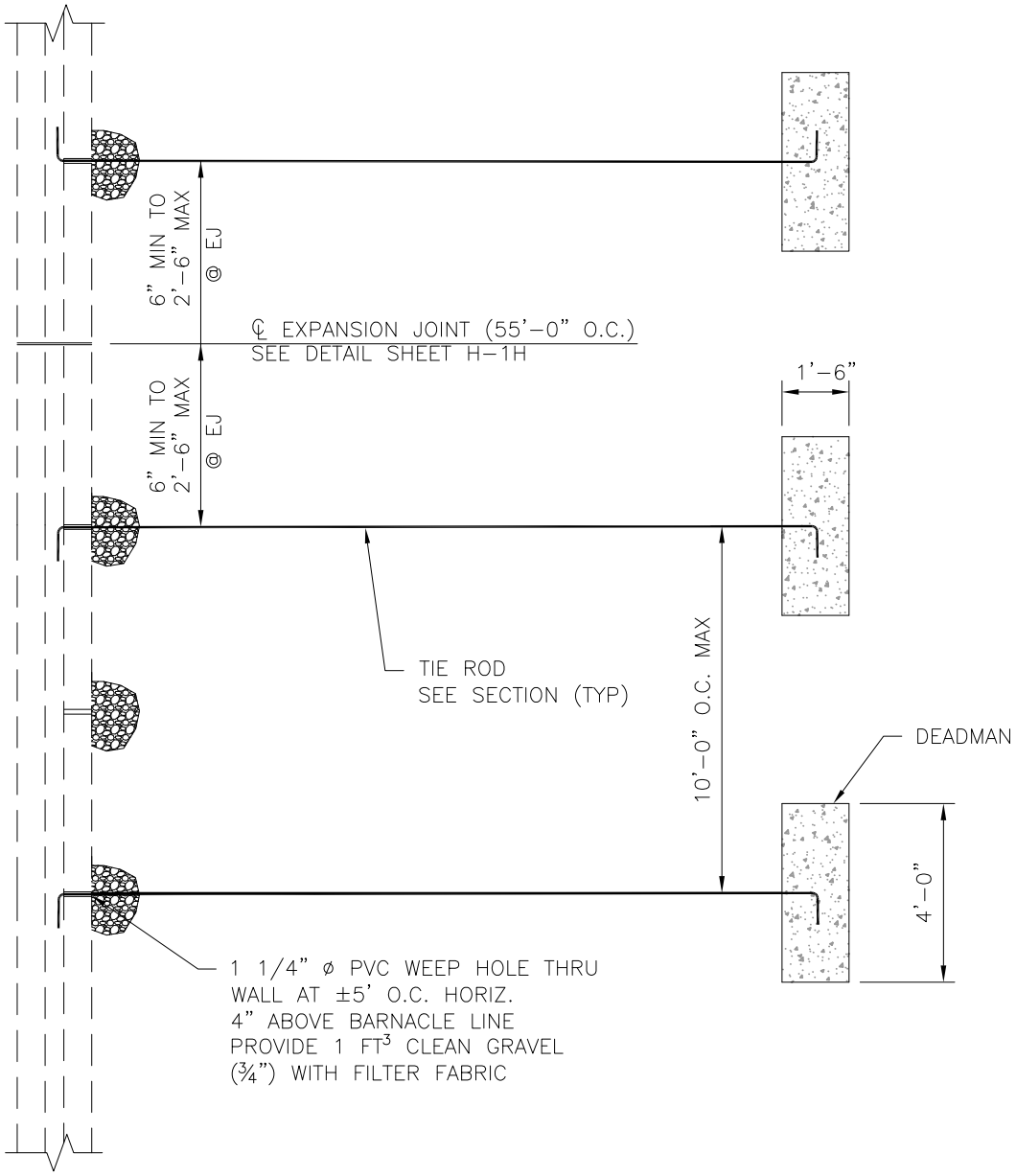

PRECAST CONCRETE SEAWALL PLAN

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11-03-2021		PRECAST CONCRETE SEAWALL TYPICAL PLAN	H-1F
		REVISIONS:	

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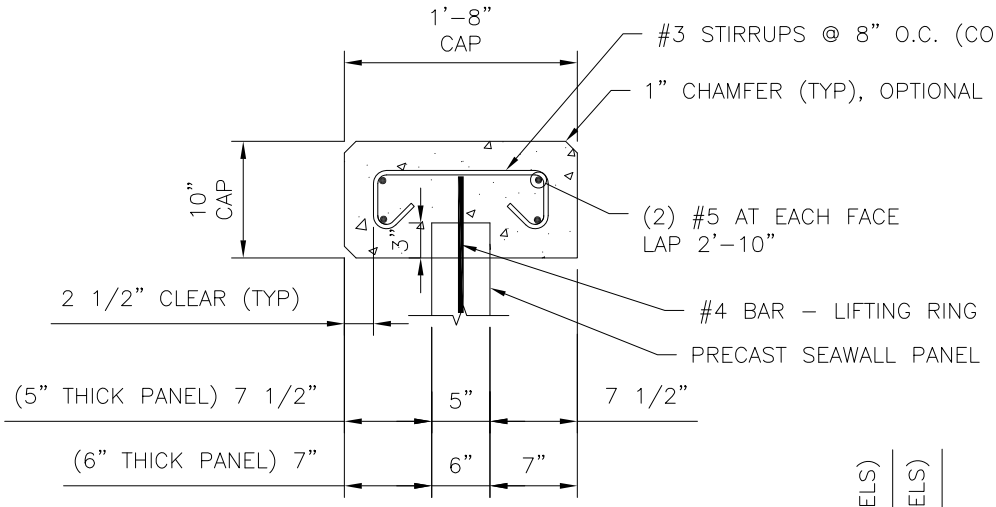
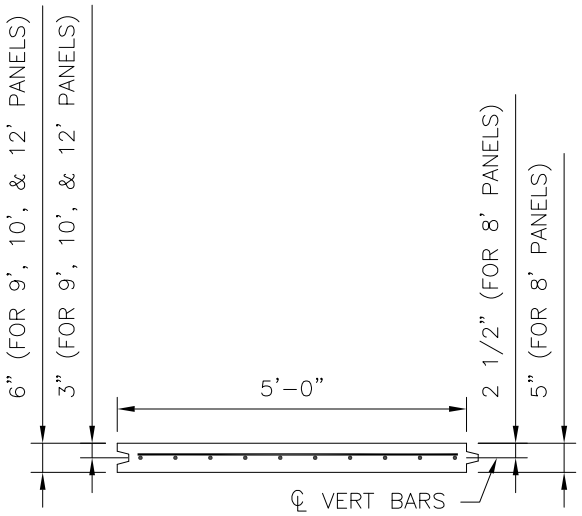


CAP DETAIL



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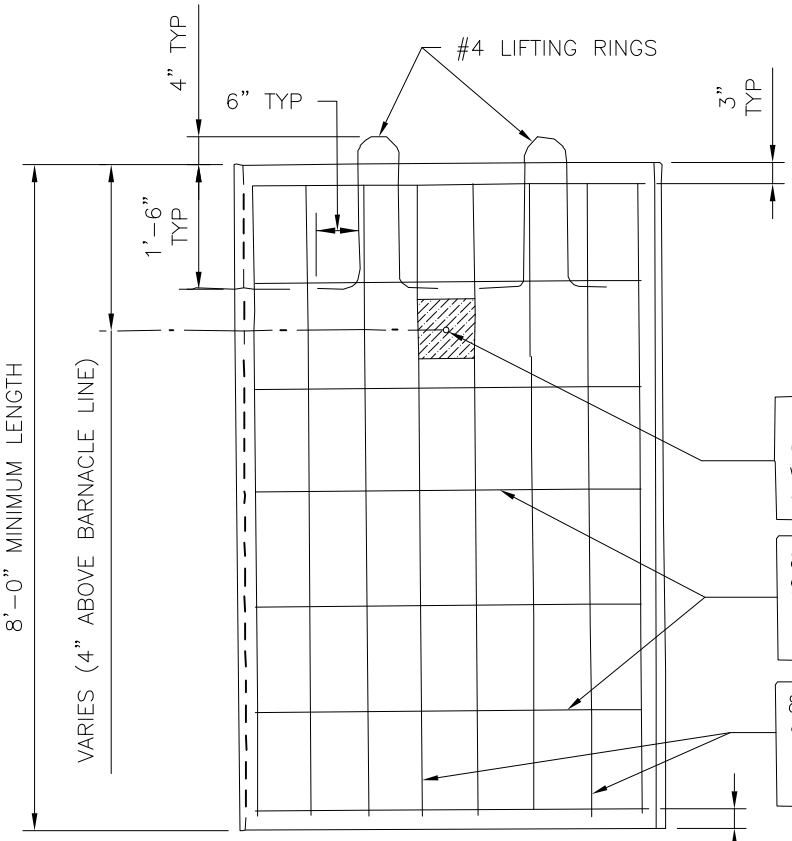

1 1/4" DIA. WEEP HOLE W/9" SQ. CARTHAGE 6% PATCH ATTACHED W/BITUMASTIC MAT'L. (SLABS W/GROUTED JOINTS ONLY)

8' PANELS: #3 AT 24" O.C. (5-REQ'D.)
9' PANELS: #3 AT 24" O.C. (6-REQ'D.)
10' PANELS #3 AT 24" O.C. (6-REQ'D.)
12' PANELS #3 AT 24" O.C. (7-REQ'D.)

8' PANELS: #3 AT 4 1/2" O.C. (12 REQ'D.)
9' PANELS: #3 AT 4 1/2" O.C. (12 REQ'D.)
10' PANELS #4 AT 6" O.C. (10 REQ'D.)
12' PANELS #4 AT 6" O.C. (10 REQ'D.)

(OR AS APPROVED BY THE EOR)

SEAWALL PANEL DETAIL

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11-03-2021		PRECAST CONCRETE SEAWALL TYPICAL DETAILS	H-1G
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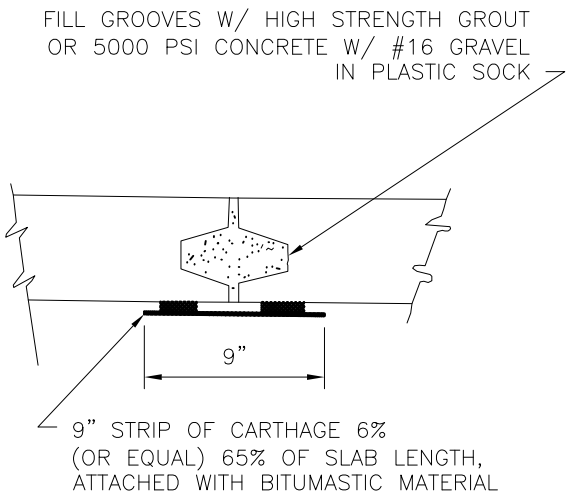
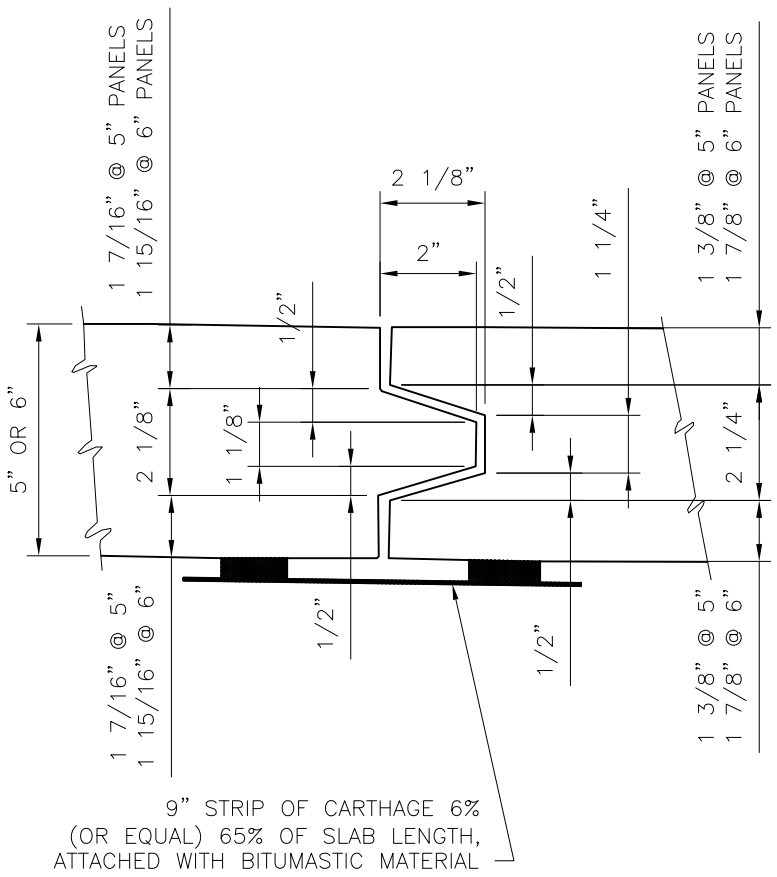
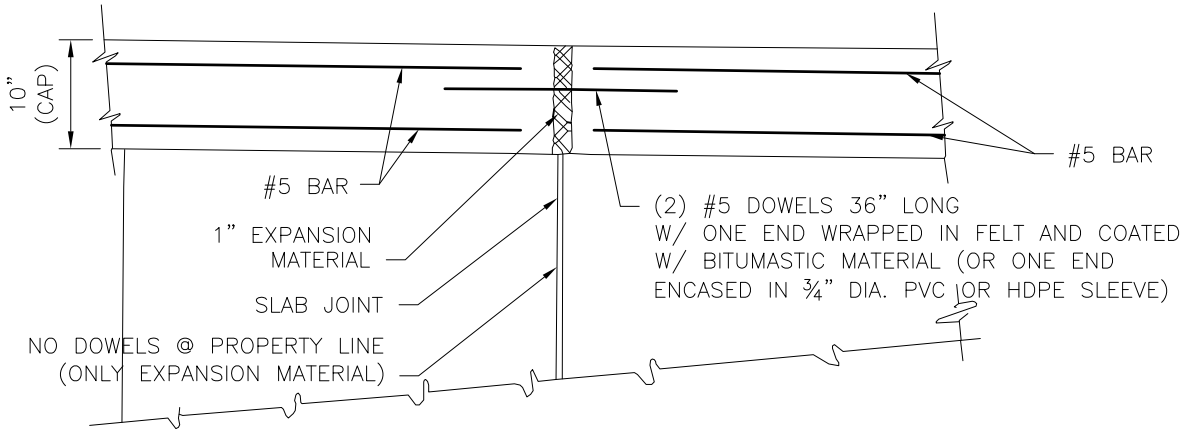


ALTERNATE PANEL JOINT DETAIL



PANEL JOINT DETAIL



EXPANSION JOINT DETAIL

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11–03–2021		PRECAST CONCRETE SEAWALL TYPICAL DETAILS	H-1H
		REVISIONS:	

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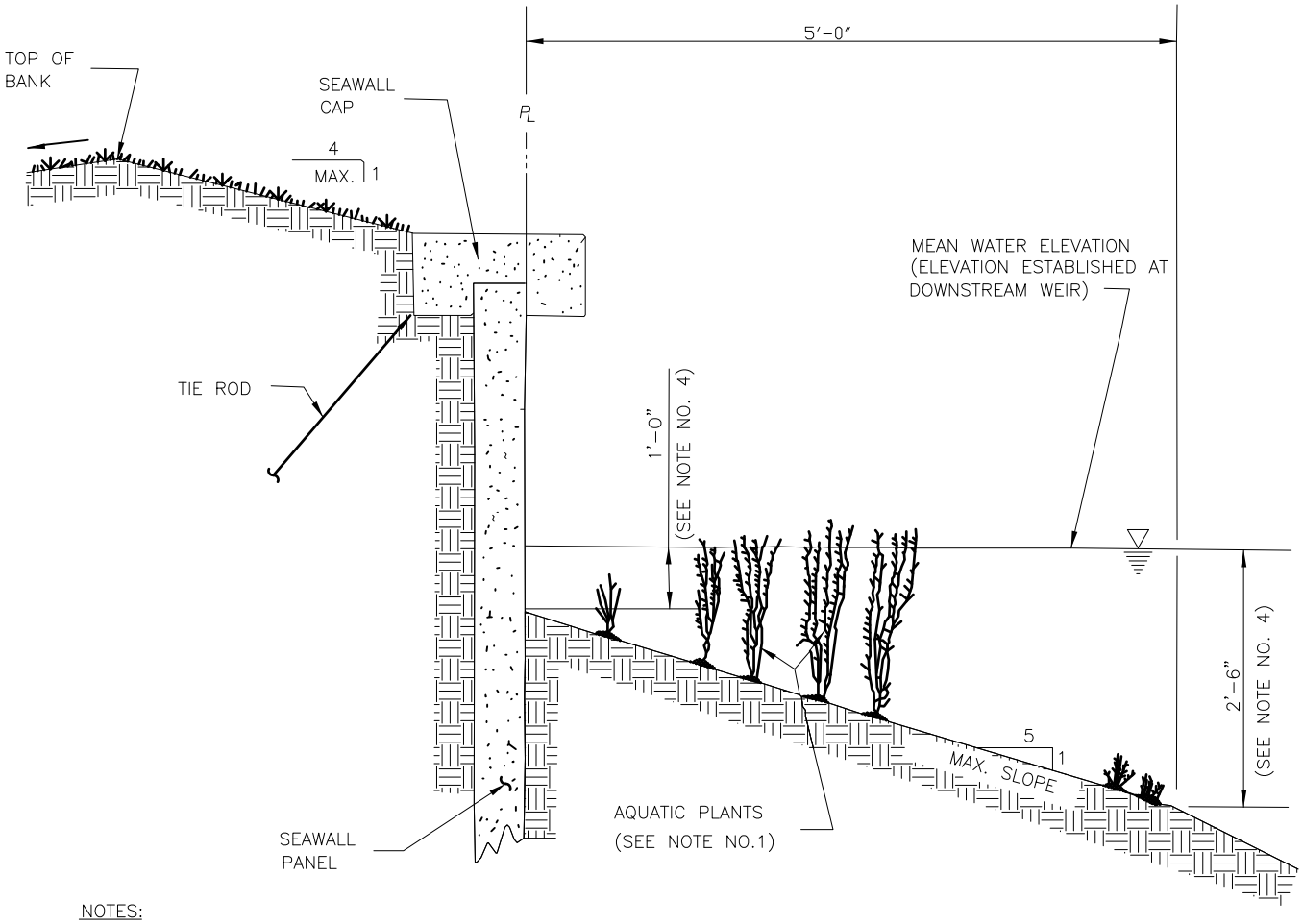

NOTES:

1. THE PLANTING OF EMERGENT AQUATIC PLANTS FOR LANDSCAPING IS OPTIONAL. (ONLY APPROVED VEGETATION WILL BE PERMITTED.)
2. VARIATIONS TO THIS STANDARD MUST BE APPROVED BY THE CITY PUBLIC WORKS DEPARTMENT.
3. CAP ELEVATION TO MATCH EXISTING SEAWALL CAPS OR MATCH EXISTING DOWNSTREAM WEIR WINGWALL CAP ELEVATION.
4. TOLERANCE FOR WATER DEPTH AT SEAWALL AND AT 5'-0" FROM PROPERTY LINE SHALL BE +/- 6".
5. IN CASES WHERE ELEVATIONS OF EXISTING SEAWALL CAP DIFFERS WITH THE NEW SEAWALL CAP, ELEVATION OF THE NEW CAP SLOPE SHOULD NOT EXCEED 10%.

PRECAST SEAWALL FRESHWATER CANAL

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11-03-2021		PRECAST CONCRETE SEAWALL FRESHWATER CANAL TYPICAL DETAIL	H-11
		REVISIONS:	

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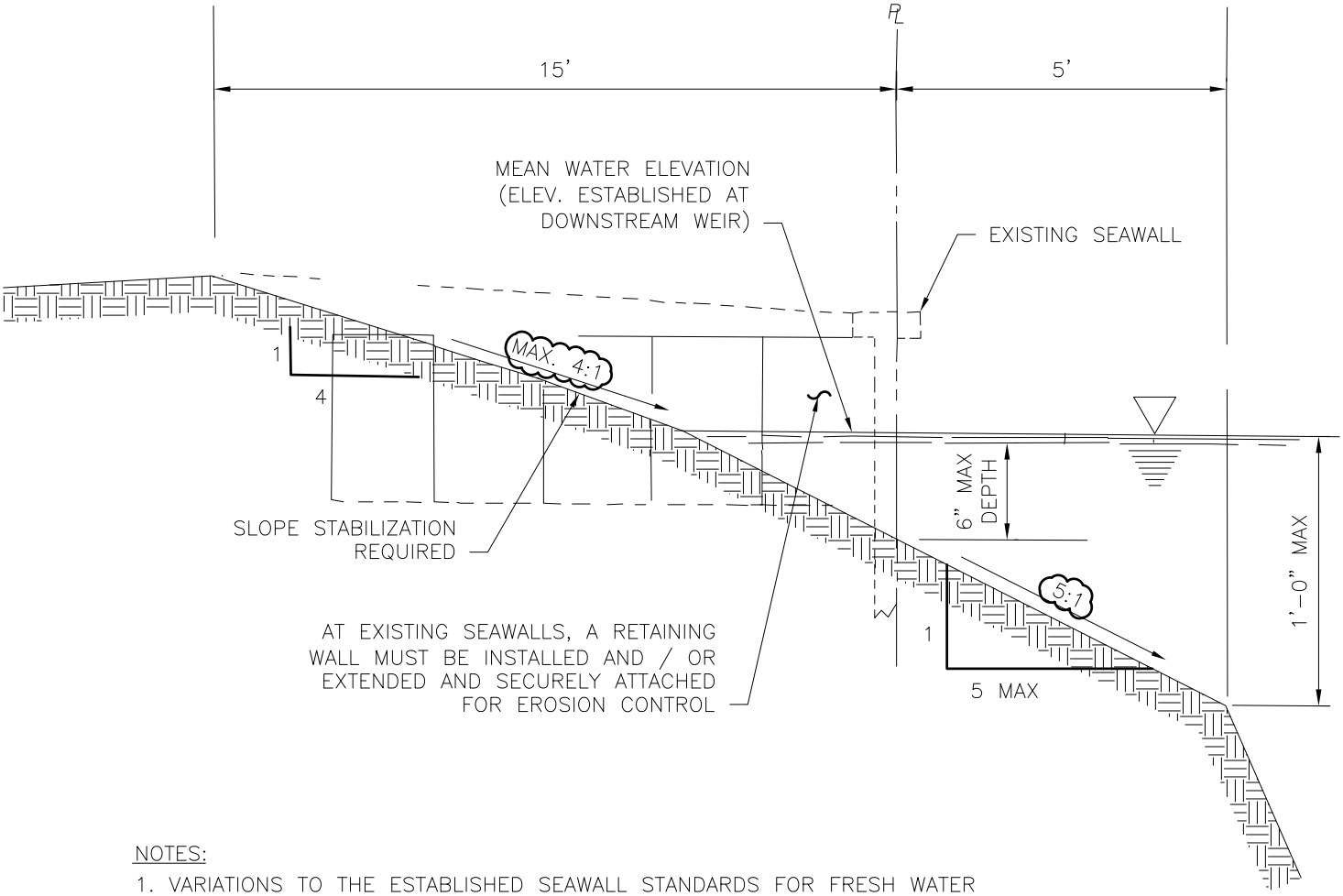

NOTES:

1. VARIATIONS TO THE ESTABLISHED SEAWALL STANDARDS FOR FRESH WATER SYSTEMS MAY BE CONSIDERED BY THE CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT.

2. THE FOLLOWING MINIMUM DESIGN CRITERIA MUST BE INCORPORATED INTO THE PROPOSED DESIGN.

   A. MAXIMUM ALLOWABLE SLOPE TO WATERLINE IS 1:4 (V:H).

   B. SLOPE TO BE STABILIZED WITH APPROVED MATERIALS / METHODS FOR EROSION CONTROL.

   C. MAXIMUM WATER DEPTH AT PROPERTY LINE IS TO BE 6 INCHES.

   D. TERRACING MAY BE USED TO ESTABLISH PROPER SLOPES.

   E. ADJACENT SLOPE MUST BE GRADED SUCH THAT NO GREATER THAN 4:1 SLOPE EXISTS WHEN FINISHED GRADING.

   F. ALL PLANS MUST BE SEALED BY A PROFESSIONAL ENGINEER, REGISTERED IN FLORIDA WITH STRUCTURAL EXPERIENCE.

VERTICAL BULKHEAD ALTERNATE 1

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11–03–2021		SEAWALLS - FRESHWATER CANAL ALTERNATE 1 TYPICAL DETAIL	H-1J
		REVISIONS:	

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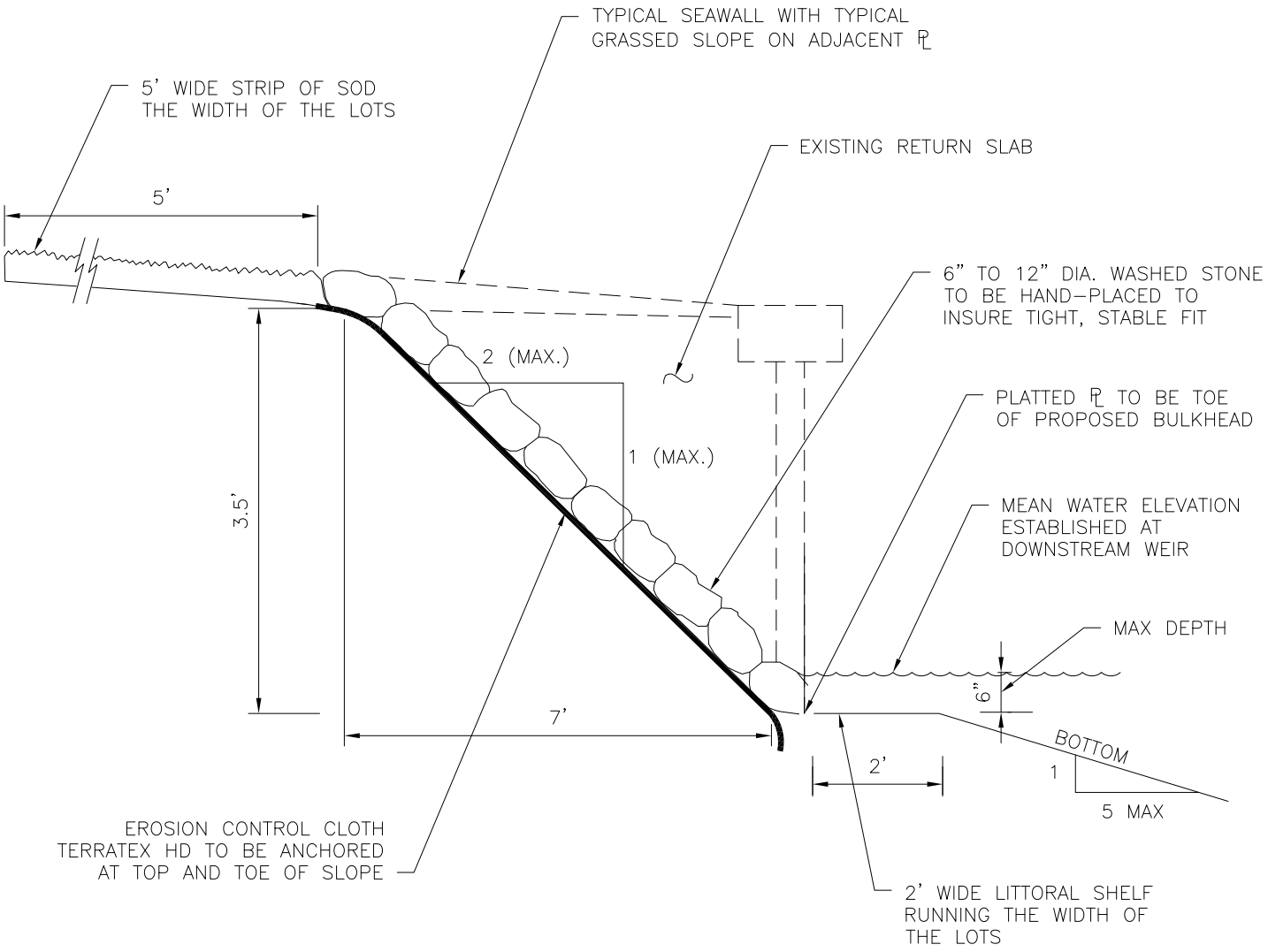

VERTICAL BULKHEAD ALTERNATE 2

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11-03-2021		SEAWALLS - FRESHWATER CANAL ALTERNATE 2 TYPICAL DETAIL	H-1K
		REVISIONS:	

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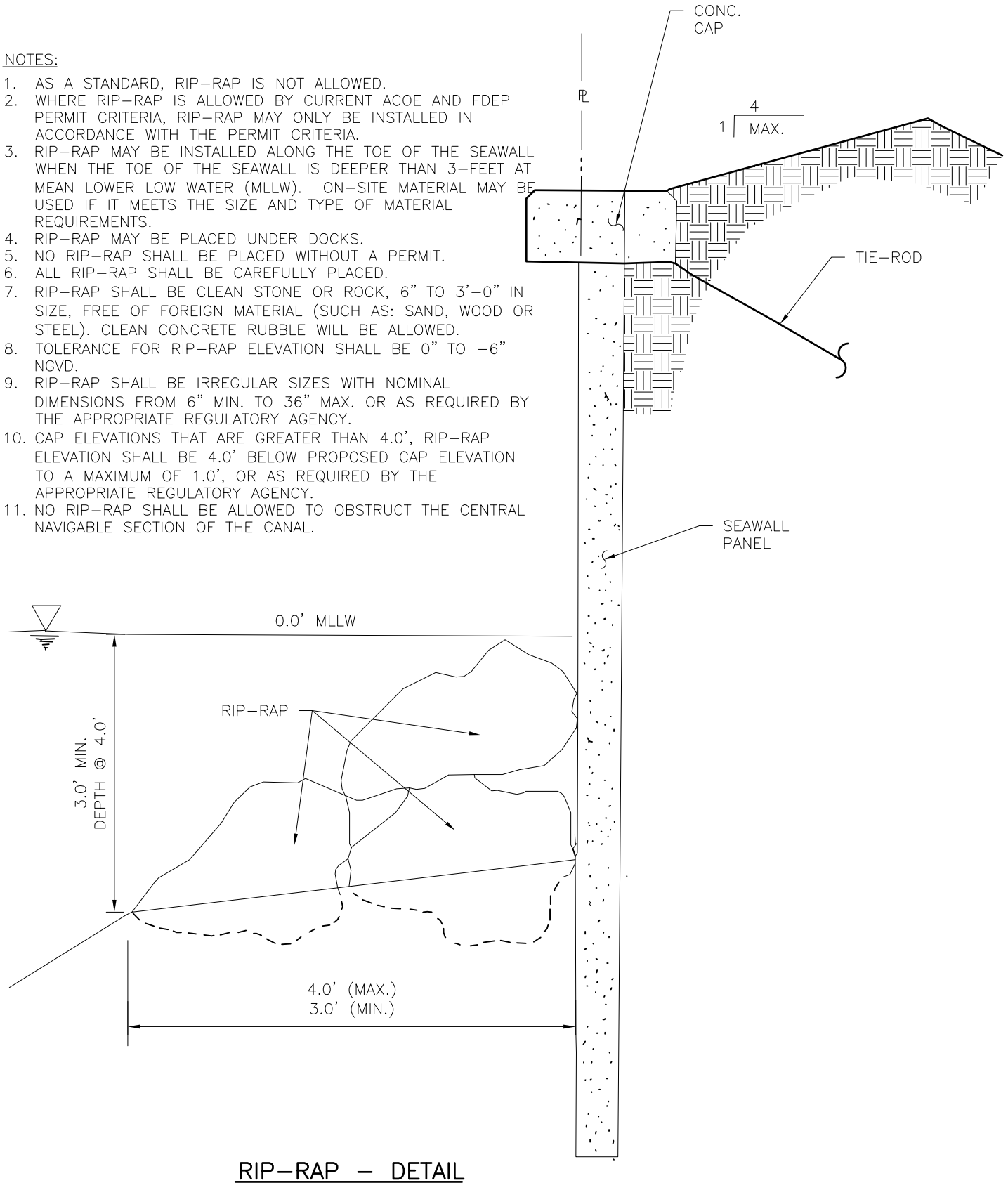
NOTES:

1. AS A STANDARD, RIP–RAP IS NOT ALLOWED.
2. WHERE RIP–RAP IS ALLOWED BY CURRENT ACOE AND FDEP PERMIT CRITERIA, RIP–RAP MAY ONLY BE INSTALLED IN ACCORDANCE WITH THE PERMIT CRITERIA.
3. RIP–RAP MAY BE INSTALLED ALONG THE TOE OF THE SEAWALL WHEN THE TOE OF THE SEAWALL IS DEEPER THAN 3–FEET AT MEAN LOWER LOW WATER (MLLW). ON–SITE MATERIAL MAY BE USED IF IT MEETS THE SIZE AND TYPE OF MATERIAL REQUIREMENTS.
4. RIP–RAP MAY BE PLACED UNDER DOCKS.
5. NO RIP–RAP SHALL BE PLACED WITHOUT A PERMIT.
6. ALL RIP–RAP SHALL BE CAREFULLY PLACED.
7. RIP–RAP SHALL BE CLEAN STONE OR ROCK, 6" TO 3'–0" IN SIZE, FREE OF FOREIGN MATERIAL (SUCH AS: SAND, WOOD OR STEEL). CLEAN CONCRETE RUBBLE WILL BE ALLOWED.
8. TOLERANCE FOR RIP–RAP ELEVATION SHALL BE 0" TO –6" NGVD.
9. RIP–RAP SHALL BE IRREGULAR SIZES WITH NOMINAL DIMENSIONS FROM 6" MIN. TO 36" MAX. OR AS REQUIRED BY THE APPROPRIATE REGULATORY AGENCY.
10. CAP ELEVATIONS THAT ARE GREATER THAN 4.0', RIP–RAP ELEVATION SHALL BE 4.0' BELOW PROPOSED CAP ELEVATION TO A MAXIMUM OF 1.0', OR AS REQUIRED BY THE APPROPRIATE REGULATORY AGENCY.
11. NO RIP–RAP SHALL BE ALLOWED TO OBSTRUCT THE CENTRAL NAVIGABLE SECTION OF THE CANAL.



RIP–RAP – DETAIL

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11–03–2021		PRECAST CONCRETE SEAWALL - RIP-RAP TYPICAL DETAIL	H-1L
		REVISIONS:	

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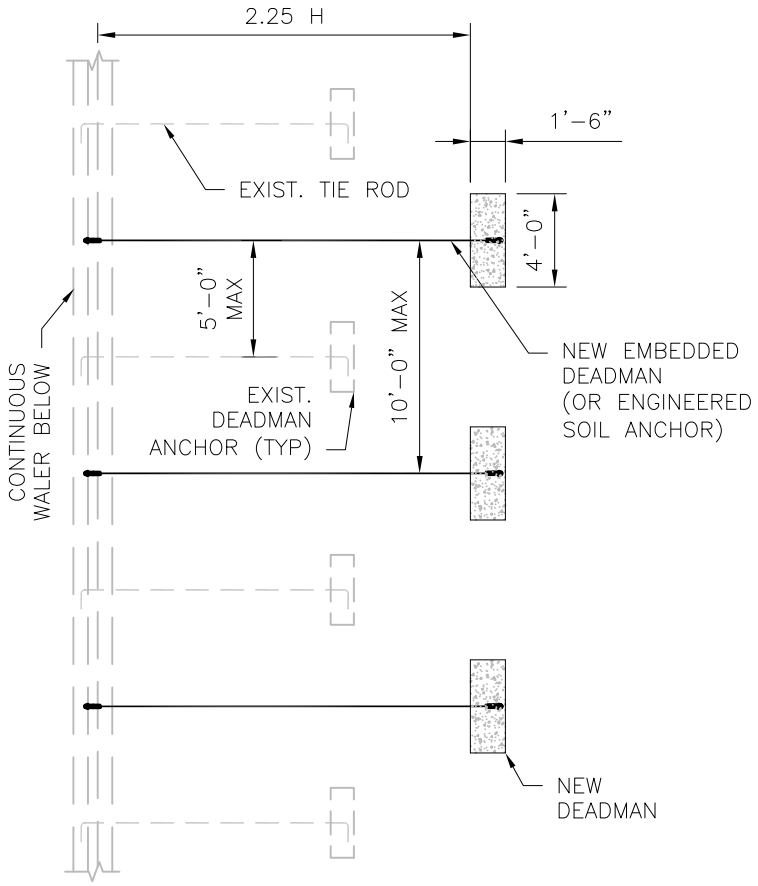
NOTES:

1. WALER AND TIE RODS MUST BE ENGINEERED TO ACCOMMODATE SITE CONDITIONS.

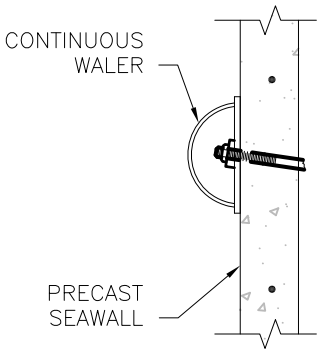
2. CONTRACTOR TO OBTAIN APPROVAL FROM PUBLIC WORKS DEPT. BEFORE CONSTRUCTING.

3. ALLOWABLE WALER MATERIALS: STAINLESS STEEL, ALUMINUM, STRUCTURAL PLASTIC.

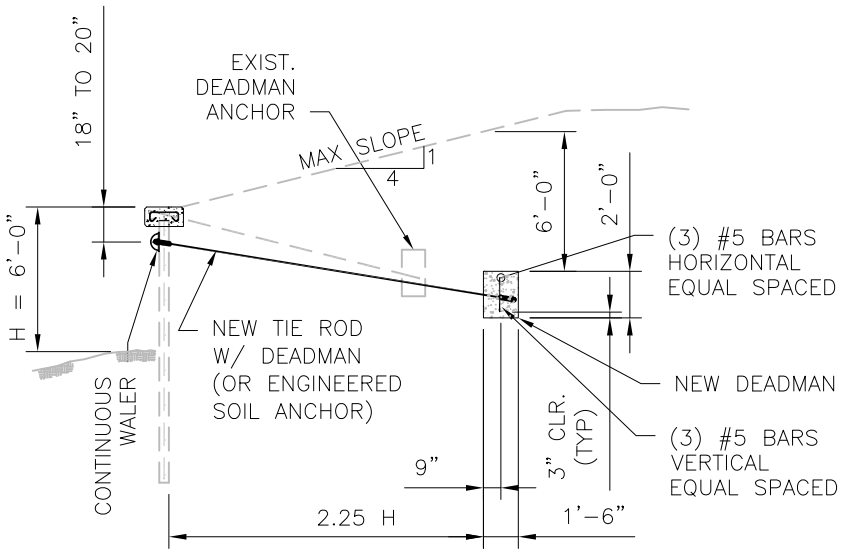
4. HORIZONTAL COMPONENT WORKING LOAD OF WALER = 1030 PLF.



TIE–BACK PLAN



WALER DETAIL



TIE–BACK ELEVATION

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11–03–2021		PRECAST CONCRETE SEAWALL TIE-BACK FOR SPECIAL CONDITIONS TYPICAL DETAILS	H-1M
		REVISIONS:	

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FLAT VINYL WITH CAST–IN–PLACE CONC. SEAWALL GENERAL NOTES

1. THESE SPECIFICATIONS SHOW TYPICAL DETAILS FOR FLAT VINYL FORMS WITH CAST–IN–PLACE CONCRETE SEAWALLS WHICH ARE TO BE CONSTRUCTED IN THE CITY OF CAPE CORAL. INDIVIDUAL SEAWALL DESIGN IS THE RESPONSIBILITY OF THE PERMITEE AND MUST BE PERFORMED BY A FLORIDA REGISTERED PROFESSIONAL ENGINEER WHO SHALL BE THE ENGINEER OF RECORD FOR THE PROJECT. THESE SPECIFICATIONS ARE TYPICAL DETAILS ONLY AND ARE NOT INTENDED TO BE A FINAL SEAWALL DESIGN RELATING TO A SPECIFIC SITE.

2. THE ENGINEER OF RECORD (EOR) SHALL BE RESPONSIBLE FOR CERTIFYING THE FOLLOWING AS PART OF THE FINAL SEAWALL DESIGN:

   a. EOR OR THEIR REPRESENTATIVE VISITED THE PROJECT SITE, AND INCORPORATED ALL SITE–SPECIFIC CONDITIONS, METHOD OF CONSTRUCTION, AND LOADS INTO FINAL DESIGN.

   b. FINAL SEAWALL DESIGN CALCULATIONS AND CONSTRUCTION DOCUMENTS MUST BE SIGNED AND SEALED BY A FLORIDA REGISTERED PROFESSIONAL ENGINEER WITH STRUCTURAL EXPERIENCE.

   c. IN ADDITION TO FINAL SEAWALL DESIGN, THE EOR SHALL CERTIFY THAT THE FOLLOWING SEAWALL ELEMENTS WERE CONSTRUCTED IN ACCORDANCE WITH THEIR PLANS AND SPECIFICATIONS:

      c.1. ALIGNMENT OF SEAWALL

      c.2. PENETRATION OF SEAWALL INTO SEABED

      c.3. SEAWALL CAP REINFORCING AND PLACEMENT

      c.4. DEADMAN ANCHORS, REINFORCING, AND TIE–BACK PLACEMENT

3. SEAWALL DESIGN CRITERIA:

   a. THE FOLLOWING DESIGN CRITERIA IS APPLICABLE FOR A FLAT VINYL FORM WITH CAST–IN–PLACE CONCRETE SEAWALL PLACED IN FRONT OF AN EXISTING PRECAST CONCRETE SEAWALL (TO REMAIN IN PLACE) WITH A 7' EXPOSED HEIGHT ABOVE THE MUDLINE.

   b. DESIGN SPECIFICATIONS: DESIGN SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF FLORIDA BUILDING CODE RESIDENTIAL, ASCE/SEI 24 FLOOD RESISTANT DESIGN AND CONSTRUCTION, ASCE 7 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, ACI 318 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, AND U.S. ARMY CORPS OF ENGINEERS ENGINEERING AND DESIGN MANUAL EM 1110–2–2504 DESIGN OF SHEET PILE WALLS.

   c. EXISTING PRECAST CONCRETE SEAWALL MAY REMAIN IN PLACE SUBJECT TO THE FOLLOWING CRITERIA:

      c.1. EXISTING SEAWALL CAP MUST BE SOUND, WITHIN ORIGINAL VERTICAL ALIGNMENT (±½"), AND WITHIN ORIGINAL HORIZONTAL ALIGNMENT (WITH NO OUTWARD MOVEMENT IN TOWARDS THE CANAL).

      c.2. EXISTING PRECAST SEAWALL PANEL MUST HAVE LESS THAN 2" HORZONTAL MOVEMENT (LANDWARD) FROM ITS ORIGINAL PLUMB INSTALLATION. NO HORIZONTAL MOVEMENT (WATERWARD) IS ALLOWED.

      c.3. IF THE EXISTING PRECAST SEAWALL (TO REMAIN IN PLACE) DOES NOT MEET THE ABOVE CRITERIA, THE EXISTING PRECAST WALL MAY BE DEMOLISHED ENTIRELY AND A NEW FLAT VINYL FORM WITH CAST–IN–PLACE CONCRETE SEAWALL MAY BE INSTALLED IN THE ORIGINAL LOCATION MEETING THE BELOW SPECIFICATIONS.

   d. DESIGN LOAD COMBINATIONS: (OR AS APPROVED BY THE EOR)

      d.1. LOW TIDE CANAL WATER (WATERWARD OF WALL) AT 5.5' BELOW NEW SEAWALL CAP, PLUS WATER LEVEL LANDWARD OF WALL AT 3' BELOW NEW SEAWALL CAP, PLUS EARTH PRESSURE, PLUS 200 psf SURCHARGE LOAD.

      d.2. CANAL WATER (WATERWARD OF WALL) AT MUDLINE (7' MAXIMUM BELOW NEW SEAWALL CAP), PLUS WATER LEVEL LANDWARD OF WALL AT 3' BELOW NEW SEAWALL CAP, PLUS EARTH PRESSURE, AND NO SURCHARGE LOAD.

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11–03–2021		FLAT VINYL FORM SEAWALL GENERAL NOTES	H-2A
		REVISIONS:	

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e. SOIL ASSUMED AS LOOSE FINE SAND. ALTERNATE SOIL TYPES MAY BE CONSIDERED IF A SITE SPECIFIC GEOTECHNICAL SOILS ENGINEERING REPORT IS PERFORMED AND PROVIDED.

f. SEABED (WATERWARD OF WALL) SLOPING DOWN AND AWAY FROM WALL AT 1:5 (V:H) SLOPE MAXIMUM.

g. FINISHED GRADE (LANDWARD OF WALL) SLOPING UP AND AWAY FROM SEAWALL CAP AT 1:4 (V:H) SLOPE MAXIMUM.

h. FLAT VINYL FORM SHEETING:

h.1. DEPTH = 8" MAX

h.2. MODULUS OF ELASTICITY = 380,000 psi MIN

h.3. MOMENT OF INERTIA, I = 66 in^4/ft MIN

h.4. SECTION MODULUS, Z = 16.6 in^3/ft MIN

h.5. ALLOWABLE DESIGN STRESS = 3200 psi MIN

h.6. COLOR = GREY

h.7. INSTALLED VERTICAL ALIGNMENT TOLERANCE = ¼" per foot

h.8. PROJECTION ABOVE MUDLINE = 7' (TOP OF CAP) (SEE SEAWALL MATRIX)

h.9. EMBEDMENT BELOW MUDLINE = 50% PENETRATION OF PANEL (OR AS APPROVED BY THE EOR)

h.10. IF LIMESTONE ROCK IS ENCOUNTERED PRIOR TO FULL EMBEDMENT DEPTH, ALTERNATE PINNING IN ROCK MAY BE UTILIZED. IF LIMESTONE ROCK IS LESS THAN 2' THICK, PANEL MUST BE ADVANCED DOWN TO FULL 50% PENETRATION.

h.11. ALTERNATE PINNING IN ROCK MAY BE ALLOWED AS FOLLOWS. DRILL 1" ø HOLES x 3'–0" DEEP VERTICALLY INTO ROCK. PLACE #8 LOW–CARBON CHROMIUM STEEL REBAR ASTM A1035 CS, GRADE 100, INTO HOLES AND HAMMER TIGHT FULLY DOWN INTO PRE–DRILLED HOLES (1 REBAR PIN EVERY 1'–0" O.C.). REBAR PINS SHALL BE CONTINUOUS FULL HEIGHT OF VINYL PANEL.

h.12. SEAWALL ELEVATION OPTIONS PER SEAWALL MATRIX. IN CASES WHERE NEW SEAWALL ELEVATION IS HIGHER AT PROPERTY LINE, NEW SEAWALL ENDS SHALL BE LEVEL WITH SITE SPECIFIC DESIGN RETURN.

h.13. WORK TO BE PERFORMED IN ACCORDANCE WITH ARMY CORPS OF ENGINEERS (ACOE) PERMITTING GUIDELINES.

i. MAXIMUM DISTANCE FROM CANAL FACE OF EXISTING PRECAST SEAWALL PANEL (JUST BELOW EXISTING CAP) TO CANAL FACE OF NEW SEAWALL CAP = 18".

j. CONCRETE INSTALLED WITHIN FLAT VINYL FORMS SHALL BE POURED DOWN TO EMBEDMENT DEPTH AND INSTALLED PER FDOT SPECIFICATION TREMIES AND PUMPS AFTER ALL SEABED SOILS HAVE BEEN EVACUATED WITHIN VINYL FORMS.

k. VOID BETWEEN EXISTING PRECAST SEAWALL AND NEW FLAT VINYL FORM WALL SHALL BE FILLED DOWN TO MUDLINE WITH GROUT OF 3000 PSI MINIMUM COMPRESSIVE STRENGTH (GROUT INSTALLED PER FDOT SPECIFICATION TREMIES AND PUMPS).

4. CONSTRUCTION IS TO CONFORM TO CURRENT FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. FDOT SPECS APPLY WHERE REFERENCE IS MADE TO A SPECIFIC SECTION.

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PRESERVATION OF ALL CONSTRUCTION STAKES UNTIL THE SEAWALL IS INSTALLED AND APPROVED.

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11–03–2021		FLAT VINYL FORM SEAWALL GENERAL NOTES	H-2B
		REVISIONS:	

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6. CONCRETE SHALL BE TYPE II CEMENT, CLASS III CONCRETE AND HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5000 psi AT 28 DAYS AND COMPLY WITH FDOT SPECIFICATION PORTLAND CEMENT CONCRETE.

7. REINFORCING STEEL SHALL BE AS FOLLOWS AND SHALL BE PLACED IN ACCORDANCE WITH FDOT SPECIFICATION REINFORCING STEEL.

   a. SEAWALL PANEL, SEAWALL CAP, AND DEADMAN: LOW-CARBON CHROMIUM STEEL REBAR ASTM A1035 CS, GRADE 100 (DO NOT WELD OR FIELD BEND), (OR AS APPROVED BY THE EOR)

   b. TIE RODS: LOW-CARBON CHROMIUM STEEL REBAR ASTM A1035 CS, GRADE 100 (DO NOT WELD OR FIELD BEND), -OR- STAINLESS STEEL REBAR ASTM A995, GRADE 60, -OR- STAINLESS STEEL THREADED ROD 316L (UNS S31603). (OR AS APPROVED BY THE EOR)

8. TIE REINFORCING USING PLASTIC, POLYMER, OR NYLON COATED PLIABLE STEEL WIRE THAT READILY BENDS AND TWISTS WITHOUT BREAKING.

9. ALL EXPOSED SURFACES SHALL HAVE A CLASS 3 FINISH IN ACCORDANCE WITH FDOT SPECIFICATION FINISHING CONCRETE. ALL UNEXPOSED SURFACES ARE TO BE FREE OF HONEYCOMBING AND MAJOR IMPERFECTIONS.

10. BACK FILL BELOW TIE-RODS SHALL BE HAND-COMPACTED TO PROVIDE FULL SUPPORT OF THE TIE-RODS TO PREVENT BENDING OR FRACTURING DURING COMPACTION. BACK FILL IS TO BE COMPACTED TO A STABLE DENSITY SUCH THAT NO APPRECIABLE SETTLEMENT OCCURS AFTER COMPLETION OF WALLS.

11. THE DEAD MAN ANCHORS ARE TO BE CONSTRUCTED BY PLACING CONCRETE INTO THE SPECIFIED SIZE HOLE EXCAVATED IN UNDISTURBED GROUND. ALTERNATIVELY, ENGINEERED SOIL ANCHOR SYSTEMS MAY BE CONSIDERED IF SITE-SPECIFIC ENGINEERED AND SUBMITTED FOR APPROVAL. ENGINEERED SOIL ANCHOR SYSTEMS MAY BE GALVANIZED STEEL SYSTEMS BEYOND 5' UPLAND OF THE SEAWALL. THE FIRST 5' OF TIE ROD UPLAND OF THIS SEAWALL SHALL BE REBAR TIE ROD (WITH PVC SLEEVE) OR STAINLESS STEEL (NO SLEEVE REQUIRED). THREADED TIE RODS SHALL BE PROVIDED WITH SUBSTANTIAL ANCHORS IN SEAWALL CAP DESIGNED IN ACCORDANCE WITH ACI 318. (OR AS APPROVED BY THE EOR).

12. ROCK 6" NOMINAL DIAMETER AND LESS MAY BE LEFT IN BACKFILL. ALL OTHER ROCK IS TO BE REMOVED.

13. THE CONTRACTOR WILL BE RESPONSIBLE TO COMPLETE THE CONSTRUCTION OF THE SEAWALL IN ACCORDANCE WITH PERMIT CRITERIA.

14. THE CONTRACTOR WILL BE RESPONSIBLE TO PEG THE TOP ROW OF THE SOD (AT TOP OF SLOPE) WITH STANDARD SURVEY STAKES AT LEAST 12" LONG SPACED 24" APART.

15. CONTRACTOR TO SEED ALL DISTURBED AREAS UNLESS A BUILDING PERMIT IS POSTED ON SITE.

16. ALL JOB SITES SHALL HAVE SEAWALL PERMITS POSTED ON AN APPROVED PERMIT BOARD WITH RAIN SHIELD PRIOR TO BEGINNING ANY CONSTRUCTION.

17. THE CONTRACTOR SHALL BE RESPONSIBLE TO INSTALL APPROVED TURBIDITY SCREENS IN PLACE DURING ANY AND ALL CLEARING, EXCAVATING, JETTING, AND BACK FILLING OPERATIONS WHICH TOTALLY ENCLOSES THE CONSTRUCTION SITE. SCREENS ARE TO REMAIN IN PLACE 24 HOURS MINIMUM AFTER CONSTRUCTION CEASES OR UNTIL TURBIDITY LEVEL IS 20 OR LESS NTU ABOVE THE PRE-CONSTRUCTION TURBIDITY LEVEL. SCREENS MUST EXTEND FROM THE WATER SURFACES TO THE BOTTOM AND BE ADEQUATELY WEIGHTED TO KEEP THEM IN PLACE DURING ALL OPERATIONS. THERE SHALL BE ADEQUATE FLOATATION AT THE SURFACE TO PREVENT OVERFLOW. THIS FLOATATION MUST BE BRIGHTLY COLORED TO MAXIMIZE VISIBILITY.

18. ANY LOOSE DIRT OR STOCK PILES SHALL BE SURROUNDED BY SILT SCREENS AND MAINTAINED IN GOOD WORKING ORDER (AT THE EDGE OF THE TOE OF THE SLOPE) TO PREVENT RUNOFF INTO CANAL.

19. CULVERT PIPE WHERE APPLICABLE SHALL NOT PROJECT MORE THAN 6" FROM THE WATER-FACE OF THE SEAWALL OR AS APPROVED BY THE CITY.

20. REFER TO THE FDOT SPECIFICATION ON EROSION CONTROL FOR PROTECTION OF SLOPES.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11-03-2021		FLAT VINYL FORM SEAWALL GENERAL NOTES	H-2C
		REVISIONS:	

G:\Engineering Design Standards\UPDATED STANDARDS\H - SEAWALLS\Sht H-2 FV.dwg, 11/23/2021 10:40:30 AM, Adobe PDF

TABLE 1

RIVER SEAWALL MATRIX

ENGINEERING DESIGN STANDARDS (EDS)

Seawall System			Seawall Construction	Seawall Height Increases Allowed (Inches)		
				24	12	Match
1	New or Replacement	Precast Concrete Panels & Cast-In-Place Concrete in Flat Vinyl Forms	New house - New seawall construction	M		
			Existing house - Replacement of existing seawall - full property	M		V
			Existing house - Replacement of existing seawall - partial property			X
2	Repair in front of existing seawall	Cast-In-Place Concrete in Flat Vinyl Forms or Corrugated Vinyl Sheeting	Existing house - Repair in front of existing seawall - full property	M	V	V
			Existing house - Repair in front of existing seawall - partial property			X

M = Mandatory

V = Variance

X = Allowed

TABLE 2

SALTWATER CANAL SEAWALL MATRIX

ENGINEERING DESIGN STANDARDS (EDS)

Seawall System			Seawall Construction	Seawall Height Increases Allowed (Inches)		
				24	12	Match
1	New or Replacement	Precast Concrete Panels & Cast-In-Place Concrete in Flat Vinyl Forms	New house - New seawall construction	X		X
			Existing house - Replacement of existing seawall - full property	X		X
			Existing house - Replacement of existing seawall - partial property			X
2	Repair in front of existing seawall	Cast-In-Place Concrete in Flat Vinyl Forms or Corrugated Vinyl Sheeting	Existing house - Repair in front of existing seawall - full property		X	X
			Existing house - Repair in front of existing seawall - partial property			X

X – ALLOWED

NOTES:

1. FRESH WATER CANALS – MATCH EXISTING SEAWALL ELEVATIONS.
2. SEAWALL CAPS WHICH ARE RAISED 24" ABOVE ORIGINAL SEAWALL CAP ELEVATION, CONCRETE RETURNS SHALL BE CONSTRUCTED JUST INSIDE OF EACH PROPERTY LINE EXTENDING A MINIMUM OF 5 FEET FROM THE LANDWARD EDGE OF THE REINFORCED CONCRETE SEAWALL CAP, AT AN ANGLE OF 90 DEGREES FROM THE CAP. RETURNS AND CAPS SHALL BE CONSTRUCTED IN A NEAT AND WORKMANLIKE MANNER WHICH RETAINS ALL MATERIALS FROM WASHING AWAY INTO ADJOINING PROPERTIES AND WATERWAYS. RETURNS AND CAPS SHALL HAVE A UNIFORM, SOLID, AND CONTINUOUS EXTERIOR APPEARANCE WHEN VIEWED FROM THE ADJOINING PROPERTIES AND WATERWAYS.
3. FINISHED TOP SURFACE ELEVATION OF NEW OR REPAIRED SEAWALL CAPS AND RETURNS SHALL BE LEVEL AND ELEVATED 24" ABOVE ORIGINAL CAP ELEVATION FOR NEW AND 12" ABOVE THE ORIGINAL CAP ELEVATION FOR A REPAIR.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11–03–2021		FLAT VINYL FORM SEAWALL GENERAL NOTES	H-2C-A
		REVISIONS:	

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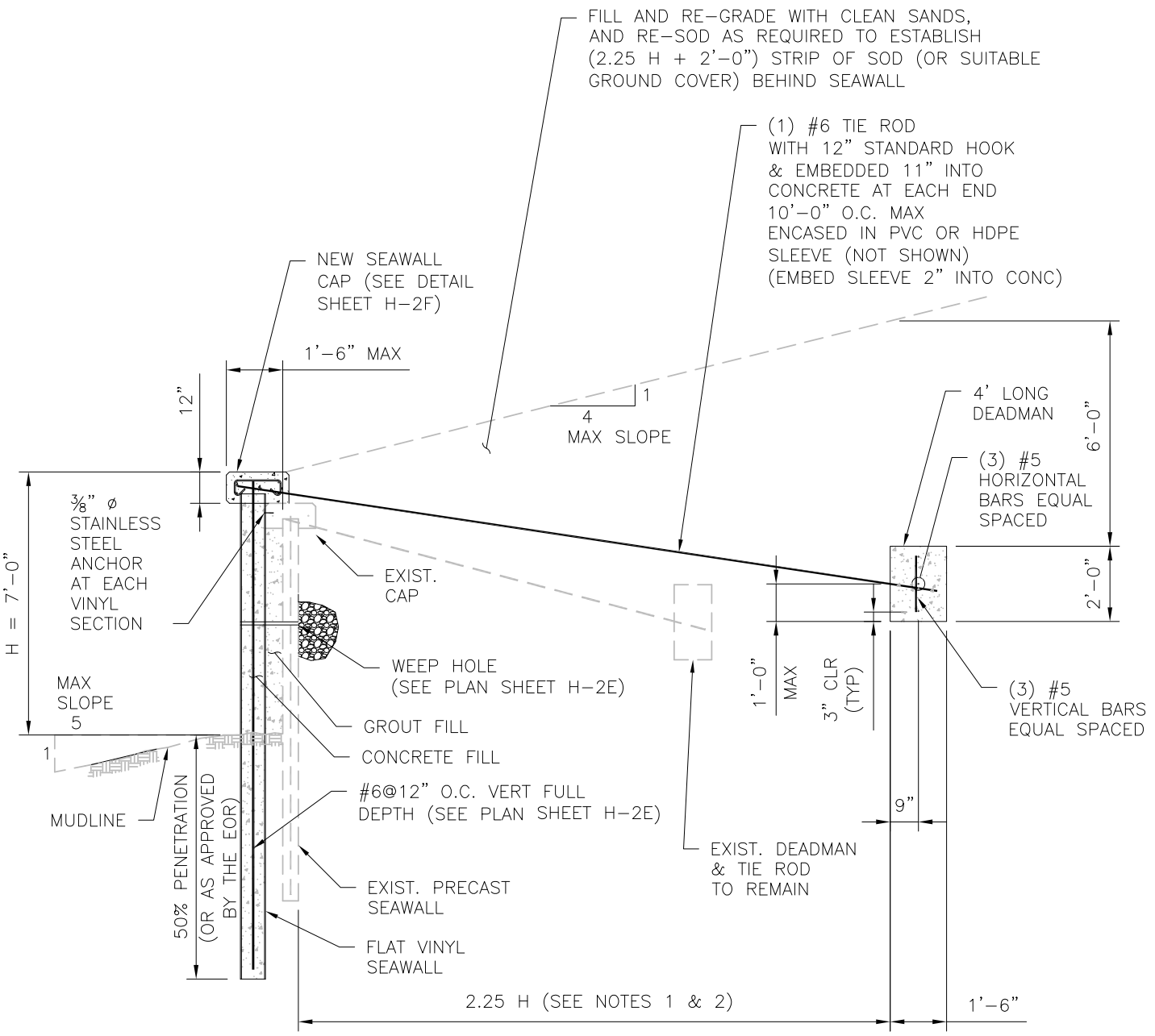

NOTES:

1. ALTERNATE TIE-ROD (STAINLESS STEEL) AND SOIL ANCHOR SYSTEMS MAY BE CONSIDERED IF ENGINEERED FOR A HORIZONTAL COMPONENT WORKING LOAD OF 1220 PLF (SPACED AT 10'-0" O.C. MAX) AND EMBEDDED 2.25 H BEHIND SEAWALL.
2. ANY ANCHORS EMBEDDED BEHIND SEAWALL MUST BE SITE-SPECIFIC ENGINEERED.

SEAWALL ELEVATION

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11-03-2021		FLAT VINYL FORM SEAWALL TYPICAL ELEVATION	H-2D
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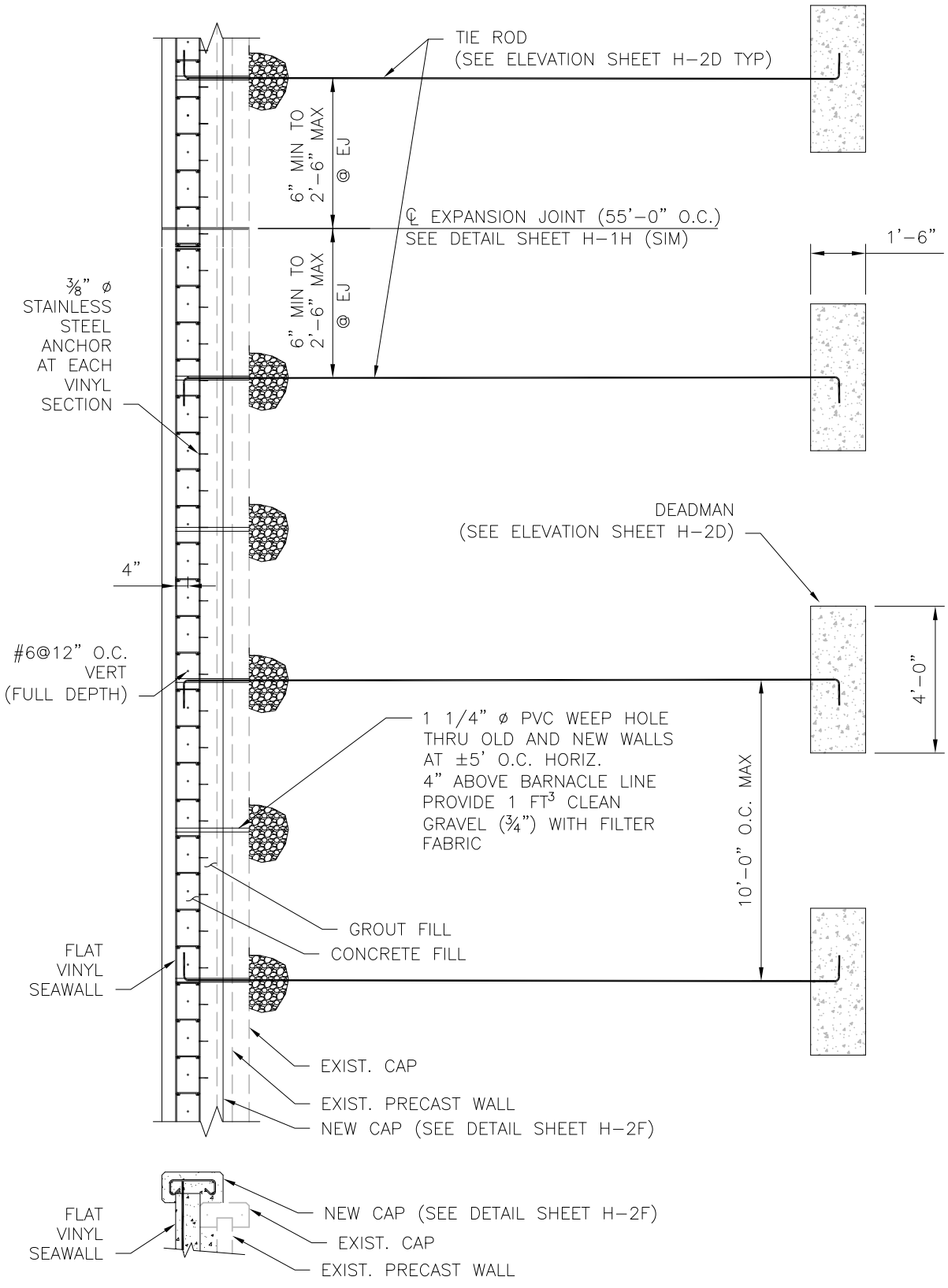

SEAWALL PLAN

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11-03-2021		FLAT VINYL FORM SEAWALL TYPICAL PLAN	H-2E
		REVISIONS:	

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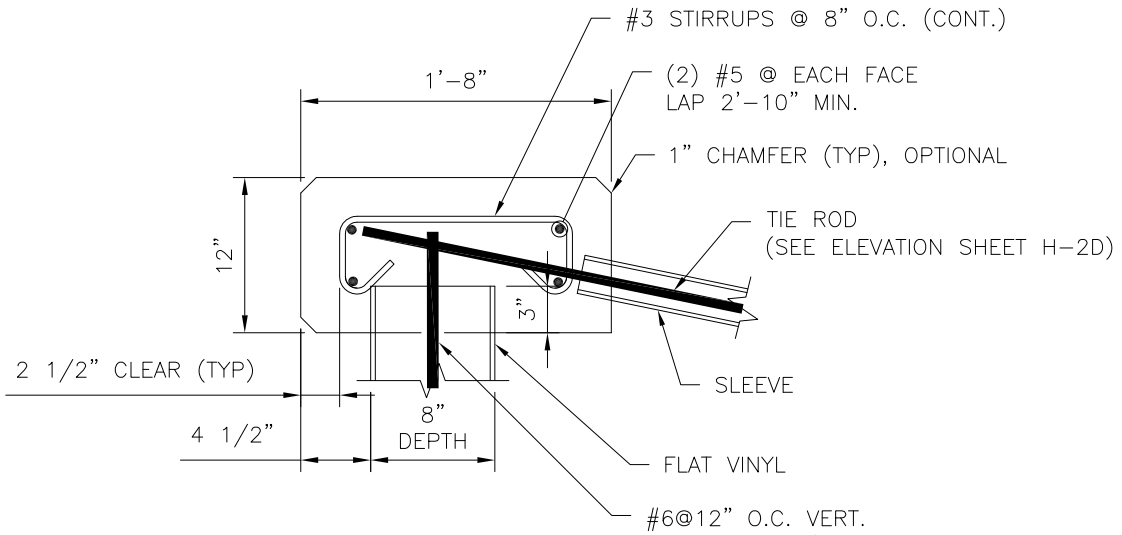
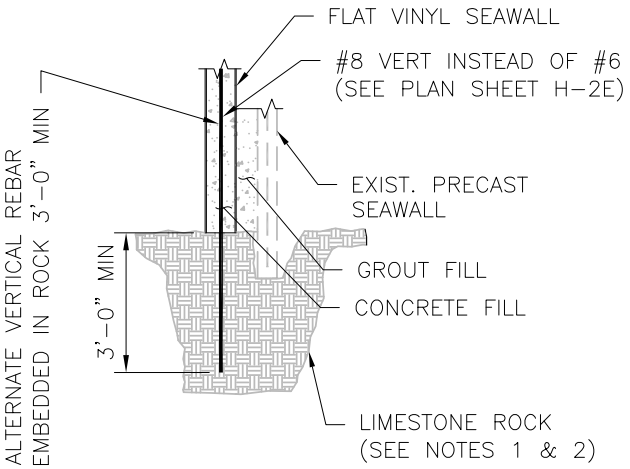


SEAWALL CAP DETAIL



NOTES:

1. REFERENCE FLAT VINYL FORMS WITH CAST-IN-PLACE CONCRETE SEAWALL SPECIFICATION GENERAL NOTES 3.h.10 & 3.h.11.

2. IF LIMESTONE ROCK IS LESS THAN 2' THICK, PANEL MUST BE ADVANCED DOWN TO THE FULL 50% PENETRATION.

SEAWALL WITH EXISTING PRECAST CONCRETE SEAWALL PINNED IN ROCK DETAIL

ADOPTED BY CITY COUNCIL		TITLE	SHEET NO.
11-03-2021	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	FLAT VINYL FORM SEAWALL TYPICAL DETAILS	H-2F
		REVISIONS:	

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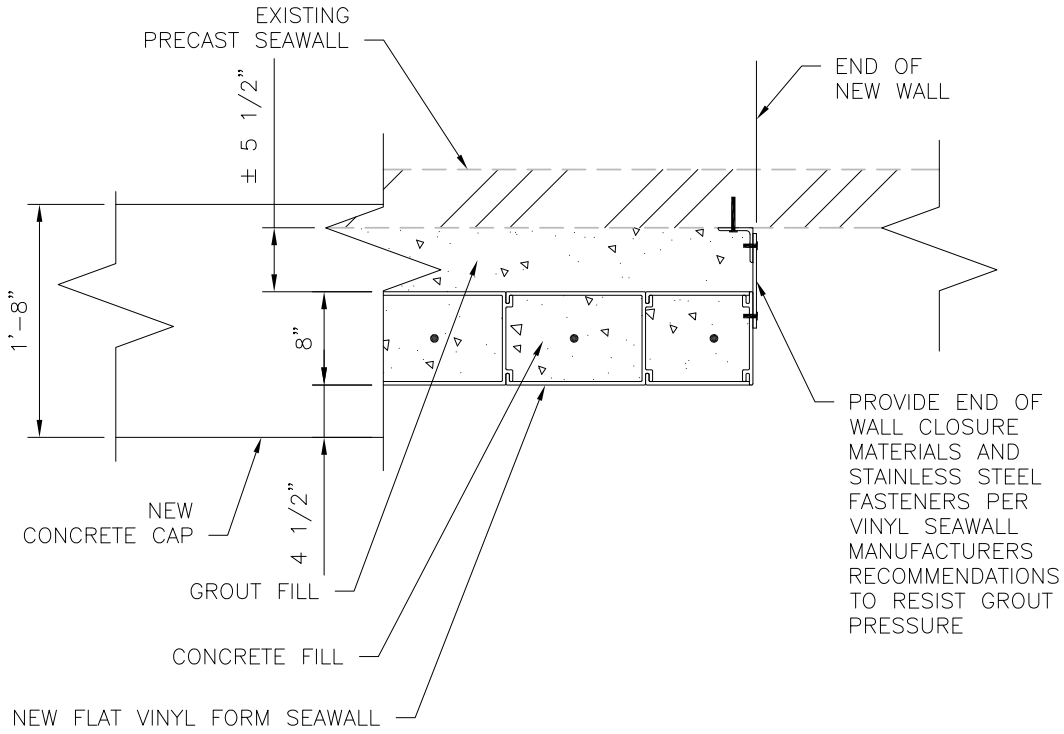

END OF WALL DETAIL

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11-03-2021		FLAT VINYL FORM SEAWALL TYPICAL DETAIL	H-2G
		REVISIONS:	

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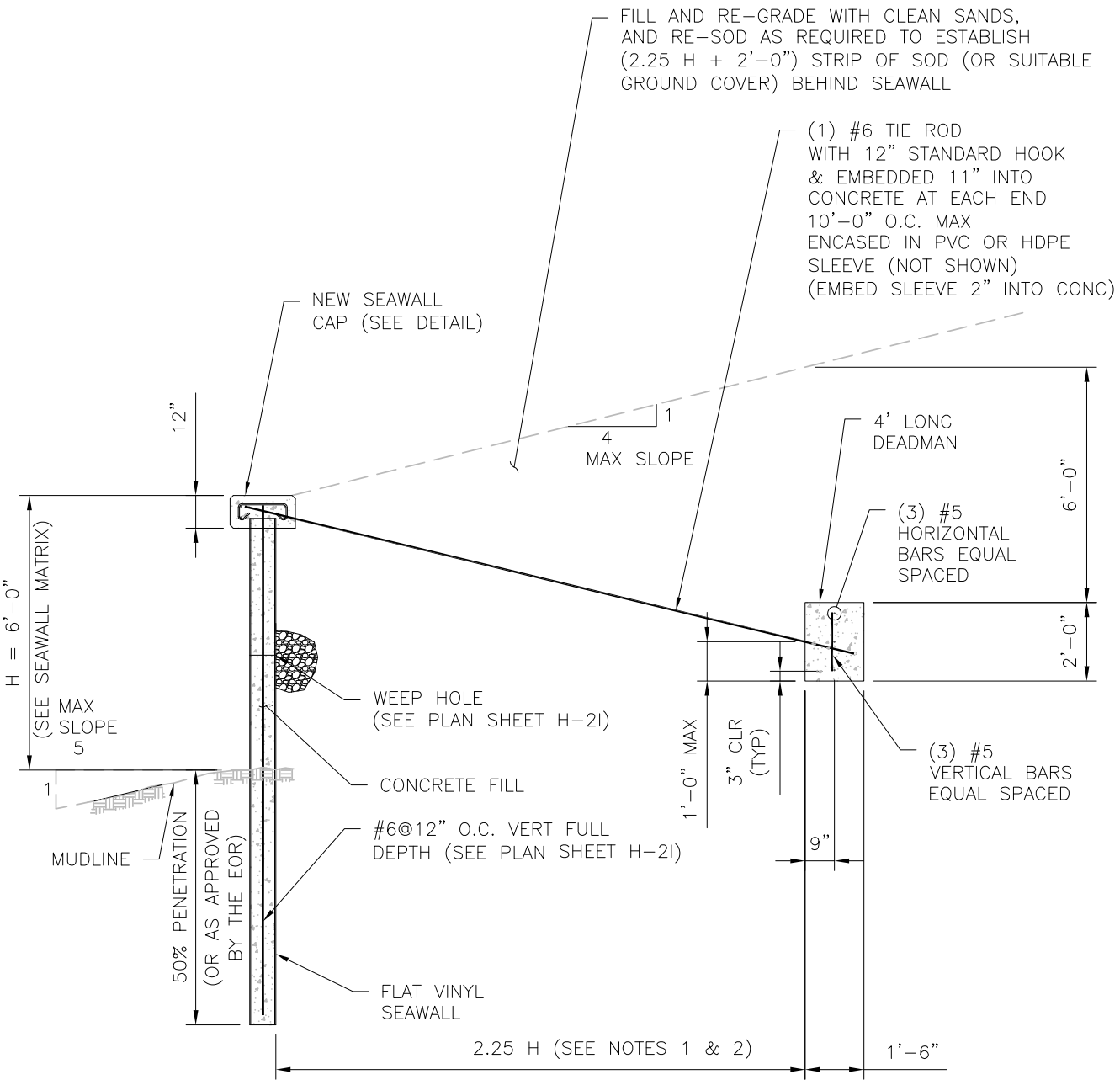

NOTES:

1. ALTERNATE TIE-ROD (STAINLESS STEEL) AND SOIL ANCHOR SYSTEMS MAY BE CONSIDERED IF ENGINEERED FOR A HORIZONTAL COMPONENT WORKING LOAD OF 1030 PLF (SPACED AT 10'-0" O.C. MAX) AND EMBEDDED 2.25 H BEHIND SEAWALL.
2. ANCHORS EMBEDDED BEHIND SEAWALL MUST BE SITE-SPECIFIC ENGINEERED.

ALTERNATE SEAWALL ELEVATION

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11-03-2021		FLAT VINYL FORM SEAWALL ALTERNATE TYPICAL ELEVATION	H-2H
		REVISIONS:	

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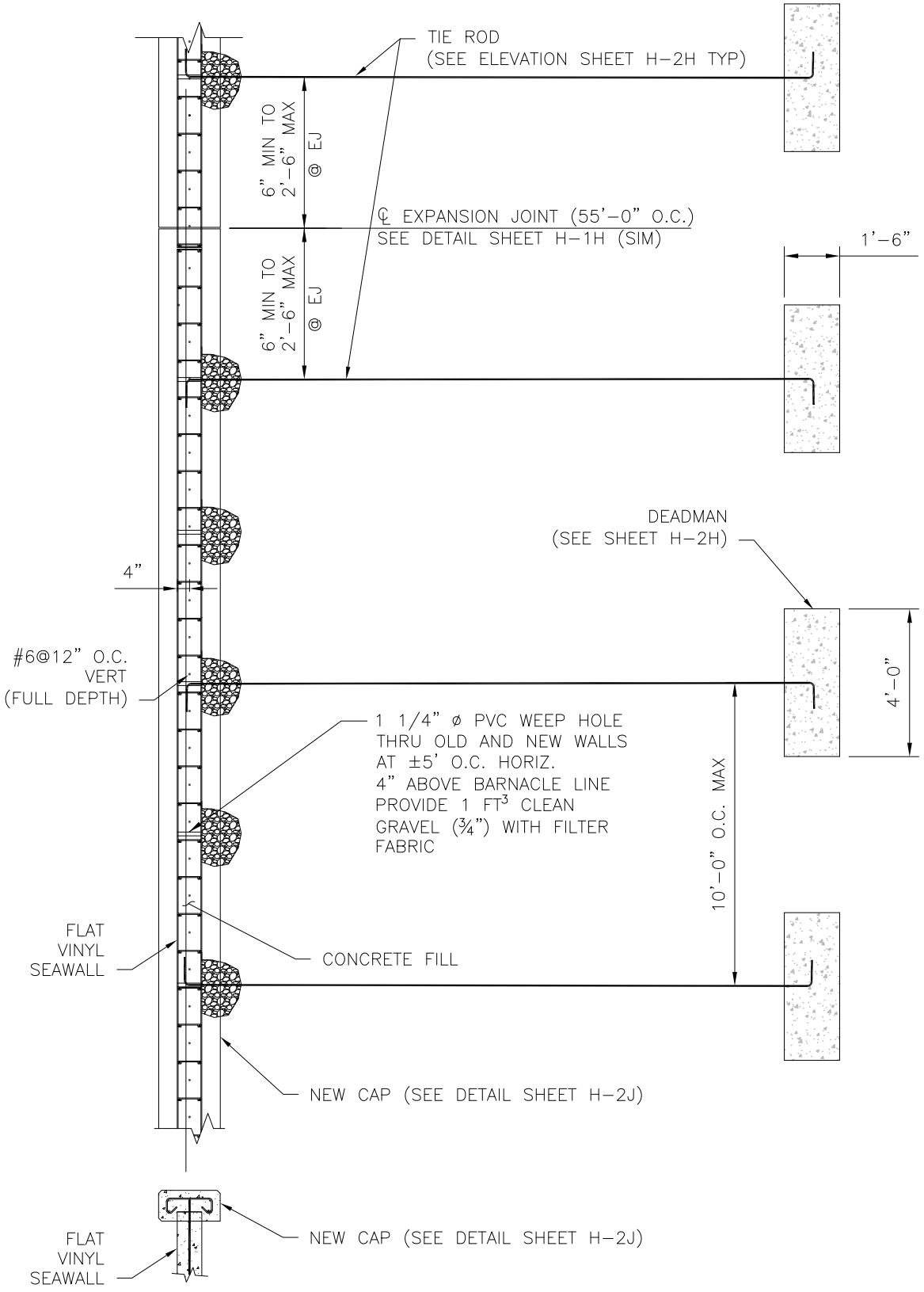

ALTERNATE SEAWALL PLAN

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11-03-2021		FLAT VINYL FORM SEAWALL ALTERNATE TYPICAL PLAN	H-2I
		REVISIONS:	

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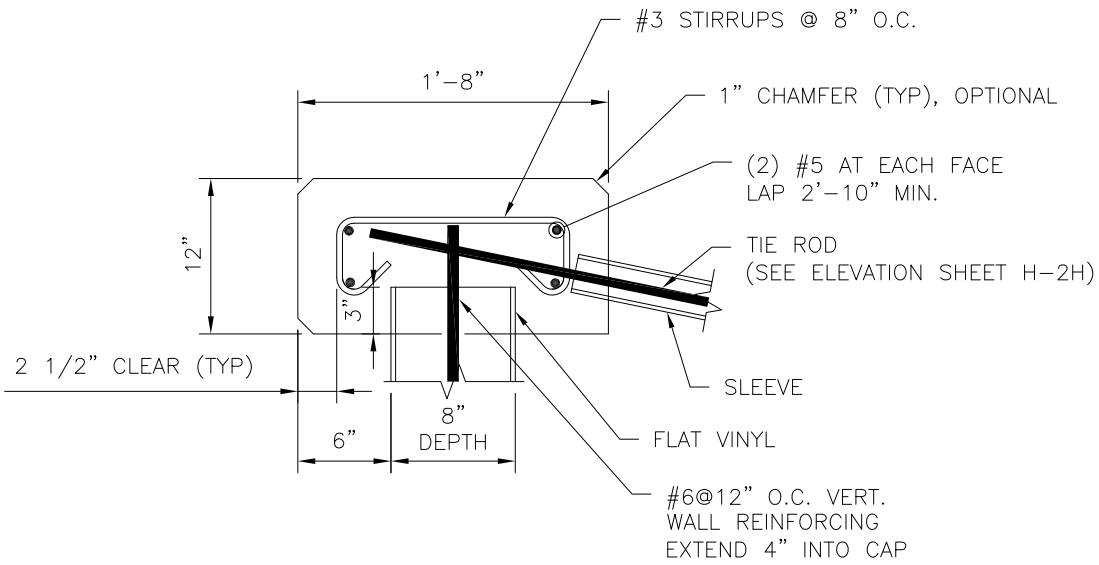
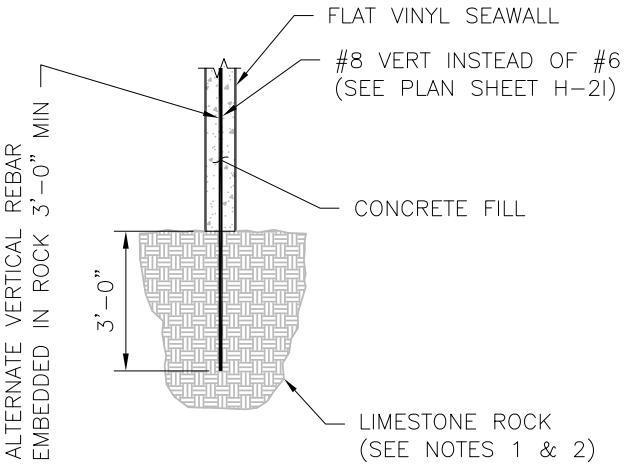


ALTERNATE SEAWALL CAP DETAIL



NOTES:

1. REFERENCE FLAT VINYL FORMS WITH CAST-IN-PLACE CONCRETE SEAWALL SPECIFICATION GENERAL NOTES 3.h.10 & 3.h.11.

2. IF LIMESTONE ROCK IS LESS THAN 2' THICK, PANEL MUST BE ADVANCED DOWN TO THE FULL 50% PENETRATION.

ALTERNATE SEAWALL WITHOUT PRECAST CONCRETE PINNED IN ROCK DETAIL

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11-03-2021		FLAT VINYL FORM SEAWALL ALTERNATE TYPICAL DETAILS	H-2J
		REVISIONS:	

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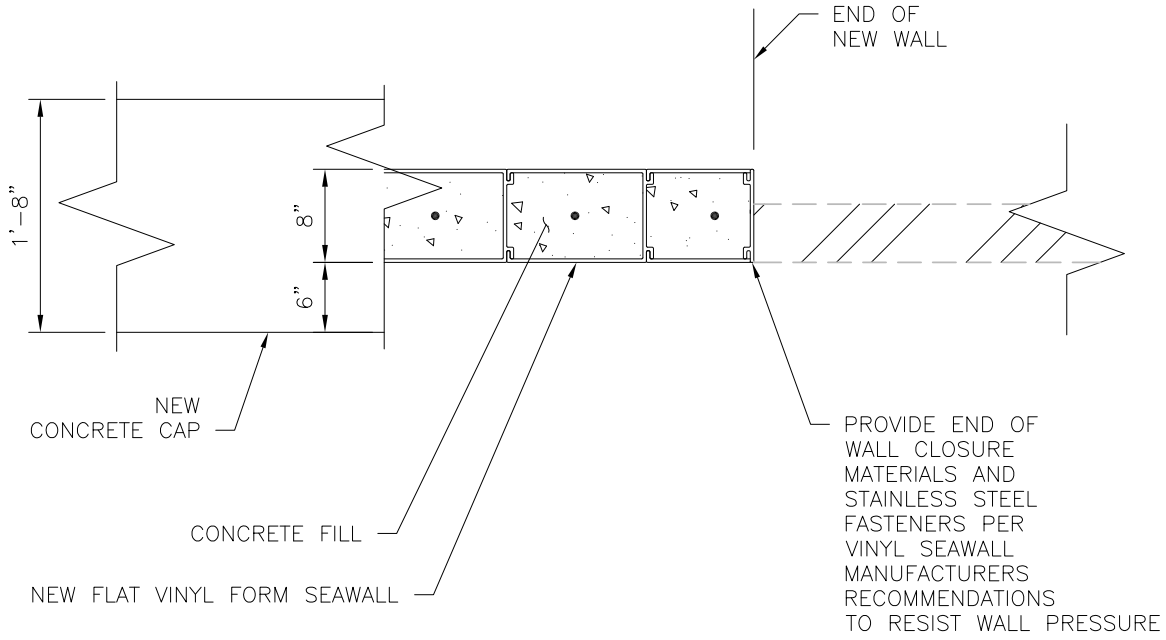

ALTERNATE END OF WALL DETAIL

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11-03-2021		FLAT VINYL FORM SEAWALL ALTERNATE TYPICAL DETAIL	H-2K
		REVISIONS:	

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CORR. VINYL WITH CAST–IN–PLACE CONC. SEAWALL GENERAL NOTES

1. THESE SPECIFICATIONS SHOW TYPICAL DETAILS FOR CORRUGATED VINYL FORMS WITH CAST–IN–PLACE CONCRETE SEAWALLS WHICH ARE TO BE CONSTRUCTED IN THE CITY OF CAPE CORAL. INDIVIDUAL SEAWALL DESIGN IS THE RESPONSIBILITY OF THE PERMITEE AND MUST BE PERFORMED BY A FLORIDA REGISTERED PROFESSIONAL ENGINEER WHO SHALL BE THE ENGINEER OF RECORD FOR THE PROJECT. THESE SPECIFICATIONS ARE TYPICAL DETAILS ONLY AND ARE NOT INTENDED TO BE A FINAL SEAWALL DESIGN RELATING TO A SPECIFIC SITE.

2. THE ENGINEER OF RECORD (EOR) SHALL BE RESPONSIBLE FOR CERTIFYING THE FOLLOWING AS PART OF THE FINAL SEAWALL DESIGN:

   a. EOR OR THEIR REPRESENTATIVE VISITED THE PROJECT SITE, AND INCORPORATED ALL SITE–SPECIFIC CONDITIONS, METHOD OF CONSTRUCTION, AND LOADS INTO FINAL DESIGN.

   b. FINAL SEAWALL DESIGN CALCULATIONS AND CONSTRUCTION DOCUMENTS MUST BE SIGNED AND SEALED BY A FLORIDA REGISTERED PROFESSIONAL ENGINEER WITH STRUCTURAL EXPERIENCE.

   c. IN ADDITION TO FINAL SEAWALL DESIGN, THE EOR SHALL CERTIFY THAT THE FOLLOWING SEAWALL ELEMENTS WERE CONSTRUCTED IN ACCORDANCE WITH THEIR PLANS AND SPECIFICATIONS:

      c.1. ALIGNMENT OF SEAWALL

      c.2. PENETRATION OF SEAWALL INTO SEABED

      c.3. SEAWALL CAP REINFORCING AND PLACEMENT

      c.4. DEADMAN ANCHORS, REINFORCING, AND TIE–BACK PLACEMENT

3. SEAWALL DESIGN CRITERIA:

   a. THE FOLLOWING DESIGN CRITERIA IS APPLICABLE FOR A CORRUGATED VINYL SHEET PILE WALL WITH CAST–IN–PLACE CONCRETE SEAWALL PLACED IN FRONT OF AN EXISTING PRECAST CONCRETE SEAWALL (TO REMAIN IN PLACE) WITH A 7' EXPOSED HEIGHT ABOVE THE MUDLINE.

   b. DESIGN SPECIFICATIONS: DESIGN SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF FLORIDA BUILDING CODE RESIDENTIAL, ASCE/SEI 24 FLOOD RESISTANT DESIGN AND CONSTRUCTION, ASCE 7 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, ACI 318 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, AND U.S. ARMY CORPS OF ENGINEERS ENGINEERING AND DESIGN MANUAL EM 1110–2–2504 DESIGN OF SHEET PILE WALLS.

   c. EXISTING PRECAST CONCRETE SEAWALL MAY REMAIN IN PLACE SUBJECT TO THE FOLLOWING CRITERIA:

      c.1. EXISTING SEAWALL CAP MUST BE SOUND, WITHIN ORIGINAL VERTICAL ALIGNMENT (±½") AND WITHIN ORIGINAL HORIZONTAL ALIGNMENT (WITH NO OUTWARD MOVEMENT IN TOWARDS THE CANAL).

      c.2. EXISTING PRECAST SEAWALL PANEL MUST HAVE LESS THAN 2" HORIZONTAL MOVEMENT (WATERWARD OR LANDWARD) FROM ITS ORIGINAL PLUMB INSTALLATION.

      c.3. THESE SPECIFICATIONS MAY NOT BE USED IF THE EXISTING PRECAST SEAWALL (TO REMAIN IN PLACE) DOES NOT MEET THE ABOVE CRITERIA.

   d. DESIGN LOAD COMBINATIONS: (OR AS APPROVED BY THE EOR)

      d.1. LOW TIDE CANAL WATER (WATERWARD OF WALL) AT 5.5' BELOW NEW SEAWALL CAP, PLUS WATER LEVEL LANDWARD OF WALL AT 3' BELOW NEW SEAWALL CAP, PLUS EARTH PRESSURE, PLUS 200 psf SURCHARGE LOAD.

      d.2. CANAL WATER (WATERWARD OF WALL) AT MUDLINE (7' MAXIMUM BELOW NEW SEAWALL CAP), PLUS WATER LEVEL LANDWARD OF WALL AT 3' BELOW NEW SEAWALL CAP, PLUS EARTH PRESSURE, AND NO SURCHARGE LOAD.

   e. SOIL ASSUMED AS LOOSE FINE SAND. ALTERNATE SOIL TYPES MAY BE CONSIDERED IF A SITE SPECIFIC GEOTECHNICAL SOILS ENGINEERING REPORT IS PREFORMED AND PROVIDED.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11–03–2021		CORR. VINYL WITH CONC SEAWALL GENERAL NOTES	H-3A
		REVISIONS:	

G:\Engineering Design Standards\UPDATED STANDARDS\H - SEAWALLS\Sht H-3 CV.dwg, 11/23/2021 11:15:58 AM, Adobe PDF

f. SEABED (WATERWARD OF WALL) SLOPING DOWN AND AWAY FROM WALL AT 1:5 (V:H) SLOPE MAXIMUM.

g. FINISHED GRADE (LANDWARD OF WALL) SLOPING UP AND AWAY FROM SEAWALL CAP AT 1:4 (V:H) SLOPE MAXIMUM.

h. CORRUGATED VINYL SHEETING:

h.1. DEPTH = 8" MAX

h.2. MODULUS OF ELASTICITY = 380,000 psi MIN

h.3. MOMENT OF INERTIA, I = 57 in^4/ft MIN

h.4. SECTION MODULUS, Z = 14.3 in^3/ft MIN

h.5. ALLOWABLE DESIGN STRESS = 3200 psi MIN

h.6. COLOR = GREY

h.7. INSTALLED VERTICAL ALIGNMENT TOLERANCE = ¼" per foot

h.8. PROJECTION ABOVE MUDLINE = 7' (TOP OF CAP) (SEE SEAWALL MATRIX)

h.9. EMBEDMENT BELOW MUDLINE = 50% PENETRATION OF PANEL. (OR AS APPROVED BY THE EOR)

h10. IF LIMESTONE ROCK IS ENCOUNTERED PRIOR TO FULL EMBEDMENT DEPTH, EMBED VINYL SHEETING 2' MINIMUM INTO LIMESTONE ROCK AFTER USING A STEEL PUNCH TO PUNCH A KEYWAY IN LIMESTONE ROCK FOR NEW VINYL SHEETING. IF LIMESTONE ROCK IS LESS THAN 2' THICK, PANEL MUST BE ADVANCED DOWN TO FULL 50% PENETRATION.

h.11. ALTERNATE TOE WALER BRACING IN ROCK MAY BE ALLOWED AS FOLLOWS. EMBED VINYL SHEETING 1' MINIMUM INTO LIMESTONE ROCK AFTER USING A STEEL PUNCH TO PUNCH A KEYWAY IN LIMESTONE ROCK FOR NEW VINYL SHEETING. A CONTINUOUS TOE WALER WITH ANCHOR PINS BRACING SYSTEM MUST BE ENGINEERED TO ACCOMMODATE SITE CONDITIONS AND BE DESIGNED FOR A MINIMUM HORIZONTAL COMPONENT WORKING LOAD OF 1150 PLF. ANCHOR PINS SHALL BE DESIGNED CONSIDERING BOTH SHEAR AND BENDING. PREDRILL ANCHOR PINS 3'–0" MINIMUM INTO ROCK. ALLOWABLE WALER MATERIALS: STAINLESS STEEL, STRUCTURAL PLASTIC, OR PRECAST CONCRETE. ALLOWABLE PIN MATERIALS: CARBON STEEL REBAR ASTM A615, GRADE 60 (ALLOW FOR 0.20" CORROSION ALL AROUND), –OR– STAINLESS STEEL REBAR ASTM A995, GRADE 60 (NO ALLOWANCE FOR CORROSION REQUIRED). CONTRACTOR TO OBTAIN APPROVAL FROM PUBLIC WORKS DEPT. BEFORE CONSTRUCTING.

h.12. SEAWALL ELEVATION OPTIONS PER SEAWALL MATRIX. IN CASES WHERE NEW SEAWALL ELEVATION IS HIGHER AT PROPERTY LINE, NEW SEAWALL ENDS SHALL BE LEVEL WITH SITE SPECIFIC DESIGN RETURN.

h.13. WORK TO BE PERFORMED IN ACCORDANCE WITH ARMY CORPS OF ENGINEERS (ACOE) PERMITTING GUIDELINES.

i. MAXIMUM DISTANCE FROM CANAL FACE OF EXISTING PRECAST SEAWALL PANEL (JUST BELOW EXISTING CAP) TO CANAL FACE OF NEW SEAWALL CAP = 18".

j. CONCRETE INSTALLED BETWEEN EXISTING PRECAST SEAWALL AND NEW CORRUGATED VINYL WALL PANEL SHALL BE POURED DOWN TO MUDLINE AND INSTALLED PER FDOT SPECIFICATION TREMIES AND PUMPS.

4. CONSTRUCTION IS TO CONFORM TO CURRENT FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. FDOT SPECS APPLY WHERE REFERENCE IS MADE TO A SPECIFIC SECTION.

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PRESERVATION OF ALL CONSTRUCTION STAKES UNTIL THE SEAWALL IS INSTALLED AND APPROVED.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11–03–2021		CORR. VINYL WITH CONC SEAWALL GENERAL NOTES	H-3B
		REVISIONS:	

G:\Engineering Design Standards\UPDATED STANDARDS\H - SEAWALLS\Sht H-3 CV.dwg, 11/23/2021 11:24:13 AM, Adobe PDF

6. CONCRETE SHALL BE TYPE II CEMENT, CLASS III CONCRETE AND HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5000 psi AT 28 DAYS AND COMPLY WITH FDOT SPECIFICATION PORTLAND CEMENT CONCRETE.

7. REINFORCING STEEL SHALL BE AS FOLLOWS AND SHALL BE PLACED IN ACCORDANCE WITH FDOT SPECIFICATION REINFORCING STEEL.

   a. SEAWALL PANEL, SEAWALL CAP, AND DEADMAN: LOW-CARBON CHROMIUM STEEL REBAR ASTM A1035 CS, GRADE 100 (DO NOT WELD OR FIELD BEND). (OR AS APPROVED BY THE EOR)

   b. TIE RODS: LOW-CARBON CHROMIUM STEEL REBAR ASTM A1035 CS, GRADE 100 (DO NOT WELD OR FIELD BEND), -OR- STAINLESS STEEL REBAR ASTM A995, GRADE 60, -OR- STAINLESS STEEL THREADED ROD 316 L (UNS S31603). (OR AS APPROVED BY THE EOR)

8. TIE REINFORCING USING PLASTIC, POLYMER, OR NYLON COATED PLIABLE STEEL WIRE THAT READILY BENDS AND TWISTS WITHOUT BREAKING.

9. ALL EXPOSED SURFACES SHALL HAVE A CLASS 3 FINISH IN ACCORDANCE WITH FDOT SPECIFICATION FINISHING CONCRETE. ALL UNEXPOSED SURFACES ARE TO BE FREE OF HONEYCOMBING AND MAJOR IMPERFECTIONS.

10. BACK FILL BELOW TIE-RODS SHALL BE HAND-COMPACTED TO PROVIDE FULL SUPPORT OF THE TIE-RODS TO PREVENT BENDING OR FRACTURING DURING COMPACTION. BACK FILL IS TO BE COMPACTED TO A STABLE DENSITY SUCH THAT NO APPRECIABLE SETTLEMENT OCCURS AFTER COMPLETION OF WALLS.

11. THE DEAD MAN ANCHORS ARE TO BE CONSTRUCTED BY PLACING CONCRETE INTO THE SPECIFIED SIZE HOLE EXCAVATED IN UNDISTURBED GROUND. ALTERNATIVELY, ENGINEERED SOIL ANCHOR SYSTEMS MAY BE CONSIDERED IF SITE-SPECIFIC ENGINEERED AND SUBMITTED FOR APPROVAL. ENGINEERED SOIL ANCHOR SYSTEMS MAY BE GALVANIZED STEEL SYSTEMS BEYOND 5' UPLAND OF THE SEAWALL. THE FIRST 5' OF TIE ROD UPLAND OF THIS SEAWALL SHALL BE REBAR TIE ROD (WITH PVC SLEEVE) OR STAINLESS STEEL (NO SLEEVE REQUIRED). THREADED TIE RODS SHALL BE PROVIDED WITH SUBSTANTIAL ANCHORS IN SEAWALL CAP DESIGNED IN ACCORDANCE WITH ACI 318. (OR AS APPROVED BY THE EOR).

12. ROCK 6" NOMINAL DIAMETER AND LESS MAY BE LEFT IN BACKFILL. ALL OTHER ROCK IS TO BE REMOVED.

13. THE CONTRACTOR WILL BE RESPONSIBLE TO COMPLETE THE CONSTRUCTION OF THE SEAWALL IN ACCORDANCE WITH THE PERMIT CRITERIA.

14. THE CONTRACTOR WILL BE RESPONSIBLE TO PEG THE TOP ROW OF THE SOD (AT TOP OF SLOPE) WITH STANDARD SURVEY STAKES AT LEAST 12" LONG SPACED 24" APART.

15. CONTRACTOR TO SEED ALL DISTURBED AREAS UNLESS A BUILDING PERMIT IS POSTED ON SITE.

16. ALL JOB SITES SHALL HAVE SEAWALL PERMITS POSTED ON AN APPROVED PERMIT BOARD WITH RAIN SHIELD PRIOR TO BEGINNING ANY CONSTRUCTION.

17. THE CONTRACTOR SHALL BE RESPONSIBLE TO INSTALL APPROVED TURBIDITY SCREENS IN PLACE DURING ANY AND ALL CLEARING, EXCAVATING, JETTING, AND BACK FILLING OPERATIONS WHICH TOTALLY ENCLOSES THE CONSTRUCTION SITE. SCREENS ARE TO REMAIN IN PLACE 24 HOURS MINIMUM AFTER CONSTRUCTION CEASES OR UNTIL TURBIDITY LEVEL IS 20 OR LESS NTU ABOVE THE PRE-CONSTRUCTION TURBIDITY LEVEL. SCREENS MUST EXTEND FROM THE WATER SURFACES TO THE BOTTOM AND BE ADEQUATELY WEIGHTED TO KEEP THEM IN PLACE DURING ALL OPERATIONS. THERE SHALL BE ADEQUATE FLOATATION AT THE SURFACE TO PREVENT OVERFLOW. THIS FLOATATION MUST BE BRIGHTLY COLORED TO MAXIMIZE VISIBILITY.

18. ANY LOOSE DIRT OR STOCK PILES SHALL BE SURROUNDED BY SILT SCREENS AND MAINTAINED IN GOOD WORKING ORDER (AT THE EDGE OF THE TOE OF THE SLOPE) TO PREVENT RUNOFF INTO CANAL.

19. CULVERT PIPE WHERE APPLICABLE SHALL NOT PROJECT MORE THAN 6" FROM THE WATER-FACE OF THE SEAWALL OR AS APPROVED BY THE CITY.

20. REFER TO THE FDOT SPECIFICATION ON EROSION CONTROL FOR PROTECTION OF SLOPES.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11-03-2021		CORR. VINYL WITH CONC SEAWALL GENERAL NOTES	H-3C
		REVISIONS:	

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TABLE 1
RIVER SEAWALL MATRIX
ENGINEERING DESIGN STANDARDS (EDS)

	Seawall System		Seawall Construction	Seawall Height Increases Allowed (Inches)		
				24	12	Match
1	New or Replacement	Precast Concrete Panels & Cast-In-Place Concrete in Flat Vinyl Forms	New house - New seawall construction	M		
			Existing house - Replacement of existing seawall - full property	M		V
			Existing house - Replacement of existing seawall - partial property			X
2	Repair in front of existing seawall	Cast-In-Place Concrete in Flat Vinyl Forms or Corrugated Vinyl Sheeting	Existing house - Repair in front of existing seawall - full property	M	V	V
			Existing house - Repair in front of existing seawall - partial property			X

M = Mandatory
V = Variance
X = Allowed

TABLE 2
SALTWATER CANAL SEAWALL MATRIX
ENGINEERING DESIGN STANDARDS (EDS)

	Seawall System		Seawall Construction	Seawall Height Increases Allowed (Inches)		
				24	12	Match
1	New or Replacement	Precast Concrete Panels & Cast-In-Place Concrete in Flat Vinyl Forms	New house - New seawall construction	X		X
			Existing house - Replacement of existing seawall - full property	X		X
			Existing house - Replacement of existing seawall - partial property			X
2	Repair in front of existing seawall	Cast-In-Place Concrete in Flat Vinyl Forms or Corrugated Vinyl Sheeting	Existing house - Repair in front of existing seawall - full property		X	X
			Existing house - Repair in front of existing seawall - partial property			X

X – ALLOWED

NOTES:

1. FRESH WATER CANALS – MATCH EXISTING SEAWALL ELEVATIONS.
2. SEAWALL CAPS WHICH ARE RAISED 24" ABOVE ORIGINAL SEAWALL CAP ELEVATION, CONCRETE RETURNS SHALL BE CONSTRUCTED JUST INSIDE OF EACH PROPERTY LINE EXTENDING A MINIMUM OF 5 FEET FROM THE LANDWARD EDGE OF THE REINFORCED CONCRETE SEAWALL CAP, AT AN ANGLE OF 90 DEGREES FROM THE CAP. RETURNS AND CAPS SHALL BE CONSTRUCTED IN A NEAT AND WORKMANLIKE MANNER WHICH RETAINS ALL MATERIALS FROM WASHING AWAY INTO ADJOINING PROPERTIES AND WATERWAYS. RETURNS AND CAPS SHALL HAVE A UNIFORM, SOLID, AND CONTINUOUS EXTERIOR APPEARANCE WHEN VIEWED FROM THE ADJOINING PROPERTIES AND WATERWAYS.
3. FINISHED TOP SURFACE ELEVATION OF NEW OR REPAIRED SEAWALL CAPS AND RETURNS SHALL BE LEVEL AND ELEVATED 24" ABOVE ORIGINAL CAP ELEVATION FOR NEW AND 12" ABOVE THE ORIGINAL CAP ELEVATION FOR A REPAIR.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11–03–2021		CORR. VINYL WITH CONC SEAWALL GENERAL NOTES	H-3CA
		REVISIONS:	

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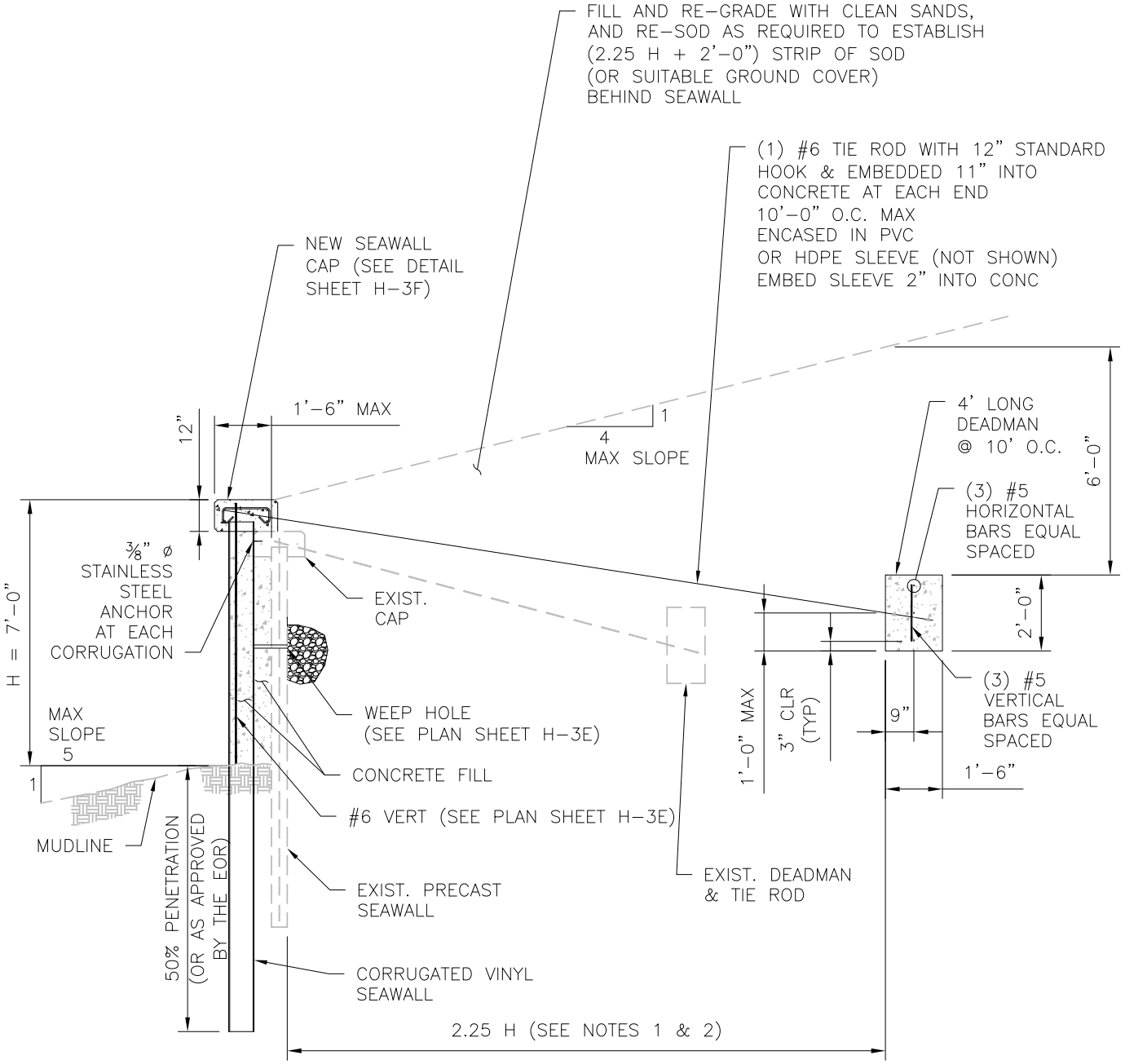

NOTES:

1. ALTERNATE TIE-ROD (STAINLESS STEEL) AND SOIL ANCHOR SYSTEMS MAY BE CONSIDERED IF ENGINEERED FOR A HORIZONTAL COMPONENT WORKING LOAD OF 1220 PLF (SPACED AT 10'-0" O.C. MAX) AND EMBEDDED 2.25 H BEHIND SEAWALL.

2. ANCHORS EMBEDDED BEHIND SEAWALL MUST BE SITE-SPECIFIC ENGINEERED.

SEAWALL ELEVATION

ADOPTED BY CITY COUNCIL		TITLE	SHEET NO.
11-03-2021	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	CORR. VINYL WITH CONC SEAWALL TYPICAL ELEVATION	H-3D
		REVISIONS:	

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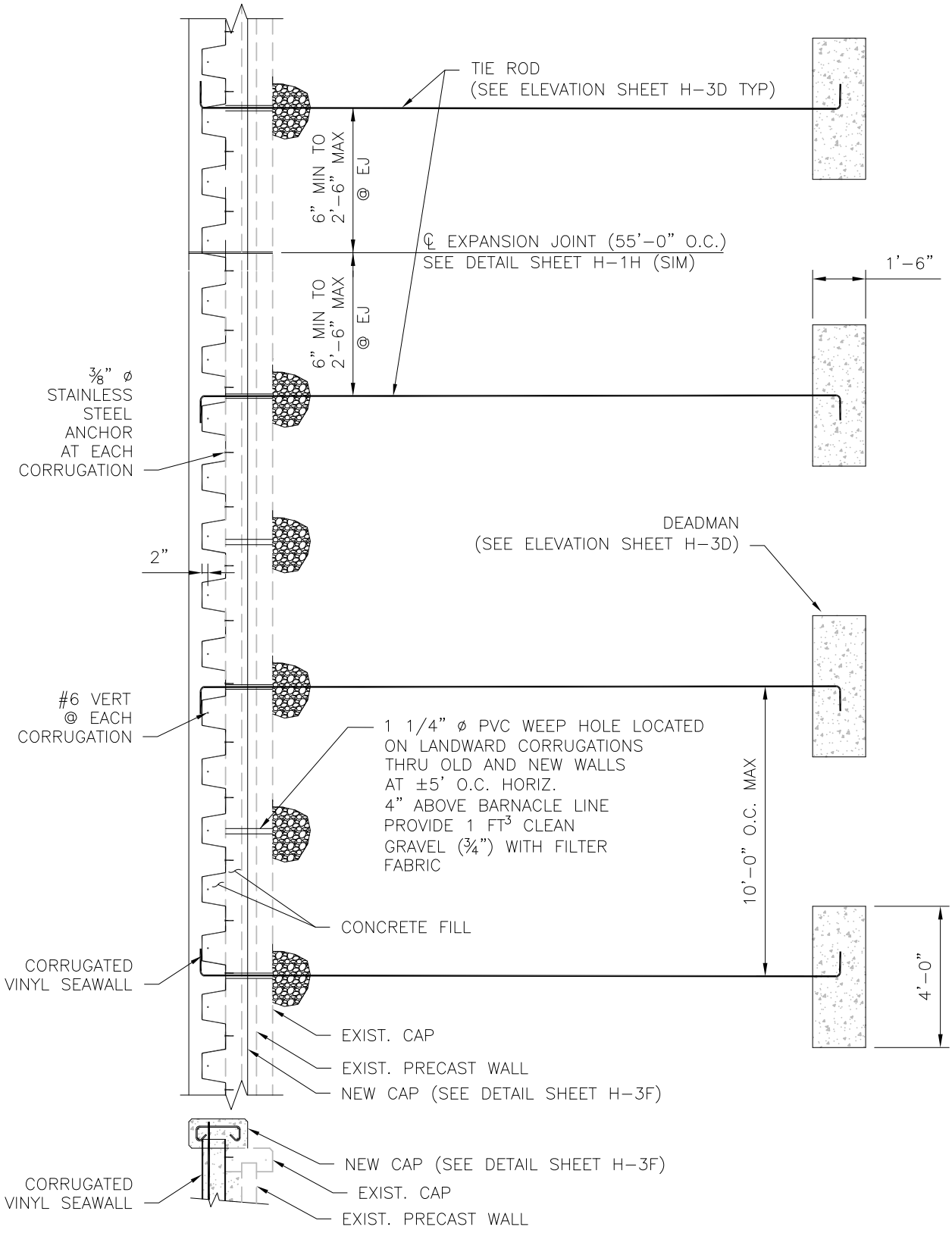

SEAWALL PLAN

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11-03-2021		CORR. VINYL WITH CONC SEAWALL TYPICAL PLAN	H-3E
		REVISIONS:	

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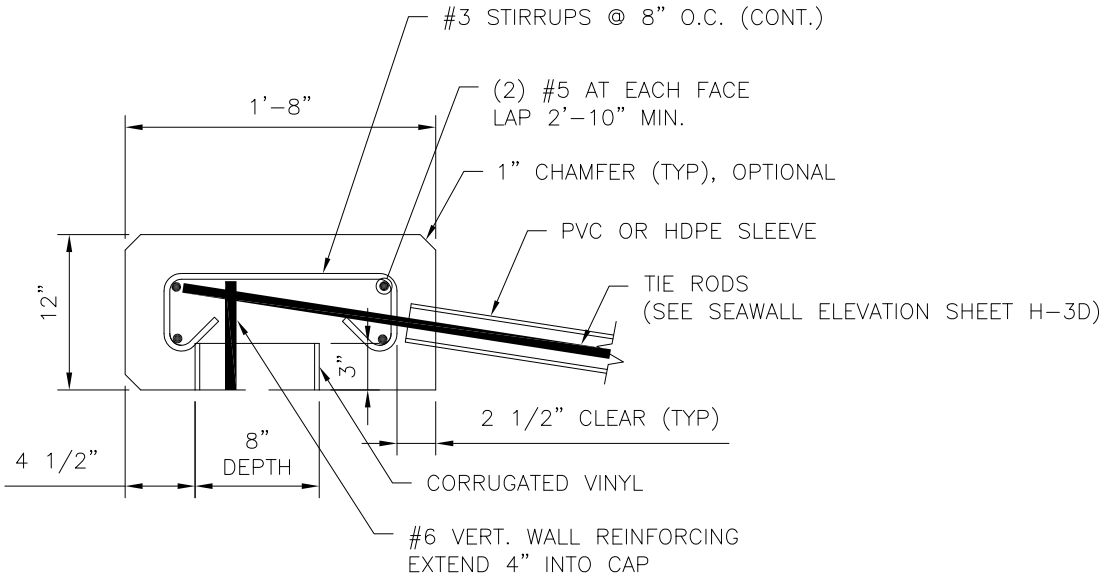
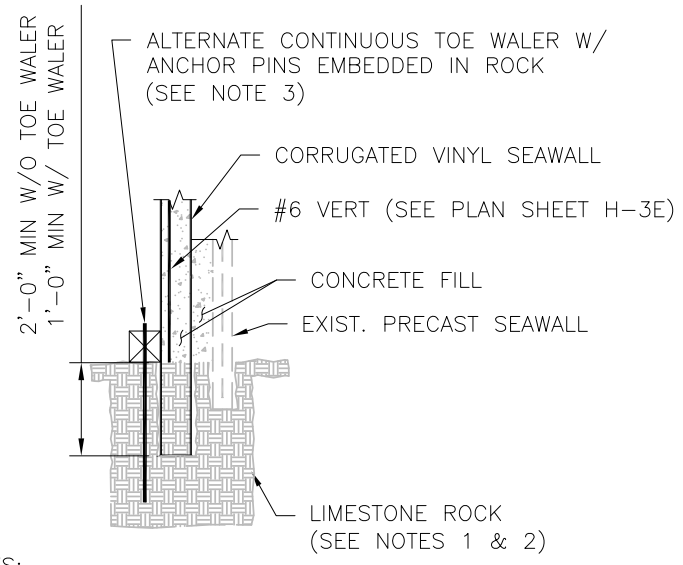


SEAWALL CAP DETAIL



NOTES:

1. REFERENCE CORRUGATED VINYL WITH CAST IN PLACE CONCRETE SEAWALL SPECIFICATION GENERAL NOTE 3.h.10.

2. IF LIMESTONE ROCK IS LESS THAN 2' THICK, PANEL MUST BE ADVANCED DOWN TO FULL 50% PENETRATION.

3. REFERENCE CORRUGATED VINYL WITH CAST IN PLACE CONCRETE SEAWALL SPECIFICATION GENERAL NOTE 3.h.11.

SEAWALL WITH EXISTING PRECAST CONCRETE SEAWALL EMBEDDED IN ROCK DETAIL

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11-03-2021		CORR. VINYL WITH CONC SEAWALL TYPICAL DETAILS	H-3F
		REVISIONS:	

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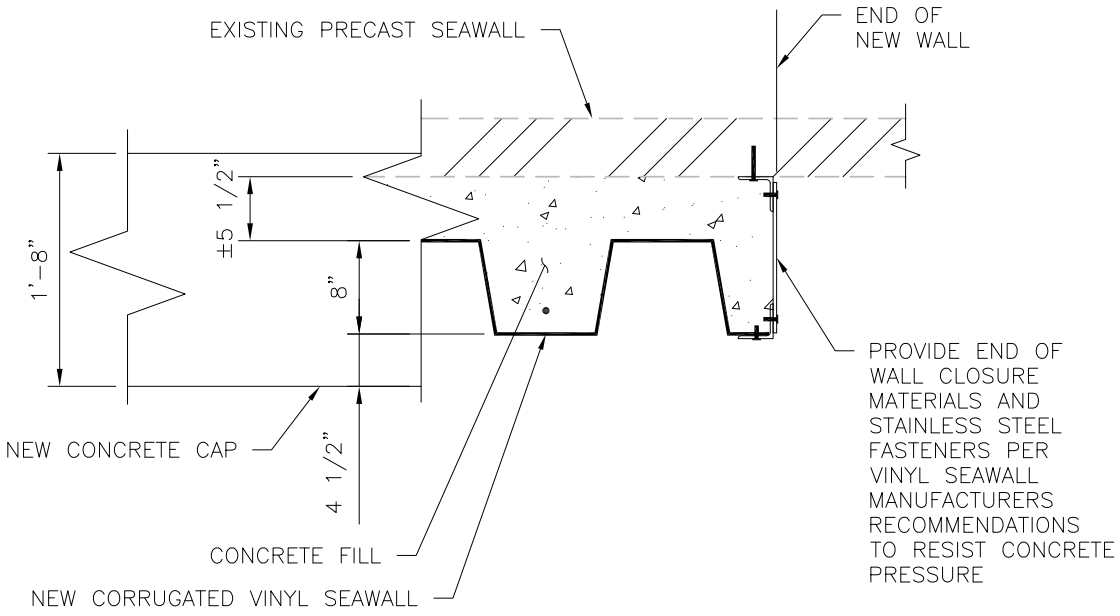
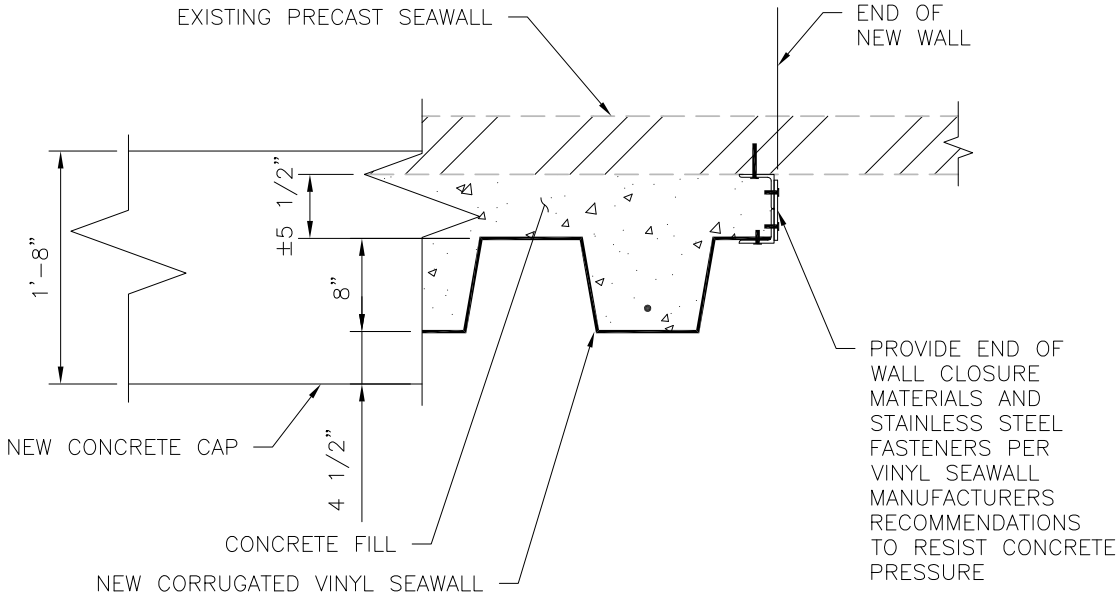


ALTERNATE 1



ALTERNATE 2

END OF WALL DETAILS

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
11-03-2021		CORR. VINYL WITH CONC SEAWALL TYPICAL DETAILS	H-3G
		REVISIONS:	

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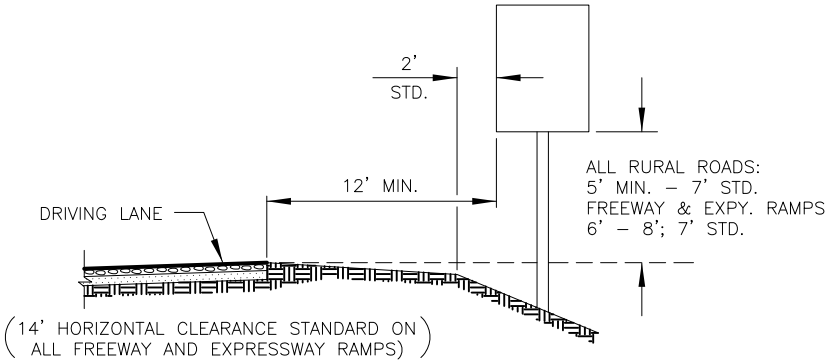

FREEWAY, EXPRESSWAY, AND RURAL ROADS

FLORIDA GREEN BOOK TABLE 3–15
MINIMUM WIDTH OF CLEAR ZONE

TYPE OF FACILITY	DESIGN SPEED (MPH)							
	25 AND BELOW	30	35	40	45	50	55	60 AND ABOVE
	MINIMUM CLEAR ZONE (FEET)							
FLUSH SHOULDER •	6	6 LOCAL 10 COLLECTORS 14 ARTERIALS	6 LOCAL 10 COLLECTORS 14 ARTERIALS	10 COLLECTORS 14 ARTERIALS	14 ARTERIALS AND COLLECTORS ADT < 1500 18 ARTERIALS AND COLLECTORS ADT ≥ 1500	14 ARTERIALS AND COLLECTORS ADT < 1500 18 ARTERIALS AND COLLECTORS ADT ≥ 1500	18 ARTERIALS AND COLLECTORS ADT < 1500 24 ARTERIALS AND COLLECTORS ADT ≥ 1500	18 ARTERIALS AND COLLECTORS ADT < 1500 30 ARTERIALS AND COLLECTORS ADT ≥ 1500
CURBED *	1–1/2	4**	4**	4**	4**	N/A••	N/A••	N/A••

* FROM FACE OF CURB

** ON PROJECTS WHERE THE 4 FOOT MINIMUM OFFSET CANNOT BE REASONABLY OBTAINED AND OTHER ALTERNATIVES ARE DEEMED IMPRACTICAL, THE MINIMUM MAY BE REDUCED TO 1–1/2.

• USE RURAL FOR URBAN FACILITIES WHEN NO CURB AND GUTTER IS PRESENT. MEASURED FROM THE EDGE OF THROUGH TRAVEL LANE ON RURAL SECTION.

•• CURB AND GUTTER NOT TO BE USED ON FACILITIES WITH DESIGN SPEED > 45 MPH.

NOTE: ADT IN TABLE 3–15 REFERS TO DESIGN YEAR ADT.

REFERENCE – FDOT STANDARD PLANS FOR ADDITIONAL DETAILS

ADOPTED BY CITY COUNCIL		TITLE	SHEET NO.
DRAFT	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	ROADWAY SIGNS	J-1
		REVISIONS: 08–31–2020	

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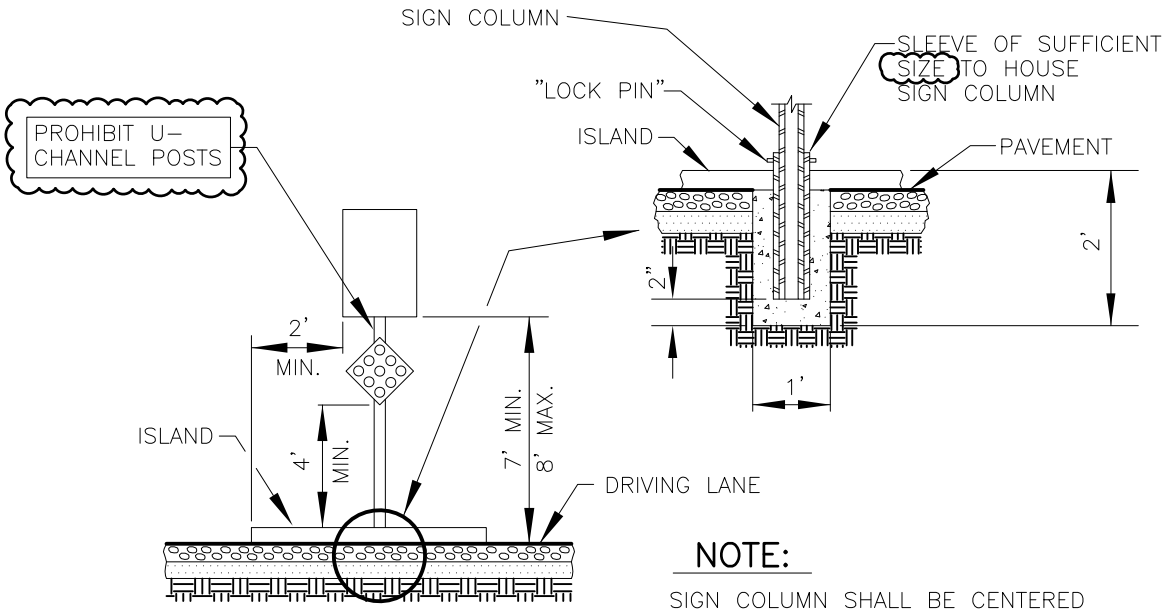

NOTE:

SIGN COLUMN SHALL BE CENTERED ON ISLAND.

SIGN ON ISLAND

SIGN INSTALLATION

IN BUSINESS, COMMERCIAL, OR RESIDENTIAL DISTRICTS WHERE PARKING AND / OR PEDESTRIAN MOVEMENT IS LIKELY, THE CLEARANCE TO THE BOTTOM OF A SIGN SHALL BE AT LEAST 7 FEET ABOVE THE EDGE OF PAVEMENT. IN RURAL AREAS, THE CLEARANCE TO THE BOTTOM OF A SIGN SHALL BE AT LEAST 5 FEET ABOVE THE EDGE OF PAVEMENT. (Sec. 2A.20). REF. MUTCD.

LATERAL CLEARANCE FOR REGULATORY AND WARNING SIGNS OR SMALL DIRECTIONAL SIGNS SIGNS SHOULD BE IN CONFORMANCE WITH THE FLORIDA GREEN BOOK. A CLEARANCE OF 1 FOOT FROM THE SIGN FACE IS PERMISSIBLE WHERE SIDEWALK WIDTH IS LIMITED (Sec 2A19). REF. MUTCD.

BREAKAWAY COLUMNS SHALL FOLLOW THE SPECIFICATION LAID OUT IN THE DETAIL ABOVE.

STANDARD SIZES OF SIGNS:

POST MOUNTED SIGNS

D3-1: STREET NAME (RECTANGLE): 6" HIGH WITH 4-1/2" HIGH LETTERING (25 MPH MORE OR LESS)
HANDICAPPED PARKING (RECTANGLE): 12" x 18"

D3-1: 40 MPH OR LESS (6" UPPERCASE & 4-1/2" LOWERCASE). 9" TALL SIGN (BLANK). GREATER THAN 40 MPH (8" UPPERCASE & 6" LOWERCASE - TYPICALLY MULTI-LANE).
12" BLANK WHITE BORDER (MAY BE OMITTED).

R1-1: STOP: 30" (OCTAGON)(SINGLE LANE). 36" (MULTI-LANE).

R1-2: YIELD: 36" (EQUILATERAL TRIANGLE)(SINGLE LANE). 48" (MULTI-LANE).

R2: REGULATORY (SPEED LIMIT, KEEP RIGHT)(RECTANGLE): 24" x 30" (OR 30" x 36" MULTI-LANE).

R3-3: NO TURNS (SYMBOL)(SQUARE): 24" x 24" (36" x 36" MULTI-LANE).
WARNING (RIGHT OR LEFT CURVE, NO OUTLET...) 30" x 30" OR 36" x 36" (DIAMOND)

R3-18: NO U-TURN/NO U-TURN (SYMBOL SIGN)(SQUARE): 24" x 24" (SINGLE). (36" x 36" MULTI-LANE).

R5-1: DO NOT ENTER (SQUARE): 30" x 30" (OR 36" x 36" MULTI-LANE).

R6-1: ONE WAY (RECTANGLE): 36" x 12" (SINGLE LANE). 54" x 18" (MULTI-LANE).

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
		ROADWAY SIGNS	J-2
		REVISIONS: 03-31-2026	

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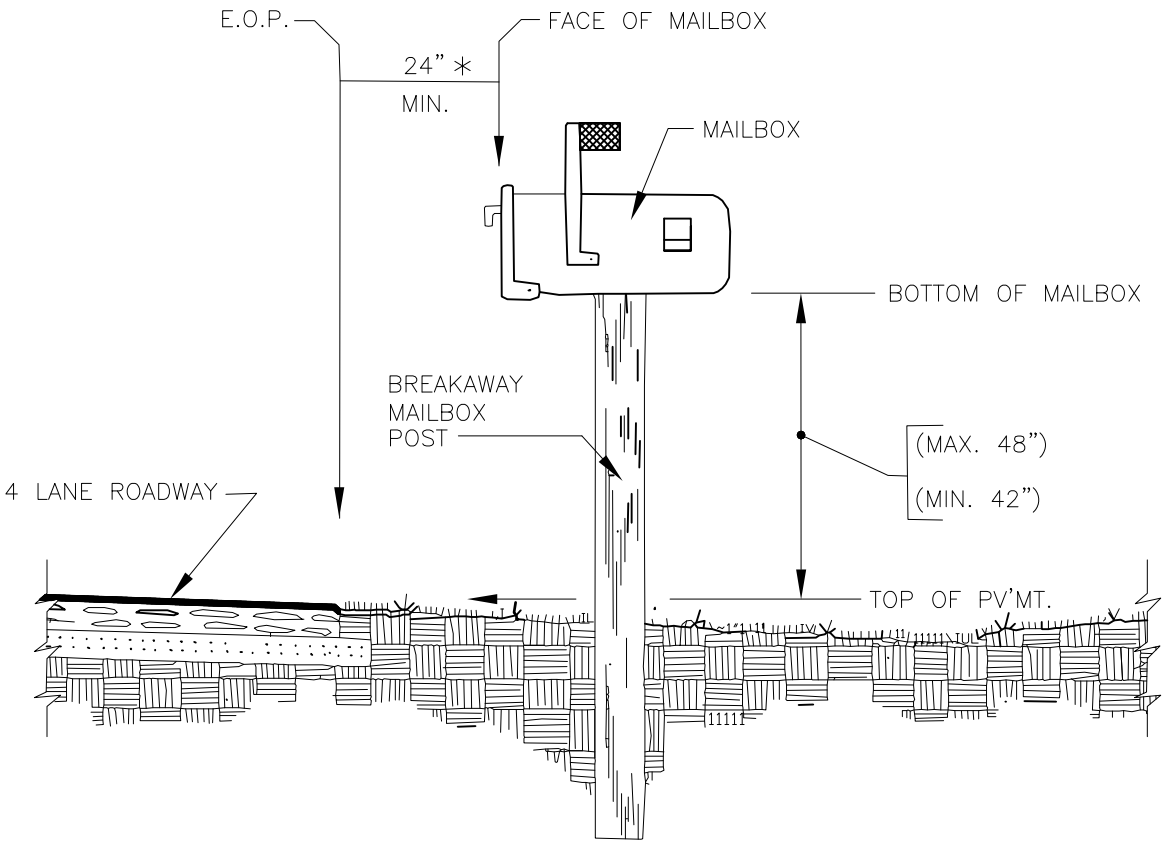

* = 18" MINIMUM ON ALL LOCAL STREETS.

NOTES:

1. CONSULT U.S. POST OFFICE FOR DETERMINING PROPER SIDE OF ROAD FOR PLACEMENT.
2. FOR DESIGNS WHICH DIFFER FROM THIS STANDARD, CONSULT THE LOCAL U.S. POST OFFICE.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
DRAFT		MAILBOX DETAIL	J-3
		REVISIONS: 08-31-2020	

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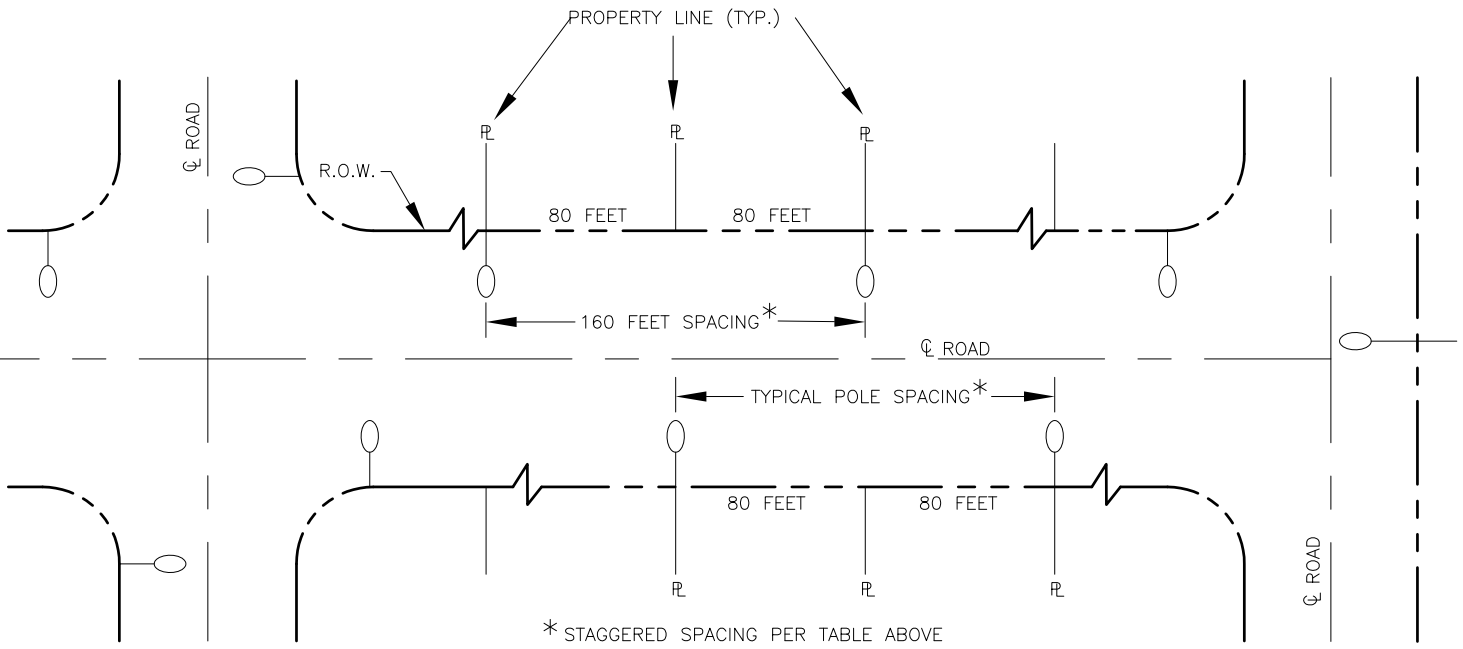
TYPE, SPACING AND WATTAGES

STREET CLASSIFICATION (1)	POLE SPACING (2)	HPS WATTAGE	LUMINAIRE COBRAHEAD (3)	LED EQUIVALENT	LED (4) ROADWAY LUMINAIR
	(FT)	(W)	(CUTOFF)	(W)	(GE)
LOCAL	160	N/A	125	53	ERL1
COLLECTOR	160	150	125	N/A	ERL1
MAJOR ARTERIAL	160	250	125	N/A	ERL1
PRINCIPAL ARTERIAL	160	400	125	N/A	ERL2

(1) SEE FUNCTIONAL CLASSIFICATION MAP
(2) LCEC POLES
(3) AMERICAN ELECTRIC LIGHTING – ROADWAY SERIES 125
(4) GENERAL ELECTRIC (GE) EVOLVE LED ROADWAY LIGHTING

INTERSECTION	LOCAL	COLLECTOR	MAJOR ARTERIAL	PRINCIPAL ARTERIAL
LOCAL	53 W (LED)	150 W (HPS)	250 W (HPS)	400 W (HPS)
COLLECTOR	150 W (HPS)	150 W (HPS)	250 W (HPS)	400 W (HPS)
MAJOR ARTERIAL	250 W (HPS)	250 W (HPS)	250 W (HPS)	400 W (HPS)
PRINCIPAL ARTERIAL	400 W (HPS)	400 W (HPS)	400 W (HPS)	400 W (HPS)



NOTES:

1. LIGHTING LAYOUT AND DESIGN PLAN SHALL BE PER LEE COUNTY ELECTRICAL COOPERATIVE.
2. ANY CHANGE IN LOCATION OF STREET LIGHTS FROM APPROVED PLANS OR STANDARDS IS SUBJECT TO WRITTEN APPROVAL BY THE CITY.
3. DECORATIVE ROADWAY LIGHTING IS ACCEPTABLE PROVIDED IT MEETS THE MINIMUM DESIGN CRITERIA AND OBJECTIVES CONTAINED IN THE FLORIDA GREENBOOK.

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
07–20–2022 ORD. 47–22		STREET LIGHTING	J-4
		REVISIONS:	

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TRAFFIC IMPACT ANALYSIS (TIA)

PURPOSE

A Traffic Impact Analysis (TIA) provides information on the projected traffic expected from a proposed development. A TIA also evaluates the impacts of proposed development at full buildout on the multimodal transportation system, including roads, transit, bicycle, and pedestrian facilities.

The purpose of these TIA Guidelines is to provide a coordinated process for performing a TIA within the City of Cape Coral, Lee County, Metropolitan Planning Area (MPA). See Figure 1.

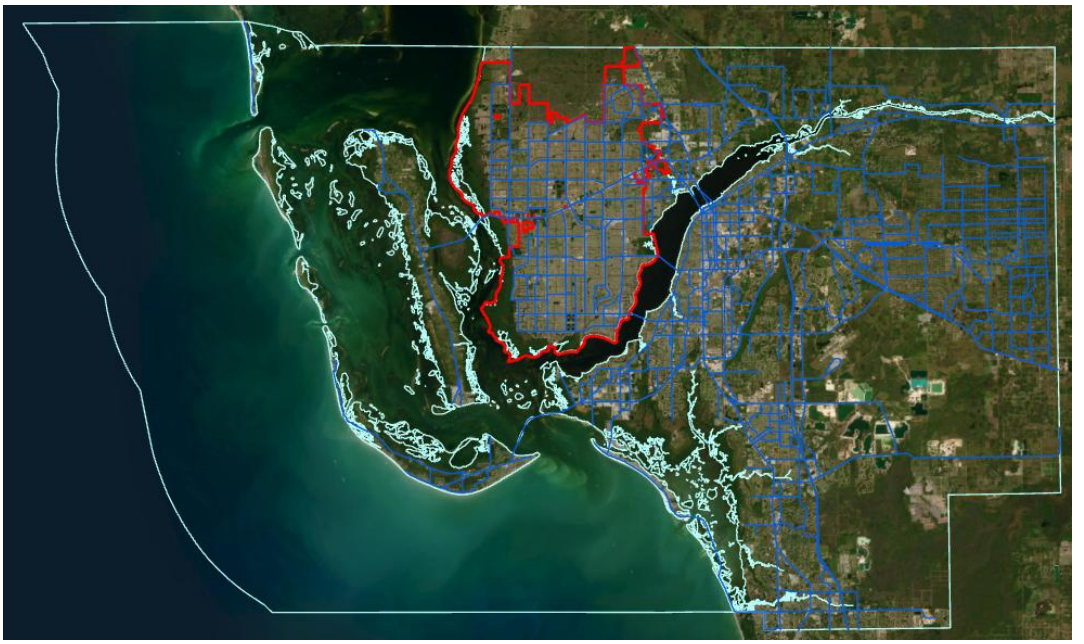


Figure 1: City of Cape Coral, Lee County, Metropolitan Planning Area

APPLICABILITY

The TIA, or Traffic Impact Analysis (TIA), must be provided at the first submission of the site development plan (SDP) or Preliminary Subdivision Plan (PSP).

A TIA for rezoning may be required prior to the development TIA to analyze the net trip difference between the current and proposed zoning categories. Planned Unit Developments (PUDs) shall be treated as rezonings and are subject to TIA provisions.

A Traffic Impact Statement (TIS) may be provided in lieu of a Traffic Impact Analysis

(TIA) where impacts are anticipated to be de minimis (under 300 cumulative peak hour trips) and approved by staff prior to submittal. The need for a TIA or any other studies should be coordinated with the City.

TIAs are managed and reviewed by the City Traffic Official (CTO). The CTO may be an engineer licensed in the State of Florida practicing Traffic Engineering or a transportation planning professional having at least five (5) years of experience in transportation planning and holding certification from the American Institute of Certified Planners (AICP) or Professional Transportation Planner (PTP) designations.

A TIA will be required as determined by the provisions within the Engineering Design Standards (EDS) for developments generating:

1. 300 or more cumulative trips in the peak hour (Comprehensive Plan Transportation Element, Policy 1.1.11)

2. Any change in the use of an existing non-residential building that would result in reaching the above-mentioned peak hour threshold, is also subject to the requirement. An exception would be instances where trip generation would increase by less than 15%.

3. A TIA will expire in two years from the date that it was approved unless otherwise revalidated by an approved memo to the CTO. A new TIS will be required if revised traffic conditions will result in an increase in the traffic generation of over 15%, or an increase of 20% in the directional distribution of traffic, or as requested by the CTO.

Developments generating less than 300 cumulative peak hour trips may also be required to submit a TIA if determined necessary by the CTO to maintain site-related operational and safety standards.

LOS performance measures are determined by the City and referenced in Comprehensive Plan Transportation Element. Transportation concurrency is rescinded per Ordinance #42-25 Mobility Plan and Mobility Fee. However, the development remains responsible for implementing site-related improvements necessary to address operational and safety impacts attributable to the proposed development. Nothing contained in these guidelines is to be construed to require proportionate share payments for offsite improvements that are not site-related improvements for any size project.

The City has adopted the following peak hour, peak season LOS performance measures for the following facilities:

1.	Del Prado Boulevard (Cape Coral Parkway to SR 78)	LOS E
2.	Del Prado Boulevard (SR 78 to US 41)	LOS C
3.	State Road 78 (Pine Island)	LOS C
4.	Pondella Road	LOS E

5.	Hancock Bridge Pkwy. (City limits to Del Prado Blvd.)	LOS E
6.	Cape Coral Pkwy. (Cape Coral Bridge to Pelican Blvd.)	LOS E
7.	Veterans Parkway	LOS C
8.	All other local, collector, arterial roadways	LOS D
9.	All limited access facilities	LOS D
10.	All other roads within City jurisdiction	LOS D

REVIEW SCHEDULE

Prior to the initial application submittal identified under Applicability, the Applicant shall submit a Methodology Statement outlining the proposed approach for evaluating the required standards. No TIA will be accepted without prior approval of the methodology.

If the CTO determines that a TIA is not required based on the Applicability criteria, a TIS may be requested in its place. If the CTO determines that a TIA is required following methodology approval, the Applicant shall submit the TIA with the initial review in accordance with the approved methodology.

Approval of the methodology does not preclude the CTO from requesting additional data or supporting information after submittal.

1. METHODOLOGY STATEMENT

Prior to conducting the TIA, a written methodology statement shall be prepared by the applicant and submitted for review and approval by the CTO. The purpose of the methodology statement is to establish agreed upon methodologies and assumptions prior to the start of the study, corresponding to the issues outlines in the following sections. The methodology statement shall be prepared using the guidelines provided in the following paragraphs, considering requirements of Section 6 and 7 Information Requirements.

The methodology statement will first be reviewed by the CTO, if necessary, through a methodology meeting (or correspondence) with the applicant. Following review of the methodology statement by the CTO, the applicant will then revise the statement is necessary based upon agreed upon methodologies. The applicant shall not prepare a TIA without an approved methodology statement signed by the CTO.

For developments within the City that may impact County or State facilities, the respective agency may also be required to approve the methodology if as directed by the CTO. The collective methodology agreement shall be valid for a period of six (6) months.

2. REPORT FORMAT AND SUBMITTAL REQUIREMENTS

Report Format

For consistency purposes and ease of City review, the TIA report shall include all items identified in the TIA Submission Checklist provided in Section 7 in corresponding order, as appropriate, unless otherwise directed by the CTO.

Submittal Requirements

The Applicant has flexibility in how the TIA report is formatted but must clearly include the information required as described herein with sufficient detail and supporting graphics. Maps and other illustrative graphics accompanied with summary text, where appropriate, is encouraged.

In addition, the TIA must include:

1. A title page which will include the development name and project number assigned by City, City/County, the developer's name, company, address and phone number, the professional engineer/planner's name, company, address and phone number and the TIA preparation date.

2. A table of contents shall be provided which lists the figures, tables, chapters and appendices.

3. Each page of the report body and appendices shall be numbered.

4. A copy of the project site plan

5. A completed and signed Transportation Impact Analysis Submission Checklist.

A minimum of one electronic version in .pdf format of the TIA (including all plans, graphs, figures, diagrams, etc.) must be submitted to the City for review. Other amounts and reviewers required may be determined by the CTO. The Applicant is encouraged to submit GIS compatible files in addition to the report.

The CTO reserves the right to return a TIA report without review that does not meet the requirements noted in this section.

3. EXTENTS OF STUDY

Roadways, Intersections, and Signalized Systems

For the purpose of this section, the term "Major Roadway" may include all existing collector (major and minor) and higher-classified roadways per the latest, adopted Functional Classification Map and those schedules for construction within the Lee MPO Transportation Improvement Plan (TIP), and/or adopted into the City Capital Improvement Program (CIP).

Impacted roadways and intersections/signalized systems that must be studies in the TIA shall include:

1. The major roadway segment(s) to which the site has direct connections, or to which the site has the most direct access via local/non-major streets (if the site has no direct connection to major roadways).

2. All roadways of the project where the project's peak hour trips consume three percent (3%) or more of the roadway's two-way peak hour generalized service volume based on the adopted performance measure LOS and committed number of lanes, unless otherwise specified by the CTO.

3. All roadways included within the boundary of 1) and 2) above currently operating at critical or near critical volume to capacity ratios regardless of the percentage of capacity consumed.

4. Major intersections (all signalized intersections and unsignalized intersections of major roadways the cross another major roadway) and signalized systems that are part of the impacted threshold roadways.

5. The intersection(s) and signalized systems of the major roadways with the non-major roads that provide access for 50 or more peak-hour development trips to or from the site (two-way total) to the major network.

6. An interchange operations analysis report shall be submitted when deemed appropriate by the CTO.

7. The CTO shall be able to add segments and/or intersections to be analyzed based on traffic capacity or safety concerns.

8. Signal warrant analysis shall be required upon request of the CTO.

For purposes of determining if peak hour development traffic consumes the threshold values of the existing service volume of a roadway, the allowable capacity, the City's most recent available traffic counts for Average Annual Daily Traffic (AADT) shall be utilized. Independent data collection or Lee County Traffic Counts may be used as supplemental information.

The TIA will also include an evaluation of the traffic circulation at the development entrances in relation to the adjacent intersections and internally within the site. This assessment must include the vehicular stacking and storage provided for site plans at the entrance driveways in advance of any parking stalls or driveway aisles. An operations management plan may be required when requested by the CTO.

Transit

Impacts to the existing or future funded transit network shall be reviewed and addressed within the report. Coordination with the local transit agency in developing recommendations may be required and upon the CTO request.

All transit recommendations should reference the adopted Mobility Plan.

Bicycle Facilities, Pedestrian Facilities and Multiuse Trails

The site plan and recommended improvements shall be reviewed to ensure that pedestrian, bicycle, and multi-use trail traffic can be accommodated safely and

efficiently, where appropriate. The TIA should document existing and planned pedestrian and bicycle facilities within the project extents. The appropriate level of analysis should be identified in the methodology. In making determination, at a minimum the following questions should be considered:

1. Are pedestrian and bicycle needs safely accommodated on-site and off-site?

2. Will the proposed development maintain or improve safety for pedestrian and bicyclists?

3. Will the proposed development's access points increase potential conflicts with pedestrian and bicyclists?

4. Will site-generated traffic adversely affect pedestrians and bicyclists?

5. Will site-generated traffic adversely affect existing and planned pedestrian and bicycle facilities?

6. How will proposed mitigation affect pedestrians and bicyclists?

7. Is the proposed mitigation in alignment with the adopted Mobility Plan Multimodal Element?

The applicant should provide specifics on where pedestrians will access the development, mid-block crossings (if any), locations of safe refuge, convenient and safe transit stops, etc. The applicant shall evaluate if pedestrian volumes warrant crossing treatments such as new crosswalks, flashing beacons, rectangular rapid flashing beacons (RRFB), pedestrian signals, etc.

4. ANALYSIS SCENARIOS

1. "Existing scenario" is defined as the analysis of existing traffic on the existing network. The existing network includes all existing roads, major roads under construction by a non- governmental party, plus all improvements for which construction contracts have been executed by government agencies at the time the proposed transportation methodology statement is initially submitted.

2. "Future scenario" is defined as the analysis of existing traffic, plus background traffic (derived from growth rates, vested trips, or combination of both), plus the project's traffic placed on the existing network, plus all improvements funded for construction within the first three (3) years of the local jurisdiction's adopted CIE and/or adopted LEEMPO's TIP.

   It should be noted that improvements funded for construction in the CIP or TIP may be relied upon for purposes of identifying solutions to future road operating conditions.

3. “Future scenario with Mitigation” is defined as analysis of the Future Scenario with the inclusion of any improvements that are required for mitigation. This analysis scenario will be required only if mitigation of site-related improvements is required as the result of the future scenario analysis.

4. If development is located in the South Cape Community Revitalization Area (CRA), evaluation of “Alternative Mode Analysis” may be required. This constitutes evaluation of a present or future urbanized area to include sidewalks, bikeways, and existing transit accessibility.

   Provisions for consideration within the report shall include the following (Policy 14.5, Comprehensive Plan Future Land Use Element):

   a) Preferential parking for carpools, vanpools, or multiple occupancy vehicles with the object of increasing the average vehicle occupancy for trips generated by the development.

   b) Flexible work schedules for employees of the development, with the object of decreasing peak hour automobile trips generated by the development.

   c) Payment of a subsidy to LeeTran to support an increased level of transit service within the TCEA.

   d) Payment into one or more funds, to be established by the City or the CRA. Monies collected by such fund(s) shall be used to support programs or capital projects designed to provide additional parking and/or to enhance bicycle, pedestrian, and transit mobility within the TCEA.

   e) The provision of transit shelters, built to City of Cape Coral specifications, within the development.

   f) The provision of a safe and convenient internal pedestrian and bicycle circulation system within the development, including the placement of bicycle racks or bike lockers.

   g) The provision of transit turn out lanes on heavily traveled roadways.

   h) The provision of structured parking for use by residents, patrons, and employees of the development.

   i) Clustering buildings within the development or otherwise designing the development to achieve maximum residential density or non-residential intensity at the development site in a manner, which preserves open space, enhances multimodal opportunities, and provides transit-oriented densities or intensities.

j) Where feasible, the construction of new roadway or alley facilities to reduce congestion on major roadways and to provide alternate access to the development.

k) Any other innovative transportation related modifications or standards submitted by the developer and acceptable to and approved by the City of Cape Coral.

5. INTERNAL AND PASSER-BY CAPTURE

Internal and passer-by trip capture estimates shall be based on the most current edition of the ITE Trip Generation Manual and Handbook, supplemented by NCHRP Report 684 or other accepted methodologies as approved by the City Traffic Engineer. Site-specific data, regional studies, or emerging data sources may be used where appropriate to reflect local conditions. Capture rates shall be appropriate to the specific land use and context and may exceed typical default values where justified by data. A fixed maximum percentage shall not apply unless otherwise determined by the City.

6. INFORMATION REQUIREMENTS FOR UNDER 300 TRIPS TIS MEMORANDUM

1. Number of units (i.e. dwelling units, square feet, etc.)

2. Description of development and ITE category for trip generation.

3. Trip end rates or equation used to generate the traffic and the source of this information. (Use of the Trip Generation Manual latest edition is required unless otherwise approved by Public Works.)

4. Total trips generated for the Average Daily Traffic (ADT) and the a.m. and p.m. peak hours. (The peak hour of the adjacent street traffic is usually the most applicable peak hour to use.)

5. An analysis to check if turn lanes, traffic signals or other site related improvements will be required at the project's access points and roads.

7. INFORMATION REQUIREMENTS FOR 300 OR MORE TRIPS TIA STUDY

What information should a TIA contain?

At a minimum such a study should describe:

1. The size, type, location and staging of the proposed land use.
2. A description of the physical site and the surrounding area.
3. A determination of the area of influence of the new land use and approved by the Public Works division during methodology approval.
4. A description of existing conditions including traffic volumes, accidents, traffic signals and overall traffic operations and circulation.

5. Identification of traffic congestion, accident areas and other deficiencies to the existing roads and to nearby lands now being developed and the overall traffic growth trends in the area.
6. The projected traffic volumes and the anticipated distribution of traffic on the area street system. The analysis must use the latest edition of the ITE Trip Generation Manual and provide the AM, PM and peak hour for each proposed use and the entire project.
7. An identification of traffic congestion, safety problems and/or other deficiencies for the future roadway network with the proposed development in place. The analysis must determine the level of service provided during the peak season of the year following the year in which the project is expected to be completely constructed and occupied (build out year).
8. The identification of improvement measures needed to offset increased congestion due to the additional traffic generated by the new development. Improvements can include roadway widening, turn lanes and signals at intersections and other measures as delineated by the CTO.
9. On-site issues including the location of all driveways as well as parking needs, circulation, safety including pedestrians/transit users and truck access and operations.
10. All queue and storage areas with associated demand calculations as applicable (drive-through, schools, loading, etc.)

The outline for the complete Traffic Impact Analysis (TIA) that is to be followed is found on the following sheets . Sufficient detail should be included so that reviewers can follow the methodology and associated findings and recommendations

Traffic Impact Analysis Contents

1. INTRODUCTION
   a. Land Use, Site and Study Area Boundaries (provide map).
   b. Existing and proposed site uses. (provide table)
   c. Existing and proposed uses in vicinity of site (provide map).
   d. Existing and proposed roadways and intersections (provide map).
   e. Analysis years (existing, background development, buildout year, phasing)

2. TRIP GENERATION AND DESIGN HOUR VOLUMES (provide table).

3. TRIP DISTRIBUTION (provide figure).

4. MODE CHOICE (provide table)

5. TRIP ASSIGNMENT (provide figure)

6. EXISTING AND PROJECTED TRAFFIC VOLUMES (provide figure for each).
   a. A.M. and P.M. Peak hour site-generated traffic (including turning movements)
   b. A.M. and P.M. Peak hour background traffic (existing + approved, no site).
   c. A.M. and P.M. Peak hour total traffic (background + site-generated traffic)
   d. Design peak hour(s) necessary for complete analysis (e.g., peak season,

school peak, weekend peak), where applicable.

e. Total existing daily traffic (AADT) for street system in study area.
f. Total future daily traffic (AADT) including site-generated traffic.
g. Total future buildout daily traffic (AADT) including site traffic and projected growth within the study area.

7. CAPACITY ANALYSIS (provide Analysis Sheets in appendices)

8. TRAFFIC SIGNALS/WARRANTS (provide Analysis Sheets in appendices)

9. TRAFFIC ACCIDENTS (required unless otherwise permitted to be omitted by Public Works, provide Collision Diagrams and Accident Rates)

10. CONCLUSIONS

11. RECOMMENDATIONS.
    a. Proposed recommended improvements (provide sketches of improvements).
    b. Volume/capacity Analysis at critical points (provide analysis sheets in appendices).
    c. Traffic volume proportions.

CITY OF CAPE CORAL TRAFFIC IMPACT ANALYSIS (TIA) SCOPING MEETING WORKSHEET

This worksheet was developed to facilitate the TIA scoping process and supplement the minimum information required for a TIA by the City of Cape Coral. The preparer shall complete Sections 1 and 2 and submit this worksheet and required attachments to the City prior to the scoping meeting.

Section 1: General Information

Project Name:					
Project Address/Location:					
Location?	☐ City of Cape Coral	☐ Lee County	☐ ROW		
Preparer Company:					
Preparer Name:				Preparer Email:	
Preparer Address:				Preparer Phone:	
Application Type or Reason for TIA Worksheet/Report					
☐ Traffic Statement (TIS)	☐ Final Plat	☐ Permit	☐ Site Plan	☐ Zoning	☐ Other
Required Attachments					
☐ Basis for background traffic growth rate			☐ Preliminary trip distribution and assignment diagrams		
☐ Site plan with access locations					

Section 2: TIA Parameters

Parameter	Developer Proposed		City Concurrence		If no, identify modifications required
			Yes	No	
Trip Generation Method	☐ ITE Trip Gen, 12th Ed ☐ Other:				
Background Traffic Growth Rate					
Proposed Peak Periods	☐ AM ☐ PM ☐ Other:				
Scenarios and Years for Analysis (e.g. Existing 20XX, Background & Phase # 20XX, Background & Buildout 20XX)	1. 2. 3. 4. 5. 6.	20 20 20 20 20 20			
Intersections for Analysis (in addition to all site access)	1. 2. 3. 4. 5. 6.				
Background Traffic from Adjacent Development					

Section 3: Additional Comments/Concerns to be Addressed in the TIA Report (*access, sight distance, traffic control warrants, neighborhood traffic control plan, traffic calming, funded capital and developer improvements, parking, truck traffic, etc.*)

Section 4: Additional Information

Attachment: ☐ Crash Analysis ☐ Multimodal Narrative ☐ Other (Supporting Documents)

Applicant Signature

Preparer's Signature

DRAINAGE DESIGN STANDARDS

The Drainage Design Standards are intended to provide a standardized method of design and to assist the design professionals and the construction industry in applying the rules and regulations required by the following:

1. The City of Cape Coral
2. The South Florida Water Management District
3. The State of Florida Department of Transportation
4. The Florida State Statutes
5. The United States Environmental Protection Agency in conjunction with the FDEP NPDES Permit FLS000035
6. The Clean Water Act of 1973 or as currently updated.
7. Florida Building Code (latest edition)

The Drainage Design Standards, as adopted by the City of Cape Coral, are intended to be applied to all new, expanded and altered development projects or sites, including redevelopment of properties within the jurisdictional boundaries of the City of Cape Coral.

The City of Cape Coral has adopted and incorporated into the Drainage Design Standards the rules and regulations specified in the above mentioned governing agencies.

REQUIREMENTS FOR RESIDENTIAL DRIVEWAYS

The design and subsequent elevation stake-out of all driveways, to include ramps, swales, culverts, and full culverts for residential, multi-residential and places of worship will be the responsibility of the Public Works Department. Refer to the applicable sections of this Engineering Design Standard for design criteria.

All full culverts must be constructed with perforated pipe, bedded over a rock filled trench (#57 drainage rock) or comparable, the pipe and rock must be wrapped in permeable filter fabric to provide exfiltration and percolation of stormwater runoff into the soil for water treatment. The installation of French Drains shall follow the FDOT Standard Plans requirements. In cases where full culverts are approvable, it may be necessary for the developer to install and/or construct one or more catch basins.

INLETS & JUNCTION BOXES

Inlets and junction boxes must comply with City of Cape Coral Engineering Design Standards and FDOT Design Standards.

RE-LOCATION OF EXISTING STORM DRAINAGE

When the relocation or replacement of an existing storm drainage pipe becomes necessary due to a conflict resulting from accumulation of lots and/or new construction design, then the owner/developer shall be responsible for the expense and construction of relocation or replacement of an existing storm drainage pipe, and will be responsible for the procurement of the necessary permits. All pipe relocations must first be referred through the City's Registered Surveyor to ensure proper placement and alignment of pipes. Based on analysis, the pipe will be replaced at a minimum of the same size or larger than the existing system.

Permits for relocation of storm drains are obtained through the Department of Development Services.

City will not maintain private storm drainpipes or outfalls.

All newly constructed pipes must be inspected and approved by the Public Works Department prior to the removal of existing system.

STANDARD FOR ABANDONED PIPE

All abandoned pipes must be completely removed, or at City's option may be fully grouted and capped.

COMMERCIAL REQUIREMENTS

All development with the exception of single family homes or duplexes constructed on existing platted lots is considered commercial development. Any development consisting of two acres or more of impervious area, and projects consisting of ten acres or more are required to obtain a SFWMD general permit. All lesser projects fall under the guideline of the State-Wide ERP, 10-2 General Permit requiring electronic certification within 30 days of completion of construction.

The City's professional engineering staff performs a complete review of all drainage designs for compliance with SFWMD criteria during the Site Development Plan (SDP), Subdivision Construction Plan(SCP) or any applicable development review review process. The criteria for review are addressed under the SFWMD Applicant's Handbook Volume II requirements for water quality, and water quantity. All commercial development is required to provide stormwater retention/detention prior to discharge from the site. Due to limitations of the City drainage facilities, project discharge of stormwater is limited to a peak discharge of 0.10 cfs/acre for the 25 yr. 3-day rainfall event. Projects discharging directly to tidal waters do not have that limitation. All dry retention/detention area side slopes shall be designed and constructed with side slopes of a 4:1 ratio are subject to Public Works approval. Projects with unusual site constraints may utilize side slopes no steeper than at a 3:1 ratio for areas not adjacent to buildings, parking lots or areas with frequent pedestrian access. All dry retention/detention areas will be stabilized with sod on tops, sides and bottom.

Use of retaining walls to contain stormwater detention or retention areas is limited to no more that 40 percent of the perimeter of the treatment area, as measured along the toe of slope. When retaining walls are utilized the equivalent length of 5:1 side slope shall be provided elsewhere along the perimeter to compensate for the loss of surface area and treatment efficiency in the treatment system. Treatment areas adjacent to buildings must not be steeper than 4:1 up to the 25 yr 3 day peak stage in the water management system. Retaining walls must be provided with the appropriate handrails or vehicular guard rails if adjacent to vehicular use areas, and drop-offs per the Florida Greenbbook.

Underground storage may be utilized within the public Right-of-Way pending Public Works approval.

It will be the developer's responsibility to provide a "Wet Season" water table, percolation factors, and complete drainage calculations for all development projects submitted to the City for review and approval. Percolation shall not be used as a discharge method in the design of a projects water management system when determining peak stages and peak discharge rates. Exfiltration amounts as determined by the SFWMD exfiltration formula may be considered during the design calculations for peak stages and discharges.

Compensating storage must be provided for all off-site impervious areas proposed or required for the project and any areas where it is impractical to intercept site runoff prior to discharging to the City right of way.

Contact the Department of Development Services for information regarding the various applications for development review.

For all construction projects containing one or more acres, the developer or contractor will be required to file an NPDES Notice of Intent with the U.S. Environmental Protection Agency/FDEP. It will also be necessary to provide the City with a copy of the Notice of Intent prior to the commencement of construction. Prior approval from the City will be required prior to disturbing any Wetlands or Conservation Easements. An Army Corps of Engineers permit may also be necessary if the site contains "Wetlands."

PIPE MATERIAL AND SIZING

For pipe material refer to FDOT Standards. Pipe sizing shall be determined by the volume and capacity needed for the conveyance of stormwater runoff in relation to the design storm event as determined by the engineer of record. All materials used must specify the design roughness. The use of galvanized steel will not be permitted.

Mitered ends with concrete collars may be included for any culverts installed, subject to review and approval by the Public Works Director. All swales within the ROW will be subject to the standards for residential, multi-residential, and places of worship, and must be permitted and inspected.

RESIDENTIAL REQUIREMENTS

A. Submittals

As part of the Engineering Design Standards, DSDwill require a conceptual drainage plan to be submitted and reviewed with the permit application. Failure to submit a Drainage Plan shall delay permit review and approval. This drainage plan will document the intent of the contractor to comply with the Engineering Design Standards. The chosen method to meet this intent shall be at the sole discretion of the General Contractor. See sheets L-5 thru L-11 for typical examples. The contractor may use the appropriate Engineering Design Standard in conjunction with the drainage plan or, if required by site conditions as determined by contractor, submit an alternate design reviewed and certified by a Licensed Engineer or Surveyor. All drainage plans shall include elevations of the adjoining properties and identify any affect, positive or negative, the proposed work will have on existing drainage conditions (see Sheets L-5 through L-10 for locations of elevations). The completed grading and drainage work shall be documented by the Engineer or Surveyor and submitted on the final survey to the City as record information prior to issuance of the Certificate of Occupancy. The maintenance of these drainage improvements will be the property owner's responsibility.

B. Design

The garage floor slab shall be a minimum of 12" above the crown of the road. The crown of the road is defined as the highest point on a roadway cross section that is directly in front of the proposed driveway. Deviations may be approved by the City, as discussed under the Deviation section on page 2.

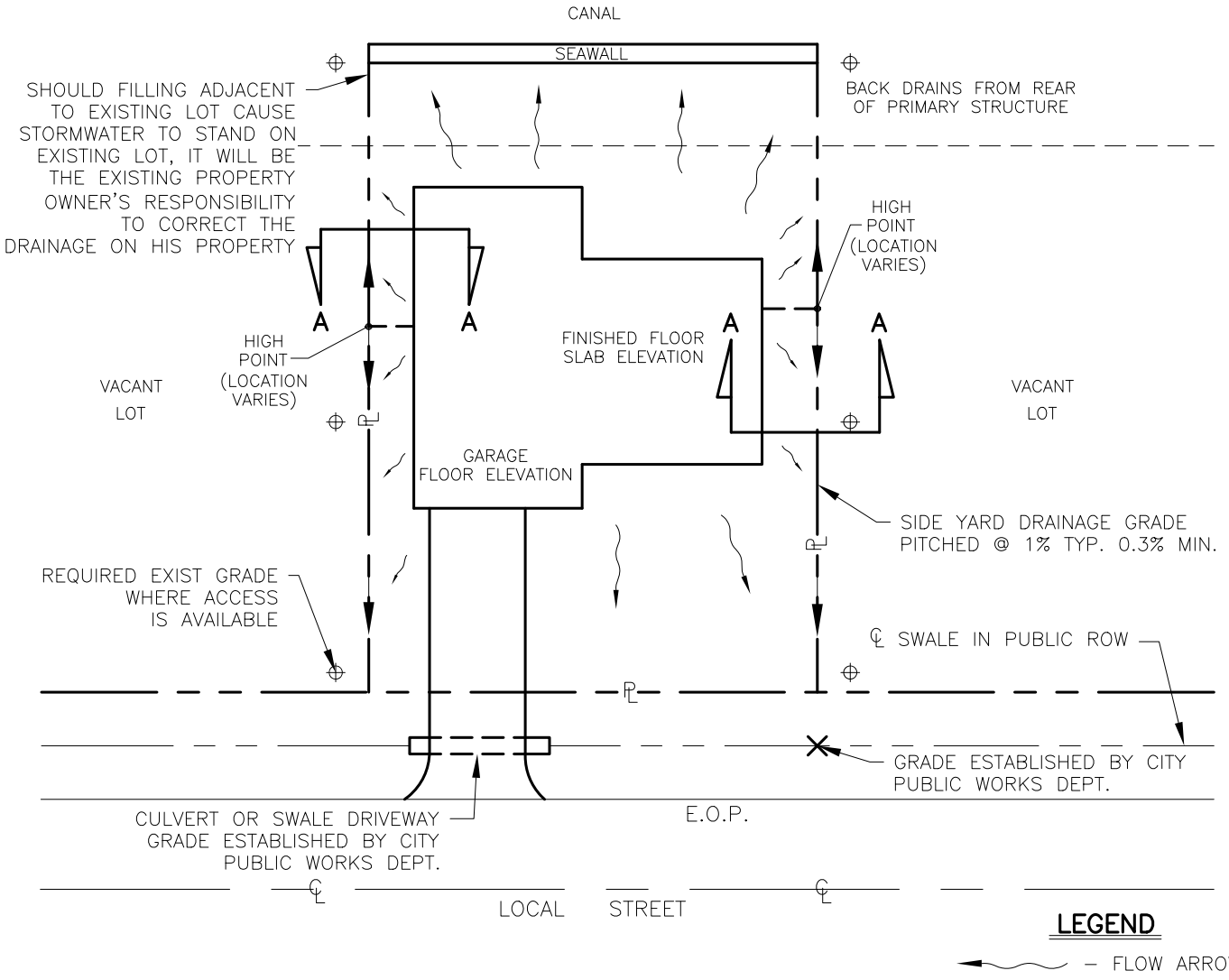
The critical swale grade shown on the detail drawing is the minimum slope to obtain positive drainage from the rear of the property to the road. All new home construction shall use culvert pipes under driveways unless determined by the City to be impractical.

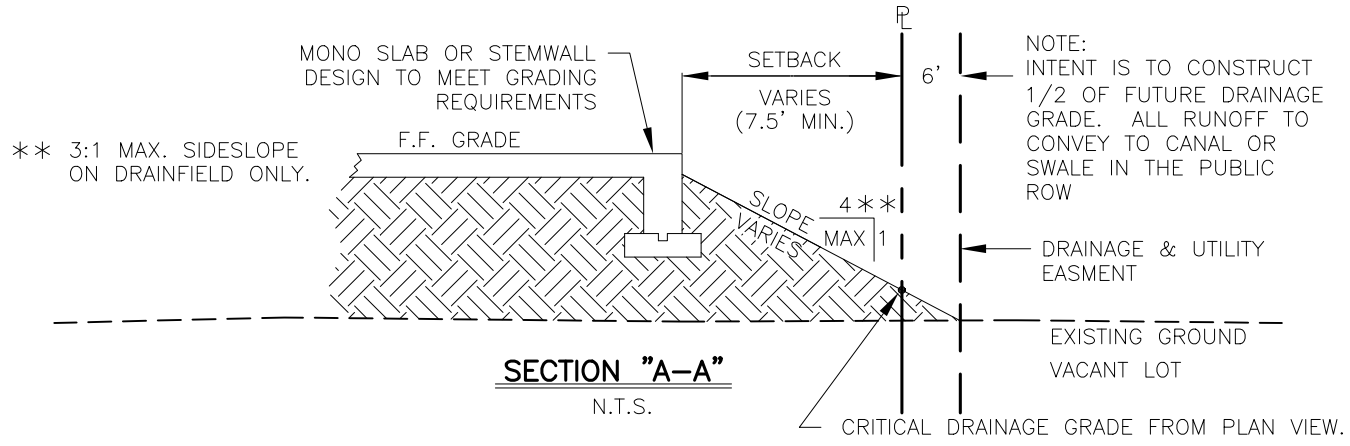
Typical examples of residential design standards and/or acceptable solutions are found on sheets L5 through L11.

Water Discharge

No gutter downspout or other water discharge device, including without limitation any extensions thereof such as coiled flexible tubing with perforations or by any other means, shall discharge water, measured from the actual point of discharge, less than four and one-half (4 ½) feet from the property line. Further, the water discharge from any downspout or water discharge device shall be directed only towards the front or rear property lines, and not towards the side lot lines of the property on which the discharge is located. (Ord. 15-04, 2/9/04).

RESIDENTIAL WATERFRONT LOT DRAINAGE PATTERN





ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
04–01–2006 ORD. 163–05		LOT DRAINAGE PATTERN WATERFRONT	L-5
		REVISIONS:	

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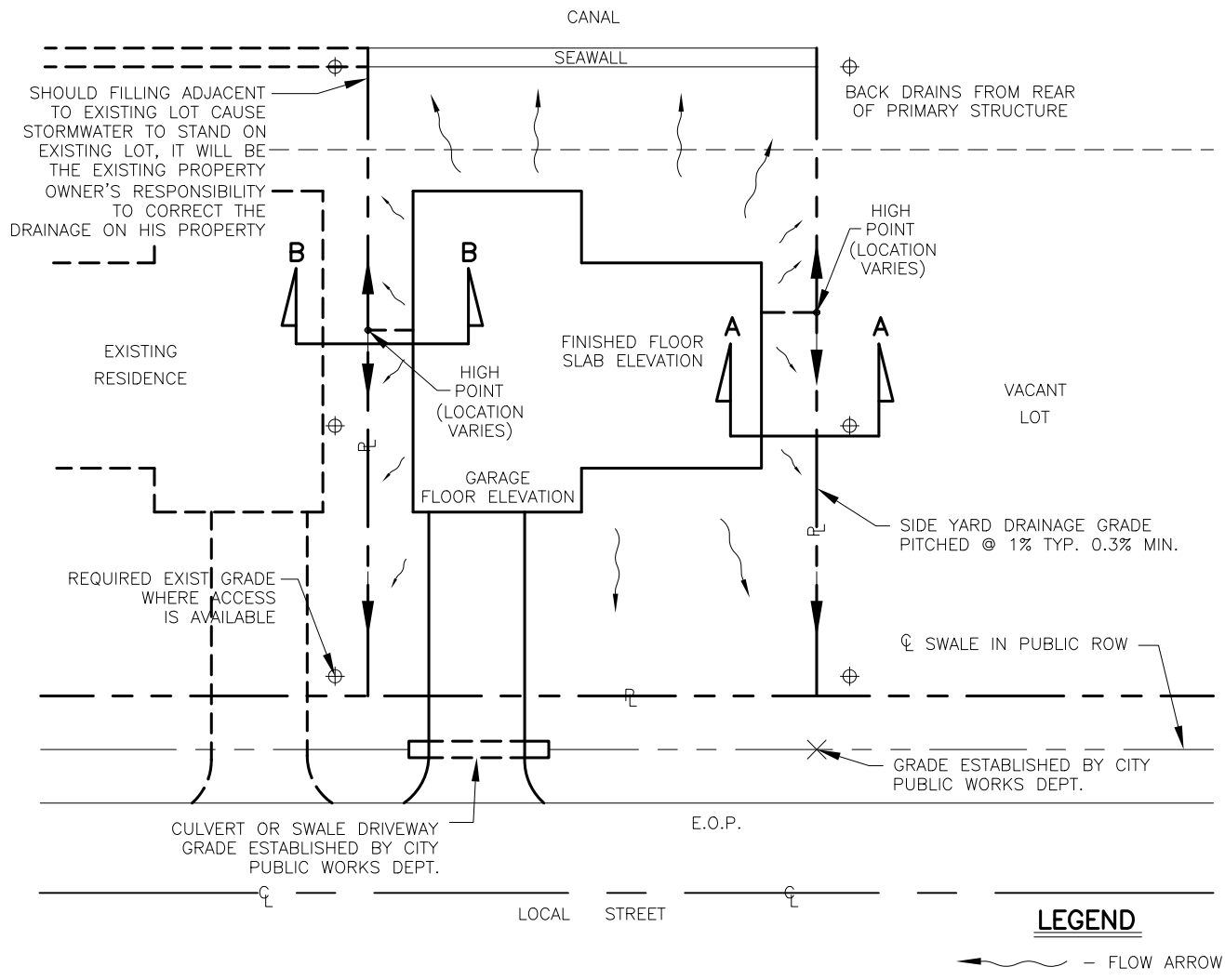
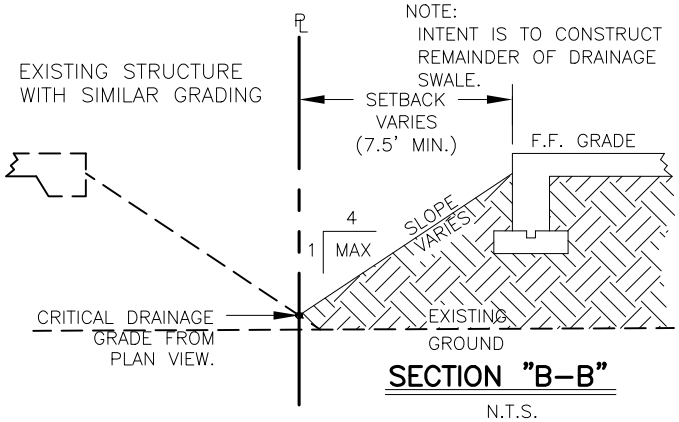
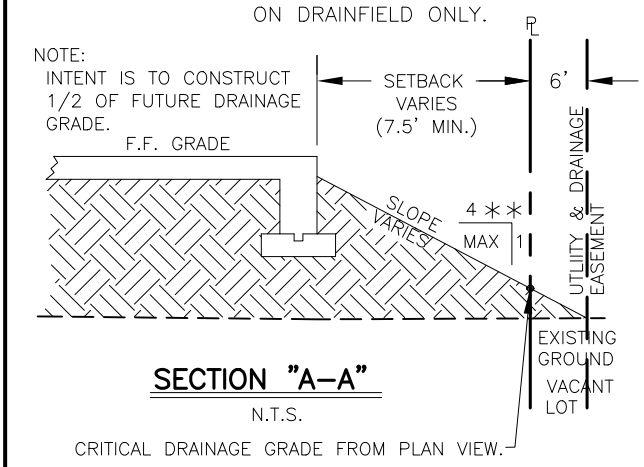
RESIDENTIAL WATERFRONT LOT DRAINAGE PATTERN







ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
04–01–2006 ORD. 163–05		LOT DRAINAGE PATTERN WATERFRONT	L-6
		REVISIONS:	

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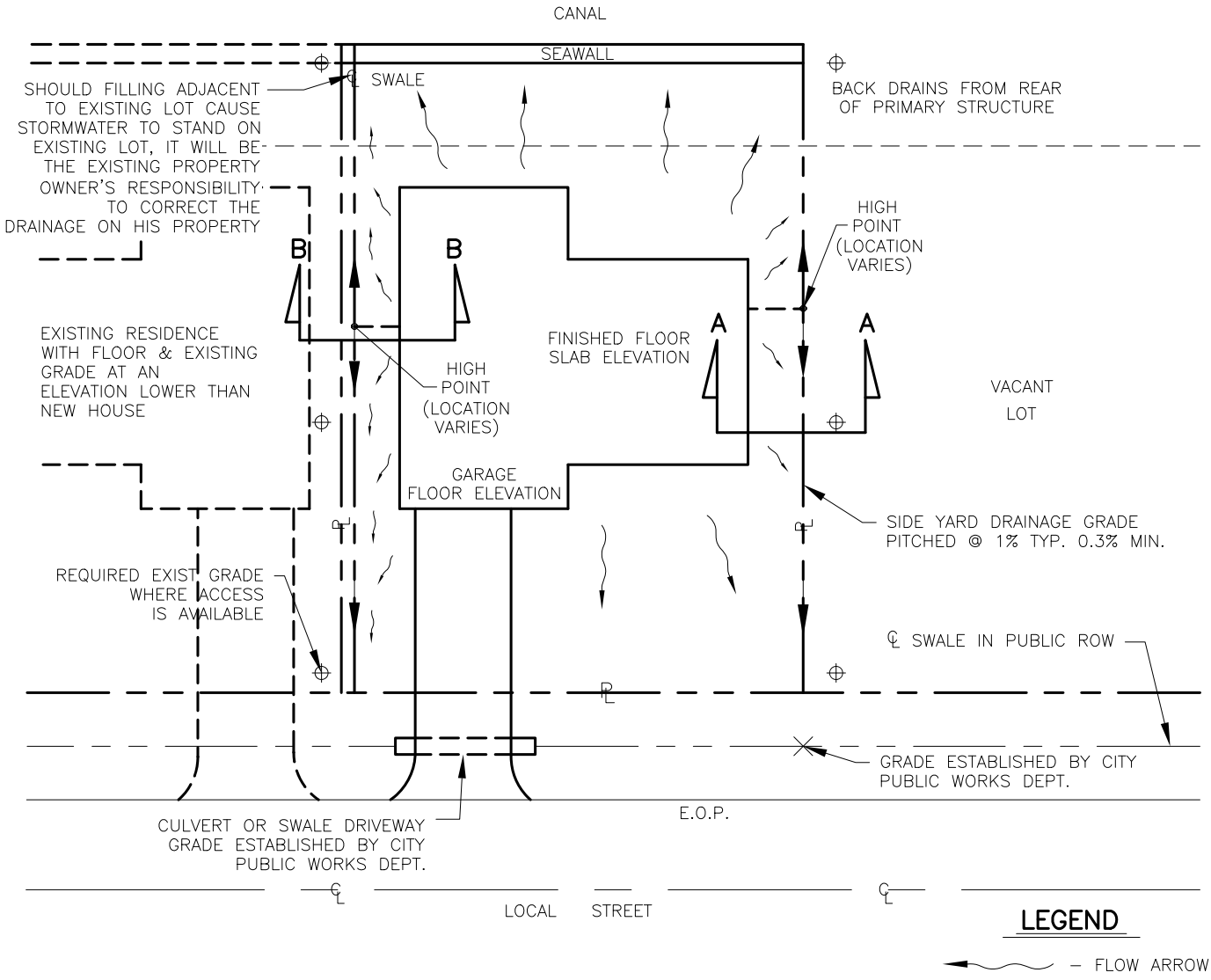

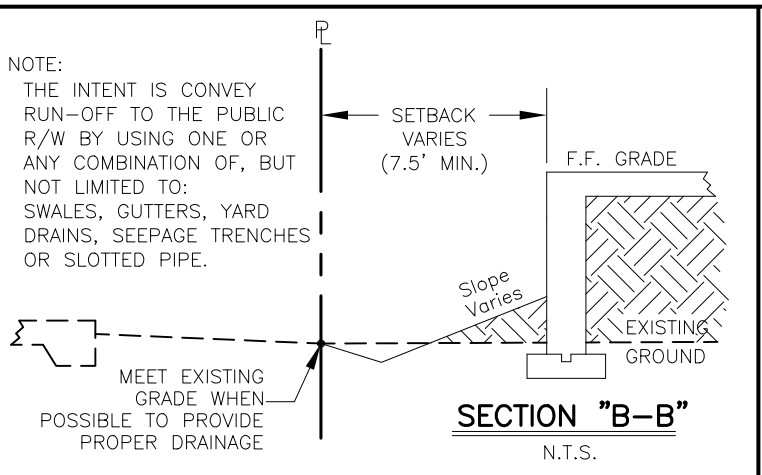

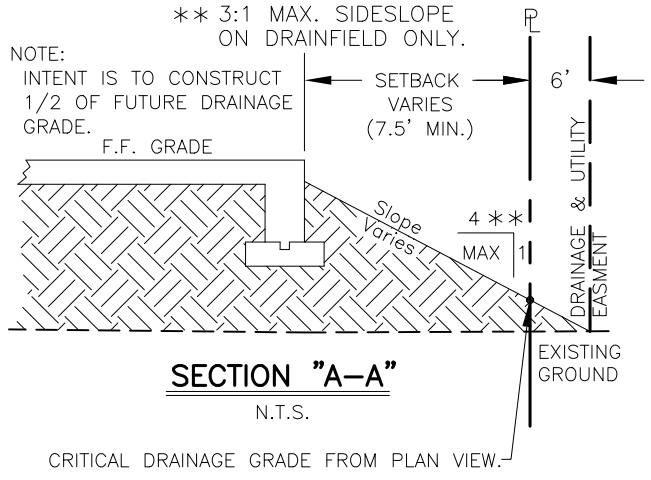

ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
04–01–2006 ORD. 163–05		LOT DRAINAGE PATTERN WATERFRONT	L-7
		REVISIONS:	

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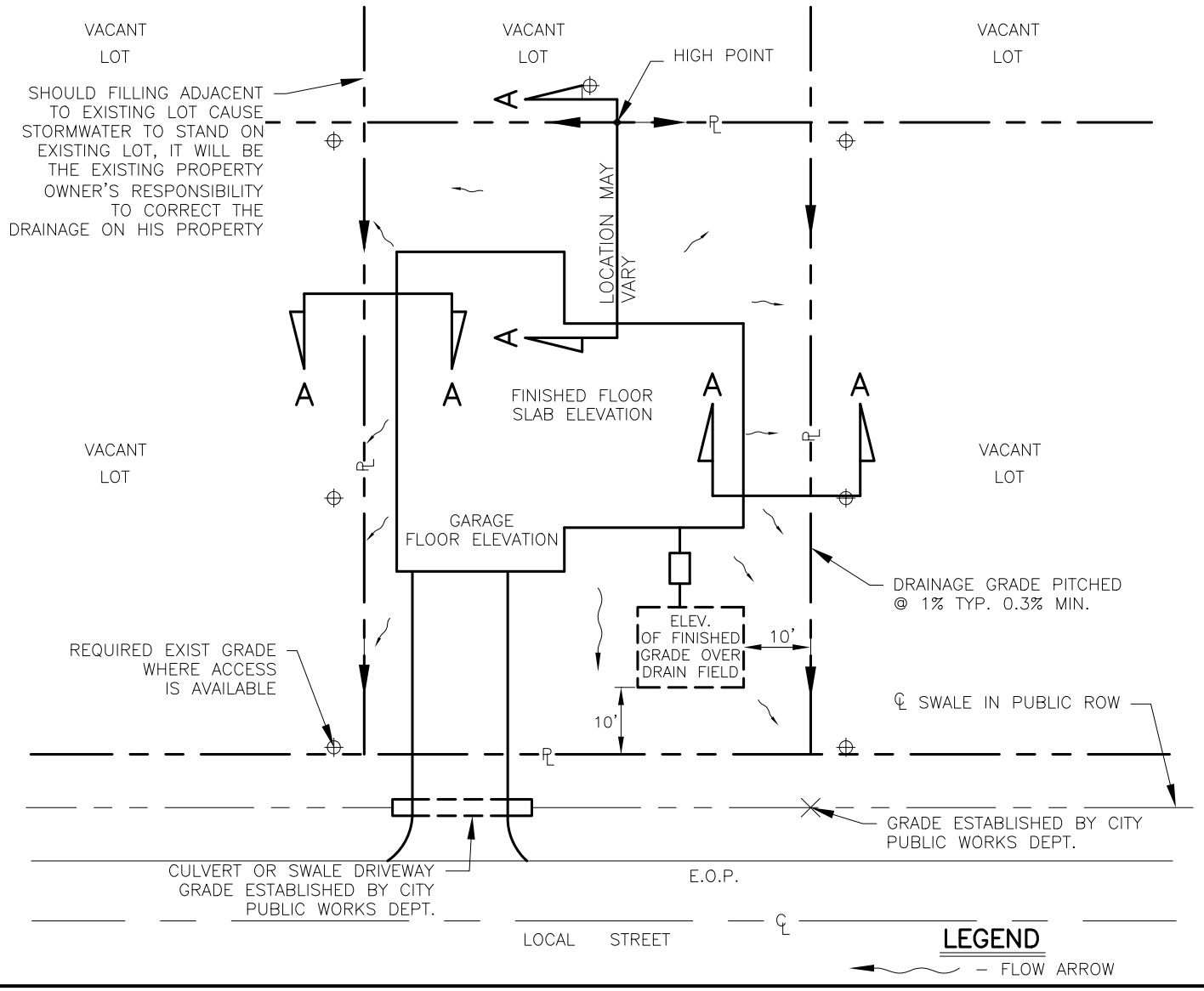
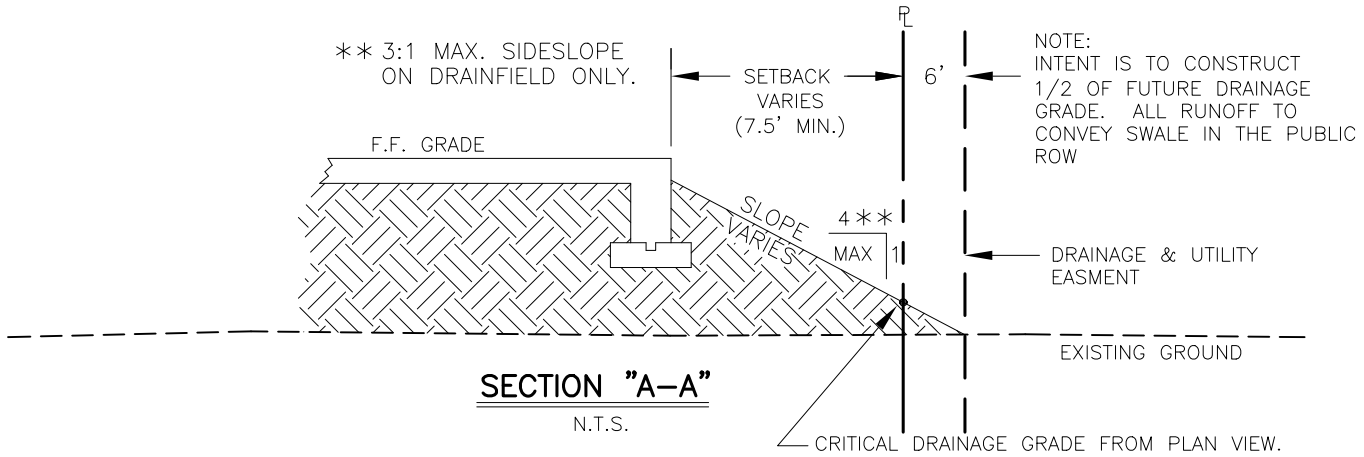
RESIDENTIAL NON–WATERFRONT LOT DRAINAGE PATTERN





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04–01–2006 ORD. 163–05		LOT DRAINAGE PATTERN NON-WATERFRONT	L-8
		REVISIONS:	

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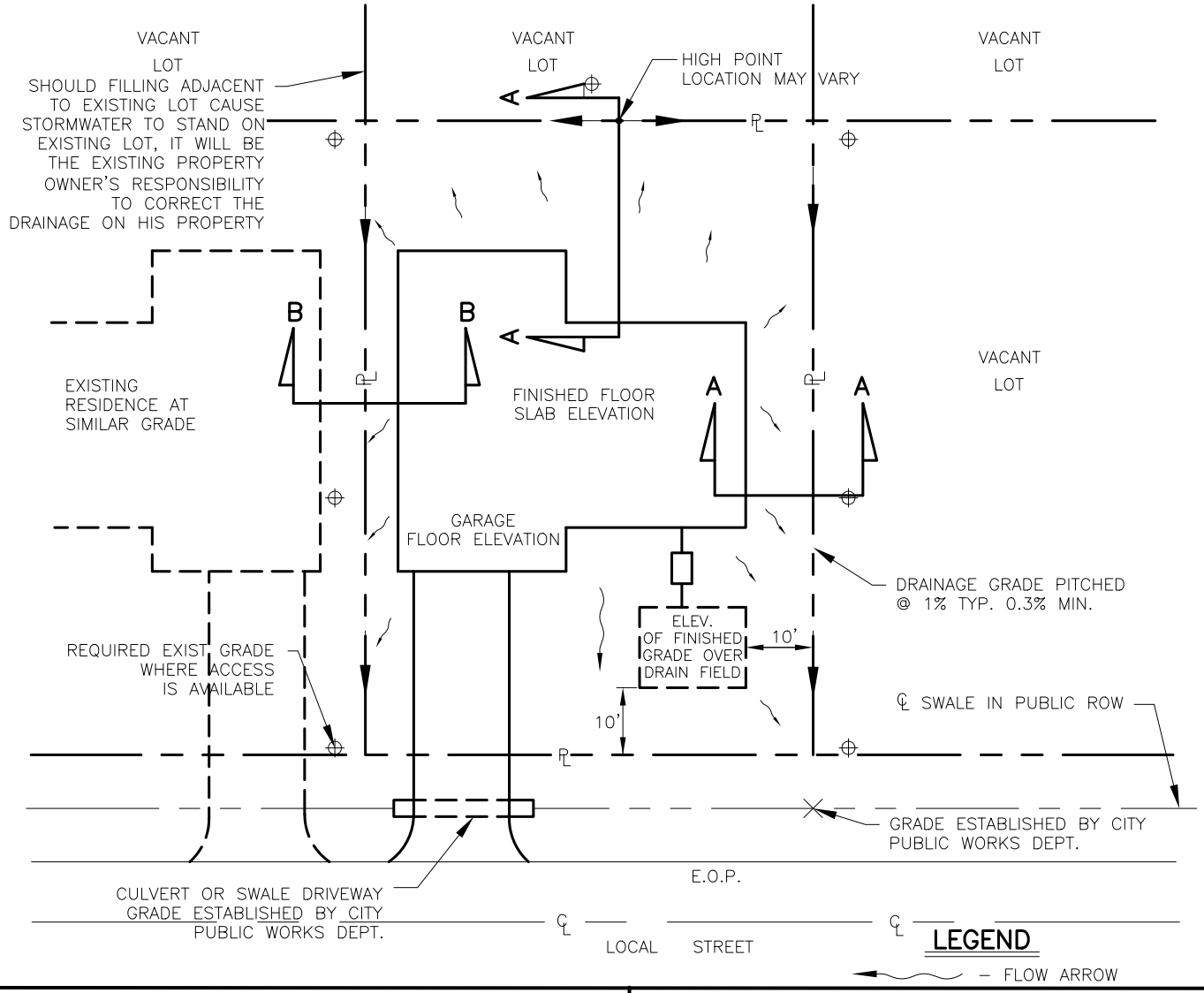
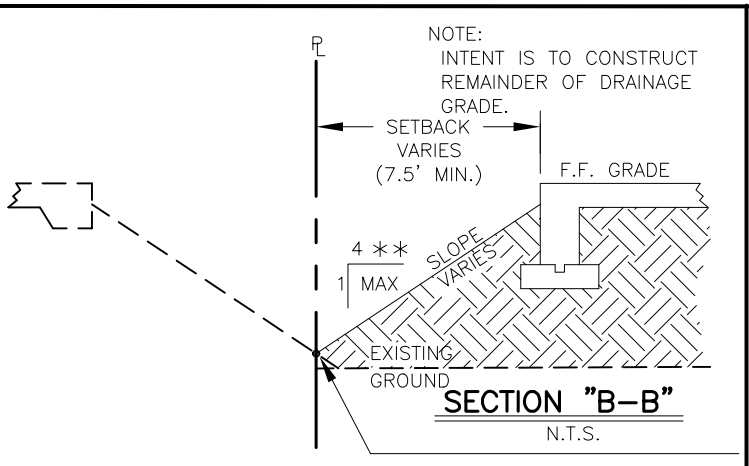
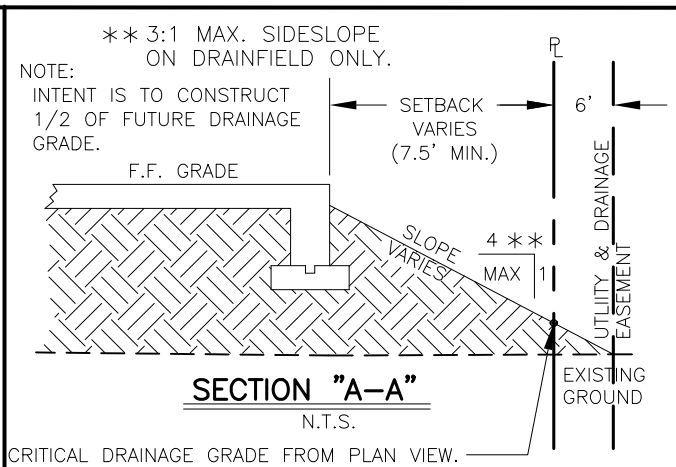
RESIDENTIAL NON–WATERFRONT LOT DRAINAGE PATTERN





SECTION "B–B"
N.T.S.



SECTION "A–A"
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CRITICAL DRAINAGE GRADE FROM PLAN VIEW.

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04–01–2006 ORD. 163–05		LOT DRAINAGE PATTERN NON-WATERFRONT	L-9
		REVISIONS:	

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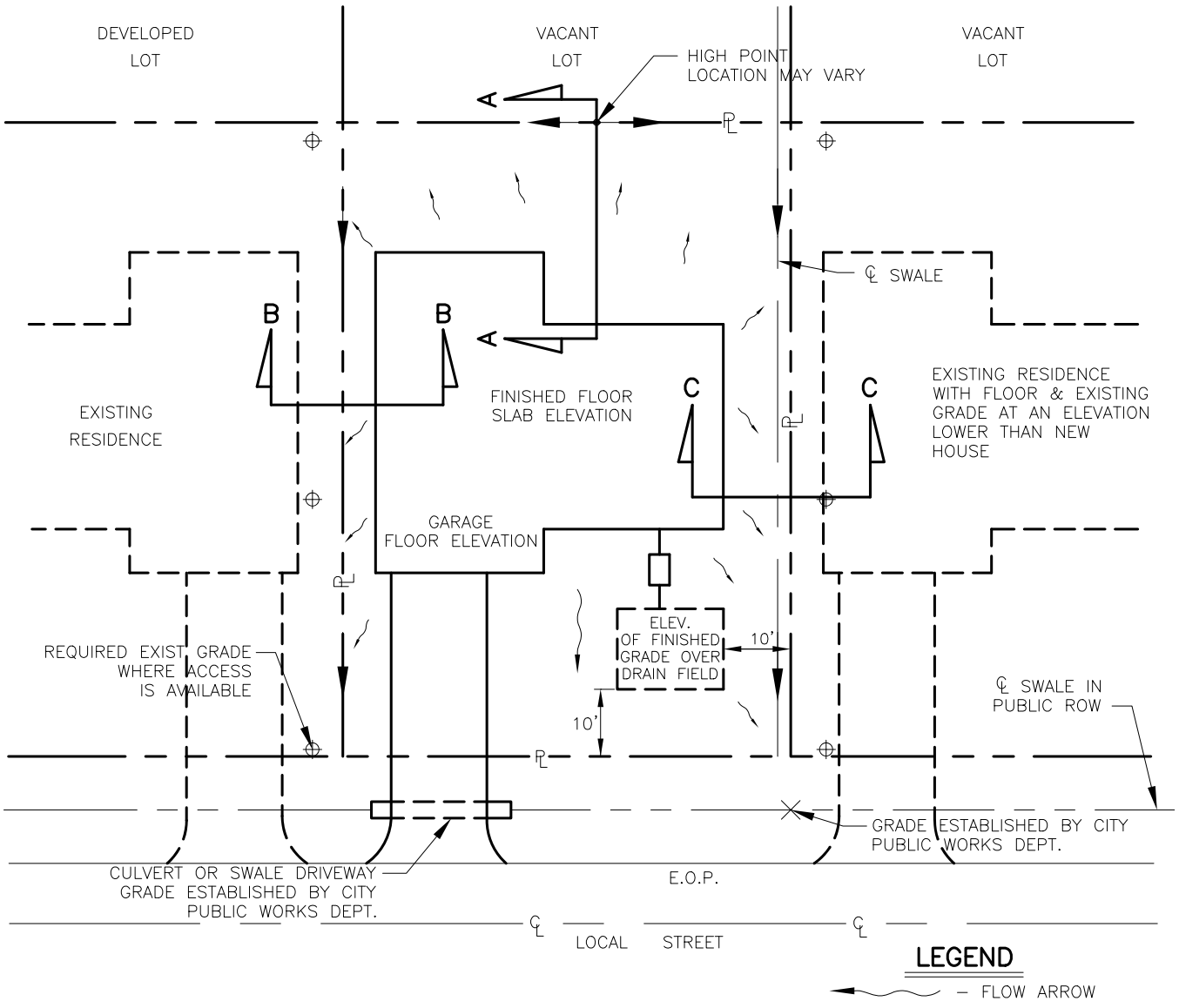
RESIDENTIAL NON–WATERFRONT LOT DRAINAGE PATTERN



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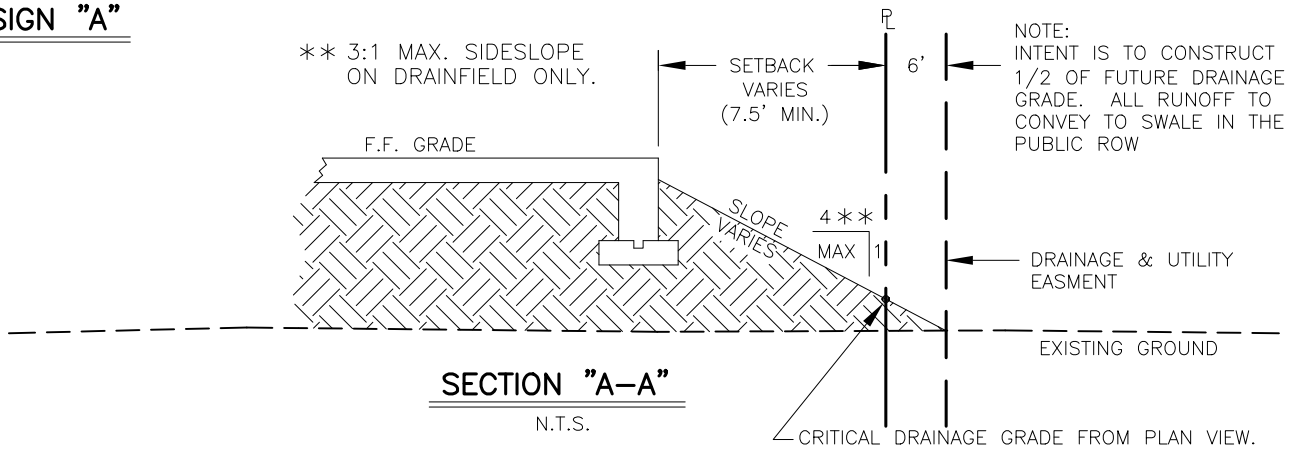

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ADOPTED BY CITY COUNCIL	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	TITLE	SHEET NO.
04–01–2006 ORD. 163–05		LOT DRAINAGE PATTERN NON-WATERFRONT	L-10
		REVISIONS:	

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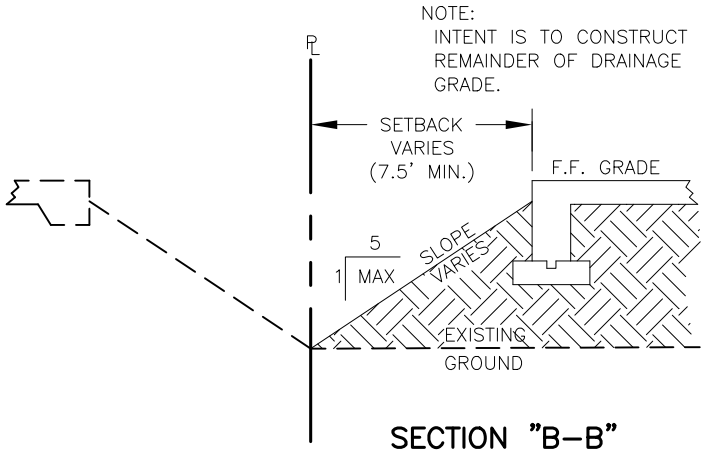

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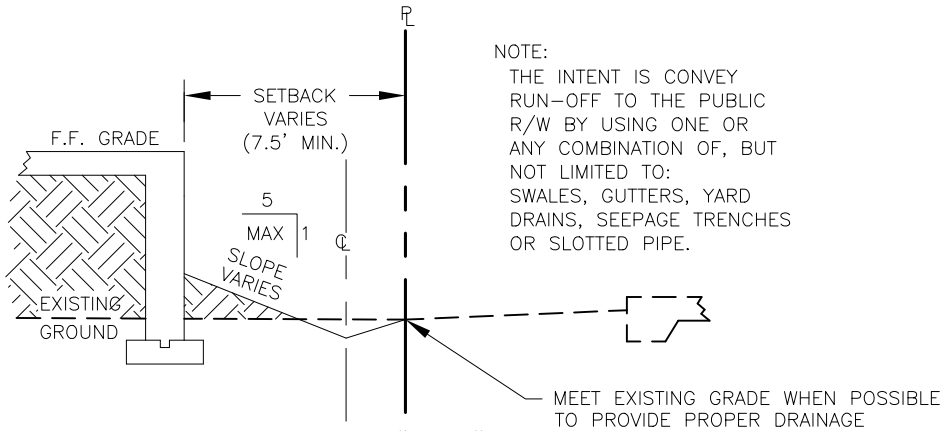

SECTION "C–C"

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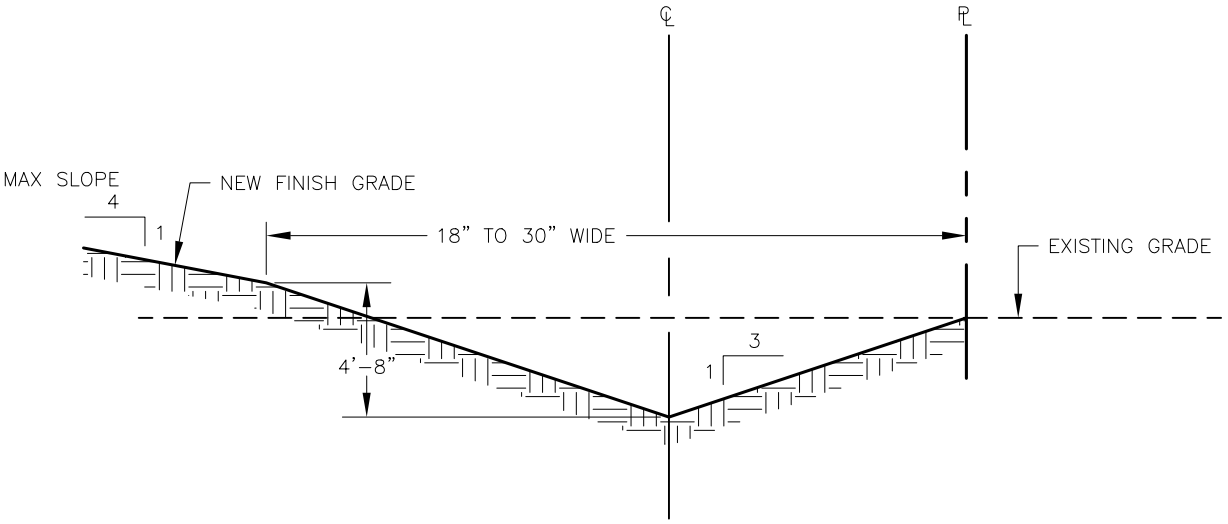
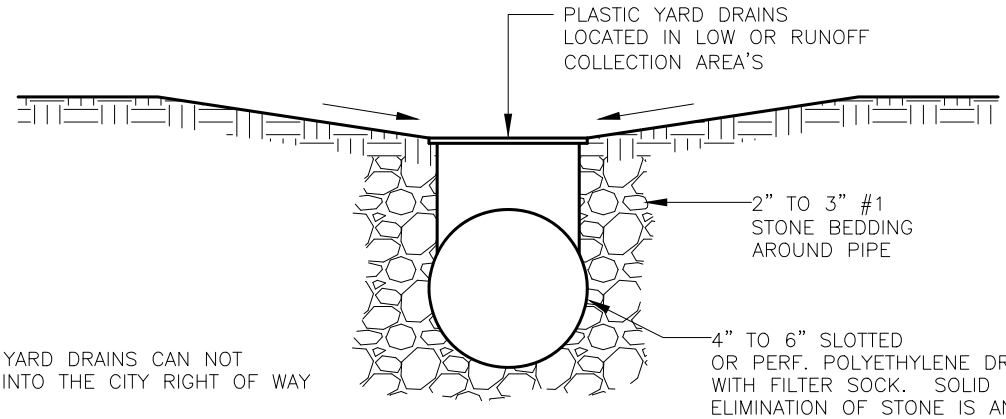
ADOPTED BY CITY COUNCIL		TITLE	SHEET NO.
04–01–2006 ORD. 163–05	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	LOT DRAINAGE PATTERN NON-WATERFRONT	L-10A
		REVISIONS:	



TYPICAL LOT DRAINAGE DETAIL

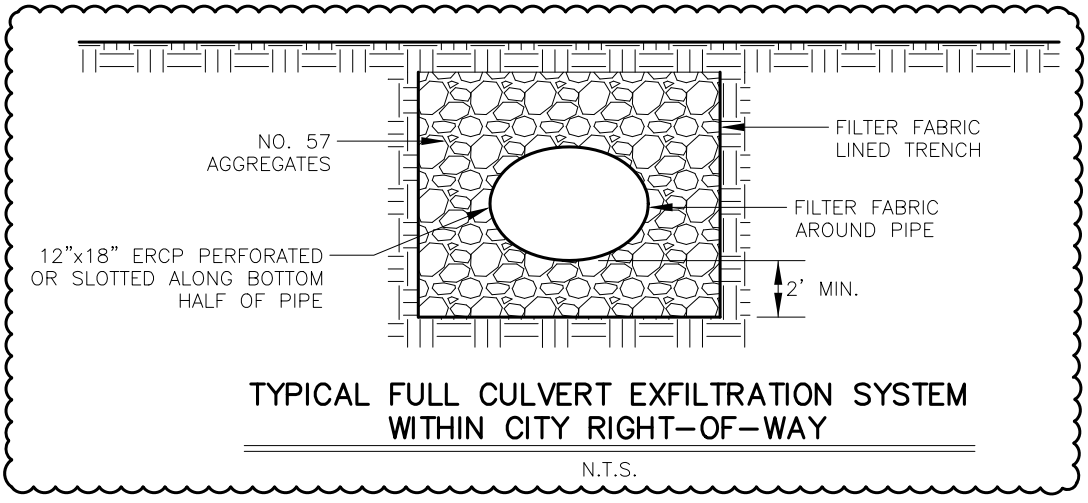
N.T.S.



NOTE:
PLASTIC YARD DRAINS CAN NOT EXTEND INTO THE CITY RIGHT OF WAY

TYPICAL LOT DRAIN & PIPE DETAIL

N.T.S.



TYPICAL FULL CULVERT EXFILTRATION SYSTEM WITHIN CITY RIGHT-OF-WAY

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ADOPTED BY CITY COUNCIL		TITLE	SHEET NO.
DRAFT	CITY OF CAPE CORAL PUBLIC WORKS DEPARTMENT ENGINEERING DESIGN STANDARD	LOT DRAINAGE DETAILS	L-11
		REVISIONS: 01-31-2025	

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STANDARDS AND SPECIFICATIONS
FOR
EROSION CONTROL

The City of Cape Coral, as a permittee covered by the National Pollution Discharge Elimination System (NPDES) permit, has established a surface water management program which requires pollution prevention measures, treatment or removal techniques, storm water monitoring, use of legal authority, and other appropriate means to control the quality of storm water discharges from the Municipal Separate Storm Sewer System.

In addition to the City of Cape Coral Land Development Code, Section 5.1.10 Maintenance of City Right-of-Way that requires erosion control devices in the City's right-of-way during construction, the City of Cape Coral is also required to comply with Regulations for Stormwater Discharge as stated in the Florida Administrative Code (F.A.C. 62-621.300).

The City shall comply with the standards set forth in the State of Florida Erosion and Sediment Control Designer and Reviewer Manual, FDOT, FDEP (2013), or its latest revision for all stormwater discharge and erosion control requirements during construction. Copies of this manual are available from the Department of Environmental Protection, NPDES Stormwater Program, MS #3585, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, or online at https://www.flrules.org/Gateway/reference.asp?No=Ref-04227.

UTILITIES
(Water, Sewer, Irrigation)

Notice:

Section U, identified as ***Utilities (Water, Sewer, Irrigation)***, falls under the City of Cape Coral Utility Standards (Volume 1-4), provided by the Utilities Administrative Department.

Copies of these standards are available through the City of Cape Coral, Utilities Administration office.

Contact the Utilities Engineering Department at 239-574-0729 or 239-242-3227 with any questions regarding these items.