Ditch Grade

*Slope: To & Pipe For Pipes 18" And Smaller 1:2 For Pipes 24" And Larger.

Note: See Sheets 6 and 7 for details and general notes.

SINGLE AND MULTIPLE ROUND CONCRETE PIPE

≥ DESCRIPTION: LAST REVISION 07/01/02

No Pipe Joint Permitted Unless Approved By The Engineer

F (Pipe To Be Included Under Unit Price For Mitered End Section)

Connector

Not < Than D

SECTION

Saddle

Q

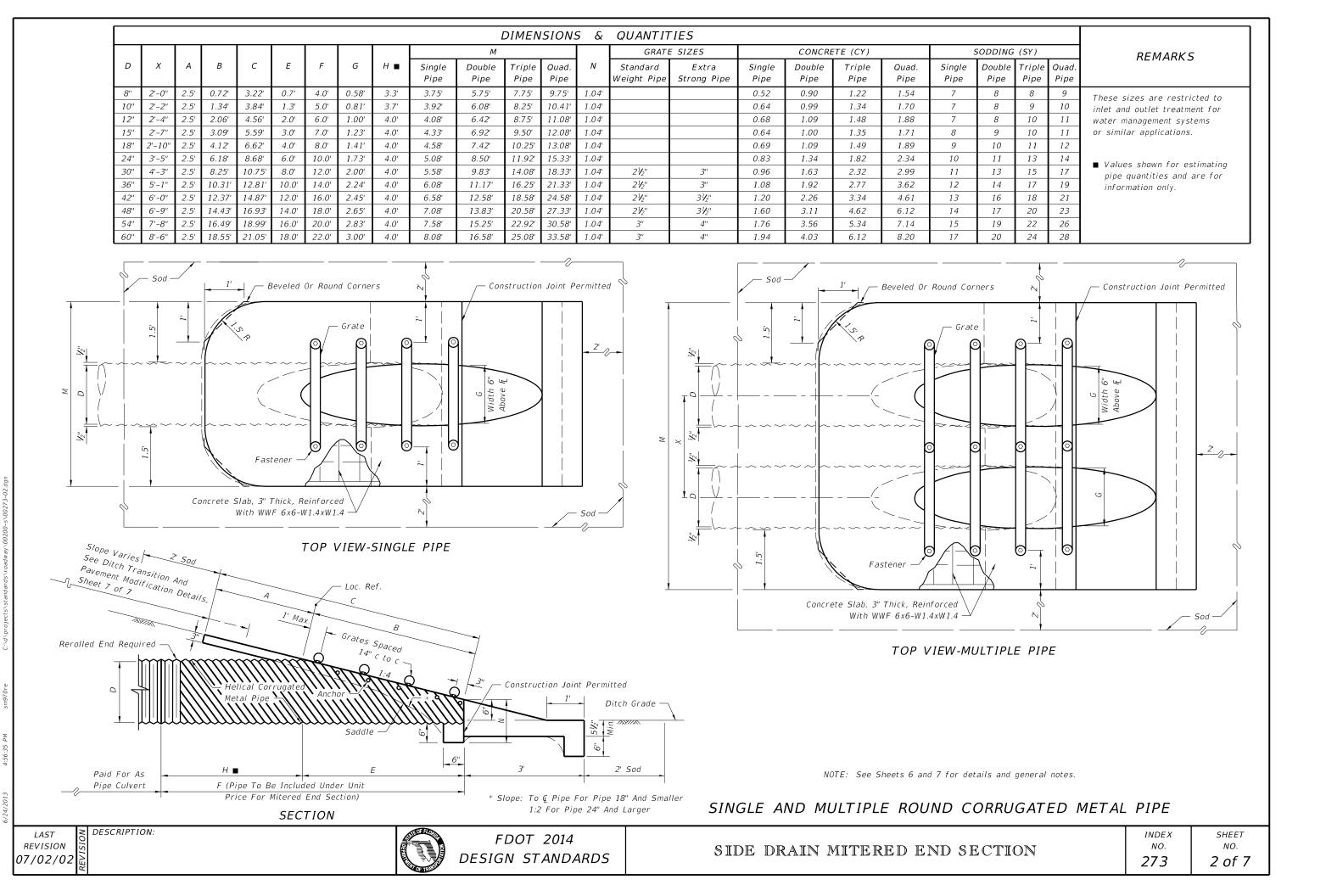
Paid For As

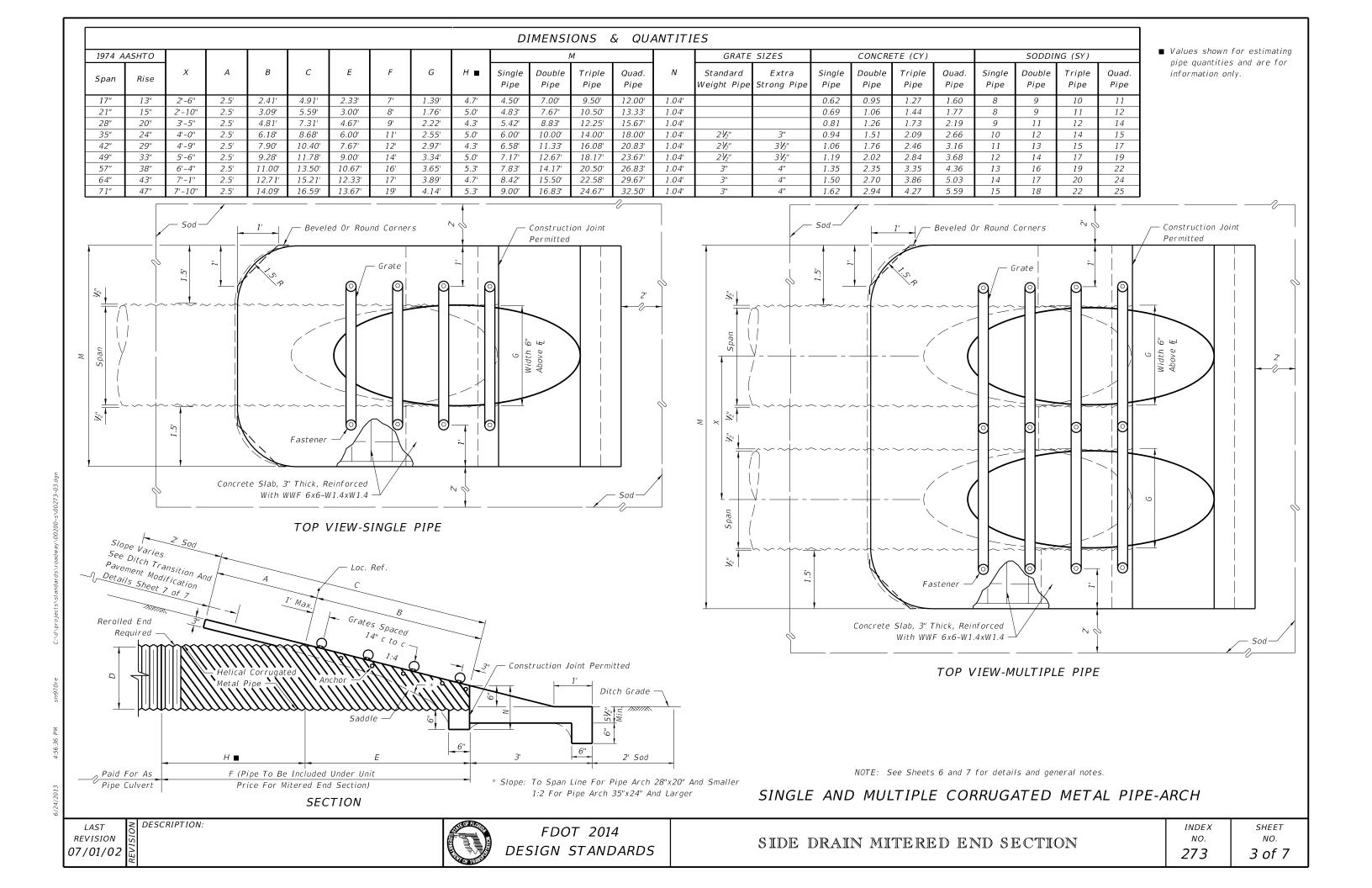
Pipe

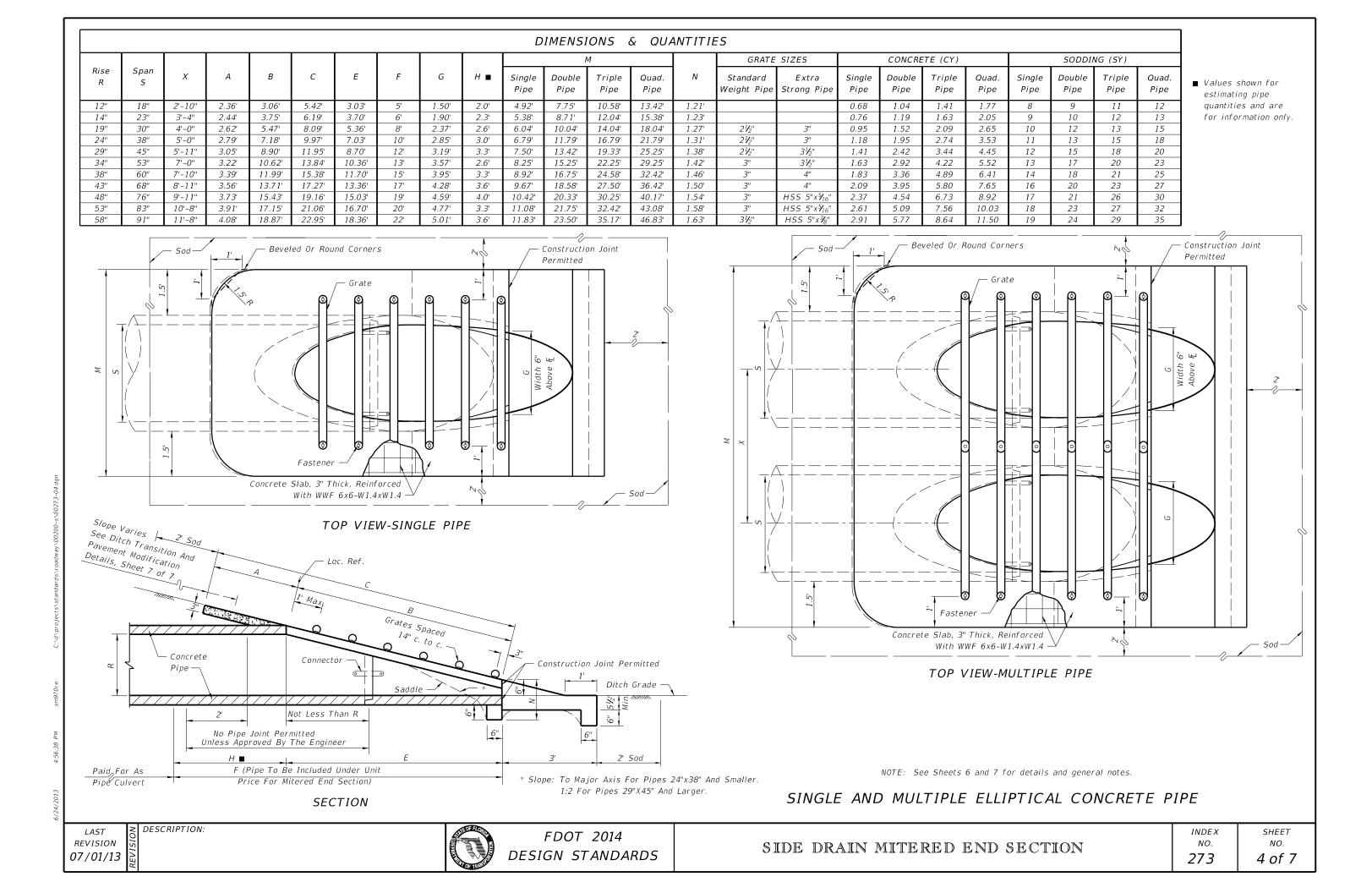
FDOT 2014 DESIGN STANDARDS

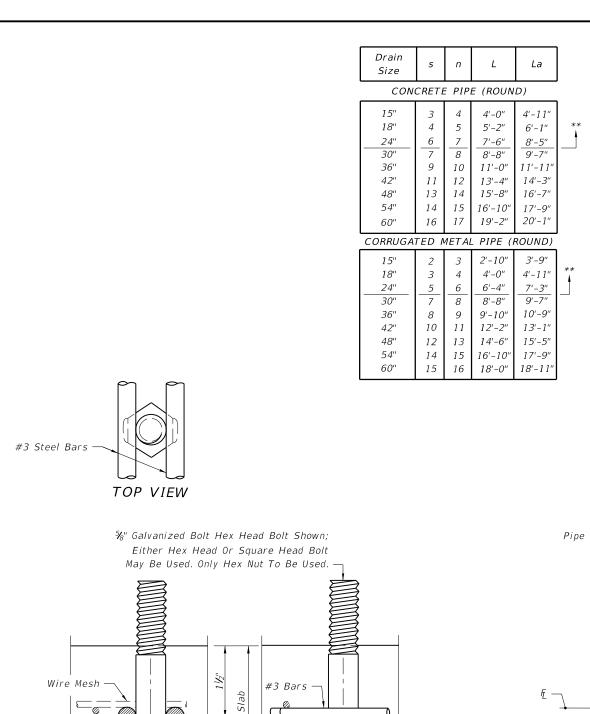
SIDE DRAIN MITERED END SECTION

INDEX SHEET NO. NO. 273 1 of 7









SIDE VIEW

The specified weld shall be made when the

and repeated handling. Tack welds are permitted for local or job site fabrication.

fabricated unit is subject to hazardous hauls

Galvanizing over welded surface not required.

	Size	3	"	L	La	
ELLIPTICAL CONCRETE PIPE						
	12"x18"	2	3	2'-10"	3'-9"	**
١	14"x23"	3	4	4'-0'	4'-11"	lî
١	19"x30"	4	5	5'-2"	6'-1"	
١	24"x38"	5	6	6'-4"	7'-3"	
١	29"x45"	7	8	8'-8"	9'-7"	
١	34"x53"	8	9	9'-10"	0'-9"	
١	38"x60"	10	11	12'-2"	13'-1"	
١	43"x68"	11	12	13'-4"	14'-3"	
١	48"x76"	13	14	15'-8"	16'-7"	
ı	53"x83"	14	15	16'-10"	17'-9"	
Į	58"x91"	15	16	18'-0"	18'-11"	
CORRUGATED METAL PIPE (ARCH)						*:
	17"×13"	1	2	1'-8"	2'-7"	}
	21"x15"	2	3	2'-10"	3'-9"	"
	28"x20"	_ 4	5	5'-2"	6'-1"	
	2 E'' y 2 A''	-5	-6	6' 1"	7'_3"	

7'-6"

8'-8"

11'-0"

14'-6"

11 12'-2"

10

10

8'-5"

13'-1"

42"x29"

49"x33"

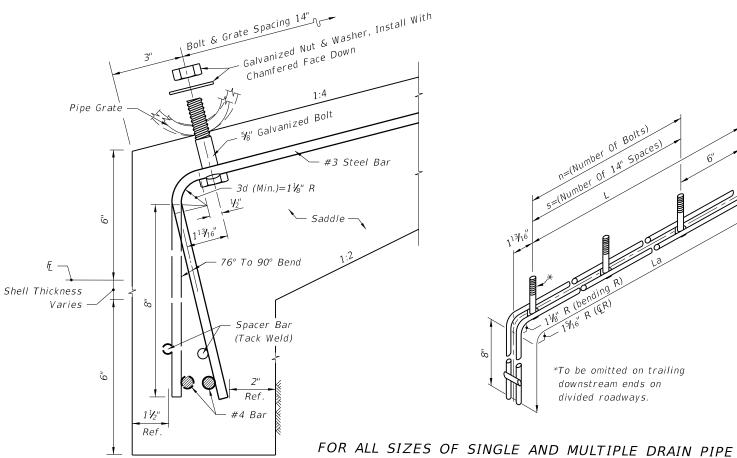
57"x38"

64"x43" 71"x47" Note: %" x 3" bolts are standard for all grate fasteners, except when the contractor elects to use the slotted upper holes for the intermediate fasteners on multiple drain pipes, which will require the following bolt lengths:

Grate Size (Std. & X-Stg.)	Bolt Length
2 ½ "	5½"
3"	6"
3½"	6½"
4"	7"

** To be used only when grates are called for in the plans.

*** 1974 AASHTO Pipe Arch Sizes.



DETAILS FOR CONCRETE & CORRUGATED METAL PIPE

LAST REVISION 07/01/00 END VIEW

BOTTOM VIEW

≥ DESCRIPTION:

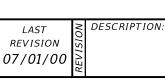


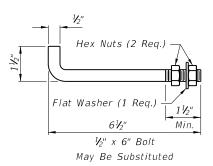
FDOT 2014 DESIGN STANDARDS FASTENER UNIT











Notes:

Anchors required for CMP only.

Anchor, washer and nuts to be galvanized steel.

Bend anchor where required to center in concrete slab.

Damaged surfaces to be repaired after bending.

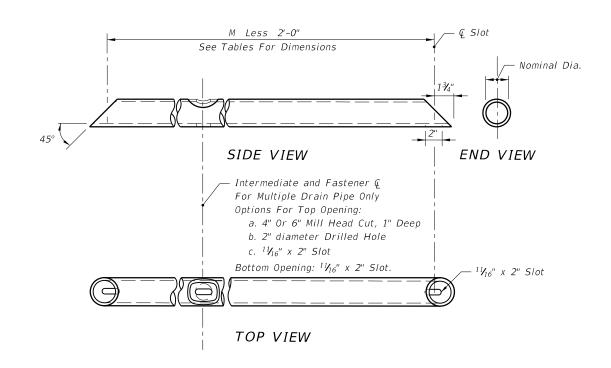
Anchors are to be spaced a distance equal to four (4) corrugations.

Place the anchors in the outside crest of corrugation.

Flat washer to be placed on inside wall of pipe.

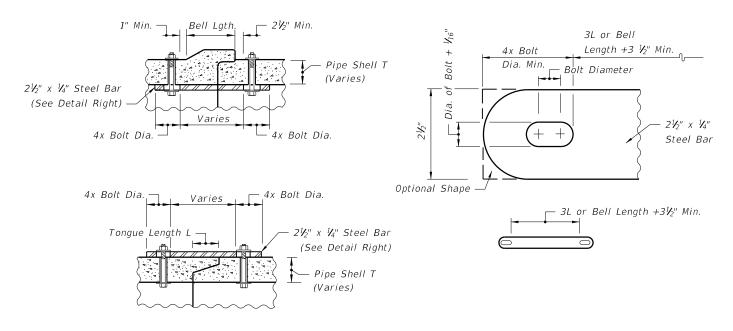
Holes in the mitered end pipe are to be drilled or punched; burning not permitted.

ANCHOR DETAIL



FOR SINGLE & MULTIPLE DRAIN PIPE GRATE DETAIL

See General Notes, Sheet 7.



All bars, bolts, nuts and washers are to be galvanized steel.

Bolt diameters shall be $\frac{3}{6}$ " for 15" to 36" pipe and $\frac{5}{6}$ " for 42" to 60" pipe.

Two connectors required per joint, located 60° right and left of bottom center of pipe.

Bolt holes in pipe shell are to be drilled.

CONCRETE PIPE CONNECTOR DETAIL

DETAILS FOR CONCRETE & CORRUGATED METAL PIPE

THE PARTY OF THE P	FDOT 2014			
	DESIGN STANDARDS			

۵

Intersect 1:4 Slope

And Crown Line Elev.

Modified Slope When Minimum

Cover Or Less Occurs Both On Existing And Proposed Installations

1:12 Or Steeper



Ditch

Bottom

Flow

Transition Length=10 D

PLAN

DITCH TRANSITION

PERMISSIBLE PAVEMENT MODIFICATION

—Side

Ditch



GENERAL NOTES

- 1. Unless otherwise designated in the plans, concrete pipe mitered end sections may be used with any type of side drain pipe; corrugated steel pipe mitered end sections may be used with any type of side drain pipe except aluminum pipe; and, corrugated aluminum mitered end sections may be used with any type of side drain pipe except steel pipe. When bituminous coated metal pipe is specified for side drain pipe, mitered end sections shall be constructed with like pipe or concrete pipe. When the mitered end section pipe is dissimilar to the side drain pipe, a concrete jacket shall be constructed in accordance with Index No. 280
- 2. Corrugated polyethylene pipe (HDPE), polyvinyl-chloride pipe (PVC) and polypropylene pipe (PPP) for side drain applications shall utilize either corrugated metal or concrete mitered end sections (MES). When used in conjunction with corrugated (MES), connection shall be by either a formed metal band specifically designated to join HDPE or PVC pipe, with metal pipe or other coupler approved by the State Drainage Engineer. When used in conjunction with a concrete (MES), connection shall be by concrete jacket constructed in accordance with Index No. 280.
- 3. Concrete pipe used in the assembly of mitered end sections shall be of selective lengths to avoid excessive connections.
- 4. Corrugated metal pipe galvanizing that is damaged during beveling and perforating for mitered end section shall be repaired.
- 5. That portion of corrugated metal pipe in direct contact with the concrete slab and extending 12" beyond shall be bituminous coated prior to placing of the concrete.
- 6. When existing multiple side drain pipes are spaced other than the dimensions shown in this detail, or have nonparallel axes, or have non-uniform sections, The mitered end sections will be constructed either separately as single pipe mitered end sections or collectively as multiple pipe end sections as directed by the Engineer; however, mitered end sections will be paid for each, based on each independent pipe end.
- 7. In addition to the requirements of Section 430-4, side drain culverts shall comply with the cover requirements shown on Index
- 8. The reinforced concrete slab shall be constructed for all sizes of side drain pipe and cast in place with Class NS concrete.
- 9. Round pipe size 30" or greater, pipe-arch size 35"x24" or greater and elliptical pipe 19"x30" or greater shall be grated unless excepted in the plans. Smaller sizes of pipe shall be grated only when called for in plans. The lower grate on trailing downstream ends on divided highways shall be omitted.
- 10. Grates are to be fabricated from steel ASTM A53, Grade B, pipe. The lower grate on all traffic approach ends shall be Schedule 80 and all remaining grates shall be Schedule 40. Grates subject to salt free and corrosive free environment may be fabricated from galvanized pipe, with base metal exposed during fabrication repaired as specified in Section 562, Standard Specifications; or, fabricated from black pipe and hot dip galvanized after fabrication in accordance with ASTM A123. Grates subject to salt water or highly corrosive environment shall be hot dip galvanized after fabrication in accordance with ASTM A123.
- 11. Ditch transitions shall be used on all grades in excess of 3% as directed by the Engineer.
- 12. The project engineer shall contact the District Drainage Engineer for possible alternate treatment prior to constructing side drain mitered end sections where a minimum spacing of 30' will not result between the toe points of the mitered end sections.
- 13. The cost of all pipe(s), grates, fasteners, reinforcing, connectors, anchors, concrete, sealants, jackets and coupling bands shall be included in the cost for the mitered end section. Sodding shall be paid for separately under the contract unit price for Performance Turf, SY.
- 14. Mitered end sections shall be paid for under the contract unit price for Mitered End Section (SD), Ea., based on each independent pipe end.

DESIGN NOTES

- 1. In critical hydraulic locations, grates shall not be used until potential debris transport has been evaluated by the drainage engineer and appropriate adjustments made. Ditch grades in excess of 3% or pipe with less than 1.5' of cover and grades in excess of 1% will require such an evaluation (General Note 9).
- 2. The design engineer shall determine highly corrosive locations and specify in the plans when the grates shall be hot-dip galvanized after fabrication (General Note 10).
- 3. The design engineer shall determine and designate in the plans which alternate types of mitered end section will not be permitted. The restriction shall be based on corrosive or structural requirements.

NOTES & INFORMATION

