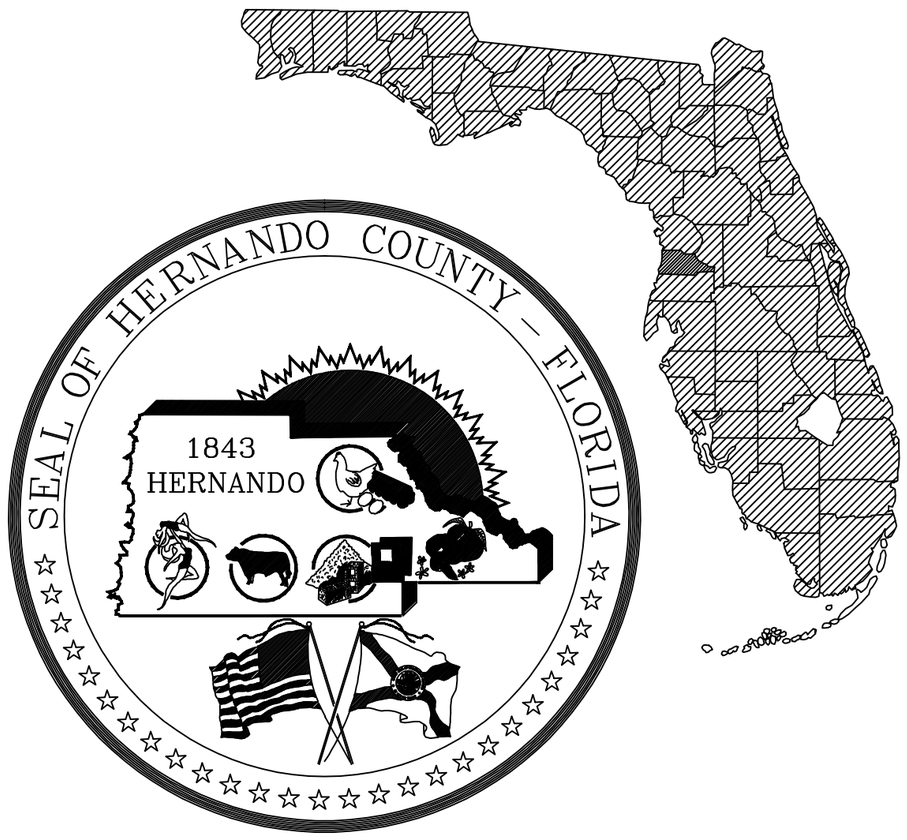
HERNANDO COUNTY FLORIDA

DEPARTMENT OF PUBLIC WORKS / ENGINEERING DIVISION

FACILITY DESIGN GUIDELINES



Note:
These standards were developed in conjunction with those established by Federal Highway Administration and the Florida Department of Transportation for use on the streets and roadways in Hernando County, Florida.

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PREFACE

The purpose of this document is to provide uniform minimum standards and criteria for the design, construction and maintenance of all public roads and streets, medians, curbs, gutters, drainage structures and networks, driveways, sidewalks and curb ramps, traffic controls, and commercial, industrial and residential developments constructed in Hernando County, Florida.

The standards established by this document are intended for use on all new construction projects. It is understood that the Standards herein cannot be applied completely to all reconstruction and maintenance type projects, however, the Standards should be applied to the extent that the economic and environmental considerations and existing development will allow, as determined by the County Engineer.

This document refers to the Florida Department of Transportation (FDOT) design standards, specifications, and guidelines; American Association of State Highway and Transportation Officials (AASHTO) publications; Federal Highway Administration (FHWA) books and documents; and Institute of Transportation Engineers (ITE) reports and publications; these guidelines and standards should generally be considered as minimum criteria.

The criteria and standards set forth in other manuals, which have been included by reference, shall be considered as requirements within the authority of the document.

Failure to follow these standards may result in a stop work order and/or other enforcement actions.

SELECTED BIBLIOGRAPHY

A Policy on Geometric Design of Rural Highways: (AASHTO Greenbook): American Association of State Highway and Transportation Officials (AASHTO), 5th Edition or latest.

Transportation and Traffic Engineering Handbook: (ITE Handbook): Institute of Transportation Engineers (ITE).

Manual on Uniform Traffic Control Devices for Streets and Highways: (MUTCD): U.S. Department of Transportation, Federal Highway Administration (FHWA), 2003 Edition, or latest.

Standard Specifications for Road and Bridge Construction: (FDOT Spec Book): Florida Department of Transportation (FDOT), 2007 Edition, or newer.

Design Standards: (FDOT Index): Florida Department of Transportation (FDOT), 2008 Edition, or latest.

Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways: (FDOT Greenbook): Florida Department of Transportation (FDOT), 2007 Edition, or latest.

Transit Facility Guidelines: Florida Department of Transportation (FDOT), 2005 Edition, or latest. http://www.dot.state.fl.us/transit/pages/transit facilities guidelines.pdf

Drainage Manual: Florida Department of Transportation (FDOT), 2006 Edition, or latest.

Storm Drains, Drainage Manual: Florida Department of Transportation (FDOT), 2004 Edition, or latest.

Trip Generation: Institute of Transportation Engineers (ITE), 7th Edition.

Florida Roundabout Guide: Florida Department of Transportation (FDOT).

Minimum Specifications for Traffic Control Signal Devices: Florida Department of Transportation (FDOT), 2000 Edition, or latest.

Guidelines for Landscaping Roadways: Hernando County Florida.

Guide for the Development of Bicycle Facilities: American Association of State Highway and Transportation Officials (AASHTO), 4th Edition or latest.

Hernando County Ordinance No. 2006-10, NPDES Ordinance

HERNANDO COUNTY FACILITY DESIGN GUIDELINES

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SECTION I

ENGINEERING DESIGN CRITERIA

SECTION I

DEFINITIONS

ARTERIAL STREETS AND HIGHWAYS: Primarily facilitate the through movement, i.e., mobility, of vehicular traffic. Access management techniques are commonly instituted on them to preserve the facilities' capacity. Land access is a secondary priority to the movement of traffic.

BICYCLE FACILITY: A designated travel way for bicycles, including bike lanes, bike paths, paved shoulders, wide lanes, and multi-use trails.

BMP- BEST MANAGEMENT PRACTICE: Implementation of industry standard control practices.

COLLECTOR STREETS: Function primarily to carry traffic from local streets to arterials. The operating speeds are generally lower than that of arterials, but generally greater than that of local streets. Collector roads provide a greater degree of land use.

COMPENSATORY EXCAVATION: The excavation within or directly contiguous to a flood plain for restoring flood storage capacity lost to fill within the flood plain. Compensatory excavation shall become part of the flood plain and based on the professional justification by the engineer of record that the excavated area is adequately connected hydraulically to the historic flood plain area.

CONSTRUCTION ENTRANCES AND TRUCK ROUTES: Approved routes to/from the site to all major roads. All construction vehicles going to from the site will utilize these routes.

CUL-DE-SAC: A widened end of a local road (typically circular in shape) to enable turnaround movements. The distance from the edge of the nearest connecting roadway to the center point of the cul-de-sac shall not exceed six hundred (600) feet. (To exceed 600' a variance is also required from the Fire Department and the cul-de-sac shall be designed to meet current National Fire Protection Association standards.)

DETENTION: The temporary storage of storm water runoff to limit the rate of discharge into receiving water bodies.

DEVELOPER: The owner, his agent, or employee engaged in the process of development.

DEVELOPMENT: Any man-made material change to improved or unimproved real estate, including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations.

EASEMENT: A legally defined right of passage or use across a specified property. An easement may allow for access, placement of utilities, drainage, other purposes, or any combination of these uses.

ELEVATION: The vertical distance of a point above the established North American Vertical Datum (NAVD) 1988 expressed in feet above Mean Sea Level (MSL).

FILE OF RECORD: A permanent file which contains all pertinent data, correspondence, calculations, drawings, plats, etc. used to review site plans and/or plats of submitted developments.

FLOODPLAIN: The lateral extent of inundation by an event of given statistical frequency, such as "25-year flood plain," as designated by the Southwest Florida Water Management District (SWFWMD).

FLOODWAY: The channel of a watercourse and the adjacent land areas that must be reserved in order to discharge the 25-year flood or 100-year flood (base flood), as stipulated without cumulatively increasing the water surface elevation more than one-tenth of a foot.

FRONTAGE ROADS: Streets which run concurrent with arterial streets and highways, and which provide access to abutting properties and protection from through traffic. A frontage road may be developed along the property frontage or to the rear of the property (reverse frontage road).

FUGITIVE SOILS: Soils that have tracked, eroded, blown etc from where they were placed.

IMPERVIOUS: Surface which has been compacted or covered with a layer of material so that it is highly resistant to infiltration by water, including surfaces such as compacted sand, limerock, shell or clay, as well as most conventionally surfaced streets, roofs, sidewalks, parking lots and other similar structures.

KARST: An area of irregular limestone in which erosion has produced fissures, sinkholes, underground streams, and caverns.

MAJOR COLLECTOR ROAD: Designed to carry traffic from local streets to Arterial roadways; designed for moderate to high traffic volumes, moderate to high trip lengths and moderate to high speeds.

MAJOR DRAINAGE SYSTEM: A system of natural or man-made drainage-ways such as streams, ditches, or canals that collect stormwater runoff from watersheds identified in Hernando County.

MAJOR LOCAL ROAD: An intermediate road which carries more traffic than a local road but less than a Collector road. Designed as a main thoroughfare in a residential subdivision to carry traffic to and from local roads to Collector & Arterial roads.

MULTI-USE TRAIL: A designated travel way for combined pedestrian, bicycle and/or other non-motorized travel built to standards for multi-use trails design and construction, 10’ standard width, 12’ width for high volume and multiple modes.

NATURAL DRAINAGE-WAYS: Those watercourses that are either natural or have not been substantially excavated, graded or otherwise altered or improved, by man.

NPDES: National Pollutant Discharge Elimination System.

RECEIVING WATER BODIES: Those bodies and drainage-ways, either natural or man-made, that lie downstream of the site in question and which are susceptible to degradation of water quality due to activity at the upstream site.

REGISTERED ENGINEER OR LAND SURVEYOR: As defined by Ch. 471 and 472, Florida Statutes.

RETENTION: The prevention of direct discharge of storm runoff into receiving waters, included as examples are systems which discharge through percolation, exfiltration, and evaporation processes and which generally have residence times less than 3 days.

RIGHT-OF-WAY (ROW): A strip of land used or intended to be used for vehicular or pedestrian travel, whether public or private.

SEASONAL HIGH GROUNDWATER TABLE LEVEL (SHGWT): The elevation to which the ground or surface water can be expected to rise due to a normal wet season.

SIDEWALK: A designated pedestrian travel way built to standards for sidewalk design and construction.

MAINTENANCE

Prior to County acceptance, the Developer shall maintain all right-of-way, drainage retention areas, and drainage right-of-ways for a period of 18 months. During this period, grass shall be kept mowed to a height not to exceed ten inches. Should pavement cracks develop, the Developer shall be required to remediate the entire road lengths and/or sections with an approved sealer, i.e., Type I, II, III, slurry seal, fog seal.

The Developer shall periodically inspect for erosion problems after major storms and correct any erosion over 4” in depth. Prompt attention should be made when erosion has occurred within three feet of the edge of pavement. The Developer shall take corrective measures to stabilize and prevent further erosion within seven days. After this time has passed, the deficient area shall be brought to the attention of the Public Works Director for corrective action.

Periodic inspections will be performed by the County to determine if 80% of the amount of grassing and/or sodding originally planted has survived. These inspections will be conducted at six months, one year and eighteen months. The Developer shall remediate areas as identified as deficient.

ROADWAY CONSTRUCTION STANDARDS:

The following table summarizes Hernando County's minimum design and construction standards:

ROADWAY CLASSIFICATION	TRAFFIC SAFETY		RIGHT OF WAY				NEW ROAD CONSTRUCTION				PEAK HOUR TRAFFIC
ROADWAY DESCRIPTION	DESIGN SPEED	TRAFFIC STRIPING	MINIMUM (FEET)				LANE WIDTHS	MINIMUM THICKNESS (INCHES) (NOTES 1 & 3)			2 WAY TRIPS DURING PEAK HOUR (NOTE 1)
			OPEN DRAINAGE		CLOSED DRAINAGE						
	(MPH)		4 LANE	2 LANE	4 LANE	2 LANE	(FEET)	SUBBASE	BASE	SURFACE COURSE	
MAJOR COLLECTOR	60	YES	160	100	150	N/A	12 (NOTE 2)	12	8	3	N/A
COLLECTOR ROAD	40	YES	130	80	100	70	12 (NOTE 2)	12	8	2.5	151-450
MAJOR LOCAL/COMMERCIAL RD	35	YES	120	70	90	60	11	12	8	2	76-150
LOCAL ROAD	30	NO	N/A	60	N/A	50	10	9	6	1.75	0-75
FRONTAGE ROAD	30	YES	50	50	N/A	50	12	12	8	2	N/A
CLASS B SUB DIVISION > 10 LOTS	30	NO	N/A	60/30	N/A	N/A	9		4	1 (OPT)	N/A
CLASS C SUB DIVISION ≤10 LOTS	30	NO	N/A	60/30	N/A	N/A	12 (ONE LANE ONLY)		4	1 (OPT)	N/A

NOTES: N/A = Not Applicable

1. Truck traffic may reduce the traffic thresholds
2. Paved shoulders required on open drainage roadways.
3. Layer thickness other than those specified, shall have an equivalent structural number, and shall be subject to approval by the County Engineer.

ROADWAY REQUIREMENTS:

A. Minimum right-of-way requirements shall be as follow:

1. See typical Sheet I-04 and Sections IV-03 thru IV-15.

2. Cul-de-sacs shall have 50 feet of right-of-way approach to a minimum 120-foot diameter right-of-way for a turn around circle when constructed with curb and gutter, with a 50 foot paved radius.

3. Cul-de-sacs shall have 60 feet of right-of-way approach to a 140-foot diameter right-of-way for a turn around circle when constructed with open drainage, with a 50 foot paved radius.

B. Subdivision Streets:

1. Subdivision streets shall be planned so that residential lots will not have driveways entering directly onto Collector or Arterial streets.

2. Subdivision streets shall be classed as "Local Streets, Major Local Streets, or Collector Streets."

3. Subdivisions having ¼ acre lots or smaller, shall utilize curb and gutter, closed drainage, sod common areas and traversable inlets only.

4. Subdivisions having lots larger than ¼ acre shall include (1) a four-foot sod strip along all pavement edges when open drainage roadway system is utilized and (2) sod on all common areas.

C. Collector and Arterial streets shall have a minimum design speed as indicated in the Florida Department of Transportation Manual of Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highways and as outlined in the roadway section of this guideline.

D. Roadway radii shall be a minimum of 30 feet at all intersection on Local Streets and Major Local Streets in residential areas.

E. Roadway radii shall be a minimum of 35 feet at all intersections on Collector Streets, Major Collector Streets, and Frontage Roads in Commercial areas.

F. The angle of the centerlines of intersecting roadways shall not be less than 70°.

G. Minimum distance between intersections on Local Streets shall be 150'. Intersections shall also meet all sight distance requirements.

H. Intersections: Roadway slopes at intersections shall not exceed 5% without a vertical curve.

ROADWAY DESIGN

Design Standards:

A. The Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways (Greenbook – Latest Edition) and Roadway and Traffic Design Standards (Latest Edition), each prepared by the Florida Department of Transportation, and the Florida Department of Transportation Standard Specifications for Road and Bridge Construction (Latest Edition) are by reference incorporated into this document except where modified by this document. In case of conflict, the following standards shall apply.

B. General Paving Criteria:

1) Pavement cross-slope shall be ¼ inch per foot and inverted crowns are not permitted. Finish pavement shall be ¼ inch higher than the lip of any concrete gutter.

2) The minimum edge of pavement elevation for Local Street construction shall be at or above the 25-year storm events; Collector Street construction shall be above the 50-year storm event; and Major Collector Street construction shall be above the 100-year storm event, unless otherwise approved by the County Engineer.

C. Flexible Pavement Standards:

1) Sub-bases shall be of good, clean, acceptable material with a Limerock Bearing Ratio (LBR) of no less than 40, compacted to 98% of the maximum density determined by AASHTO T-180. The sub-base must extend six (6) inches beyond the back-of-curb or, for rural road sections, eighteen (18) inches beyond the base. If utility cuts are made after sub-base stabilization, the trenches shall be backfilled, full depth, with base material compacted to 98% maximum density. Sub-base material shall be separated a minimum of two (2) feet from high ground water conditions.

2) Bases may be constructed of limerock, crushed concrete, dura-rock, soil cement, or asphaltic concrete. Other materials may be proposed by the Developer for approval by the County Engineer, subject to the following standards:

3) Base material shall have a Limerock Bearing Ratio (LBR) of not less than 100.

4) Soil cement mixtures shall be designed by an Engineering Testing Laboratory and approved by the County Engineer. The Testing Laboratory shall monitor mixing and compaction.

5) Asphaltic concrete design mix shall be submitted for approval by the County Engineer.

6) Asphaltic concrete surface courses shall be mixed, placed, and compacted in accordance with Florida Department of Transportation Specifications for Hot Bituminous Material, Plant Methods, and Equipment & Construction Methods.

D. The pavement section elements specified herein are minimums. In some areas, due to soil conditions and/or traffic density, it may be required that the pavement structural section be designed in accordance with the Florida D.O.T. Flexible Pavement Design Manual.

E. The widening of an existing roadway may require milling and/or an overlay for the limits of said widening.

F. Approval for deviations from adopted pavement section elements shall be obtained in writing from the County Engineer.

G. Rigid (Portland Cement Concrete) pavement designs will be reviewed for approval by the County Engineer on a case-by-case basis.

H. Sidewalk Construction:

1) Sidewalks shall be constructed of 3,000 p.s.i. concrete at least five (5) feet wide and four (4) inches thick. Driveway sidewalks shall be six (6) inches thick with six (6) inch by six (6) inch #10 wire mesh reinforcing or with fibermesh in lieu of wire mesh reinforcing

2) Construction joints shall be provided every five (5) feet on center and ½ inch expansion joints every fifty (50) feet on center along entire length.

3) Sub-bases for sidewalks shall be of good, clean, acceptable material compacted to 95% of maximum density as determined by AASHTO T-180.

4) Sidewalks should be located in right-of-way within two (2) feet to two and one-half (2.5) feet of the property line on local and major local two lane roadways. Sidewalks should be located in right-of-way within one (1) foot of the property line on all other roadways.

5) Sidewalks shall be connected to each adjacent street per ADA and FDOT standards. Developers are required to install sidewalks in all common areas, including ADA street connections, parks, etc. Follow FDOT Index 304, 310 and FDOT Spec 527. For the detectable warning surface (truncated domes) only the Armorcast Detectable Warning Tile (red or yellow) S527-0012 in or equivalent from the FDOT Qualified Products List shall be acceptable. A tapered edge tile shall be used on all approach sides. All curbs that will get a sidewalk connection in the future will be recessed to accept a handicap ramp in the future.

I. All backfill over any pipe (storm sewer, water line, sanitary sewer) that is to be installed under roadways, must comply with sheet IV-16, Pavement Restoration, using flowable fill. Anything outside of one foot from the pavement, within the shoulder area, etc. of the roadway is to be compacted per Department of Transportation Specifications, Section 125.8.3, Latest Edition. This particular section specifies compaction to 100% of maximum density as determined by AASHTO T-99. This must be indicated on the plans.

J. Mailboxes shall be installed in conformance with the Florida Department of Transportation Roadway and Traffic Design Standards Index 532 (Latest Edition) and as required by the U.S. Postal Service.

DRAINAGE REQUIREMENTS

Scope:

A. All proposals for development shall include a detailed stormwater management plan to be submitted for approval by Hernando County.

B. Requirements:

1) Stormwater Runoff Storage/Discharge:

a) The retention/detention of cumulative stormwater runoff in excess of pre-development release rates and pre-development runoff volume shall be provided by sufficient storage capacity constructed on the property to be developed or within off-site drainage areas. Detention/retention storage capacity shall be based on a 25-year/24-hour duration storm event for open basins and 100-year/24-hour for closed basins and the requirements listed below. The 100-year pre/post volumes may be provided by a combination of storage volume and/or percolation as demonstrated by a routing and mounding analysis. Design high water elevations shall be established in consideration of adjacent properties and facilities such that off-site drainage impacts are minimized.

b) Special closed drainage basins, which have undersized receiving Drainage Retention Areas that flood during a 100-year 24-hour storm event, will necessitate proposed development to provide additional on-site storage volume to accommodate the 100-year storm event. These basins are the Forest Oaks, Berkley Manor, Spring Hill Drive Basins, and the Stony Brook Area of Ridge Manor as shown on sheets III-19-22, and any other basin with documented flooding, identified by the County Engineer and approved by the BOCC.

c) The detention/retention facilities designed for the storage of stormwater to control runoff rates and runoff volumes shall:

(1) Be designed in accordance with requirements of Hernando County, Southwest Florida Water Management District, the Florida Department of Transportation, and/or other agencies with jurisdiction.

(2) Be identified as a drainage retention easement on the final plat of a subdivision, or duly recorded as such in other developments. Include an outlet structure in detention/retention facilities sized to release, as a maximum, the pre-development runoff rate and pre-development volume and designed to provide water quality treatment of the runoff from the contributing area, in accordance with applicable standards of the respective agencies (Hernando County, Southwest Florida Water Management District, Department of Environmental Regulation, the Florida Department of Transportation) having jurisdiction.

(3) Constructed with a DRA height to provide a minimum of six (6) inches of freeboard between the design high water elevation and the lowest provided berm elevation surrounding the detention/retention area.

(4) Discharge from overflow structures flow through an abutting drainage easement, minimum twenty (20) feet, or public right-of-way in order to convey stormwater runoff away from the detention area. Drainage easements will be acceptable if the entire conveyance system is built and has capacity to accept increased runoff volumes. Engineering calculations will be required to support the use of drainage easements.

(5) Include special engineering features such as skimmers designed to remove oils and other objectionable materials, in accordance with criteria established by the Southwest Florida Water Management District, and other applicable agencies having jurisdiction.

d) Off-site discharge and volume is limited to amounts, which will not cause adverse off-site impacts.

(1) For a project or portion of a project located within an open drainage basin, the allowable discharge shall not exceed historic discharge and volume (25 year-24 hour storm), which is the peak rate and maximum volume at which runoff leaves a parcel of land under existing site conditions. These criteria shall not apply to projects, which have been discharging stormwater runoff directly to the Gulf of Mexico or a river system.

(2) For a project or portion of a project located within a closed drainage basin, the required retention volume shall be the post-development runoff volume, less the pre-development runoff volume, computed using Southwest Florida Water Management District's 24-hour/100-year rainfall map, and the Soil Conservation Services, Type II, Florida Modified 24-hour rainfall distribution with an antecedent moisture Condition II. The total post-development stormwater runoff volume leaving the site shall be no more than the total pre-development stormwater runoff volume leaving the site for the design 100-year storm, unless otherwise approved by the County Engineer.

e) Maintenance of pre-development off-site low flow may be required in hydrologically sensitive areas.

f) In Closed Basins, no net encroachment into the flood plain, up to that encompassed by the 100-year event, which will adversely affect conveyance, storage, water quality, or adjacent lands will be allowed. A detailed flood study performed by a registered engineer will be required by Hernando County, which indicates no adverse impact is caused. Any required compensating storage shall be equivalently provided between the seasonal high water level and the 100-year flood level to allow storage function during all lesser flood events.

g) Off-site Lands, adequate provisions shall be made to allow drainage from off-site upstream areas to downstream areas without adversely affecting the upstream or downstream areas.

h) Exfiltration Systems Designed in conjunction with Detention/Retention Systems.

i) Double ring infiltrometer tests shall be performed at each detention/retention facility, unless otherwise approved in advance by the County Engineer. Said test shall be performed at the approximate elevation of infiltration, (i.e. within two feet of DRA bottom elevation). If the test is greater than two feet above the bottom of the DRA, an additional .25 safety factor per foot above the initial two-foot allowance shall be added to the base 2.0-safety factor.

(1) A safety factor of 2.0 or more shall be applied in the exfiltration design to allow for geological uncertainties by dividing the exfiltration rate by the safety factor.

(2) All development plans shall include a drainage chart, which includes both post-developed and pre-developed discharge rates and volumes; results of Double Ring Infiltration test and the elevation that the test was conducted at; and the Seasonal High Groundwater Elevation.

j) Development of multi-family tri-plex and quad-plex projects require Drainage Retention Areas on-site, sized to store ½" of runoff from the contributing runoff sub-basin area for treatment purposes in systems that utilize dry retention methodology. Wet detention areas require 1" of runoff as above. General: All new developments shall be required to provide a detention/retention system in order to detain/retain-increased runoff caused by the development. Where public or private lakes, ponds, borrow pits, or similar type water detention/retention areas are incorporated in a comprehensive drainage plan, drainage calculations shall demonstrate that the facilities have sufficient capacity for the design storm.

2) Hydraulics of curb and gutter construction:

3) The minimum grade for curb and gutter road construction shall be 0.4 percent.

a) Length of curb run from any high point to a drainage inlet shall not allow stormwater to flood the roadway more than four (4) feet from back of curb. Spread calculations per FDOT Drainage Manual, Chapter 3 are required and shall be submitted for review.

b) Hydraulics of underground drainage: Underground drainage through storm sewers, where employed, shall conform to good accepted engineering practice. Coefficients of friction suitable for the type of pipe or structure shall be applied. Minimum pipe diameters shall be fifteen (15) inches for side drains and eighteen (18) inches for cross drains for swale drainage. Eighteen (18) inch minimum pipe diameter for closed hydraulic design. Inverted siphons shall not be accepted.

4) Hydraulics of drainage structure: Drainage structures such as bridges, box culverts, headwalls, dams, weirs, bulkheads and other structures shall be designed hydraulically and structurally in accordance with good engineering practice. The effects on adjacent channels and structures shall be considered. Energy dissipaters or other means of reducing flow velocity shall minimize erosion.

5) Drainage Outfalls:

a) Positive and adequate outfalls are required for all proposed and/or existing drainage systems. Engineering calculations are required to demonstrate the entire route of the receiving drainage outflow system has capacity to accept the additional stormwater discharge for the project. Energy dissipaters shall be installed at all drainage outfalls with exit velocities greater than 3 fps, for a minimum 10-year 24-hour storm event, or unusual site conditions. Label all velocities on plans. The Developer shall provide the "As-Built" location, elevation, and description of each outfall.

b) Drainage wells and seepage basins are not acceptable as positive outfalls. Percolation is the only outfall method, for dry retention pond systems. Drainage Detention ponds shall include water quality recovery systems in accordance with SWFWMD rules. In some cases of severe hardship, the County Engineer may approve an alternative device with special site-specific restrictions and requirements.

6) Discharge Structures: Discharge structures designed to discharge shall be located to outflow into County right-of-ways. A Drainage Right-of-Way (DROW) of twenty (20) feet minimum shall be provided for access to any stormwater detention/retention facility from a dedicated road or street to the discharge structure. The Developer shall provide the "As-Built" location, elevation, and description of each outfall. Stormwater Runoff: Runoff and routing analysis shall be based on current hydrological design procedures. Computations shall include a tabulation of both pre-developed and post-developed inflow, discharge, storage capacity, minimum and maximum water elevations, and retention/detention time to peak. Post-developed discharge rate and volume shall not exceed pre-developed discharge rate and volume for 25-year/24 hour storm event. Alternative drainage designs are allowable if approved by SWFWMD and then upon written approval by the County Engineer.

7) Conveyance Facilities:

a) General stormwater conveyance facilities include swales, ditches, channels, culverts, storm sewers, inlets, and weirs. The collection of stormwater runoff should be by positive gravity means without the use of siphons, pumps, or similar devices, unless specific approval is obtained from the County Engineer. The Engineer of Record shall design all underground piping.

8) NPDES Requirements:

a) Prior to the commencement of construction the Developer/Owner shall obtain the necessary permit, from State of Florida Department of Environmental Protection (FDEP), required to comply with the National Pollutant Discharge Elimination System (NPDES) stormwater regulatory program and Hernando County's NPDES Ordnance.

(1) Large Construction Activity is defined in 40 CFR Part 122.26(b)(14)(x)

(2) Small Construction Activity is defined in 40 CFR Part 122.26(b)(15)

b) Hernando County requires that all construction activity include the implementation of stormwater control “Best Management Practices” (BMPs) meaning those schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of surface waters. BMPs also include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. Reference is made to Section 104, Florida Department of Transportation Standard Specifications for Road and Bridge Construction (Latest Edition) and F.D.E.P. NDPES Stormwater program, and Guidance for Stormwater Pollution Prevention. The applicable measures shall be implemented to minimize the transportation of silts and sediments off site and to eliminate, to the greatest extent possible, the contamination of surface waters flowing off-site or recharging on-site.

c) Stabilize all disturbed soils within seven days of no construction, project completion, or final inspection, whichever occurs first.

d) Contractors shall clean up all fugitive soils at a minimum weekly or more often as needed.

e) For those sites requiring a FDEP Permit, as described above, a copy of the Stormwater Pollution Prevention Plan shall be provided to the Hernando County Engineering Office, 1525 East Jefferson Street, Brooksville, Florida 34601, prior to commencing construction.

f) Provide a copy of the Notice of Termination to the County Engineers office when construction is complete, as above.

DRAINAGE DESIGN

Drainage Standards:

A. Valley curb shall be twenty four (24) inches wide with a minimum thickness of six (6) inches at the center, with a three (3) inch rise to the back of the curb and a one (1) inch rise to the pavement edge, 3,000 p.s.i. concrete used throughout.

B. Vertical Curb and Gutter shall conform to FDOT Index 300 Type F.

C. Vertical curbs without gutters shall be constructed using 3,000 p.s.i. concrete and be per FDOT Index 300 Type D, used on high side of road only.

D. Curb end transitions to meet FDOT Index No. 300.

E. Culvert Pipe:

1) Culvert pipe under roadways shall be steel reinforced concrete pipe, eighteen (18) inch minimum; driveway pipes may be steel reinforced concrete, corrugated metal, or HDPE. However, for side drain materials other than steel reinforced concrete a minimum of one (1’) spacing is required between the non-reinforced concrete pipe material and edge of pavement and or curb. Pipe easements shall be fifteen (15) feet minimum to permit access, maintenance, and protection. Pipes with over 4 feet of cover shall be steel reinforced concrete pipe.

2) Maximum length of culvert pipe between structures shall not exceed four hundred (400) feet.

3) All pipe joints shall be wrapped with approved filter fabric per FDOT Specifications, Section 280.

4) Pipes shall be sized to accommodate a minimum 10-year 24-hour storm event.

F. Mitered End Section, all culverts under roadways or driveways shall have mitered end sections made of reinforced concrete, Plastic Flared End Sections are not allowed. Where shallow swales intersect deeper drainage ditches or DRA’s, erosion control shall be provided by use of culvert pipes, concrete swales, mitered end section with spillways, or other suitable means. Cover material over culverts in swales shall be stabilized, compacted, and sodded to prevent erosion. The proposed design of reinforced concrete mitered end sections must meet current FDOT Standards.

G. Splash Pads/Rip Rap: shall be provided on all MES that have velocities of greater than 4 ft/sec for a minimum 10-year 24-hour storm event. Velocities for all pipes shall be provided and ranges shall be within prudent hydraulic engineering design standards.

H. Endwalls shall be made of 3,000 p.s.i. concrete per FDOT Index No. 250 and shall be used only outside the roadway clear recovery area.

I. Manholes or junction boxes shall be constructed of reinforced concrete. They shall be a minimum of four (4) feet inside diameter at the base with straight walls or corbelled a maximum of four (4) inches in one (1) foot, with a manhole rim cast in place for access. Inverts are to be formed to a minimum of ½ the pipe diameter. FDOT Index No. 200 and 201 shall be used with a maximum corbel height of four (4) feet and a vertical chimney height of no more than eighteen (18) inches including ring and cover. Manholes or junction boxes shall not have metal steps.

J. Inlets:

1) Curb Type: See FDOT Roadway and Traffic Design Standards Index No. 200 and 201 (Latest Edition). Bottomless inlets shall not be allowed. Curb inlets shall not be placed within curb return radii.

2) Ditch Bottom Type: Shall be constructed per (a) above with the exception that FDOT Index No. 232 Type C or greater shall be used. A FDOT Index Type F "Modified" may be used and details obtained from Hernando County Engineering Department.

K. Valley Crossing in Local Streets:

1) The design of Valley Crossings in streets will only be allowed on closed drainage system, curb, and gutter, unless otherwise approved by the County Engineer. In no case shall concrete valley gutters be less than thirty six (36) inches wide.

2) Valley Crossing shall be limited to streets that have a stop condition at intersection.

L. Swale Drainage:

1) Roadside Swale Geometry: Shall be per current FDOT Greenbook Standards.

2) Swale Erosion Protection: Swales shall be provided with permanent erosion protection. Such protection may be turf, using an approved type grass, or approved type of erosion fabric may be utilized. When turf protection is used, the swales shall be sodded a lateral distance extending from within one (1) foot of the road pavement to the top of the swale backslope.

3) Driveway Across Swales: Driveways across swales shall have an invert, or drainage pipes of adequate size place beneath them conforming to the proper flow lines for positive drainage. The culvert pipes shall have a minimum fifteen (15) inches in diameter, long enough to provide a six (6) foot wide shoulder on each side of the driveway pavement. The ends of the pipe shall be finished with mitered end sections.

M. Canals, Drainage Retention/Detention Areas, Major Waterways.

1) One twenty (20) foot DROW is required for each retention/detention area not abutting county ROW.

2) The following DRA's shall undergo geotechnical subsurface testing (at a minimum with Ground Penetrating Radar (GPR), Electrical Resistivity Imaging (ERI); Multi-Electrode Electrical Resistivity (MER), or equivalent as accepted by the County Engineer) to determine the presence of karst features or voids:

a) All planned Class A residential subdivision DRA's

b) All DRA's dedicated to the County

c) DRA's serving apartment complexes with one-half (1/2) acre or more of pond bottom and a total design depth of six (6) feet or greater

d) Any non-residential DRA's within fifty (50) feet of a residential area (measured from top of bank) with one-half (1/2) acre or more of pond bottom and a design depth of six (6) feet or greater

A report shall be delivered to the County Engineering & Planning Departments, which details the methods, mapping, results, and conclusions of the subsurface testing signed and sealed by a professional engineer or geologist. The project engineer shall sign and seal a letter to the County Engineering Department acknowledging review of the subsurface testing report; acceptance of its findings; conclusions as to the site suitability for stormwater retention; and detailing any recommendations or remediation of any karst features or voids present.

N. Design factors for known karst features within proposed platted lots.

1) Geotechnical analysis of the feature(s) shall be conducted and recommendations for remedial action provided to the Engineering and Planning Departments.

O. Flood Plains: where lands are or have been subject to periodic flooding, the County and/or FEMA have not established minimum building elevations, the Developer shall establish 100-year, and 25-year flood elevations at design flood conditions in accordance with SWFWMD and County standards.

DRAINAGE SYSTEM CONSTRUCTION

Unless otherwise approved by Hernando County, standard details and specifications for the construction of storm drainage systems shall conform to applicable sections of the following (Latest Editions):

1. Florida Department of Transportation “Roadway and Traffic Design Standards.”
2. Florida Department of Transportation “Standard Specifications for Road and Bridge Construction.”
3. Drainage Manual: Florida Department of Transportation (FDOT)
4. Drainage Manual, Storm Drains: Florida Department of Transportation (FDOT)

TRAFFIC CONTROL REQUIREMENTS

1. All traffic control devices shall be depicted on plans, including type, placement location and dimensions, and material and installation details in conformance with County, State, and Federal guidelines.
2. All traffic control devices shall be installed by the Developer, at his/her expense, prior to the opening of the development to public usage and travel.
3. Approved work zone traffic control, and project site security and safety plans/notes are required on the plans. Construction traffic entrance and exiting route shall be designated on construction plans.
4. Frontage roads, Major Local, Collector, and Major Collector roadways shall be striped per the MUTCD, per the conditions of design for that submittal.

SIDEWALK AND BICYCLE FACILITY REQUIREMENTS

A. Residential Streets

1. Subdivisions in all residential zoning districts, Residential Single-Family manufactured Housing Districts, and Residential Planned Development Project Districts (including single family, multi-family, mobile home, resort residential and residential components of Combined PDPs) shall include sidewalks on both sides of internal streets and on one side along the frontage of all external streets adjoined by the development.
2. Residential developments not required to include sidewalks by Section A.1 shall be required to include one of the following along Major Local, Collector and Arterial roadways:
    a. A sidewalk on one side (both sides if four or more existing or planned road lanes)
    b. Bicycle facilities along both sides
    c. A multi-use trail separated from and parallel to Major Local, Collector, and Arterial roadways.

B. County Collector and Arterial Roadways

1. County collector and arterial road pavement widening projects in urban areas (within FHWA apportioned urban boundaries) where bicycle and pedestrian facilities are planned, as part of a county network shall include paved shoulders (at a minimum) for bicycle travel.

2. County collector and arterial road pavement widening projects in urban areas (within FHWA apportioned urban boundaries) shall include a sidewalk along one side (at a minimum), except when such roads have four or more lanes sidewalks shall be included along both sides.

3. Where parallel public bicycle and/or pedestrian facilities exist or are planned in close proximity to and are (or are planned to be) accessible from county arterial and collector roads, pavement widening projects on these roads may not include additional bicycle and/or pedestrian facilities.

4. All developments fronting county collector and arterial roads in urban areas shall include a sidewalk along one side of all county collector and arterial roads fronted by the development and shall be required to include onsite pedestrian features i.e., sidewalks, crosswalks, etc., built to connect the development to the existing or planned sidewalk(s).
5. Where it is not practical (as determined by the County Engineer based on planned road widening within 5 years or incomplete planning to determine sidewalk locations, or environmental constraints) to construct a required sidewalk, the developer may contribute funds equivalent to the cost of the required sidewalk fund for the area.

A. Frontage Roads

1. Frontage roads shall include a sidewalk on at least one side.

2. Development (residential and nonresidential) occurring adjacent to existing frontage roads with existing or planned (to a sufficient degree to determine location) sidewalk(s) shall include onsite sidewalk(s) built to connect to the existing or planned sidewalk(s). However, when the existing or planned sidewalk is on the opposite side of the pavement from the development, onsite sidewalk(s) shall be required to connect to the edge of pavement at a suitable location for pedestrian traffic to safely cross the pavement to reach the sidewalk, and shall include signed and marked pedestrian crossing(s). Developments constructing frontage roads shall include sidewalks as part of frontage road construction.

3. Development occurring adjacent to existing frontage roads without existing or planned (to a sufficient degree to determine location) sidewalks shall be required to include onsite sidewalk(s) built to the property line.

4. Development occurring adjacent to frontage roads shall include pedestrian connections to adjoining properties.

D. Development Proximate to Planned Bicycle and Pedestrian Facilities

1. Development adjoining (or including) planned or existing bicycle and pedestrian facilities where there are gaps in incomplete networks shall construct the portion(s) necessary to continue the planned or existing facilities adjacent to (or through) the development.

E. ADA Ramps and Recessed Curbing

1. FDOT Indexes 304, 310 and FDOT Spec 527 shall be followed for all ADA ramps and recessed curbs. The developer of the subdivision shall place all recessed curbs during construction. For the detectable warning surface (truncated domes) only the Armorcast Detectable Warning Tile (red or yellow) S527-0012 in or equivalent from the FDOT Qualified Products List shall be acceptable. A tapered edge tile shall be used on all approach sides.

2. Local roads with Tee intersections shall have a minimum of 3 curb recesses/ramps for unimpeded ADA access. All ramps shall be at 45 or 90 degrees to the roadway, so that pedestrians cross and arrive perpendicular to the ramp/sidewalk. Curb ramps should align with crosswalks.

3. Collector and higher-level roads shall have their ADA ramps coordinated with the County Engineers Office prior to design.

LOTS AND LOT GRADING

A. Lots with side setbacks or easements of less than seven and one-half (7.5) feet require an Engineered Site Plan to show effective drainage that minimizes impacts to surrounding properties and conforms to the local drainage pattern. This shall specify whether slab on grade or stemwall construction. Only applies to lots ½ acre and smaller.

B. Lots with a 5’ setback that exceed 8” difference in F.F.E. between them shall be designed with a stem wall or retaining wall to be constructed by the homebuilder. Lots with a 7.5’ setback that exceed 18” difference in F.F.E. between them shall be designed with a stem wall or retaining wall. Lots with a 10’ setback that exceed 28” difference in F.F.E. between them shall be designed with a stem wall or retaining wall. All stemwalls and retaining walls are to be shown on the subdivision plans. Only applies to lots ½ acre and smaller.

C. All lots being developed shall have provisions made to receive stormwater flows from offsite properties so they do not impact their construction, to preclude erosion and flooding.

D. All lots graded, as B/C shall have the rear swales in place during the construction of the subdivision.

E. All lots on subdivision plans shall show Finished Floor Elevation (FFE), not pad elevations. Typical pad elevation is from 6 inches to 1 foot below FFE.

F. A final drainage inspection is required on all residential construction to verify the drainage was constructed properly.

G. All lots shall be final graded in accordance with approved drainage plans. All building pads shall be prepared in accordance with the County accepted geotechnical report and related guidelines, which require the removal of all yielding clays, muck, and/or organic materials to a minimum two (2) feet below the building foundation. Temporary ground cover, sod or seed and mulch, shall be planted and maintained on all disturbed areas prior to issuance of certificate of occupancy for the home, and prior to passing final inspection for the subdivision.

EXCAVATION AND STOCKPILES

Setbacks, buffers, berms.

A. Setbacks. The following minimum distances from the permittee's property line shall be maintained for the identified adjacent property uses:

1) Residential subdivisions (lots less than one acre), multifamily, hospitals, life care centers: Stockpiles: Five hundred (500) feet

2) Commercial, office, institutional, active and developed passive recreation, agriculture/residential subdivision (lots one acre and larger): Three Hundred (300) feet

3) Agriculture, industrial, utility, public roads, forest, open space: Stockpiles: One hundred (100) feet

4) A six-foot stockpile is acceptable for lots that are smaller in size that cannot accommodate the above setbacks.

B. Stockpile locations should be shown on the plans. All necessary BMPs shall be implemented to control fugitive dust and erosion.

PLANS AND SPECIFICATIONS SUBMITTALS

As a condition for approval of site plans, the developer shall furnish complete plans and specifications prepared, signed, sealed, and dated by a Professional Engineer licensed to practice in the State of Florida, which shall include the following:

1. Legible plans using good drafting practices. Specific design / construction elements should be shown on separate sheets.

2. Overall, site and drainage plans scaled at 50, 100, or 200 feet per inch. Construction sheets scaled at 10, 20, 30, 40, or 50 feet per inch.

3. An index of all sheets included in the plans with drawing number references, index shall be alphabetical, numerical, or alphanumerical order.

4. A location map scaled to show project location, surrounding streets, and a minimum of one arterial roadway; with all mentioned streets labeled.

5. A topographic map of the development related to mean sea level datum, with contours shown at not greater than one-foot intervals. The existing and proposed lot and street grading is to be shown. Lot grading shall be shown on all lot corners and break points.

6. A drainage map of the basin or basins within which the development lies, inclusive of immediate off site drainage. The map may be combined with the above topographic map, but in any event must include suitable topographic data acceptable to the County Engineer. All ridges outlining the basins and the sizes of the basins in acres must be shown. The outlines and sizes in acres of all

existing and proposed drainage areas within the basin shall be shown and related to corresponding points of flow concentration. Flow paths shall be indicated throughout, including final outfalls from the subdivision and basins.

7. Drainage data, assumed criteria and hydrologic and hydraulic calculations meeting the requirements of this document and Southwest Florida Water Management District.

8. Plans showing the proposed design features and typical sections of canals, swales and all other open channels, storm sewers, all drainage structures; plan, profile, and cross sections of roads, driveways, and curbs; sidewalks and ramps; permanent and work zone traffic control; and other proposed development construction. Plans shall have all drainage structures and DRA's numbered. Roadway Typical Sections shall show proposed utility locations. Design shall meet requirements of this document.

9. Existing natural and made features on and abutting the project site, including roads and curbs, intersections, driveways, sidewalks, canal and swales and other drainage features and structures shall be shown in the plans. Where proposed roads intersect existing roads, elevations, and other pertinent details shall be shown. Design shall meet the requirements of this document.

10. Construction entrances and truck routes to/from the site to all major roads. All construction vehicles going to from the site will utilize these routes. This includes builders and contractors in subdivisions, after the infrastructure is constructed.

11. Specifications to cover construction of all the work proposed, providing for good workmanship and standard practices of construction to achieve the desired finished product as designed by the engineer and accepted by the County Engineer. These specifications shall meet or exceed specifications as referenced in this document.

12. Copies of all required permits, approvals, and other necessary documents shall be provided to the Office of the County Engineer prior to site plan approval.

13. All survey data for new construction shall be in NAVD 1988 and clearly labeled.

14. Digital format (DWG) as builts shall be submitted prior to the final inspection and granting of the C.O. for all subdivisions.

ADMINISTRATIVE DESIGN VARIANCES

A. Purpose: The purpose of an Administrative Design Variance is to document site and item specific variances to guidelines, standards, and practices in the preparation of design plans for civil engineering improvements. Many factors influence the design of commercial and subdivision improvements, including: natural features and topography, land boundaries, existing infrastructure and conditions, regulations, policies, political requirements, and engineering practices. The Administrative Design Variance provides for the responsible engineer from the County the ability to acknowledge and approve an engineering design that does not necessarily meet current County design standards and guidelines, yet still provides for significant protection to the public's health, safety, and welfare.

B. Practice: The design engineer shall submit in writing a request for an Administrative Design Variance for each site / project. This request must detail each specific design variance and include:

1. Location on site of the proposed variance;

2. Type of proposed variance;

3. Design standard from which the variance is requested;

4. Intended result / effect of each proposed variance;

5. Mitigating actions, if any;

6. Reason / justification of the proposed variance;

7. Other supporting information, as applicable.

C. Approval: Written approval and confirmation for each design variance request must be issued prior to inclusion in future plan submittals.

D. Liability: Administrative Design Variances do not relieve the design "Engineer of Record" from liability of his/her chosen design and/or actions.

EXPENSE AND RESPONSIBILITY FOR TESTING

A. The developer shall submit to the County Engineer the name of testing laboratory he/she intends to employ for approval prior to starting any construction activities. The Developer will pay for the expense of testing materials and construction. All testing shall be submitted for approval by the County Engineer prior to commencing the next phase of construction, rough grade, underground utilities and storm drain, sub-base, base, wearing surface, final grade and erosion control.

B. Upon completion of all improvements required, the Developer's engineer shall submit a statement certifying to the best of his/her knowledge, periodic observation and contractor provided record drawings; that the project has been constructed to plans and specifications originally approved by the County Engineer. Accompanying this statement shall be a construction report showing where tests were made, who made them, when they were made, and what the results were. Testing shall be in accordance with "Hernando County minimum Testing Frequency Requirements" as prepared by the Hernando County Engineering office (See Section II, these Guidelines). Copies of test reports shall be furnished to the Hernando County Engineering Office after the test has been completed. Where test reports show non-compliance with specifications, corrective work shall be started immediately.

C. The County may request additional testing by the independent and certified testing laboratory approved by the County. Principles and/or owners of the approved testing laboratory shall not have financial interest in the company performing the work. Costs associated with performing additional testing shall be paid for by the County or the Developer by one of the following methods:

1. If the Developer's test complied with the approved specifications and appropriate standards, and the County's test showed otherwise, then the Developer would pay for the additional test(s).

2. If the County's test result also showed compliance with the approved specifications and appropriate standards, the County will pay for the testing.

AUTHORITY OF COUNTY INSPECTOR

A. County Inspectors may inspect all construction, all materials and may inspect preparation or manufacture of supplies. The County Inspector is not authorized to revoke, alter, or waive any requirements of the specifications, but he/she is authorized to call to the attention of the Developer any failure of work or materials to conform to the plans or specifications.

B. The County Inspector in no case shall act as foreman or perform other duties for the Developer, and shall not interfere with the management of the work. Any advice that the County Inspector may give to the Developer shall in no way be construed as binding to the County Engineer or releasing the Developer from carrying out the intent of the plans and specifications.

C. The County Engineer or his/her Inspectors, at any time they perceive a hazard or non-compliance with approved plans, may stop any work within the public right-of-way.

SECTION II

TESTING & CERTIFICATION

SECTION II **TESTING, CERTIFICATION & AS-BUILTS**

AS-BUILTS

The Subdivision As-Builts (record drawings) will include a certificate of completion from the Engineer of Record stating: The project was built to substantial completion based upon his/her onsite observation of construction. Both the original design and the constructed condition must be clearly shown. Revisions made during construction will be clouded to reflect deviations from the approved construction plans observed by the Engineer.

At a minimum the following shall be verified on the as-built drawings:

1. Discharge structures, side bank and under drain filters or trenches; weirs, pipes, orifices, skimmers, etc.
2. Storage areas for treatment and attenuation; dimensions, elevations, contours, or cross sections.
3. System grading information to determine contributing drainage areas, flow directions and conveyance of runoff to the system discharge point.
4. Conveyance; dimensions, elevations contours, final grades or cross sections of systems utilized to divert off site runoff.
5. Water levels; existing water levels and date determined.
6. Benchmarks; location and description of all benchmarks
7. Lot grading-Final Pad elevation, corners of the lot grades of rear lot swale elevations every 4 lots or 300 feet whichever is greater.

CERTIFICATION OF SUB DIVISIONS

This statement must be included in the certification letter provided by the Engineer of Record for subdivisions.

I hereby certify to the Board of County Commissioners of Hernando County, Florida that the improvements have been inspected for the above referenced subdivision and found the improvements shown on the approved plans have been fully and satisfactorily completed in substantial accordance with the approved plans. It also complies with the requirements of the Southwest Florida Water Management District (SWFWMD) permit and the National Pollution Discharge Elimination System (NPDES) Permit obtained for this project.

I enclosed two prints of the record drawings and one digital copy of the record drawings in .DWG (CADD) format, which depict approved construction plans as modified, including dimensions and elevations, including lot grade and rear lot swale elevations every 4 lots or 300 feet whichever is greater. Also included are two copies of the testing reports provided by the independent testing laboratory, that I certify to be in compliance with Hernando County Standards and the approved plans.

TESTING & SCHEDULE

Testing shall be accomplished by an independent and certified testing laboratory. Principals and/or owners of the testing laboratory shall not have any financial interest in the company performing the work. Any failures in test will be corrected and retested prior to the continuation of work at that location. The project will not be acceptable until all tests and verification thereof have been submitted to and approved by the County Engineer. The Contractor shall pay for any retesting due to evidence of failure in the original test. The developer will pay for the expense of testing materials and construction. All testing shall be approved by Engineer of Record prior to commencing the next phase of construction, rough grade, under ground utilities and storm drain, sub-base, base, wearing surface, final grading and erosion control. The test results shall be in a format that provides the test result, the standard it was supposed to meet and whether it passed or failed. The test lab or engineer of record will certify that all testing met Hernando County Standards.

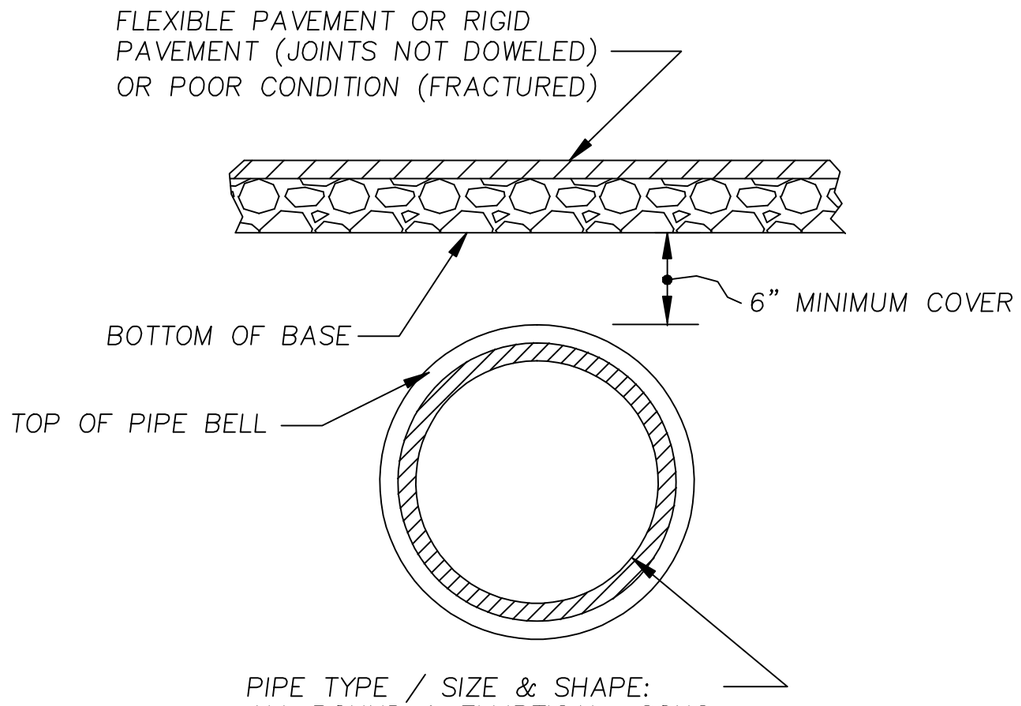
The following is a list of minimum test requirements respective to various items of work:

ITEM	TEST	TEST IDENTIFICATION	TEST REQUIREMENTS	TEST FREQUENCY
Base	Maximum Density, Optimum Moisture	AASHTO T-180-C, ASTM D1557-C, FM 5-515	LBR 100	One per source, density test per 10,000 sq. ft. of parking area
	Thickness, Field Density	AASHTO T191, T310, ASTM D1556, D2922	98% of Maximum Density, AASHTO T-180-C, 1/2" tolerance	Each 6" course every 300 feet, staggered left and right of centerline.
	Gradation, Atterburg Limits	FLORIDA DOT	FLORIDA DOT Sec 911	One Per source
Stabilized Subgrade	Bearing Values	Florida DOT LBR, FM 5-515	Minimum 40 LBR	One per Material Type*
	Maximum Density, Optimum Moisture	AASHTO T-180-C, ASTM D 1557	N/A	One per Material Type
	Thickness, Field Density	AASHTO T191, T310 ASTM D1556, D2922	98% of Maximum Density AASHTO T-180-C, 1/2" tolerance	Test shall be no more than 300' apart under curbs and centerlines (staggered). No less than one per street.
Concrete	Slump Test	AASHTO T-119-82, ASTM C143	Florida DOT	One per set of cylinders
	Compressive Strength Cylinders	AASHTO T23-80, ASTM C31-69	Florida DOT Sec 346-5	One set of 3 cylinders for 100 Cubic Yards or Fraction thereof placed each day as called for by the engineer (1 to be tested at 7 days, 1 at 28 days and 1 hold)
	Air Content	AASHTO T199-82	Florida DOT	Florida DOT, One per days production
Asphaltic Concrete	Rolling Straight Edge Or Longitudinal Laser Profiler	Florida DOT, FM 5-509	Florida DOT	Florida DOT
	Aggregate Analysis	Florida DOT	Florida DOT	One per Design
	Design Mix	Florida DOT	Florida DOT	One per Test
	Bitumen Content	Florida DOT Modified, AASHTO T164	Florida DOT	One per Day
	Graduation Stability Flow	Florida DOT	Florida DOT	One per Day
	Field Density	ASTM 02950-91	95% of Lab Density	One Density each course every 300L.F. or One density per 10,000 S.F of parking area
	Properties Of In-Place Materials	Marshall (Asphalt Institute MS-2)	Florida DOT	One per Day
	Thickness	Florida DOT	Florida DOT, ¼" tolerance	One thickness each course every 300 L.F.
Embankment	Maximum Density, Optimum Moisture	AASHTO T99, ASTM D698.78	Florida DOT Sec 120	Per Soil Type
	Field Density	AASHTO T 191, T310, ASTM D1556, D2937, D2922	100% of Maximum Density, AASHTO T-99	One per 500' horizontally, alternating lifts (1 ft.)
Utility Trench Backfill under roadways and structures	Maximum Density, Optimum Moisture	AASHTO T99, ASTM D698.78	N/A	Per Soil Type
	Field Density	AASHTO T 199, ASTM D1556, D2937, D2922	100% of Maximum Density, AASHTO T-99	**
Backfill of Structures	Maximum Density, Optimum Moisture	AASHTO T99, ASTM D698.78	N/A	Per Soil Type
	Field Density	AASHTO T 191, T310, ASTM D1556, D2937, D2922	100% of Maximum Density, AASHTO T-99	Each Lift, but not to exceed 1' vertically

** Test shall be located no more than 300' apart. Tests shall be performed on each lift, except that tests shall not be further apart than one foot vertically, every 300 linear feet or part there or, and centerline of each roadway. Field Densities shall be taken over all road crossings. Field Densities for Sanitary lines shall be staggered to include results over service laterals. There shall be a minimum of one test series for each one foot of lift over pipeline between manholes.

SECTION III

DRAINAGE / EROSION STANDARDS



MINIMUM COVER FOR CONCRETE PIPE

GENERAL NOTES:

1. THE RECOMMENDED 6" MINIMUM DIMENSION IS TO WITHSTAND ANTICIPATED HIGHWAY TRAFFIC LOADS. ADDITIONAL COVER MAY BE REQUIRED TO SUPPORT CONSTRUCTION EQUIPMENT LOADS OR HIGHWAY TRAFFIC LOADS BEFORE PAVEMENT IS COMPLETED. SOME SIZE THICKNESS COMBINATIONS MAY REQUIRE MINIMUM COVER GREATER THAN THE ONE LISTED ABOVE.
2. 6" MIN. COVER SHOWN IS STANDARD INSTALLATION. THE COUNTY ENGINEER MAY REQUIRE MORE COVER AND/OR BASE DEPENDING ON SITE CONDITIONS. (THESE FEATURES MAY INCLUDE BUT ARE NOT LIMITED TO EXTRA STRENGTH PIPE, SELECT BEDDING, SELECT BACKFILL AND ENCASEMENT). REFERENCE F.D.O.T. INDEX 205.

TITLE: DRAINAGE / EROSION STANDARD
COVER HEIGHTS

APPROVED BY: C. G. MIXSON, P.E.
DATE: 10-01-08
NO.: III-01

HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
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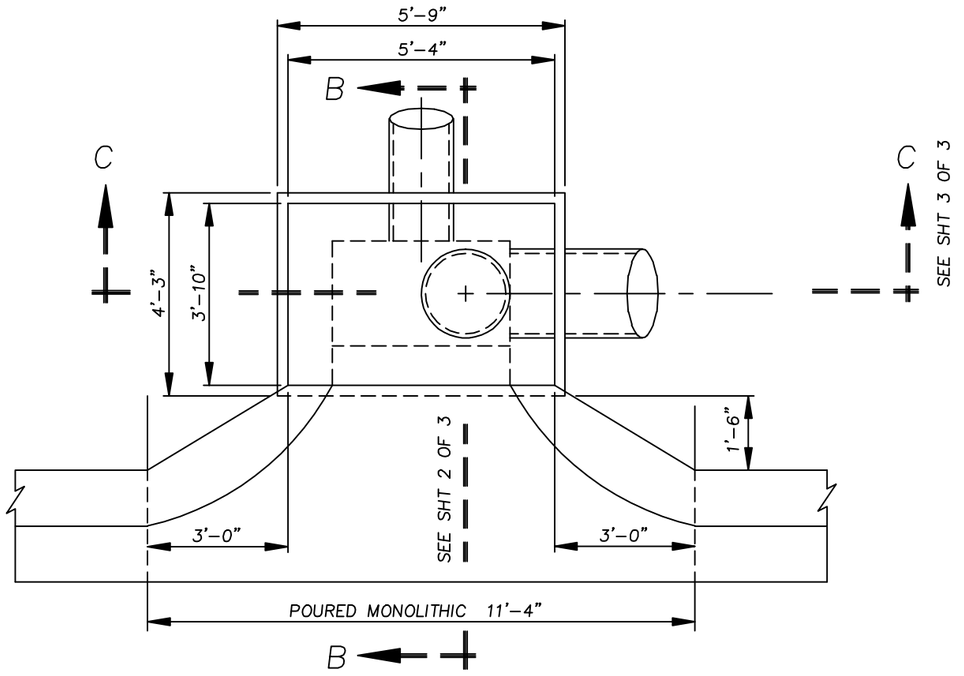
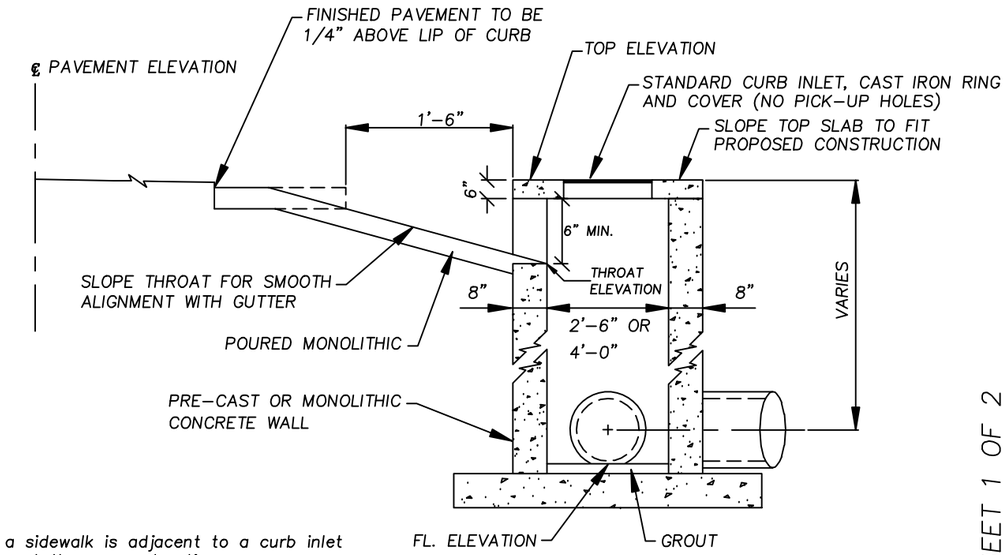


INLET FOR MIAMI GUTTER

TYPE I INLET N.T.S.



NOTE: If a sidewalk is adjacent to a curb inlet it shall be at the same elevation.

SECTION B – B

N.T.S.

SHEET 1 OF 2

TITLE: DRAINAGE / EROSION STANDARD
CURB INLET

APPROVED BY: C. G. MIXSON, P.E.
DATE: 10–01–08
NO.: III–02

HERNANDO COUNTY
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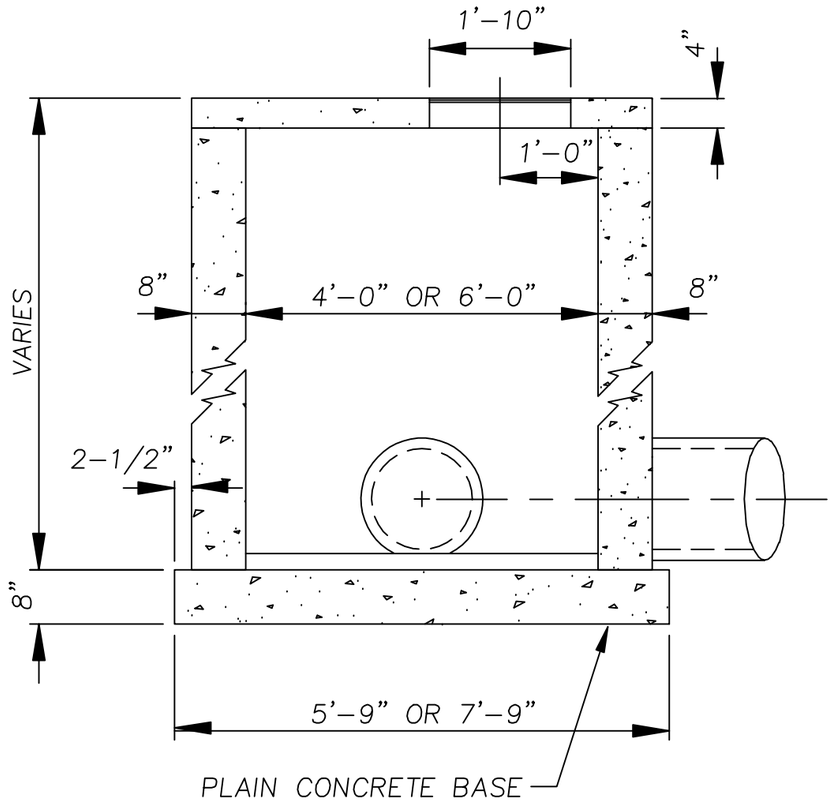

SECTION C – C

N.T.S.

NOTES:

1. STRUCTURE CAN BE MODIFIED FOR SINGLE OR DOUBLE THROAT.
2. SEE F.D.O.T. STANDARD NO. 210 FOR STEEL REINFORCING IN TOP SLAB.
3. STRUCTURES LARGER THAN 4' X 6' (INSIDE) SHALL BE PRE–CAST OR CAST–IN–PLACE.
4. REINFORCING – NO.4 BARS @ 12" CENTERS UNLESS OTHERWISE NOTED. CUT OR BEND BARS OUT OF THE WAY OF PIPE WHEN NECESSARY. BARS TO CLEAR PIPE BY 1–1/2".
5. RECOMMENDED MAXIMUM PIPE SIZES ARE 24" LONGITUDINAL AND 30" TRANSVERSE. FOR LARGER PIPE, INLETS WITH BOTTOMS TYPE J, ALT. B, INDEX NO. 200 ARE RECOMMENDED.
6. FOR MANHOLE AND JUNCTION BOX TOPS, FOR FRAMES AND COVERS, AND, FOR SUPPLEMENTARY DETAILS SEE INDEX NO. 201.

TITLE: DRAINAGE / EROSION STANDARD
CURB INLET

APPROVED BY: C. G. MIXSON, P.E.
DATE: 10–01–08
NO.: III–03

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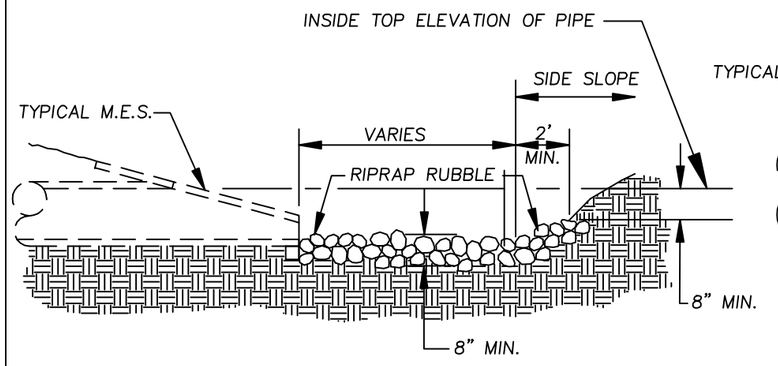

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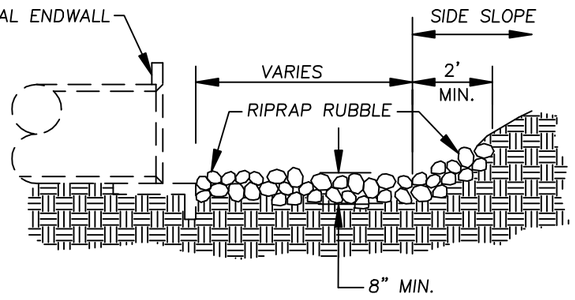

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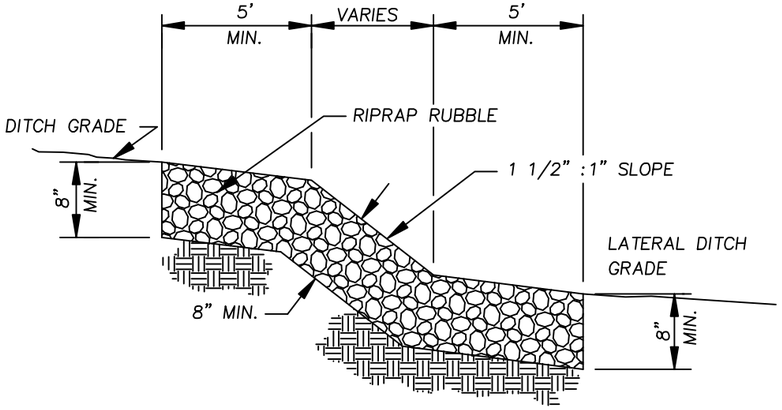

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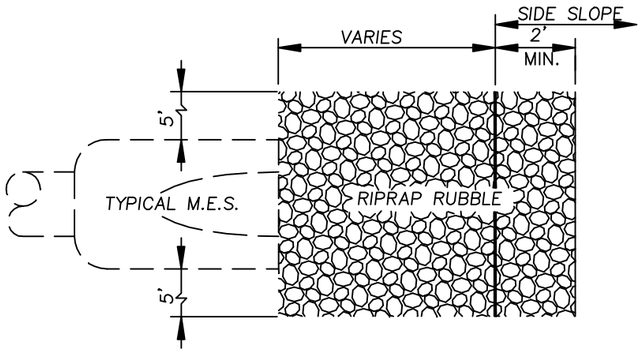
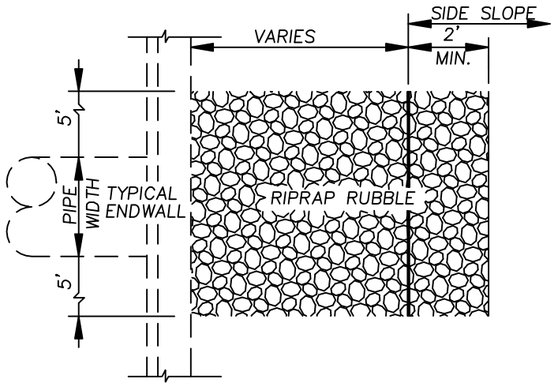


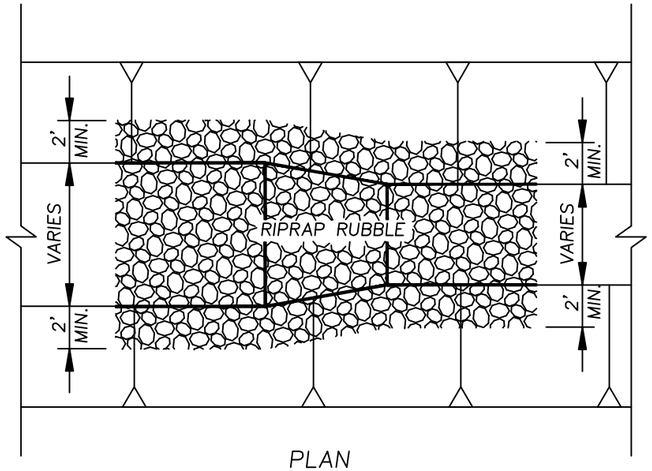
PLAN

TYP. M.E.S. w/
RIPRAP RUBBLE



PLAN

TYP. ENDWALL w/
RIPRAP RUBBLE



PLAN

TYP. DITCH w/
RIPRAP RUBBLE

GENERAL NOTES

1. REFER TO F.D.O.T. STANDARD SPECIFICATIONS SECTION 530 FOR ADDITIONAL RIPRAP RUBBLE SPECIFICATIONS.

2. GEOTEXTILE SHALL BE INSTALLED BEFORE ANY RIP RAP IS PLACED. GEOTEXTILE SHALL CONFORM TO F.D.O.T. SPEC 530 AND 514.

TITLE: DRAINAGE / EROSION STANDARD
RIPRAP

APPROVED BY:
C. G. MIXSON, P.E.

DATE: 10-01-08

NO.: III-04

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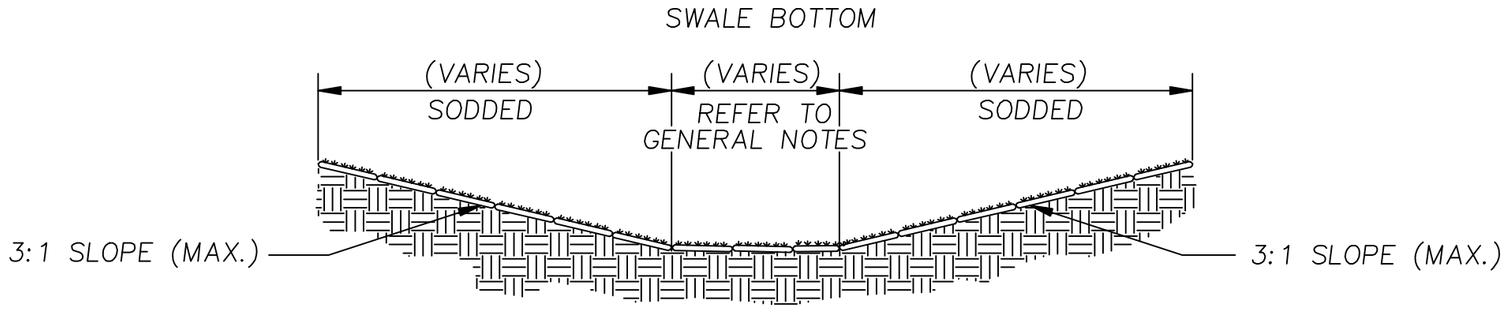
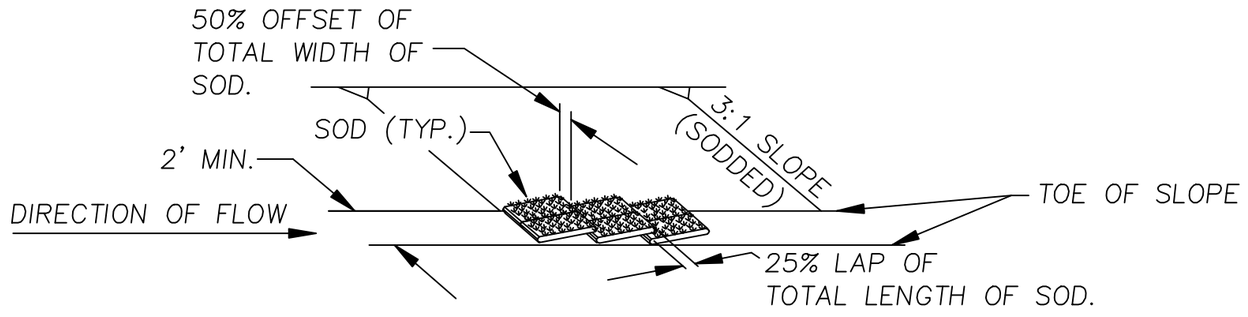


SECTION

GENERAL NOTES

1. REFER TO F.D.O.T. STANDARD SPECIFICATION SECT. 575 FOR SODDING SPECIFICATIONS.
2. REFER TO F.D.O.T. STANDARD SPECIFICATION SECT. 570 FOR SEEDING AND MULCHING.
3. LESS THAN 3% SWALE FLOW LINE GRADES SHALL BE SEEDED & MULCHED.
4. 3% TO 5% SWALE FLOW LINE GRADES REQUIRES STRIP SODDING ACROSS SWALES EVERY 20' MAX.
5. 5% TO 8% SWALE GRADES REQUIRE SWALES TO BE FULLY SODDED. SOD SHALL BE OVER LAPPED AT BOTTOM OF SWALES.
6. SWALE FLOWLINES GREATER THAN 8% SHALL HAVE SOD PEGGED IN PLACE.



SOD LAPPING PLACEMENT

LEGEND

INDICATES SLOPING AREA

TITLE: DRAINAGE / EROSION STANDARD
SWALE DETAILS

APPROVED BY: C. G. MIXSON, P.E.
DATE: 10-01-08
NO.: III-05

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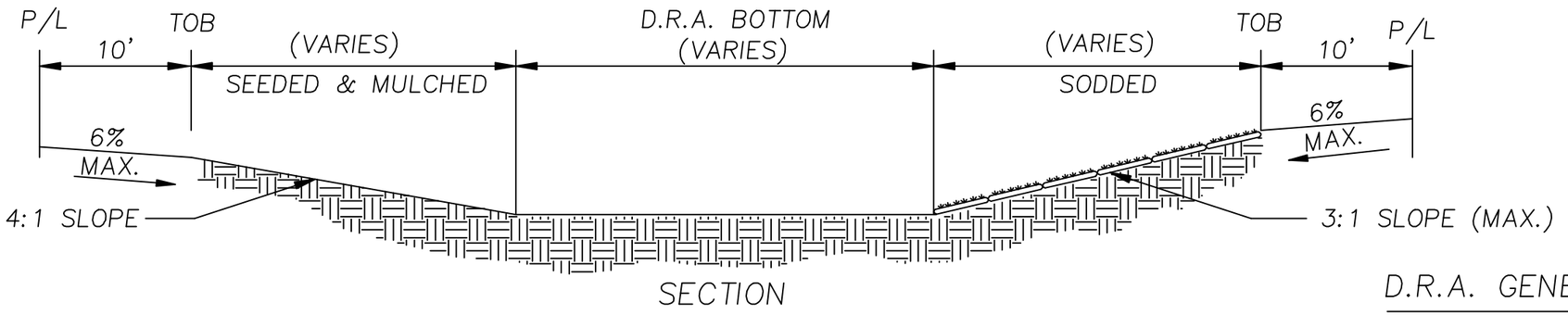

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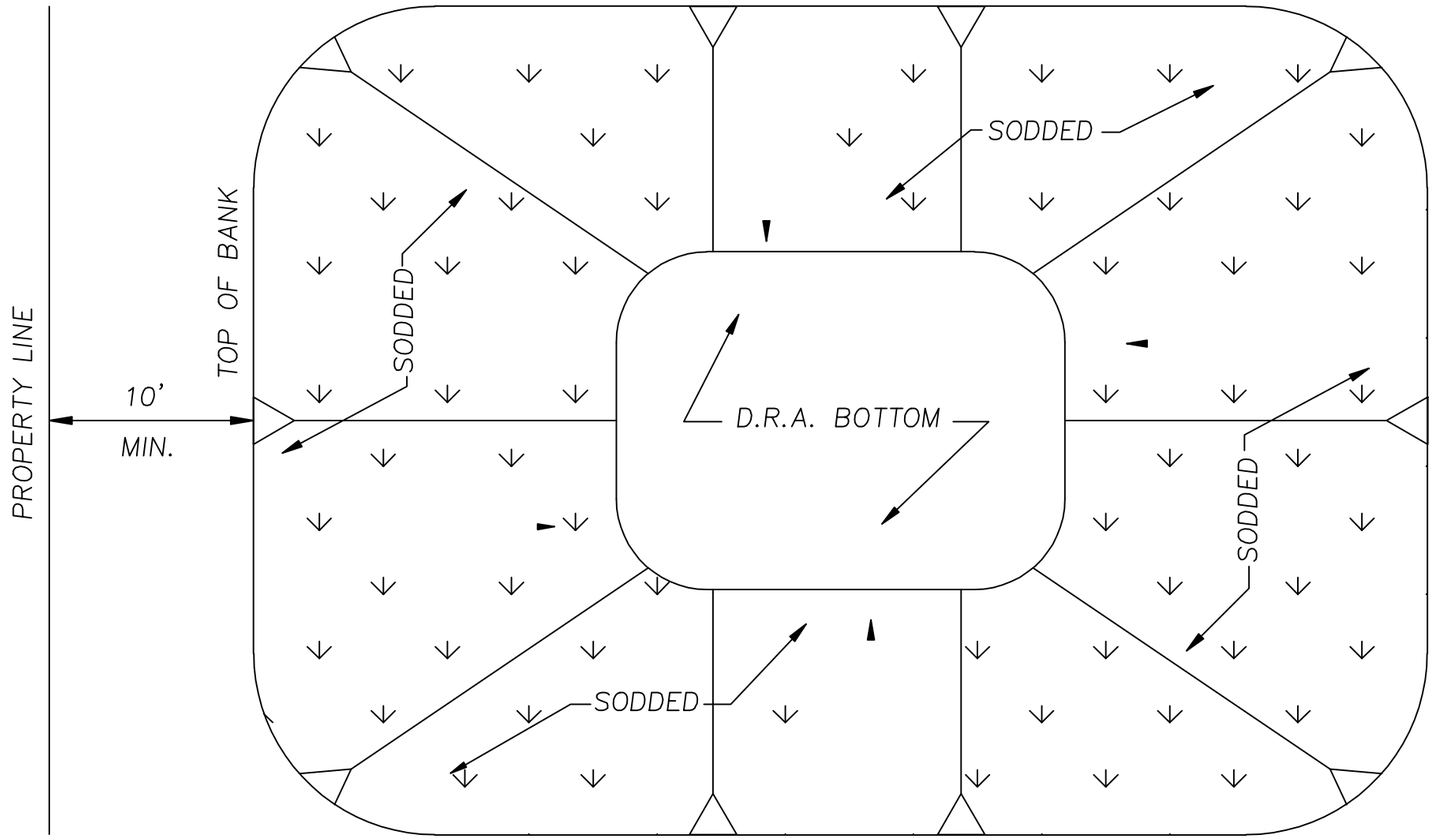

PLAN

D.R.A. GENERAL NOTES

1. REFER TO F.D.O.T. STANDARD SPECIFICATION SECT. 575 FOR SODDING SPECIFICATIONS.
2. REFER TO F.D.O.T. STANDARD SPECIFICATION SECT. 570 FOR SEEDING AND MULCHING OF THE D.R.A. BOTTOM.
3. ALL 3:1 SLOPES SHALL BE SODDED.
4. THE MAXIMUM SIDE SLOPE SHALL BE 3:1.
5. ALL 4:1 SLOPES MAY BE SEEDED & MULCHED, UNLESS OTHERWISE REQUESTED BY HERNANDO COUNTY.
6. SEE SECTION I, SHEET I-08 FOR PIPES, DRAINAGE AND EASEMENTS.

LEGEND

INDICATES SLOPING AREA

TITLE: DRAINAGE / EROSION STANDARD
D.R.A. DETAIL (DRY POND)

APPROVED BY: C. G. MIXSON, P.E.
DATE: 10-01-08
NO.: III-06

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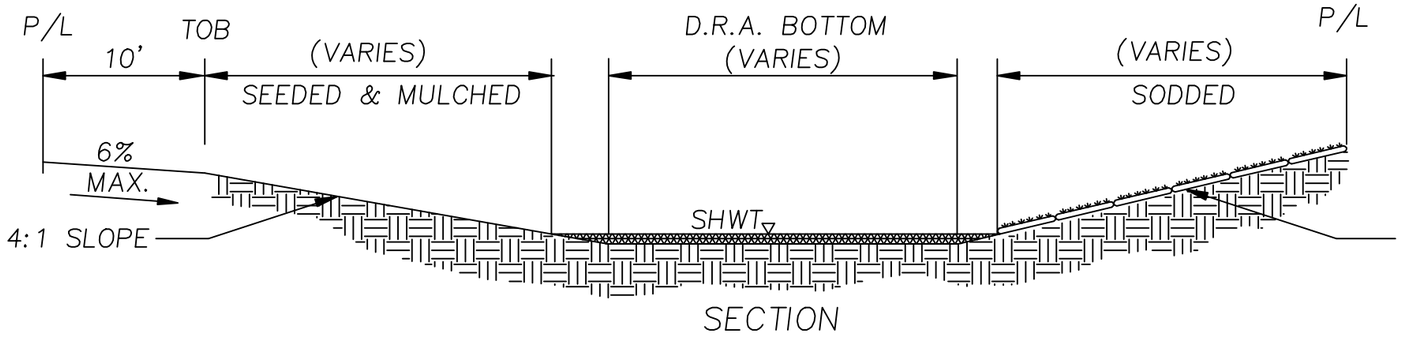
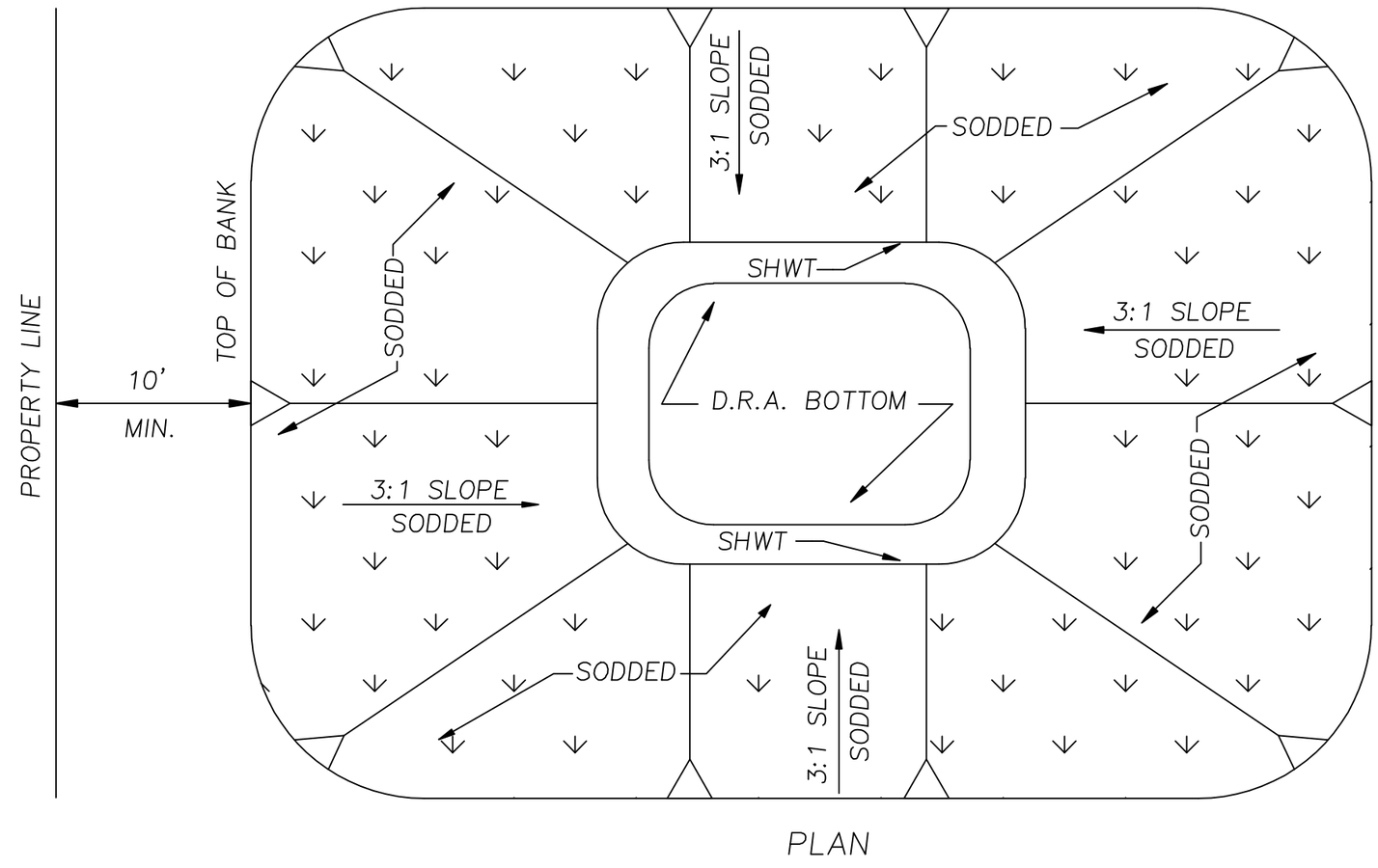


SECTION



PLAN

D.R.A. GENERAL NOTES

1. REFER TO F.D.O.T. STANDARD SPECIFICATION SECT. 575 FOR SODDING SPECIFICATIONS.
2. ALL SLOPES GREATER THAN 4:1 SHALL BE SODDED.
3. SLOPES 4:1 OR LESS MAY BE SEEDED & MULCHED, UNLESS OTHERWISE REQUESTED BY HERNANDO COUNTY.
4. THE MAXIMUM SIDE SLOPE SHALL BE 3:1, 2:1 ALLOWED PER SWFWMD RULES, BELOW WATER (SHWT).
5. SEE SECTION I, SHEET I-8 FOR PIPES, DRAINAGE, & EASEMENTS.

LEGEND

INDICATES SLOPING AREA

TITLE: DRAINAGE / EROSION STANDARD
D. R. A. DETAIL (WET POND)

APPROVED BY: C. G. MIXSON, P.E.
DATE: 10-01-08
NO.: III-07

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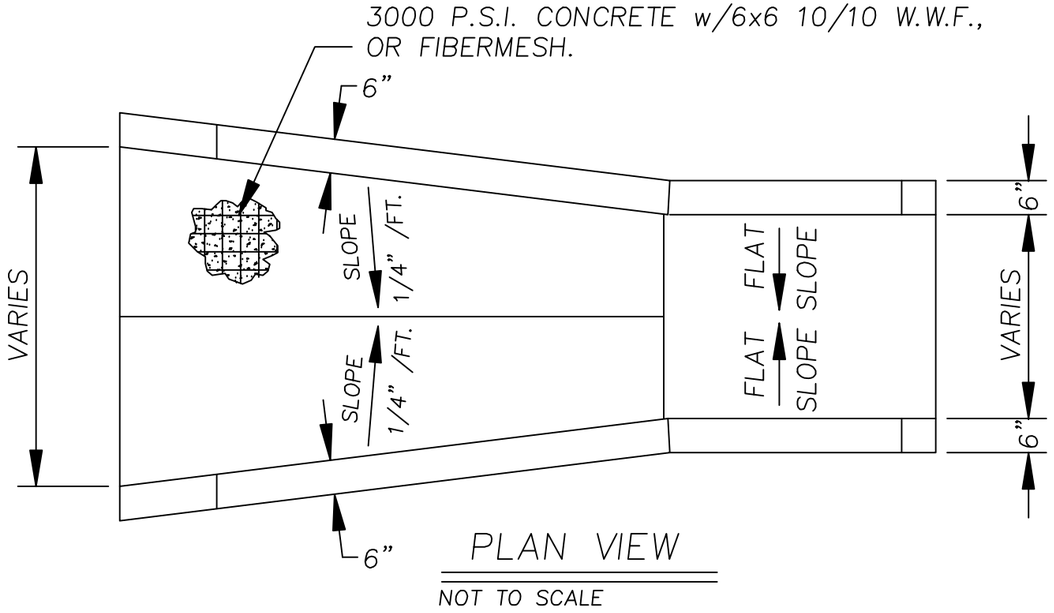


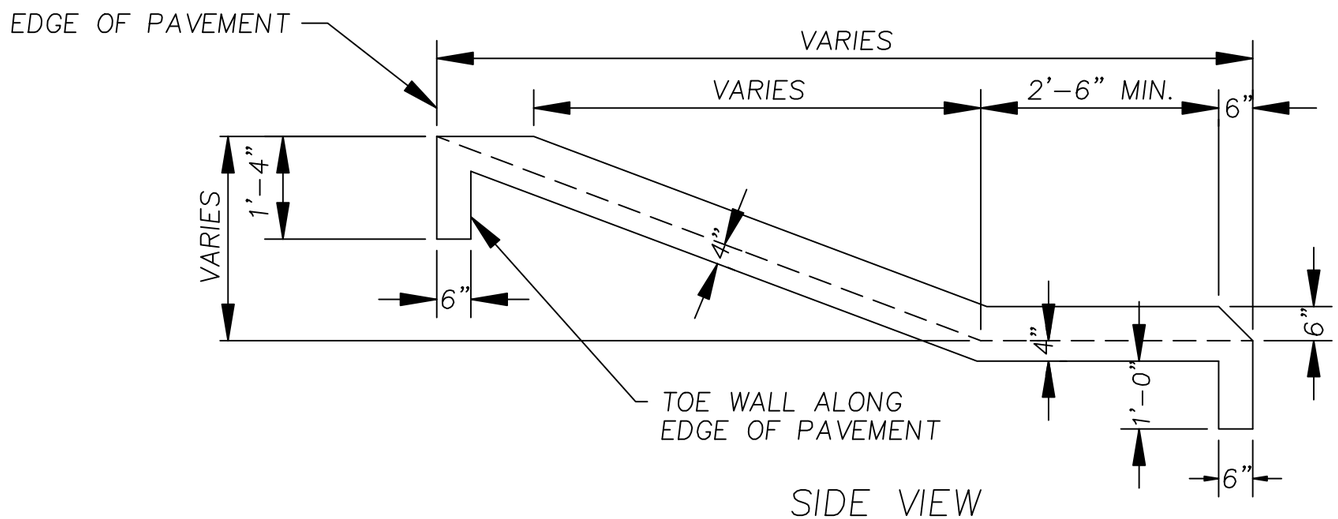
PLAN VIEW

NOT TO SCALE

NOTES:

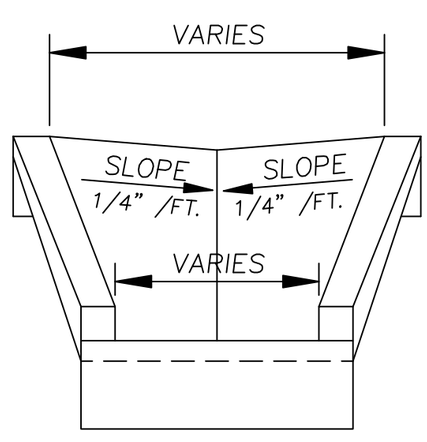
1. 3/4" CHAMFER ON ALL EXPOSED CONCRETE EDGES.

2. ENERGY DISSIPATION REQUIRED ON ALL OUTFALLS AND SHALL BE DESIGNED BY THE ENGINEER OF RECORD.



SIDE VIEW

NOT TO SCALE



FRONT VIEW

NOT TO SCALE

TITLE: DRAINAGE / EROSION STANDARD
FLUME

APPROVED BY: C. G. MIXSON, P. E.

DATE: 10-01-08

NO.: III-08

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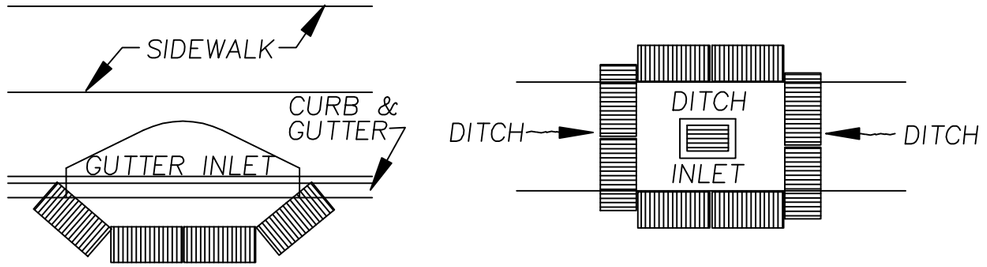
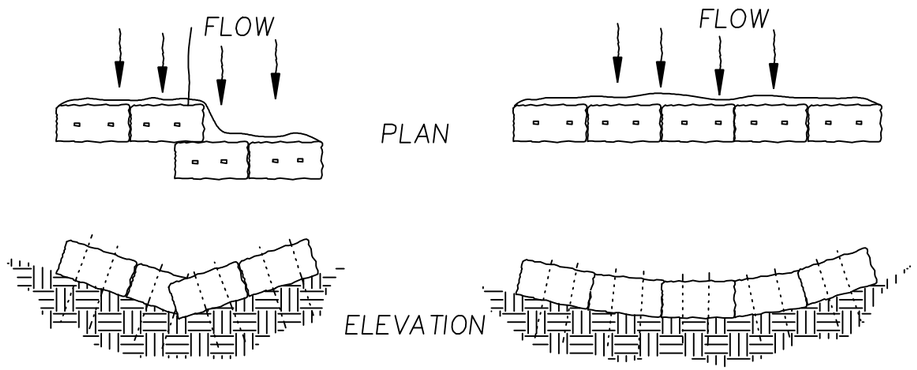
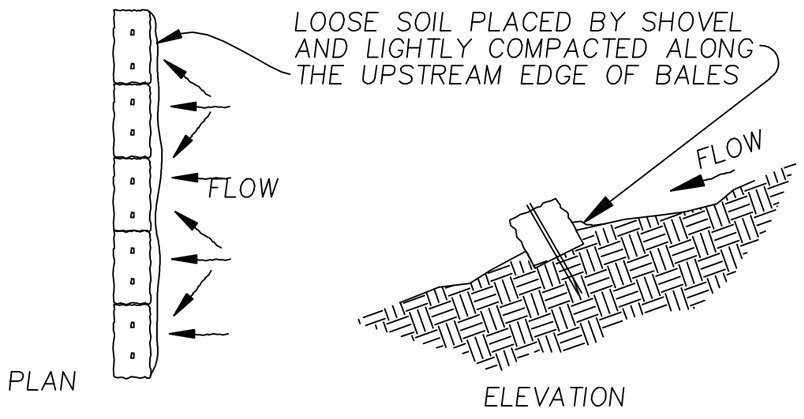


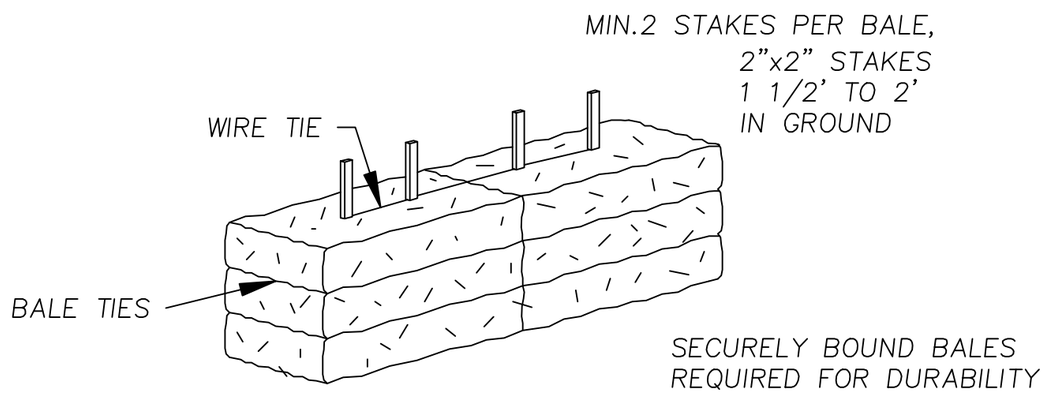
BARRIERS FOR INLETS



BARRIERS FOR SWALES



BARRIERS FOR SLOPES



ANCHORING BALES

NOTES:

- Hay Bales shall be trenched in a minimum of 4 inches.
- For additional information and details, see F.D.O.T. Index No.102.
- Unless specified, silt fences may be used in lieu of hay barriers.
- Additional posts and rails may be necessary to secure and support barriers.
- Additional barrier lengths may be required by the County Engineer or by regulatory agencies.
- Inlet Protection: Silt Fence, Gravel Bags, Commercial Inlet Barriers can all be used

TITLE: DRAINAGE / EROSION STANDARD
HAY BALE BARRIERS

APPROVED BY: C. G. MIXSON, P.E.
DATE: 10-01-08
NO.: III-09

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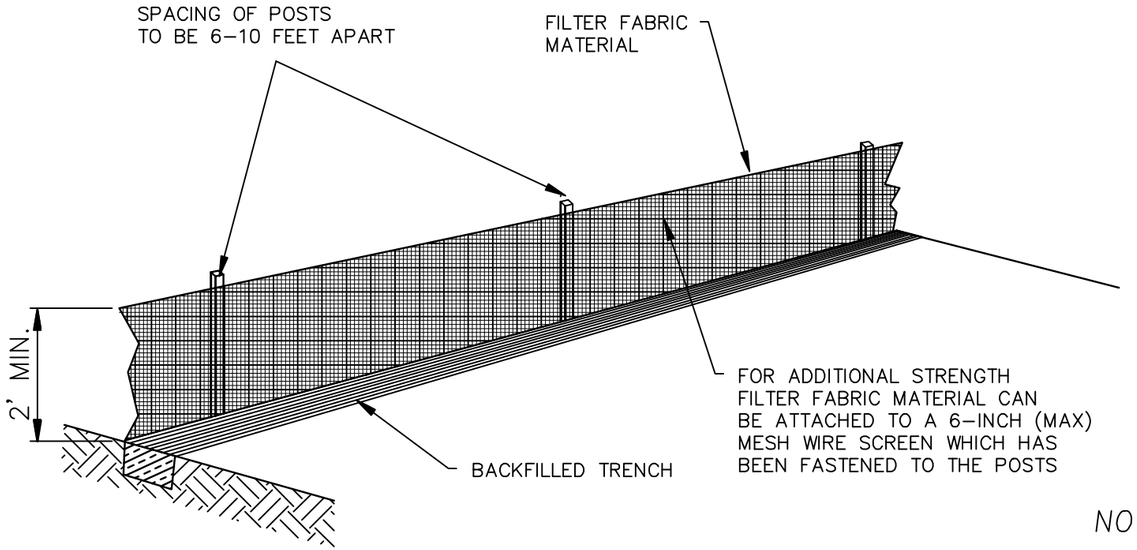
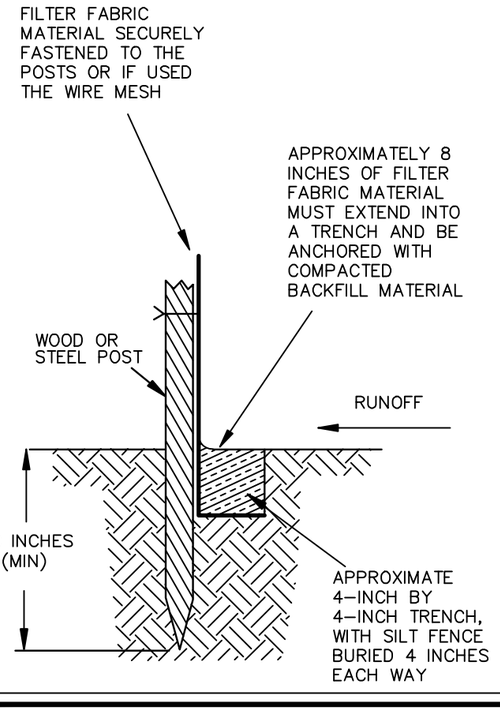
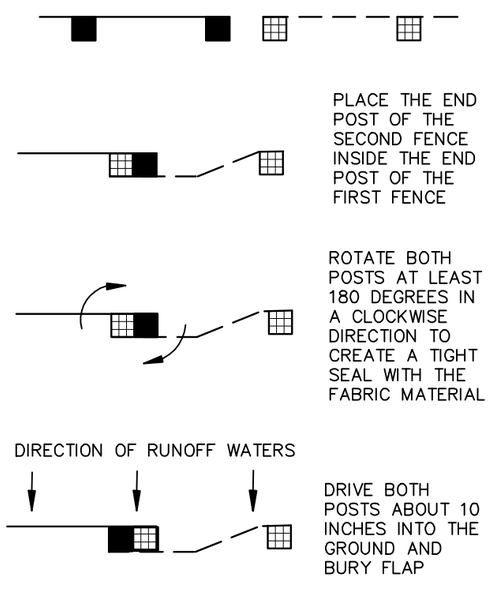




ATTACHING TWO SILT FENCES



NOTES:

–For additional information and details, see F.D.O.T. Index No.102.

–Unless specified, hay barriers may be used in lieu of silt fences.

–Additional posts and rails may be necessary to secure and support barriers.

–Additional fence lengths may be required by the County Engineer or by regulatory agencies.

–Type–III normally used, where required

–Type–IV used where large sediment loads anticipated, see FDOT Index 102

DO NOT DEPLOY IN A MANNER SO THAT SILT FENCES WILL ACT AS A DAM ACROSS PERMANENT FLOWING WATERCOURSES. SILT FENCES ARE TO BE USED AT UPLAND LOCATIONS AND TURBIDITY BARRIERS ARE TO BE USED AT PERMANENT BODIES OF WATER.

TITLE: DRAINAGE / EROSION STANDARD
SILT FENCES

APPROVED BY:
C. G. MIXSON, P.E.

DATE: 10–01–08

NO.: III–10

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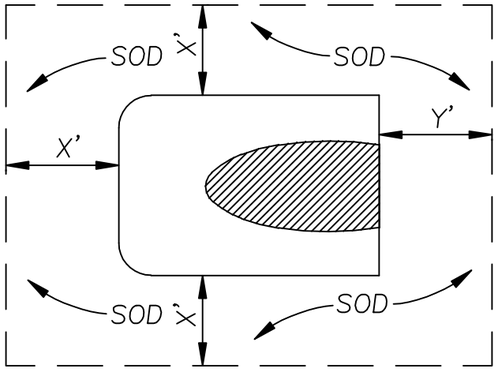

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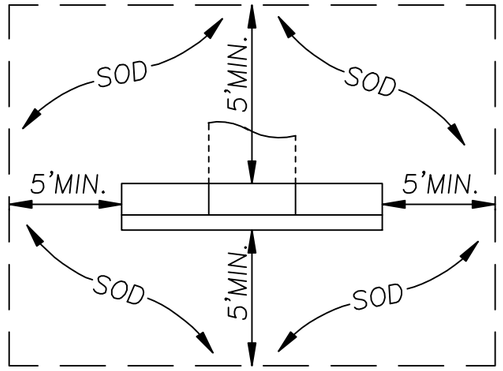
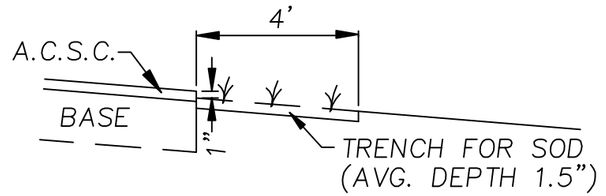


ENDWALLS

TYPE	"X"	"Y"
SIDE DRAIN	2'MIN.	4'MIN.
CROSS DRAIN	5'MIN.	5'MIN.

SOD DETAIL AT STRUCTURES



NOTE:
SPECIAL ATTENTION IS TO BE GIVEN TO THE PLACEMENT OF SOD NEXT TO THE ROADWAY. TOP OF SOD SHALL BE 1" BELOW PAVEMENT GRADE.

SOD DETAIL AT PAV'T EDGE

GENERAL SODDING NOTES

- See F.D.O.T. Index No's. 100, 105, 272, 273, 281, and Hernando County Guidelines on D.R.A.'s for additional details.
- All disturbed areas of an existing public right of way shall receive sodding.
- All new roadways shall receive sodding, four(4) feet wide along the pavement edges as a minimum, for open drainage.
- All new roadways shall receive sodding, one strip wide along the pavement edges as a minimum, for closed drainage.
- All drainage structures shall receive sodding per the above as a minimum.
- All slopes 3:1 OR steeper shall receive sodding.
- All sod on slopes equal to or steeper than 2 to 1 shall be pegged or mat secured.
- All other disturbed areas NOT receiving sod shall be properly seeded and mulched.
- Sodding shall include all work, fertilizers, and watering necessary to produce a dense, live stand of grass.
- Sodding will be considered acceptable if 80% of the installation is healthy at the beginning and end of the 18 month maintenance period.

TITLE: DRAINAGE / EROSION STANDARD
SODDING

APPROVED BY: C. G. MIXSON, P.E.

DATE: 10-01-08

NO.: III-11

HERNANDO COUNTY
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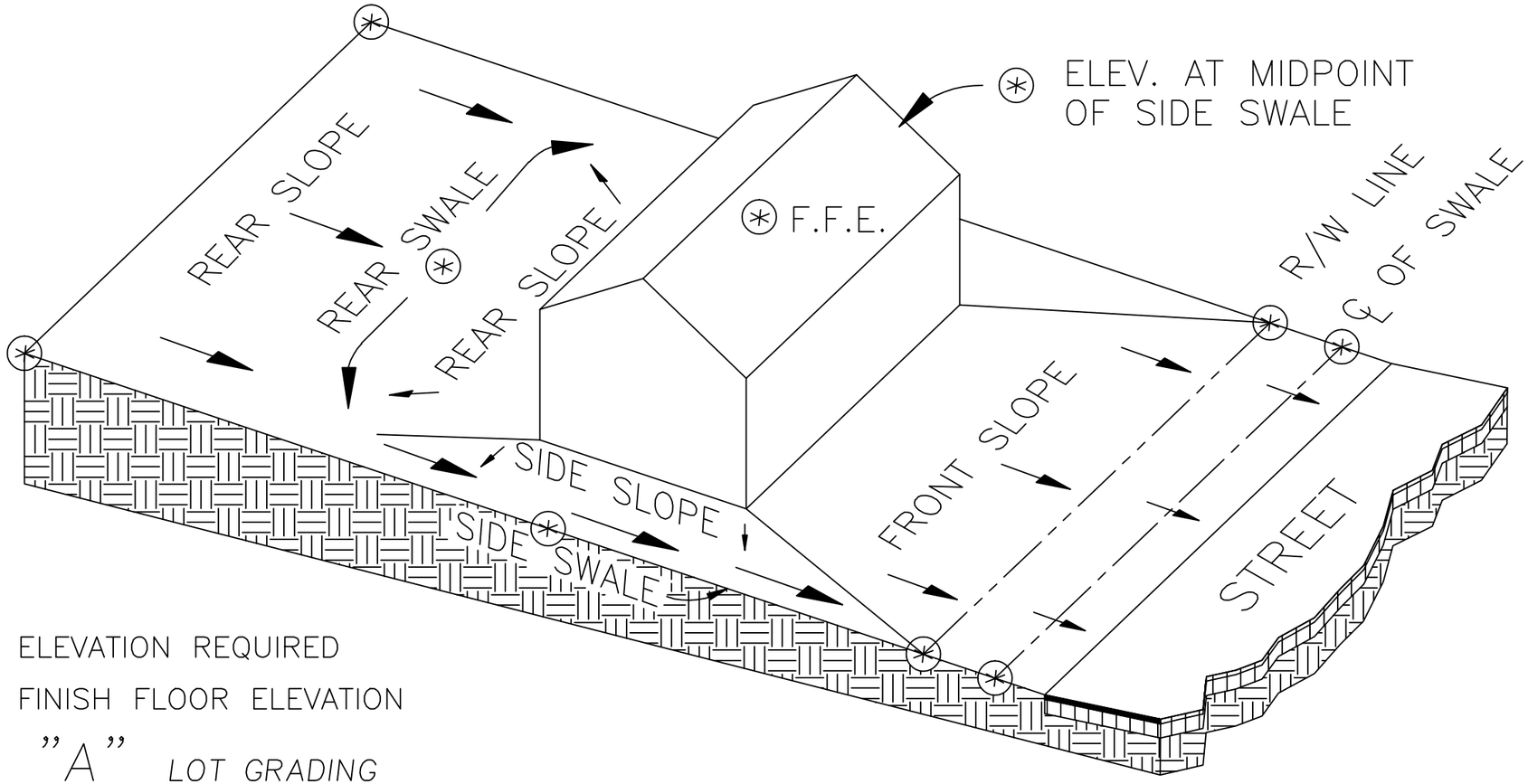

LEGEND:

⊛ ELEVATION REQUIRED

F.F.E. FINISH FLOOR ELEVATION

TYPICAL "A" LOT GRADING

NOTES:

1. *USE WITH SHEET III–15, LOT GRADING RULES.*
2. *TYPICAL " A " REPRESENTS REAR SLOPING SITES. WHERE THE SITE IS SLOPED, THE STRUCTURE WILL BE ELEVATED AT LEAST 12" ABOVE THE HIGHEST ELEVATION THE HOUSE SITS ON. DRAINAGE WILL BE AWAY FROM AND AROUND THE STRUCTURE.*
3. *REAR SWALE MINIMUM DEPTH 12" BELOW FINISH FLOOR ELEVATION REAR SWALE SHALL DIRECT RUNOFF TO SIDE SWALE FLOWING INTO COUNTY RIGHT–OF–WAY.*

TITLE: DRAINAGE / EROSION STANDARD
LOT AND BLOCK GRADING " A "

APPROVED BY: C. G. MIXSON, P.E.
DATE: 10–01–08
NO.: III–12

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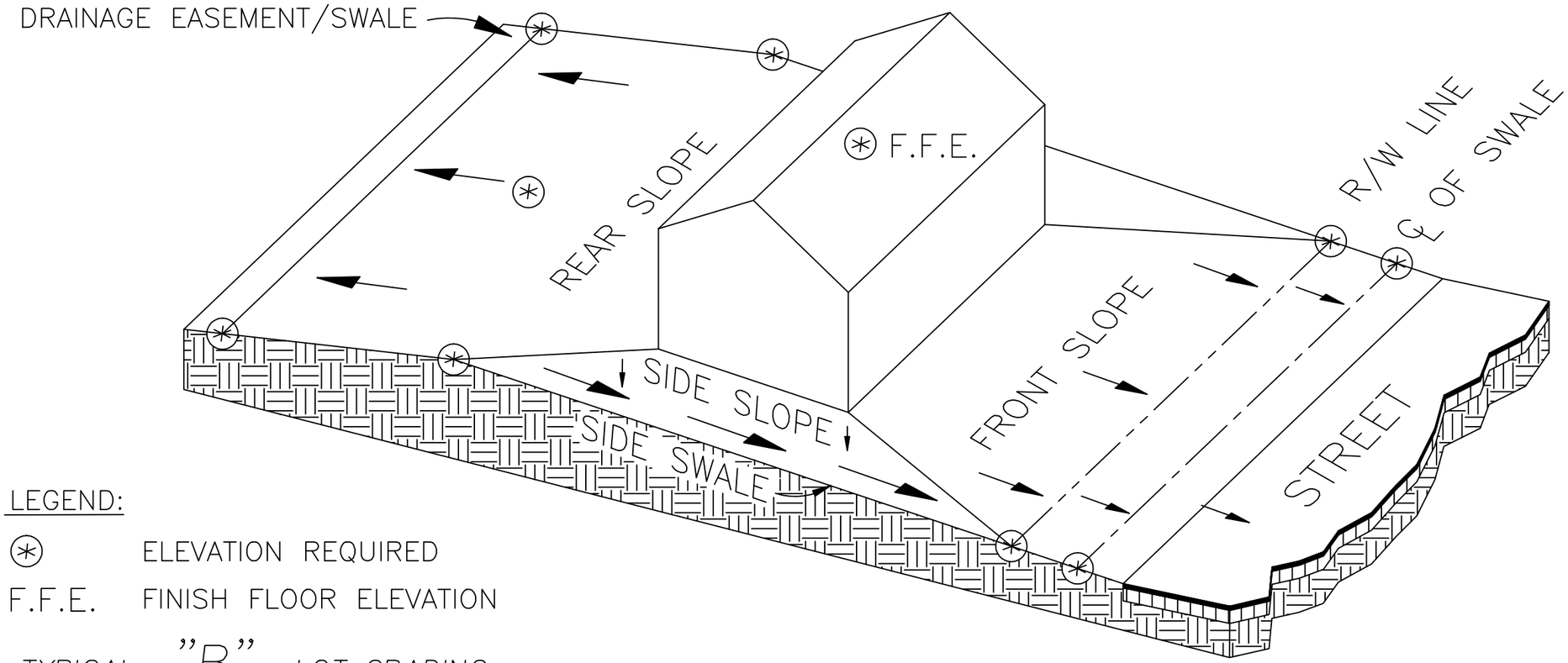

LEGEND:

⊛ ELEVATION REQUIRED

F.F.E. FINISH FLOOR ELEVATION

TYPICAL "B" LOT GRADING

NOTES:

1. USE WITH SHEET III–15, LOT GRADING RULES.
2. TYPICAL " B " REPRESENTS FLAT OR DEPRESSED SITES. IF THE SITE IS FLAT OR DEPRESSED, THE FIRST FLOOR OF THE STRUCTURE SHALL BE AT LEAST 12" ABOVE THE CROWN OF THE ROAD, MEASURED AT THE MID–POINT OF THE FRONT OF THE HOUSE PAD.
3. FINISH FLOOR ELEVATION TO BE A MIN. 12" ABOVE ℄ OF ROAD GRADE AND BE AT OR ABOVE THE 100 YEAR FLOOD PLAIN.

TITLE: DRAINAGE / EROSION STANDARD
LOT AND BLOCK GRADING " B "

APPROVED BY: C. G. MIXSON, P. E.
DATE: 10–01–08
NO.: III–13

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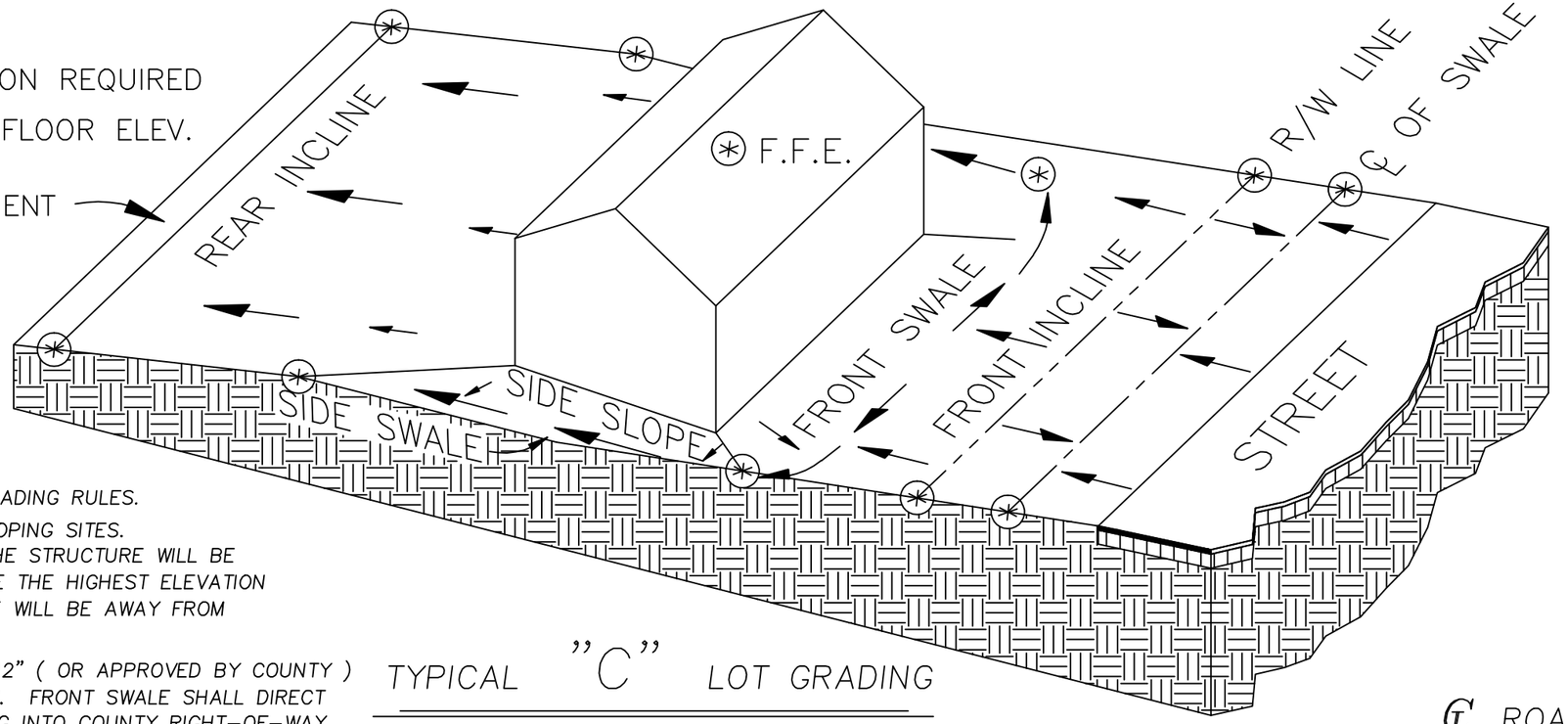
LEGEND:

⊛ ELEVATION REQUIRED

F.F.E. FINISH FLOOR ELEV.

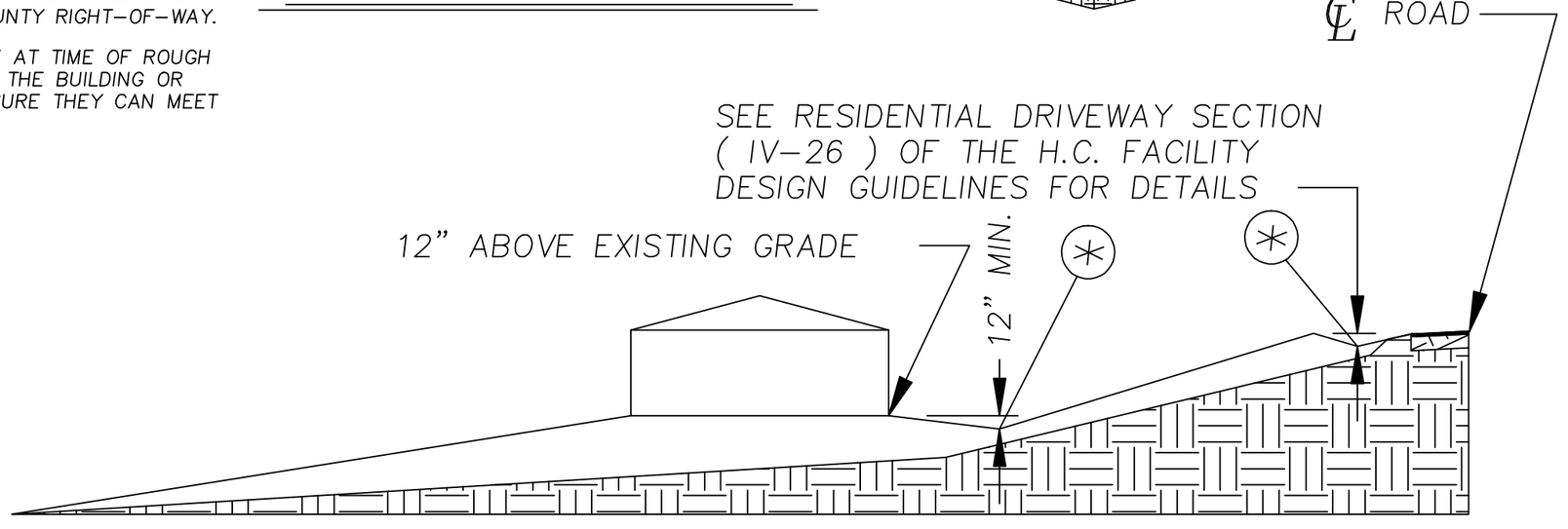
DRAINAGE EASEMENT



TYPICAL "C" LOT GRADING

NOTES:

1. USE WITH SHEET III–16, LOT GRADING RULES.
2. TYPICAL " C " REPRESENTS SLOPING SITES. WHERE THE SITE IS SLOPED, THE STRUCTURE WILL BE ELEVATED AT LEAST 12" ABOVE THE HIGHEST ELEVATION THE HOUSE SITS ON. DRAINAGE WILL BE AWAY FROM AND AROUND THE STRUCTURE.
3. FRONT SWALE MINIMUM DEPTH 12" (OR APPROVED BY COUNTY) BELOW FINISH FLOOR ELEVATION. FRONT SWALE SHALL DIRECT RUNOFF TO SIDE SWALE FLOWING INTO COUNTY RIGHT–OF–WAY.
4. IF DRIVEWAY IS GREATER THEN 10% SLOPE AT TIME OF ROUGH GRADE, BUILDER MAY BE REQUIRED TO MOVE THE BUILDING OR PROVIDE AND ENGINEERED SITE PLAN TO ENSURE THEY CAN MEET DRIVEWAY STANDARDS AND POSITIVE FLOW.



DRIVEWAY CROSS SECTION

TITLE: DRAINAGE / EROSION STANDARD
LOT AND BLOCK GRADING " C "

APPROVED BY: C. G. MIXSON, P. E.

DATE: 10–01–08

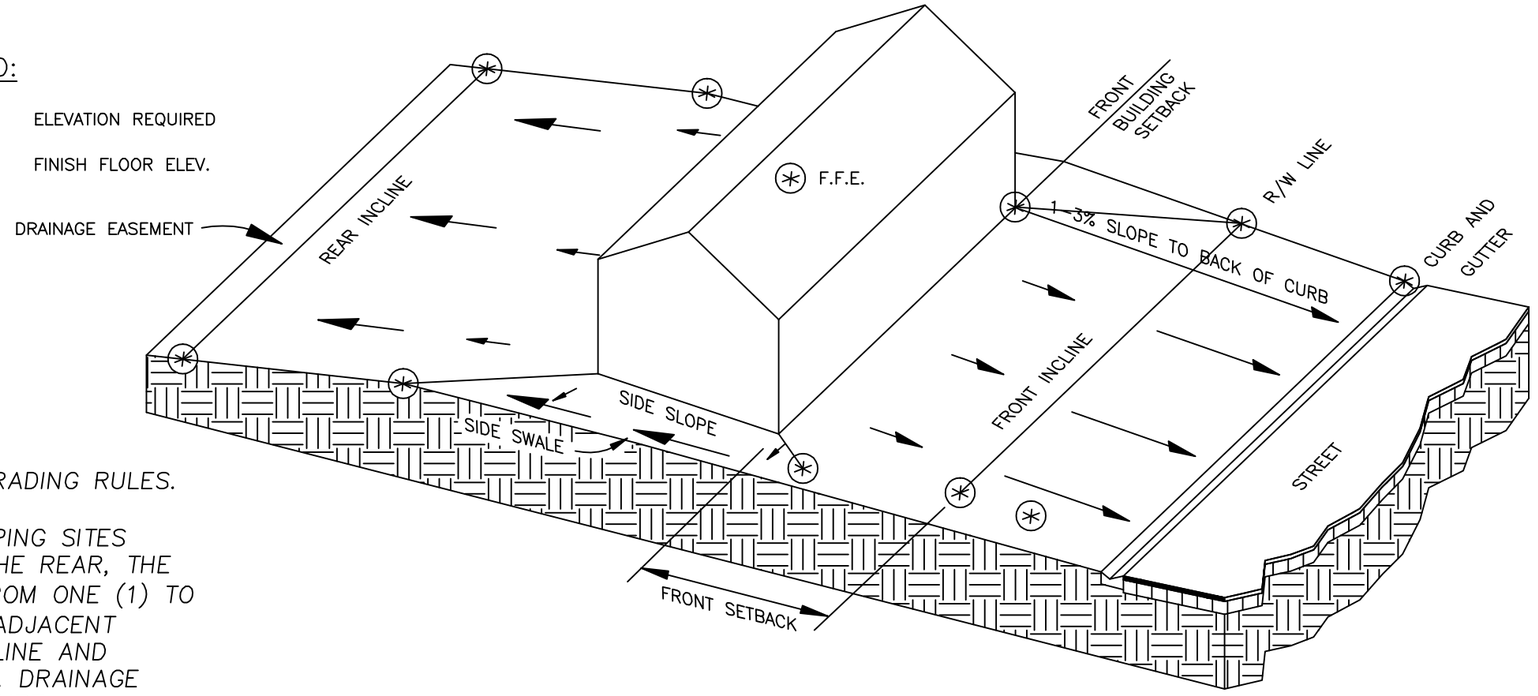
NO.: III–14

HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
BROOKSVILLE, FLORIDA 34601
PH. (352)754-4062 FAX. (352)754-4423

LEGEND:

⊛ ELEVATION REQUIRED

F.F.E. FINISH FLOOR ELEV.

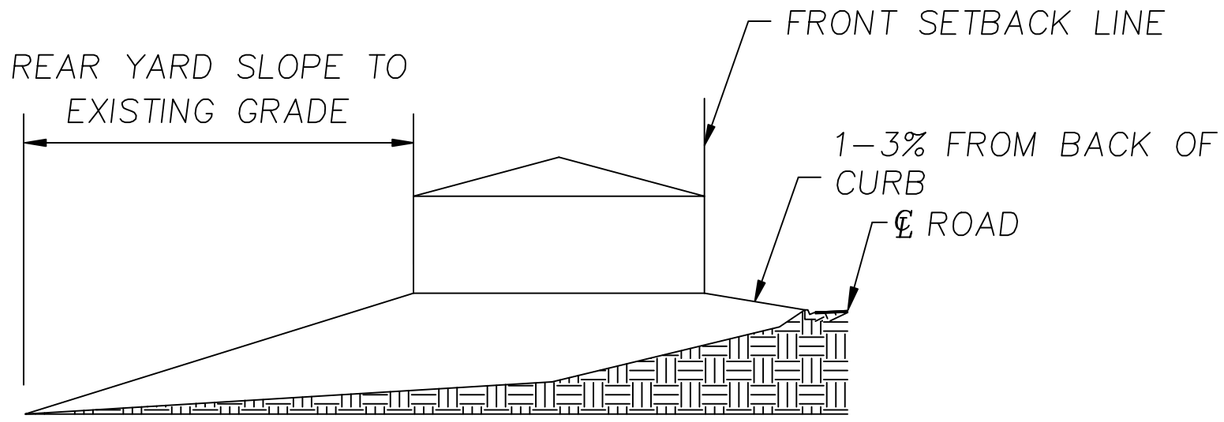


NOTES:

1. USE WITH SHEET III–16, LOT GRADING RULES.

2. TYPICAL "D" REPRESENTS SLOPING SITES WHERE THE SITE IS SLOPED TO THE REAR, THE STRUCTURE WILL BE ELEVATED FROM ONE (1) TO THREE (3) PERCENT ABOVE THE ADJACENT STREET @ THE UPGRADIENT LOT LINE AND STREET PROTECTED INTERSECTION. DRAINAGE WILL BE AWAY FROM THE STRUCTURE.
FRONT: 1–3% TO BACK OF CURB
SIDE: MAXIMUM 5:1 AWAY FROM STRUCTURE TO SIDE CENTERLINE.
REAR: SLOPE TO EXISTING GRADE @ REAR LOT LINE.

TYPICAL "D" LOT GRADING



DRIVEWAY CROSS SECTION

TITLE: DRAINAGE / EROSION STANDARD
LOT AND BLOCK GRADING " D "

APPROVED BY: C. G. MIXSON, P.E.

DATE: 10-01-08

NO.: III-15

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DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
BROOKSVILLE, FLORIDA 34601
PH. (352)754-4062 FAX. (352)754-4423

LOT GRADING RULES FOR ALL LOTS

1. THIS STANDARD IS INTENDED TO MEET THE PROVISIONS OF THE FLORIDA BUILDING CODE REQUIRING DRAINAGE BE DESIGNED TO CARRY WATER AWAY FROM STRUCTURE. IT IS NOT INTENDED TO AND DOES NOT NECESSARILY PREVENT FLOODING CAUSED BY THE STRUCTURE BEING LOCATED IN A FLOOD PRONE AREA.
2. THE FINISHED FLOOR ELEVATION SHOULD BE SHOWN ON SUBDIVISION FINAL CONSTRUCTION PLANS TO THE NEAREST 1/TENTH (0.1) FOOT.
3. PROVISIONS SHOULD BE MADE TO RECEIVE RUNOFF FROM HIGHER ADJACENT LOTS, AND TO DISCHARGE TO LOWER LOTS AT AN APPROPRIATE LOCATION
4. FINISHED FLOOR ELEVATIONS OF ADJACENT STRUCTURES, IF EXISTING, SHALL BE PROVIDED.
5. ELEVATION OF SWALE ℄ AT EACH PROPERTY LINE PROJECTION AND BOTH CULVERT INVERTS, IF EXISTING, SHALL BE PROVIDED.
6. FILL OR CUTS 30" OR GREATER SHALL REQUIRE AN ENGINEERED SITE PLAN TO ADDRESS DRAINAGE AND SLOPE STABILITY.
7. FRONT, SIDE, AND REAR SLOPES SHALL NOT BE STEEPER THAN 3:1.
8. NO STRUCTURE, BUILDING, OR IMPROVEMENT CAN ENCROACH, OR BE CONSTRUCTED WITHIN EASEMENTS.
9. IF SIDE AND/OR REAR EASEMENTS EXIST, AND IF RETAINING WALL CONSTRUCTION IS REQUIRED ALONG SIDE AND/OR REAR OF LOT, THE SIDE AND/OR REAR LOT EASEMENTS MUST FIRST BE VACATED AND THE RETAINING WALL(s) MUST THEN BE CONSTRUCTED ADJACENT TO THE PROPERTY LINE.
10. LOTS WITH 5' SIDE SETBACKS/EASEMENTS REQUIRE AN ENGINEERED SITE PLAN FOR ANY CONSTRUCTION.
11. LOTS WITH A 5' SETBACK THAT EXCEED 8" DIFFERENCE IN F.F.E. BETWEEN THEM REQUIRE A STEM WALL OR RETAINING WALL BETWEEN THEM, (LOCATIONS TO BE SHOWN ON PLANS). LOTS WITH 7.5' SETBACK THAT EXCEED 18" DIFFERENCE IN F.F.E. BETWEEN THEM REQUIRE A STEM WALL OR RETAINING WALL BETWEEN THEM, (LOCATIONS TO BE SHOWN ON PLANS). LOTS WITH A 10' SETBACK THAT EXCEED 28" DIFFERENCE IN F.F.E. BETWEEN THEM REQUIRE A STEM WALL OR RETAINING WALL BETWEEN THEM, (LOCATIONS TO BE SHOWN ON PLANS).
12. ALL SINGLE FAMILY RESIDENTIAL AND ACCESSORY STRUCTURES SHALL RECEIVE A FINAL GRADE AND DRAINAGE INSPECTION PRIOR TO ISSUANCE OF THE CERTIFICATE OF OCCUPANCY.
13. ALL FINISHED FLOOR ELEVATIONS SHALL BE AT OR ABOVE THE 100 YEAR FLOOD PLAIN ELEVATION.
14. THE HOUSE SHALL BE 12" HIGHER THAN THE FLOW LINE OF THE SWALE ALL AROUND THE HOUSE.
15. LOTS WITHIN THE VELOCITY ZONE, THE 100-YEAR FLOOD ZONE, AND INFILL LOTS SHALL REQUIRE KNOCKOUT WALLS, STEM WALLS, AND/OR RETAINING WALLS AS NECESSARY TO PROVIDE ADEQUATE DRAINAGE AND ACCEPTABLE GRADE TRANSITIONS TO ADJACENT LOT ELEVATIONS.
16. LOT GRADING SHALL MAINTAIN HISTORICAL FLOW PATHS AND PREVENT ACCUMULATION OF WATER OR EXCESSIVE RUNOFF ONTO ADJACENT PROPERTIES.
17. SIDE SWALES SHALL DRAIN TO THE FRONT OR REAR ON EACH LOT AND SHALL FUNCTION INDEPENDENTLY FROM ALL ADJOINING LOTS.
18. WHERE A SEPTIC SYSTEM MOUND IS REQUIRED, ADEQUATE DISTANCE MUST BE PROVIDED BETWEEN THE TOE OF SLOPE OF THE MOUND AND THE PROPERTY LINE TO ADDRESS DRAINAGE ISSUES (SEE LOT GRADING RULE 16 ABOVE).
19. IN SUBDIVISIONS ADJACENT LOTS GENERALLY SHARE A COMMON SWALE. THE CENTER OF THE SWALE IS THE PROPERTY LINE. THE FIRST HOUSE BUILT MUST ESTABLISH THEIR HALF OF THE COMMON SWALE.

TITLE: DRAINAGE / EROSION STANDARD
LOT GRADING RULES

APPROVED BY: C. G. MIXSON, P.E.
DATE: 10-01-08
NO.: III-16

HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
BROOKSVILLE, FLORIDA 34601
PH. (352)754-4062 FAX. (352)754-4423

SAMPLE ENGINEERED SITE PLAN

BASE FLOOD ELEV=
SHOW 100 YR FLOOD ZONE IF APPLICABLE
SURVEY DATUM = N.A.V.D. 1988
LOT GRADING PLAN TYPE= A/B/C

LEGEND

- DRAINAGE FLOW ARROW
- CONCRETE
- X SPOT ELEVATION

BLOCK/LOT #
ADDRESS

F.F.E.=

B

BLOCK/LOT #
ADDRESS

F.F.E.= 85.06
N.A.V.D. 1988

A

BLOCK/LOT #
ADDRESS OR WHAT IS HERE,
DRA, ETC

BLOCK/LOT #
ADDRESS

A

F.F.E.=

10' UTILITY EASEMENT

PL

5' CONCRETE SIDEWALK

EP

PROPOSED DRIVEWAY

EASY STREET

N

SCALE IN FEET

DRIVEWAY PROFILE

TITLE: DRAINAGE / EROSION STANDARD
SAMPLE ENGINEERED SITE PLAN

APPROVED BY: C. G. MIXSON, P.E.

DATE: 10-01-08

NO.: III-17

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1525 E. JEFFERSON ST.
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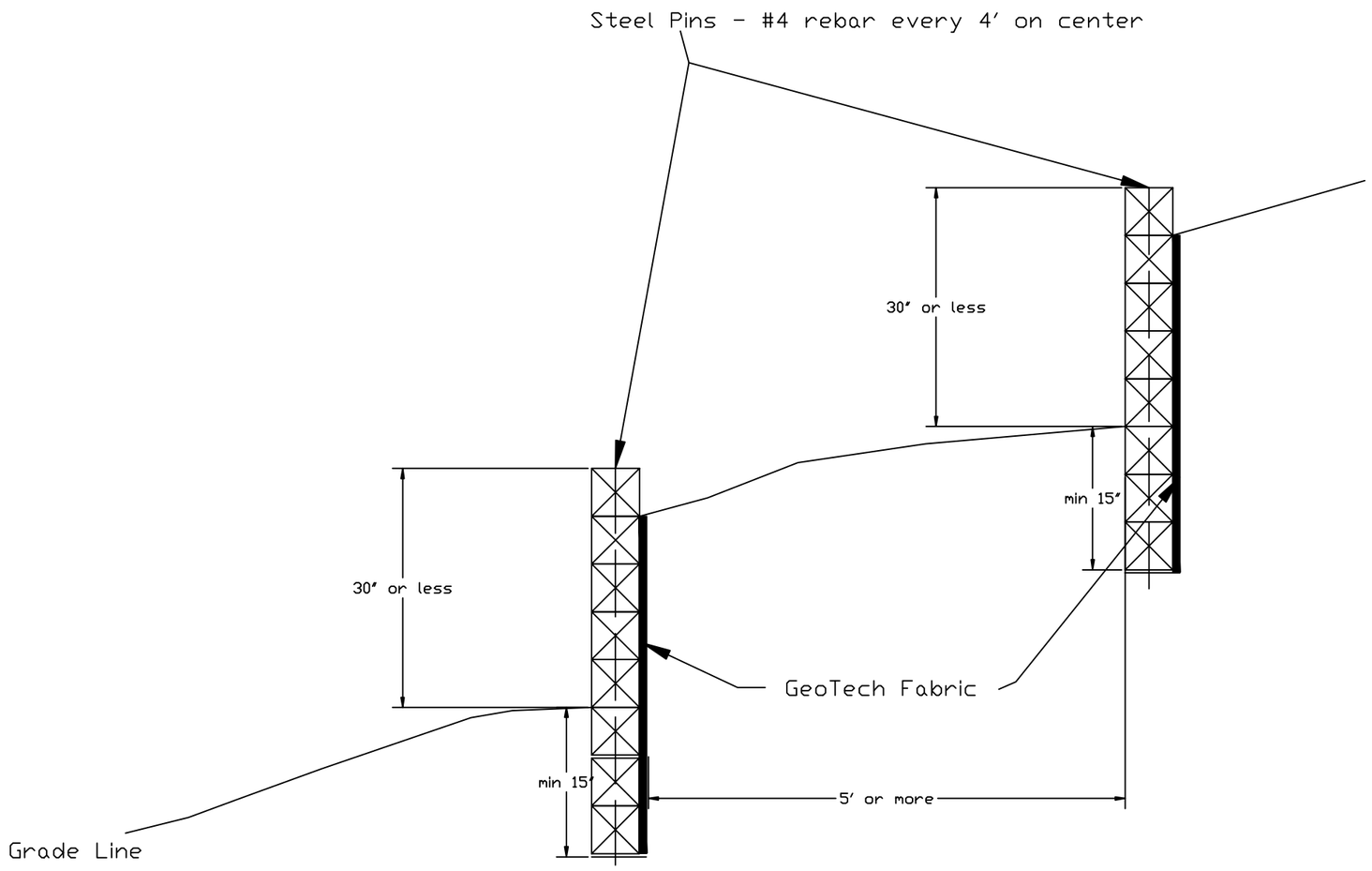
TEMPORARY TIMBER RETAINING WALL



1. ALL SLOPES SHALL NOT BE STEEPER THAN 3:1.
2. ONLY TWO SETS OF TIMBER RETAINING WALLS ARE ALLOWED PER SLOPE.
3. IF THE SITE REQUIRES MORE THAN A 30" WALL OR MORE THAN TWO WALLS PER SLOPE , IT SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER, IN ACCORDANCE WITH FLORIDA BUILDING CODE, IT SHALL HAVE A RAILING COMPLYING WITH FL BUILDING CODE. IT ALSO MUST BE PERMITTED & INSPECTED THROUGH THE BUILDING DEPARTMENT.
4. TIMBERS MUST BE A MINIMUM 6"X6" AND JOINTS OVERLAPPED BY A MINIMUM 12".

TITLE: DRAINAGE / EROSION STANDARD
LOT GRADING RULES

APPROVED BY: C. G. MIXSON, P.E.
DATE: 10-01-08
NO.: III-18

HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
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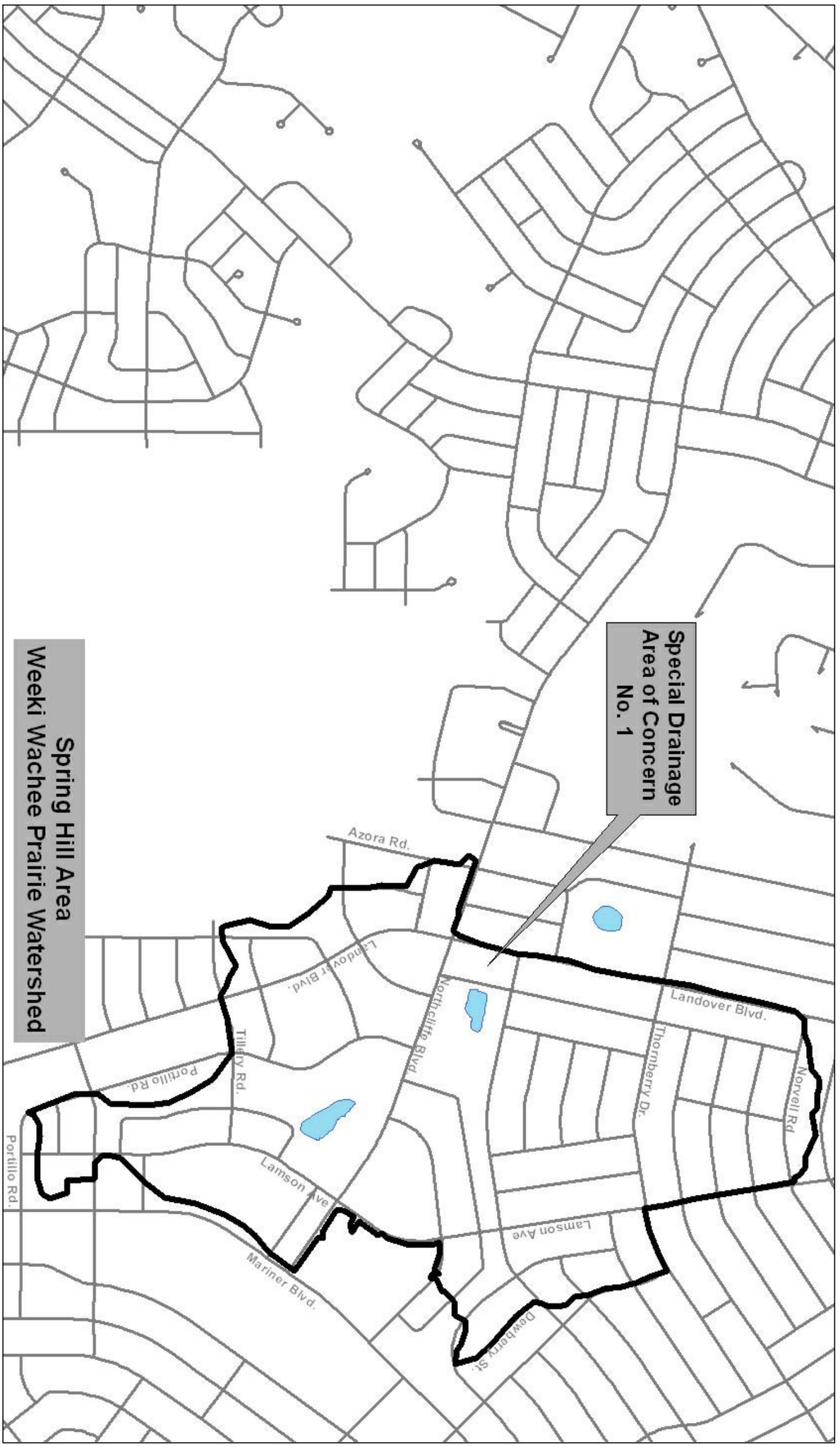
PH. (352)754-4062 FAX. (352)754-4423



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BROOKSVILLE, FLORIDA 34601
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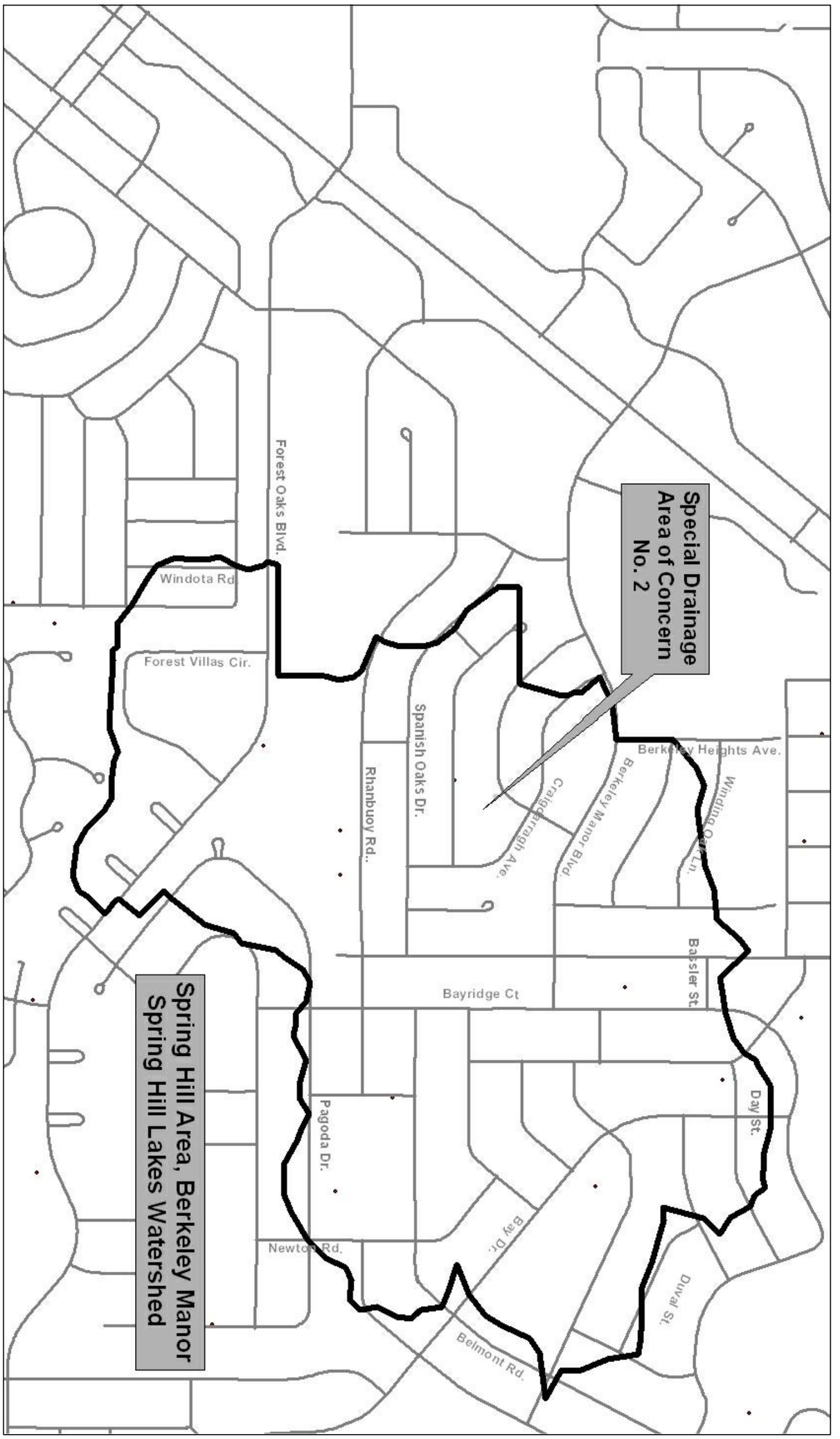
TITLE: DRAINAGE / EROSION STANDARD
SPECIAL DRAINAGE AREA OF CONCERN 1

APPROVED BY:	DATE:	NO.:
C. G. MIXSON, P.E.	10-01-08	III-19



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BROOKSVILLE, FLORIDA 34601
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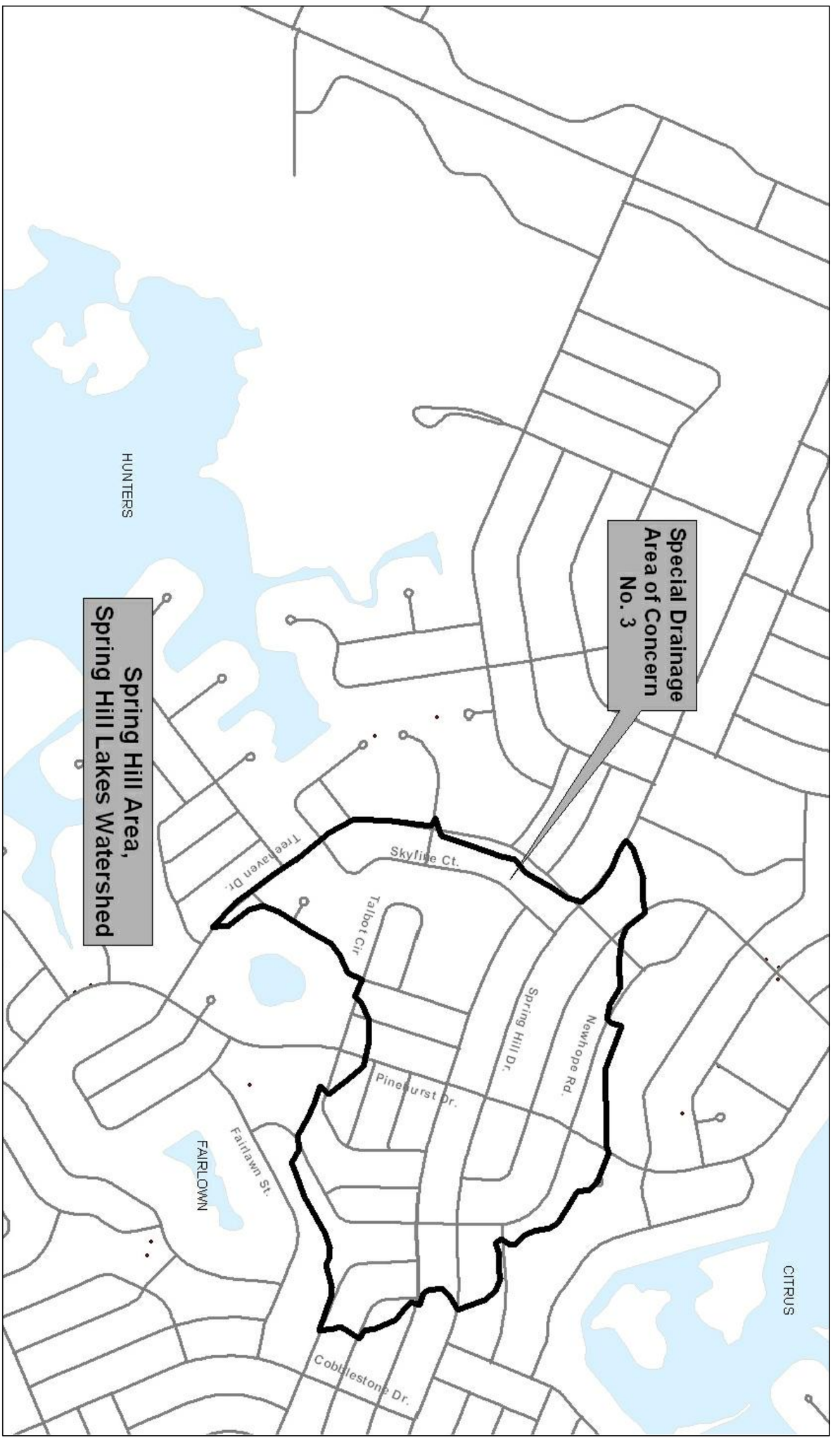
TITLE: DRAINAGE / EROSION STANDARD
SPECIAL DRAINAGE AREA OF CONCERN 2

APPROVED BY:	DATE:	NO.:
C. G. MIXSON, P.E.	10-01-08	III-20



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BROOKSVILLE, FLORIDA 34601
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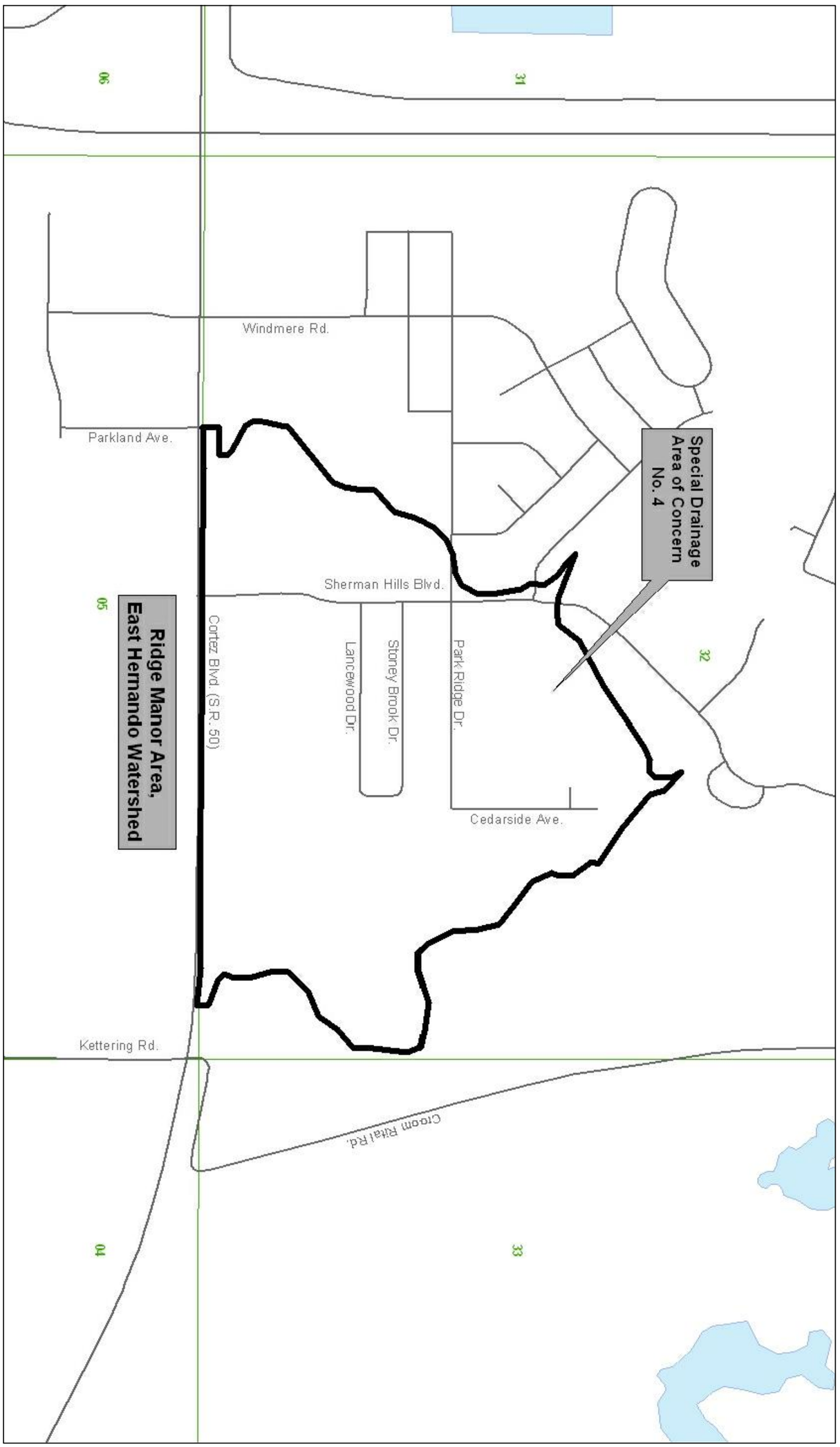
TITLE: DRAINAGE / EROSION STANDARD
SPECIAL DRAINAGE AREA OF CONCERN 3

APPROVED BY:	DATE:	NO.:
C. G. MIXSON, P.E.	10-01-08	III-21



HERNANDO COUNTY
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BROOKSVILLE, FLORIDA 34601
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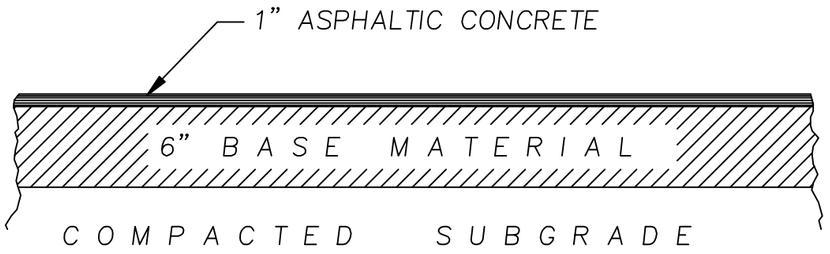
TITLE: DRAINAGE / EROSION STANDARD
SPECIAL DRAINAGE AREA OF CONCERN 4

APPROVED BY:	DATE:	NO.:
C. G. MIXSON, P.E.	10-01-08	III-22

SECTION IV

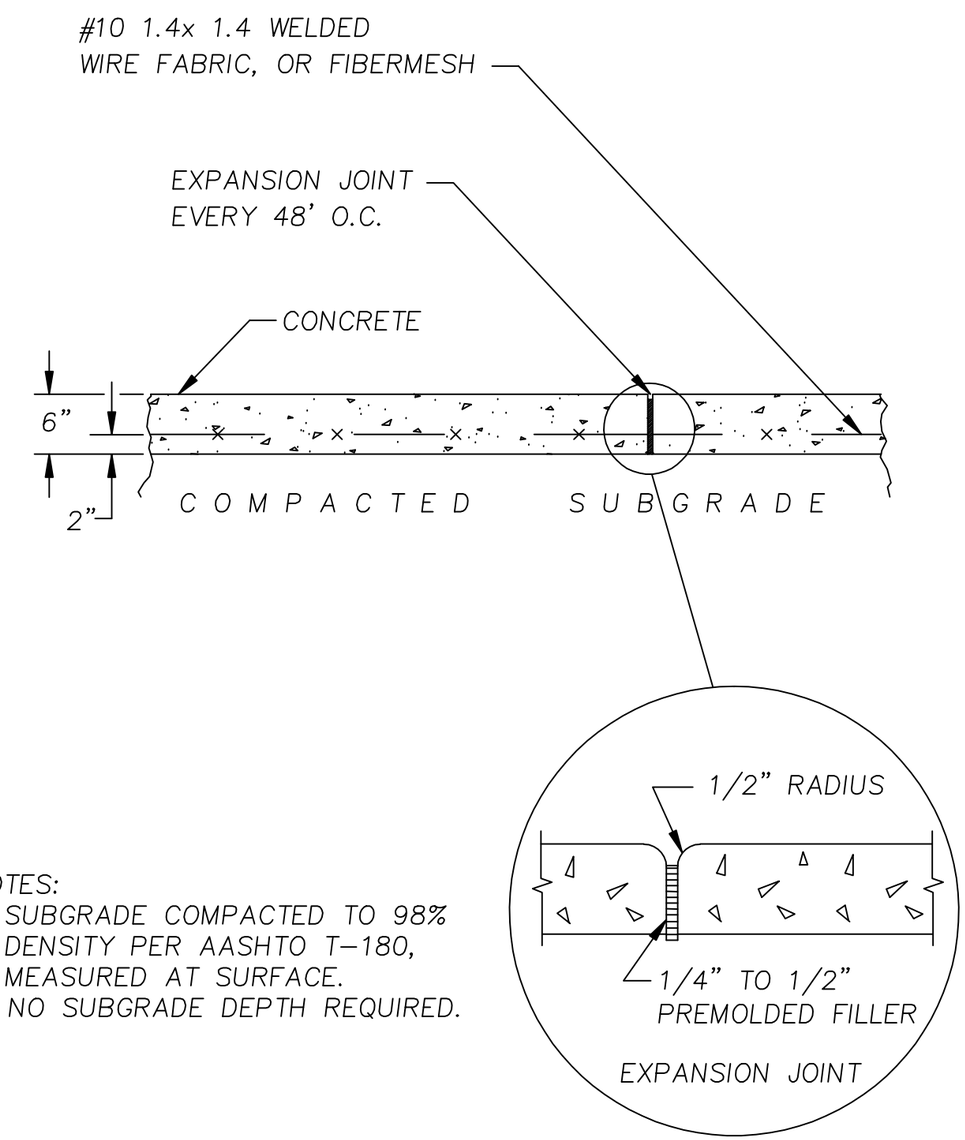
ROADWAY STANDARDS

COMMERCIAL PARKING LOT



NOTES:

1. ALL THICKNESSES ARE MINIMUM.
2. BASE COMPACTION TO MEET 98% UNDER AASHTO T-180.
3. SUBGRADE COMPACTED TO 98% DENSITY PER AASHTO T-180, MEASURED AT SURFACE.
4. NO SUBGRADE DEPTH REQUIRED.



NOTES:

1. SUBGRADE COMPACTED TO 98% DENSITY PER AASHTO T-180, MEASURED AT SURFACE.
2. NO SUBGRADE DEPTH REQUIRED.

TITLE: ROADWAY STANDARD
ASPHALT / CONCRETE PARKING

APPROVED BY: C. G. MIXSON, P.E.
DATE: 10-01-08
NO.: IV-01

HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
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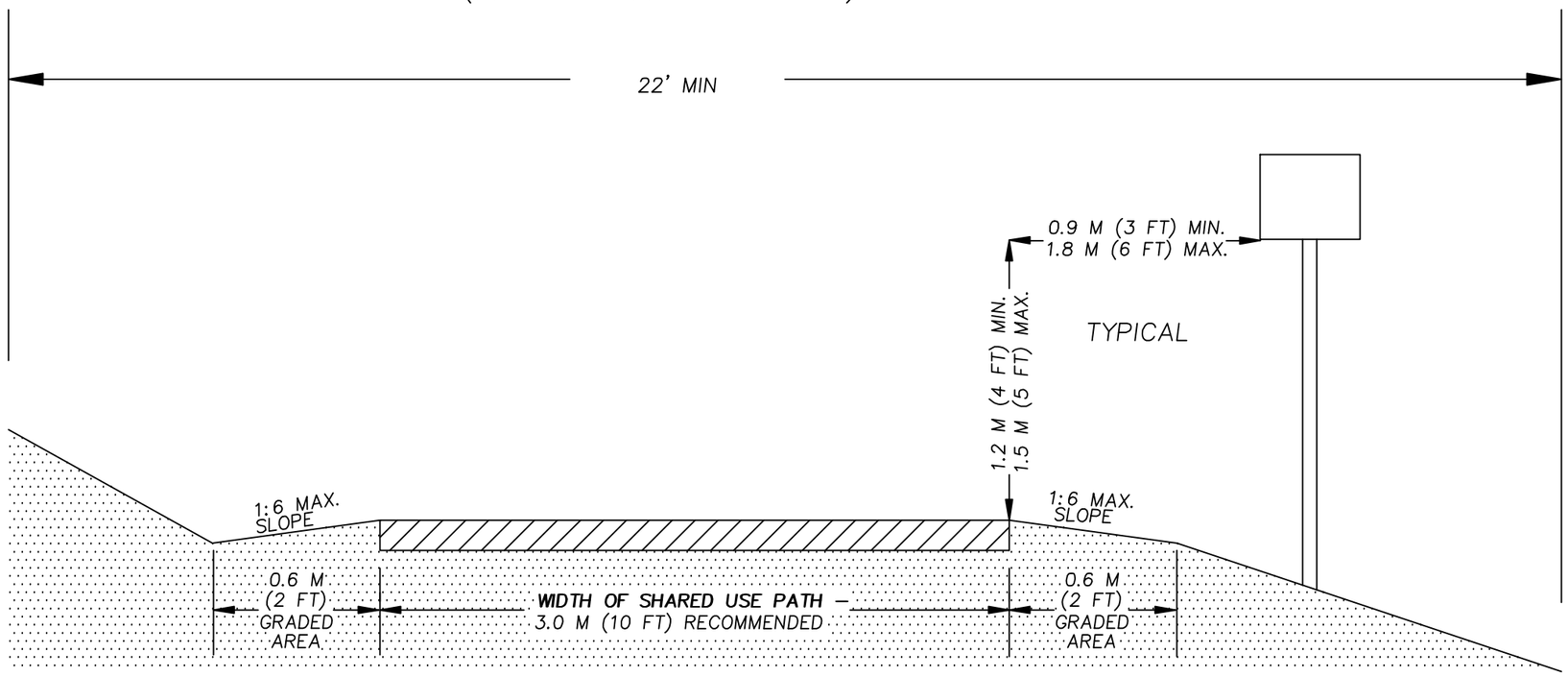
TWO-WAY SHARED USE PATH ON SEPARATED RIGHT-OF-WAY

(DESIGN SPEED = 20 M.P.H.)



TYPICAL SECTION

NOT TO SCALE

GENERAL NOTE:

DESIGN SPEED, RIGHT-OF-WAY, AND ROADSIDE DIMENSIONS ARE MINIMUMS. SITE CONDITION MAY REQUIRE INCREASES.

TITLE: CROSS SECTION
TWO-WAY SHARED USE PATH

APPROVED BY:
C. G. MIXSON, P. E.

DATE: 10-01-08

NO.: IV-02

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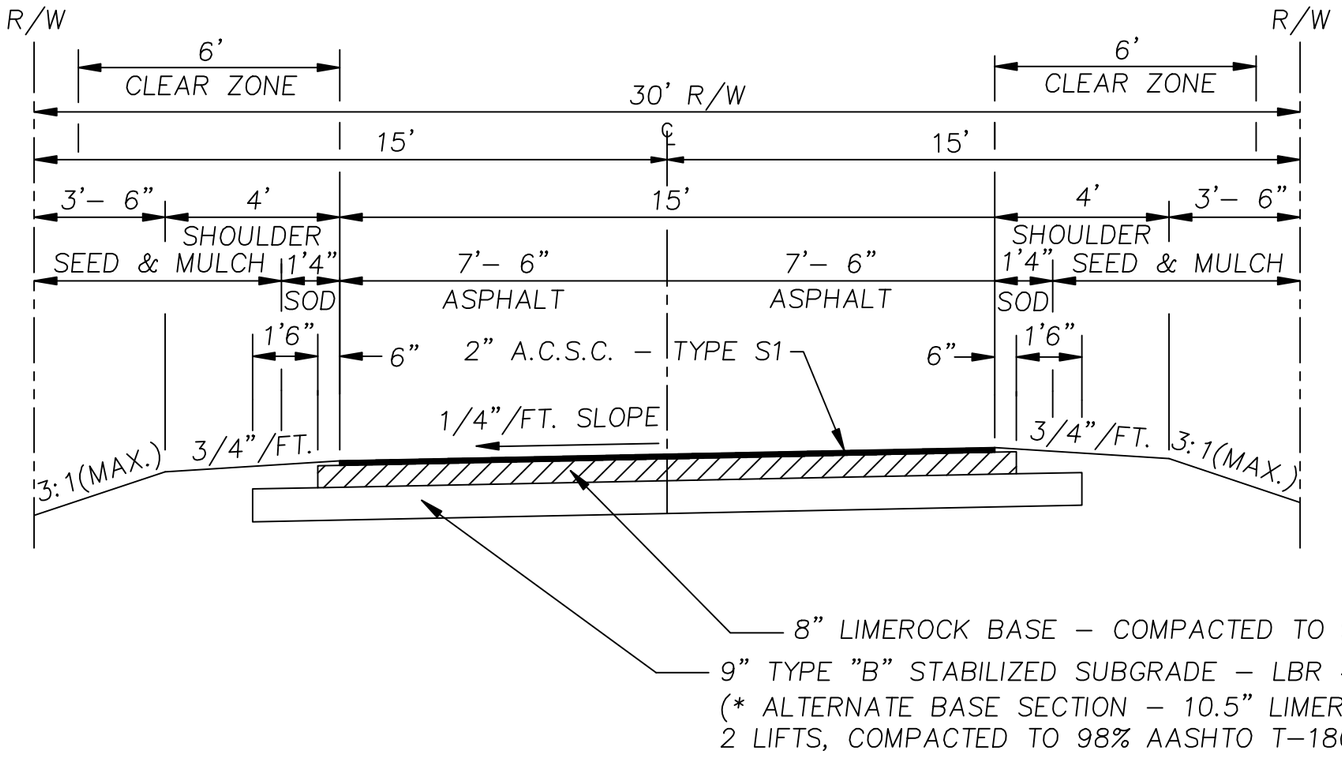
PH. (352)754-4062 FAX. (352)754-4423

ALLEY – ONE WAY TRAFFIC

DESIGN SPEED = 20 M.P.H.



TYPICAL SECTION

NOT TO SCALE

GENERAL NOTE:
DESIGN SPEED, RIGHT–OF–WAY, AND ROADSIDE DIMENSIONS ARE MINIMUMS. SITE CONDITION MAY REQUIRE INCREASES.

TITLE: ROADWAY STANDARD
ALLEY

APPROVED BY:
C. G. MIXSON, P.E.

DATE: 10–01–08

NO.: IV–03

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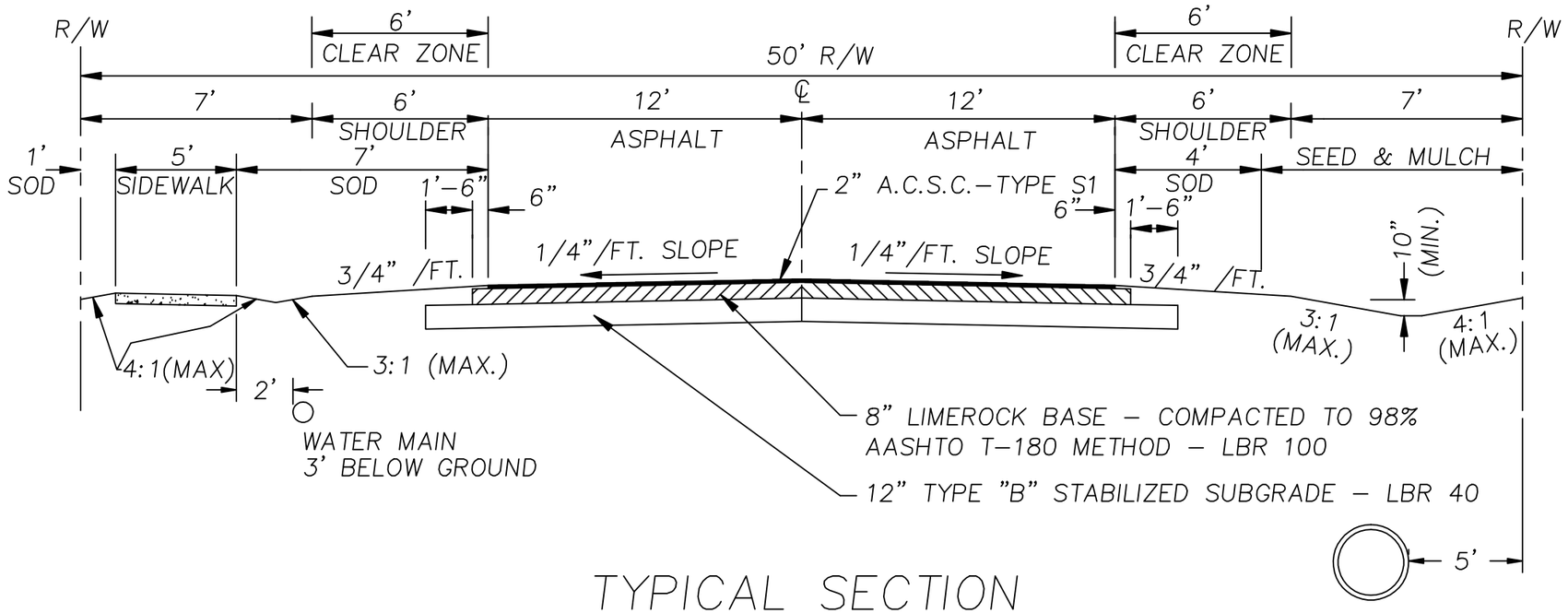
FRONTAGE ROAD

DESIGN SPEED = 30 M.P.H.



TYPICAL SECTION

NOT TO SCALE

GENERAL NOTE:

DESIGN SPEED, RIGHT-OF-WAY, AND ROADSIDE DIMENSIONS ARE MINIMUMS. SITE CONDITION MAY REQUIRE INCREASES.

TITLE: ROADWAY STANDARD
FRONTAGE ROAD

APPROVED BY: C. G. MIXSON, P. E.
DATE: 10-01-08
NO.: IV-04

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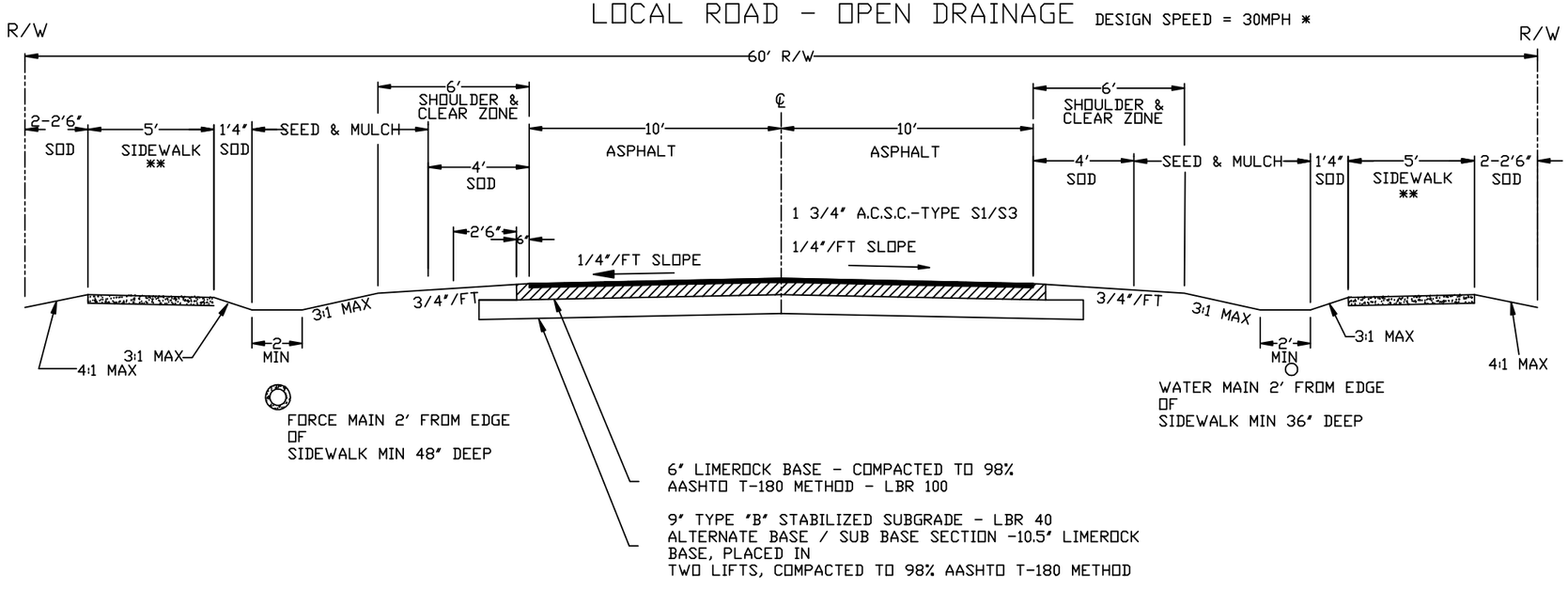
PH. (352)754-4062 FAX. (352)754-4423

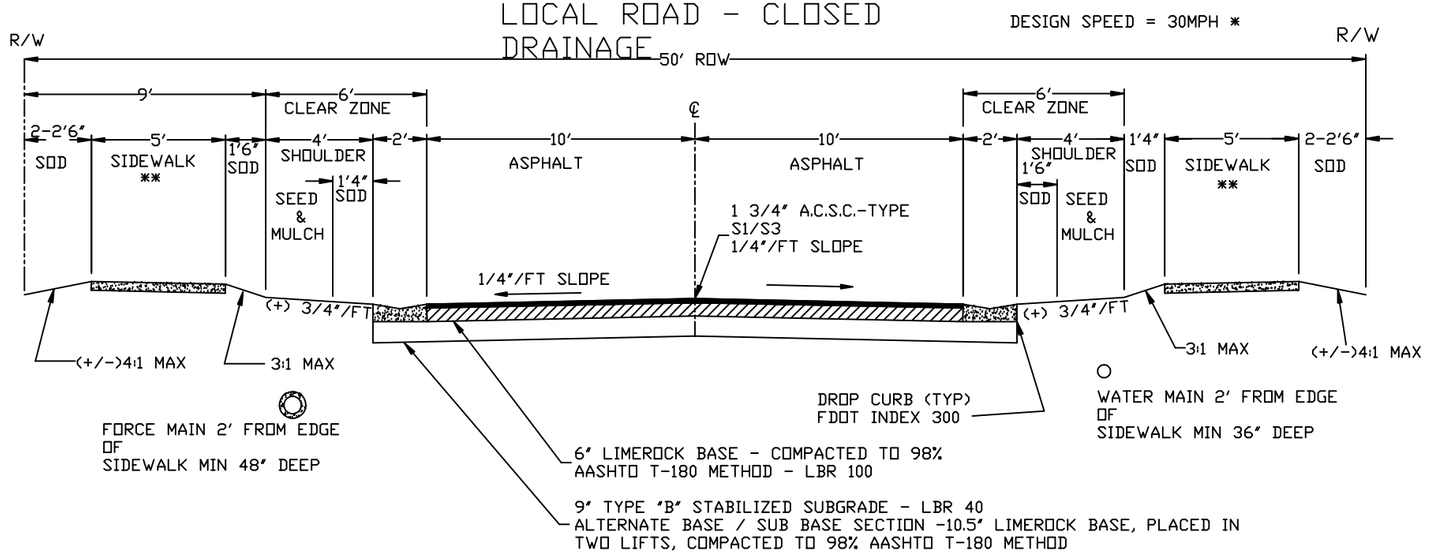
LOCAL ROAD - OPEN DRAINAGE DESIGN SPEED = 30MPH *



TYPICAL SECTIONS

NOT TO SCALE

LOCAL ROAD - CLOSED DRAINAGE DESIGN SPEED = 30MPH *



GENERAL NOTES:

DESIGN SPEED, RIGHT-OF-WAY, AND ROADSIDE DIMENSIONS ARE MINIMUMS. SITE CONDITION MAY REQUIRE INCREASES.

* VARIANCE IN HORIZONTAL DESIGN SPEED ALLOWED
WITH JUSTIFICATION AND APPROPRIATE SIGNAGE

** SIDEWALKS IF APPLICABLE

ALL DIMENSIONS & LABELS ARE TYPICAL

TITLE: ROADWAY STANDARD
LOCAL ROADS

APPROVED BY: DATE: NO.:
C. G. MIXSON, P. E. 10-01-08 IV-05

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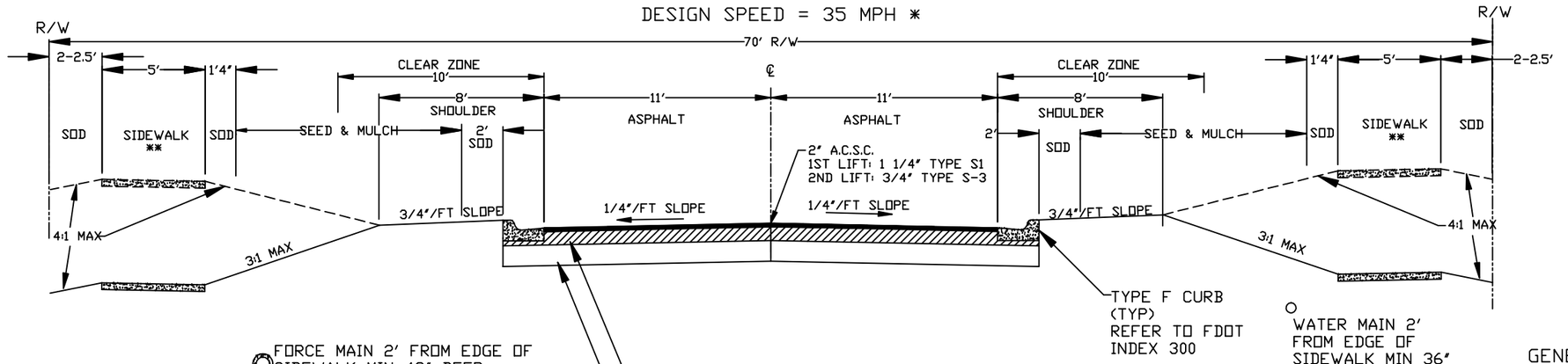
MAJOR LOCAL/COMMERCIAL 2 LANE ROAD - CLOSED DRAINAGE

DESIGN SPEED = 35 MPH *



8" LIMEROCK BASE - COMPACTED TO 98%
AASHTO T-180 METHOD - LBR 100

12" TYPE "B" STABILIZED SUBGRADE - LBR 40
ALTERNATE BASE / SUB BASE SECTION -13.5" LIMEROCK BASE,
PLACED IN
TWO LIFTS, COMPACTED TO 98% AASHTO T-180 METHOD

TYPICAL SECTIONS
NOT TO SCALE

GENERAL NOTE:

DESIGN SPEED, RIGHT-OF-WAY, AND ROADSIDE DIMENSIONS ARE MINIMUMS. SITE CONDITION MAY REQUIRE INCREASES.

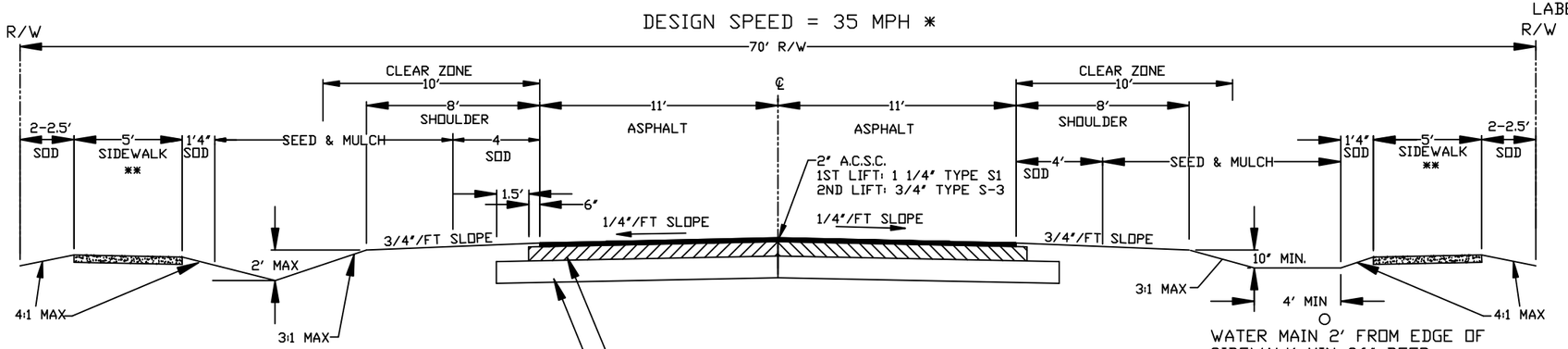
* VARIANCE IN HORIZONTAL DESIGN SPEED ALLOWED WITH JUSTIFICATION AND APPROPRIATE SIGNAGE

** SIDEWALKS IF APPLICABLE

ALL DIMENSIONS AND LABELS ARE TYPICAL AND SHOWN IN FEET UNLESS LABELD OTHERWISE

MAJOR LOCAL/COMMERCIAL 2 LANE ROAD - OPEN DRAINAGE

DESIGN SPEED = 35 MPH *



8" LIMEROCK BASE - COMPACTED TO 98%
AASHTO T-180 METHOD - LBR 100

12" TYPE "B" STABILIZED SUBGRADE - LBR 40
ALTERNATE BASE / SUB BASE SECTION -13.5" LIMEROCK BASE, PLACED IN
TWO LIFTS, COMPACTED TO 98% AASHTO T-180 METHOD

TITLE: ROADWAY STANDARD
MAJOR LOCAL/COMMERCIAL

APPROVED BY: C. G. MIXSON, P.E.
DATE: 10-01-08
NO.: IV-06

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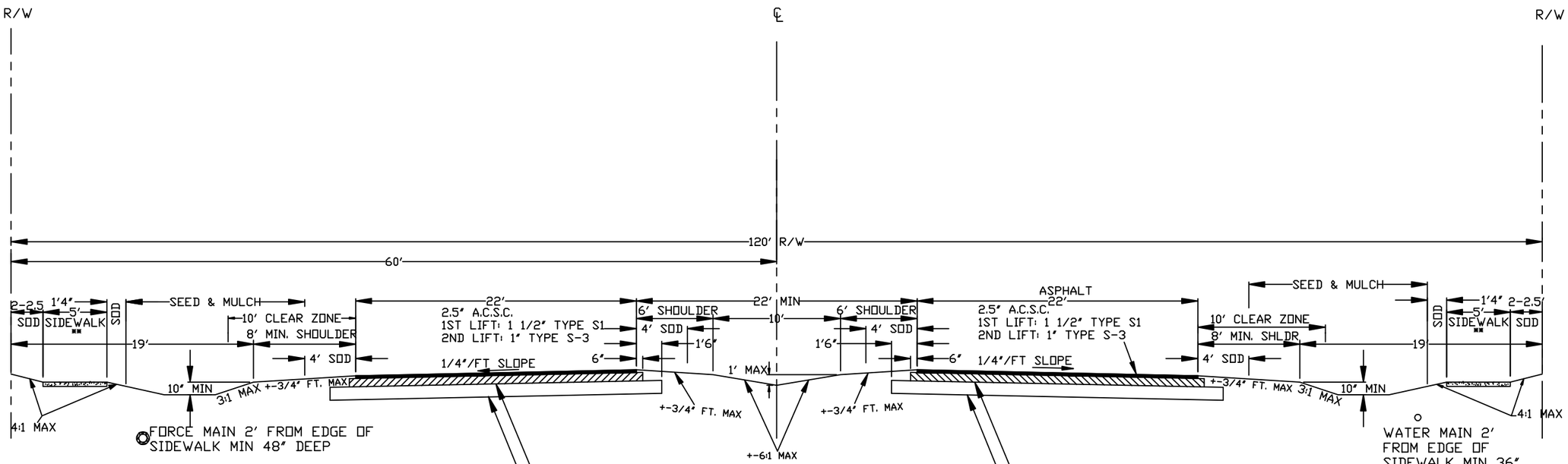
PH. (352)754-4062 FAX. (352)754-4423

MAJOR LOCAL/COMMERCIAL 4 LANE ROAD - OPEN DRAINAGE

DESIGN SPEED = 35 MPH *



8" LIMEROCK BASE - COMPACTED TO 98% AASHTO T-180 METHOD - LBR 100

12" TYPE "B" STABILIZED SUBGRADE - LBR 40 ALTERNATE BASE / SUB BASE SECTION -13.5" LIMEROCK BASE, PLACED IN TWO LIFTS, COMPACTED TO 98% AASHTO T-180 METHOD

8" LIMEROCK BASE - COMPACTED TO 98% AASHTO T-180 METHOD - LBR 100

12" TYPE "B" STABILIZED SUBGRADE - LBR 40 ALTERNATE BASE / SUB BASE SECTION -13.5" LIMEROCK BASE, PLACED IN TWO LIFTS, COMPACTED TO 98% AASHTO T-180 METHOD

TYPICAL SECTION
NOT TO SCALE

GENERAL NOTE:

DESIGN SPEED, RIGHT-OF-WAY, AND ROADSIDE DIMENSIONS ARE MINIMUMS. SITE CONDITION MAY REQUIRE INCREASES.

* VARIANCE IN HORIZONTAL DESIGN SPEED ALLOWED WITH JUSTIFICATION AND APPROPRIATE SIGNAGE

** SIDEWALKS IF APPLICABLE

ALL DIMENSIONS AND LABELS ARE TYPICAL AND SHOWN IN FEET UNLESS OTHERWISE LABELED

TITLE: ROADWAY STANDARD
MAJOR LOCAL 4 LANE- OPEN DRAINAGE

APPROVED BY: C. G. MIXSON, P.E.
DATE: 10-01-08
NO.: IV-07

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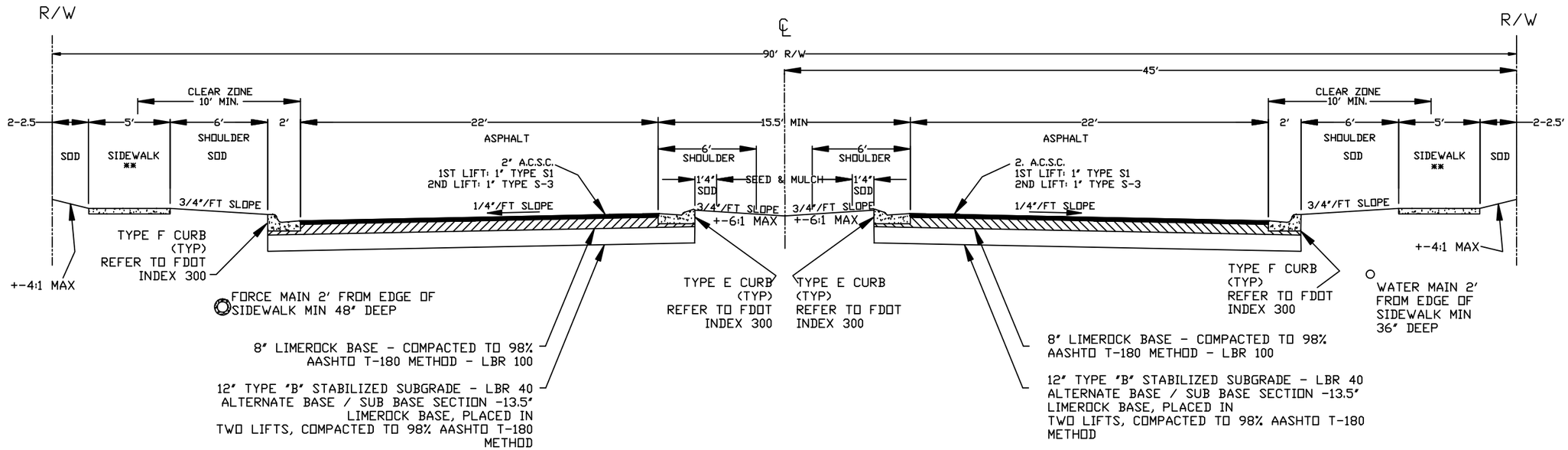
MAJOR LOCAL/COMMERCIAL 4 LANE ROAD - CLOSED DRAINAGE

DESIGN SPEED = 35 MPH *

TYPICAL SECTION
NOT TO SCALE



GENERAL NOTE:

DESIGN SPEED, RIGHT-OF-WAY, AND ROADSIDE DIMENSIONS ARE MINIMUMS. SITE CONDITION MAY REQUIRE INCREASES.

* VARIANCE IN HORIZONTAL DESIGN SPEED ALLOWED WITH JUSTIFICATION AND APPROPRIATE SIGNAGE

** SIDEWALKS IF APPLICABLE

ALL DIMENSIONS AND LABELS ARE TYPICAL AND SHOWN IN FEET UNLESS OTHERWISE LABELED

TITLE: ROADWAY STANDARD
MAJOR LOCAL 4LANE- CLOSED DRAINAGE

APPROVED BY: DATE: NO.:
C. G. MIXSON, P. E. 10-01-08 IV-08

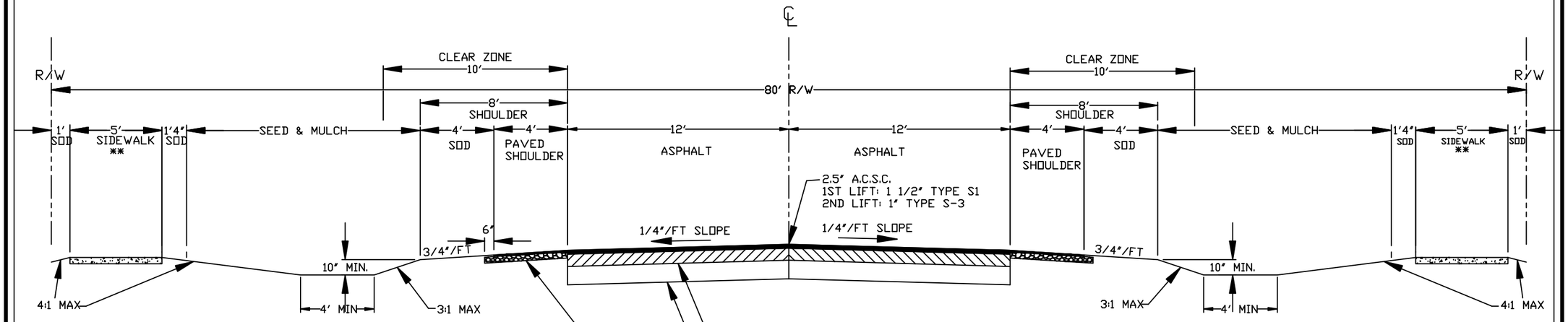
HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
BROOKSVILLE, FLORIDA 34601
PH. (352)754-4062 FAX. (352)754-4423

COLLECTOR 2 LANE ROAD - OPEN DRAINAGE

DESIGN SPEED = 40 MPH *

TYPICAL SECTION

NOT TO SCALE



FORCE MAIN 2' FROM EDGE OF SIDEWALK MIN 48" DEEP

WATER MAIN 2' FROM EDGE OF SIDEWALK MIN 48" DEEP

8" LIMEROCK BASE - COMPACTED TO 98% AASHTO T-180 METHOD - LBR 100

12" TYPE "B" STABILIZED SUBGRADE - LBR 40
ALTERNATE BASE / SUB BASE SECTION -13.5"
LIMEROCK BASE, PLACED IN
TWO LIFTS, COMPACTED TO 98% AASHTO T-180
METHOD

4' PAVED SHOULDER (TYP)
1" A.C.S.C. - TYPE S1
4" LIMEROCK BASE - COMPACTED TO 98% AASHTO
T-180 METHOD - LBR 100

GENERAL NOTE:

DESIGN SPEED, RIGHT-OF-WAY, AND
ROADSIDE DIMENSIONS ARE MINIMUMS.
SITE CONDITION MAY REQUIRE INCREASES.

* VARIANCE IN HORIZONTAL DESIGN SPEED
ALLOWED
WITH JUSTIFICATION AND APPROPRIATE
SIGNAGE

** SIDEWALKS IF APPLICABLE

ALL DIMENSIONS ARE TYPICAL AND SHOWN IN
FEET, UNLESS NOTED OTHERWISE

TITLE: ROADWAY STANDARD
COLLECTOR ROAD / 2 LANE - OPEN DRAINAGE

APPROVED BY: C. G. MIXSON, P.E.

DATE: 10-01-08

NO.: IV-09

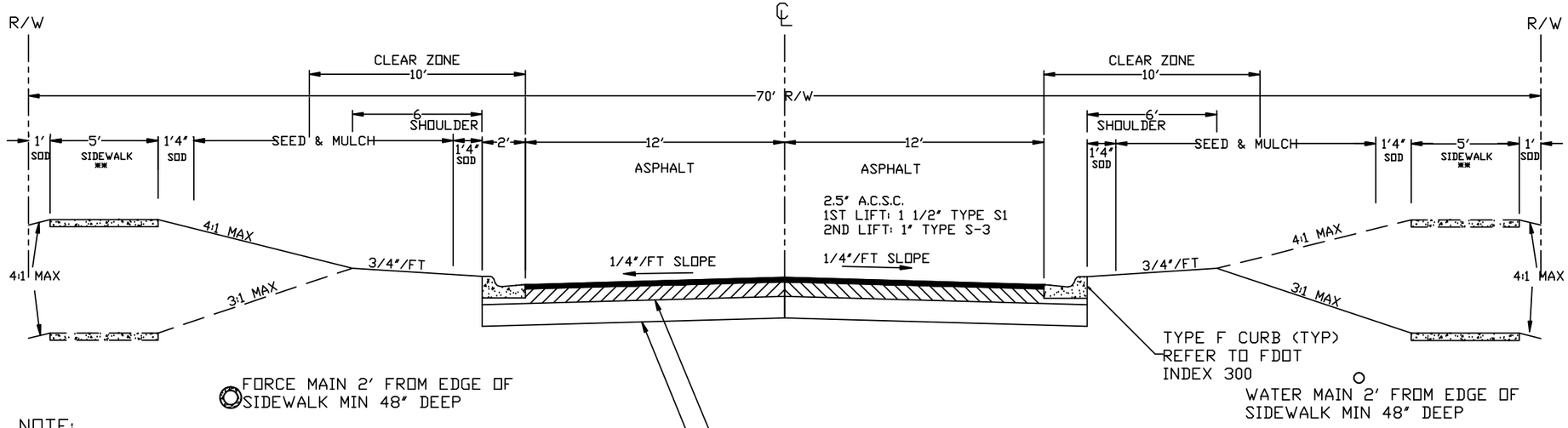
HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
BROOKSVILLE, FLORIDA 34601
PH. (352)754-4062 FAX. (352)754-4423

COLLECTOR / 2 LANE ROAD - CLOSED DRAINAGE

DESIGN SPEED = 40 MPH *

TYPICAL SECTION

NOT TO SCALE



GENERAL NOTE:

DESIGN SPEED, RIGHT-OF-WAY, AND ROADSIDE DIMENSIONS ARE MINIMUMS. SITE CONDITION MAY REQUIRE INCREASES.

* VARIANCE IN HORIZONTAL DESIGN SPEED ALLOWED
WITH JUSTIFICATION AND APPROPRIATE SIGNAGE

** SIDEWALKS IF APPLICABLE

ALL DIMENSIONS ARE TYPICAL AND SHOWN IN FEET, UNLESS NOTED OTHERWISE

TITLE: ROADWAY STANDARD
COLLECTOR ROAD/2 LANE-CLOSED DRAINAGE

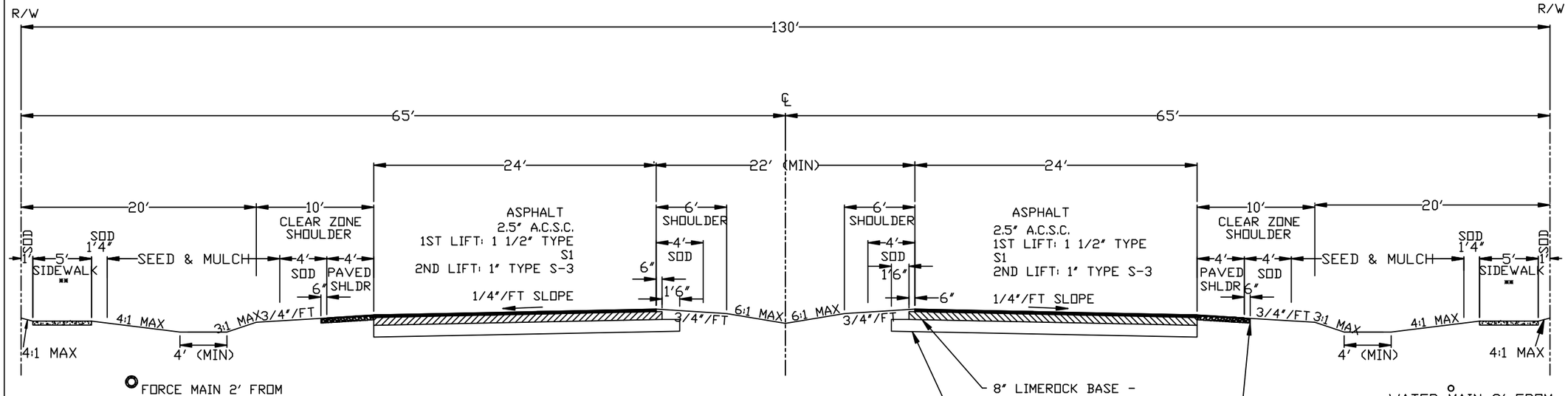
APPROVED BY: DATE: NO.:
C. G. MIXSON, P.E. 10-01-08 IV-10

HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
BROOKSVILLE, FLORIDA 34601
PH. (352)754-4062 FAX. (352)754-4423

COLLECTOR / 4 LANE ROAD - OPEN DRAINAGE

DESIGN SPEED = 40 MPH *

TYPICAL SECTION
NOT TO SCALE



GENERAL NOTE:

DESIGN SPEED, RIGHT-OF-WAY, AND ROADSIDE DIMENSIONS ARE MINIMUMS. SITE CONDITION MAY REQUIRE INCREASES.

* VARIANCE IN HORIZONTAL DESIGN SPEED ALLOWED WITH JUSTIFICATION AND APPROPRIATE SIGNAGE

** SIDEWALKS IF APPLICABLE

ALL DIMENSIONS & LABELS ARE TYPICAL AND SHOWN IN FEET UNLESS NOTED OTHERWISE

TITLE: ROADWAY STANDARD
COLLECTOR ROAD/4 LANE-OPEN DRAINAGE

APPROVED BY: C. G. MIXSON, P.E.
DATE: 10-01-08
NO.: IV-11

HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
BROOKSVILLE, FLORIDA 34601
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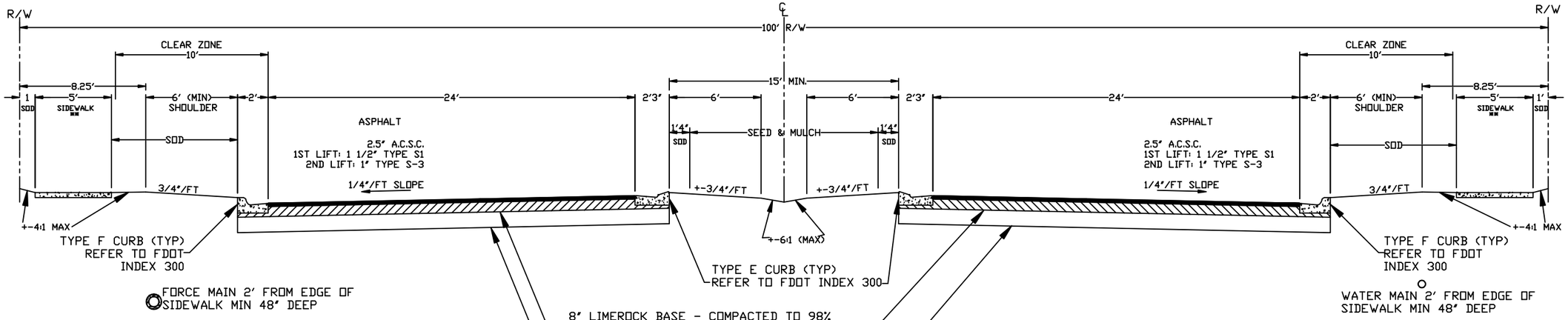
COLLECTOR / 4 LANE ROAD - CLOSED DRAINAGE

DESIGN SPEED = 40 MPH *

TYPICAL SECTION
NOT TO SCALE



GENERAL NOTE:

DESIGN SPEED, RIGHT-OF-WAY, AND
ROADSIDE DIMENSIONS ARE MINIMUMS.
SITE CONDITION MAY REQUIRE INCREASES.

* VARIANCE IN HORIZONTAL DESIGN SPEED
ALLOWED
WITH JUSTIFICATION AND APPROPRIATE
SIGNAGE

** SIDEWALKS IF APPLICABLE

ALL DIMENSIONS & LABELS ARE TYPICAL (TYP.)

8" LIMEROCK BASE - COMPACTED TO 98%
AASHTO T-180 METHOD - LBR 100

12" TYPE "B" STABILIZED SUBGRADE - LBR 40
ALTERNATE BASE / SUB BASE SECTION -13.5"
LIMEROCK BASE, PLACED IN
TWO LIFTS, COMPACTED TO 98% AASHTO T-180
METHOD

TITLE: ROADWAY STANDARD
COLLECTOR ROAD/4 LANE-CLOSED DRAINAGE

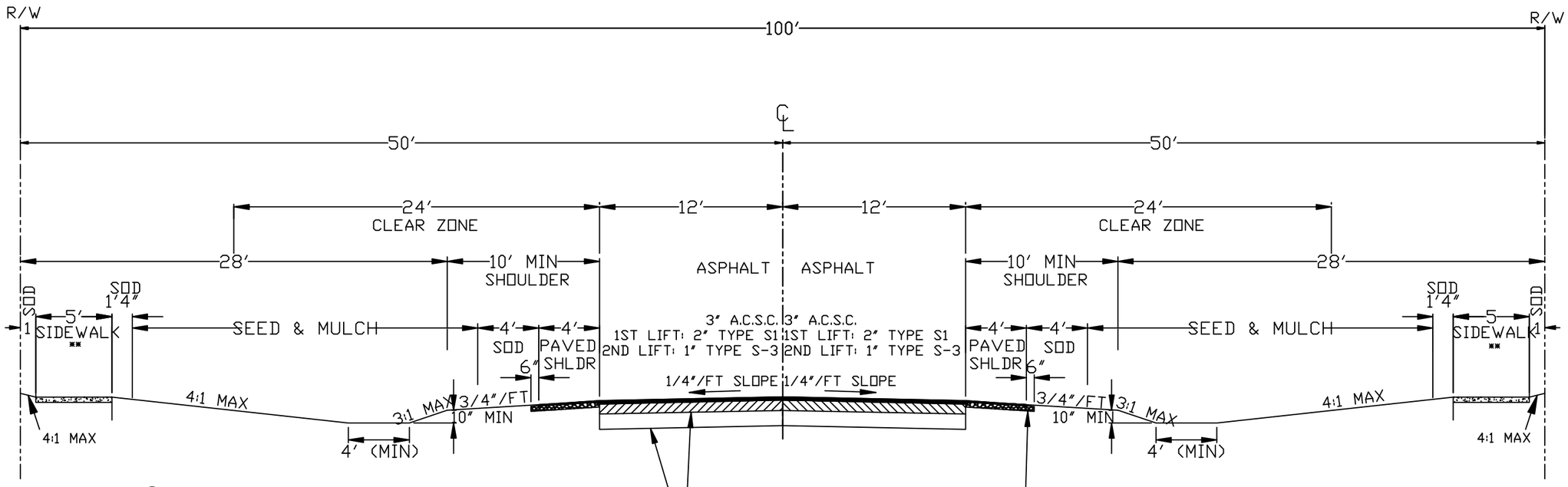
APPROVED BY: DATE: NO.:
C. G. MIXSON, P. E. 10-01-08 IV-12

HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
BROOKSVILLE, FLORIDA 34601
PH. (352)754-4062 FAX. (352)754-4423

MAJOR COLLECTOR / 2 LANE ROAD - OPEN DRAINAGE

DESIGN SPEED = 60 MPH *

TYPICAL SECTION
NOT TO SCALE



FORCE MAIN 2' FROM EDGE OF SIDEWALK MIN 48" DEEP

8" LIMEROCK BASE - COMPACTED TO 98% AASHTO T-180 METHOD - LBR 100

12" TYPE "B" STABILIZED SUBGRADE - LBR 40
ALTERNATE BASE / SUB BASE SECTION -13.5" LIMEROCK BASE, PLACED IN TWO LIFTS, COMPACTED TO 98% AASHTO T-180 METHOD

4' PAVED SHOULDER (TYP)
1" A.C.S.C. - TYPE S1
4" LIMEROCK BASE - COMPACTED TO 98% AASHTO T-180 METHOD - LBR 100

WATER MAIN 2' FROM EDGE OF SIDEWALK MIN 48" DEEP

GENERAL NOTE:

DESIGN SPEED, RIGHT-OF-WAY, AND ROADSIDE DIMENSIONS ARE MINIMUMS. SITE CONDITION MAY REQUIRE INCREASES.

* VARIANCE IN HORIZONTAL DESIGN SPEED ALLOWED WITH JUSTIFICATION AND APPROPRIATE SIGNAGE

** SIDEWALKS IF APPLICABLE

ALL DIMENSIONS & LABELS ARE TYPICAL AND SHOWN IN FEET UNLESS OTHERWISE NOTED

TITLE: ROADWAY STANDARD
MAJ COLLECTOR ROAD/2 LANE-OPEN DRAINAGE

APPROVED BY: C. G. MIXSON, P. E.
DATE: 10-01-08
NO.: IV-13

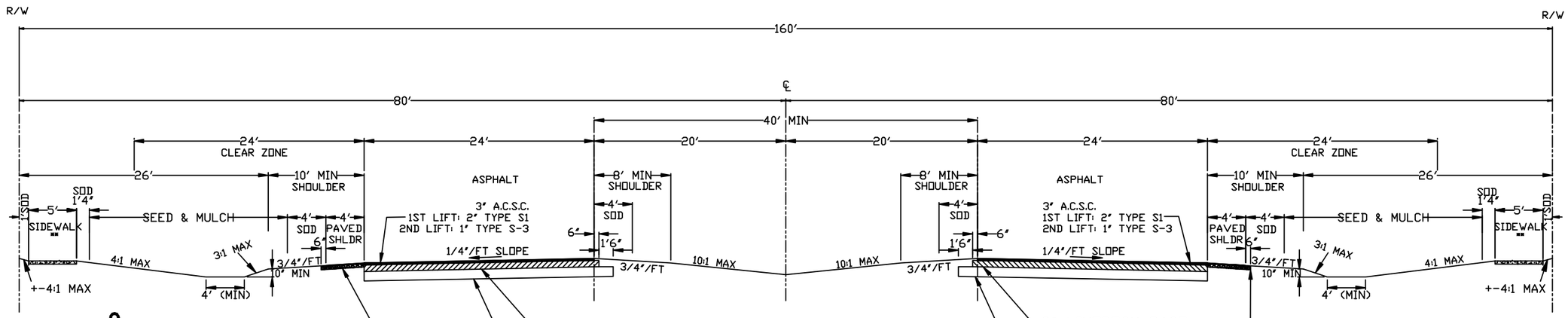
HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
BROOKSVILLE, FLORIDA 34601
PH. (352)754-4062 FAX. (352)754-4423

MAJOR COLLECTOR / 4 LANE ROAD - OPEN DRAINAGE

DESIGN SPEED = 60 MPH *

TYPICAL SECTION

NOT TO SCALE



FORCE MAIN 2' FROM EDGE OF SIDEWALK MIN 48" DEEP

8" LIMEROCK BASE - COMPACTED TO 98% AASHTO T-180 METHOD - LBR 100

12" TYPE "B" STABILIZED SUBGRADE - LBR 40
ALTERNATE BASE / SUB BASE SECTION -13.5" LIMEROCK BASE, PLACED IN TWO LIFTS, COMPACTED TO 98% AASHTO T-180 METHOD

4' PAVED SHOULDER (TYP)
1" A.C.S.C. - TYPE S1
4" LIMEROCK BASE - COMPACTED TO 98% AASHTO T-180 METHOD - LBR 100

8" LIMEROCK BASE - COMPACTED TO 98% AASHTO T-180 METHOD - LBR 100

12" TYPE "B" STABILIZED SUBGRADE - LBR 40
ALTERNATE BASE / SUB BASE SECTION -13.5" LIMEROCK BASE, PLACED IN TWO LIFTS, COMPACTED TO 98% AASHTO T-180 METHOD

4' PAVED SHOULDER (TYP)
1" A.C.S.C. - TYPE S1
4" LIMEROCK BASE - COMPACTED TO 98% AASHTO T-180 METHOD - LBR 100

WATER MAIN 2' FROM EDGE OF SIDEWALK MIN 48" DEEP

GENERAL NOTE:

DESIGN SPEED, RIGHT-OF-WAY, AND ROADSIDE DIMENSIONS ARE MINIMUMS. SITE CONDITION MAY REQUIRE INCREASES.

* VARIANCE IN HORIZONTAL DESIGN SPEED ALLOWED WITH JUSTIFICATION AND APPROPRIATE SIGNAGE

** SIDEWALKS IF APPLICABLE

ALL DIMENSIONS & LABELS ARE TYPICAL AND SHOWN IN FEET UNLESS OTHERWISE NOTED

TITLE: ROADWAY STANDARD
MAJ COLLECTOR ROAD/4 LANE-OPEN DRAINAGE

APPROVED BY: C. G. MIXSON, P. E.

DATE: 10-01-08

NO.: IV-14

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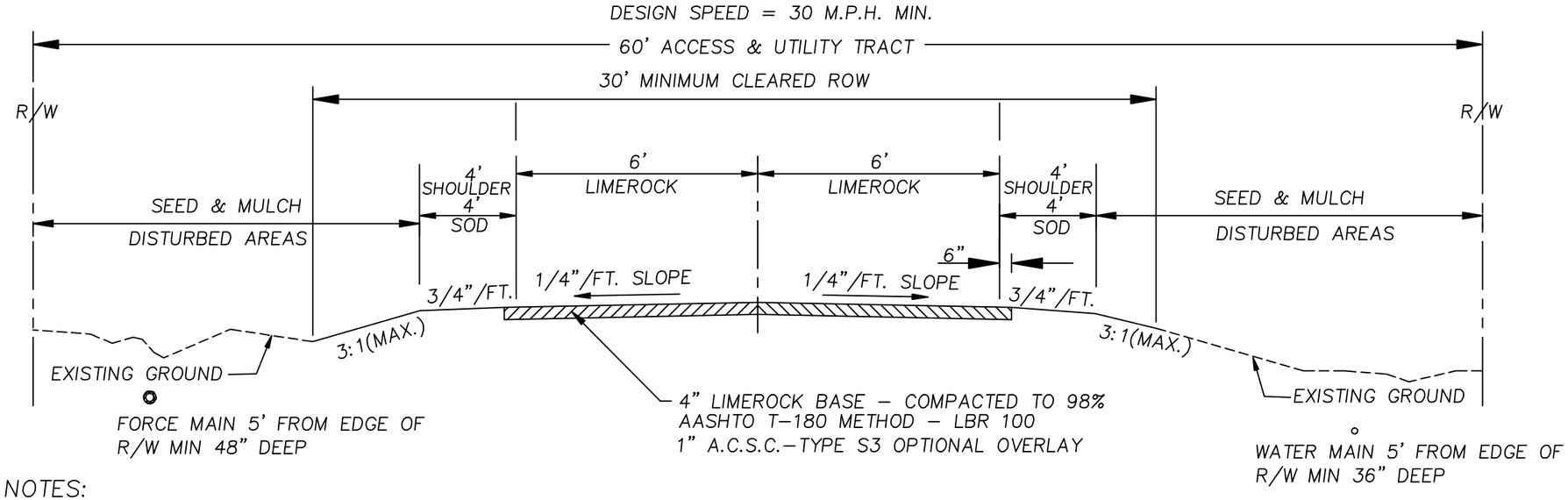
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
BROOKSVILLE, FLORIDA 34601
PH. (352)754-4062 FAX. (352)754-4423

CLASS C SUBDIVISION ROAD 10 LOTS AND UNDER – OPEN DRAINAGE



GENERAL NOTES:

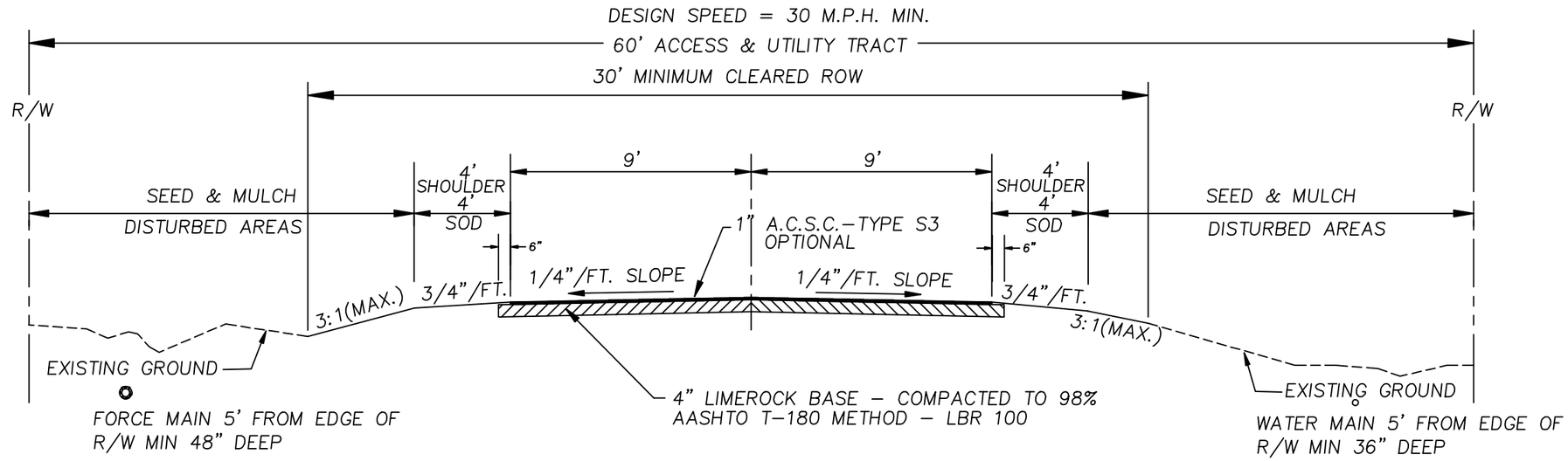
DESIGN SPEE, RIGHT-OF-WAY, AND ROADSIDE DIMENSIONS ARE MINIMUMS. SITE CONDITIONS MAY REQUIRE INCREASES.

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED

TYPICAL SECTIONS

NOT TO SCALE

CLASS B SUBDIVISION ROAD OVER 10 BUT LESS THAN 50 LOTS – OPEN DRAINAGE



TITLE: ROADWAY STANDARD
CLASS B/C SUB DIV. ROADS

DATE: 10-01-08
NO.: IV-15

APPROVED BY:
C. G. MIXSON, P.E.

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1525 E. JEFFERSON ST.
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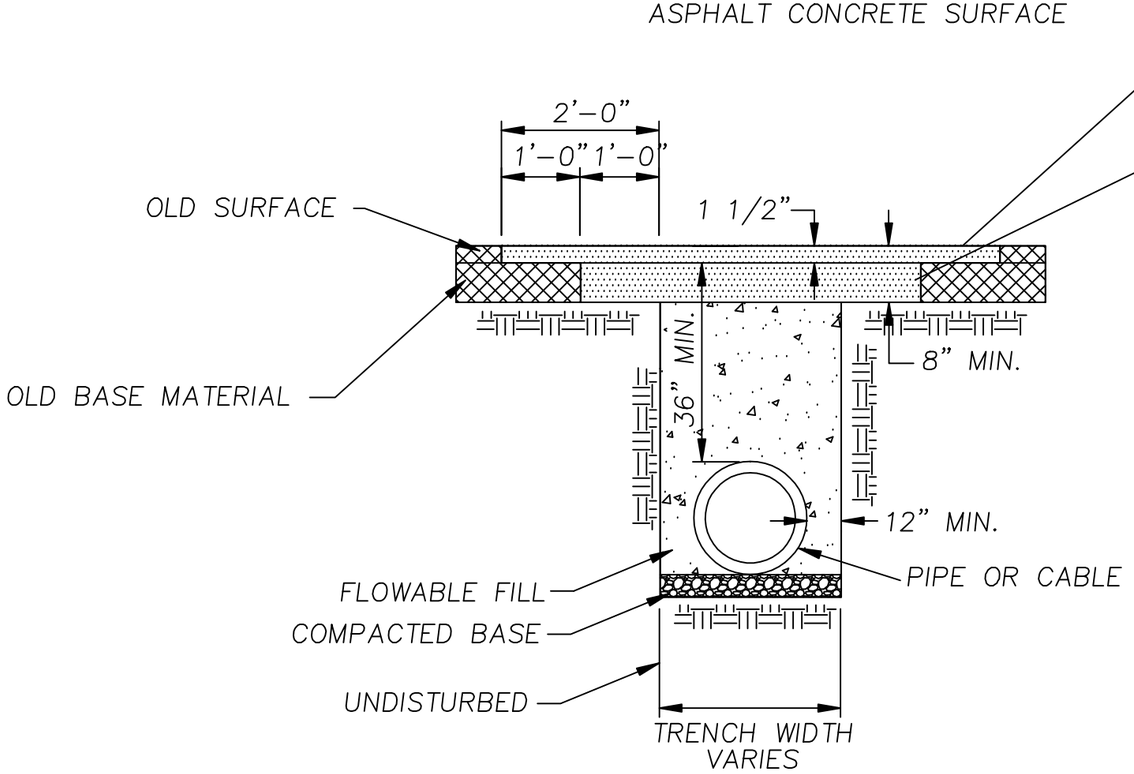
TYPICAL ROAD CUT

ASPHALT CONCRETE SURFACE



SPECIAL NOTE:

REFER TO ROADWAY AND TRAFFIC DESIGN STANDARDS, TRAFFIC CONTROL THROUGH WORK ZONES SECTION FOR PLACEMENT AND TYPE OF TRAFFIC CONTROL DEVICES THAT MUST BE UTILIZED DURING CONSTRUCTION.

GENERAL NOTES:

1. Place 3' of flowable fill, min 500 PSI at 48 hours, above the pipe, for compaction reasons. If the pipe is less than 3' from top of pavement, fill the Flowable Fill to the bottom of pavement, then pave over after it settles. If the pipe is deeper, place the 3' of flowable fill and then lime rock to the bottom of asphalt, with compaction every 6". The Flowable Fill shall extend 1' on the sides of the pipe. It shall extend 1' beyond the pavement, (not the length of the pipe).
2. Base replacement shall be flowable fill, min 800 PSI at 28 days, non-excavatable, as approved by the County Engineer.
3. Minimum Asphaltic Concrete surface thickness is 1 1/2" of type S-1 over the cut area in one layer.
4. All surface joints shall be mechanically saw cut.
5. RC-70 or equivalent liquid asphalt shall be added to all surface joints to form seal.
6. Pavement restoration is typical for large diameter pipes.
7. Variances to these pavement restorations may be requested from the County Engineer.

TITLE: ROADWAY STANDARD
PAVEMENT RESTORATION

DATE: 10-01-08
NO.: IV-16

APPROVED BY:
C. G. MIXSON, P. E.

HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
BROOKSVILLE, FLORIDA 34601
PH. (352)754-4062 FAX. (352)754-4423

GENERAL ALIGNMENT

In the design of roadway curves, it is necessary to establish a proper relationship between curvature of the roadway and its design speed.

Sharp horizontal or vertical curvature should not be used in the following locations:

- At or near a crest in grade;
- At or near a low point or sag in grade;
- At the end of long tangents;
- At or near intersections.

Note that good roadway alignment shall include proper roadside design including: shoulders, front and back slopes, clear zone, and the treatment of all other features located within the right-of-way.

HORIZONTAL ALIGNMENT

Table 1, provides the centerline radius for various design speeds for roadways designed using a "normal" crown (+2% / -2%).

The use of superelevation may be employed to counteract centrifugal force and allow drivers to comfortably and safely travel through curves of a sharper design.

Superelevation design shall be accomplished per the FDOT Greenbook & Design Standards (Index), latest editions.

VERTICAL ALIGNMENT

Changes in grade shall be connected by a parabolic curve. Vertical curves are required when the algebraic difference of intersecting grades exceed the values given in Table 2.

The minimum length of a vertical curve is obtained from calculations using the "K" values in Table 3.

Vertical curve length shall not be less than three (3) times the design speed of the roadway.

RESIDENTIAL ACCESS LOOPS

The use of one or two way access loops, partial cul-de-sacs, (also referred to as "eyebrows", "bulb-outs", "bulges") or other means to provide additional pavement on horizontal or vertical curves is not allowed.

Table 1

HORIZONTAL CURVATURE w/ NORMAL CROWN (+2%/-2%)

V (MPH)	COLLECTOR		RESIDENTIAL	
	f	RADIUS	f	RADIUS
15			0.380	50'
20			0.300	95'
25			0.260	180'
30			0.220	300'
35	0.200	450'		
40	0.175	690'		
45	0.145	1080'		
50	0.140	1390'		
55	0.135	1750'		
60	0.130	2180'		

f = Coefficient of Friction

HORIZONTAL CURVE FORMULA

$$R = \frac{V^2}{15(e+f)}$$

R = Radius (in feet)
V = Velocity (MPH)
e = Superelevation Rate (%)
f = Coefficient of Friction

Table 2

MAX CHANGE IN GRADE w/o USING VERTICAL CURVE

Design Speed (MPH)	20	25	30	35	40	45	50	55	60
Max Change in % Grade	1.2	1.1	1.00	0.90	0.80	0.70	0.60	0.50	0.40

Table 3

MINIMUM LENGTHS FOR VERTICAL CURVES

L = KA

L=Length of Vertical Curve A=Algebraic Difference of Grades in Percent

Design Speed (MPH)	20	25	30	35	40	45	50	55	60
K Value - Crest Curves	10	19	31	47	70	98	136	185	245
K Value - Sag Curves	17	26	37	49	64	79	96	115	136

SEE GUIDELINES IV-04 THROUGH IV-12 FOR DETAILS OF SPECIFIC ROADWAY SECTION INFORMATION.

TITLE: ROADWAY STANDARD
HORIZONTAL AND VERTICAL ALIGNMENT

APPROVED BY: C. G. MIXSON, P. E.
DATE: 10-01-08
NO.: IV-17

HERNANDO COUNTY
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1525 E. JEFFERSON ST.
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PH. (352)754-4062 FAX. (352)754-4423

Projects generating 50 or more PM Peak Hour, or Peak Hour of the generator trips, are required to submit two (2) copies of a traffic access analysis, signed and sealed by a Florida Professional Engineer. The traffic analysis is utilized to review operational issues by the Engineering Division, and concurrency issues by the Planning Department. The methodology outlined below can be utilized for both purposes; however, be advised a separate application and copy of the study must be submitted to the Planning Department for purposes of concurrency review.

METHODOLOGY DEVELOPMENT:

–*Project information:*
- *a. site location, & roads to access (e.g. NW corner of US41 & CR574 with access on each).*
- *b. proposed land use & size (e.g. Medical Office, 30,000 S.F.).*
- *c. proposed phasing, if any;*
- *d. build–out date (e.g. 2010).*
- *e. developer and consulting engineer's names and numbers*

–*Identify access types and locations (e.g. full access driveway at median opening on Broad Street)*
–*Identify roadways, frontage roads, intersections, immediate impacted intersections, and adjacent roadway segments defined as roadways impacted by the project at 4.5% of the LOS 'D' Peak Hour service volume (County roads) or LOS 'C' Peak Hour for State roads.*
–*Define time frames of analysis (i.e. AM Peak, PM Peak, Peak Hour of Generator for Church, School, Theater).*
–*Define trip generation rates (i.e. ITE Trip Generation Manual, 7th ed., land use and code for daily, AM, and PM Peak Hours.*
–*Identify trip distribution methodology and percentages (e.g. gravity model with 40% via west, 60% viz east).*
–*Identify data sources (e.g. consultant Peak Hour turning movement counts).*
NOTE: All traffic data used for analysis shall be within 12 months of age.
NOTE: Consultant may submit, at his/her own risk, completed Traffic Access Analysis without methodology approval.

ANALYSIS SUBMITTAL:

–*ANALYSIS TO BE A NARRATIVE REPORT WITH SUPPORTING DATA IN APPENDICES (with computer analysis on CD).*
- ☐ *Cover sheet, Table of Contents, and List of Figures, Tables, and Exhibits.*
- ☐ *Introduction / project description including location map and preliminary site plan.*
- ☐ *Trip generation for Daily, AM, and PM, per land uses and sizes, per ITE, with table when multiple land uses on site.*
- ☐ *Pass–by trip reduction, if justified, is not to exceed 10% of adjacent street. Internal capture per ITE worksheets.*
- ☐ *Provide listing and map of facilities to be studied (using 4.5% of LOS 'C' or 'D' Peak Hour service volume).*
- ☐ *Identify method and percentages of distribution of project trips, and assign on schematic map.*
- ☐ *Acquire traffic signal timings from Engineering Division. Timings cannot be altered without written approval.*
- ☐ *Provide LOS analysis of existing facilities in study area using FDOT Tables & HCS+, then Synchro, if desired.*
- ☐ *Identify growth traffic and vested traffic volumes, and add to existing volumes to provide background traffic.*
- ☐ *Provide LOS analysis of future conditions in study area using FDOT Tables & HCS+, then Synchro, if desired. (provide schematic map that shows background traffic, project trips, and total traffic for each facility movement)*
- ☐ *Identify movements of deficient capacity, and if any, mitigating measures.*
- ☐ *Provide analysis of justification (or non–justification) for left and right turn lanes for all project access points and deficient intersection movements, using Harmelink warrants or AASHTO Exhibit 9–75.*
- ☐ *Provide turn lane calculations per Hernando County Guidelines for all justified turn lanes.*
- ☐ *Provide LOS analysis of proposed improvements, if any, using FDOT Tables & HCS+, then Synchro, if desired.*
- ☐ *Provide LOS comparison table of existing, future, and improved traffic conditions for all facilities.*
- ☐ *Provide study conclusion that summarizes the project, its impacts on capacity, and mitigating improvements.*
- ☐ *Appendixes include: conceptual site plan, traffic volumes and turning movements including adjustments, roadway, intersection, and driveway capacity analysis worksheets, turn lane justification worksheets, and traffic signal warrant analysis, where applicable.*

Note: Traffic Access Analysis needs to address truck and pedestrian access, where applicable.

APPROVAL STATEMENT:

–*Confirms Staff approval of submitted Traffic Access Analysis.*

DEFICIENCY STATEMENT:

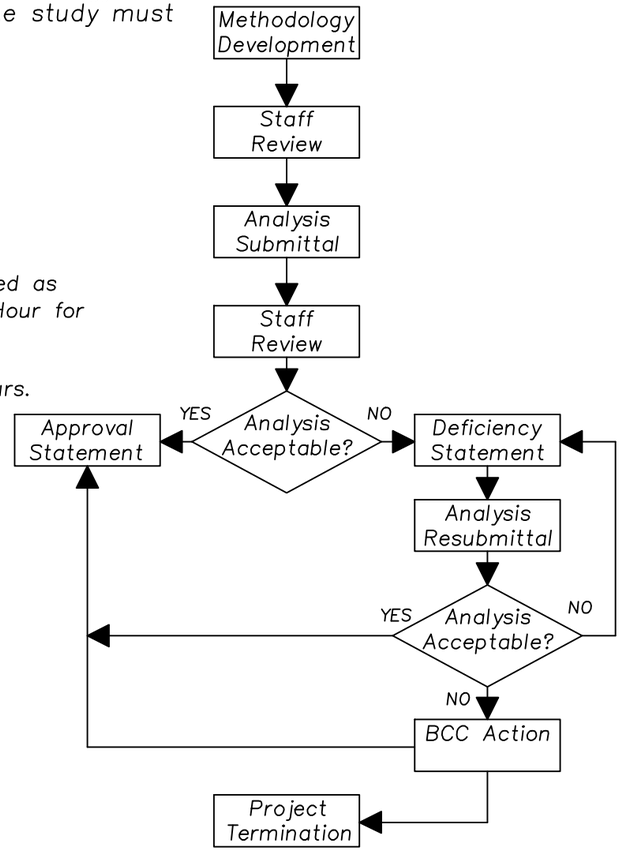
–*Provides Staff questions, concerns, or disputes for submitted Traffic Access Analysis.*

ANALYSIS RESUBMITTAL:

–*The re–submittal of the Traffic Access Analysis with alterations / additions resultant from the Deficiency Statement.*

BOCC ACTION:

–*Provides developer a forum to appeal staff final denial.*



NOTE 1: Traffic Access Analysis may be for ultimate project or immediate planned phases. HOWEVER, if phased, subsequent phases will require a new analysis, and may necessitate reconstruction of originally constructed improvements.

NOTE 2: Project design may be concurrent with review of the Traffic Access Analysis, HOWEVER, strictly at the Developer's risk. Site layout, access types and locations, roadway improvements, and drainage MAY ALL require major revisions.

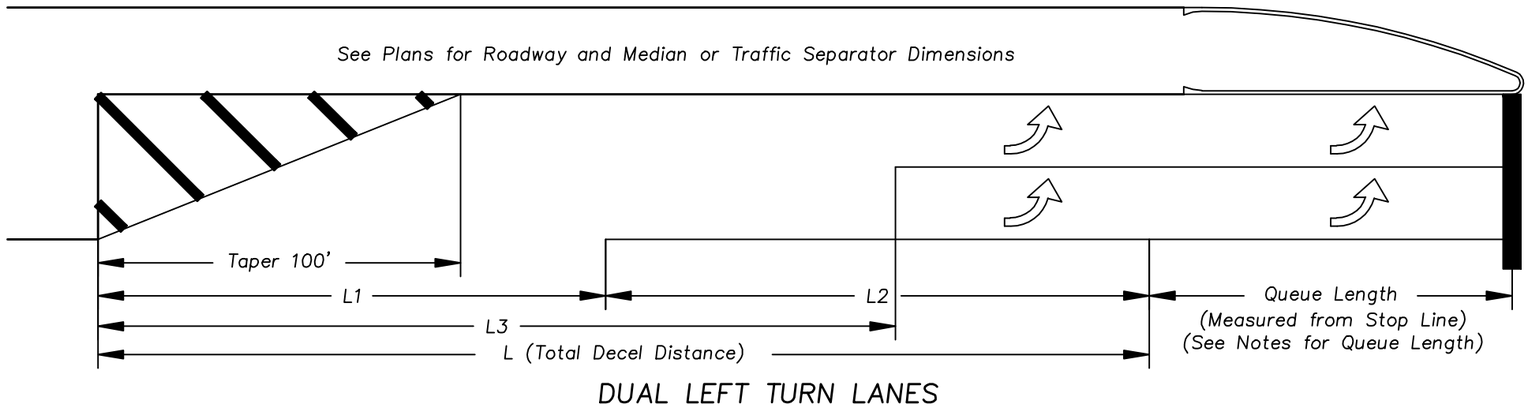
Hernando County may require specific access, capacity, operational, and/or safety improvements or analysis in association with a proposed project, irrespective of the conclusions derived from the submitted Traffic Access Analysis.

TITLE: ROADWAY STANDARD
TRAFFIC ACCESS ANALYSIS

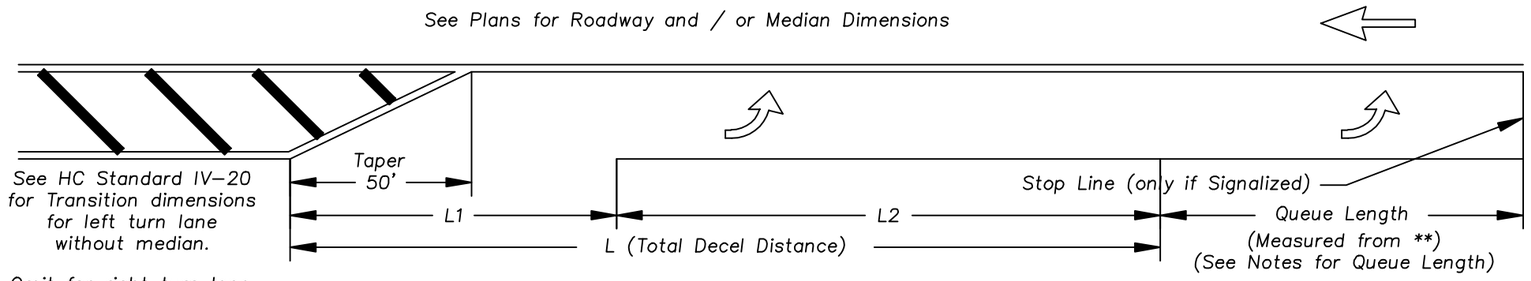
DATE: 10–01–08
NO.: IV–18

APPROVED BY:
C. G. MIXSON, P. E.

HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
BROOKSVILLE, FLORIDA 34601
PH. (352)754–4475 FAX. (352)754–4423



DUAL LEFT TURN LANES



SINGLE LEFT / RIGHT TURN LANE

QUEUE LENGTH NOTES:

1. Minimum Queue Length required for left turn lane is 100' and right turn lane is 25', dependent on analysis (See note 2).
2. Queue Length shall be determined from generated volumes from Traffic Impact analysis, and shall be approved by the County Engineer.
3. Peak 15 minute volumes of peak hour will be calculated for generators with scheduled times.
4. Queue Length Formulas:
   Non–signalized QL=V(0.8332)
   Signalized QL=[2.0*25*V]/40
   V= volume: per note 2 & 3 above
   2.0= 90th %tile randomness factor
   25= length of queued vehicle
   40= default cycles per hour (@ 90 second signal cycle)

** Queue Length is measured from control radius, median nose, or stop line (if signalized).

GENERAL NOTES:

- The dimensions listed are minimums, and greater dimensions may be required by the County Engineer.
- See plans for roadway construction dimensions.
- See FDOT Index No. 17346 for pavement marking information.
- Milling and / or an overlay course of asphalt may be required for the project's limits associated with pavement widening.
- Existing paved shoulders shall be retained in any turn lane construction.
- All disturbed areas of the public right of way shall require sodding.

Design Speed (MPH)	Clearance Distance L1	Brake to Stop Distance L2	Total Decel Distance L	Clearance Distance 2 L3	Conditions
30	70'	75'	145'	110'	URBAN
35	70'	75'	145'	110'	
40	80'	75'	155'	120'	
45	85'	100'	185'	135'	
50	105'	135'	240'	160'	RURAL
55	125'	225'	350'	195'	
60	145'	260'	405'	230'	

This standard is based on FDOT Index No. 301, 2004 edition.

DESIGN NOTES:

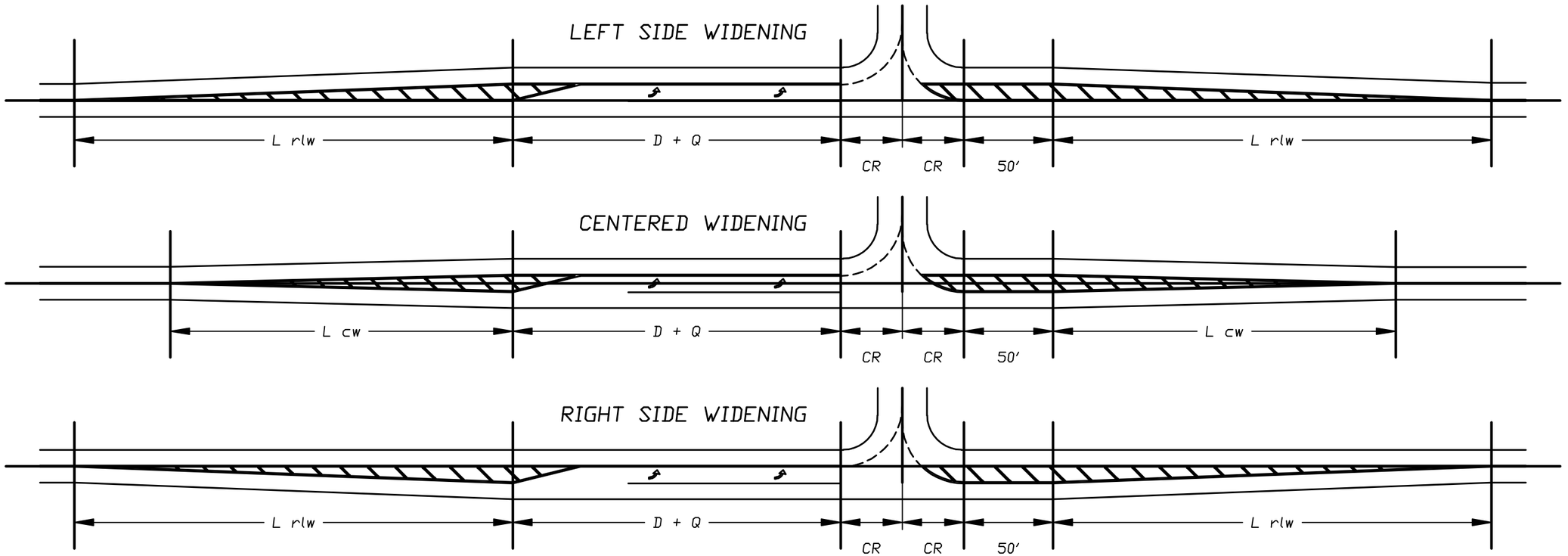
Basis for turn lane distances:
- * informed driver
- * stop condition (with or without stop control)
- * wet pavement
- * reaction preceding entry
- * maximum safe deceleration rates for urban condition
- * comfortable deceleration rates for rural condition

TITLE: ROADWAY STANDARD
TURN LANES

DATE: 10–01–08 NO.: IV–19

APPROVED BY:
C. G. MIXSON, P. E.

HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
BROOKSVILLE, FLORIDA 34601
PH. (352)754-4062 FAX. (352)754-4423



GENERAL NOTES:

- Mirror design for cross or opposing side street intersections.
- See County Standard IV-19 for deceleration and queue lengths.
- The dimensions listed are minimums, and greater dimensions may be required by the County Engineer.
- See plans for roadway construction dimensions.
- See FDOT Index No. 17346 for pavement marking information.
- Milling and / or an overlay course of asphalt may be required for the project's limits associated with pavement widening.
- Roadways with paved shoulders existing will require their replacement.
- Truck (WB-40 or greater) turning volumes exceeding 25 per day will require review for accel tapers and increased inside corner radii.
- All disturbed areas of the public right of way will require sodding.
- See FDOT Index No. 526 for other transition information.

Design Speed (MPH)	Centered Widening L cw	Right & Left Side Widening L rlw	Decel & Queue Length D+Q	(Minimum) Control Radius CR
30	180'	180'	IV-21	40'
35	210'	250'	IV-21	40'
40	240'	320'	IV-21	40'
45	290'	410'	IV-21	50'
50	360'	500'	IV-21	50'
55	420'	610'	IV-21	60'
60	480'	720'	IV-21	60'

This standard modifies FDOT Index No. 526, 2000 edition.

TITLE: ROADWAY STANDARD
ROADWAY TRANSITIONS

APPROVED BY: C. G. MIXSON, P.E.

DATE: 10-01-08

NO.: IV-20

HERNANDO COUNTY
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ENGINEERING DIVISION
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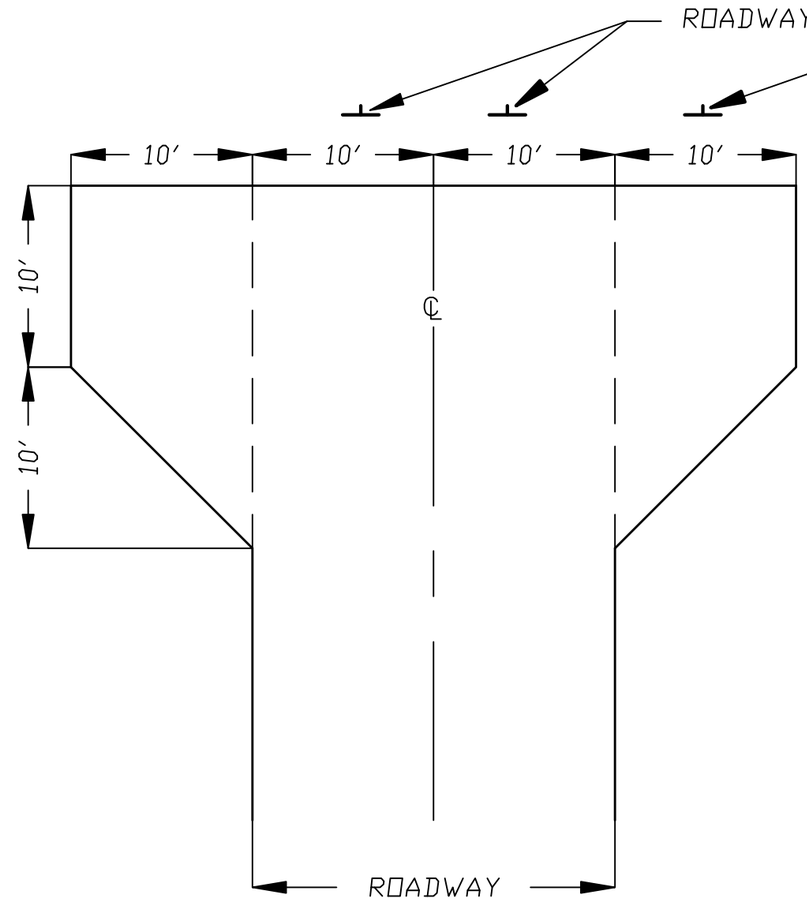

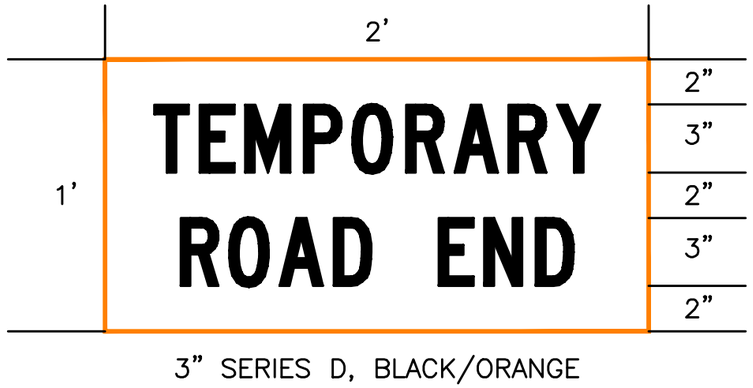

3" SERIES D, BLACK/ORANGE

NOTES:

- Turn arounds shall be constructed per the same section dimensions as the roadway on which they are constructed.
- Drainage around the wings shall be addressed on a site specific basis.
- Roadway termination markers and "NO OUTLET" signage may be required.
- "TEMPORARY ROAD END" sign shall be required if turn around is temporary and located in a subdivision.

TITLE: ROADWAY STANDARD
HAMMER HEAD TURN AROUND

APPROVED BY: C. G. MIXSON, P. E.

DATE: 10-01-08

NO.: IV-21

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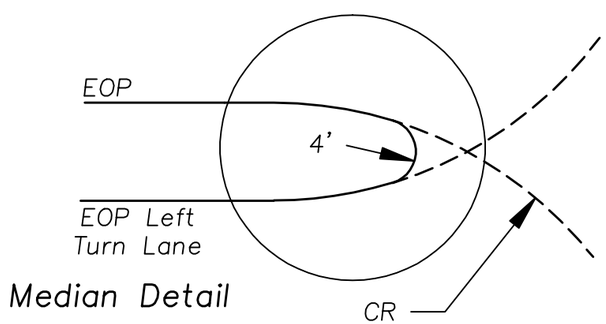
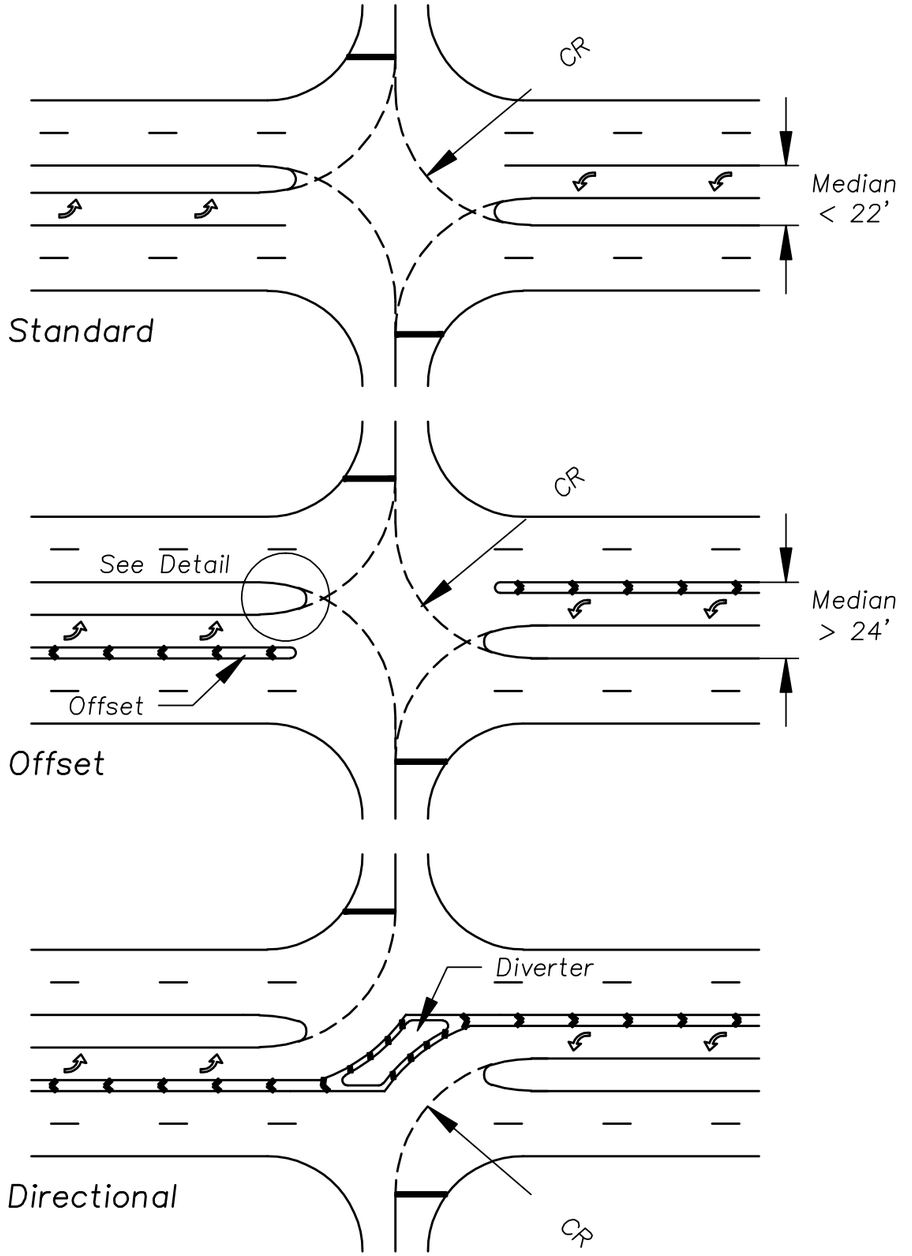
General Notes . . .

1. All new median opening locations shall be approved by the County Engineer.
2. Left turn lanes are required with all new median openings.
3. Directional median openings (left–in only) may be required for safety / access management.
4. Left turn lanes may be required to be offset to provide for appropriate sight distance.
5. Truck (WB–40 or greater) turning volumes of five (5) or more per day requires review for accel tapers and larger sized radius returns.
6. The dimensions shown herein are minimums, and greater dimensions may be required by the County Engineer.
7. The installation of curbing or curb and gutter shall be located within the stated control radius and / or radius return.
8. Designs of greater than 45 MPH requires Type E curb and gutter. Non–mountable curbs are not allowed.
9. Concrete divider should be located 2 ft outside of a travel way.
10. The travel way width within a turning radius shall be 16 feet.
11. See FDOT Index No. 302 for concrete separators.
12. See Guideline IV–19 for left turn lanes.

Design Speed (MPH)	(Minimum) Control Radius CR
30	40'
35	40'
40	40'
45	50'
50	50'
55	60'
60	60'



Median Detail



TITLE: ROADWAY STANDARD
MEDIAN OPENINGS

APPROVED BY:
C. G. MIXSON, P. E.

DATE: 10–01–08

NO.: IV–22

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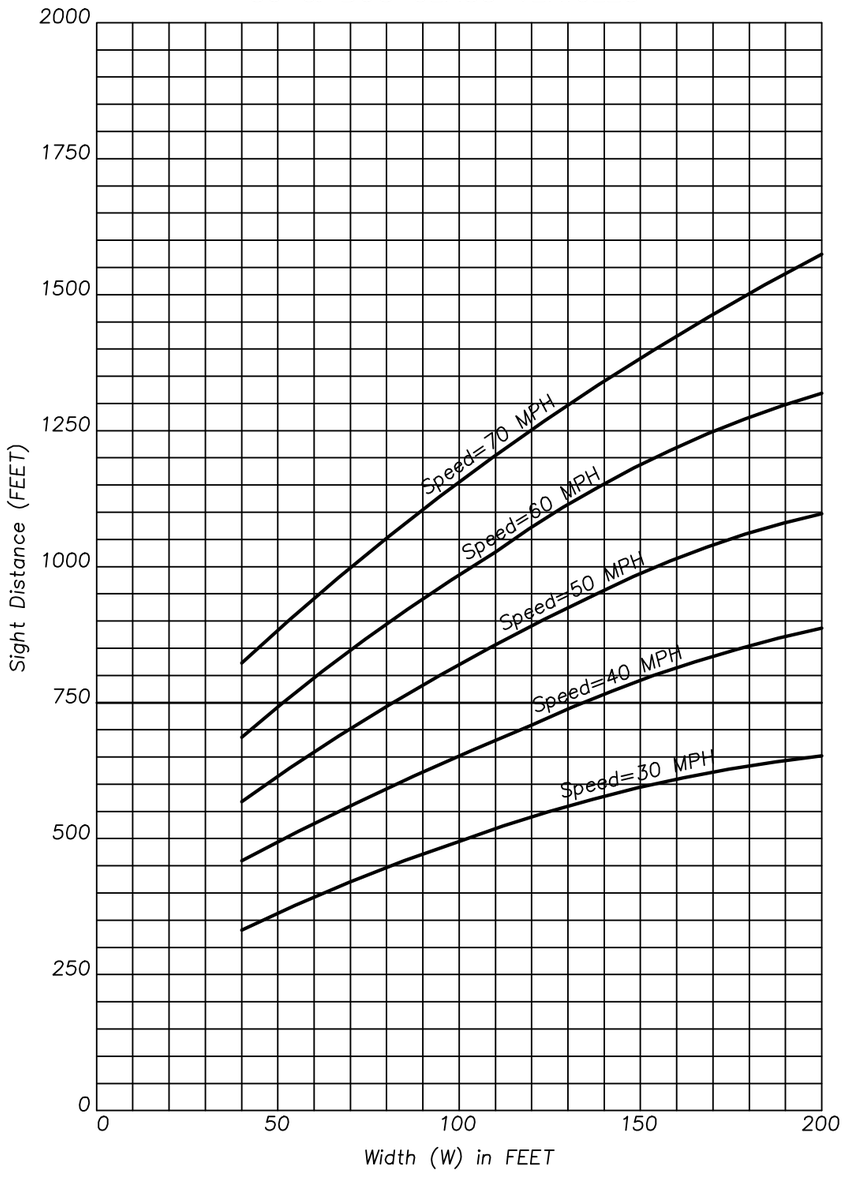
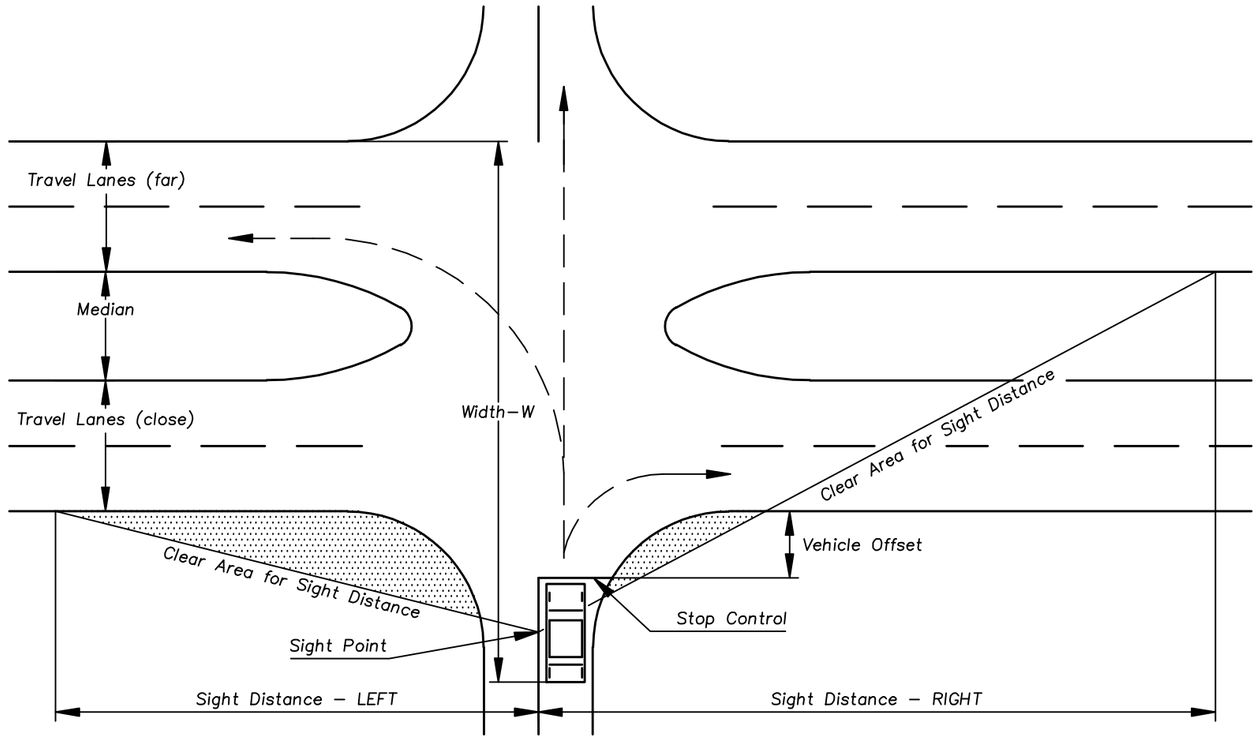
SIGHT DISTANCE FOR CROSSING MANEUVER
(Effect of grade not included)
SU & BUS CLASS VEHICLES



INTERSECTION CONFIGURATION



PROCESS:

* Determine crossing width by formula: W = TLF+M+TLC+VO+V
* Locate design speed curve on graph (left) and width (W) from formula then plot sight distance.
  If design speed unknown, round posted speed up 5 MPH. Round odd numbered speed limits up 5 MPH.
* TLF=Travel Lanes (far); M=Median; TLC=Travel Lanes (close); VO=Vehicle Offset; V=Vehicle Length.
* Default Values: Vehicle Length=40'; Vehicle Offset=15'; Sight Point=20'.

GENERAL NOTES:

– Criteria from FDOT Greenbook, 2000 edition; Chapter 3.9.b, and Figures III–9 , III–10, & III–11.
– Minimum Country design standard based on crossing maneuver, SU & BUS class vehicles.
  WB class vehicle chart (figure III–10) to be used where volume exceeds 25 crossings per day.
– The dimensions listed are minimums, and greater dimensions may be required by the County Engineer.
– This standard does not account for the effects of grade or horizontal curvature.
– See plans for roadway construction dimensions.
– See FDOT Index No. 17346 for pavement marking information.
– Truck (WB–40 or greater) turning volumes exceeding 25 per day will require review for accel tapers and increased inside corner radii.
– Sight Distance – LEFT or RIGHT is the same, and is designated for site reference purposes only.

TITLE: ROADWAY STANDARD
INTERSECTION SIGHT DISTANCE

APPROVED BY:
C. G. MIXSON, P. E.

DATE: 10–01–08

NO.: IV–23

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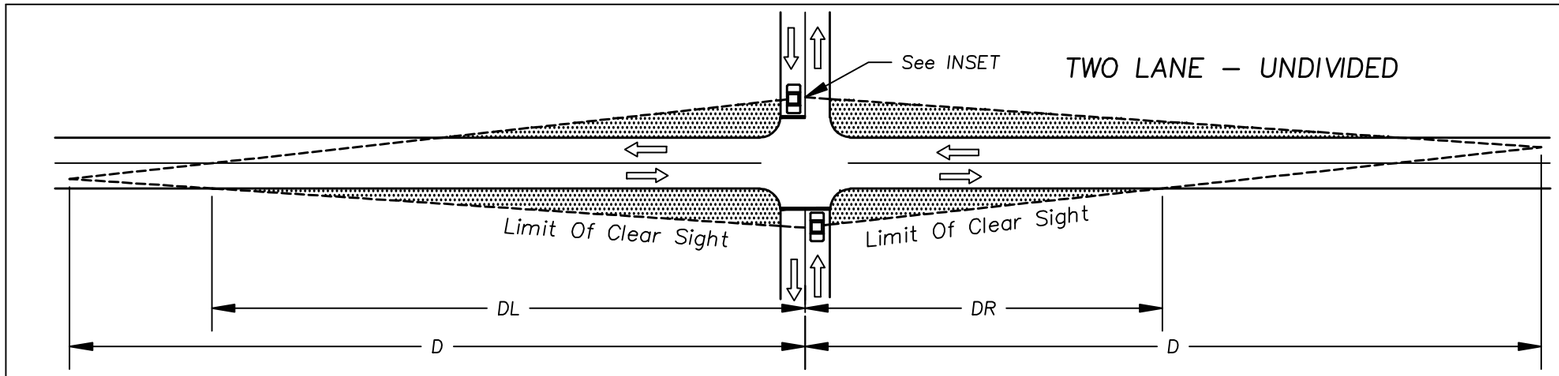
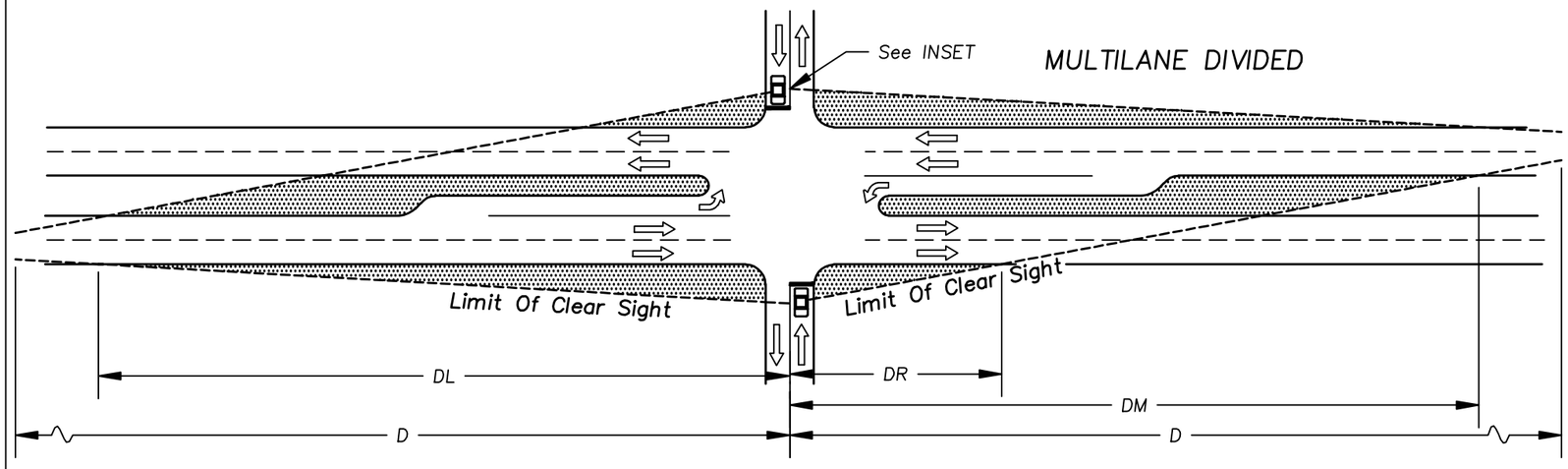


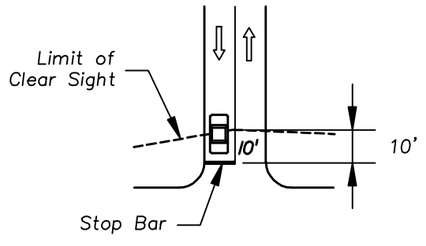
Design Speed (MPH)	D	DL	DR
30	380'	290'	200'
35	470'	370'	250'
40	580'	450'	310'
45	710'	550'	380'
50	840'	650'	450'
55	990'	760'	520'
60	1150'	890'	610'

This standard is based on FDOT Index No. 546.



Design Speed (MPH)	D	DL	DR	DM
30	380'	290'	120'	300'
35	470'	370'	150'	370'
40	580'	450'	180'	460'
45	710'	550'	220'	560'
50	840'	650'	260'	670'
55	990'	760'	300'	780'
60	1150'	890'	360'	910'

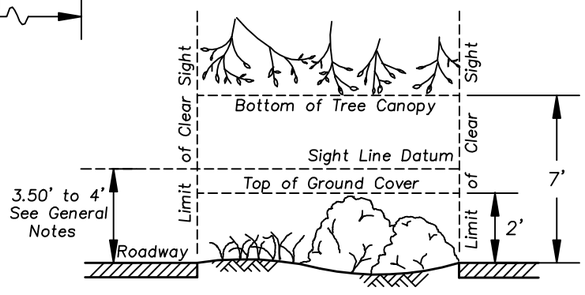
This standard is based on FDOT Index No. 546.



INSET

GENERAL NOTES:

- The limits of clear sight define a corridor through which a clear sight window must be preserved. See WINDOW DETAIL.
- Clear sight is provided by a sight line originating 3.5' above the pavement at drivers eye level and ending 4' above the pavement at the vehicle observed.
- The corridor defined by the limits of clear sight is a restricted planting area.
- See Hernando County Landscaping Guidelines for planting types and spacing.
- Plants shall never obscure traffic signs or signals.
- If landscaping interferes with the line of sight prescribed by these standards the County Engineer may rearrange, relocate, or eliminate plantings.
- See plans for roadway construction dimensions.
- See FDOT Index No. 17346 for pavement marking information.



The intent of this standard is to provide a window with vertical limits 3' above and 1' below the sight line datum, and the horizontal limits defined by the limits of clear sight.

WINDOW DETAIL

TITLE: ROADWAY STANDARD
INTERSECTION LANDSCAPING

APPROVED BY: DATE: NO.:
C. G. MIXSON, P. E. 10-01-08 IV-24

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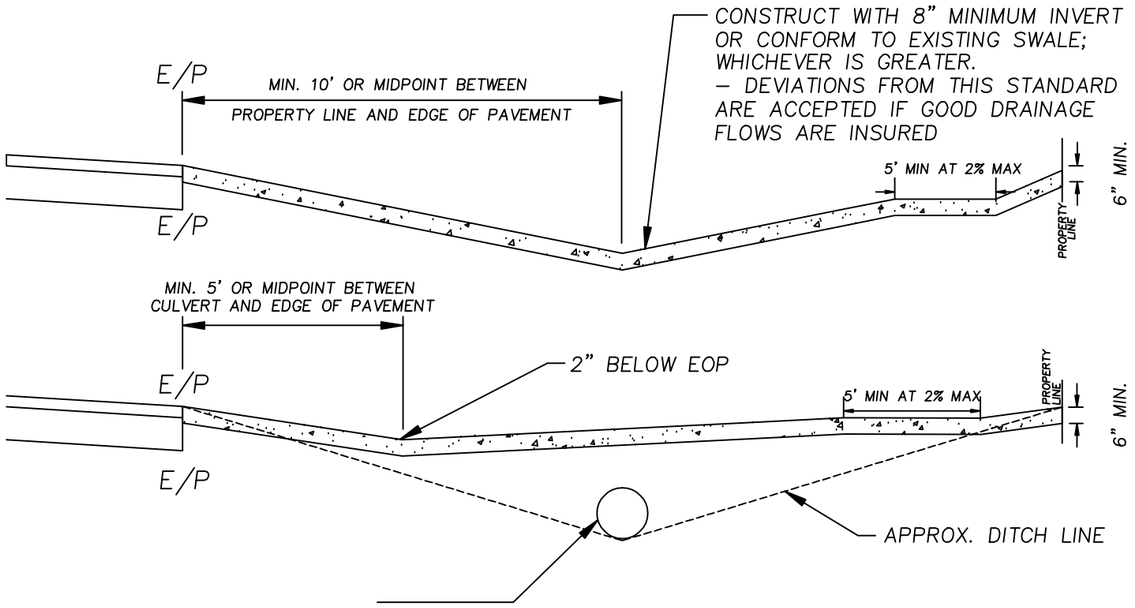
COMMERCIAL DRIVEWAY CONNECTION SECTIONS



CULVERT SIZE & TYPE TO BE DETERMINED BY PUBLIC WORKS PERMITTING; MINIMUM CULVERT SIZE 15" OR EQUIVALENT (SEE COMPARISON CHART BELOW).

CULVERT SIZE CHART	
ROUND	OVAL
15"	12" x 18"
18"	14" x 23"
24"	19" x 30"

DRIVEWAYS FOR LOTS OVER 150' DEEP WILL NOT EXCEED 5% SLOPE. DRIVEWAYS FOR LOTS UNDER 150' DEEP WILL NOT EXCEED 12%.DRIVEWAYS WITH SIDEWALKS WILL HAVE A MIN 5' SIDEWALK NOT TO EXCEED 2% CROSS SLOPE.

GENERAL NOTES:

1. ALL RIGHT–OF–WAY FRONTING THE EDGE OF PAVEMENT SHALL BE SODDED.

2. WHEN THE PERMITEE'S PROPERTY ABUTS A DRAINAGE RIGHT–OF–WAY OR A COUNTY LAKE, SUFFICIENT VEGETATION MUST BE UTILIZED TO CONTROL EROSION IF THE AFOREMENTIONED AREA IS DISTURBED BY REGRADING, SOD MUST BE UTILIZED TO CONTROL SUBSEQUENT EROSION.

3. ALL WORK TO BE COMPLETED PRIOR TO ISSUING A CERTIFICATE OF OCCUPANCY, UNLESS AN EXTENSION IS GRANTED BY THE BUILDING DEPARTMENT.

4. DRIVEWAYS CONSTRUCTED ON UNPAVED STREETS WILL TERMINATE 7' OFF THE GRADED WAY, AND AREA BETWEEN DRIVEWAY AND ROAD TO BE STABILIZED WITH A MINIMUM OF 6" LIMEROCK.

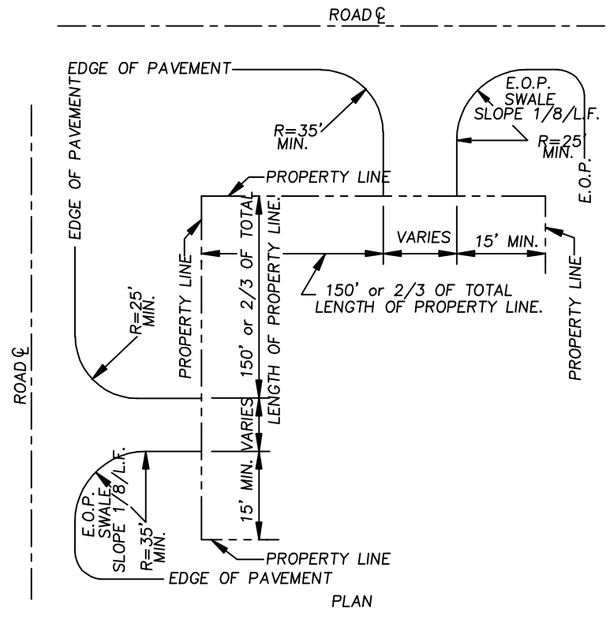
5. DRIVEWAY PROFILES TO BE SHOWN ON PLANS.

6. USE HERNANDO COUNTY STANDARD ASPHALT OR CONCRETE DETAILS FOR MATERIALS FOR DRIVEWAYS. MINIMUM THICKNESS IS 6", DETERMINED BY THE PROJECT ENGINEER.

7. ALL VEHICULAR ACCESS POINTS SHALL BE LOCATED AT LEAST 150', OR 2/3rd THE DISTANCE OF THE LOT FRONTAGE, WHICHEVER IS LESS, FROM THE INTERSECTION OF ANY RIGHT–OF–WAY LINES OF STREETS OR A STREET AND A RAILROAD AND AT LEAST 15' FROM ALL SIDE OR REAR PROPERTY LINES.

8. ON 24" AND LARGER PIPES, A 6' WIDE SHOULDER SHALL BE PROVIDED ON EACH SIDE OF THE DRIVEWAY PAVEMENT WITH 2:1 MITERED END SECTIONS. ON 18" AND SMALLER PIPES, A 2' FOOT WIDE SHOULDER SHALL BE PROVIDED WITH A 4:1 MITERED END SECTIONS.

9. ADDITIONAL DRIVEWAYS, LOCATIONS OR WIDTHS REQUIRE A VARIANCE BY THE COUNTY ENGINEER.



TITLE: ROADWAY STANDARD
COMMERCIAL CONNECTION

APPROVED BY: C. G. MIXSON, P. E.
DATE: 10–01–08
NO.: IV–25

HERNANDO COUNTY
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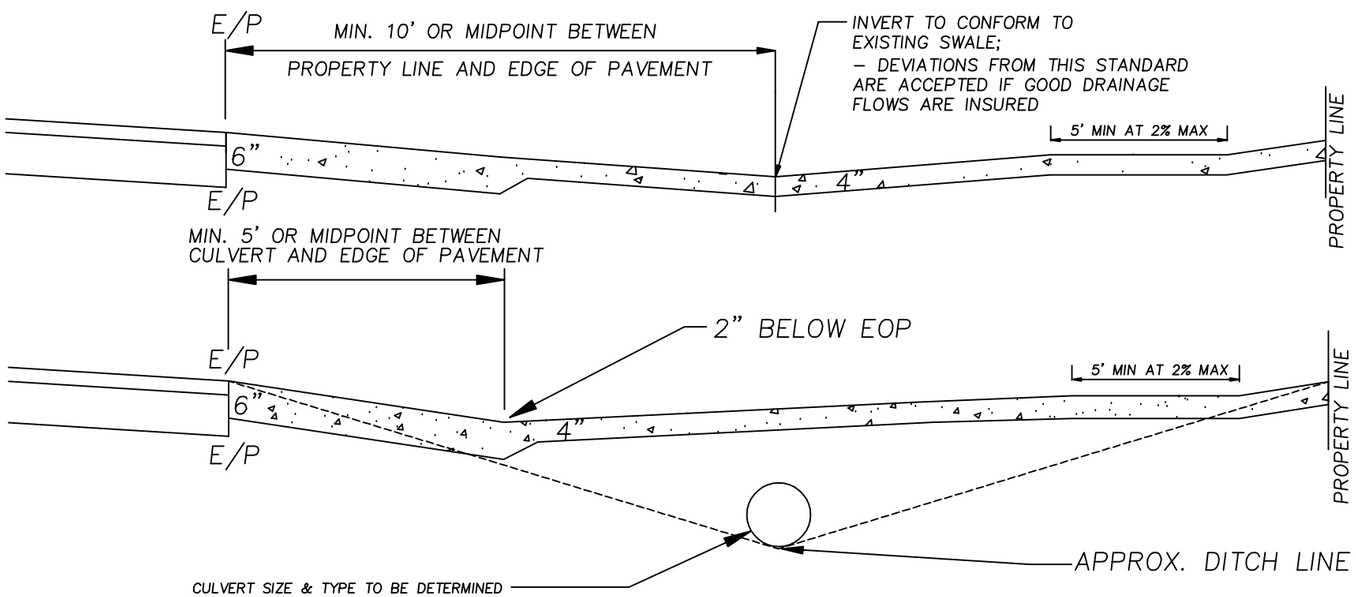
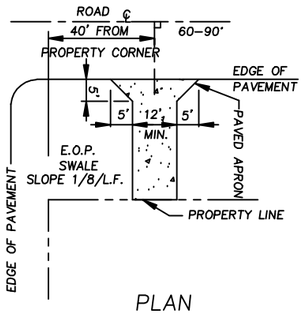
RESIDENTIAL CONNECTION

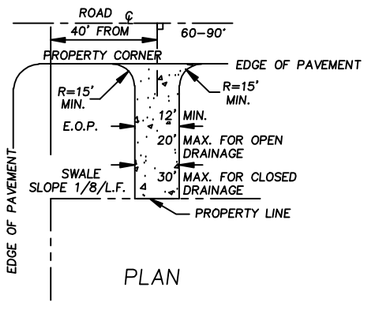


MAX SLOPE FOR DRIVEWAY 12%. (1.0' VERTICAL TO 8.3' HORIZONTAL DISTANCE).SIDEWALK PORTION NOT TO EXCEED 2% CROSS SLOPE (¼" PER FOOT). IF NO SIDEWALKS, DISREGARD SIDEWALK PORTION.

CULVERT SIZE CHART	
ROUND	OVAL
15"	12" x 18"
15"	14" x 23"
24"	19" x 30"

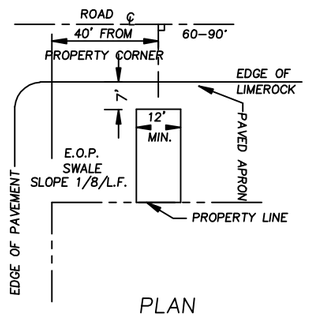


PLAN



PLAN

APRON DETAILS PAVED ROADS



PLAN

APRON DETAILS UNPAVED ROAD

GENERAL NOTES:

1. PAVERS NOT ALLOWED WITHIN COUNTY RIGHT OF WAY, UNLESS APPROVED BY COUNTY ENGINEER. PAVERS FOR SIDEWALKS MUST MEET ADA GUIDELINES.

2. A PAVED APRON/DRIVEWAY WITHIN THE RIGHT OF WAY IS REQUIRED FOR DRIVEWAY CONNECTIONS TO PAVED ROADS. APRON SHALL BE 5 FEET WIDE (FROM ROAD), AND A MINIMUM OF 5 FEET LONG TAPER ON EITHER SIDE OF DRIVEWAY. DRIVEWAY WIDTH SHALL BE 12 FOOT MINIMUM, 20 FOOT MAXIMUM FOR OPEN DRAINAGE AND 30 FOOT MAX. FOR CLOSED DRAINAGE. APRON/DRIVEWAY CAN BE CONSTRUCTED WITH A MINIMUM OF SIX INCHES LIMEROCK BASE AND ONE INCH OF ASPHALT OR, MINIMUM SIX INCHES OF 3000 P.S.I. CONCRETE.

3. ALL RIGHT OF WAY FRONTING THE EDGE OF PAVEMENT AND THE PROPERTY LINE WILL BE SODDED.

4. WHEN THE PERMITEE'S PROPERTY ABUTS A DRAINAGE RIGHT OF WAY OR COUNTY LAKE, SUFFICIENT VEGETATION MUST BE UTILIZED TO CONTROL EROSION IF THE AFOREMENTIONED AREA IS DISTURBED BY REGRADING, SOD MUST BE UTILIZED TO CONTROL SUBSEQUENT EROSION.

5. DRIVEWAYS CONSTRUCTED ON UNPAVED STREETS SHALL TERMINATE 7' OFF THE GRADED WAY, AND THE AREA BETWEEN THE CONSTRUCTED DRIVEWAY AND ROAD TO BE STABILIZED WITH 6" OF LIMEROCK, CONFORMING TO EXISTING SWALE, WITH A MINIMUM 6" DEEP SWALE.

6. DRIVEWAYS OTHER THAN CONCRETE, REQUIRE ONLY A PUBLIC WORKS PERMIT.

7. ALL WORK TO BE COMPLETED PRIOR TO ISSUING A CERTIFICATE OF OCCUPANCY, UNLESS AN EXTENSION IS GRANTED BY THE BUILDING DEPARTMENT.

8. AREA WITHIN RIGHT OF WAY BETWEEN PROPERTY LINE AND EDGE OF PAVEMENT SHALL BE SODDED.

9. MAXIMUM WIDTH OF DRIVEWAY FOR CLOSED DRAINAGE SHALL BE 30', 20' FOR OPEN DRAINAGE.

10. ON 24" AND LARGER PIPES, A 6' WIDE SHOULDER SHALL BE PROVIDED ON EACH SIDE OF THE DRIVEWAY PAVEMENT WITH 2:1 MITERED END SECTIONS. ON 18" AND SMALL PIPES. A 2' WIDE SHOULDER SHALL BE PROVIDED ON EACH SIDE OF THE DRIVEWAY PAVEMENT WITH 4:1 MITERED END SECTIONS.

11. SIDEWALKS SHOULD BE FORMED FIRST TO ENSURE ADA COMPLIANCE SHALL BE MET.

MATERIALS TO USE:

1. 4" CONC. w/6"x6" 10/10 WWM OR FIBERMESH
2. 6" CONC. w/6"x6" 10/10 WWM OR FIBERMESH FOR APRON
3. 6" LIMEROCK, COMPACTED TO 98% AASHTO T–180 METHOD, 1" ACSC
4. 6" SOIL CEMENT, 1"ACSC

TITLE: ROADWAY STANDARD
RESIDENTIAL CONNECTION

DATE: 10–01–08

NO.: IV–26

APPROVED BY:
C. G. MIXSON, P. E.

HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
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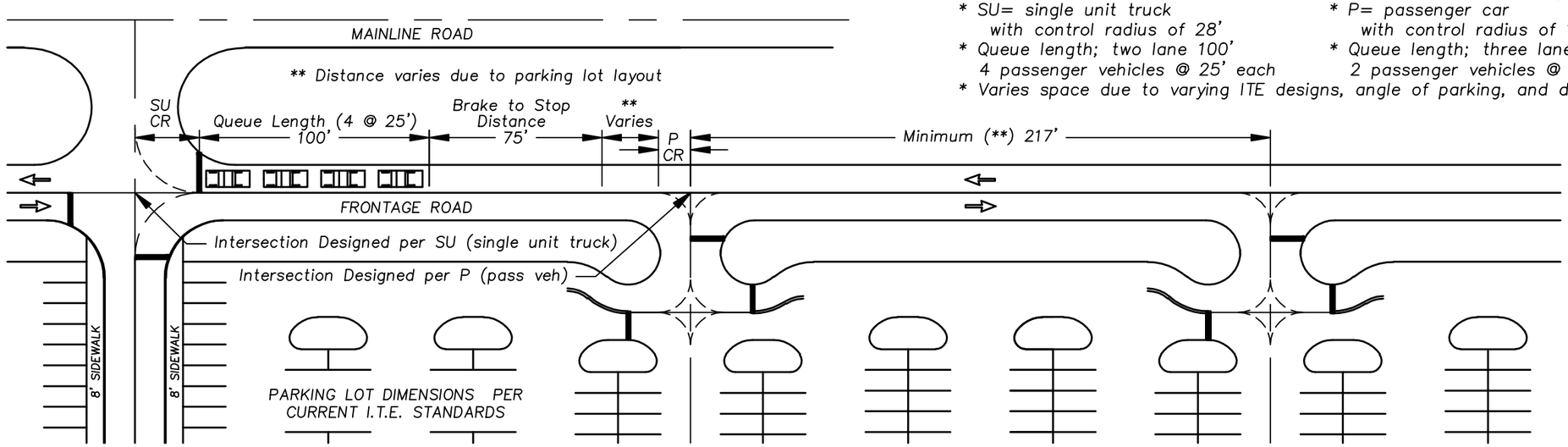
PARKING LOT TO FRONTAGE ROAD ACCESS (2 LANE FRONTAGE ROAD)



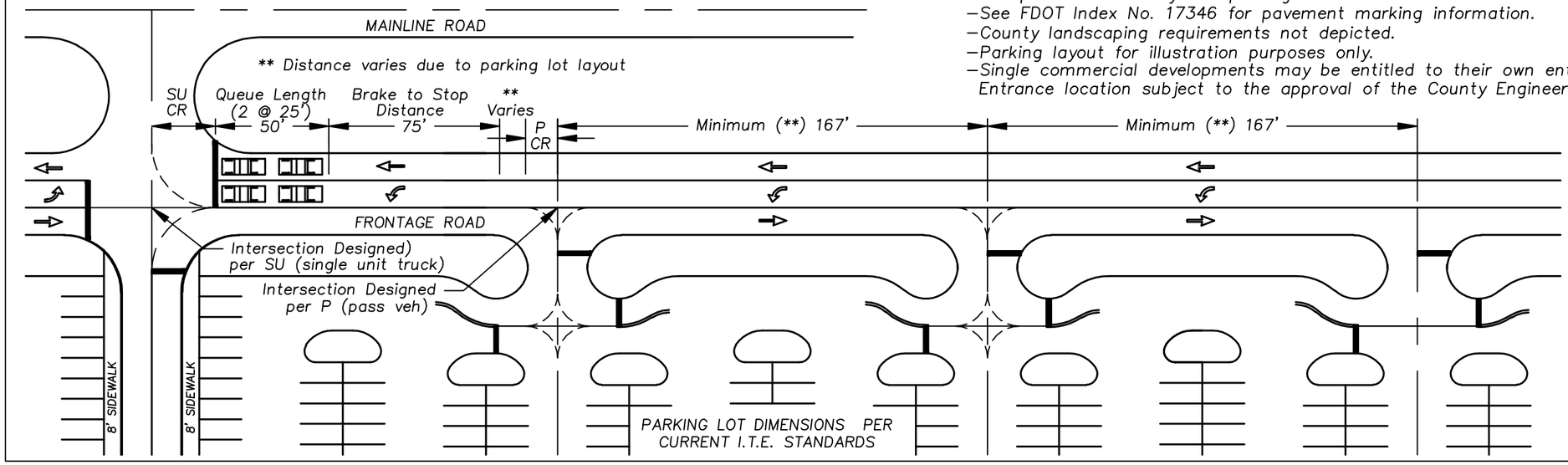
DESIGN NOTES: Basis for driveway spacing:

* ℄ to ℄ of driveways
* SU= single unit truck with control radius of 28'
* Queue length; two lane 100' 4 passenger vehicles @ 25' each
* Varies space due to varying ITE designs, angle of parking, and drive aisle width
* Minimum distances subject to project review
* P= passenger car with control radius of 14'
* Queue length; three lane 50' 2 passenger vehicles @ 25' each (paired)

GENERAL NOTES:

- The dimensions listed are minimums, and greater dimensions may be required by the County Engineer.
- Due to unique circumstances, the spacing may be reduced by the County Engineer, if it is determined said variance improves traffic operations and safety.
- See plans for roadway and parking lot construction dimensions.
- See FDOT Index No. 17346 for pavement marking information.
- County landscaping requirements not depicted.
- Parking layout for illustration purposes only.
- Single commercial developments may be entitled to their own entrance. Entrance location subject to the approval of the County Engineer.

PARKING LOT TO FRONTAGE ROAD ACCESS (3 LANE FRONTAGE ROAD)



TITLE: ROADWAY STANDARD
FRONTAGE ROAD DRIVEWAY SPACING

APPROVED BY: C. G. MIXSON, P. E.
DATE: 10-01-08
NO.: IV-27

HERNANDO COUNTY
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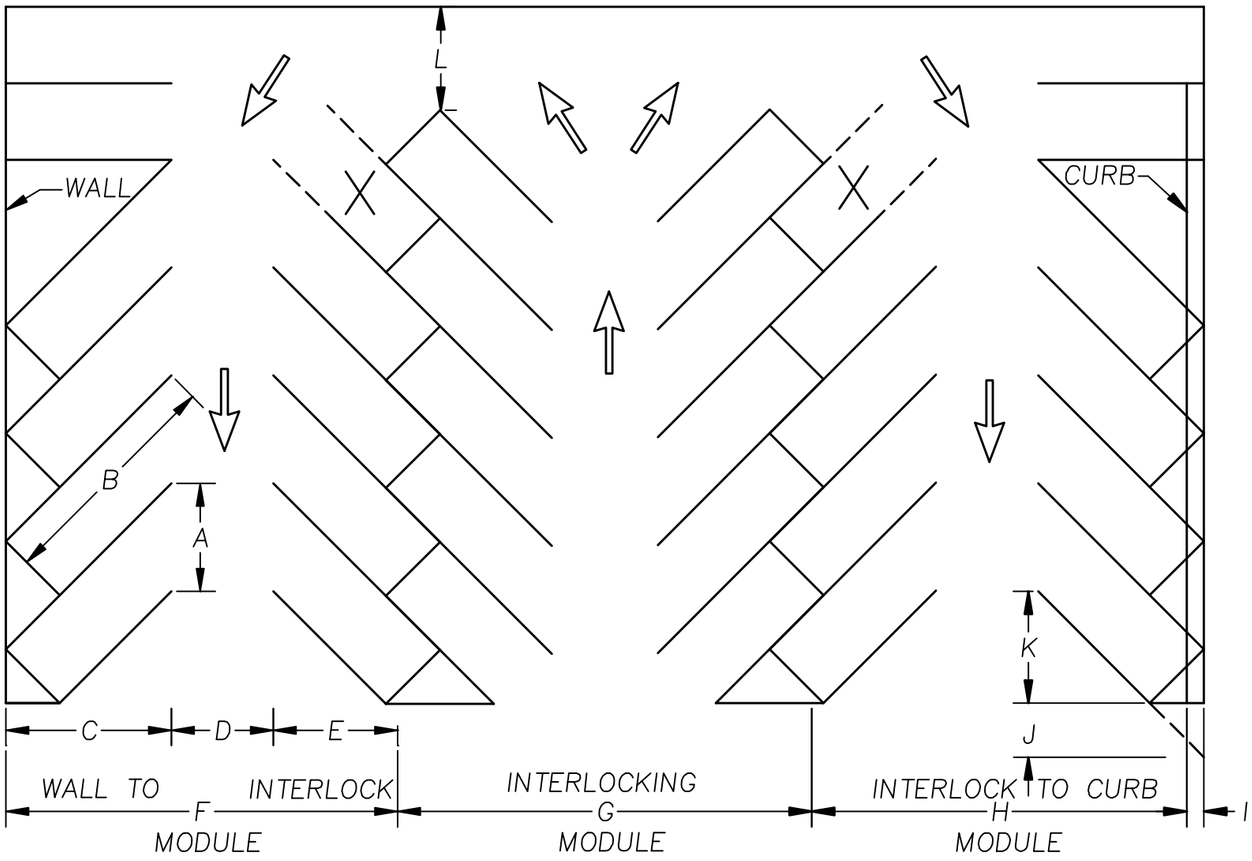

X = STALL NOT ACCESSIBLE IN CERTAIN LAYOUTS

PARKING LAYOUT DIMENSION (IN FT) FOR 9 FT X 18.5 FT STALLS AT VARIOUS ANGLES

DIMENSION	ON DIAGRAM	ANGLE 45°	60°	75°	90°
STALL WIDTH, PARALLEL TO AISLE	A	12.7	10.4	9.3	9.0
STALL LENGTH OF LINE	B	27.5	23.7	20.9	18.5
STALL DEPTH TO WALL	C	19.5	20.5	20.0	18.5
AISLE WIDTH BETWEEN STALL LINES	D	12.0	16.0	23.0	26.0
STALL DEPTH, INTERLOCK	E	16.5	18.5	19.0	18.5
MODULE, WALL TO INTERLOCK	F	48.0	55.0	62.0	63.0
MODULE, INTERLOCKING	G	45.0	53.0	61.0	63.0
MODULE, INTERLOCK TO CURB FACE	H	46.0	52.5	59.5	60.5
BUMPER OVERHANG (TYPICAL)	I	2.0	2.3	2.5	2.5
OFFSET	J	6.4	2.6	0.6	0.0
SETBACK	K	13.1	9.3	4.8	0.0
CROSS AISLE, ONE-WAY	L	14.0	14.0	14.0	14.0
CROSS AISLE, TWO-WAY	–	24.0	24.0	24.0	24.0

NOTE: FOR MORE DETAILED INFORMATION, REFER TO INSTITUE OF TRANSPORTATION ENGINEERS' TRANSPORTATION AND ENGINEERING HANDBOOK.

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ENGINEERING DIVISION
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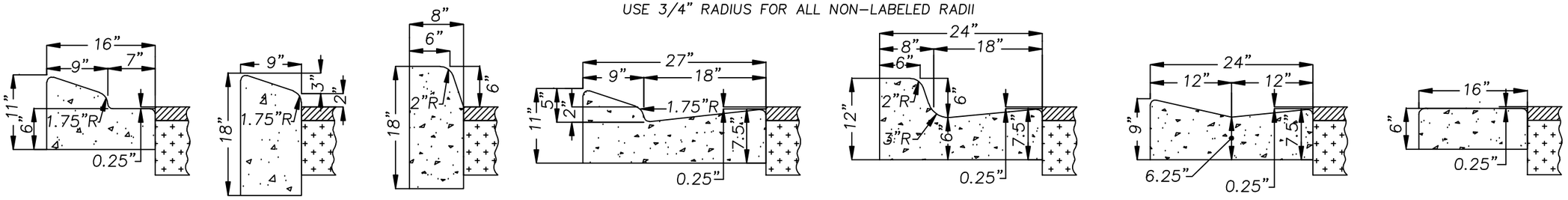
TITLE: ROADWAY STANDARD
PARKING LOT / STALL LAYOUT

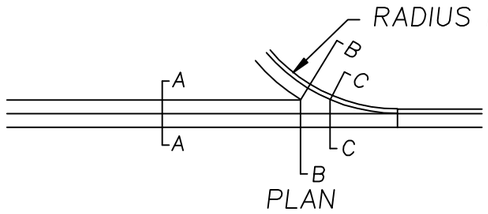
APPROVED BY: C. G. MIXSON, P.E.
DATE: 10-01-08
NO.: IV-28

USE 3/4" RADIUS FOR ALL NON-LABELED RADII

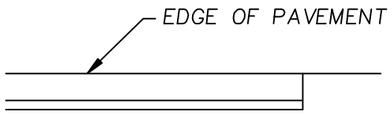


TYPE A | TYPE B | TYPE D | TYPE E | TYPE F | MIAMI | FLUSH

CURB TYPES

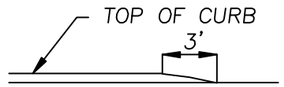


PLAN

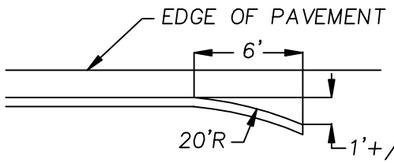


PLAN

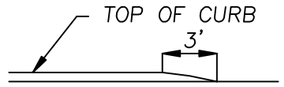
STRAIGHT END



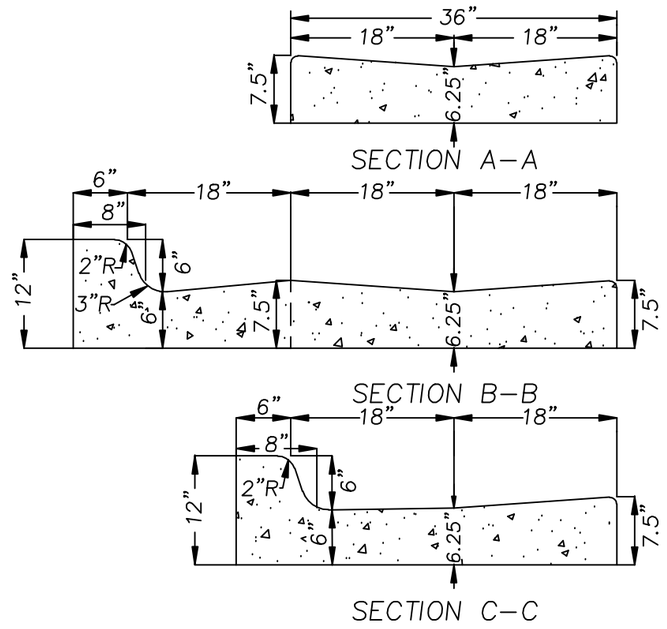
PROFILE



FLARED END



CURB & GUTTER ENDINGS



VALLEY GUTTER

NOTES:

- See F.D.O.T. Index No. 300 for additional details.
- The pavement surface on low pavement edge is to be 1/4" above the lip of the gutter. The pavement surface on the high pavement edge is to be flush with the gutter.
- 1/8"-1/4" construction joints at 10' centers maximum are to be provided.
- A 1/2" expansion joint is required between concrete pavement and curbs and/or gutters.
- Minimum 3,000 psi. fibermesh concrete to be used for curbs and/or gutters.

TITLE: ROADWAY STANDARD
CURBS AND GUTTERS

APPROVED BY: C. G. MIXSON, P.E.
DATE: 10-01-08
NO.: IV-29

HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
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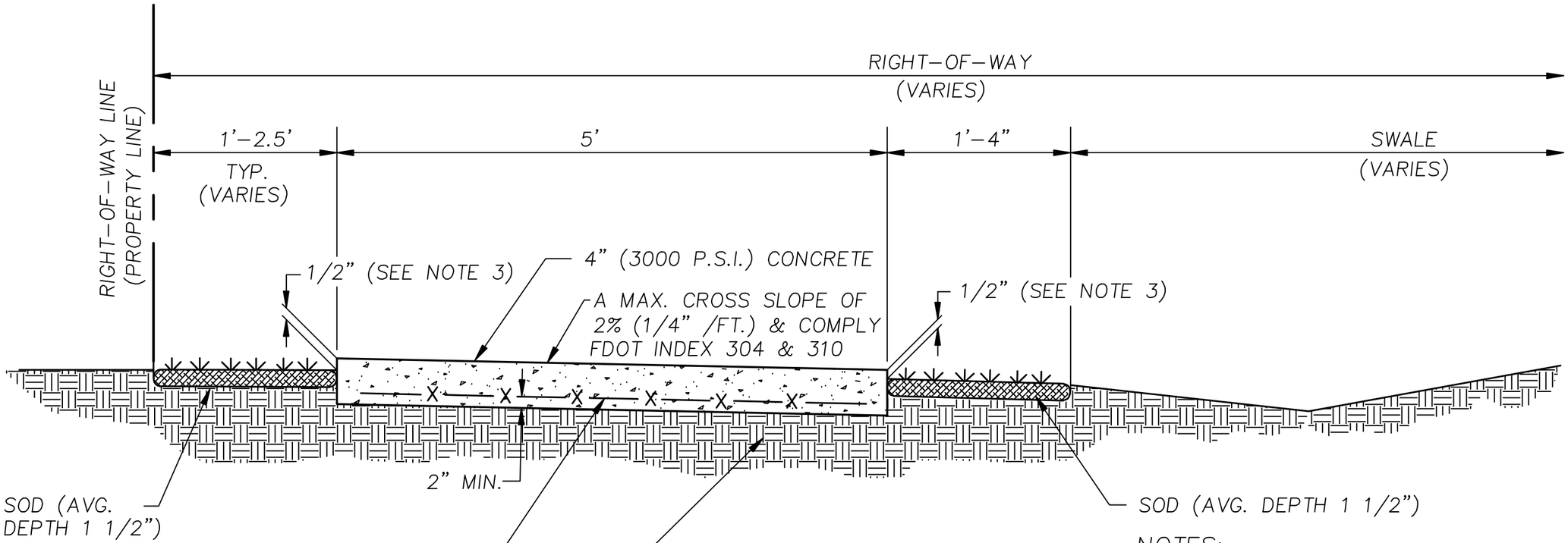
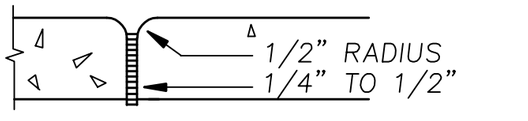


NOTES:

1. EXPANSION JOINT NEEDED EVERY 50'. TROWELLED CONTROL JOINT NEEDED EVERY 5'.
2. IN LIEU OF WIRE WOVEN FABRIC CONTRACTOR MAY USE CONCRETE REINFORCED WITH FIBERMESH AS AN ACCEPTABLE ALTERNATE.
3. SPECIAL ATTENTION SHALL BE GIVEN TO THE GRADED SOD PLACEMENT TRENCH. THE GRADING BY THE CONTRACTOR SHALL PROVIDE A 1/2" DROP FROM THE SIDEWALK TO THE TOP OF THE SOD.
4. SIDEWALKS ABUTTING DRAINAGE STRUCTURES SHALL BE LEVEL WITH THE TOP OF THE STRUCTURE.

CONSTRUCTION CONTROL JOINT DETAIL

NOT TO SCALE



EXPANSION JOINT DETAIL

NOT TO SCALE

TITLE: ROADWAY STANDARD
SIDEWALK

APPROVED BY: C. G. MIXSON, P. E.

DATE: 10-01-08

NO.: IV-30

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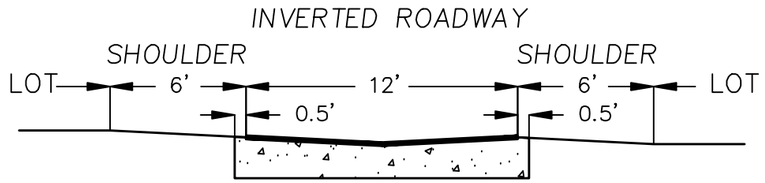
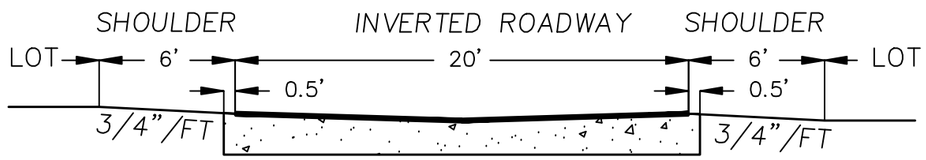


6" LIMEROCK BASE, COMPACTED TO 98% AASHTO T-180 METHOD/ 1' A.C.S.C.
ROADWAY INVERTED AT 1/4" PER FOOT
SHOULDERS SLOPED TO EXISTING GRADE

TYPICAL ONE-LANE ROADWAY

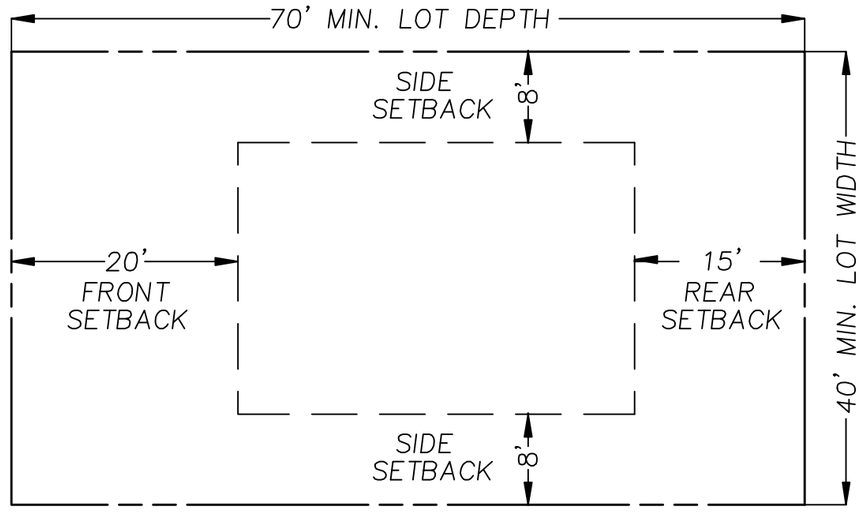


6" LIMEROCK BASE, COMPACTED TO 98% AASHTO T-180 METHOD/ 1' A.C.S.C.
ROADWAY INVERTED AT 1/4" PER FOOT
SHOULDERS SLOPED TO EXISTING GRADE

TYPICAL TWO-LANE ROADWAY

GENERAL NOTES:

- Refer to "CODE OF ORDINANCES-HERNANDO COUNTY, FLORIDA" for additional information.
- These are minimum standards with Hernando County reserving the right of plans approval on a per site basis.
- Overall drainage to comply with the requirements set forth by the SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT.
- Minimum radius of 25' for road intersections.



MINIMUM LOT DIMENSIONS

TITLE: ROADWAY STANDARD
R V PARKS

DATE: 10-01-08

NO.: IV-31

APPROVED BY:
C. G. MIXSON, P. E.

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ENGINEERING DIVISION
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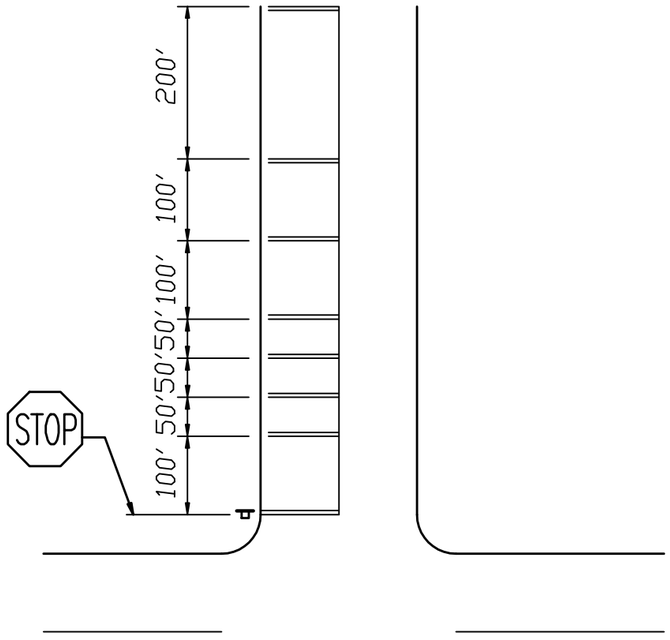
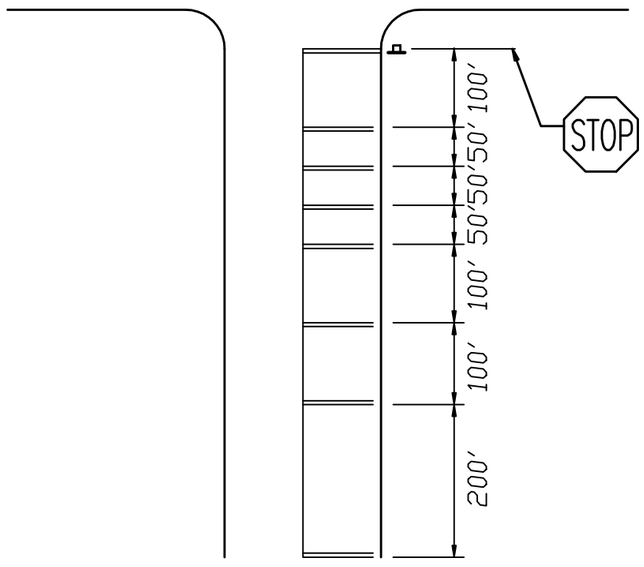
PH. (352)754-4062 FAX. (352)754-4423





TWO - WAY STOP

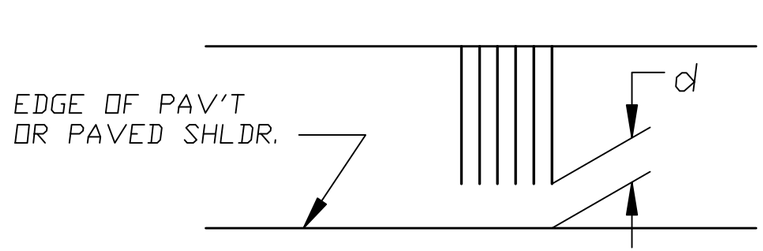
GENERAL NOTES:

1. RUMBLE STRIPS SHALL BE CONSTRUCTED AT ALL STRUCTURES WITH LESS THAN FULL WIDTH SHOULDERS. RUMBLE STRIPS AT INTERSECTIONS SHALL BE CONSTRUCTED ONLY WHEN SPECIFIED IN THE PLANS.

2. WHEN ANY PORTION OF A CURVE FALLS WITHIN THE LIMITS OF RUMBLE STRIPS SHOWN IN THESE DETAILS, AN ADDITIONAL RUMBLE STRIP SET SPACED AT 200' CENTERS SHALL BE CONSTRUCTED BEYOND THOSE DETAILED, THROUGHOUT THE APPROACHING CURVE.

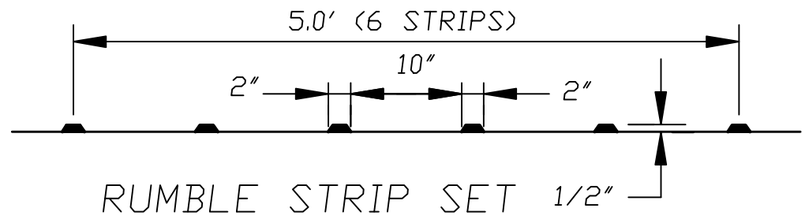
3. PLACEMENT OF RUMBLE STRIPS SHALL BE APPROVED BY COUNTY ENGINEER.

4. RUMBLE STRIPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH INDEX No. 518 OF THE F.D.O.T. ROADWAY AND TRAFFIC DESIGN STANDARDS.



d = 1.5' FOR OTHER HIGHWAYS WITH SHOULDER PAVEMENT 4' OR WIDER.
d = 1.5' FOR AT GRADE INTERSECTIONS.

INSERT



RUMBLE STRIP SET

TITLE: ROADWAY STANDARD
RUMBLE STRIPS

APPROVED BY: DATE: NO.:
C. G. MIXSON, P. E. 10-01-08 IV-32

HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
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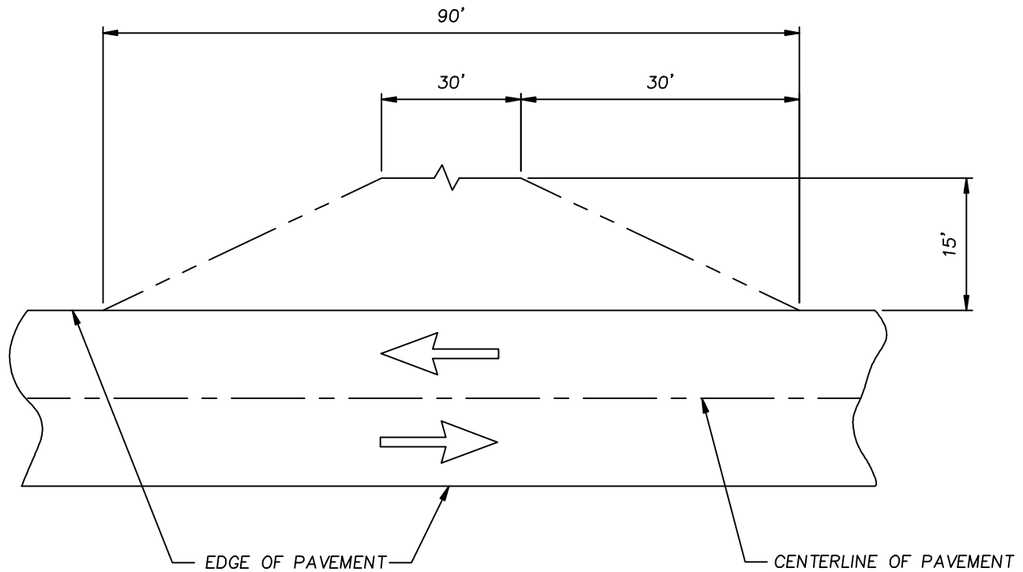
SEE FDOT INDEX #532 FOR FURTHER DETAILS AND DIMENSIONS.

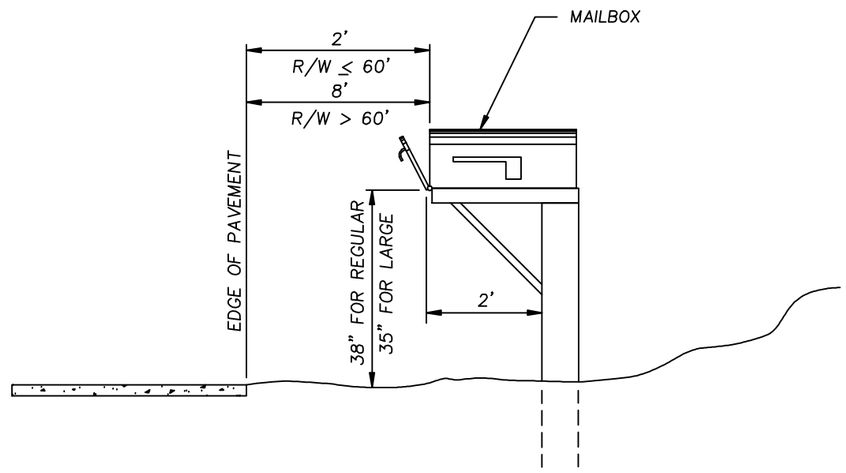


PAVING STANDARD

1.5" ACSC
6" LIMEROCK, COMPACTED TO 98% AASHTO T-180 METHOD

NOTES:
1. TO BE PLACED AT LEAST 200 FEET FROM NEAREST INTERSECTION.
2. CAN NOT BE INCLUDED AS A PART OF A DRIVEWAY.
3. CAN NOT BE PLACED IN A RESIDENTIAL

CONGLOMERATE MAIL BOXES



NOTES:
1. WOOD SUPPORTS SHOULD NOT EXCEED 5" IN DIAMETER, IF ROUND, OR SHOULD NOT HAVE NOMINAL DIMENSIONS GREATER THAN 4" X 4".
2. METAL SUPPORTS IN SMALL DIAMETER PIPES OR LIGHT WEIGHT FENCE POSTS MAY BE USED BUT MAY NOT HAVE A NOMINAL INSIDE DIAMETER GREATER THAN 1-1/2".
3. HEAVY METAL POSTS, CONCRETE, AND OTHER MISCELLANEOUS EQUIPMENT SHALL NOT BE USED.

MAIL BOX INSTALLATION

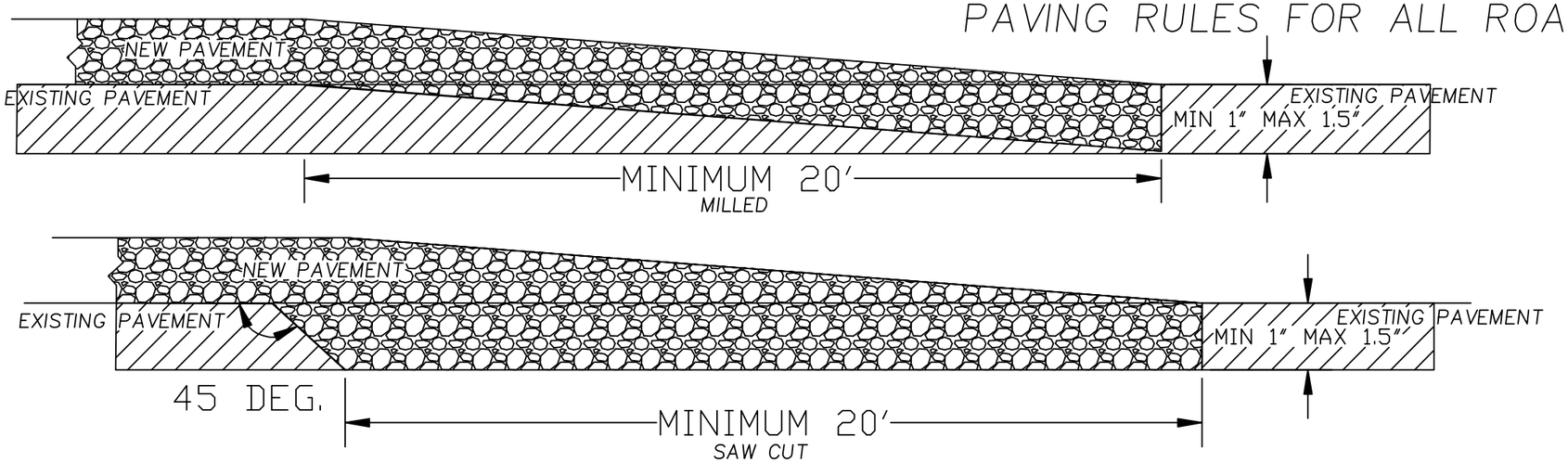
NOTE: CONSTRUCTION AND INSTALLATION SHALL CONFORM TO (OR WITH) THE REQUIREMENTS OF THE U.S. POSTAL SERVICE, THE FLORIDA DEPARTMENT OF TRANSPORTATION AND HERNANDO COUNTY.

TITLE: ROADWAY STANDARD
MAIL BOXES

APPROVED BY: C. G. MIXSON, P. E.
DATE: 10-01-08
NO.: IV-33

HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
BROOKSVILLE, FLORIDA 34601
PH. (352)754-4062 FAX. (352)754-4423

PAVING RULES FOR ALL ROADWAY PAVEMENTS



OVERLAY JOINTS

LAYER THICKNESS FOR APSHALTIC CONCRETE STRUCTURAL COURSES

LAYER THICKNESS (INCHES)

COURSE THICKNESS (INCHES)	TYPE S-1			TYPE S-1 W/TYPE S-3 TOP LAYER			TYPE S-3		
	1ST	2ND	3RD	1ST	2ND	3RD	1ST	2ND	3RD
1							1		
1 1/2	1 1/2								
2				1 1/4	3/4				
2 1/2	1 1/4	1 1/4		1 1/2	1				
3	1 1/2	1 1/2		2	1				
3 1/2	2	1 1/2		1 1/4	1 1/4	1			

1. Paving machines used on roadways within the county shall have a minimum 8-foot screed with extendamats, not cut off shoes.

2. Roadways within the county shall be tested with a rolling straight edge per FDOT FM 5-509, or the Measuring of Longitudinal Profile using a Laser Profiler IAW FDOT FM 5-0549 either by the paving contractor verified by the county or by a testing lab hired by the contractor/developer verified by the county.

3. New roadways (subdivisions, etc.) within the county that need patches shall be patched from curb to curb or full width.

4. If combinations other than those shown in the table (see paving rules sheet 2)are used, the thickness must be consistent with the following: S1, 1 1/4" min., 2" max., S-III 3/4", 1 1/4" max. Multiple layers shall be used when possible. Layer combinations shall be approved by the County Engineer.

5. In addition to the Min-Max thickness requirements, the following restrictions are placed on the respective material when used as a structural course: S-I may not be used in the 1st layer of courses over 4.5" thick. S-III Limited to the final (top) structural layer, one layer only.

6. When construction includes the paving of adjacent shoulders ≤5' wide, the layer thickness for the upper pavement layer and shoulder shall be the same and paved in a single pass.

7. When overlaying existing asphalt pavement all surface joints shall be mechanically saw cut or cold milled. A minimum depth of 1", maximum 1.5", full lane width and a minimum length of 20' for the transition is required. RC-70 or equivalent liquid asphalt shall be added to all surface joints to form a seal. SEE SHEET 1V-39.

TITLE: ROADWAY STANDARD
PAVING RULES

APPROVED BY:
C. G. MIXSON, P.E.

DATE: 10-01-08

NO.: IV-34

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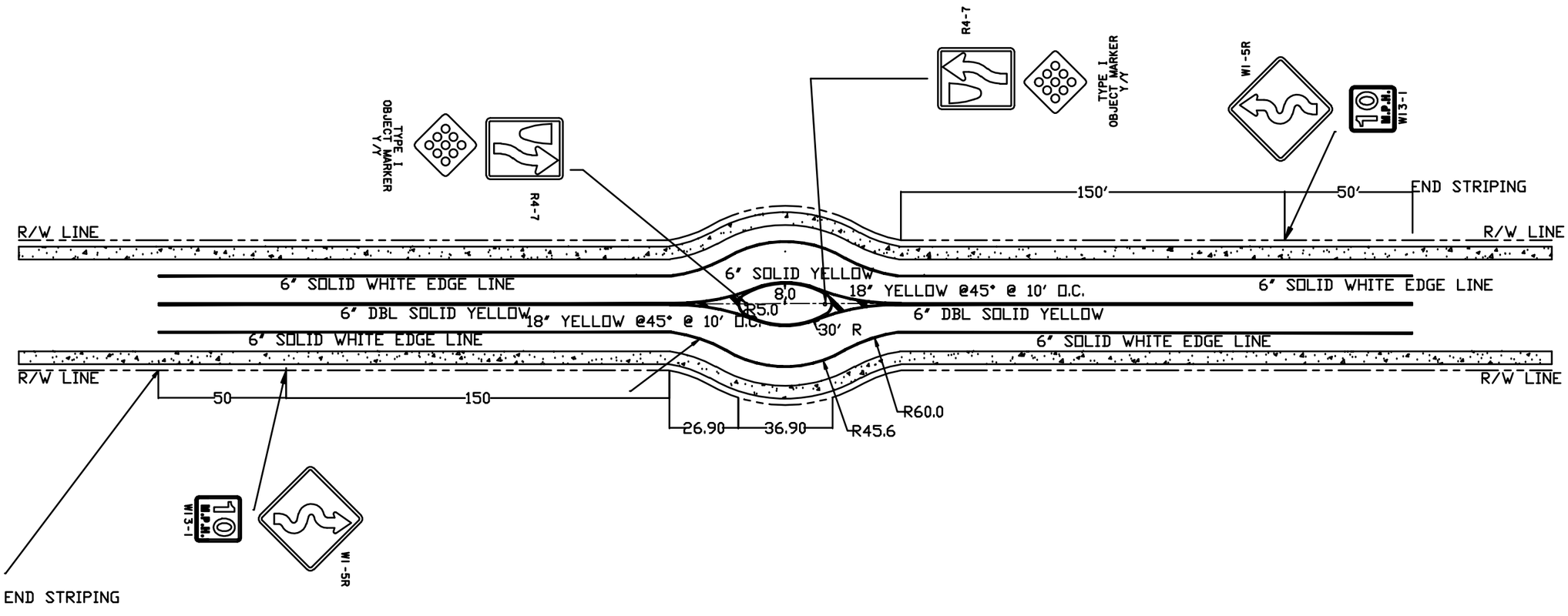
PH. (352)754-4062 FAX. (352)754-4423

NOTES:

1. ALL DIMENSIONS ARE TYPICAL.
2. SIDEWALKS ARE 5' WIDE, IF APPLICABLE.



TITLE: ROADWAY STANDARDS
TRAFFIC CALMING DEVICE

APPROVED BY: C. G. MIXSON, P.E.
DATE: 10-01-08
NO.: IV-35

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DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
BROOKSVILLE, FLORIDA 34601
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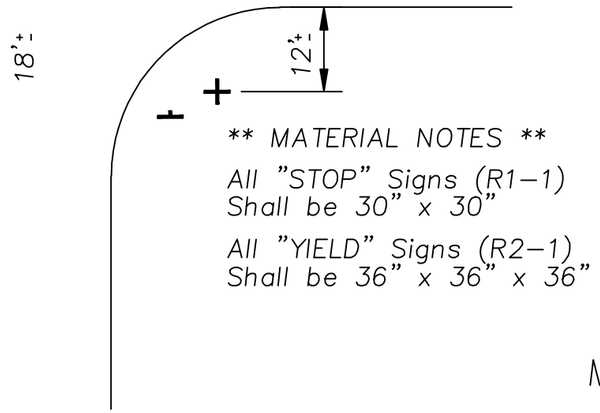
SECTION V

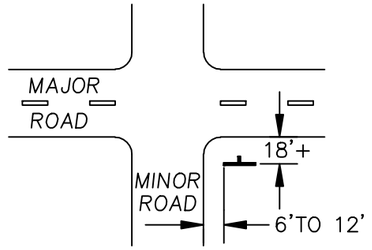
TRAFFIC CONTROL STANDARDS



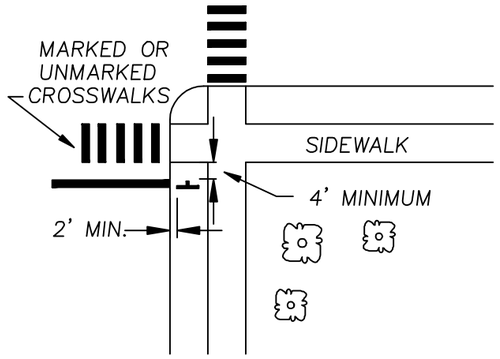
** MATERIAL NOTES **

All "STOP" Signs (R1-1) Shall be 30" x 30"

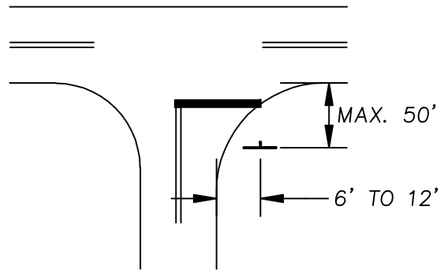
All "YIELD" Signs (R2-1) Shall be 36" x 36" x 36"



MINOR CROSSROAD

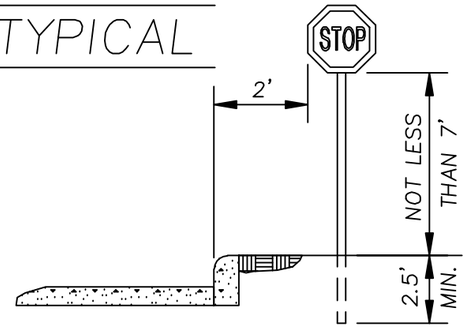


URBAN INTERSECTION

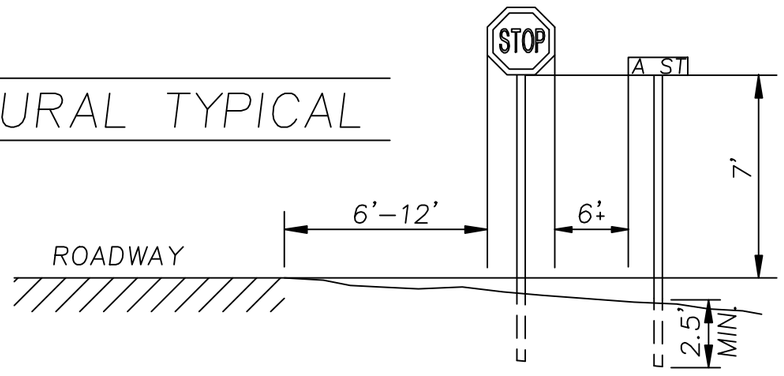


WIDE THROAT INTERSECTION

URBAN TYPICAL



RURAL TYPICAL



LOCATION OF STOP AND YIELD SIGNS

A STOP sign should be erected at the point where the vehicle is to stop, or as near thereto as possible, and may be supplemented with a Stop line and/or the word "STOP" on the pavement.

A YIELD sign should be erected in the same manner.

Where only one sign, STOP or YIELD, is used, it shall be on the right-hand side of the traffic lane to which it applies. At the intersection where a wide throat exists on the signed approach, observance of the sign may be improved by the erection of an additional sign on the left side of the approach road, and by the use of a STOP line. Where two lanes of traffic are subject to the STOP sign, a second sign should be placed where it is visible to traffic in the inner lane. At certain channelized intersections, the additional signs may be effectively placed on a channelized island. In no instance shall a STOP or YIELD sign be mounted above on another on the same post.

Where two roads intersect at an acute angle, the STOP or YIELD sign should be positioned at an angle or shielded so that the message is visible from the appropriate approach.

All signs shall be Type III-A, high performance sheeting, which consists of encapsulated spherical lens elements.

TITLE: TRAFFIC CONTROL STANDARD
STOP / YIELD SIGNAGE

APPROVED BY: C. G. MIXSON, P.E.

DATE: 10-01-08

NO.: V-01

HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
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PH. (352)754-4062 FAX. (352)754-4423

STREET NAME SIGNAGE

Street NAMES shall be confirmed by the Hernando County Addressing Department.

Street name signs should be installed at every intersection with a minimum of one sign for each street name. Along multi-lane roadways, street name signs should be placed at least on diagonally opposite corners so they will be on the far right side of the intersection for traffic on the major street.

Street name signs shall be installed on their own separate post, at a height of 7' from the bottom of the sign panel to pavement grade.

Street name signs should have a white legend on a green background, and the border, if used, should be the same as the legend.

Street name signs shall be Type-IIIA high performance sheeting which consists of encapsulated spherical lens elements.

Street name blades should be .080" x 9" x length necessary.

Lettering shall be minimum 6" upper-case with 4.5" lower-case letters, all Series "B".

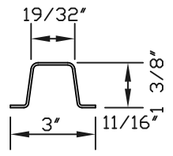
STANDARD ACCEPTED ABBREVIATIONS ARE:

Drive–DR	Court–CT	Parkway–PKWY	Loop–LOOP	Place–PL
Road–RD	Junction–JCT	Avenue–AVE	Street–ST	Way–WAY
Circle–CIR	Terrace–TER	Boulevard–BLVD	Lane–LN	Trail–TRL

STANDARD HERNANDO COUNTY DPW MATERIALS

FLAT ALUMINUM BLADE

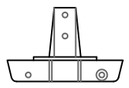
Flat blades of 5052-h38 alu-minum alloy have a .080 thickness, with 3/4" radius corners and aladine finish.



FLANGED CHANNEL SIGN POSTS (Steel)

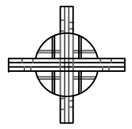
Length	Weight Per ft.	Finish
06'	1.5 lb.	Galvanized
10'	2.0 lb.	Galvanized
12'	2.0 lb.	Galvanized
14'	2.5 lb.	Galvanized
16'	3.0 lb.	Galvanized

SUPR-LOK PRUF BRACKETS



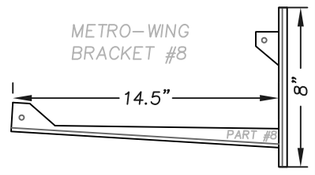
For flat aluminum
Length of slot: 5 3/8"
Width of slot: 3/16"

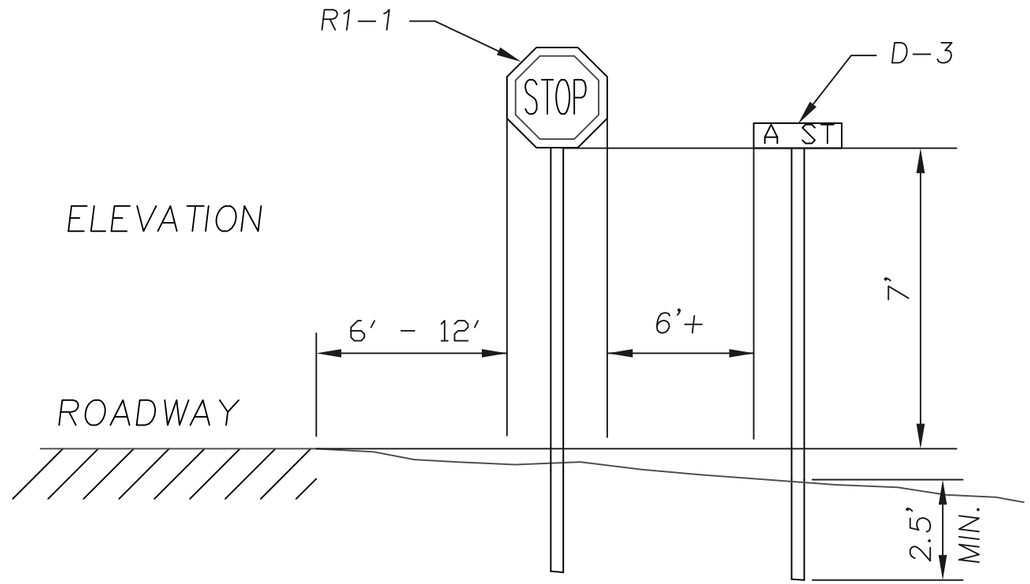
SUPR-LOK PRUF 91-U-F
For all U posts

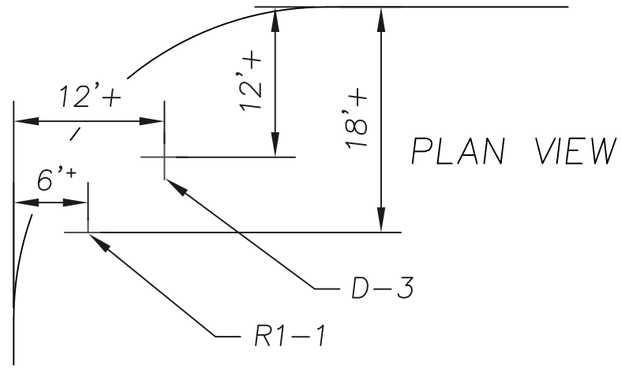


SUPR-LOK PRUF 990 F

METRO-WING BRACKET #8







1" Series "B" all upper case, spaced to fit.

Lettering shall be minimum 6" upper-case with 4.5" lower-case letters, all Series "B".

This sign shall be used on a private road where it meets a public road.

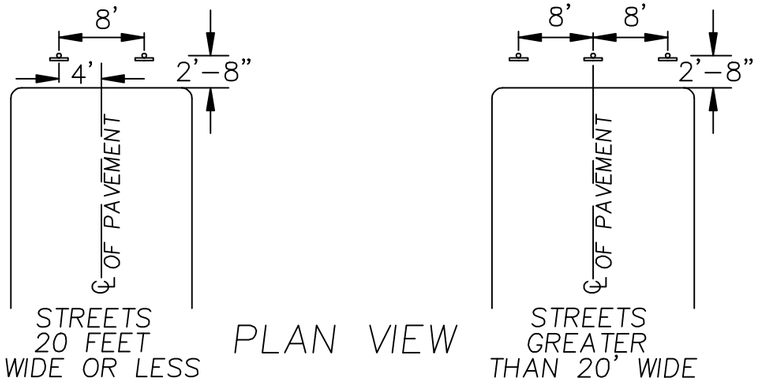
Lettering shall be minimum 6" upper-case with 4.5" lower-case letters, all Series "B".

TITLE: TRAFFIC CONTROL STANDARD
STREET NAME SIGNAGE

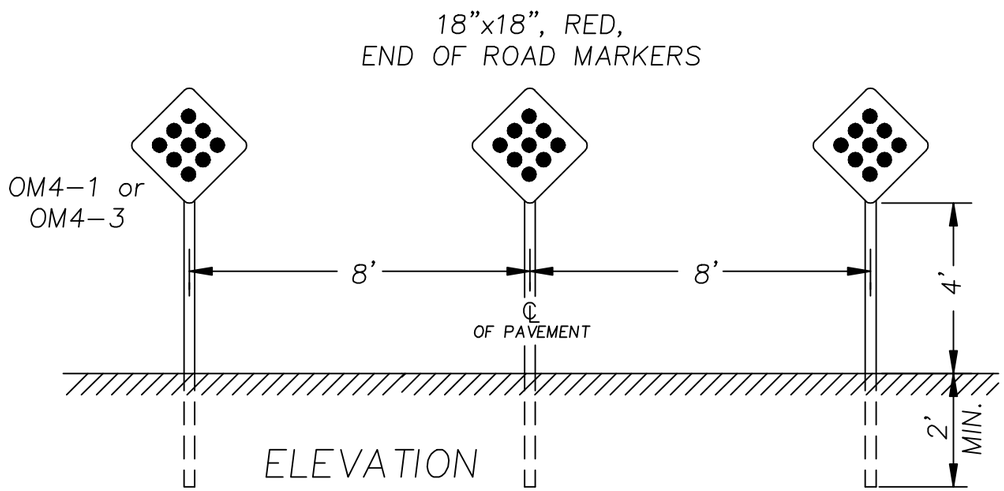
DATE: 10-01-08
NO.: V-02

APPROVED BY:
C. G. MIXSON, P.E.

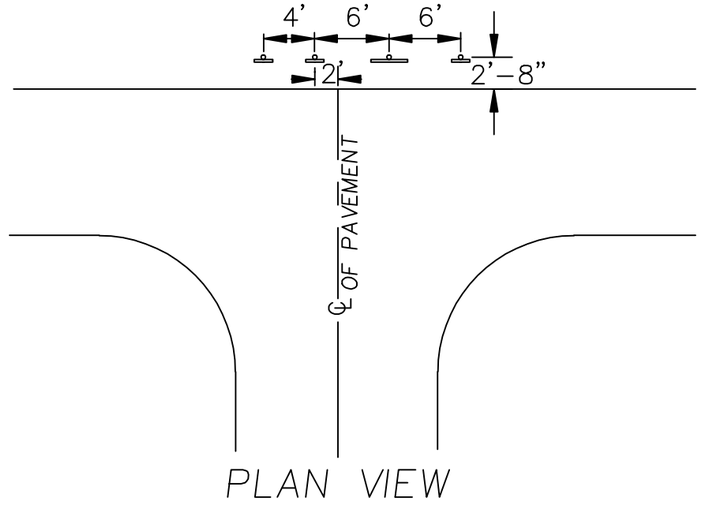
HERNANDO COUNTY FLORIDA
Department of Public Works
ENGINEERING DIVISION
1525 East Jefferson Street
Brooksville, FL 34601-2807
Ph. (352) 754-4062 Fax. (352) 754-4423



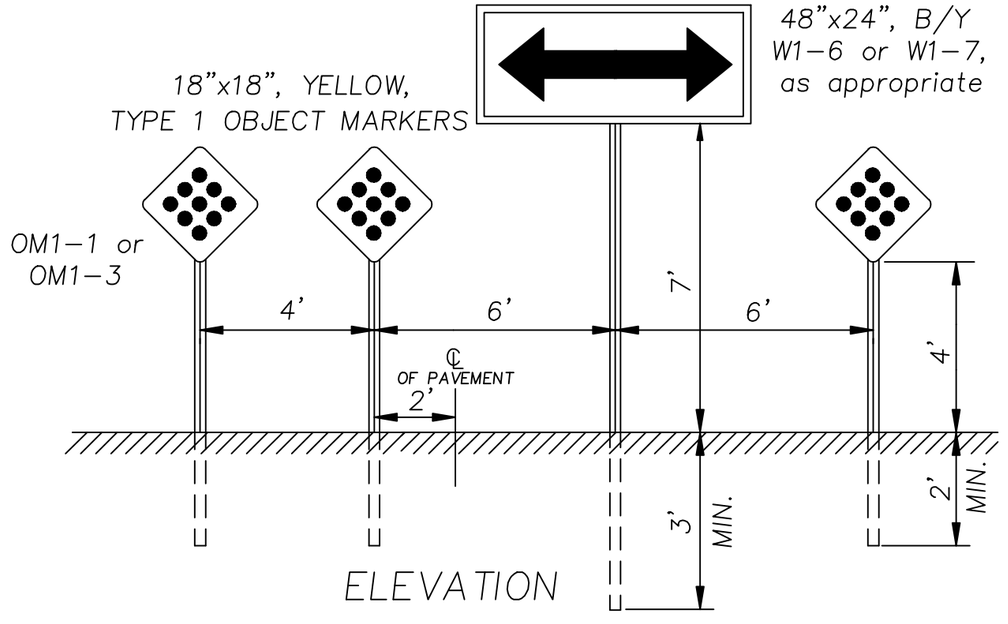
PLAN VIEW



ELEVATION



PLAN VIEW



ELEVATION

All signs shall be Type III–A, high performance sheeting, which consists of encapsulated spherical lens elements.

OTHER REGULATORY AND/OR WARNING SIGNS MAY BE REQUIRED WITH THE INSTALLATION OF ROADWAY TERMINATION MARKERS.

TITLE: TRAFFIC CONTROL STANDARD
ROADWAY TERMINATION MARKERS

APPROVED BY: C. G. MIXSON, P.E.

DATE: 10–01–08

NO.: V–03

HERNANDO COUNTY
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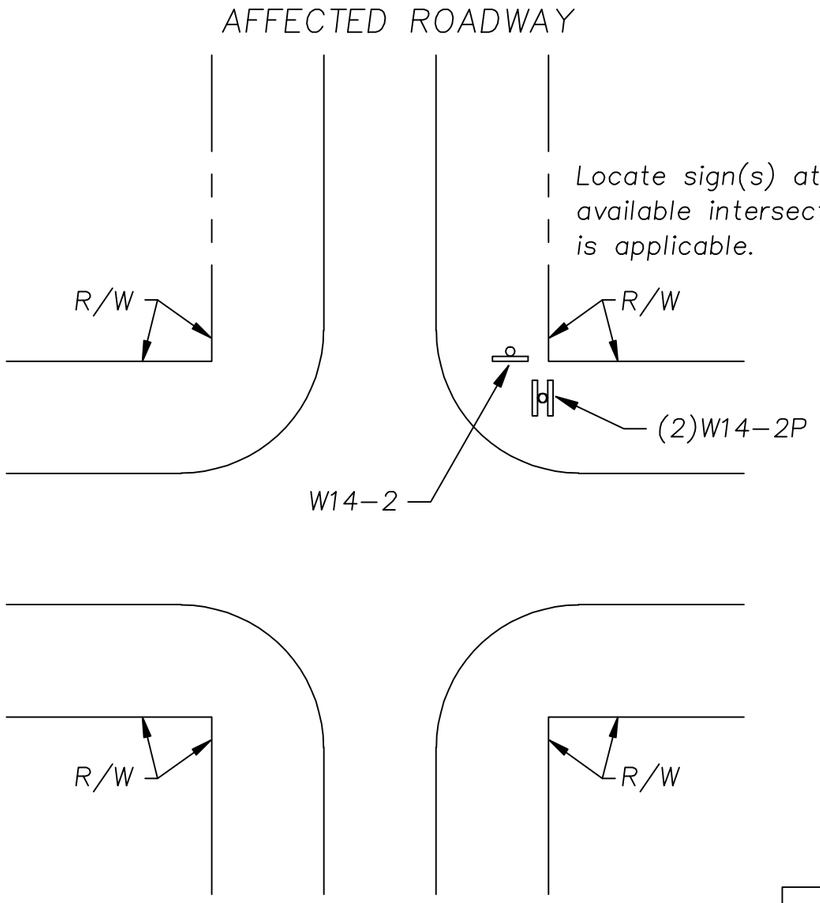
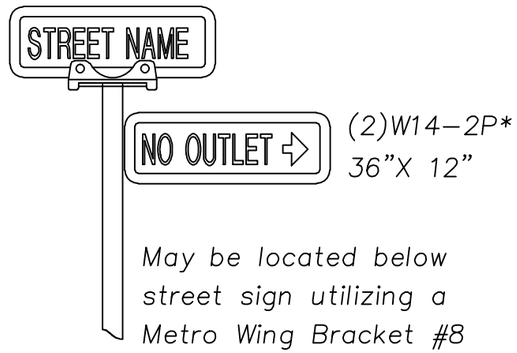
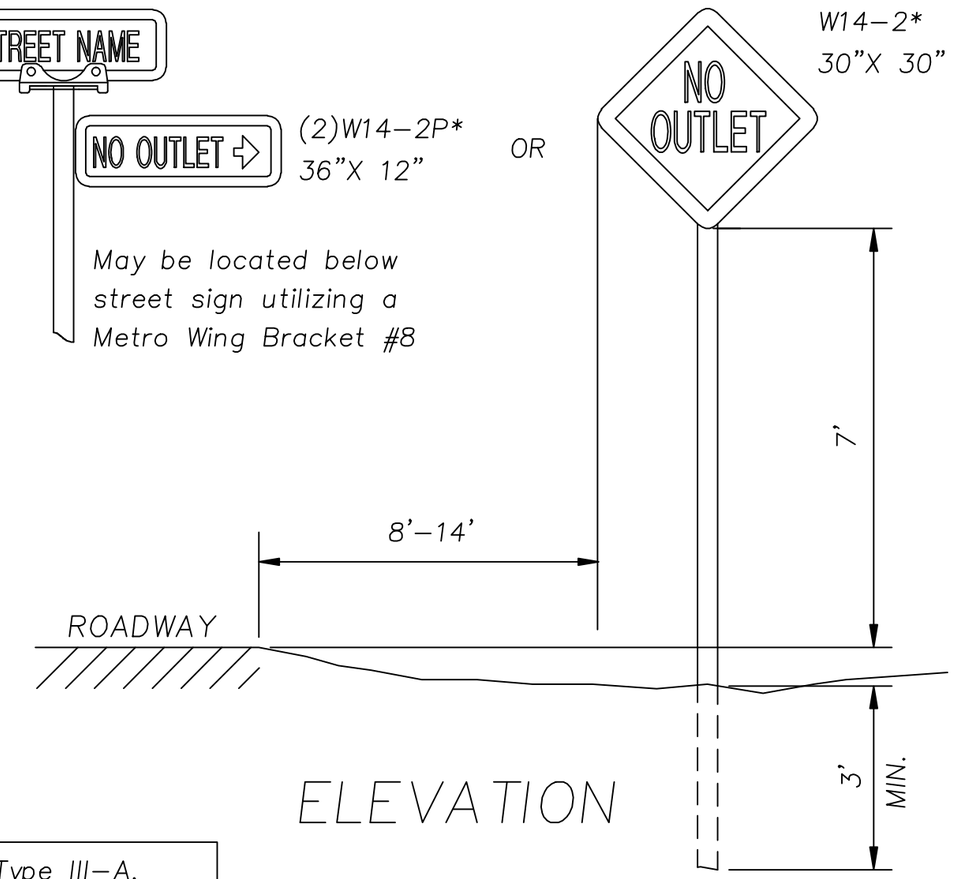




W14-2 sign is required if the affected roadway begins at a cross intersection.



All signs shall be Type III-A, high performance sheeting, which consists of encapsulated spherical lens elements.

Roadway termination markers may be required on some streets in conjunction with this signage.

TITLE: TRAFFIC CONTROL STANDARD
"NO OUTLET" SIGNAGE

APPROVED BY: C. G. MIXSON, P. E.
DATE: 10-01-08
NO.: V-04

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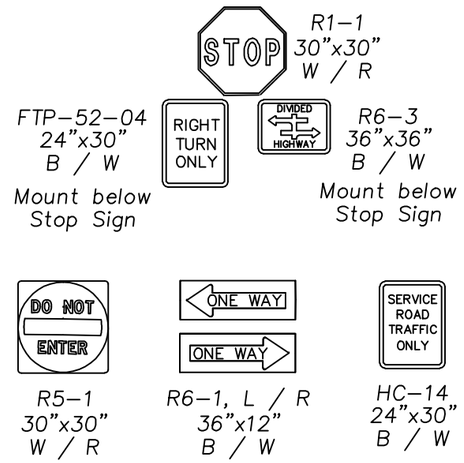
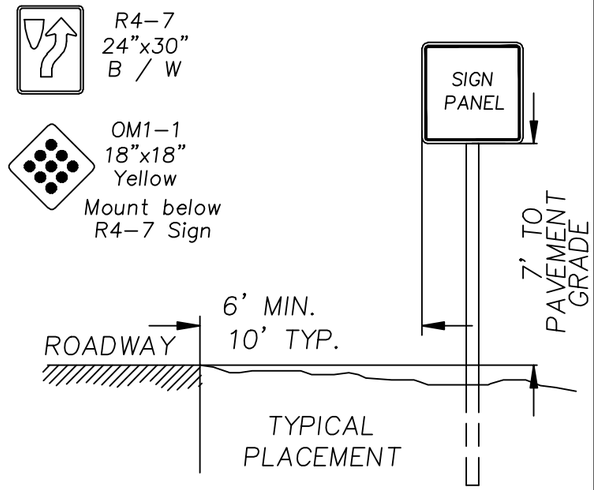
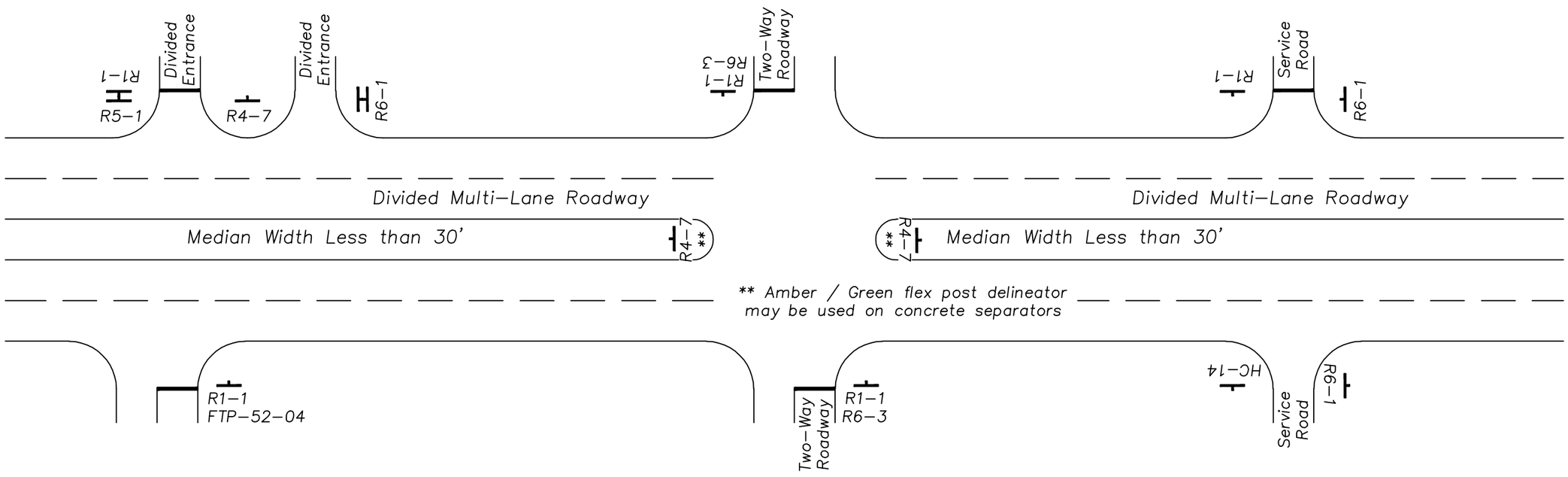
GENERAL NOTES:

- See FDOT Index No. 17346 for additional details.
- See FDOT Index No. 17346 for median widths greater than 30'.
- R4-7 assembly only to be placed at major intersections and the beginning of divided roadways. Use amber / green flex delineators for minor intersections and median openings.
- The dimensions listed are minimums, and greater dimensions may be required by the County Engineer.
- See plans for roadway construction dimensions.
- See FDOT Index 17346 for pavement marking information.

All signs shall be Type III-A, high performance sheeting, which consists of encapsulated spherical lens elements.







County Standard based on FDOT Index No. 17346. See FDOT Index for median widths 30' and greater.

TITLE: TRAFFIC CONTROL STANDARD
ONE WAY / DIVIDED ENTRANCE SIGNAGE

APPROVED BY:
C. G. MIXSON, P.E.

DATE: 10-01-08
NO.: V-05

HERNANDO COUNTY
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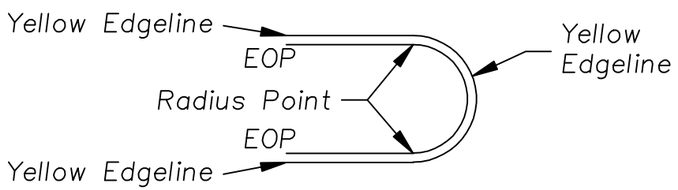
PH. (352)754-4062 FAX. (352)754-4423

GENERAL NOTES:

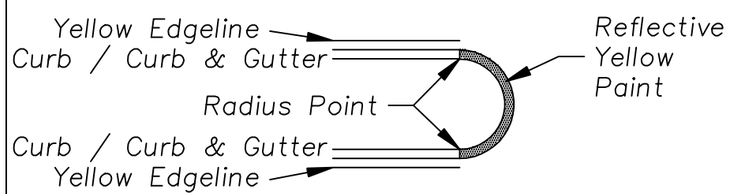
- See FDOT Index 17346 for additional details.
- See FDOT District 7 Index No. 108 for additional details.
- R4-7 assembly only to be placed at major intersections and the beginning of divided roadways. Use amber / green flex delineators for minor intersections and median openings.
- Delineators colors are green nearest approach and amber farthest from approach.
- Installation dimensions same for grass median or concrete separator.
- The dimensions listed are minimums, and greater dimensions may be required by the County Engineer.
- See plans for roadway construction dimensions.
- See FDOT Index 17346 for pavement marking information.

MEDIAN NOSE PAINT DETAILS

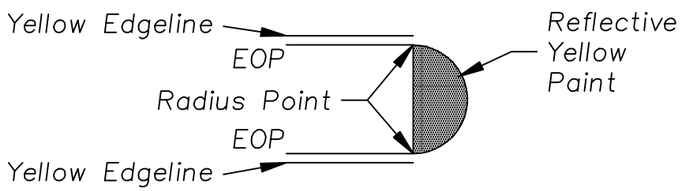
GRASS MEDIAN



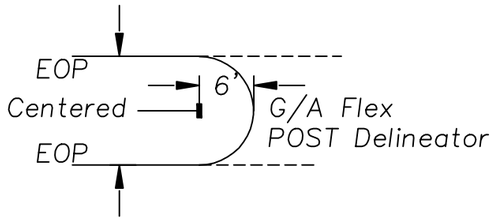
CURBED MEDIAN

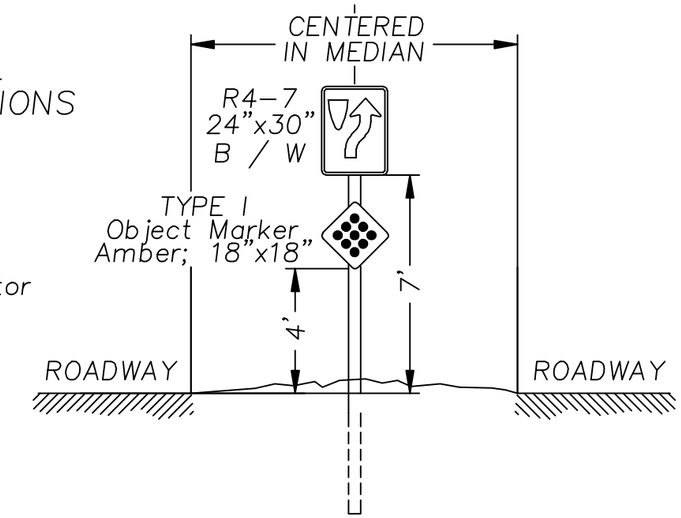


CONCRETE SEPARATOR

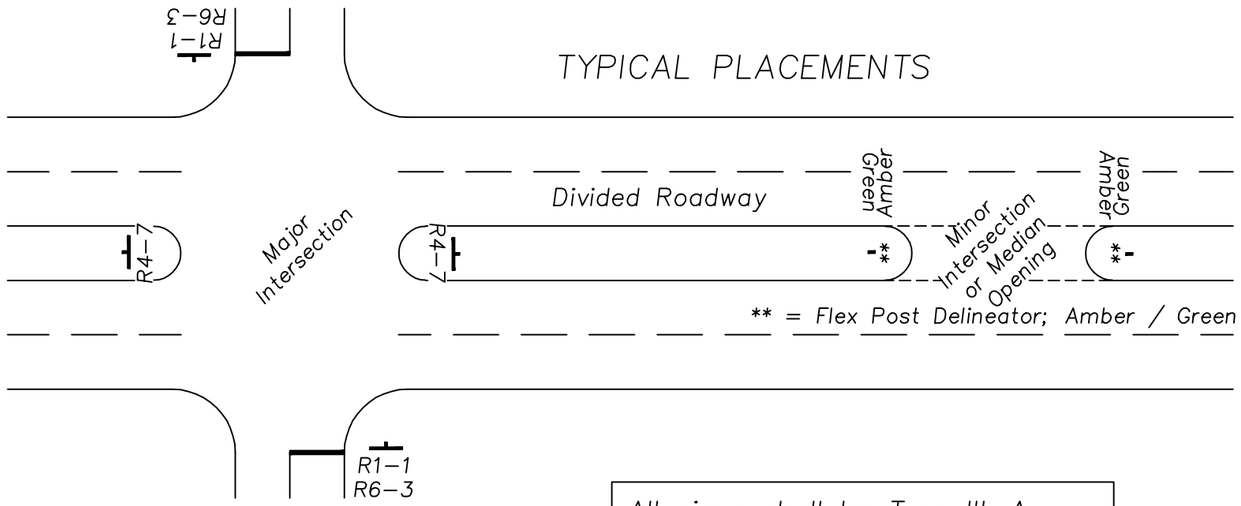


TYPICAL INSTALLATIONS





TYPICAL PLACEMENTS



All signs shall be Type III-A, high performance sheeting, which consists of encapsulated spherical lens elements.

TITLE: TRAFFIC CONTROL STANDARD
MEDIAN END SIGNAGE

APPROVED BY:
C. G. MIXSON, P. E.

DATE: 10-01-08
NO.: V-06

HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
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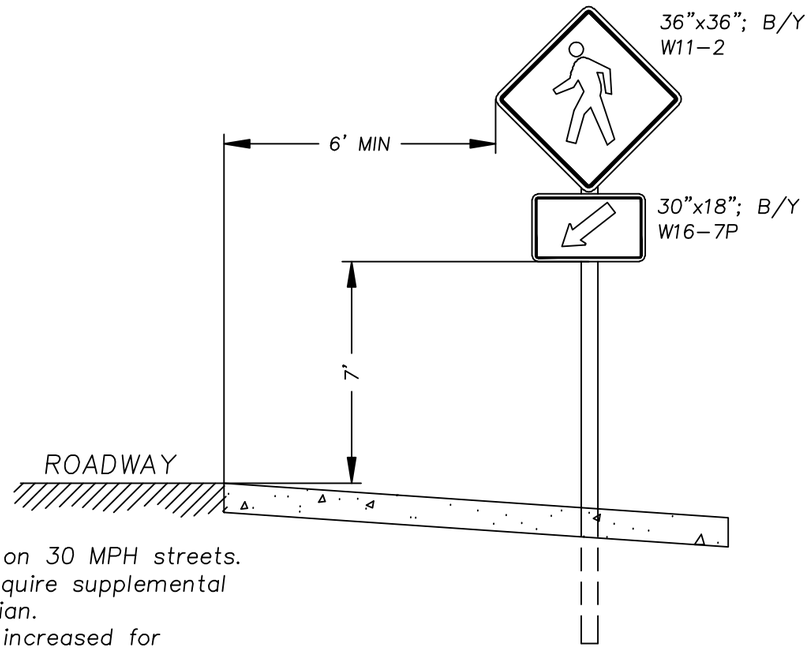
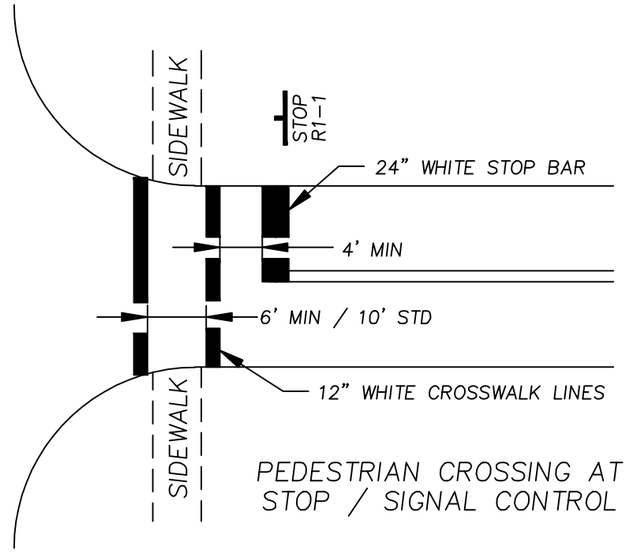
PH. (352)754-4062 FAX. (352)754-4423

Design Speed (MPH)	Crossing Sign W11–2 W16–7p	Advance Sign W11–2
STOP	NO	NO
30	YES	NO
35	YES	150'
40	YES	225'
45	YES	300'
50	YES	375'
55	YES	450'

Distances based on 1988 MUTCD, Table II–1, Advance Placement of Warning Signs, Condition B – Stop Condition to 10 MPH. Distances to be increased with horizontal and vertical curvature.

PEDESTRIAN CROSSING SIGN



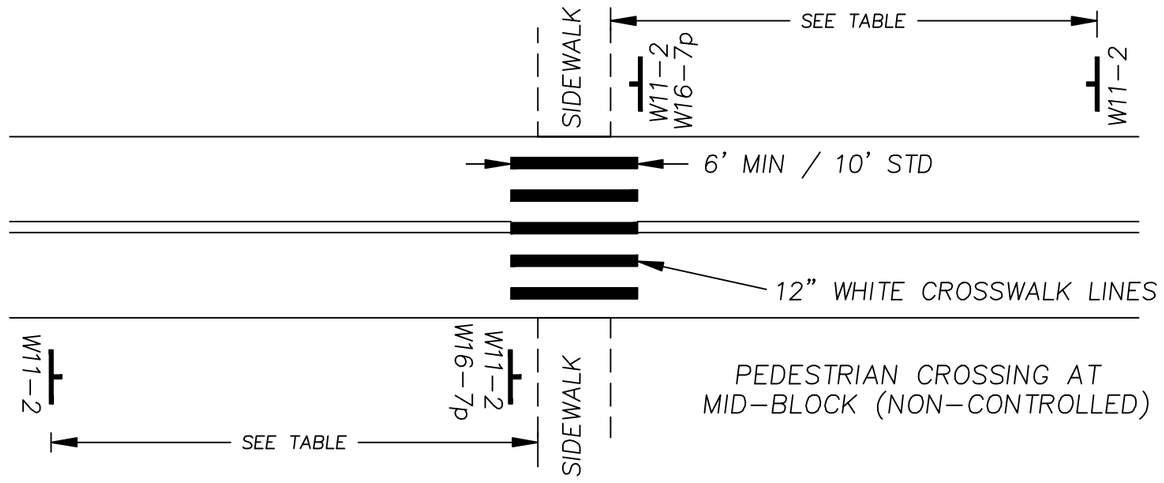


PEDESTRIAN CROSSING AT STOP / SIGNAL CONTROL

GENERAL NOTES:

- Advance warning signs are not required on 30 MPH streets.
- Divided (median) multi–lane roadways require supplemental advance and crossing signs in the median.
- Advance sign placement distance to be increased for horizontal and vertical curves, or other sight obstructions. Supplemental distance panels may be required.
- The dimensions listed are minimums, and greater dimensions may be required by the County Engineer.
- See FDOT Index No. 17346 for pavement marking information.
- Special Emphasis crosswalks are only to be used at locations not controlled by Stop sign or traffic signals.
- Clear sight distances for sidewalk and roadway must be maintained at all times.
- The fluorescent yellow–green background color for sign panels is restricted to school signage only.
- FDOT Index 304/310 and Spec 527 shall be followed for ADA Ramps

All signs shall be Type III–A, high performance sheeting, which consists of encapsulated spherical lens elements.



PEDESTRIAN CROSSING AT MID–BLOCK (NON–CONTROLLED)

MID–BLOCK PEDESTRIAN CROSSINGS SHOULD ONLY BE CONSIDERED AT LOCATIONS OF DOCUMENTED OR POTENTIAL HIGH PEDESTRIAN VOLUMES

TITLE: TRAFFIC CONTROL STANDARD
PEDESTRIAN CROSSING

APPROVED BY: C. G. MIXSON, P. E.
DATE: 10–01–08
NO.: V–07

HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
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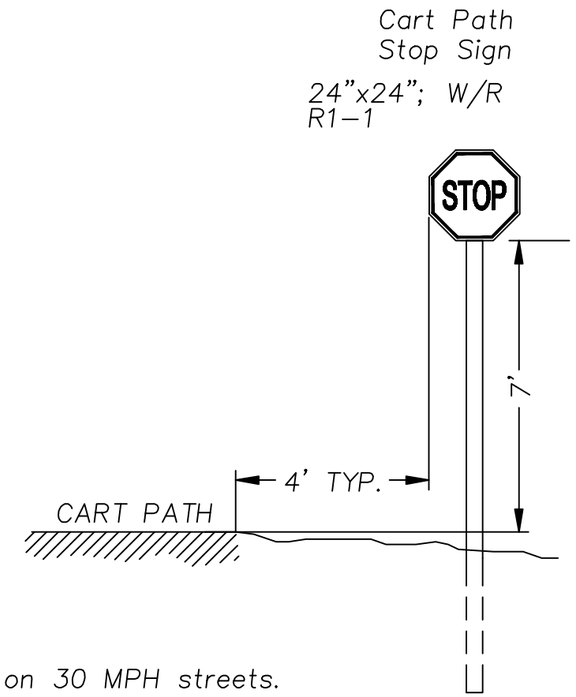
Design Speed (MPH)	Crossing Sign W11-11/W16-7P	Advance Sign W11-11
30	YES	NO
35	YES	200'
40	YES	275'
45	YES	350'
50	YES	425'
55	YES	500'
60	YES	575'

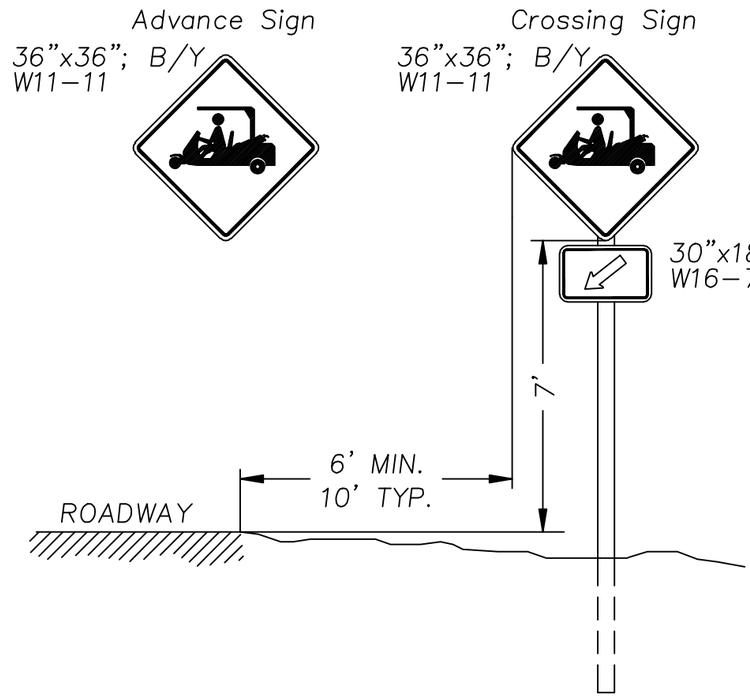
Distances based on 2000 MUTCD, Table 2C-4, Advance Placement of Warning Signs, Condition C – decelerated to 10 MPH. Distances to be increased with horizontal and vertical curvature.

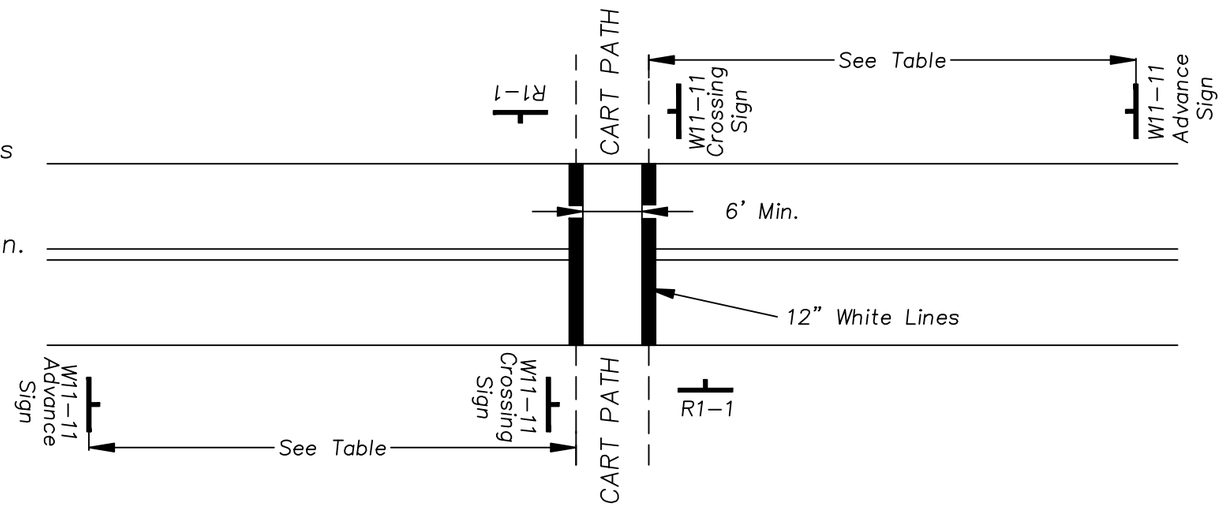
GENERAL NOTES:

- Advance warning signs are not required on 30 MPH streets.
- Divided (median) multi-lane roadways require supplemental advance and crossing signs in the median.
- Advance sign placement distance to be increased for horizontal and vertical curves, or other sight obstructions. Supplemental distance panels may be required.
- The dimensions listed are minimums, and greater dimensions may be required by the County Engineer.
- See plans for roadway construction dimensions.
- See FDOT Index No. 17346 for pavement marking information.
- Special Emphasis crosswalks shall NOT to be used without written approval from the County Engineer.
- Clear sight distances for cart path and roadway must be maintained at all times.
- Cart paths must stop for pedestrian facilities (sidewalks).

All signs shall be Type III-A, high performance sheeting, which consists of encapsulated spherical lens elements.







TITLE: TRAFFIC CONTROL STANDARD
GOLF CART CROSSING

APPROVED BY: C. G. MIXSON, P. E.
DATE: 10-01-08
NO.: V-08

HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
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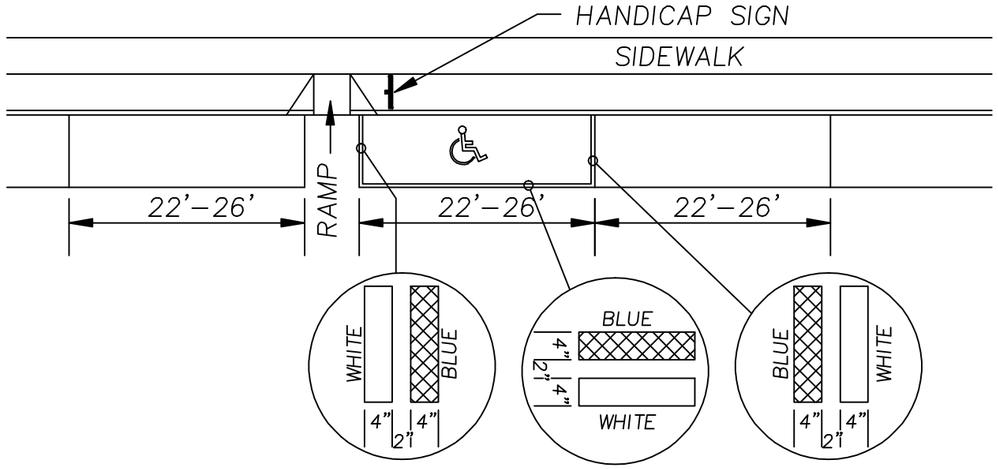
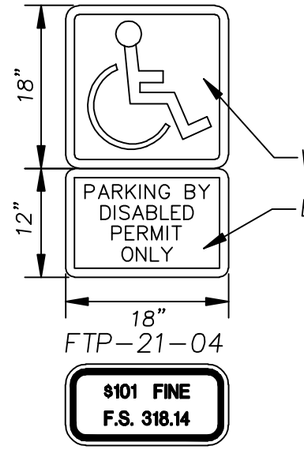
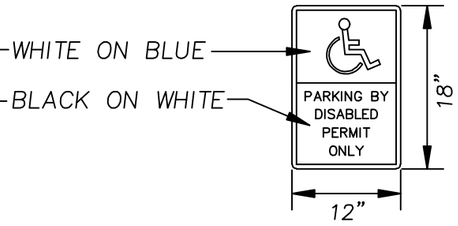


- *All parking space lines to be 4" wide and white unless otherwise noted.*
- *Use of pavement symbol in handicapped parking spaces is optional, but when used shall be 3 ft. to 5 ft. high and white in color.*
- *The access aisle shall be striped diagonally to designate it as a no parking zone, and shall be white in color. Curb ramps must be located outside of disabled parking spaces and access aisles.*



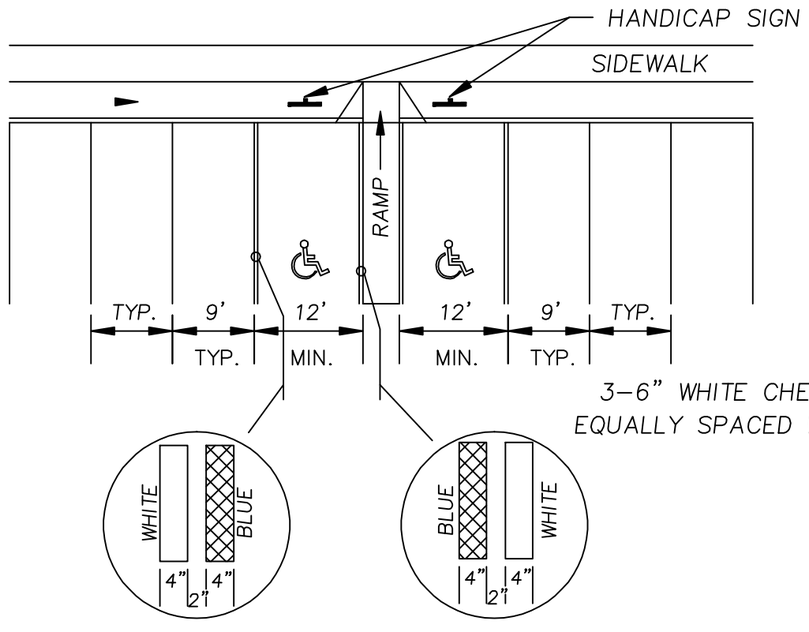
FTP–21–04

FTP–22–04

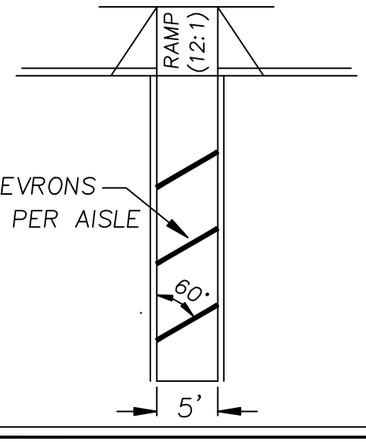


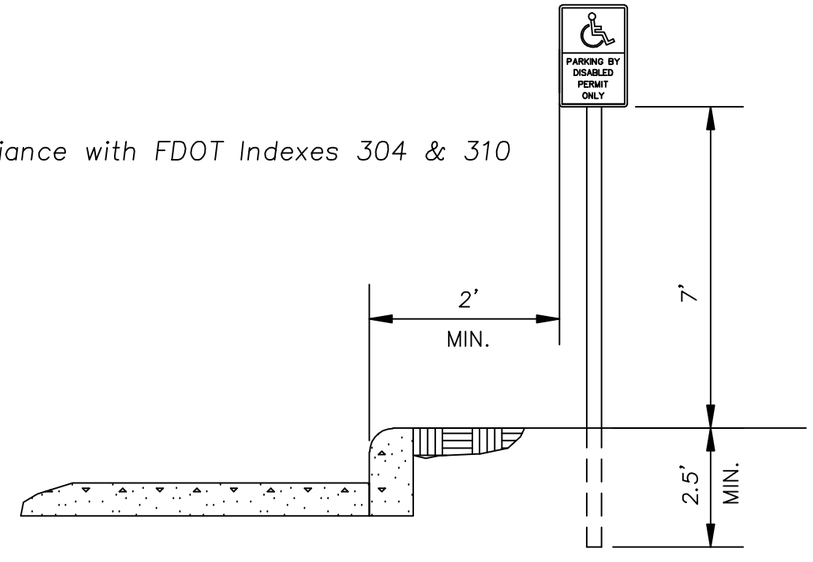
FTP–20–04

(Signs erected after October 1, 1996, must indicate penalty for illegal use of the space)



All ramps shall be in compliance with FDOT Indexes 304 & 310





- *Handicap sign(s) may be affixed on permanent structures in lieu of installing on poles.*

TITLE: TRAFFIC CONTROL STANDARD
HANDICAP PARKING

APPROVED BY:
C. G. MIXSON, P. E.

DATE: 10–01–08
NO.: V–09

HERNANDO COUNTY
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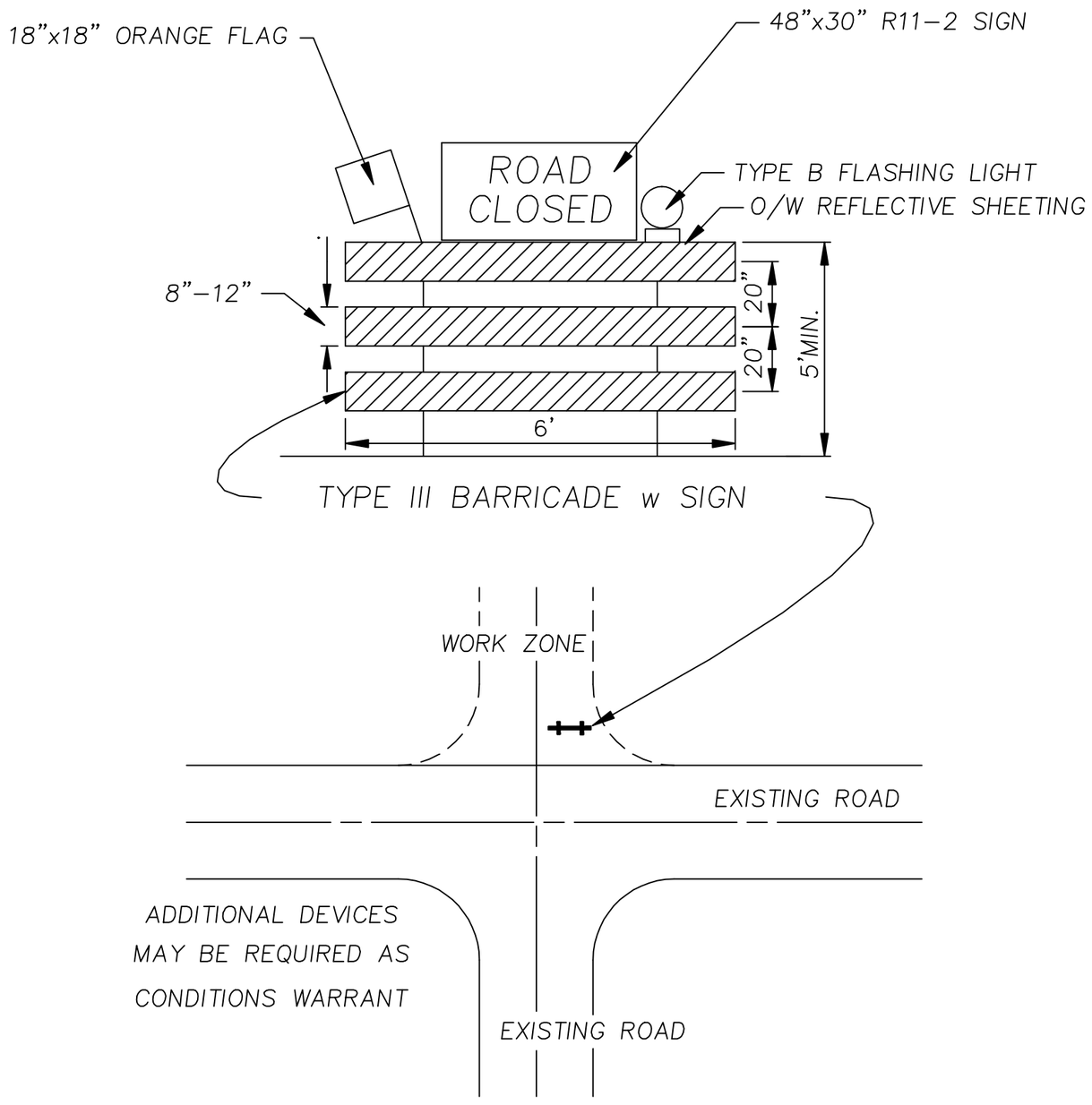

NOTES

- All streets entering the construction zone shall receive Road Closure signage
- All Road Closed signs shall be accompanied by an 18"X18" orange flag and a type B hi-intensity flashing light.
- Other work zone traffic control devices may be required for construction. Refer to part VI of the M.U.T.C.D. and the 600 series of the F.D.O.T. Standards for additional details.
- Roadway(s) shall not to be opened to public travel until:
  - A. All permanent traffic control devices are in place;
  - B. Project is inspected and accepted.
- Type III barricades and road closed sign SHALL not block intersection/driveway sight distance.

All signs shall be Type III-A, high performance sheeting, which consists of encapsulated spherical lens elements.

TITLE: TRAFFIC CONTROL STANDARD
ROAD CLOSED SIGNAGE

APPROVED BY: C. G. MIXSON, P. E.

DATE: 10-01-08

NO.: V-10

HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
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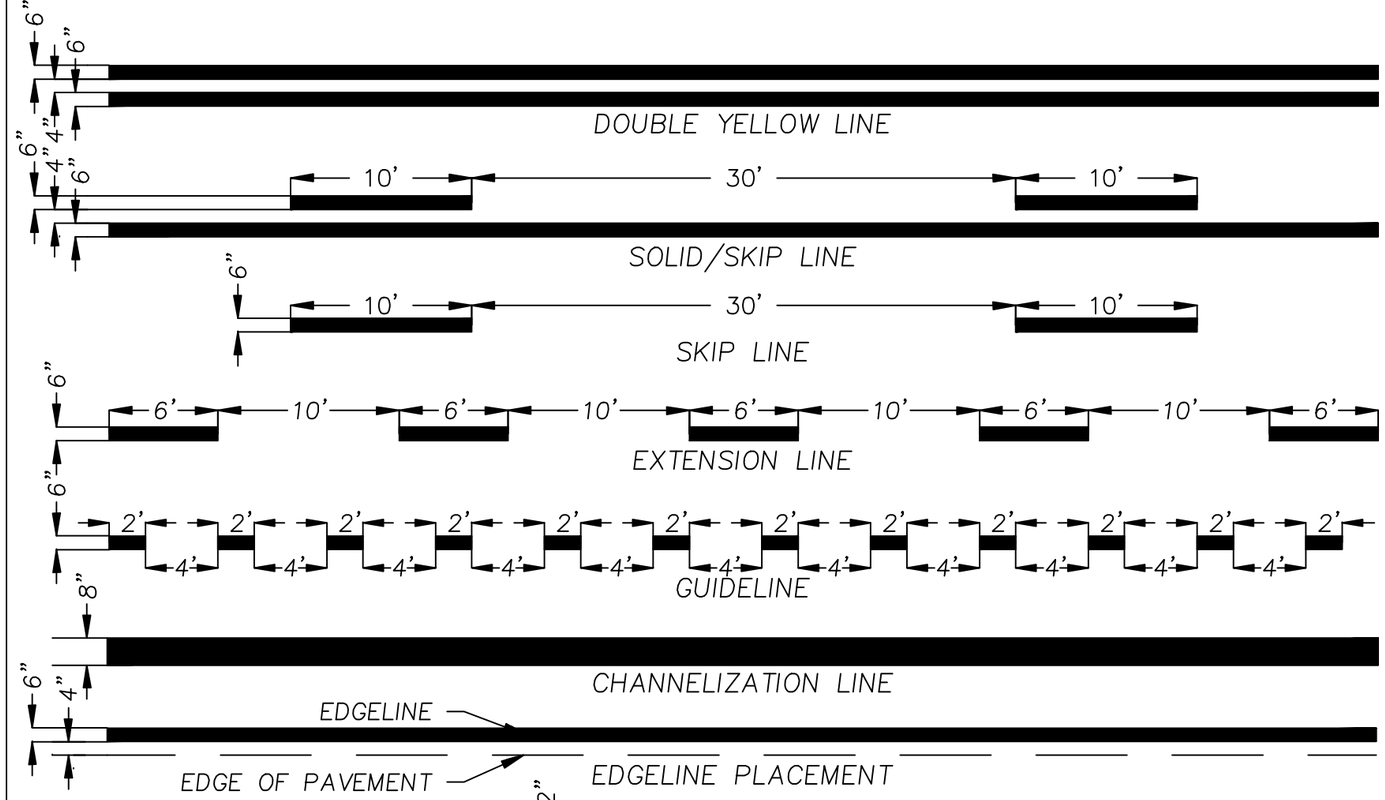
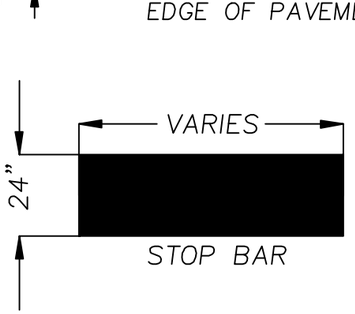
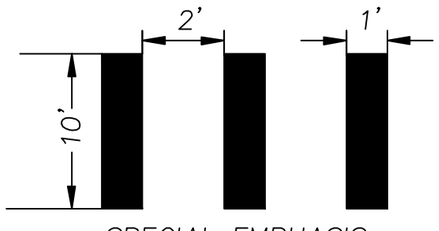
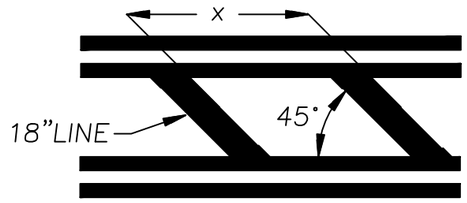
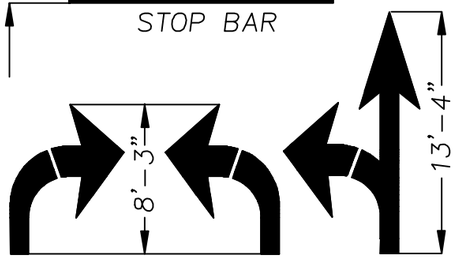


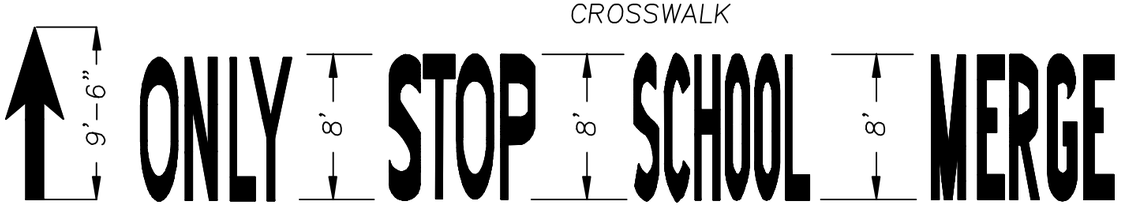


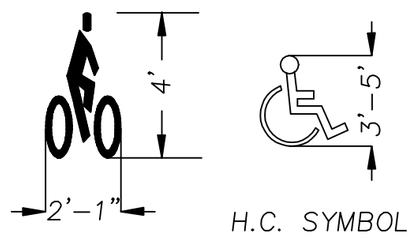




SPEED	x
<30MPH	10'
35–45	20'
>50MPH	40'







NOTES:

- See F.D.O.T. Index No's.17344 and 17346 for additional details.
- See Hernando County Facilities Guideline V–09 for Handicap Parking for parking lot striping.
- Pavement markings application and materials to comply with FDOT Standard Specifications for Road and Bridge Construction.
- Pavement arrows, pavement legends, stopbars, and crosswalks shall be thermoplastic or preformed unless previously approved in writing.
- All markings to replace or extend thermoplastic or preformed markings shall be same unless previously approved in writing.
- All conflicting markings shall be removed via an approved F.D.O.T. method of eradication.
- The installation of thermoplastic or preformed markings for new asphalt shall occur at least 30 days after the new asphalt is cured. The contractor/developer shall provide temporary pavement markings per the plans and M.U.T.C.D. until the permanent markings are installed.
- Work Zone Traffic Control Markings shall be full length by 75% width of the permanent markings.

TITLE: TRAFFIC CONTROL STANDARD
PAVEMENT MARKINGS

DATE: 10–01–08
NO.: V–11

APPROVED BY:
C. G. MIXSON, P. E.

HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
1525 E. JEFFERSON ST.
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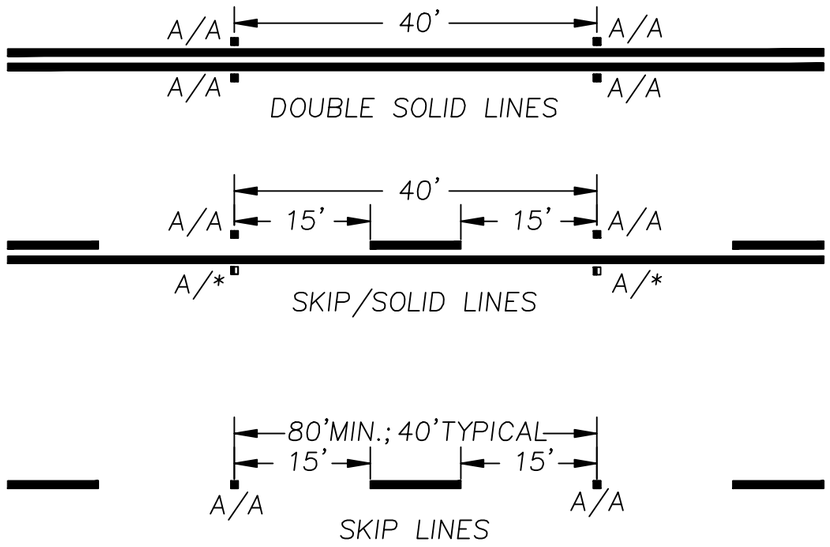
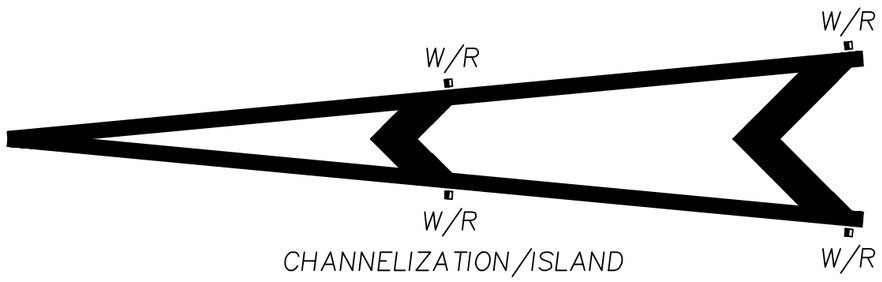
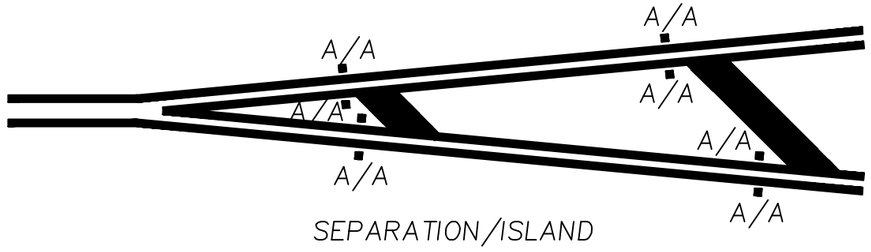
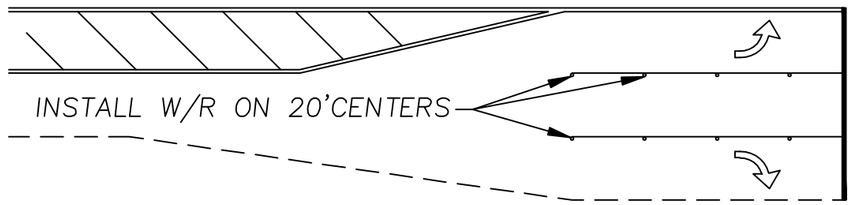


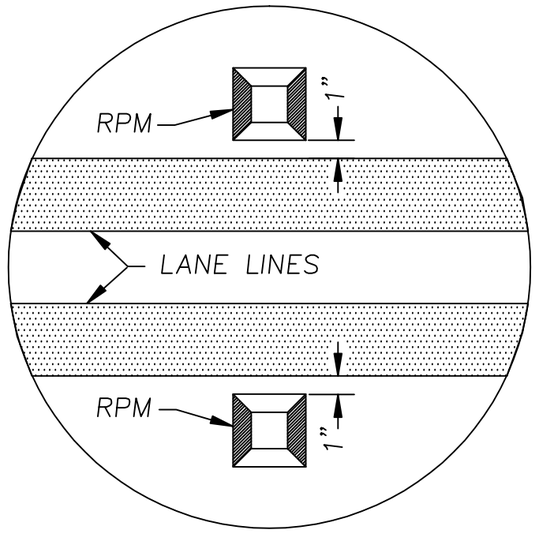




INTERSECTION DETAIL



INSTALLATION DETAIL



MARKER TYPES

TYPE 1 ARE AMBER/AMBER

TYPE 2 ARE WHITE/RED

TYPE 3 ARE AMBER/RED

TYPE 4 ARE AMBER/BLANK

TYPE 5 ARE WHITE/BLANK

...*=BLANK

NOTES:

- See F.D.O.T. Index No. 17352 for additional details.
- Reflective pavement markers (RPM's) application and materials shall comply with the F.D.O.T. Standard Specifications for Road and Bridge Construction.
- All markers shall be Class B only per F.D.O.T. standard specifications 706.
- Markers shall only be installed using bituminous adhesive.
- All RPM's shall be spaced 1"offset from lines.
- Longitudinal spacing may be reduced for sharp curves and turns.
- Any roadway with RPM's existing shall receive new RPM's with any improvements.
- Low Profile RPM's will not be permitted.

TITLE: TRAFFIC CONTROL STANDARD
REFLECTIVE PAVEMENT MARKERS

APPROVED BY: DATE: NO.:
C. G. MIXSON, P. E. 10-01-08 V-12

HERNANDO COUNTY
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There are many various ways to accomplish the design of a traffic signal. The information contained on this sheet identifies some of the criteria for the design and construction of traffic signals in Hernando County.

1. All design and construction shall comply with the criteria set forth in the following publications:
   - –FDOT Standard Specifications for Road and Bridge Construction, 2007, or latest;
   - –FDOT Minimum Specifications for Traffic Control Signal Devices, 2000, or latest;
   - –FDOT Design Standards (Index), 2008, or latest;
   - –Hernando County Facility Design Guidelines, 2008.

2. Any roadway or intersection construction near an existing traffic signal may require reconstruction of parts or all of that signal. Traffic signals that are damaged during construction shall be repaired immediately at the contractor's expense.

3. Contact Public Works – Engineering for the latest format of traffic signal plans and specifications.

4. All new traffic signals shall be designed to FDOT standard mast arm specifications for 110 MPH, unless approved in writing by the County Engineer.

5. All new traffic signals shall include countdown pedestrian signals and detectors and ADA ramps unless otherwise approved in writing by the County Engineer.

6. All vehicular and pedestrian traffic signal indications shall be LED, with stainless steel hardware.

7. All vehicular traffic signal heads shall use tunnel visors. All east/west signal heads to have metal backplates.

8. Video detection (per County standards) is the preferred method of detection with mast arms. Loops are required for span wire supported signals.

9. All loops shall be Type 'F', 6' x 30', using a wrap pattern of 3–6–3, and the leading edge located 2' beyond the stop bar.

10. Signal power cables, detector cables, and fiber optic cables shall be located in separate conduits and pull boxes.

11. The controller cabinet assembly shall be FDOT Type V, with an Econolite TS–2–ASC 2s/2120–11 controller with all components as required per Hernando County specifications. Separate UPS cabinet required.

12. Street name signs shall be internally illuminated, and installed free swinging using County defined hardware.

13. Contractor shall provide 3 sets of "As–Built" plans, along with all documentation and testing, prior to project closeout.

14. All equipment shall be compatible with the Hernando County Signal System.

15. Any new signal proposed shall include fiber optic interconnect to any adjacent existing or pro–grammed traffic signal within 1.0 mile.

16. Splices in fiber optic cable are not permitted between signal cabinets. New continuous cable between controller cabinets is required when the fiber optic is severed for any reason.

17. All fiber ends shall be fusion spliced to a "pigtail" with a ST type connector, and have an identification tag stating the buffer color, fiber color, and cable origin. All fibers shall be OTDR tested, with the results provided to the County.

TITLE: TRAFFIC CONTROL STANDARD
TRAFFIC SIGNALS

APPROVED BY: C. G. MIXSON, P. E.
DATE: 10–01–08
NO.: V–13

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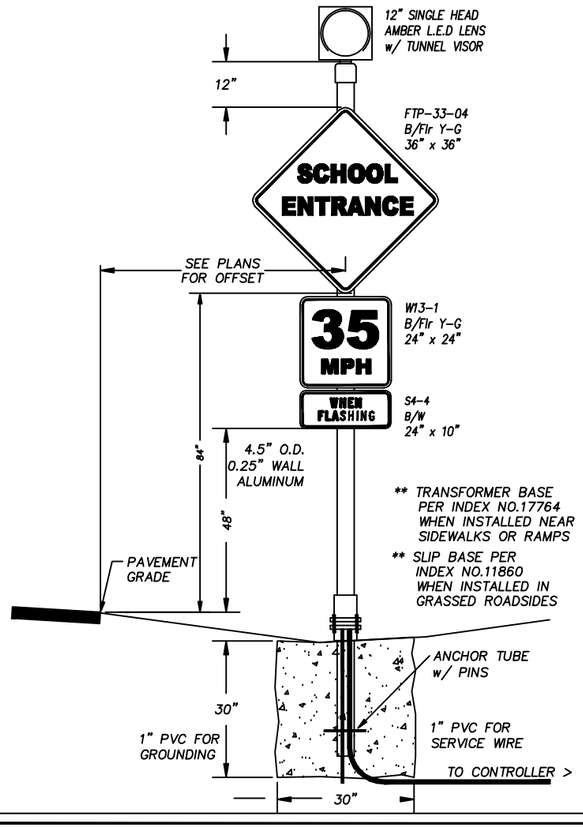
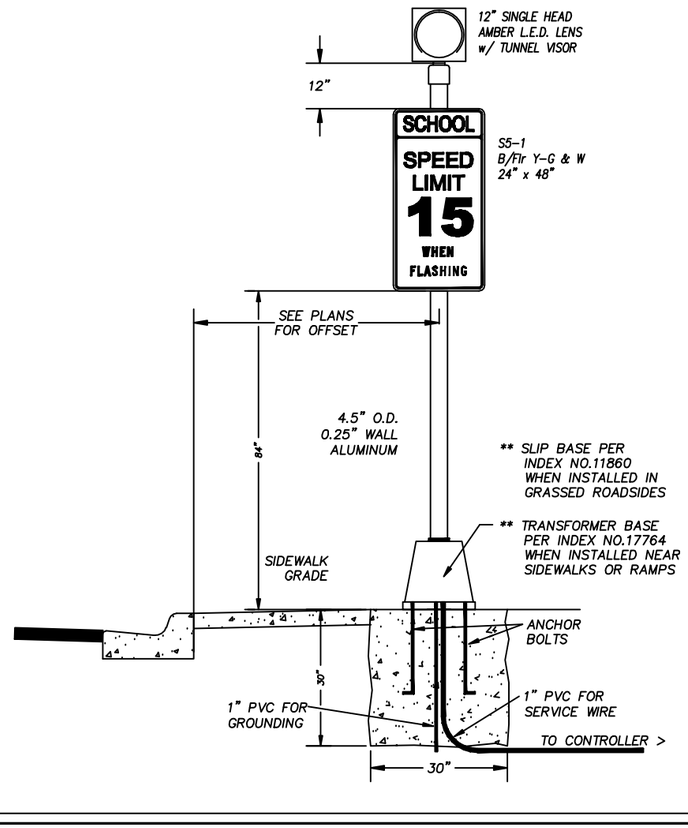
GENERAL INFORMATION:

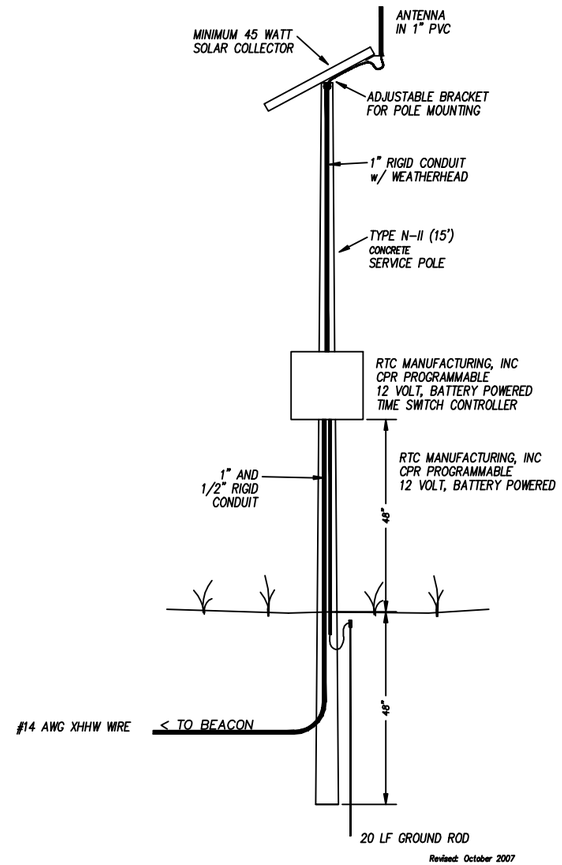
1. The determination to install school beacons shall be based upon an analysis performed by a State of Florida Professional Engineer.
2. The design of school beacons is in conjunction with additional traffic signs and pavement markings. Use FDOT Index No.17344 for type and placement in the plans preparation.
3. All materials used in the construction of school beacons sh
all be listed in the current FDOT Approved Products List (APL), or shall have a product specification sheet from the manufacturer submitted for approval of use.
4. All work undertaken in the installation of school beacons shall
be accomplished per FDOT Standard Specifications, and the FDOT Minimum Specifications for Traffic Control Signal Devices by qualified technicians.
5. The "School Entrance" warning sign / beacon assembly is intended for school sites with higher vehicular congestion and controlled pedestrian access. The regulatory "School Speed Limit" sign is for locations with established school crosswalks.
6. The speed limit displayed on school beacons is site specific as approved by the County Engineer.
7. All electronic traffic control devices in Hernando County right-of ways are operated by the Department of Public Works.

TECHNICAL INFORMATION:

A. Each school zone beacon shall be designed as a separate and complete installation.
B. School warning signs are the only signs in Hernando County to be fluorescent yellow-green background color.
C. School beacon installations on sidewalks or other concrete areas shall use a frangible transformer base mount. school beacons installed in grassed areas along roadsides to utilize a slip base mount per FDOT Index no. 11864.
D. Hernando County requires all new electronic school zone traffic control beacons to be compatible with its 12 volt solar charged, pager time clock system, manufactured by RTC Manufacturing, Inc. 800-782-8721.
E. Contractors shallt contact DPW Traffic Operations at 352-754-4060 to acquire the current CAP Code prior to ordering any RTC system.
F. Hernando County will assign all beacon addresses.
G. The time of operation of school beacons is determined by the County Engineer in accordance with documented conditions, and per Florida Statutes.
H. School beacon controllers shall be installed on concrete service poles outside the prescribed clear zone. the service pole includes: pole, controller cabinet, with time clock, pager, receiver, battery and all necessary conduit, cable and hardware.







Revised: October 2007

TITLE: TRAFFIC CONTROL STANDARD
SCHOOL BEACONS

APPROVED BY: DATE: NO.:
C. G. MIXSON, P. E. 10-01-08 V-14

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WIRING COLOR CODE FOR 12 CONDUCTOR CABLE / SOP 7 (SOP 10 ADJUSTMENTS ARE IN PARENTHESIS)

WIRE COLOR	CABLE 'A' TO PHASE	CABLE 'B' TO PHASE	INDICATION
1. GREEN	MAIN ø2	MAIN ø6	GREEN
2. ORANGE	MAIN ø2	MAIN ø6	YELLOW
3. RED	MAIN ø2	MAIN ø6	RED
4. GREEN/BLACK	MINOR ø4	MINOR ø8	GREEN
5. ORANGE/BLACK	MINOR ø4	MINOR ø8	YELLOW
6. RED/BLACK	MINOR ø4	MINOR ø8	RED
7. BLUE/BLACK	L/T ø1 (L/T ø7 IF SOP 10)	L/T ø5 (L/T ø3 IF SOP 10)	GREEN
8. BLACK/WHITE	L/T ø1 (L/T ø7 IF SOP 10)	L/T ø5 (L/T ø3 IF SOP 10)	YELLOW
9. WHITE/BLACK	SPARE (L/T ø7 IF SOP 10)	SPARE (L/T ø3 IF SOP 10)	SPARE RED – if 3 section is used
10. BLUE	L/T ø3	L/T ø7	GREEN (spare if 3 section only)
11. BLACK	L/T ø3	L/T ø7	YELLOW (spare if 3 section only)
12. WHITE	NEUTRAL RETURN	NEUTRAL RETURN	NONE

CABLE "C" TO BE ADDED WHEN PROTECTED LEFT TURNS ARE USED

1. GREEN	MAIN L/T ø1	GREEN
2. ORANGE	MAIN L/T ø1	YELLOW
3. RED	MAIN L/T ø1	RED
4. GREEN/BLACK	MAIN L/T ø5	GREEN
5. ORANGE/BLACK	MAIN L/T ø5	YELLOW
6. RED/BLACK	MAIN L/T ø5	RED
7. BLUE/BLACK	SPARE	SPARE
8. BLACK/WHITE	SPARE	SPARE
9. WHITE/BLACK	SPARE	SPARE
10. BLUE	SPARE	SPARE
11. BLACK	SPARE	SPARE
12. WHITE	NEUTRAL RETURN	NONE

WIRING COLOR CODE FOR 18 CONDUCTOR CABLE / SOP 10

WIRE COLOR	CABLE 'A' TO PHASE	CABLE 'B' TO PHASE	INDICATION
1. GREEN	MAIN ø2	MAIN ø6	GREEN
2. ORANGE	MAIN ø2	MAIN ø6	YELLOW
3. RED	MAIN ø2	MAIN ø6	RED
4. GREEN/BLACK	MINOR ø4	MINOR ø8	GREEN
5. ORANGE/BLACK	MINOR ø4	MINOR ø8	YELLOW
6. RED/BLACK	MINOR ø4	MINOR ø8	RED
7. BLUE/BLACK	L/T ø1	L/T ø5	GREEN
8. BLACK/WHITE	L/T ø1	L/T ø5	YELLOW
9. WHITE/BLACK	L/T ø1	L/T ø5	RED – spare if 5 section
10. BLUE	L/T ø3	L/T ø7	GREEN (spare or 5 section only)
11. BLACK	L/T ø3	L/T ø7	YELLOW (spare or 5 section only)
12. WHITE	NEUTRAL RETURN	NEUTRAL RETURN	NONE
13. GREEN/WHITE	L/T ø3 (not for 5 section)	L/T ø7 (not for 5 section)	GREEN (protected)
14. BLUE/WHITE	L/T ø3 (not for 5 section)	L/T ø7 (not for 5 section)	ORANGE (protected)
15. RED/WHITE	L/T ø3 (not for 5 section)	L/T ø7 (not for 5 section)	RED (protected)
16. BLACK/RED	SPARE	SPARE	
17. ORANGE/RED	SPARE	SPARE	
18. WHITE/RED	SPARE	SPARE	

WIRING COLOR CODE FOR 12 CONDUCTOR CABLE / PEDESTRIAN SIGNAL

WIRE COLOR	TO PHASE	INDICATION
1. GREEN	ø2 OR 6	WALK
2. ORANGE	ø2 OR 6	PEDESTRIAN PUSH BUTTON
3. RED	ø2 OR 6	DON'T WALK
4. GREEN/BLACK	ø4 OR 8	WALK
5. ORANGE/BLACK	ø4 OR 8	PEDESTRIAN PUSH BUTTON
6. RED/BLACK	ø4 OR 8	DON'T WALK
7. BLUE/BLACK	SPARE	
8. BLACK/WHITE	SPARE	
9. WHITE/BLACK	LOGIC GROUND	
10. BLUE	SPARE	
11. BLACK	SPARE	
12. WHITE	NEUTRAL	

Note: Cables shall be marked as P–1, P–2, P–3, P–4, etc. to identify them. Permanent indelible cable markers shall be attached to each conductor to identify its connection point. A corresponding sheet shall be included in the cabinet to identify said cables and conductors, and specify what location each cable goes to.

NOTES:
- As per FDOT specifications; all signal head disconnects shall be capable of terminating all wires of the signal cable, this includes all spares, on the terminal block of the disconnect.
- Down sizing of the signal cables (dropping conductors) will not be accepted. There shall be the same amount of wires throughout all disconnects to the end disconnect.
- All cables shall be identified in the cabinet with a corresponding sheet and permanent indelible cable markers shall be attached to each conductor to identify its connection point.
- Any questions concerning the wiring color code to be used at a specific intersection, contact Hernando County DPW Traffic Division (352) 754–4060.
- Contact Hernando County DPW Traffic Engineering (352)754–4475 for color codes and terminations of fiber optic cables.

TITLE: TRAFFIC CONTROL STANDARD SIGNAL WIRING COLOR CHART

APPROVED BY: C. G. MIXSON, P. E.

DATE: 10–01–08

NO.: V–15

HERNANDO COUNTY
DEPARTMENT OF PUBLIC WORKS
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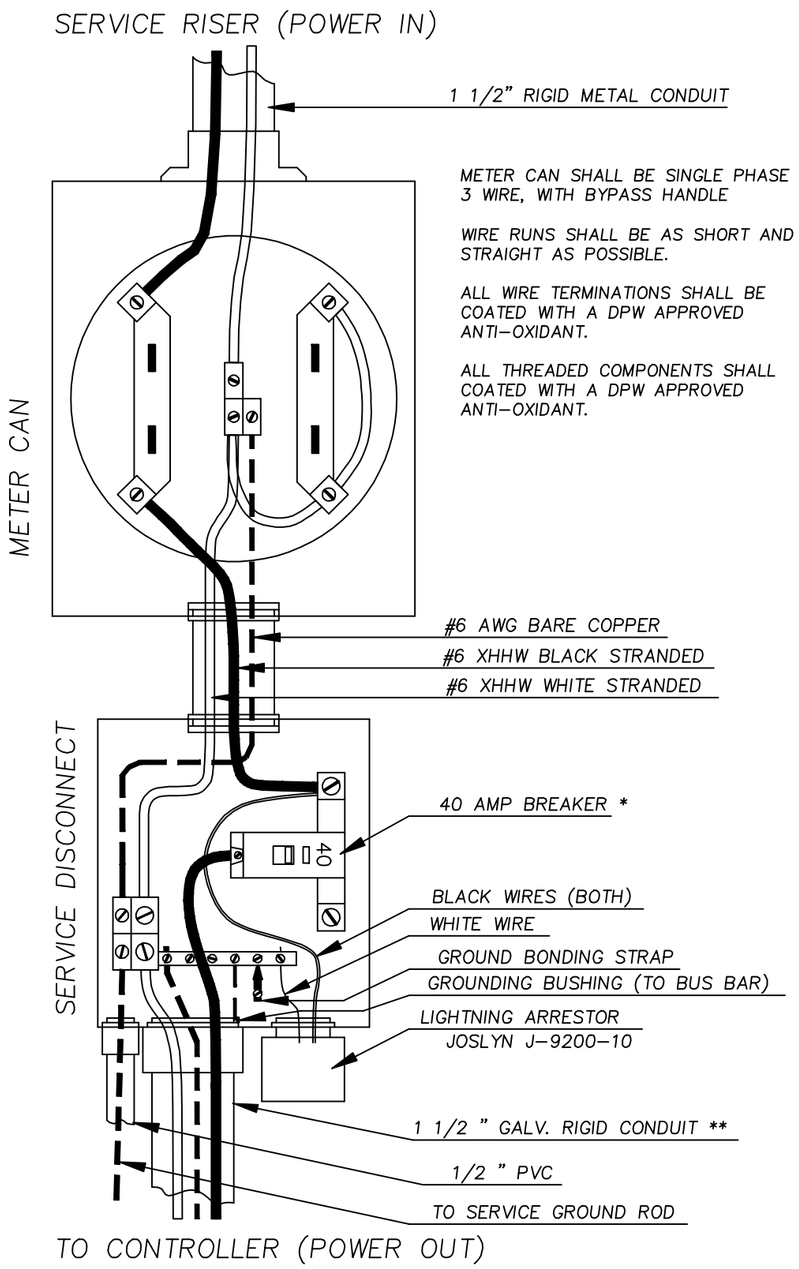
POWER SERVICE ASSEMBLY



* FOR BEACONS A DOWNSIZED BREAKER OF 20 AMP. MINIMUM MAY BE USED DEPENDENT ON THE LOADING

** ON BEACON CABINETS, 1 " NON-ARMOURED FLEX LIQUID TIGHT MAY BE USED AS A SUBSTITUTE. NEC SHALL BE FOLLOWED FOR SIZING CONDUIT OF OVER 1"

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TITLE: TRAFFIC CONTROL STANDARD
POWER SERVICE DISCONNECT ASSEMBLY

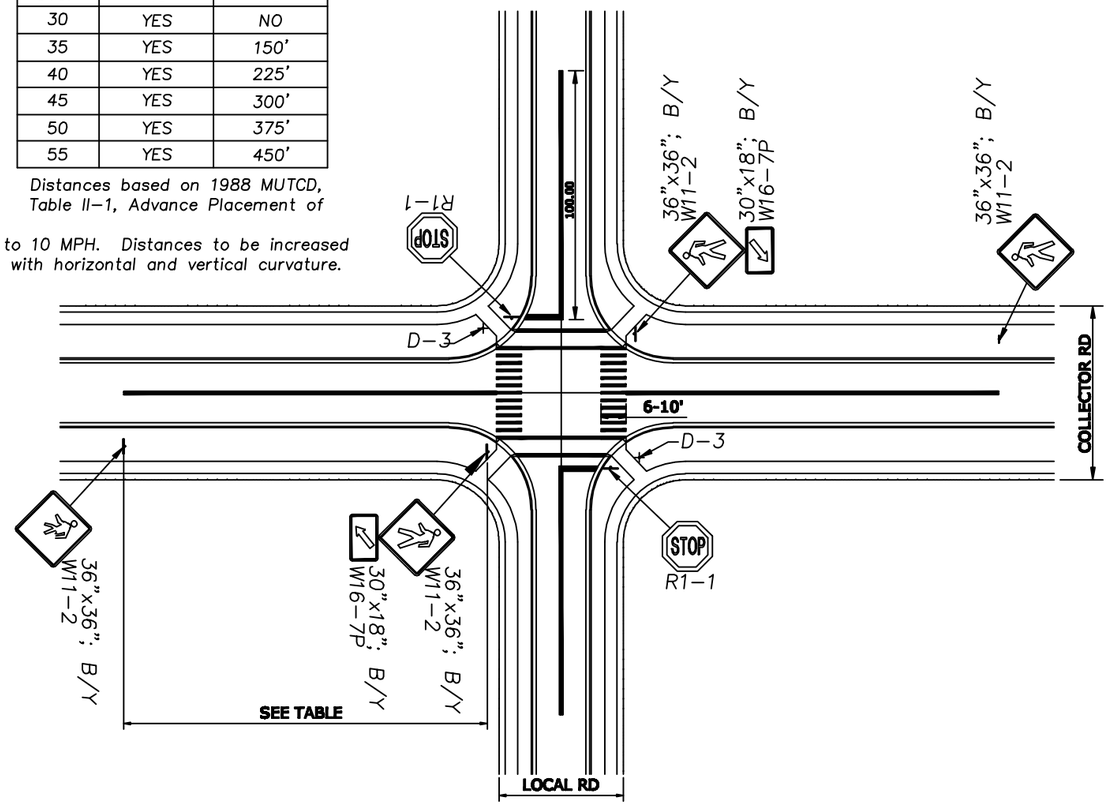
APPROVED BY:	DATE:	NO.:
C. G. MIXSON, P.E.	10-01-08	V-16

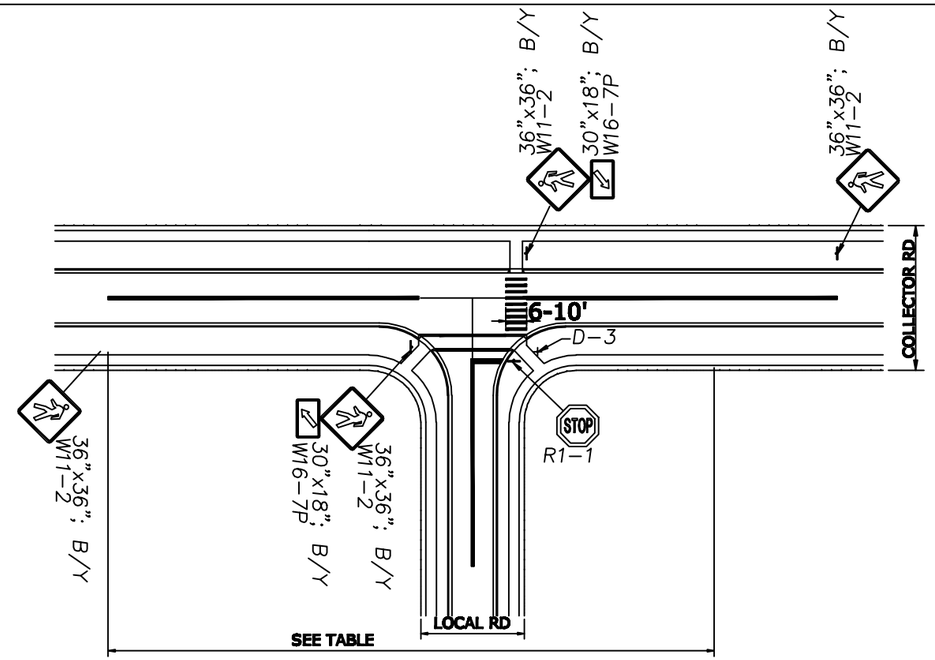
Design Speed (MPH)	Crossing Sign W11–2 W16–7p	Advance Sign W11–2
STOP	NO	NO
30	YES	NO
35	YES	150'
40	YES	225'
45	YES	300'
50	YES	375'
55	YES	450'

Distances based on 1988 MUTCD, Table II–1, Advance Placement of

to 10 MPH. Distances to be increased with horizontal and vertical curvature.

All signs shall be Type III–A, high performance sheeting, which consists of encapsulated spherical lens elements.





TEE INTERSECTION SPECIFIC NOTES:

–There will be a minimum of two crossings at a Tee intersection. The first is parallel to the main road, the second is perpendicular to the main road generally on the right side of the Tee leg. This is a minimum of 3 curb recesses for the ADA ramps.

GENERAL NOTES ALL INTERSECTIONS:

–Advance warning signs are not required on 30 MPH streets.

–Divided (median) multi–lane roadways require supplemental advance and crossing signs in the median.

–Advance sign placement distance to be increased for horizontal and vertical curves, or other sight obstructions. Supplemental distance panels may be required.

–The distances listed are minimums, and greater dimensions may be required by the County Engineer.

–See FDOT Index 17346 for pavement marking information.

–Special Emphasis Crosswalks are only to be at locations not controlled by stop sign or traffic signals.

–Clear Sight Distance for sidewalk and roadway must be maintained at all times.

–The fluorescent yellow–green background color for sign panels is restricted to school signage only.

–ADA ramps and curb recesses shall comply with FDOT Indexes 304 & 310 and Spec 527.

TITLE: TRAFFIC CONTROL STANDARD
INTERSECTION CROSSINGS

APPROVED BY: C. G. MIXSON, P. E. **DATE:** 10–01–08 **NO.:** V–17

HERNANDO COUNTY
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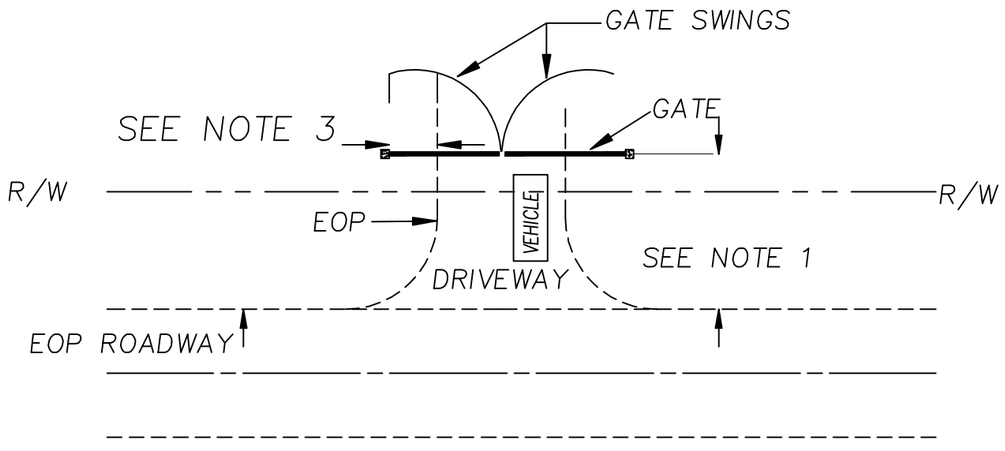
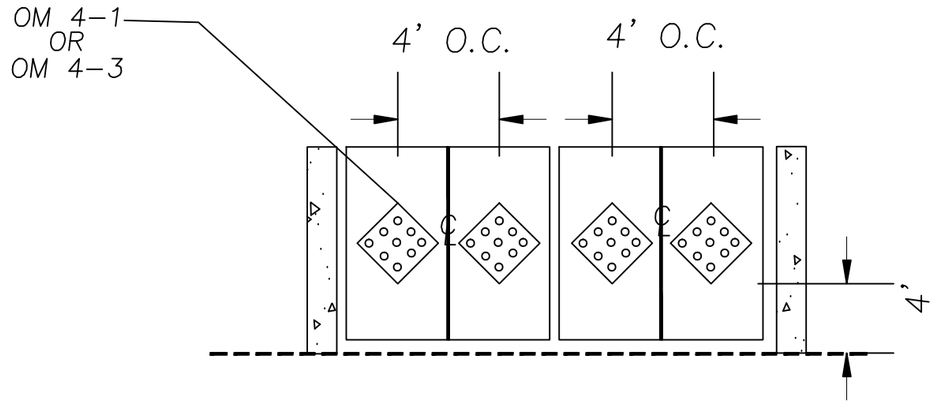
GATES

NOTES:

1. GATES SHALL BE SET BACK FROM THE CLOSEST EDGE OF PAVEMENT 1.5 TIMES THE LENGTH OF THE LONGEST PROPOSED VEHICLE TO REGULARLY USE THE GATE, OR DEPENDENT ON THE TRAFFIC STUDY, IF WAS ONE DONE
2. GATES SHALL OPEN INWARD ONTO PRIVATE PROPERTY, NOT TOWARDS THE ROADWAY.
3. THE FDOT MANUAL OF UNIFORM MINIMUM STANDARDS FOR DESIGN AND MAINTENANCE FOR STREETS AND HIGHWAYS (THE FLORIDA GREENBOOK), GOVERNS THE GATE FEATURE PHYSICAL LOCATIONS. NO PORTION OF THE GATE SUPPORTS SHALL BE CLOSER THAN 6' FROM THE EDGE OF PAVEMENT, OR 18" FROM THE BACK OF CURB, IF A 6" UPRIGHT CURB. CURBING MUST BE 50' ON ENTRANCE SIDE AND 10' ON EXIT SIDE OF GATE..
4. THE CLEAR SITE TRIANGLE IS GOVERNED BY FDOT INDEX 546 FOR ANY OBJECT INSTALLATION.
5. THE MINIMUM RADII FOR THE TURN AROUND IN FRONT OF THE GATES SHALL ACCOMMODATE A SU CLASS VEHICLE, IF REQUIRED.
6. TWO (2) RED OBJECT MARKERS, OM4-1 OR OM4-3 SHALL BE INSTALLED 4' ON CENTER, 4' ABOVE PAVEMENT GRADE ON THE FRONT AND BACK OF EACH GATE.
7. ADDITIONAL SIGNAGE AND PAVEMENT MARKINGS MAY BE REQUIRED.





GATES W/ OM4-1 or OM4-3

TITLE: TRAFFIC CONTROL STANDARD
GATE LOCATIONS

APPROVED BY: DATE: NO.:
C. G. MIXSON, P. E. 10-01-08 V-18

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