

PREFACE - APPENDIX B

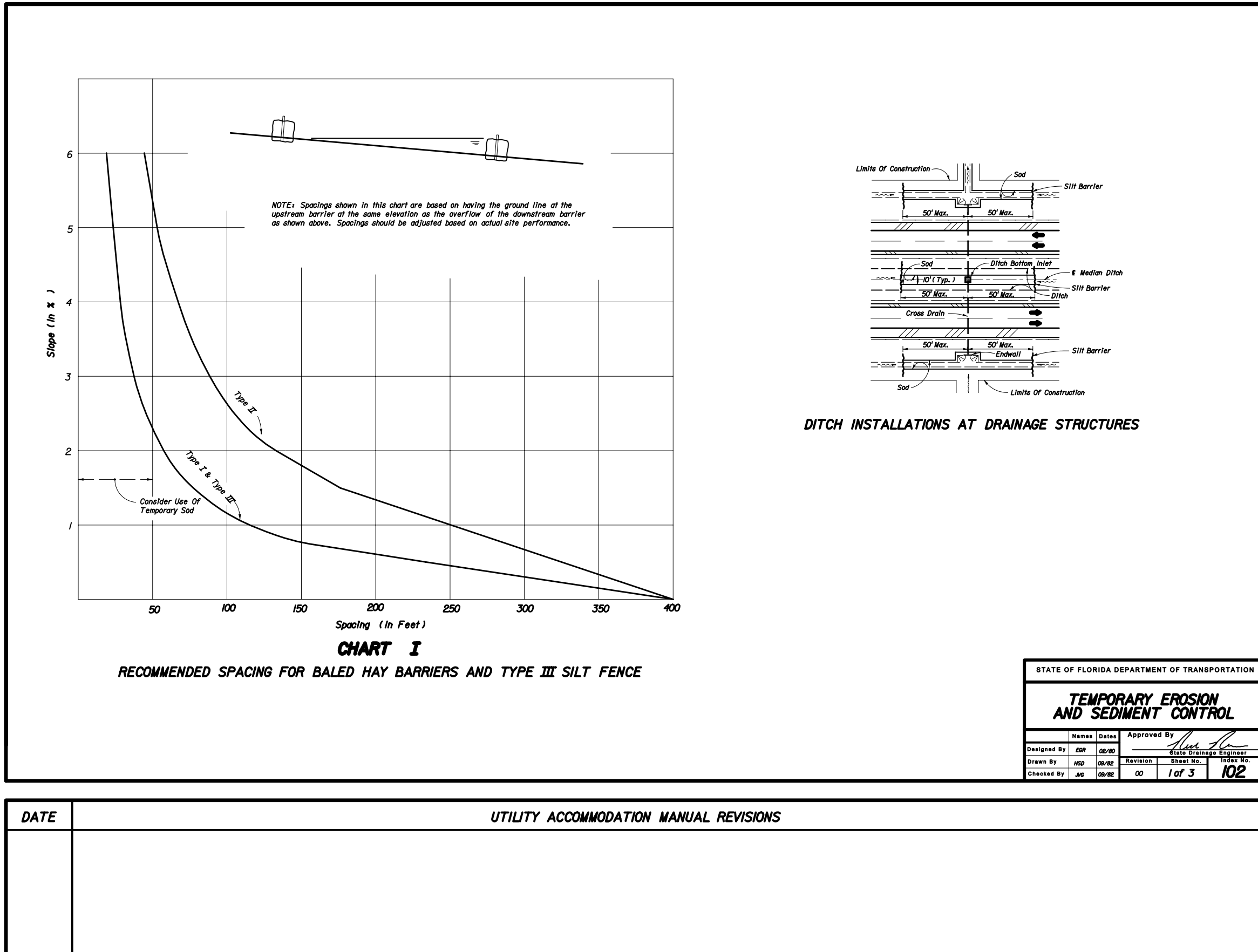
This Appendix B contains certain standards from the Department's January 2004 Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System that supplement the requirements found in this UAM for utility restoration and certain other utility operations deemed necessary to preserve the condition of the R/W. Should the particular conditions in the field indicate that the standards contained in this Appendix B are insufficient to restore FDOT R/W to the condition existing prior to utility work and that a standard not contained within this Appendix B is absolutely necessary to restore FDOT R/W to the condition existing prior to utility work, such standard shown in the Department's January 2004 Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System (excluding the 600 series indexes) will be prescribed by FDOT. To the extent it is possible to do so, such standard shall be identified on the permit, so adjustments to the utility work can be made by the utility. The January 2004 Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System can be found on FDOT's website at http://www.dot.state.fl.us/rddesign/rd/RTDS/04/2004_Standards.htm.

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| STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION |
| APPENDIX B |

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PROTECTION AROUND INLETS OR SIMILAR STRUCTURES

BARRIER FOR PAVED DITCH

BARRIERS FOR FILL SLOPES

BARRIERS FOR UNPAVED DITCHES

NOTES FOR BALED HAY OR STRAW BARRIERS

- Type I and II Barriers should be spaced in accordance with Chart 1, Sheet 1.
- Hay bales shall be trenched 3" to 4" and anchored with 2 - 1" x 2" (or 1" dia.) x 4' wood stakes. Stakes of other material or shape providing equivalent strength may be used if approved by the Engineer. Stakes other than wood shall be removed upon completion of the project.
- Rails and posts shall be 2" x 4" wood. Other materials providing equivalent strength may be used if approved by the Engineer.
- Adjacent bales shall be butted firmly together. Unavoidable gaps shall be plugged with hay or straw to prevent silt from passing.
- Where used in conjunction with silt fence, hay bales shall be placed on the upstream side of the fence.
- Bales to be paid for under the contract unit price for Baled Hay or Straw, EA. The unit price shall include the cost of filter fabric for Type I and II Barriers. Sand bags shall be paid for under the unit price for Sandbagging, CY. Rock bags to be paid for under the contract unit price for Rock Bags, EA.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION AND SEDIMENT CONTROL

| | | | | | |
|-------------|-----|-----------|------|-------------|---|
| Designed By | WR | Dates | 5/74 | Approved By | <i>[Signature]</i> State Drainage Engineer |
| Drawn By | HLB | Revision | 00 | Sheet No. | 2 of 3 |
| Checked By | HLB | Index No. | 6/74 | | 102 |

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TYPE III SILT FENCE

Post Options: Softwood 2 1/2" Dia. Softwood 2" x 4" Hardwood 1 1/2" x 1 1/2" Steel 1.33lbs/ft

Optional Post Positions

Principle Post Position (Canted 20° Toward Flow)

Filter Fabric (In Conformance With Sec. 985 FDOT Spec.)

Vertical

Silt Flow

6' Max.

12" Min. to 18" Max.

SECTION

TYPE IV SILT FENCE

Post Options: Softwood 4" Dia. Softwood 4" x 4" Hardwood 3" Dia. Steel 1.33lbs/ft Min.

Optional Post Positions

Principle Post Position (Canted 20° Toward Flow)

Poultry Mesh (20 Ga. Min.) Or Type A Fence Fabric (Index No. 451 & Sec. 550 FDOT Spec.)

Filter Fabric (In Conformance With Sec. 985 FDOT Spec.)

Vertical

Silt Flow

10' Max.

5' Or More to 18" Min. to 33" Max.

SECTION

SILT FENCE APPLICATIONS

Silt Fence Protection in Ditches with Intermittent Flow

Stormwater Runoff

Silt Fence

Watercourse

Silt Fence

Silt Fence Protection Around Ditch Bottom Inlets.

PLAN VIEW

Post

Flow

Post

Flow

Place the end post of one fence behind the end post of the other fence as shown.

Rotate both posts at least 180 degrees in a clockwise direction to create a tight seal with the fabric material.

Drive both posts into the ground and bury flap.

JOINING TWO SILT FENCES

NOTES FOR SILT FENCES

- Type III Silt Fence to be used at most locations. Where used in ditches, the spacing for Type III Silt fence shall be in accordance with Chart 1, Sheet 1.
- Type IV Silt Fence to be used where large sediment loads are anticipated. Suggested use is where fill slope is 1:2 or steeper and length of slope exceeds 25 feet. Avoid use where the detained water may back into travel lanes or off the right of way.
- Do not construct silt fences across permanent flowing watercourses. Silt fences are to be at upland locations and turbidity barriers used at permanent bodies of water.
- Where used as slope protection, Silt Fence is to be constructed on 0% longitudinal grade to avoid channelizing runoff along the length of the fence.
- Silt Fence to be paid for under the contract unit price for Staked Silt Fence, (LF).

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| TEMPORARY EROSION AND SEDIMENT CONTROL | | | | | |
| Names | Dates | Approved By | | | |
| Designed By | RAA/CJA | 09/85 | State Drainage Engineer | | |
| Drawn By | LRE | 09/85 | Revision | Sheet No. | Index No. |
| Checked By | RAA | 10/85 | 02 | 3 of 3 | 102 |

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TYPE II

TYPE I

$D_1 = 5'$ Std. (Single Panel For Depths 5' or Less).
 $D_2 = 5'$ Std. (Additional Panel For Depths > 5').
 Curtain To Reach Bottom Up To Depths Of 10 Feet.
 Two (2) Panels To Be Used For Depths Greater Than 10 Feet Unless Special Depth Curtains Specifically Called For In The Plans Or As Determined By The Engineer.

NOTICE: COMPONENTS OF TYPES I AND II MAY BE SIMILAR OR IDENTICAL TO PROPRIETARY DESIGNS. ANY INFRINGEMENT ON THE PROPRIETARY RIGHTS OF THE DESIGNER SHALL BE THE SOLE RESPONSIBILITY OF THE USER. SUBSTITUTIONS FOR TYPES I AND II SHALL BE AS APPROVED BY THE ENGINEER.

STAKED TURBIDITY BARRIER

Post (Options: 2" x 4" Or 2 1/2" Min. Dia. Wood; Steel 1.33 Lbs/Ft. Min.)

18 Oz. Nylon Reinforced PVC Fabric (300 psi Test)

FLOATING TURBIDITY BARRIERS

LEGEND

- Pile Locations
- ▨ Dredge Or Fill Area
- ⊖ Mooring Buoy w/Anchor
- Anchor
- Barrier Movement Due To Current Action

NOTES:

- Turbidity barriers are to be used in all permanent bodies of water regardless of water depth.
- Number and spacing of anchors dependent on current velocities.
- Deployment of barrier around pile locations may vary to accommodate construction operations.
- Navigation may require segmenting barrier during construction operations.
- For additional information see Section 104 of the Standard Specifications.

Note: Turbidity barriers for flowing streams and tidal creeks may be either floating, or staked types or any combinations of types that will suit site conditions and meet erosion control and water quality requirements. The barrier type(s) will be at the Contractors option unless otherwise specified in the plans, however payment will be under the pay item(s) established in the plans for Floating Turbidity Barrier and/or Staked Turbidity Barrier. Posts in staked turbidity barriers to be installed in vertical position unless otherwise directed by the Engineer.

TURBIDITY BARRIER APPLICATIONS

GENERAL NOTES

- Floating turbidity barriers are to be paid for under the contract unit price for Floating Turbidity Barrier, LF.
- Staked turbidity barriers are to be paid for under the contract unit price for Staked Turbidity Barrier, LF.

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| STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | |
| TURBIDITY BARRIERS | | | |
| Designed By | RAA/CIA | Date | 9/85 |
| Drawn By | LRE | Date | 9/85 |
| Checked By | RAA | Date | 10/85 |
| Approved By | | State Drainage Engineer | |
| Revision | 00 | Sheet No. | 1 of 1 |
| Index No. | 103 | | |

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LEGEND

- 1 Wildflower Group #1
- 2 Wildflower Group #2
- G Grass-Seed/Seed & Mulch (To Limit of Construction)
- SCS Selective Clearing And Grubbing
- LCC Limits Of Construction
- 3 Seed, Seed And Mulch, Sod Or Seed, Sod

| TYPE OF SEED | ZONE I | | | | ZONE II | | | |
|------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | COASTAL | | INLAND | | COASTAL | | INLAND | |
| | Mar. To Nov. | Nov. To Mar. | Mar. To Oct. | Oct. To Mar. | Feb. To Dec. | Dec. To Feb. | Feb. To Dec. | Dec. To Feb. |
| PERMANENT GRASSES | | | | | | | | |
| Unhulled Bermuda | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Bahia Argentina Or Pensacola Bahia | | | 80 | 80 | | | 80 | 80 |
| QUICK GROWING GRASS | | | | | | | | |
| Annual Rye | | 20 | | 20 | | 20 | | 20 |
| TOTAL Lbs/ PER ACRE | 20 | 40 | 100 | 120 | 20 | 40 | 100 | 120 |

Note: The seeding rates shown in this table apply only when seed is spread by an approved mechanical spreader meeting the requirements of Section 570 and 577 of the Standard Specifications.
*See Index No. 105 for zone boundaries and seeding rates for shoulder reworking.

| WILDFLOWERS SEEDING RATE | |
|--|--------|
| Common Name (Botanical Name) | Lbs/ac |
| #1 Group | |
| Black-Eyed Susan (Rudbeckia hirta) | 2 |
| Tickseed (Coreopsis tinctoria) | |
| Lance-Leaf Tickseed (Coreopsis lanceolata) | 10 |
| Indian Blanket (Gaillardia pulchella) | 10 |
| #2 Group | |
| Annual Phlox (Phlox drummondii) | 10 |
| Moss Verbena (Berbera tenuifolia) | 6 |

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PERMANENT EROSION CONTROL

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|-------------|-----------|-------------------------|
| Names | Dates | Approved By |
| Designed By | GLH 01/00 | |
| Drawn By | BSD 01/00 | State Drainage Engineer |
| Checked By | GLH 01/00 | Revision |
| | | Sheet No. 1 of 2 |
| | | Index No. 104 |

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SHOULDER AND SLOPE TREATMENT IN SAG VERTICAL CURVES

SHOULDER AND SLOPE TREATMENT FOR SUPERELEVATED ROADWAYS

TREATMENTS FOR PROTECTION FROM CONCENTRATED ROADWAY RUNOFF EROSION AND SHOULDER RAVELING

| CRITERIA FOR PAVING SHOULDER ON DIVIDED AND UNDIVIDED FACILITIES | | |
|--|-----------------|---|
| Design Speed (mph) | Radius Of Curve | Notes: |
| 30 | 7' Or Greater | (1) Shoulder Pavement is required on all curves meeting the criteria tabulated. For curves not meeting the criteria, shoulders are to be paved where erosion of the shoulder is evident or anticipated. (2) If outside shoulder is paved as designated bike lane, the paved width within curves shall match the bike lane width. |
| 40 | 5' Or Greater | |
| 50 | 4' Or Greater | |
| 60 | 3' Or Greater | |
| 65 | 3' Or Greater | |
| 70 | 2' Or Greater | |

NOTES

- These treatments are applicable to new construction, reconstruction and RRR projects. Project requirements for shoulder pavement and sodding that exceed the limits of this standard take precedence.
- For sodding adjacent to ditches and at headwalls, see Index No. 281.
- All front slopes steeper than 1:3 are to be sodded.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

PERMANENT EROSION CONTROL

| | | | | |
|-------------|-----|-------|-------------------------|--------------------|
| Designed By | HLG | 04/75 | Approved By | <i>[Signature]</i> |
| Drawn By | | | State Drainage Engineer | |
| Checked By | DCB | 04/75 | Revision | 02 |
| | | | Sheet No. | 2 of 2 |
| | | | Index No. | 104 |

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TRENCH OPENING
Edge Of Any Existing Or New Pavement | 1'-4" | Sod Trench | Existing Shoulder | Excavated Turf And Topsoil To Be Used For Filling Voids And Low Areas At Edge Of Pavement (Gap For Drainage)

PLAN VIEW PATTERN DETAIL
Edge Of Pavement | 1'-4" | Sod Blocks Shall Be Placed With Staggered Transverse Joints

SHOULDER BUILD-UP METHOD
Edge Of Any Existing Or New Pavement | 3" Or More Overlay | Reworking Width Called For In The Plans (Shoulder Width Plus 2' Min.) Width For Payment Under Reworking Shoulder, SY | 2'-8" See Pattern Detail | Seed And Mulch (See Gen. Note No. 5) | Sod (Avg. Depth 1 1/2") | Seed And Mulch Plus Either Emulsified Asphalt Mulch Or Latex Mulch* | Salvaged Turf And Topsoil | Varies, 2' Min. | Exist. Turf And Topsoil To Be Excavated And Replaced With Fill | Excavated Turf And Topsoil (Gap For Drainage)

SHOULDER REWORKING METHOD
Edge Of Any Existing Or New Pavement | 3" Or More Overlay | Reworking Width Called For In The Plans (Shoulder Width Plus 2' Min.) Width For Payment Under Reworking Shoulder, SY | 2'-8" See Pattern Detail | Seed And Mulch (See Gen. Note No. 5) | Sod (Avg. Depth 1 1/2") | Seed And Mulch Plus Either Emulsified Asphalt Mulch Or Latex Mulch* | Fill | Varies, 2' Min. | Shoulder Reworking Mix To Depth Indicated In Specifications Or Plans

CRITERIA FOR USING TREATMENT TYPE R-1
Project—
• is resurfacing, widening and resurfacing or construction of shoulder pavement
• is rural or is urban without curb and gutter
• has good existing soil and turf with no significant shoulder erosion (isolated areas of significant erosion will require additional special treatment. Where poor soil and/or turf conditions exist shoulder reworking, Type R-2, should be applied.)
• resurfacing build-up is greater than 1 1/2" to less than 3"

CRITERIA FOR USING TREATMENT TYPE R-2
Project—
• is resurfacing or construction of shoulder pavement
• is rural or is urban without curb and gutter
• has good existing soil and turf
• resurfacing build-up is 3" or more

CRITERIA FOR USING TREATMENT TYPE R-3
Project—
• is resurfacing, widening and resurfacing or construction of shldr. pavt.
• is rural or is urban without curb and gutter
• has good existing soil and turf with no significant shoulder erosion (isolated areas of significant erosion will require additional special treatment. Where poor soil and/or turf conditions exist shoulder reworking, Type R-2, should be applied.)
• resurfacing build-up is 1 1/2" or less

SEEDING RATE ZONES
Zone I
Zone II

SEEDING RATES (Lbs/Ac)

| TYPE OF SEED | ZONE I | | | | ZONE II | | | |
|------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | COASTAL | | INLAND | | COASTAL | | INLAND | |
| | Mar. to Nov. | Nov. to Mar. | Mar. to Oct. | Oct. to Mar. | Feb. to Dec. | Dec. to Feb. | Feb. to Dec. | Dec. to Feb. |
| PERMANENT GRASSES | | | | | | | | |
| Unhulled Bermuda | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Bahia Argentina Or Pensacola Bahia | | | 80 | 80 | | | 80 | 80 |
| QUICK GROWING GRASS | | | | | | | | |
| Annual Rye Grass | | 20 | | 20 | | 20 | | 20 |
| TOTAL POUNDS PER ACRE | 20 | 40 | 100 | 120 | 20 | 40 | 100 | 120 |

Note: The seeding rates shown in this table apply only when seed is spread by an approved mechanical spreader meeting the requirements of Section 570 and 577 of the Standard Specifications.
Wildflowers destroyed by shoulder reworking are to be reestablished under the seeding rates prescribed for permanent wildflower *2 Group shown by table on Index No. 104.

GENERAL NOTES
1. Special attention is to be directed to the construction of the required 1" drop-off at edge of pavement.
2. Fertilize entire unpaved shoulder and front slope to toe of slope or bottom of ditch.
3. Topsoil obtained from borrow pits or other sources may be used in lieu of excavated turf and topsoil when economically feasible. No additional payment will be made for substituting topsoil for excavated turf or topsoil.
4. Payment for excavation of turf and topsoil and for backfill of this material under Types R-1 and R-3, is to be included in the contract unit price for Sodding, SY.
5. Payment for reworking shoulders, shall include the cost for those seeding and mulching operations within the limits for reworking shoulders. Materials (Seed, Mulch, Fertilizer and Water) and Sodding shall be paid for as separate items. Reworking shoulders shall be paid for under the contract unit price for Reworking Shoulders, SY.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
SHOULDER SODDING AND REWORKING ON EXISTING FACILITIES
Designed By: EGR 08/07/04
Drawn By: HSD 08/07/04
Checked By: EGR 08/07/04
Approved By: [Signature]
State Drainage Engineer
Revision: 00
Sheet No.: 1 of 1
Index No.: 105

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CURB AND GUTTER ENDINGS

CURB TYPE A
FLARED END
STRAIGHT END

CURB AND GUTTER TYPES E & F
FLARED END
STRAIGHT END

CONTRACTION JOINT IN CURB AND GUTTER

CONTRACTION JOINT IN CURB

CONCRETE CURB AND GUTTER

CONCRETE CURB

CONCRETE BUMPER GUARD

GENERAL NOTES

- For curb, gutter and curb & gutter provide $\frac{1}{8}$ " - $\frac{1}{4}$ " contraction joints at 10' centers (max.). Contraction joints adjacent to concrete pavement on tangents and flat curves are to match the pavement joints, with intermediate joints not to exceed 10' centers. Curb, gutter and curb & gutter expansion joints shall be located in accordance with Section 520 of the standard specifications.
- Ends of Curbs Types B and D shall transition from full to zero heights in 3'.

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CURB & CURB AND GUTTER

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| Designed By | Names | Dates | Approved By |
| Drawn By | | | Revision |
| Checked By | | | Sheet No. |
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TRUNCATED DOME

PLAN VIEW

All Sidewalk Curb Ramps Shall Have Detectable Warning Surfaces That Extend The Full Width Of The Ramp And In The Direction Of Travel 24 Inches (610 mm) From The Back Of Curb.

GENERAL NOTES

- Public sidewalk curb ramps shall be constructed in the public right of way at locations that will provide continuous unobstructed pedestrian circulation paths to pedestrian areas, elements and facilities in the public right of way and to accessible pedestrian routes on adjacent sites. Curbed facilities with sidewalks and those without sidewalks are to have curb ramps constructed at all street intersections and at turnouts that have curbed returns. Partial curb returns shall extend to the limit prescribed by Index No. 515 to accommodate curb ramps. Ramps constructed at locations without sidewalks shall have a landing constructed at the top of each ramp, see Sheet 5.
- The location and orientation of curb ramps shall be as shown in the plans.
- Curb ramp running slopes at unrestrained sites shall not be steeper than 1:12 and cross slope shall be 0.02 or flatter. Transition slopes shall not be steeper than 1:12.
When altering existing pedestrian facilities where existing site development precludes the accommodation of a ramp slope of 1:12, a running slope between 1:12 and 1:10 is permitted for a rise of 6" maximum and a running slope of between 1:10 and 1:8 is permitted for a rise of 3" maximum. Where compliance with the requirements for cross slope cannot be fully met, the minimum feasible cross slope shall be provided.
Ramp running slope is not required to exceed 8' in length, except at sites where the plans specify a greater length.
- If a curb ramp is located where pedestrians must walk across the ramp, then the walk shall have transition slopes to the ramp; the maximum slope of the transitions shall be 1:12. Ramps with curb returns may be used at locations where other improvements provide guidance away from that portion of curb perpendicular to the sidewalk; improvements for guidance are not required at curb ramps for linear pedestrian traffic.
- Curb ramp detectable warning surfaces shall extend the full width of the ramp and in the direction of travel 24" from the back of curb. Detectable warning surfaces shall be constructed by featuring a truncated dome pattern in conformance with U.S. Department of Justice A.D.A. Standards For Accessible Design, A.D.A. Accessibility Guidelines, Section 4.29.2, (detail shown above left). Transition slopes are not to have detectable warnings.
- Unless otherwise called out in the plans, the ramp detectable warning surface shall be colored in accordance with Section 351 of the Standard Specifications.
- Where a curb ramp is constructed within existing curb, curb and gutter and/or sidewalk, the existing curb or curb and gutter shall be removed to the nearest joint beyond the curb transitions or to the extent that no remaining section of curb or curb and gutter is less than 5' long. The existing sidewalk shall be removed to the nearest joint beyond the transition slope or walk around or to the extent that no remaining section of sidewalk is less than 5' long.
- Alpha-numeric identifications are for reference (plans, permits, etc.).
- Public sidewalk curb ramps are to be paid for as follows:
Ramps, reconstructed sidewalks, walk around sidewalks, sidewalk landings and sidewalk curbs are to be paid for under the contract unit price for Sidewalk Concrete, (Type Thick), SY. Curb transitions and reconstructed curbs are to be paid for under the contract unit price for the parent curb, i.e., Curb Conc., (Type), LF or Curb and Gutter Conc., (Type), LF.
When a separate pay item for the removal and disposal of existing curb, curb and gutter, and/or sidewalk is not provided in the plans, the cost of removal and disposal of these features shall be included in the contract unit price for new curb, curb and gutter and/or sidewalk respectively.

CURB RAMP DETECTABLE WARNING

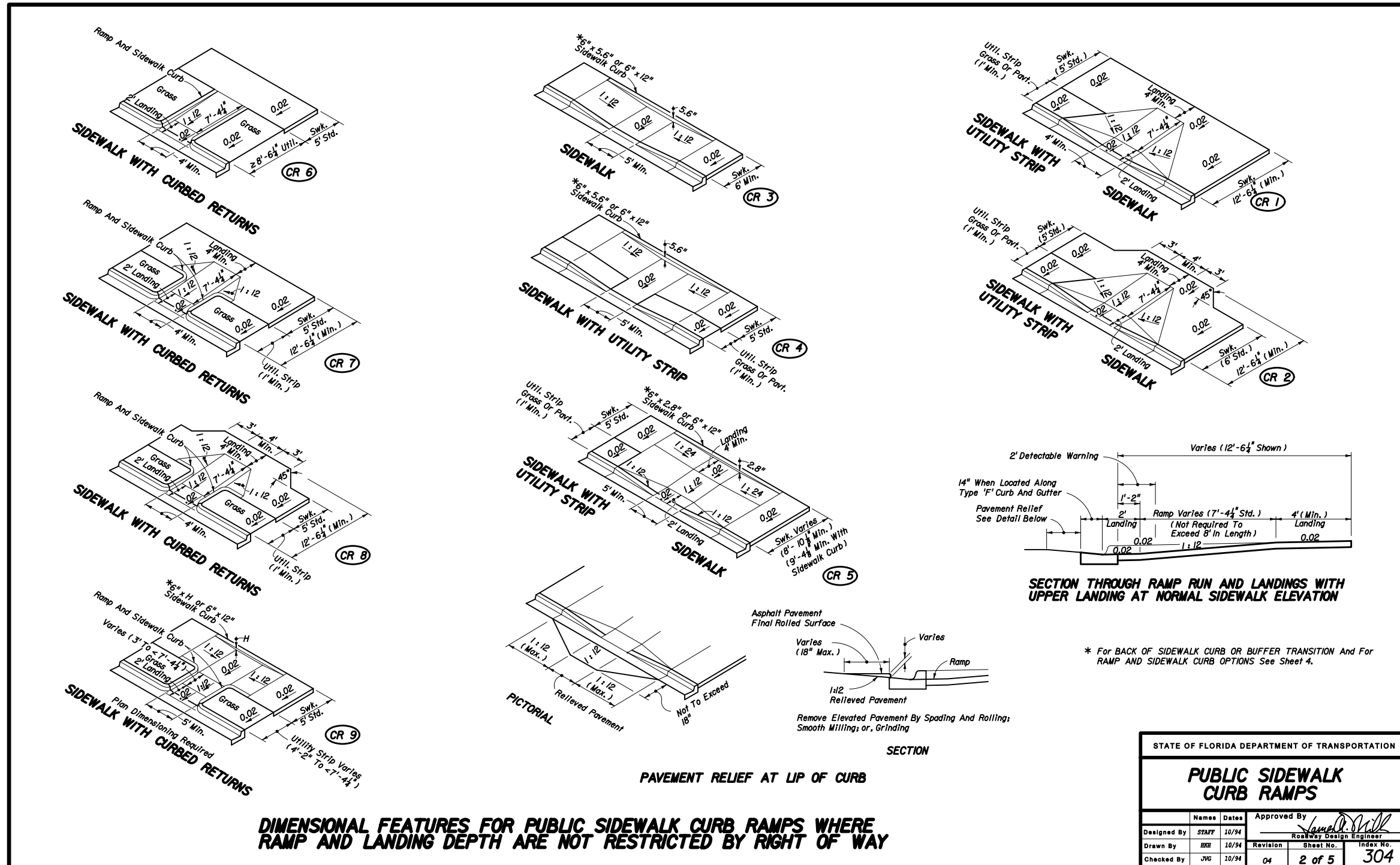
SIDEWALK / UTILITY STRIP TRANSITION

LINEAR SIDEWALK RAMPS

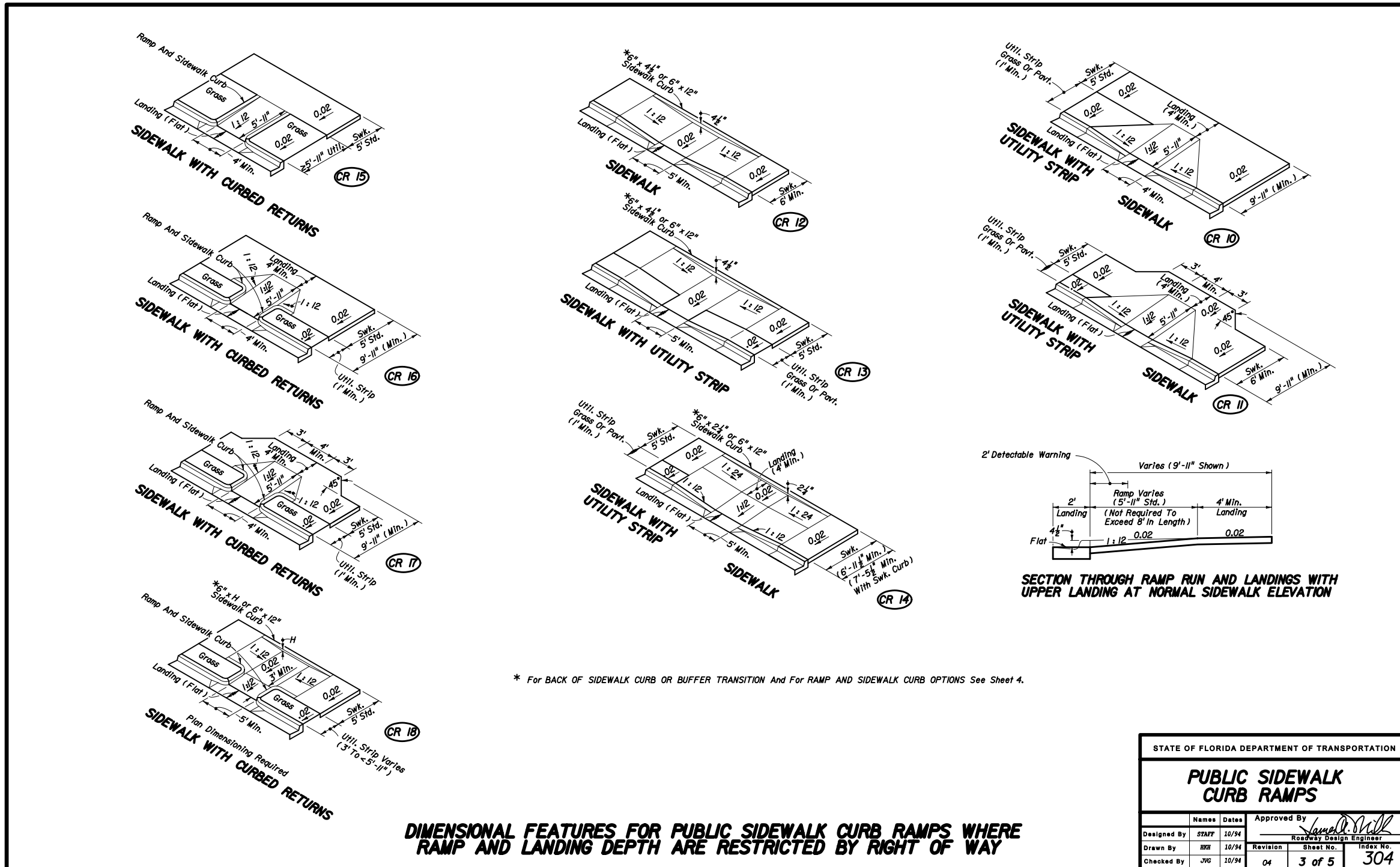
TYPICAL PLACEMENT OF PUBLIC SIDEWALK CURB RAMPS AT CURBED RETURNS

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| STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | | | |
| PUBLIC SIDEWALK CURB RAMPS | | | | | |
| | Names | Dates | Approved By | | |
| Designed By | STAFF | 10/94 | Roadway Design Engineer | | |
| Drawn By | BKH | 10/94 | Revision | Sheet No. | Index No. |
| Checked By | JVG | 10/94 | 04 | 1 of 5 | 304 |

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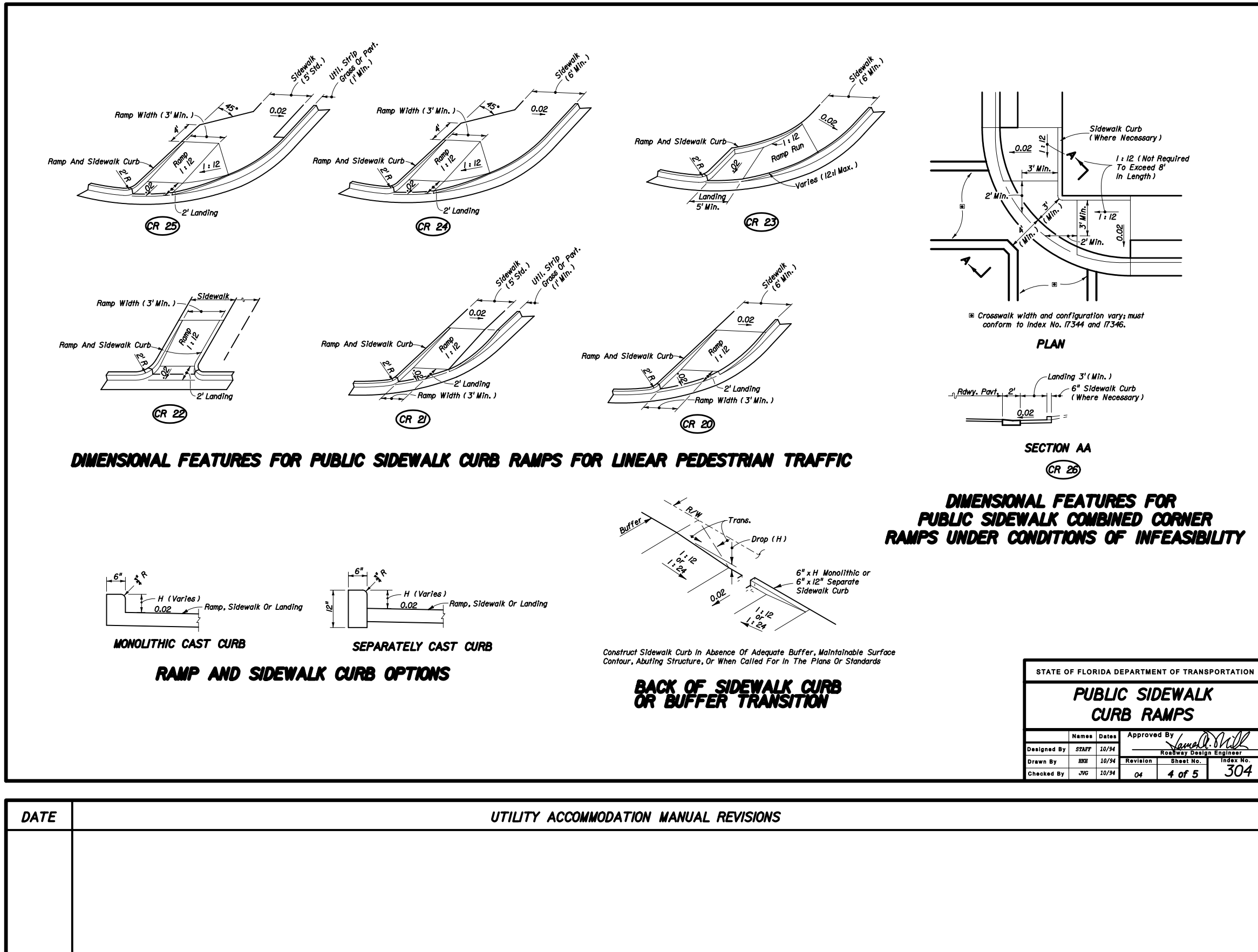


DIMENSIONAL FEATURES FOR PUBLIC SIDEWALK CURB RAMPS WHERE RAMP AND LANDING DEPTH ARE RESTRICTED BY RIGHT OF WAY

* For BACK OF SIDEWALK CURB OR BUFFER TRANSITION And For RAMP AND SIDEWALK CURB OPTIONS See Sheet 4.

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| STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | | |
| PUBLIC SIDEWALK CURB RAMPS | | | | |
| Designed By | STAFF | Dates | 10/94 | Approved By |
| Drawn By | BKH | Revision | 10/94 | <i>[Signature]</i> |
| Checked By | JVG | Sheet No. | 04 | Roadway Design Engineer |
| | | Index No. | 3 of 5 | 304 |

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5' Refuge With Maximum Slope Of 0.02 Must Be Provided When Slopes Of 0.05 Or Flatter And 5' In Length Are Not Available On Crosswalk; The Refuge Can Be Constructed At Any Location Within The Crosswalk; Or, A 5' x 5' Concrete Landing With Maximum Slope Of 0.02 Can Be Constructed Adjacent To The Crosswalk.

Slopes Shall Intersect At Centerline Of Median On The 0.02 Rate When The Edge Of Pavement Elevations Are Equal. The Slopes May Intersect Off The Centerline For Variable Edge Of Pavement Elevations Or To Accommodate Other Construction In The Median; However, Slopes Shall Not Be Steeper Than 1:12.

**SECTION CC
MEDIAN CROSSWALKS**

Curb Transition
(On Existing Facilities Remove And Reconstruct Curb Or Curb And Gutter)
For Payment See General Note 9.

PLAN

Concrete Landing
0.02 Max. Slope

Ramp Run
1:12

Concrete Landing
0.02 Max. Slope

Ramp Run
1:12

Concrete Landing
0.02 Max. Slope

Ramp Run
1:12

Other Options As Shown In The Plans

LANDINGS FOR RAMPS WITHIN PUBLIC RIGHT OF WAY CONSTRUCTED AT LOCATIONS WHERE FUTURE SIDEWALKS ARE PROPOSED, WHERE STABLE SURFACES OTHER THAN SIDEWALKS ARE PART OF A CONTINUOUS PASSAGE OR WHERE A CURB FALLS ALONG THE CIRCULATION PATH TO PEDESTRIAN ROUTES ON ADJACENT SITES

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| STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | | | |
| PUBLIC SIDEWALK CURB RAMPS | | | | | |
| Designed By | STAFF | Date | 10/94 | Approved By | |
| Drawn By | BKH | Date | 10/94 | Revision | Sheet No. |
| Checked By | JVG | Date | 10/94 | 04 | 5 of 5 |
| | | | | | Index No. 304 |

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FLEXIBLE PAVEMENT NOTES

PAVEMENT REMOVAL AND REPLACEMENT
Pavement shall be mechanically sawed.
The replacement asphalt shall match the existing structural and friction courses for type and thickness.
The new base materials shall be either of the same type and composition as the materials removed or of equal or greater structural adequacy (See Index No. 514).

BACKFILL
COMPACTED AND STABILIZED FILL OPTION
Backfill material shall be placed in accordance with Section 125 of the Standard Specifications.
In Stage #1, construct compacted fill beneath the haunches of the pipe, using mechanical tamps suitable for this purpose. This compaction applies to the material placed beneath the haunches of the pipe and above any bedding.
In Stage #2, construct compacted fill along the sides of the pipe and up to the bottom of the base, with the upper 12" receiving Type B Stabilization. In lieu of Type B Stabilization, the Contractor may construct using Optional Base Group 3.

* **FLOWABLE FILL OPTION**
If compaction can not be achieved, through normal mechanical methods then flowable fill may be used.
Flowable fill is to be placed in accordance with Section 121 of the Specifications, as approved by the Engineer.
Do not allow the utility being installed to float. If a method is provided to prevent flotation from occurring, Stages #1 and #2 can be combined, if approved by the Engineer.
In Stage #1, place flowable fill midway up on both sides of the utility. Allow to harden before placing Stage #2.
In Stage #2, place flowable fill to the bottom of the existing base course.

FLEXIBLE PAVEMENT CUT

RIGID PAVEMENT NOTES

PAVEMENT REMOVAL AND REPLACEMENT
High early strength cement concrete (3000 psi) meeting the requirements of Standard Specification 346 shall be used for rigid pavement replacement.
Pavement shall be mechanically sawed and restored to conform with existing pavement joints within 12 hours. (See Index No. 305)

GRANULAR BACKFILL
Any edg drain system that is removed shall be replaced with the same type materials. Any edg drain system that is damaged shall be repaired with methods approved by the Engineer.
Fill material shall be placed in accordance with the Standard Specifications. Fill material shall be special select soil in accordance with Index No. 505.
In Stage #1, construct compacted fill beneath the haunches of the pipe, using mechanical tamps suitable for this purpose. This compaction applies to the material placed beneath the haunches of the pipe and above any bedding.
In Stage #2, construct fill along the sides of the pipe and up to the bottom of replacement pavement.

* **FLOWABLE FILL OPTION**
If mechanical compaction can not be achieved through normal mechanical methods then flowable fill may be used.
Flowable fill is to be placed in accordance with Section 121 of the Specifications, as approved by the Engineer.
Do not allow the utility being installed to float. If a method is provided to prevent flotation from occurring, Stages #1 and #2 can be combined, if approved by the Engineer.
In Stage #1, place flowable fill midway up on both sides of the utility. Allow to harden before placing Stage #2.
In Stage #2, place flowable fill to the bottom of the stone layer.

RIGID PAVEMENT CUT

TRENCH CUTS AND RESTORATIONS ACROSS ROADWAYS

| | | | |
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| STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | |
| MISCELLANEOUS UTILITY DETAILS | | | |
| Designed By | Names | Dates | Approved By |
| | | | State Utility Engineer |
| Drawn By | Revision | Sheet No. | Index No. |
| | | 04 | 1 of 3 |
| Checked By | | | 307 |

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- GENERAL NOTES**
1. The details provided in this standard Index apply to cases in which Jack and bore or directional boring methods are not required by the Engineer.
 2. Flowable fill shall not be placed directly over loose, or high plastic, or muck material (see Index 505) which will cause settlement due to fill weight. Where highly compressible material exists, the amount, shape and depth of flowable fill must be engineered to prevent pavement settlement.
 3. These details do not apply to utility cuts longitudinal to the centerline of the roadway which may require the additional use of geotextiles, special bedding and backfill, or other special requirements.
 4. Method of construction must be approved by the Engineer.
 5. Some pipe may require special granular backfill up to 6" above top of pipe. Geotextiles may be required to encapsulate the special granular material.
 6. Where asphalt concrete overlays exist over full slab concrete pavement, the replacement pavement shall have an overlay constructed over the replacement slab. The overlay shall match the existing asphalt pavement thickness. The replacement friction course shall match the existing friction course, except structural course may be used in lieu of dense graded friction course.
Existing broken and seated pavements shall be treated as flexible pavements.
 7. All shoulder pavement, curb, curb and gutter, and their substructure disturbed by utility trench cut construction shall be restored in kind.
 8. The use of flowable fill to reduce the time traffic is taken off a facility is acceptable but must have prior approval by the Engineer. Flowable fill use is allowed only when properly engineered for pavement crossings, whether straight or diagonal, and shall not be installed for significant depths or lengths. The maximum length shall be fifty (50) feet and a maximum depth of six (6) feet unless supported by an engineering document prepared by a registered professional engineer that specializes in soils engineering. The engineering document shall address the evaluation of local groundwater flow interruption and settlement potential.
 9. Excavatable flowable fill is to be used when the flowable fill option is selected.
 10. When approved by the Engineer, in lieu of the pavement and base, non-excavatable flowable fill may be used for manhole stabilization and ring and cover adjustments. Excavatable flowable fill shall not be used within the limits of the pavement and base.

SECTION LONGITUDINAL TO CARRIER PIPE
(Non-Pressure Or Non-Fluid Carrier Installations)

UTILITY CONFLICT CONDITION I

Grout When Box Precast

Carrier

1' Min. Clearance Between Obstruction And Flow Line Of Outlet Pipe

No Joints Allowed Within Structure

Carrier Casing: The Casing Shall Be Rated To The Greatest Pressure Of Either The Carrier, That's Called For By Design Or That's Required By Construction. The Casing May Be Steel, Cast Iron, Ductile Iron Or Plastic. The Casing Can Be Seamless Or Sealed Half Sleeves.

Annular Space Plug/Seal Option: Flowable Fill Or Neoprene Flexible Seal See Note No. 3

For Structure Type See Plans

Grout

Carrier

1' Min. Clearance Between Obstruction And Flow Line Of Outlet Pipe

Carrier Spacer Or Cradle (Cradle Option Shown)

SECTION LONGITUDINAL TO CARRIER PIPE
(Pressure Or Fluid Carrier Installations)

UTILITY CONFLICT CONDITION II

NOTES FOR UTILITY CONFLICT PIPE

1. These details are for construction field expediency to resolve utility conflicts that cannot be remedied by relocation. For conflicts determined during design, use the construction shop drawings for structure details.
2. Concrete used in conflict structures shall be as specified in ASTM C478. 4000 psi may be used in lieu of Class I concrete.
3. Maximum opening for pipe shall be the pipe OD plus 6". Mortar used to seal the pipe into the opening will be of such mix that shrinkage will not cause leakage into or out of the structure.
4. If the conflict structure is round or there are multiple inlet or outlet pipes, then the wall section should be reviewed for strength.

Allow 2 feet minimum clearance on one side of utility for maintenance purposes and no less than 1 foot clearance on the other side

Carrier Casing Or The Carrier If No Casing Is Used

DESIGNERS NOTE

"Sumped" Conflict Manholes Shall Not Be Used Unless The System is Hydraulically Designed To Account For The Headloss Generated If The Sump is Completely Blocked

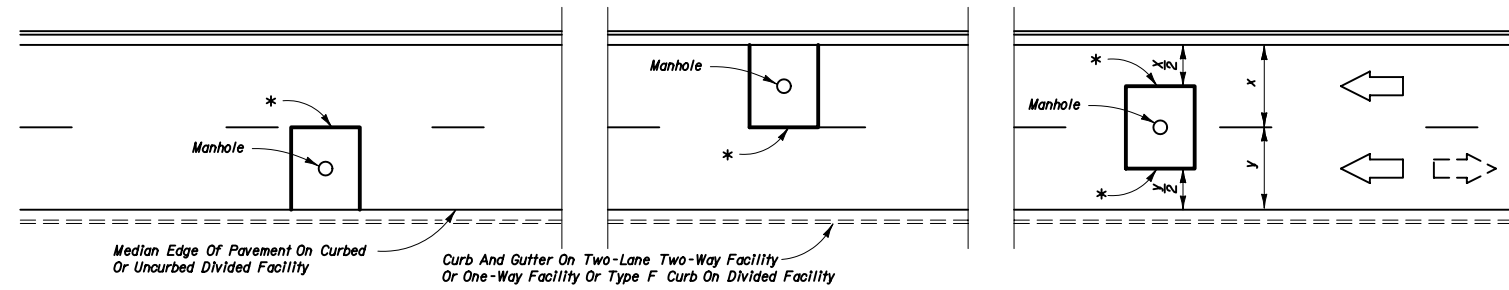
SECTION BB

SECTION AA

UTILITY CONFLICT PIPES THRU STORM SEWER STRUCTURES

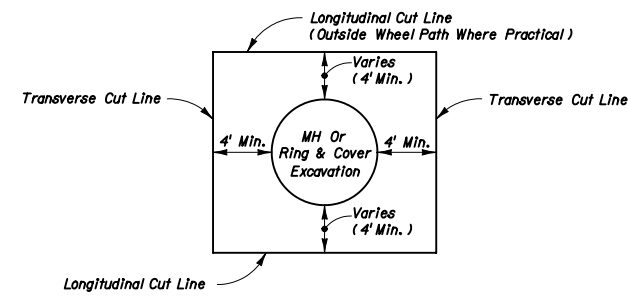
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| STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | |
| MISCELLANEOUS UTILITY DETAILS | | | |
| | Names | Dates | Approved By |
| Designed By | | | <i>[Signature]</i> State Utilities Engineer |
| Drawn By | | Revision | Sheet No. Index No. |
| Checked By | | 04 | 2 of 3 307 |

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* Longitudinal Cut Lines For Both Curbed And Uncurbed Facilities Must Coincide With A Regular Seam Or Mid-Lane Point In Order To Be Outside The Wheel Path

**PLAN VIEW
FOR TWO OR MORE LANES (TWO LANES SHOWN)**



PARTIAL CUTS FOR RING AND COVER ADJUSTMENTS

NOTES

1. No irregular seams are permitted. All seams must be clean sawed.
2. Pavement cut seams for underground utility structures in rigid pavement are the same longitudinally, but the transverse seams shall extend to the nearest existing joint.
3. See Sheet 1 for replacement pavement.

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| MISCELLANEOUS UTILITY DETAILS | | | |
| Designed By | Names | Dates | Approved By |
| Drawn By | | | <i>[Signature]</i> State Utilities Engineer |
| Checked By | | | Revision |
| | | | Sheet No. 3 of 3 |
| | | | Index No. 307 |

NON-TRENCH PAVEMENT CUTS FOR UNDERGROUND UTILITY STRUCTURES IN PAVEMENT

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SAWED JOINTS

OPEN JOINTS

EXAGGERATED SCALE
LONGITUDINAL SECTION
SIDEWALK JOINTS

JOINT LEGEND

- A- $\frac{1}{2}$ " Expansion Joints (Preformed Joint Filler)
- B- $\frac{1}{2}$ " Dummy Joints, Tooled
- C- $\frac{1}{2}$ " Formed Open Joints
- D- $\frac{3}{8}$ " Saw Cut Joints, $\frac{1}{2}$ " Deep (96 Hour) Max. 5' Centers
- E- $\frac{3}{8}$ " Saw Cut Joints, $\frac{1}{2}$ " Deep (12 Hour) Max. 30' Centers
- F- $\frac{1}{2}$ " Expansion Joint When Run Of Sidewalk Exceeds 120'. Intermediate locations when called for in the plans or at locations as directed by the Engineer.
- G- Cold Joint With Bond Breaker, Tooled

NOTES FOR CONCRETE SIDEWALK ON CURBED ROADWAYS

1. Sidewalks shall be constructed in accordance with Section 522 of the FDOT Standard Specifications except for public sidewalk curb ramp runs which shall be finished in accordance with Index No. 304.
2. Bond breaker material can be any impermeable coated or sheet membrane or preformed material having a thickness of not less than 6 mils nor more than $\frac{1}{8}$ ".
3. For public sidewalk curb ramps see Index No. 304.
4. For turnouts see Index No. 515.
5. Sidewalk shall be paid for under the contract unit price for Sidewalk Concrete (___ Thick), S.Y.

SECTION AA

SECTION BB

SIDEWALK WITH UTILITY STRIP

SIDEWALK WITHOUT UTILITY STRIP

CONCRETE SIDEWALK FOR CURBED ROADWAYS

| | | | | | |
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| STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | | | |
| CONCRETE SIDEWALK | | | | | |
| | Names | Dates | Approved By | | |
| Designed By | SPCS | | Roadway Design Engineer | | |
| Drawn By | BKH | 11/93 | Revision | Sheet No. | Index No. |
| Checked By | JVG | 11/93 | 04 | 1 of 2 | 310 |

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SAWED JOINTS

OPEN JOINTS

EXAGGERATED SCALE
**LONGITUDINAL SECTIONS
SIDEWALK JOINTS**

JOINT LEGEND

- A- $\frac{1}{2}$ " Expansion Joints (Preformed Joint Filler)
- B- $\frac{1}{4}$ " Dummy Joints, Tooled
- C- $\frac{1}{2}$ " Formed Open Joints
- D- $\frac{3}{8}$ " Saw Cut Joints, $1\frac{1}{2}$ " Deep (96 Hour) Max. 5' Centers
- E- $\frac{3}{8}$ " Saw Cut Joints, $1\frac{1}{2}$ " Deep (12 Hour) Max. 30' Centers
- F- $\frac{1}{2}$ " Expansion Joint When Run Of Sidewalk Exceeds 120'. Intermediate locations when called for in the plans or at locations as directed by the Engineer.

NOTES FOR CONCRETE SIDEWALKS ON UNCURBED ROADWAYS

1. Sidewalks shall be constructed in accordance with Section 522 of the FDOT Standard Specifications.
2. Sidewalks adjoining driveways 24' and wider, right in-right out composite driveways and side roads and streets shall have a detectable warning surface that extends the full width of the sidewalk and in the direction of travel 24" (610 mm) from the edge of driveways and edge of side roads and streets. Detectable warning surfaces shall conform to the requirements described in the General Notes on Index No. 304.

For sidewalks continuous through driveways, detectable warning surfaces are not required.
3. For turnouts see Index No. 515.
4. Sidewalk shall be paid for under the contract unit price for Sidewalk Concrete (___ Thick), SY.

CONTINUOUS SIDEWALK

DISCONTINUOUS SIDEWALK

PLAN

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

CONCRETE SIDEWALK

| Names | Dates | Approved By | | |
|-------------|-------|-------------|-------------------------|-----------|
| Designed By | SPPCS | | Roadway Design Engineer | |
| Drawn By | BKH | | Revision | Sheet No. |
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Remove Overlying Material And Organic Material Within The Limits Shown And Backfill In Accordance With Index No. 505, Unless Otherwise Called For In The Plans Or Directed Otherwise By The District Geotechnical Engineer; The Limits Include Full Median Width When Applied To Divided Facilities With Median Widths Up To 64'; When Median Width Is Greater Than 64' And For Bifurcated Roadways The Organic Material Removal Limits Will Be Set By A 1:2 Control Line Complimentary To The Outer Roadway That Will Accomodate One Future Median Lane On Each Roadway Unless Specified Otherwise By The Plans.

WITH OVERBURDEN - HALF SECTION

Remove Overlying Material And Organic Material Within The Limits Shown And Backfill In Accordance With Index No. 505, Unless Otherwise Called For In The Plans Or Directed Otherwise By The District Geotechnical Engineer; The Limits Include Full Median Width When Applied To Divided Facilities With Median Widths Up To 64'; When Median Width Is Greater Than 64' And For Bifurcated Roadways The Organic Material Removal Limits Will Be Set By A 1:2 Control Line Complimentary To The Outer Roadway That Will Accomodate One Future Median Lane On Each Roadway Unless Specified Otherwise By The Plans.

WITHOUT OVERBURDEN - HALF SECTION

IN RURAL CONSTRUCTION

Remove Overlying Material And Organic Material Within The Limits Shown And Backfill In Accordance With Index No. 505, Unless Otherwise Called For In The Plans Or Directed Otherwise By The District Geotechnical Engineer; The Limits Include Full Median Width When Applied To Divided Facilities With Median Widths Up To 64'; When Median Width Is Greater Than 64' And For Bifurcated Roadways The Organic Material Removal Limits Will Be Set By A 1:2 Control Line Complimentary To The Outer Roadway That Will Accomodate One Future Median Lane On Each Roadway Unless Specified Otherwise By The Plans.

WITH OVERBURDEN - HALF SECTION

Remove Overlying Material And Organic Material Within The Limits Shown And Backfill In Accordance With Index No. 505, Unless Otherwise Called For In The Plans Or Directed Otherwise By The District Geotechnical Engineer; The Limits Include Full Median Width When Applied To Divided Facilities With Median Widths Up To 64'; When Median Width Is Greater Than 64' And For Bifurcated Roadways The Organic Material Removal Limits Will Be Set By A 1:2 Control Line Complimentary To The Outer Roadway That Will Accomodate One Future Median Lane On Each Roadway Unless Specified Otherwise By The Plans.

WITHOUT OVERBURDEN - HALF SECTION

IN URBAN CONSTRUCTION

REMOVAL OF ORGANIC MATERIAL

GENERAL NOTES

- All details shown on this index for removal of organic and plastic materials apply unless otherwise shown on the plans.
- Utilization of excavated materials shall be in accordance with Index No. 505.
- Where organic or plastic material is undercut, backfill shall be made of suitable material in accordance with Index No. 505, unless otherwise shown on the plans.
- The term "Plastic Material" used in this index in conjunction with removal of plastic soil is as defined under soil classifications for Plastic (P) and High Plastic (H) on Index No. 505.
- The term "Organic Material" as used on this index is defined as any soil which has an average organic content greater than five (5.0) percent, or an individual organic content test result which exceeds seven (7.0) percent. Organic material shall be removed as shown on this index and the plans unless directed otherwise by the District Geotechnical Engineer.
Average organic content shall be determined from the test results from a minimum of three randomly selected samples from each stratum. Tests shall be performed in accordance with AASHTO T 267 on the portion of a sample passing the No. 4 sieve.
- The normal depth of side ditches shall be 3.5' below the shoulder point except in special cases.
- In municipal areas, where underdrain is to be constructed beneath the proposed pavement, the grade of the underdrain filter material will not extend above the bottom of the stabilized section of the subgrade. Gradation of the filter material shall conform to FDOT specifications. Minimum grade on underdrain pipe shall be 0.2%.
- See Index No. 506 for miscellaneous earthwork details.

DESIGN NOTES

- At locations where organic material or other soft soil deposits persists to such depth that removal is impractical, the construction of a geosynthetic foundation over those soils should be considered. The Engineer of Record should request guidance from the District Geotechnical Engineer and make a geosynthetic foundation design in accordance with Index No. 501 when pursuing geosynthetic alternates.
- The designer shall take into consideration the expectancy of roadway widening to the outside, and where widening is anticipated specify in the plans the limits of removal of organic and plastic materials necessary to accommodate anticipated widening.

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| STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | |
| REMOVAL OF ORGANIC AND PLASTIC MATERIAL | | | |
| Designed By | GEO/TECH | 5/93 | Approved By |
| Drawn By | BKH | 5/93 | State Geotechnical Engineer |
| Checked By | BTD/PLS | 5/93 | Revision: 02, Sheet No. 1 of 2, Index No. 500 |

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Cut Limit For Minimum Removal Of Plastic Material

Median
12"
24"
6"
1'-6" Or
0'

Gutter Line
L.C. Control Line

Inner And Outer Cut Limit For Preferable Removal Of Plastic Material. Where Preferable Method Of Removal Governs And It Is Impossible To Place The Underdrain At The Outer Cut Limit Due To Conflict With Storm Sewer Mains, Remove To Inner Limit And Place Underdrain At Location Shown For Minimum Removal.

Remove Plastic Material To This Line. See Note*.

Extended Undercut Slope When Underdrain Located At Outer Control Line Limit

0.02 Undercut Backslope When Underdrain Located At Back Of Curb Underdrain, See Index No. 286
Minimum Grade On Underdrain Pipe Shall Be 0.2%.

HALF SECTION

NOTES: Refer to roadway cross sections to determine whether minimum or preferable removal is used.
*Where frequency of median breaks indicates that it is impractical to leave plastic material in the median, the designer may elect to indicate total removal of this material. If during construction it becomes apparent, due to normal required construction procedures, that it is impractical to leave the plastic material in the median, total removal of this material shall be approved by the Engineer.

REMOVAL OF PLASTIC MATERIAL AND LOCATION OF UNDERDRAIN IN URBAN CONSTRUCTION

MISCELLANEOUS DETAILS

Undercut Line
Undercut Line

At locations where plastic material is being removed, the side ditches must be at least as deep as the undercut plane.

Where paved side ditches are used in areas of removal of plastic material, the top of the ditch pavement must be no higher than the undercut plane.

TYPICAL CUT SECTION ON TANGENT

6"
24"
24"
24"
24"
Remove Plastic Material To This Line

TYPICAL CUT SECTION ON SUPERELEVATION

6"
24"
.02
24"
.02
Remove Plastic Material To This Line

REMOVAL OF PLASTIC MATERIAL ON INTERSTATE FACILITIES, FREEWAYS, DIVIDED ARTERIALS AND MAJOR COLLECTORS HAVING DEPRESSED MEDIANS

Section On Tangent
Section On Superelevation
24"
.02
Remove Plastic Material To This Line

TYPICAL CUT SECTION

Note: When this detail is applied to minor collectors and local facilities, the undercut may be reduced to 18".

REMOVAL OF PLASTIC MATERIAL ON DIVIDED FREEWAYS, ARTERIALS AND MAJOR COLLECTORS HAVING FLUSH MEDIANS, AND ON UNDIVIDED ARTERIALS AND MAJOR COLLECTORS

REMOVAL OF PLASTIC MATERIAL

Note: For GENERAL NOTES see Sheet 1.

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| STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | |
| REMOVAL OF ORGANIC AND PLASTIC MATERIAL | | | |
| Designed By | KSB/WNL | 05/91 | Approved By |
| Drawn By | BKH | 05/91 | State Geotechnical Engineer |
| Checked By | JVG/WNL | 05/91 | Revision Sheet No. Index No. |
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DIVIDED ROADWAYS

UNDIVIDED ROADWAY

GENERAL NOTES

- Roadway dimensions are representative. Subgrade dimensions and control lines are standard. The details shown on this Index do not supersede the details shown in the plans or on Index Nos. 500 or 506.
- Plastic (P) soils may be placed above the existing water level (at the time of construction) to within 4 feet of the proposed base. It should be placed uniformly in the lower portion of the embankment for some distance along the project rather than full depth for short distances.
- High Plastic (H) soils excavated within the project limits may be used in embankment construction as indicated on this Index. High Plastic soils are not to be used for embankment construction when obtained from outside the project limits.
- Select (S) soils having an average organic content of more than two and one-half (2.5) percent, or having an individual test value which exceeds four (4) percent, shall not be used in the subgrade portion of the roadbed.

Select (S), Plastic (P), or High Plastic (H) soils having an average organic content of more than five (5) percent, or an organic content individual test result which exceeds seven (7) percent, shall not be used in the portion of embankment inside the control line, unless written authorization is provided by the District Geotechnical Engineer; these soils may be used for embankment construction outside the control line, unless restricted by the plans or otherwise specified in the plans, provided they can be compacted sufficiently to sustain a drivable surface for operational vehicles as approved by the Engineer.

Average organic content shall be determined from the test results from a minimum of three randomly selected samples from each stratum or stockpile of a particular material. Tests shall be performed in accordance with AASHTO T 267 on the portion of a sample passing the No. 4 sieve.

- Highly organic soils, composed primarily of partially decayed organic matter, often dark brown or black in color with an odor of decay, and sometimes fibrous, shall be designated as muck. Further, any stratum or stockpile of soil which contains pockets of highly organic material may be designated as Muck (M).

Highly organic soils shall not be used within the subgrade or embankment portion of the roadbed, with the exception of muck used as a supplement to construct a finish soil layer as described in Section 162 of the FDOT Standard Specifications.

DESIGN NOTES

- The designer shall take into consideration the expectancy of roadway widening to the outside, and where widening is anticipated, specify in the plans the location of the future widening control line for utilization of High Plastic (H) soils and/or soils classified as organic material in the embankment.
- The designer shall take into consideration the position of the drainage swales in the portion of the embankment where Plastic (P) soils, High Plastic (H) soils, or soils classified as organic material would be allowed. The designer shall limit the use of Plastic (P) soils, High Plastic (H) soils, and/or soils classified as organic material to locations that will not inhibit the infiltration of stormwater from the swales.

| SYMBOL | SOIL | CLASSIFICATION (AASHTO M 145) |
|--------|--------------|--|
| S | Select | A-1, A-3, A-2-4 ** |
| P | Plastic | A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 (ALL WITH LL < 50) |
| H | High Plastic | A-2-5, A-2-7, A-5 Or A-7 (ALL WITH LL > 50) |
| M | Muck | A-8 |

Classification listed left to right in order of preference.

■ See General Notes Nos. 4 & 5 for utilization of soils classified as organic material or muck.

** Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact. They should be used in the embankment above the water level existing at time of construction. They may be used in the subgrade portion of the roadbed when approved by the District Materials Engineer. A-2-4 material placed below the existing water level must be non-plastic and contain less than 15% passing the No. 200 U.S. Standard sieve.

* For cut sections this dimension may be reduced to 24"; see Index No. 500.
For minor collectors and local facilities this dimension may be reduced to 18".

FLEXIBLE PAVEMENT

| | | | |
|---|----------|-------|-----------------------------|
| STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | |
| EMBANKMENT UTILIZATION | | | |
| Designed By | GEO/TECH | 09/93 | Approved By |
| Drawn By | BSD | 09/93 | State Geotechnical Engineer |
| Checked By | BTD | 09/93 | Revision |
| | | | Sheet No. 1 of 3 |
| | | | Index No. 505 |

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DIVIDED ROADWAYS

UNDIVIDED ROADWAY

DESIGN NOTE

1. Concrete pavement is to be placed over 4" of Asphalt Treated Permeable Base (ATPB) or Cement Treated Permeable Base (CTPB) as identified in the plans. This will be placed on an aggregate separator layer using 1" Type SP (Traffic C). This will be placed on a working platform using 12" of Type B Stabilization.

| SYMBOL | SOIL | CLASSIFICATION (AASHTO M 145) |
|--------|--------------|--|
| S | Select | A-1, A-3, A-2-4 ** |
| P | Plastic | A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 (ALL WITH LL < 50) |
| H | High Plastic | A-2-5, A-2-7, A-5 Or A-7 (ALL WITH LL > 50) |
| M | Muck | A-8 |

Classification listed left to right in order of preference.

☑ See General Notes Nos. 4 & 5 for utilization of soils classified as organic material or muck.

** Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact. They should be used in the embankment above the water level existing at time of construction. They may be used in the subgrade portion of the roadbed when approved by the District Materials Engineer. A-2-4 material placed below the existing water level must be non-plastic and contain less than 15% passing the No. 200 U.S. Standard sieve.

* For cut sections this dimension may be reduced to 24"; see Index No. 500.
For minor collectors and local facilities this dimension may be reduced to 18".

RIGID PAVEMENT - TREATED PERMEABLE BASE OPTION

| | | | | |
|---|-------|-------|-----------------------------|-----------------------|
| STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | | |
| EMBANKMENT UTILIZATION | | | | |
| Designed By | Names | Dates | Approved By | |
| Drawn By | BSD | 09/93 | State Geotechnical Engineer | |
| Checked By | BTD | 09/93 | Revision | Sheet No. / Index No. |
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DIVIDED ROADWAYS

UNDIVIDED ROADWAY

| SYMBOL | SOIL | CLASSIFICATION (AASHTO M 145) |
|--------|----------------|--|
| S | Select | A-1, A-3, A-2-4 ** |
| S+ | Special Select | A-3 *** With Minimum Average Lab Permeability of 5×10^{-5} cm/sec (0.14 ft./day) as per FM 1-T215 |
| P | Plastic | A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 (ALL WITH LL < 50) |
| H | High Plastic | A-2-5, A-2-7, A-5 Or A-7 (ALL WITH LL > 50) |
| M | Muck | A-8 |

Classification listed left to right in order of preference.

See General Notes Nos. 4 & 5 for utilization of soils classified as organic material or muck.

*** When allowed by the plans, some types of A-2-4 material may be approved in writing by the District Materials Engineer. This material must meet the minimum lab permeability requirement, be non-plastic, and not exceed 12% passing the No. 200 U.S. Standard sieve.

** Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact. They should be used in the embankment above the water level existing at time of construction. A-2-4 material placed below the existing water level must be non-plastic and contain less than 15% passing the No. 200 U.S. Standard sieve.

* 3" of #57 Coarse Aggregate Mixed Into Top 6".

Note: SPECIAL SELECT SOIL OPTION may be used only when approved in writing by the District Materials Engineer and shown in the plans.

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| EMBANKMENT UTILIZATION | | | |
| | Names | Dates | Approved By |
| Designed By | BSD | 09/93 | |
| Drawn By | BSD | 09/93 | State Geotechnical Engineer |
| Checked By | BSD | 09/93 | Revision |
| | | 04 | Sheet No. 3 of 3 |
| | | | Index No. 505 |

RIGID PAVEMENT - SPECIAL SELECT SOIL OPTION

| DATE | UTILITY ACCOMMODATION MANUAL REVISIONS |
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| | |

| BASE THICKNESS AND OPTION CODES | | | | | | | | | | |
|---------------------------------|------------------|----------------------------|------------------------------|--------------------------|--------------------|------------------------|-------------------------------|-------------|---|----------|
| Base Group | Structural Range | Base Group Pay Item Number | Base Options | | | | | | | |
| | | | Limerock LBR 100 | Cemented Coquina LBR 100 | Shell Rock LBR 100 | Bank Run Shell LBR 100 | Graded Aggregate Base LBR 100 | Type B-12.5 | B-12.5 And 4" Granular Subbase, LBR 100 * | RAP Base |
| | | | Structural Number (Per. in.) | | | | | | | |
| | | | (.18) | (.18) | (.18) | (.18) | (.15) | (.30) | (.30 & .15) | (NA) |
| 1 | .65-.75 | 701 | 4" | 4" | 4" | 4" | 4 1/2" | Δ 4" | | □ 5" |
| 2 | .80-.90 | 702 | 5" | 5" | 5" | 5" | 5 1/2" | Δ 4" | | |
| 3 | .95-1.05 | 703 | 5 1/2" | 5 1/2" | 5 1/2" | 5 1/2" | 6 1/2" | Δ 4" | | |
| 4 | 1.05-1.15 | 704 | 6" | 6" | 6" | 6" | 7 1/2" | Δ 4" | | |
| 5 | 1.25-1.35 | 705 | 7" | 7" | 7" | 7" | 8 1/2" | 4 1/2" | | |
| 6 | 1.35-1.50 | 706 | 8" | 8" | 8" | 8" | 9" | 5" | | |
| 7 | 1.50-1.65 | 707 | 8 1/2" | 8 1/2" | 8 1/2" | 8 1/2" | 10" | 5 1/2" | | |
| 8 | 1.65-1.75 | 708 | 9 1/2" | 9 1/2" | 9 1/2" | 9 1/2" | 11" | 5 1/2" | | |
| 9 | 1.75-1.85 | 709 | 10" | 10" | 10" | 10" | 12" | 6" | 4" | |
| 10 | 1.90-2.00 | 710 | 11" | 11" | 11" | 11" | ∅ 13" | 6 1/2" | 4 1/2" | |
| 11 | 2.05-2.15 | 711 | 12" | 12" | 12" | 12" | ∅ 14" | 7" | 5" | |
| 12 | 2.20-2.30 | 712 | 12 1/2" | 12 1/2" | 12 1/2" | 12 1/2" | | 7 1/2" | 5 1/2" | |
| 13 | 2.35-2.45 | 713 | ∅ 13 1/2" | ∅ 13 1/2" | ∅ 13 1/2" | ∅ 13 1/2" | | 8" | 6" | |
| 14 | 2.45-2.55 | 714 | ∅ 14" | ∅ 14" | ∅ 14" | ∅ 14" | | 8 1/2" | 6 1/2" | |
| 15 | 2.60-2.70 | 715 | | | | | | 9" | 7" | |

GENERAL NOTES

1. On new construction and complete reconstruction projects where an entirely new base is to be built, the design engineer may specify just the Base Group and any of the unrestricted General Use Optional Bases shown in that base group may be used. Note, however, that some thick granular bases are limited to widening which prevents their general use.
2. Where base options are specified in the plans, only those options may be bid and used.
3. The designer may require the use of a single base option, for instance Type B-12.5 in a high water condition. This will still be bid as Optional Base.

* For granular subbase, the construction of both the subbase and Type B-12.5 will be paid for under the contract unit price for Optional Base. Granular subbases include Limerock, Cemented Coquina, Shell Rock, Bank Run Shell and Graded Aggregate Base at LBR 100. The base thickness shown is Type B-12.5. All subbase thicknesses are 4".

∅ To be used for widening only, three feet or less.

Δ Based on minimum practical thicknesses.

□ Restricted to non-limited access shoulder base construction.

GENERAL USE OPTIONAL BASE GROUPS AND STRUCTURAL NUMBERS

| | | | | |
|---|-------|-------|--------------------------------|-----------|
| STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | | |
| OPTIONAL BASE GROUP AND STRUCTURAL NUMBERS | | | | |
| Designed By | Names | Dates | Approved By | |
| Drawn By | BKH | 12/93 | State Pavement Design Engineer | |
| Checked By | BTD | 12/93 | Revision | Sheet No. |
| | | | 00 | 1 of 2 |
| | | | | 514 |

| DATE | UTILITY ACCOMMODATION MANUAL REVISIONS |
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| | |

| BASE THICKNESS AND OPTION CODES | | | | | | | | | |
|---------------------------------|------------------|----------------------------|------------------------------|--------------|-------------------------|------------------|-------------------------------------|------------------------------------|-------------------------------------|
| Base Group | Structural Range | Base Group Pay Item Number | Base Options | | | | | | |
| | | | Limerock Stabilized LBR 70 | Shell LBR 70 | Shell Stabilized LBR 70 | Sand-Clay LBR 75 | Soil Cement (300 psi) (Plant Mixed) | Soil Cement (300 psi) (Road Mixed) | Soil Cement (500 psi) (Plant Mixed) |
| | | | Structural Number (Per. in.) | | | | | | |
| | | | (.12) | (.12) | (.10) | (.12) | (.15) | (.15) | (.20) |
| 1 | .60-.75 | 701 | 5" | 5" | 7" | 5" | 5" | 5" | 4"* |
| 2 | .75-.90 | 702 | 6½" | 6½" | 8½" | 6½" | 5½" | 5½" | 4" |
| 3 | .95-1.05 | 703 | 8" | 8" | 9½" | 8" | 6½" | 6½" | 5" |
| 4 | 1.05-1.15 | 704 | 9" | 9" | 10½" | 9" | 7½" | 7½" | 5½" |
| 5 | 1.20-1.35 | 705 | 10" | 10" | 12" | 10" | 8½" | 8½" | 6" |
| 6 | 1.30-1.45 | 706 | 11" | 11" | | 11" | 9" | | 7" |
| 7 | 1.45-1.60 | 707 | 12½" | 12½" | | 12½" | 10" | | 7½" |
| 8 | 1.65-1.75 | 708 | | | | | 11" | | 8½" |

Not Recommended For 20 Year Design
Accumulated 18 kip Equivalent Single
Axle (ESAL) Loads Greater
Than 1,000,000

Note:
These base materials may be used on FDOT projects when approved in writing by the District Materials Engineer and shown in the plans.
* Based On Minimum Practical Thickness

LIMITED USE OPTIONAL BASE GROUPS AND STRUCTURAL NUMBERS

| | | | | | |
|---|-------|-------|---------------------------------|-----------|-----------|
| STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | | | |
| OPTIONAL BASE GROUP AND STRUCTURAL NUMBERS | | | | | |
| Designed By | Names | Dates | Approved By <i>Bruce Distel</i> | | |
| Drawn By | BKH | 12/93 | State Pavement Design Engineer | | |
| Checked By | BTD | 12/93 | Revision | Sheet No. | Index No. |
| | | | 00 | 2 of 2 | 514 |

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| | |

For Additional Information Refer To FDOT Rules Chapters 14-96 And 14-97.

SKETCH ILLUSTRATING DEFINITIONS

LEGEND

- Return Radius Point Or Flare Point
- ▭ Buffer Areas
- F.B. Line** Frontage Boundary Line
- W** Driveway Width
- Y** Driveway Angle
- C** Corner Clearance
- G** Setback
- R** Outside Radius
- U** Inside Radius
- D** Distance Between Connections
- F** Flare

GENERAL NOTES

1. For definitions and descriptions of access connection "Categories" and access "Classifications" of highway segments, and for other detailed information on access to the State Highway System, refer to FDOT Rule Chapter 14-96, "State Highway Connection Permits Administrative Process" and Rule Chapter 14-97, "State Highway System Access Management Classification System And Standards"
2. For this index the term 'turnout' applies to that portion of driveways, roads or streets adjoining the outer roadway. For this index the term 'connection' encompasses a driveway, street or road and their appurtenant islands, separators, transition tapers, auxiliary lanes, travelway flares, drainage pipes and structures, crossovers, sidewalks, curb cut ramps, signing, pavement marking, required signalization, maintenance of traffic or other means of access to or from controlled access facilities. The turnout requirements set forth in this index do not provide complete intersection design, construction or maintenance requirements.
3. The location, positioning, orientation, spacing and number of connections and median openings shall be in conformance with FDOT Rule Chapter 14-97.
4. On Department construction projects all driveways not shown on the plans are to be reconstructed at their existing location in conformance to these standards, or, in conformance to permits issued during the construction project.
5. Driveways shall have sufficient length and size for all vehicular queuing, stacking, maneuvering, standing and parking to be carried out completely beyond the right of way line. Except for vehicles stopping to enter the highway, the turnout areas and drives within the right of way shall be used only for moving vehicles entering or leaving the highway.
6. Connections with expected daily traffic over 4000 vpd are to be constructed as intersecting streets or roads. The design requirement of this index and that of the local government will be used to select appropriate connection widths, radii and intersection design, subject to the approval of the Department.
For connections with expected daily traffic less than 4000 vpd, the Department will determine if drop curbs or radius returns are required in accordance with existing or planned connections. Where radius returns apply, the design requirements of this index and that of the local government will be used to select appropriate connection widths, radii and intersection design, subject to the approval of the Department.
For connections that are intended to daily accommodate either multi-unit vehicles or single unit vehicles exceeding 30' in length, returns with 50' radii are to be used, unless otherwise called for in the plans or otherwise stipulated by permit. Where large numbers of multi-unit vehicles will use the connection, the connection width and radii are to be increased and auxiliary lanes, tapers, lane flares, separators and/or islands constructed, as determined by the Department to be necessary for safe turning movements.
7. Any connection on a highway having a posted or operating speed over 45 mph shall have radial returns. Any connection requiring or having a specified median opening with left turn storage and served directly by that opening shall have radial returns.
8. Where a connection is intended to align with a connection across the highway, the through lanes are to align directly with the corresponding through lanes.
9. For new connections and for connections on all new construction and reconstruction projects, pavement materials and thicknesses shall meet the requirements applicable to either that detailed for "Urban Flared Turnouts", or, that described in "Table 515-1" for connections with radial returns and/or auxiliary lanes.
10. The responsibility for the cost of construction or alteration to an access connection shall be in accordance with FDOT Rule Chapter 14-96.

DESIGN NOTES

1. Prior to the adoption of FDOT Rules Chapters 14-96 and 14-97, connections to the State Highway System were defined and permitted by Classes. Connections have been redefined by Categories under Rule 14-96; and, the term "Class" has been applied to highway segments of the State Highway System as defined under Rule 14-97.

| ELEMENT DESCRIPTION | URBAN (CURB & GUTTER) | | | RURAL | | |
|-----------------------------------|--|---|--|--|---|--|
| | 1-20 Trips/Day or 1-5 Trips/Hour | 21-600 Trips/Day or 6-60 Trips/Hour | 601-4000 Trips/Day [■] or 61-400 Trips/Hour | 1-20 Trips/Day or 1-5 Trips/Hour | 21-600 Trips/Day or 6-60 Trips/Hour | 601-4000 Trips/Day [■] or 61-400 Trips/Hour |
| | | 2-Way □ | 2-Way □ | | 2-Way □ | 2-Way □ |
| CONNECTION WIDTH W | 12' Min. 24' Max. | 24' Min. 36' Max. ☆ | 24' Min. 36' Max. ☆ | 12' Min. 24' Max. | 24' Min. 36' Max. ☆ | 24' Min. 36' Max. ☆ |
| FLARE (Drop Curb) F | 10' Min. | 10' Min. | N/A | N/A | N/A | N/A |
| RETURNS (Radius) R & U | N/A | △ | 25' Min. 50' Std. 75' Max. | 15' Min. 25' Std. 50' Max. | 25' Min. 50' Std. 75' Max. | 25' Min. 50' Std. (Or 3-Centered Curves) |
| ANGLE OF DRIVE Y | | 60°-90° | 60°-90° | | 60°-90° | 60°-90° |
| DIVISIONAL ISLAND (Throat Median) | | 4'-22' Wide | 4'-22' Wide | | 4'-22' Wide | 4'-22' Wide |
| SETBACK G | 12' Min., All categories. See General Note No. 5. | | | | | |

■ Street or road intersection design, with possible auxiliary lanes and channelization, may be necessary. Intersection design, with possible auxiliary lanes and channelization, should be considered for connections with more than 4000 trips/days.

□ "2-Way" refers to one "in" movement and one "out" movement i.e. not exclusive left or right turn lanes on the connection.

☆ When more than 2 lanes in the turnout connection are required, the 36' max. width may be increased to relieve interference between entering and exiting traffic which adversely affects traffic flow. These cases require documented site specific study and design.

△ Small radii may be used in lieu of flares as approved by the Department.

DESIGN NOTE: 1-Way connections will be designed to effectively eliminate unpermitted movements.

NOT INTENDED FOR FULL INTERSECTION DESIGN

SUMMARY OF GEOMETRIC REQUIREMENTS FOR TURNOUTS

| | | | | | |
|---|--------|-------|-------------|----------------------|-----------|
| STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | | | |
| TURNOUTS | | | | | |
| Designed By | COM/JV | 90/91 | Approved By | <i>James D. Mill</i> | |
| Drawn By | BSD | 03/91 | Revision | Sheet No. | Index No. |
| Checked By | JVG | 03/91 | 04 | 1 of 6 | 515 |

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PLAN C
TURNOUT WITHOUT SIDEWALK

PLAN B
TURNOUT WITH SIDEWALK AND UTILITY STRIP (10' OR GREATER)

PLAN A
TURNOUT WITH SIDEWALK AND UTILITY STRIP (LESS THAN 10')

INSET
JOINT PATTERN WHEN CONCRETE DRIVE CONSTRUCTED

Footnotes:

- All $\frac{1}{2}$ " Joints shall be constructed with preformed joint filler.
- * $\frac{1}{2}$ " Open Joints placed at equal (20' max.) intervals for driveways over 20' wide. Joints in curb and gutter to match joints in driveways.
- Δ When connecting to sidewalk curb and gutter sections, the no drop curb limits should extend back to the sidewalk radius point. With or without curb and gutter, no driveway should encroach on the corner radius.
- ◇ Driveways (6" concrete) shall be of a uniform width (W) to the right of way line.
- Alpha-numeric identification of a flared driveway type specifically called for in the plans, see sheets 3 and 4.

SPECIAL NOTES FOR URBAN FLARED TURNOUTS

- Driveway 6" concrete pavement and drop curb shall meet the material and construction requirements of Sections 522 and 520 respectively of the FDOT Standard Specifications. The driveway foundation shall meet the requirement of Subarticle 522-4.
- For details of drop curb and public sidewalk curb ramps refer to Index Nos. 300 and 304 respectively.
- Where turnouts are constructed within existing curb and gutter, the existing curb and gutter shall be removed either to the nearest joint beyond the flare point or to the extent that no remaining section is less than 5' long; and, drop curb constructed in accordance with Notes Nos. 1 and 2.
- Cost for preformed joint filler shall be included in the cost for the concrete pavement (concrete sidewalk, 6" thick).
- For turnouts with radial returns see the requirements under the "Summary Of Geometric Requirements For Turnouts", the "General Notes", the details of "Rural Turnout Construction" and the detail of "Limits Of Clearing & Grubbing, Stabilization And Base At Intersections".
- Department maintenance of pavement shall extend out to the right of way or 2' back of sidewalk, whichever distance is less.
- The maintenance and operation of highway lighting, traffic signals, associated equipment, and other necessary devices shall be the responsibility of a public agency.
- All pavement markings on the State highways, including acceleration and deceleration lane markings, and signing installed for the operation of the State highway shall be maintained by the Department.
- All signing and marking installed for the operation of the connection (such as stop bars and stop signs for the connection) shall be the responsibility of the permittee.
- Turnouts will be paid for under the contract unit price for Concrete Sidewalk (6" Thick), SY.

DESIGN NOTES FOR URBAN FLARED TURNOUTS

- Driveways indicated as 'Adverse Applications' are those with slopes that can cause overhang drag for representative standard passenger vehicles under fully loaded conditions; or, those with slopes that can cause drivers who are leaving the roadway to slow or pause to the extent that traffic demand volumes will be impeded.
- The standard flared driveways on this Index may not accommodate vehicles with low beds, low undercarriage or low appendage features. Where such vehicles are design vehicles driveways are to have site specific flare designs or Category III designs.
- When specific flare type driveways are to be constructed, the type shall be designated in the plans using the assigned alpha-numeric designation.

Driveways indicated as 'Marginal Applications' are those with slopes that can cause overhang drag for representative standard passenger vehicles under fully loaded conditions when the driveway is located on the low side of fully super-elevated roadways.

Driveways indicated as 'General Applications' are those with slopes that can readily accommodate representative standard passenger vehicles and those that can accommodate representative standard trucks, vans, buses and recreational vehicles operating under normal crown and superelevation conditions.

URBAN FLARED TURNOUTS

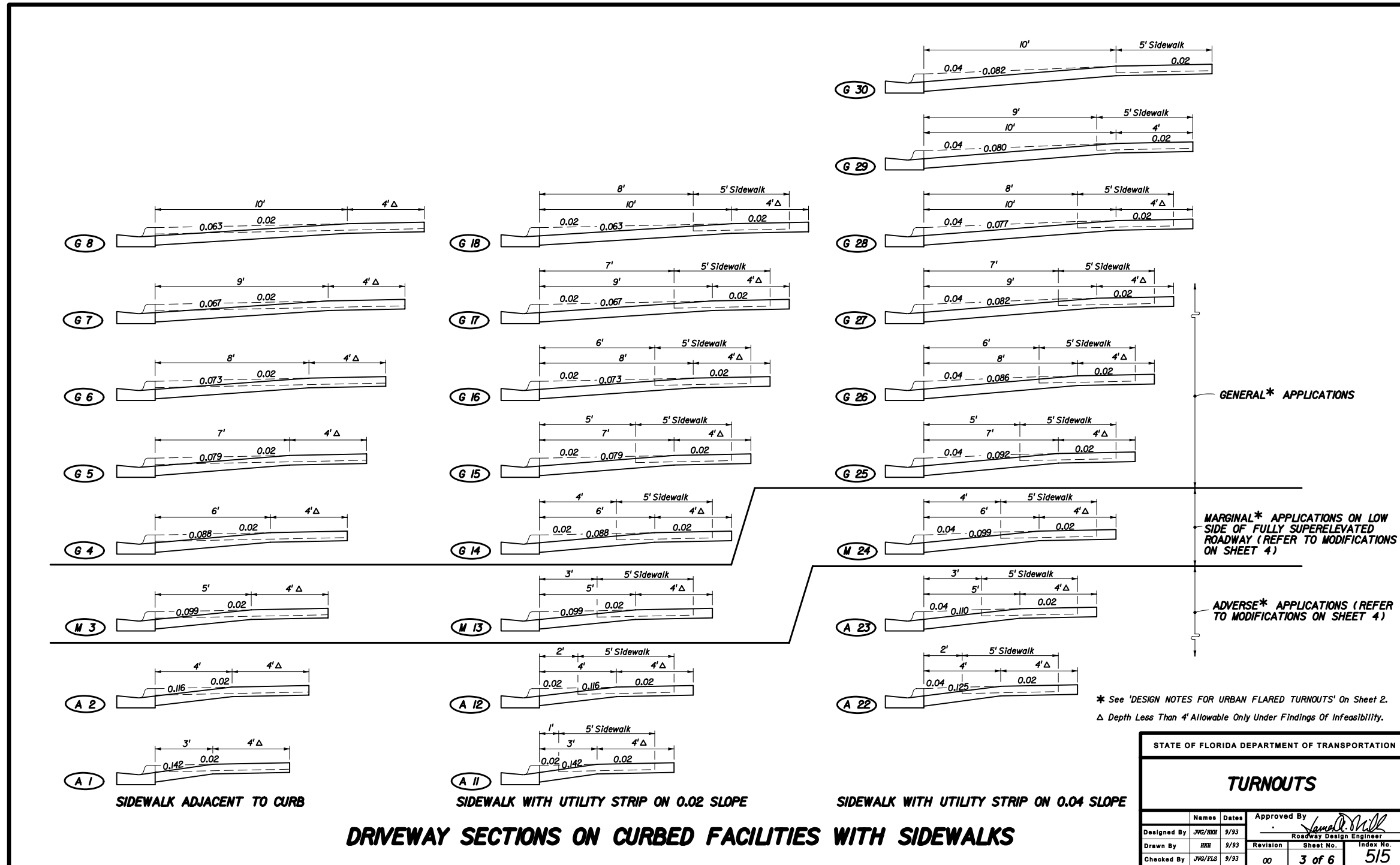
Note: See sheet 1 for 'GENERAL NOTES'

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

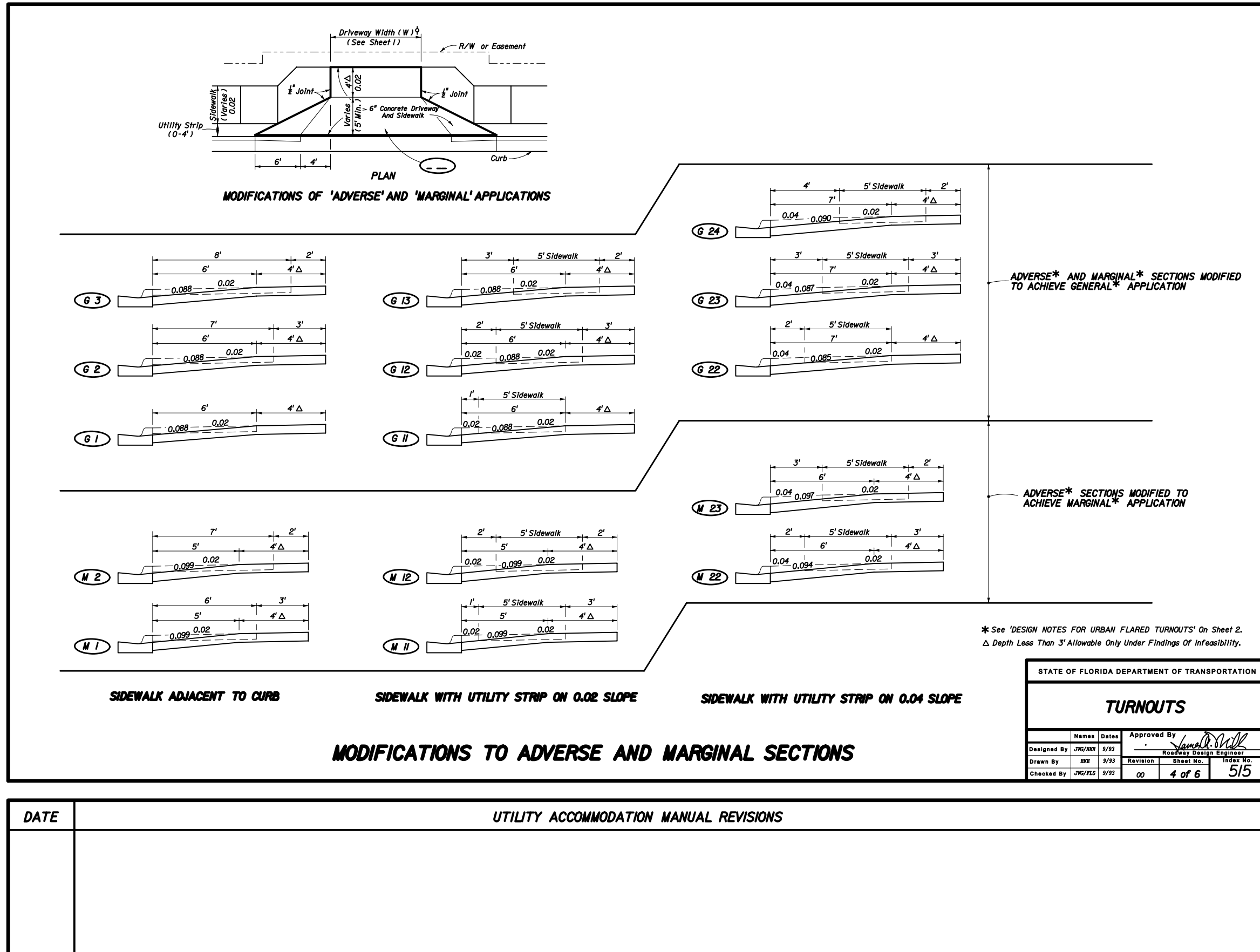
TURNOUTS

| | | | | |
|-------------|---------------|-------------|----------|-----------|
| Names | Dates | Approved By | | |
| Designed By | JVG/BKH 09/93 | | Revision | Index No. |
| Drawn By | BKH 09/93 | | 00 | 2 of 6 |
| Checked By | JVG 09/93 | | | 515 |

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Typical Half Section For Low Volume/Residential Connections

Width (See Sheet 1)

Point Of Connection As Shown On The Plans Or As Determined By The Engineer During Construction Or As Stipulated By Permit. [X]

Shoulder 5' Min. For Private Connections 6' Min. For Public Roads

5' Pavement At Graded Connections In Accordance With Index No. 516 Or As Shown In The Plans Or As Stipulated By Permit. [X]

Varies - Determined By Drive Width And Angle

PLAN

Typical Half Section For Higher Volume Connections

Shoulder 5' Min. For Private Connections 6' Min. For Public Roads

8" Or Match Exist. Stabilizing (8" Min.)

WITHOUT CURB & GUTTER

WITH CURB & GUTTER

LIMITS OF CLEARING & GRUBBING, STABILIZING AND BASE AT INTERSECTIONS

LOW VOLUME

Determined By The Engineer

30' From Edge Of Roadway Pavement Or R/W Line, Whichever Is Less

SMALL/MEDIUM COMMERCIAL

Auxiliary Lane Width

LARGE COMMERCIAL OR PUBLIC ROAD OR STREET

LEGEND

- Graded Or Paved
- Required Paving
- Limits Of Department Maintenance

NOTES

- Auxiliary lane pavements and crossover pavements shall be maintained by the Department.
- Department maintenance of turnout pavement shall extend out to 5' from edge of the travel way or limits of paved shoulders, and, extend to include auxiliary lanes. The remainder of any turnout paved area on the right of way shall be maintained by the owner or his authorized agent. As a function of routinely reworking shoulders, the Department may grade and shape existing material on non-paved areas beyond the maintained pavement.
- Control and maintenance of drainage facilities within the right of way shall be solely the responsibility of the Department, unless specified differently by Department permit.
- The maintenance and operation of highway lighting, traffic signals, associated equipment, and other necessary devices shall be the responsibility of a public agency.
- All pavement markings on the State highways, including acceleration and deceleration lane markings, and signing installed for the operation of the State highway shall be maintained by the Department.
- All signing and marking installed for the operation of the connection (such as stop bars and stop signs for the connection) shall be the responsibility of the permittee.

LIMITS OF CONSTRUCTION AND MAINTENANCE FOR RURAL CONNECTIONS

MATERIAL TYPES AND THICKNESSES IN DRIVING AREAS FOR RURAL AND URBAN CONNECTIONS

| Course | Materials ② | Thickness (In.) ① | |
|------------|-----------------------------------|-------------------|-----------|
| | | Connections ③ | Roadway ④ |
| Structural | Asphaltic Concrete | 1" | 1 1/2" |
| Bases | Optional Base (See Index No. 514) | O.B.G. 1 | O.B.G. 3 |

① Minimum thickness.
 ② All materials shall be approved by the Department prior to being placed.
 ③ Connection structure other than traffic lanes. See Notes 1 and 2 below.
 ④ Travel way flares (bypass lanes), auxiliary lanes serving more than a single connection, and all median crossovers including their auxiliary lanes and/or transition tapers. See Notes 1 and 2 below.

NOTES

- The pavement should be structurally adequate to meet the expected traffic loads and should not be less than that shown above, except as approved by the Department for graded connections. Other Department approved pavement equivalences may be used at the discretion of the Engineer. For additional information see Index No. 514.
- Auxiliary lanes and their transition tapers shall be the same structure as the abutting roadway pavement or any of the roadway structures tabulated above, whichever is thicker.
- If an asphalt base course is used for a turnout, its thickness may be increased to match the edge of roadway pavement in lieu of a separate structural course. 6" of Portland cement concrete will be acceptable in lieu of the asphalt base and structural courses. See Notes 4 and 5 below.
- A structural course is required for flexible pavements when they are used for auxiliary lanes serving more than a single connection.
- Connections paved with Portland cement concrete shall be Class I concrete of at least 6" thick. The Department may require greater thickness when called for in the plans or stipulated by permit. Materials and construction are to conform with FDOT Standard Specifications Sections 346, 350 and 522.
- The Department may require other pavement criteria where local conditions warrant.

PAVEMENT STRUCTURE FOR TURNOUTS AND AUXILIARY LANES
TABLE 515-1

RURAL TURNOUT CONSTRUCTION

LONGITUDINAL SECTION

PROFILE AND END VIEW

★ Drainage pipe size and length shall be that shown on the plans, or as stipulated by permit, or, as determined by the Engineer during construction. The size shall be at least that established by the FDOT District, but not less than 15" diameter or equivalent. For minimum cover over drainage pipe see Index No. 205. Pipe arch or elliptical pipe may be required to obtain necessary cover. At minimal cover applications a modified pavement apron is permitted. See 'PERMISSIBLE PAVEMENT MODIFICATION' Index No. 273. For spacing between adjacent pipe and treatments see Index No. 273.

☑ Stable material may be required for graded turnouts to private property as directed by the Engineer in accordance with Section 102-6 of the Standard Specifications.

☑ The 5' pavement at graded connections is not required where there is paved shoulder 4' or more in width. The 5' pavement requirement may be waived for connections serving one or two homes or field entrances with less than 20 trips per day, or 5 trips per hour as approved by permit or by the Engineer, or when not itemized in the plans.

Paved turnouts are to be constructed for all paved connecting facilities. The connecting point will be determined by the Engineer.

Paved turnouts are to be constructed for all business, commercial, industrial or high volume residential graded connecting facilities. The connecting point shall be 30' from edge of roadway pavement or at R/W line, whichever is less.

Paved turnouts are to be constructed for all connecting facilities over 4000 vehicles per day. The connecting point shall be at the R/W line.

☑ See "Summary Of Geometric Requirements For Turnouts" chart for return radii lengths and supplemental information.

| DATE | UTILITY ACCOMMODATION MANUAL REVISIONS |
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RURAL TURNOUT PROFILES

Definitions
 G- Grade (%)
 A- Algebraic Difference In Grades (%)
 L- Transition (See Tabulated Lengths):
 A ≤ 14% - Transition Not Required
 A > 14% - Straight Or Rounded Transition Required

LENGTHS (L) (FT.)

| A | CRESTS | | | | SAGS | | | |
|--------|-----------|---------|-----------|---------|-----------|---------|-----------|---------|
| | STRAIGHT | | ROUNDED | | STRAIGHT | | ROUNDED | |
| | Desirable | Minimum | Desirable | Minimum | Desirable | Minimum | Desirable | Minimum |
| 6-13% | 3 | 0 | 5 | 0 | 3 | 0 | 5 | 0 |
| 14% | 3 | 0 | 10 | 0 | 3 | 0 | 10 | 0 |
| 15% | 3 | 2.5 | 10 | 3 | 5 | 3 | 10 | 5 |
| 16% | 5 | 3 | 10 | 4 | 6 | 4 | 10 | 6 |
| 17% | 6 | 3.5 | 10 | 5 | 8 | 5 | 10 | 7 |
| 18% | 6 | 4 | 10 | 6 | 9 | 6 | 10 | 8 |
| 19% | 7 | 4.5 | 10 | 7 | 11 | 7 | 12 | 9 |
| 20% | 8 | 5 | 11 | 8 | 12 | 8 | 13 | 10 |
| 21% | 9 | 5.5 | 12 | 9 | 13 | 8.5 | 14 | 11 |
| 22% | 10 | 6 | 13 | 10 | 14 | 9 | 16 | 12 |
| 23% | 10 | 6.5 | 14 | 10.5 | 14 | 9.5 | 16 | 12.5 |
| 24% | 11 | 7 | 15 | 11 | 15 | 10 | 17 | 13 |
| 25% | 12 | 7.5 | 15 | 11.5 | 16 | 10.5 | 18 | 13.5 |
| 26% | 12 | 8 | 16 | 12 | 17 | 11 | 18 | 14 |
| 27% | 13 | 8.5 | 17 | 12.5 | 17 | 11.5 | 19 | 14.5 |
| 28% | 14 | 9 | 17 | 13 | 18 | 12 | 20 | 15 |
| 29% | NA | NA | 22 | 14 | NA | NA | 21 | 17 |
| 30-31% | NA | NA | 23 | 15 | NA | NA | 22 | 18 |
| 32-33% | NA | NA | 24 | 16 | NA | NA | 23 | 20 |
| 34-36% | NA | NA | 26 | 17 | NA | NA | 25 | 21 |
| 37-38% | NA | NA | 27 | 18 | NA | NA | 26 | 22 |
| 39-41% | NA | NA | 29 | 19 | NA | NA | 28 | 24 |
| 42-43% | NA | NA | 30 | 20 | NA | NA | 29 | 25 |
| 44-46% | NA | NA | 32 | 21 | NA | NA | 31 | 26 |
| 47-48% | NA | NA | 33 | 22 | NA | NA | 32 | 27 |
| 49-51% | NA | NA | 34 | 23 | NA | NA | 34 | 28 |
| 52-54% | NA | NA | 36 | 24 | NA | NA | 35 | 30 |
| 55-56% | NA | NA | 37 | 25 | NA | NA | 36 | 31 |

RECOMMENDED TURNOUT PROFILE TRANSITION LENGTHS (L) (FT)

Definitions
 G- Grade (%)
 A- Algebraic Difference In Grades (%)
 L- Transition (See Tabulated Lengths):
 A ≤ 14% - Transition Not Required
 A > 14% - Straight Or Rounded Transition Required

URBAN TURNOUT PROFILES

When restoring or reconstructing existing commercial turnout connections on new construction and reconstruction projects, the maximum 10% commercial grade may be exceeded provided this does not create any adverse roadway operational or safety impacts. This shall be approved by the District Design Engineer and be supported by documented site specific findings.

STORMWATER RUNOFF AND PROFILE OPTION NOTES

- Turnouts shall neither cause water to flow on or across the roadway pavement, nor cause water ponding or erosion within the State right of way. On all rural turnouts the transition (L) nearest the roadway shall be sloped or crowned to direct stormwater runoff to the roadside ditch. Inlets, flumes or other appropriate runoff control devices shall be constructed when runoff volumes are sufficient to cause erosion of the shoulder. Similar runoff control devices shall be constructed as necessary to properly direct and control the stormwater runoff on urban turnouts.
- The Option 1 profile is intended for locations where roadway, turnout taper and auxiliary lane stormwater runoff volumes are relatively large. The Option 2 profile is intended for locations where runoff volumes are relatively small and/or where there is no roadside ditch.

TURNOUT PROFILES

ROADWAY PAVEMENT SLOPES AND SLOPES OF ABUTTING RURAL TURNOUT SURFACES (G₂) SUPERELEVATION SECTIONS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TURNOUTS

| | | | |
|-------------|----------|-----------|-------------------------|
| Designed By | Names | Dates | Approved By |
| Drawn By | BSD | 08/92 | <i>[Signature]</i> |
| Checked By | JVG | 08/92 | Roadway Design Engineer |
| | Revision | Sheet No. | Index No. |
| | 02 | 6 of 6 | 515 |

| DATE | UTILITY ACCOMMODATION MANUAL REVISIONS |
|------|--|
| | |

GENERAL NOTES

1. Details apply to both rural and urban intersections under stop sign control or flashing beacon control. For full signal controlled intersections see Design Note No 4.
2. Sight distance (d) applies to normal and skewed intersections (intersecting angles between 60° and 120°), and where vertical and/or horizontal curves are present. Sight distance (d) is measured along the major roadway from the center of the entrance lane of the minor roadway to the center of the near approach lane (right or left) of the major roadway. Distances d_L and d_R are measured from the centerline of the entrance lane of the minor roadway to a point on the edge of the near side outer traffic lane on the major roadway. Distance d_m is measured from the centerline of the entrance lane of the minor roadway to a point on the median clear zone limit or horizontal clearance limit for the far side roadway of the major roadway.
3. a. The limits of clear sight define a corridor throughout which a clear sight window must be preserved. See WINDOW DETAIL, Sheet 6.
b. Clear sight must be provided between vehicles at intersection stop locations, and vehicles on the major roadway within dimension 'd'.
c. Since observations are made in both directions along the line of sight, the reference datum between roadways is 3'-6" above respective pavements.
4. Barrier systems within intersection sight corridors, where penetration into the sight window might occur, shall be located to provide the least adverse affect practical.
5. The corridor defined by the limits of clear sight is a restricted planting area. Drivers of vehicles on the intersecting roadway and vehicles on the major roadway must be able to see each other clearly throughout the limits of 'd' and 'd_a'. If in the Engineers judgement, landscaping interferes with the line of sight corridor prescribed by these standards the Engineer may rearrange, relocate or eliminate plantings. Plants within the restricted areas are limited to selections as follows:

Ground Cover & Trunked Plants (Separate or Combined):

Ground Covers - Plant selection of low growing vegetation which at maturity does not attain a height greater than 18" below the sight line datum.
For ground cover in combination with trees and palms, the following heights below the sight line datum will apply: 24" for trees and palms ≤ 11" dia.; and, 18" for sabal palms > 11" ≤ 18" dia. (dia. - within Sight Window).

Trunked Plants - Plant selection of a mature trunk diameter 4" or less measured at 6" above the ground. Canopy or high borne foliage shall never be lower than 5' above the sight line datum. These selections shall be spaced no closer than 20'.

Trees:

Trees can be used with lawn; pavers; pavement; gravel, bark or wood chip beds; ground covers or other Department approved material. The clear sight window must be in conformance with the 'WINDOW DETAIL' modified to attain the height requirements listed in 'Ground Covers' above. Tree size and spacing shall conform to the following tabular values:

| Description | Speed (mph) | | | | | | | | | | | | | |
|--|---------------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|
| | 30 | | 35 | | 40 | | 45 | | 50 | | 55 | | 60 | |
| | (Inches) | | | | | | | | | | | | | |
| Diameter (Within Limits Of Sight Window) | >4≤11 | >11≤18 | >4≤11 | >11≤18 | >4≤11 | >11≤18 | >4≤11 | >11≤18 | >4≤11 | >11≤18 | >4≤11 | >11≤18 | >4≤11 | >11≤18 |
| | (Feet) | | | | | | | | | | | | | |
| Minimum Spacing (c. to c. Of Trunk) | 22 | 91 | 27 | 108 | 33 | 126 | 40 | 146 | 45 | 165 | 52 | 173 | 60 | 193 |

Sizes and spacings are based on the following conditions:

- (a) A single line of trees in the median parallel to but not necessarily colinear with the centerline,
- (b) A straight approaching mainline, within skew limits as described in No. 2 above.
- (c) 1. Trees and palms ≤ 11" in diameter casting a vertical 6' wide shadow band on a vehicle entering at stop bar location when viewed by mainline driver beginning at distance 'd'; see SHADOW DIAGRAM, Sheet 6.
2. Sabal palms with diameters > 11" to ≤ 18" spaced at intervals providing a 2 second full view of entering vehicle at stop bar location when viewed by mainline driver beginning at distance 'd'; see PERCEPTION DIAGRAM, Sheet 6.
- (d) Trees with diameters ≤ 11" Intermixed with trees with diameters > 11" ≤ 18" are to be spaced based on trees with diameters > 11" ≤ 18".

For any other conditions the tree sizes, spacings and locations shall be detailed in the plans; see Design Note No. 5.

DESIGN NOTES

1. The information shown on this index is intended solely for the purpose of clear sight development and maintenance at intersecting highways, roads and streets, and is not intended to be used to establish roadway and roadside safety except as related to clear sight corridors. An analysis of sight distance shall be documented for all intersections.
2. Details are based on the AASHTO 'A Policy On Geometric Design Of Highways And Streets, 2001', CHAPTER 9, Intersection Sight Triangles, CASES B and C, and Department practices for channelized median openings (left turns from major roadways).
3. The minimum driver eye setback of 14.5' from the edge of the traveled way may be adjusted on any intersection leg only when justified by a documented, site specific field study of vehicle stopping position and driver eye position.
4. For SIGNALIZED INTERSECTIONS sight distances should be developed based on AASHTO 'Case D- Intersections With Traffic Signal Control'. 'At signalized intersections, the first vehicle stopped on one approach should be visible to the driver of the first vehicle stopped on each of the other approaches. Left-turning vehicles should have sufficient sight distance to select gaps in oncoming traffic and complete left turns. Apart from these sight conditions, there are generally no other approach or departure sight triangles needed for signalized intersections. However, if the traffic signal is to be placed on two-way flashing operation (i.e. flashing yellow on the major-road approaches and flashing red on the minor-road approaches) under off-peak or nighttime conditions, then the appropriate departure sight triangles for Case B, both to the left and to the right, should be provided for the minor-road approaches. In addition, if right turns on a red signal are to be permitted from any approach, then the appropriate departure sight triangle to the left for Case B2 should be provided to accommodate right turns from that approach.'
5. Where curvature, superelevation, adverse split profiles or other conditions preclude the use of standard tree sizes and spacing, proof of view and shadowing restraints must be documented and the size and location of trees in medians detailed in the plans.
6. Intersection sight distance values are provided for Passenger Vehicles, SU Vehicles and Combination Vehicles. Intersection sight distance based on the Passenger Vehicle is suitable for most intersections. Where substantial volumes of heavy vehicles enter the major-road, such as from ramp terminals with stop control or roadways serving truck terminals, the use of tabulated values for SU Vehicles or Combination Vehicles should be considered.

| | | | | | |
|---|---------|-------|-------------|-----------|-----------|
| STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | | | |
| SIGHT DISTANCE AT INTERSECTIONS | | | | | |
| Designed By | XJM/JVG | 10/89 | Approved By | | |
| Drawn By | BSD | 10/89 | Revision | Sheet No. | Index No. |
| Checked By | JVG/JJM | 10/02 | 04 | 1 of 6 | 546 |

| DATE | UTILITY ACCOMMODATION MANUAL REVISIONS |
|------|--|
| | |

**PICTORIAL
2 LANE UNDIVIDED**

**PICTORIAL
2 LANE 2 WAY • FLARED FOR OPPOSING LEFT TURN CENTERED ON ALIGNMENT**

**PICTORIAL
2 LANE 2 WAY • FLARED FOR SINGLE SIDE LEFT TURN CENTERED ON ALIGNMENT**

LEGEND
Areas Free Of Sight Obstructions

NOTE: See Sheet 6 for intersecting roadway origin of clear sight and quadrant corner clips.

**SIGHT DISTANCE (d) AND RELATED DISTANCES (d_L, d_R) (FEET)
2 LANE UNDIVIDED**

| Design Speed | d | d _L | d _R |
|--------------|-----|----------------|----------------|
| 30 | 335 | 240 | 150 |
| 35 | 390 | 275 | 175 |
| 40 | 445 | 315 | 200 |
| 45 | 500 | 350 | 225 |
| 50 | 555 | 390 | 250 |
| 55 | 610 | 430 | 275 |
| 60 | 665 | 470 | 300 |
| 65 | 720 | 510 | 325 |

Passenger Vehicle SU Vehicle Combination Vehicle

**SIGHT DISTANCE (d) AND RELATED DISTANCES (d_L, d_R) (FEET)
2 LANE 2 WAY • FLARED FOR LEFT TURNS**

| Design Speed | d | d _L | d _R |
|--------------|-----|----------------|----------------|
| 30 | 355 | 195 | 135 |
| 35 | 415 | 225 | 155 |
| 40 | 475 | 260 | 180 |
| 45 | 530 | 290 | 200 |
| 50 | 590 | 325 | 220 |
| 55 | 650 | 355 | 245 |
| 60 | 710 | 390 | 265 |
| 65 | 765 | 420 | 290 |

Passenger Vehicle SU Vehicle Combination Vehicle

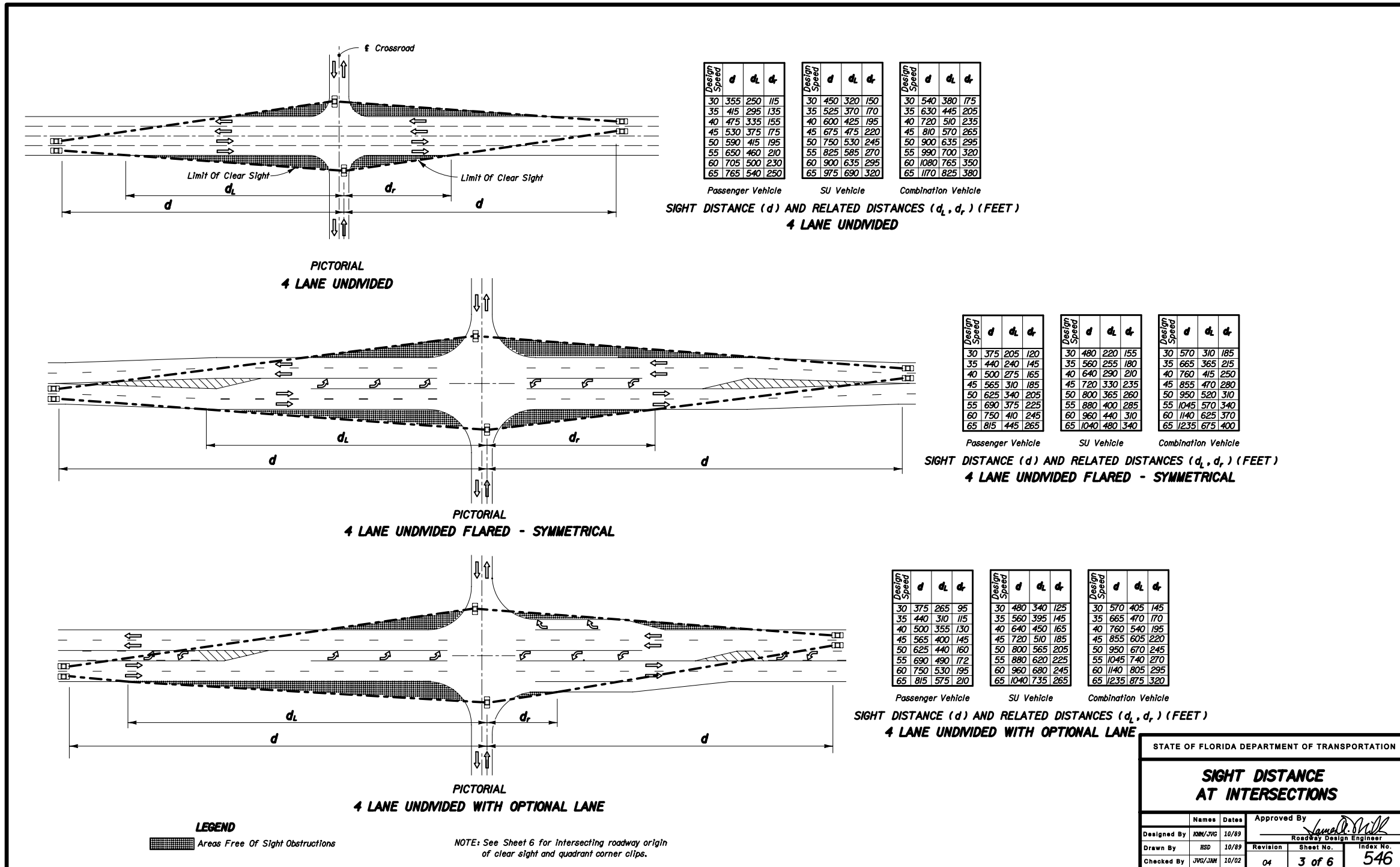
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SIGHT DISTANCE AT INTERSECTIONS

| | | | |
|-------------|----------|-----------|-------------------------|
| Designed By | Names | Dates | Approved By |
| Drawn By | BSD | 10/89 | <i>[Signature]</i> |
| Checked By | JVG/JJM | 10/02 | Roadway Design Engineer |
| | Revision | Sheet No. | Index No. |
| | 04 | 2 of 6 | 546 |

UTILITY ACCOMMODATION MANUAL REVISIONS

| DATE | |
|------|--|
| | |



| DATE | UTILITY ACCOMMODATION MANUAL REVISIONS |
|------|--|
| | |

| MEDIAN 22' OR LESS | | | | |
|--------------------|-----|----------------|----------------|----------------|
| Design Speed | d | d _L | d _r | d _m |
| 30 | 390 | 280 | 90 | 320 |
| 35 | 460 | 330 | 100 | 380 |
| 40 | 520 | 370 | 110 | 430 |
| 45 | 590 | 420 | 130 | 480 |
| 50 | 650 | 460 | 140 | 530 |
| 55 | 720 | 510 | 160 | 590 |
| 60 | 780 | 550 | 170 | 640 |
| 65 | 850 | 600 | 190 | 700 |

PASSENGER VEHICLE (P)

| MEDIAN 35' OR LESS | | | | |
|--------------------|------|----------------|----------------|----------------|
| Design Speed | d | d _L | d _r | d _m |
| 30 | 540 | 380 | 100 | 460 |
| 35 | 630 | 450 | 110 | 530 |
| 40 | 720 | 510 | 130 | 610 |
| 45 | 810 | 570 | 150 | 690 |
| 50 | 900 | 640 | 160 | 760 |
| 55 | 990 | 700 | 180 | 840 |
| 60 | 1080 | 760 | 200 | 920 |
| 65 | 1170 | 830 | 210 | 990 |

SINGLE-UNIT TRUCK (SU)

| MEDIAN 30' OR LESS | | | | |
|--------------------|------|----------------|----------------|----------------|
| Design Speed | d | d _L | d _r | d _m |
| 30 | 620 | 440 | 120 | 520 |
| 35 | 720 | 510 | 140 | 600 |
| 40 | 820 | 580 | 160 | 690 |
| 45 | 930 | 660 | 180 | 780 |
| 50 | 1030 | 730 | 200 | 860 |
| 55 | 1130 | 800 | 220 | 950 |
| 60 | 1240 | 880 | 240 | 1040 |
| 65 | 1340 | 950 | 260 | 1120 |

INTERMEDIATE SEMI-TRAILERS (WB-40 & WB-50)

| 35'-50' MEDIAN | | | | |
|----------------|------|----------------|----------------|----------------|
| Design Speed | d | d _L | d _r | d _m |
| 30 | 670 | 470 | 100 | 580 |
| 35 | 780 | 550 | 120 | 680 |
| 40 | 890 | 630 | 140 | 780 |
| 45 | 1000 | 710 | 150 | 870 |
| 50 | 1110 | 790 | 170 | 970 |
| 55 | 1220 | 860 | 190 | 1070 |
| 60 | 1330 | 940 | 200 | 1160 |
| 65 | 1440 | 1020 | 220 | 1260 |

PLAN
PICTORIAL

INSET A

INSET B

LEGEND
Areas Free Of Sight Obstructions

NOTES FOR 4-LANE DIVIDED ROADWAY

- See Sheet 6 for origin of clear sight line on the minor road.
- Values shown in the tables are the governing (controlling) sight distances calculated based on 'AASHTO Case B - Intersection with Stop Control on the Minor Road.'

| Design Speed | d | d _L | d _r | d _{vL} |
|--------------|-----|----------------|----------------|-----------------|
| 30 | 290 | 210 | 330 | 230 |
| 35 | 330 | 230 | 390 | 280 |
| 40 | 380 | 270 | 440 | 310 |
| 45 | 430 | 300 | 500 | 350 |
| 50 | 480 | 340 | 550 | 390 |
| 55 | 530 | 370 | 610 | 430 |
| 60 | 570 | 400 | 660 | 470 |
| 65 | 620 | 440 | 720 | 510 |

25'-64' MEDIAN

| Design Speed | d | d _L | d _r | d _{vL} |
|--------------|-----|----------------|----------------|-----------------|
| 30 | 370 | 260 | 420 | 300 |
| 35 | 440 | 310 | 490 | 350 |
| 40 | 500 | 350 | 560 | 400 |
| 45 | 560 | 400 | 630 | 450 |
| 50 | 620 | 440 | 700 | 500 |
| 55 | 690 | 490 | 770 | 540 |
| 60 | 750 | 530 | 840 | 590 |
| 65 | 810 | 570 | 910 | 640 |

40'-64' MEDIAN

| Design Speed | d | d _L | d _r | d _{vL} |
|--------------|------|----------------|----------------|-----------------|
| 30 | 460 | 330 | 510 | 360 |
| 35 | 540 | 380 | 590 | 420 |
| 40 | 620 | 440 | 680 | 480 |
| 45 | 690 | 490 | 760 | 540 |
| 50 | 770 | 540 | 850 | 600 |
| 55 | 850 | 600 | 930 | 660 |
| 60 | 920 | 650 | 1020 | 720 |
| 65 | 1000 | 710 | 1100 | 780 |

64' MEDIAN

SIGHT DISTANCES (d) & (d_v) AND RELATED DISTANCES (d_L, d_r, d_m & d_{vL}) (FEET)

4 LANE DIVIDED ROADWAY

| Vehicle Type | Vehicle Length (Ft.) |
|------------------|----------------------|
| Passenger (P) | 19 |
| Single Unit (SU) | 30 |
| Large School Bus | 40 |
| WB-40 | 45.5 |
| WB-50 | 55 |

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SIGHT DISTANCE AT INTERSECTIONS

| | | | | | |
|-------------|---------|-----------|-------|-------------------------|--------------------|
| Designed By | JMM/JVG | Date | 10/89 | Approved By | <i>[Signature]</i> |
| Drawn By | BSD | Revision | 10/89 | Roadway Design Engineer | |
| Checked By | JVG/JMM | Sheet No. | 04 | 4 of 6 | Index No. 546 |

| DATE | UTILITY ACCOMMODATION MANUAL REVISIONS |
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| MEDIAN 22' OR LESS | | | | |
|--------------------|-------|-------|-------|-------|
| Design Speed | d_x | d_L | d_r | d_m |
| 30 | 410 | 290 | 80 | 350 |
| 35 | 480 | 340 | 90 | 410 |
| 40 | 550 | 390 | 100 | 470 |
| 45 | 620 | 440 | 110 | 530 |
| 50 | 690 | 490 | 130 | 580 |
| 55 | 760 | 540 | 140 | 640 |
| 60 | 830 | 590 | 150 | 700 |
| 65 | 900 | 640 | 170 | 760 |

PASSENGER VEHICLE (P)

| 25'-64' MEDIAN | | | | |
|----------------|-----|-------|-------|----------|
| Design Speed | d | d_L | d_v | d_{vL} |
| 30 | 310 | 220 | 330 | 230 |
| 35 | 360 | 250 | 390 | 280 |
| 40 | 410 | 290 | 440 | 310 |
| 45 | 460 | 330 | 500 | 350 |
| 50 | 510 | 360 | 550 | 390 |
| 55 | 570 | 400 | 610 | 430 |
| 60 | 620 | 440 | 660 | 470 |
| 65 | 670 | 470 | 720 | 510 |

SINGLE-UNIT TRUCK (SU)

| MEDIAN 35' OR LESS | | | | |
|--------------------|-------|-------|-------|-------|
| Design Speed | d_x | d_L | d_r | d_m |
| 30 | 590 | 420 | 90 | 510 |
| 35 | 690 | 490 | 110 | 600 |
| 40 | 780 | 550 | 120 | 680 |
| 45 | 880 | 620 | 140 | 760 |
| 50 | 980 | 690 | 160 | 850 |
| 55 | 1080 | 760 | 170 | 940 |
| 60 | 1170 | 830 | 190 | 1020 |
| 65 | 1270 | 900 | 200 | 1100 |

INTERMEDIATE SEMI-TRAILERS (WB-40 & WB-50)

| 35'-50' MEDIAN | | | | |
|----------------|-------|-------|-------|-------|
| Design Speed | d_x | d_L | d_r | d_m |
| 30 | 720 | 510 | 100 | 640 |
| 35 | 830 | 590 | 110 | 740 |
| 40 | 890 | 630 | 130 | 840 |
| 45 | 1070 | 760 | 150 | 950 |
| 50 | 1190 | 840 | 160 | 1060 |
| 55 | 1310 | 930 | 180 | 1160 |
| 60 | 1430 | 1010 | 190 | 1270 |
| 65 | 1550 | 1100 | 210 | 1380 |

| 64' MEDIAN | | | | |
|--------------|------|-------|-------|----------|
| Design Speed | d | d_L | d_v | d_{vL} |
| 30 | 490 | 350 | 510 | 360 |
| 35 | 580 | 410 | 590 | 420 |
| 40 | 660 | 470 | 680 | 480 |
| 45 | 740 | 520 | 760 | 540 |
| 50 | 820 | 580 | 850 | 600 |
| 55 | 910 | 640 | 930 | 660 |
| 60 | 990 | 700 | 1020 | 720 |
| 65 | 1070 | 760 | 1100 | 780 |

PLAN
PICTORIAL

* 6' For Restricted Conditions
CZ For Non-Restricted Conditions
See Index No. 700

INSET A

Where The Median Is Sufficiently Wide For The Design Vehicle To Pause In The Median (Vehicle Length Plus 6' Min.) The Clear Line Of Sight To The Right (d_v) Is Measured From The Vehicle Pause Location, I.e. Not From The Cross Road Stop Position; Distances d_r & d_m Do Not Apply.

INSET B

NOTES FOR 4-LANE DIVIDED ROADWAY

1. See Sheet 6 for origin of clear sight line on the minor road.
2. Values shown in the tables are the governing (controlling) sight distances calculated based on 'AASHTO Case B - Intersection with Stop Control on the Minor Road.'

SIGHT DISTANCES (d), (d_v) & (d_x) AND RELATED DISTANCES (d_L , d_r , d_m & d_{vL}) (FEET)

6 LANE DIVIDED

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SIGHT DISTANCE AT INTERSECTIONS

| | | | | |
|-------------|---------|-------|-------------|--------------------|
| Designed By | XJM/JVG | 10/89 | Approved By | <i>[Signature]</i> |
| Drawn By | BSD | 10/89 | Revision | 04 |
| Checked By | JVG/JJM | 10/02 | Sheet No. | 5 of 6 |
| | | | Index No. | 546 |

| DATE | UTILITY ACCOMMODATION MANUAL REVISIONS |
|------|--|
| | |

PICTORIAL
ORIGIN OF CLEAR SIGHT LINE ON MINOR ROAD

PICTORIAL
WINDOW DETAIL

PERCEPTION DIAGRAM
SETTING SABAL PALM (STATE TREE) SPACING

SHADOW DIAGRAM

PICTORIAL
CHANNELIZED DIRECTIONAL MEDIAN OPENINGS

LEGEND
Areas Free Of Sight Obstructions

TABLE: d_a (Feet)

| Design Speed MPH | 1 Lane Crossed | | | 2 Lanes Crossed | | | 3 Lanes Crossed | | |
|------------------|----------------|-----|-------|-----------------|-----|-------|-----------------|-----|-------|
| | P | SU | Comb. | P | SU | Comb. | P | SU | Comb. |
| 30 | 245 | 285 | 330 | 265 | 320 | 360 | 285 | 350 | 390 |
| 35 | 285 | 335 | 385 | 310 | 370 | 420 | 335 | 405 | 460 |
| 40 | 325 | 380 | 440 | 355 | 425 | 480 | 380 | 465 | 525 |
| 45 | 365 | 430 | 495 | 395 | 475 | 540 | 430 | 520 | 590 |

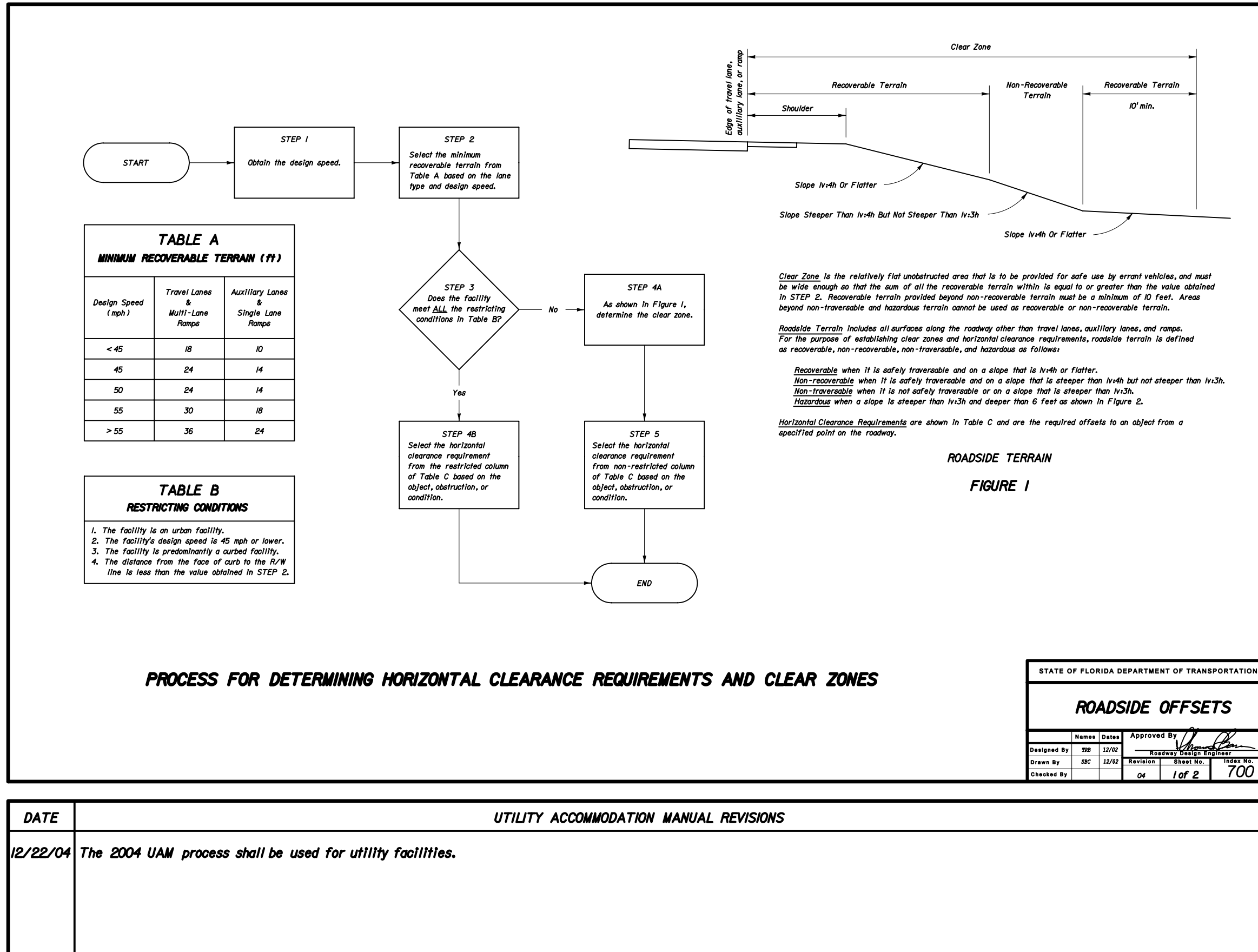
★ See Note.

★ The d_a values in this table were established by the method referenced in Design Note 2, and are applicable to urban, predominantly curbed roadways with design speeds of 45 mph or less and meeting the restricted conditions defined in Index No. 700. For horizontal clearance (HC) of six feet (6'), the values for d_b may be determined by the equation $d_b = d_a (w/w+2)$. For roadways with non-restricted conditions, d_a and d_b should be based on the geometry for the left turn storage and on clear zone widths (See Index No. 700).

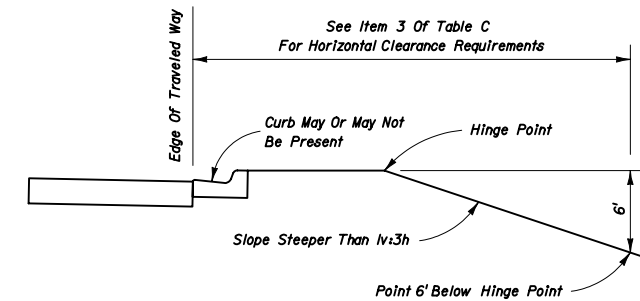
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

SIGHT DISTANCE AT INTERSECTIONS

| | | | |
|-------------|----------|-----------|-------------------------|
| Designed By | Names | Dates | Approved By |
| Drawn By | BSD | 10/89 | <i>Samuel D. Park</i> |
| Checked By | JVG/KSM | 10/89 | Roadway Design Engineer |
| | Revision | Sheet No. | Index No. |
| | 04 | 6 of 6 | 546 |



| TABLE C | | | | | |
|-------------------------|----------|---|--|---|---|
| | Item No. | OBJECTS, OBSTRUCTIONS OR CONDITIONS | HORIZONTAL CLEARANCE REQUIREMENTS | | |
| | | | Restricted | Non-Restricted | |
| GENERAL | 1 | Above ground Fixed hazards: All roadside objects, obstructions or conditions other than those listed below that exceed 4 inches in height and pose a hazard to errant vehicles and vehicle occupants. | Locate as close to the Right Of Way as practical and not less than 4 feet from face of curb. | Locate outside the clear zone as close to the Right Of Way as practical. | |
| | 2 | All FDOT approved guardrails, crash cushions, permanent or temporary concrete barriers, and guardrail end terminals. | Locate as shown in the Design Standards. | Locate as shown in the Design Standards. | |
| ROADWAY | 3 | Drop-off hazards: Any point along a roadside slope steeper than 1v:3h that is deeper than 6 feet below the hinge point. See Figure 2. | Locate the point that is 6 feet below the hinge point no less than 22 feet from the traveled way. | Treat as roadside slopes in accordance with Design Standard 400. | |
| | 4 | Mailboxes not shown in Design Standard 532. | Not to be used. | Not to be used. | |
| | 5 | Mailboxes shown in Design Standard 532. | Locate in accordance with Design Standard 532. | Locate in accordance with Design Standard 532. | |
| | 6 | Trees expected to become greater than 4 inches in diameter measured 6 inches above the ground. | Outside roadways: Locate no less than 4 feet from face of curb in accordance with Design Standard 546. Inside medians: Locate no less than 6 feet from the edge of traffic lane and in accordance with Design Standard 546. | Locate outside the clear zone as close to the Right Of Way as practical and in accordance with Design Standard 546. | |
| | 7 | Trees not expected to become greater than 4 inches in diameter measured 6 inches above the ground. | Locate in accordance with Design Standard 546. | Locate in accordance with Design Standard 546. | |
| | 8 | Canals behind guardrail. | Locate no less than 5 feet from the back of the guardrail post. | Locate no less than 5 feet from the back of the guardrail post. | |
| | 9 | Canals without guardrail. | Locate as close to the Right Of Way as practical and not less than 40 feet from the traveled way. | Design speeds of 50 mph and greater: Locate as close to the Right Of Way as practical and not less than 60 feet from the traveled way. Design speeds less than 50 mph: Locate as close to the Right Of Way as practical and not less than 50 feet from the traveled way. | |
| | DRAINAGE | 10 | Culvert wing wall, endwall, retaining walls and flared end sections less than 6 feet deep. | Locate no less than 4 feet from face of curb. | Locate outside the clear zone. |
| | | 11 | Culvert wing wall, endwall, retaining walls and flared end sections 6 feet and greater in depth. | Treat as drop-off hazard; See Item No. 3. | Treat as drop-off hazard; See Item No. 3. |
| 12 | | Mitered end sections. | Locate as shown in Design Standards 272 and 273. | Locate as shown in Design Standards. | |
| TRAFFIC CONTROL DEVICES | 13 | Frangible sign supports. | Locate no less than 4 feet from face of curb and in accordance with Design Standard 17302. | Locate in accordance with Design Standard 17302. | |
| | 14 | Overhead sign supports and other non-frangible signs. | Locate no less than 4 feet from face of curb. | Locate outside the clear zone. | |
| | 15 | Signal controller cabinets, signal poles, strain poles and mast arms. | Locate no less than 4 feet from face of curb and not in medians. | Locate outside the clear zone and not in medians. | |
| LIGHTING | 16 | Conventional lighting (frangible and non-frangible). | Locate no less than 4 feet from face of curb and not in medians. | Locate 20 feet from travel lanes or 14 feet from auxiliary lanes. Not in medians. May be clear zone width when the clear zone is less than 20 feet. | |
| | 17 | Highmast lighting. | Not applicable. | Locate outside the clear zone. | |
| STRUCTURES | 18 | Bridge piers and abutments: Above ground vertical structures. | Locate not less than 16 feet from edge of travel lane. | Locate outside the clear zone. | |
| UTILITIES | 19 | Fire hydrants with bases no higher than 4 inches above the ground. | Locate not less than 2 feet from face of curb. | Locate as close to the Right Of Way as practical. | |
| | 20 | Utility installations: All above ground fixed objects. | Locate as close to the Right Of Way as practical and not less than 4 feet from face of curb and not in medians. | Locate outside the clear zone as close to the Right Of Way as practical and not in medians and not within limited access facilities. May be placed 4 feet behind the back of shields that have been justified for other reasons. | |
| RAILROADS | 21 | Railroad crossing traffic control devices. | Locate in accordance with Design Standard 17882. | Locate in accordance with Design Standard 17882. | |



DROP-OFF HAZARDS
FIGURE 2

GENERAL NOTES

- When sidewalks are present, an unobstructed sidewalk width of at least 4 feet must be provided.
- When site specific conditions prohibit meeting the horizontal clearance requirements in TABLE C, the object, obstruction or condition must be mitigated, possibly by shielding. Otherwise, the Plans Preparation Manual, Volume 1, Chapters 2, 4, 21 and 25, or Chapters 5 and 9 of the Utility Accommodation Manual must be researched to determine viable alternatives. The minimum requirements in these manuals can only be reduced when a Design Variation or Design Exception has been approved in accordance with Chapter 23 of the Plans Preparation Manual, Volume 1 or a Utility Exception has been approved in accordance with Chapter 13 of the Utility Accommodation Manual.

| | | | | |
|---|-----|-------|-------------|---------------------|
| STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION | | | | |
| ROADSIDE OFFSETS | | | | |
| Designed By | YRB | 12/02 | Approved By | |
| Drawn By | SBC | 12/02 | Revision | Sheet No. Index No. |
| Checked By | | | 04 | 2 of 2 700 |

| DATE | UTILITY ACCOMMODATION MANUAL REVISIONS |
|----------|--|
| 12/22/04 | The 2004 UAM process shall be used for utility facilities. |