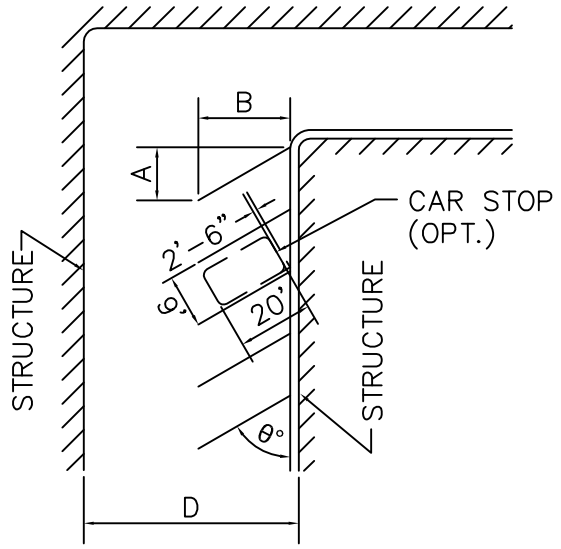
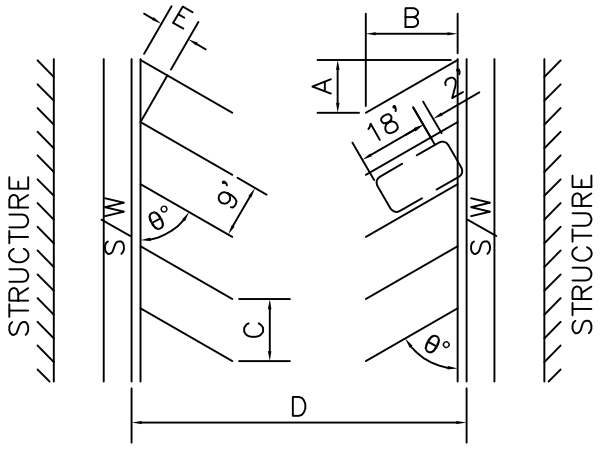
LIST OF STANDARD DETAILS

SD 8-1	PARKING LOT DETAIL
SD13-1	TOTAL ASPHALT LOCAL STREET DETAIL (MINIMUM DESIGN) (Rev. 10-17-05)
SD13-2	TOTAL ASPHALT COLLECTOR/SERVICE DETAIL (MINIMUM DESIGN) (Rev. 10-17-05)
SD13-3	TOTAL ASPHALT THOROUGHFARE STREET DETAIL (MINIMUM DESIGN)
SD13-4	TOTAL ASPHALT PARKWAY STREET DETAIL (MINIMUM DESIGN)
SD13-5	TYPICAL THOROUGHFARE MEDIAN DETAIL
SD13-6	TYPICAL PARKWAY MEDIAN DETAIL
SD13-7	DITCH SECTION ROADWAY (MINIMUM DESIGN)
SD13-8	ASPHALT SPEED HUMP SPECIFICATIONS DETAIL
SD13-9	MILLING & OVERLAY DETAIL
SD14-1	CONCRETE PAVING PAVEMENT CROSS SECTION AND JOINT LOCATIONS (LOCAL STREET SECTIONS)
SD14-2	CONCRETE PAVING COLLECTOR/SERVICE DETAIL
SD14-3	CONCRETE PAVING THOROUGHFARE STREET DETAIL
SD14-4	CONCRETE PAVING JOINT DETAILS
SD14-5	CONCRETE PAVING JOINT SEALING DETAIL
SD14-6	CONCRETE PAVING STRUCTURE DETAILS DETAIL
SD14-7	CONCRETE PAVING JOINT LOCATIONS
SD21-1	TYPE “A”, “B”, “B-1”, “C” AND “D” CURB AND GUTTER DETAIL (Rev. 10-17-05)
SD21-2	TYPE “E” AND “F” CURB DETAILS
SD21-3	SIDEWALK DETAIL (Rev. 10-17-05)
SD21-4	BICYCLE TRAIL DETAIL (Rev. 10-17-05)
SD21-5	SIDEWALK DETAIL WITH ABUTTING RETAINING WALL
SD21-6A	SIDEWALK AND STEPS DETAIL
SD21-6B	SIDEWALK AND STEPS DETAIL
SD21-6C	AUXILIARY DETAILS FOR SIDEWALK AND STEPS (ON RADIUS)
SD21-6D	AUXILIARY DETAILS FOR SIDEWALK AND STEPS (BRICKS)
SD21-6E	AUXILIARY DETAIL FOR SIDEWALK AND STEPS (CONCRETE PANELS)
SD21-7	COMMERCIAL AND INDUSTRIAL ENTRANCE DRIVE DETAIL
SD21-8	RESIDENTIAL DRIVE DETAIL
SD21-9	RESIDENTIAL ENTRANCE DRIVE AT NON-CURBED STREET
SD21-10	MONUMENT BOX DETAIL (MINIMUM DESIGN)
SD21-11	STANDARD MANHOLE ADJUSTMENT MINIMUM DESIGN
SD30-1	CONCRETE ENCASEMENT, CONCRETE CRADLE, AND BEDDING DETAILS
SD30-2	RISER DETAIL (MINIMUM DESIGN) (Rev. 11-21-05)
SD30-3	STREET CROSSING DETAIL
SD30-4	MANHOLE ADAPTER AND SADDLE DETAILS (Rev. 11-21-05)
SD31-1	STANDARD PRECAST MANHOLE DETAIL (Rev. 10-17-05)
SD31-2	STANDARD PRECAST MANHOLE WITH INSIDE DROP (ECCENTRIC CONE)
SD31-3	STANDARD PRECAST MANHOLE WITH INSIDE DROP (FLAT TOP)
SD31-5	CLEANOUT DETAIL
SD40-1	STANDARD CURB INLET (Rev. 10-17-05)
SD40-2	WALL SECTION (PRE-CAST OR CAST IN PLACE CONCRETE)
SD40-3	STREET INLET FRAME DETAIL
SD40-4	AREA INLET DETAIL
SD40-5	GRATE INLET DETAIL
SD40-6	STANDARD STORM SEWER MANHOLE
SD40-7	SHALLOW JUNCTION BOX DETAIL

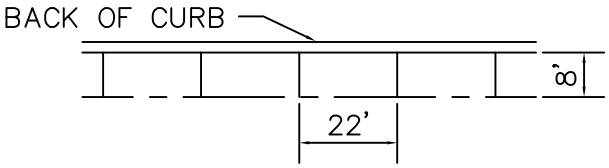
SD40-8	TYPICAL END SECTION DETAIL
SD40-9	UNDERDRAIN
SD40-10	CURB INLET STAMP (NEW CONSTRUCTION)
SD50-1	EMBEDMENTS FOR CONDUITS NOT UNDER PAVEMENT
SD50-1A	BACKFILL AND EMBEDMENT FOR CONDUITS UNDER STREETS
SD50-2	ROADWAY CONDUIT CROSSING DETAIL GEOMETRY ONLY
SD50-3	CASING PIPE DETAIL
SD50-4	LARGE DIAMETER CASING PIPE DETAIL (MINIMUM DESIGN)
SD60-1	STREET PATCH DETAIL
SD80-1	MINIMUM STREET LIGHTING POLE AND BASE DETAILS TYPE “B” AND “C”
SD80-2	STREET LIGHTING POLE AND BASE DETAILS TYPE “D”
SD90-1	TEMPORARY EROSION AND POLLUTION CONTROL STRAW BALE DITCH CHECKS
SD90-2	TEMPORARY EROSION AND POLLUTION CONTROL SILT FENCE DITCH CHECK
SD90-3	TEMPORARY EROSION AND POLLUTION CONTROL ROCK DITCH CHECK
SD90-4	TEMPORARY EROSION AND POLLUTION CONTROL SILT FENCE SLOPE BARRIER AND STRAW BALE SLOPE BARRIER



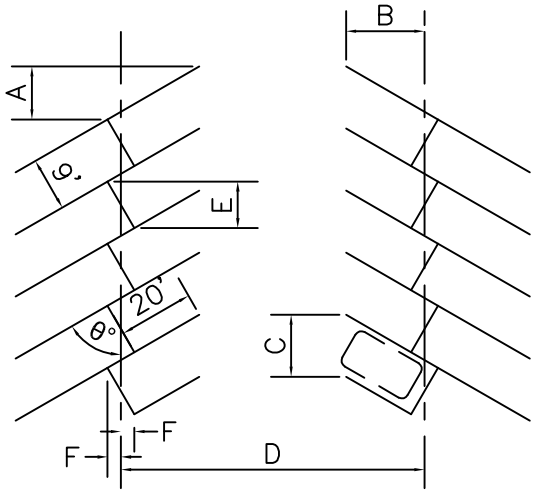
TYPE I



TYPE II



PARALLEL PARKING STALL



*C=REFER TO C TYPE II

TYPE III

NOTE: DIMENSIONS BELOW ARE GIVEN IN FEET

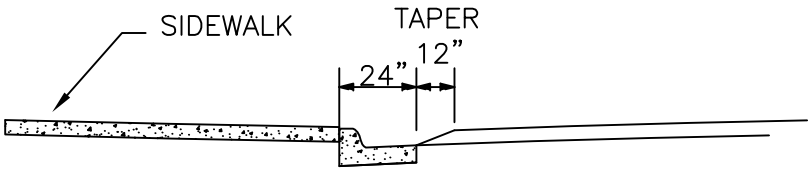
	TYPE I				TYPE II					TYPE III				
	A	B	C	D	A	B	C	D	E	A	B	D	E	F
45.0	20.5	20.5	12.7	36.5	19.1	19.1	12.7	66.2	9.0	20.5	17.3	50.6	6.4	3.2
60.0	12.6	21.8	10.4	37.8	11.6	20.1	10.4	68.2	5.2	12.6	19.6	55.2	9.0	2.3
90.0	0.0	20.0	9.0	44.0	0.0	18.0	9.0	72.0	0.0	0.0	20.0	64.0	7.8	0.0

SCALE: NOT TO SCALE

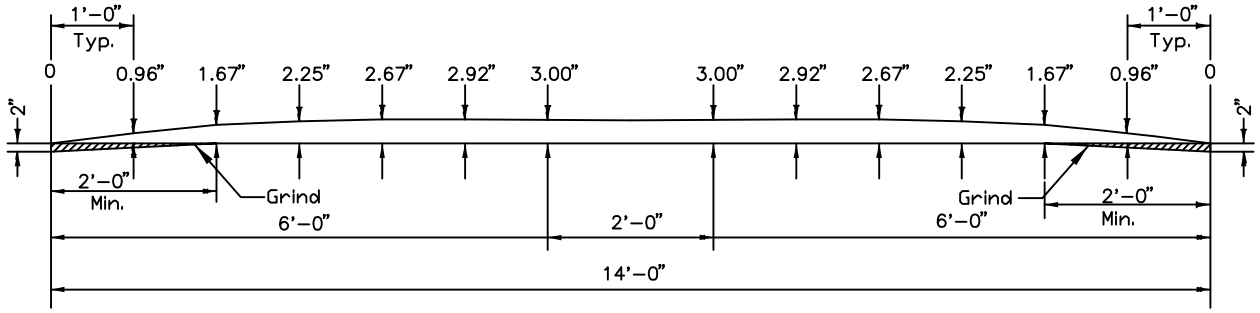
CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	PARKING LOT DETAIL	APPROVED BY: _____ DATE: NOV. 2003	REVISED 10-06-08	STANDARD DETAIL SD8-1

ROB

IMPORTANT: Speed Humps to be 3" in height to provide maximum effectiveness, while not being overly restrictive to emergency police and fire vehicles.



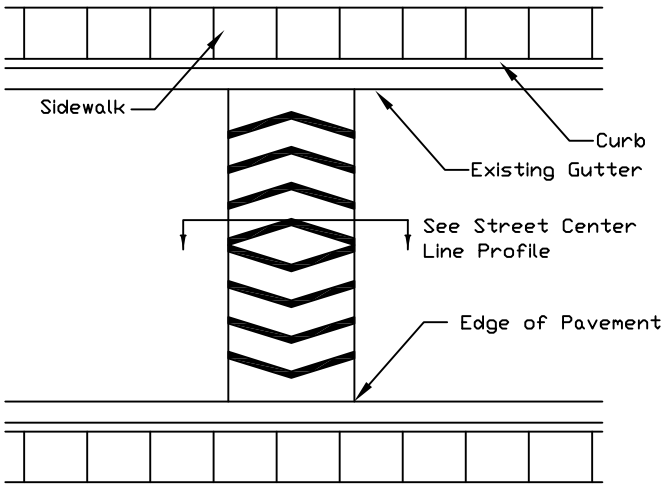
EDGE DETAIL



STREET CENTER LINE PROFILE

NOTES:

1. Speed humps shall not be placed over manholes, water valves, survey monuments, etc.
2. Speed humps shall not be installed in a location such that roadway drainage is compromised.
3. Speed humps to be constructed with BM–2 Surface course. A tack coat shall be applied prior to application of pavement.
4. Striping to be done by contractor per City spec.

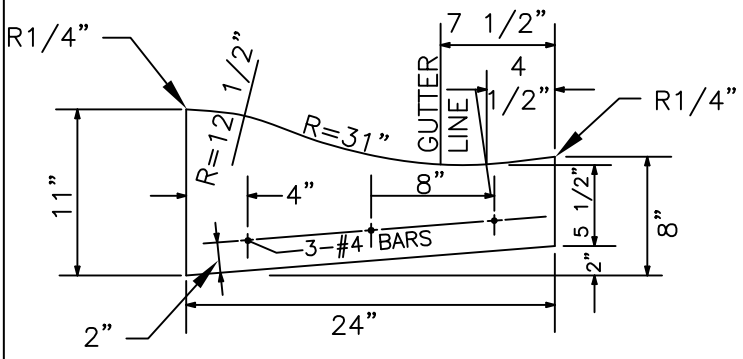


PLAN VIEW

SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	ASPHALT SPEED HUMP SPECIFICATIONS DETAIL	APPROVED BY: _____ DATE: 8 SEPTEMBER 2003	REVISED _____	STANDARD DETAIL SD13-8

ROV



TYPE A CURB

NOTES:

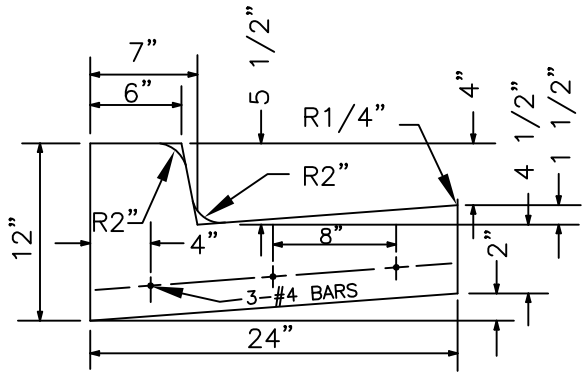
1. 1/2" PREMOLDED EXPANSION JOINTS SHALL BE PLACED AT POINTS OF CURVATURE, CURB INLETS, AND AT 100' CENTERS. CONTRACTION JOINTS SHALL BE A MIN OF 2" DEEP OR 1/3 TOTAL THICKNESS, A MAX. OF 3/8" WIDE AND PLACED AT 10' INTERVALS EQUALLY SPACED BETWEEN EXPANSION JOINTS. KANSAS CLASS A(AE) CONCRETE SHALL BE USED THROUGHOUT.

2. ALL CRUSHED STONE USED AS AGGREGATE FOR CONCRETE CONSTRUCTION SHALL BE OBTAINED FROM QUARRIES AND BEDS DESIGNATED BY THE KANSAS SEPARTMENT OF TRANSPORTATION AS MEETING DURABILITY REQUIREMENTS OF CLASS 1 OR CLASS 6.

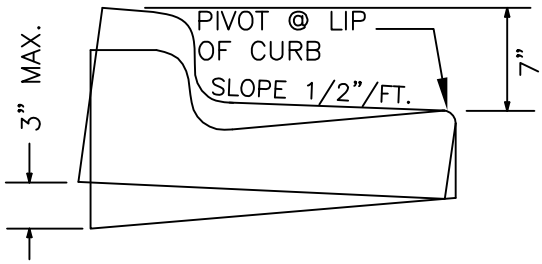
3. NEW CURB PLACEMENT SHALL BE DOWELLED TO EXISTING OR PREVIOUS PLACEMENT IN ACCORDANCE WITH REINFORCING AS SHOWN ON THIS SHEET.

4. REINFORCING NOT REQUIRED WHEN CURB IS PLACED ON ASPHALTIC CONCRETE BASE COURSE (COLLECTOR AND ARTERIAL STREETS).

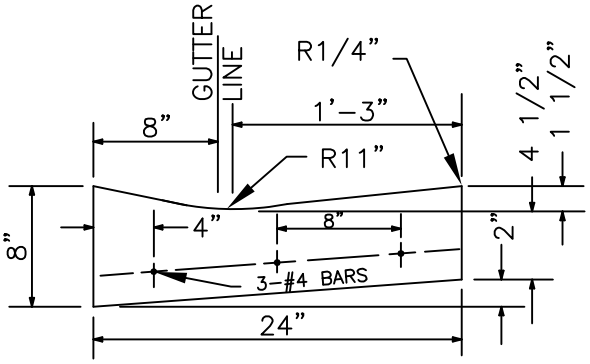
5. CONTRACTION JOINTS MUST ALIGN WITH CONCRETE PAVING JOINTS.



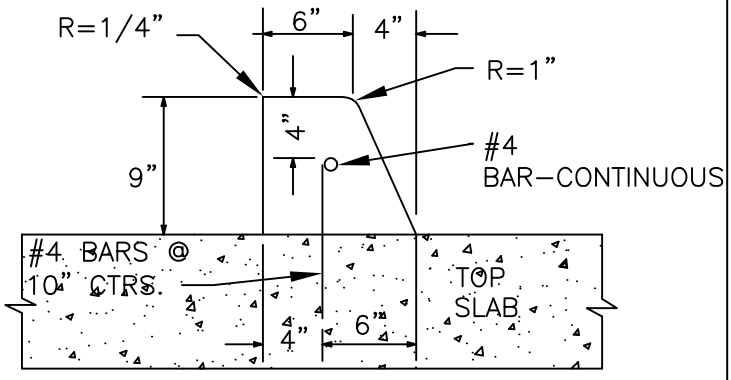
TYPE B CURB



TYPE B-1 CURB



TYPE C CURB



TYPE D MODIFIED CURB

SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	TYPE "A", "B", "B-1", "C" & "D" CURB AND GUTTER DETAIL	APPROVED BY: DATE: 8 SEPTEMBER 2003	REVISED 10-17-05 09-15-08	STANDARD DETAIL SD21-1

ROY

CITY OF LANSING

DEPARTMENT OF PUBLIC WORKS

SIDEWALK DETAIL W/ ABUTTING RETAINING WALL

APPROVED BY: _____

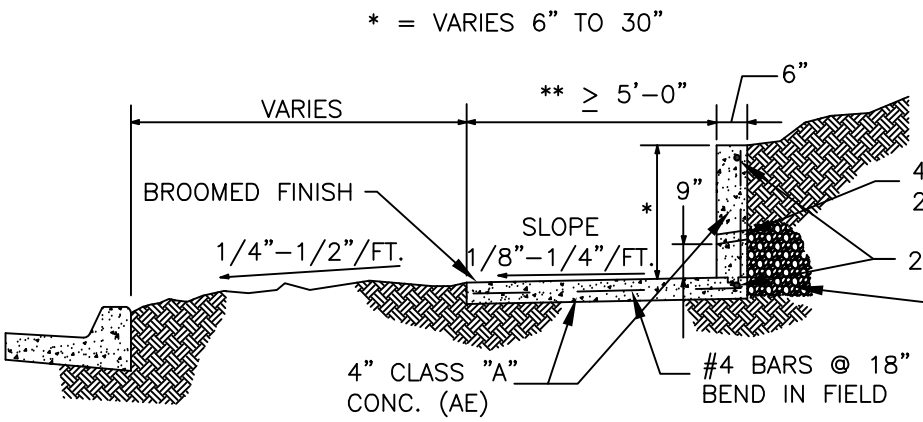
DATE: 8 SEPTEMBER 2003

REVISED 09-15-08

STANDARD DETAIL SD21-5

ROW

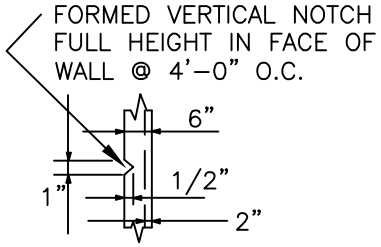
SCALE: NOT TO SCALE



* NOTE: FOR HEIGHTS GREATER THAN 30", DESIGN CALCS MUST BE SUBMITTED

** NOTE: MIN. 6 FT WIDTH WHEN ADJCENT TO CURB

SECTION



TOP VIEW

NOTES:

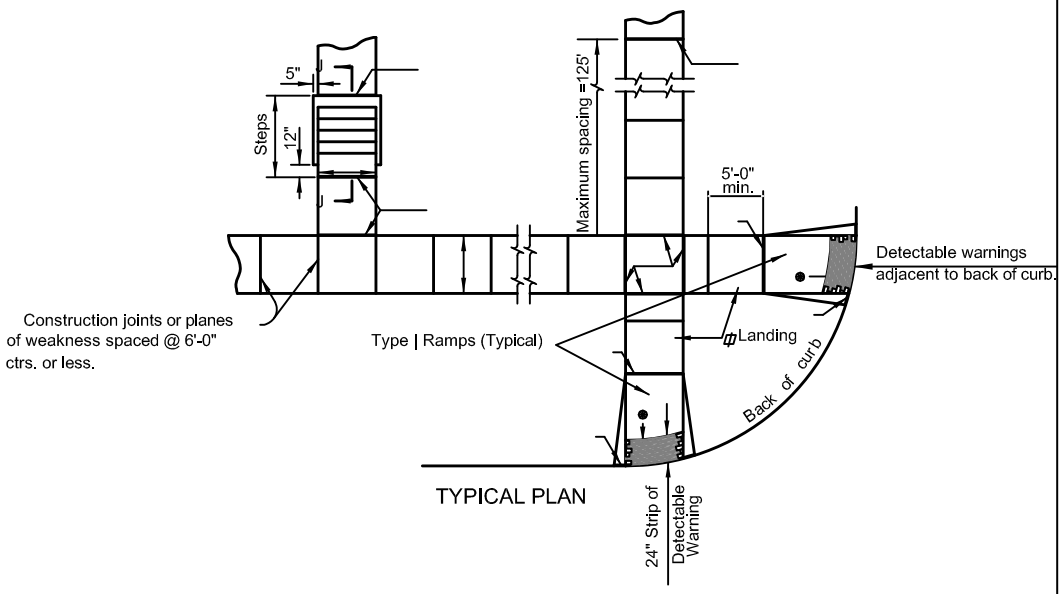
1. JOINTS SHALL BE FORMED AT RIGHT ANGLES TO THE ALIGNMENT OF THE SIDEWALK AND TO THE DEPTHS INDICATED BELOW.

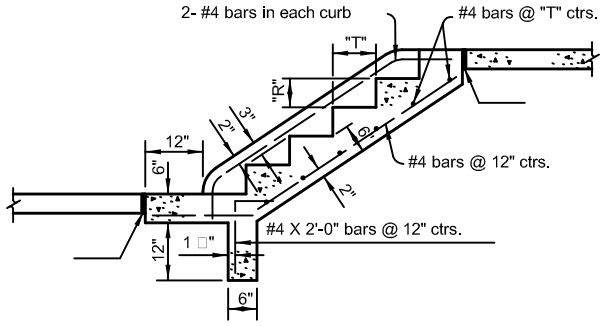
2. THE SIDEWALK SHALL BE MARKED OFF INTO SQUARE STONES BY CONTRACTION JOINTS. CONTRACTION JOINTS SHALL BE ONE-EIGHTH (1/8) INCH WIDE BY ONE (1) INCH DEEP AND MAY BE FORMED BY TOOLING OR BY USE OF A CONCRETE SAW.

3. EXPANSION JOINTS SHALL BE FORMED BY A ONE-HALF (1/2) INCH THICK PREFORMED JOINT FILLER, EXTENDING THE FULL DEPTH OF THE SLAB, AND SECURED SO THAT THEY ARE NOT MOVED BY DEPOSITING AND COMPACTING THE CONCRETE AT THESE JOINTS.

4. EXPANSION JOINTS SHALL BE PLACED WHERE SIDEWALK ABUTS OTHER STRUCTURES AND SHALL NOT BE SPACED MORE THAN 50 FEET APART ON STRAIGHT RUNS FOR HAND LAID SIDEWALK AND NOT MORE THAN 100 FEET APART ON STRAIGHT RUNS FOR MACHINE LAID SIDEWALKS.

5. PROVIDE 4" DIA. PVC DRAIN TILE AT 20'-0" INTERVALS ALONG LENGTH OF RETAINING WALL WITH GALVANIZED SCREEN AND GRANULAR BACKFILL WHEN WALL HEIGHT IS GREATER THAN OR EQUAL TO 1'-6" FROM TOP SURFACE OF SIDEWALK.





SECTION J-J

Step formula:
"R" x "T" = not less than 70 nor more than 75.
The maximum "R" = 6 3/4"
The minimum "T" = 11"

Note: Reinforcing bars shown are to be used only when more than four steps are necessary. Where field conditions permit, the steps should not be constructed too steep.

Expansion Joint (3/4 " Redwood board) placed at either back of curb line or at sidewalk line.

Expansion joint (3/4" redwood board) located as shown.

Variable width (5'-0" min.). Entrance walk to be same width as approach walk. Sidewalk width of 4'-0" may be used where existing conditions prohibit use of 5'-0".

GENERAL NOTES

The details depicted here may not be appropriate for all locations. Designs shall meet this criteria on all new construction projects unless impracticable by site restrictions. For an existing sidewalk facility where the sidewalk will be replaced, this sidewalk will be replaced according to this drawing to the maximum extent feasible.

Ramps shall be provided at all corners of street intersections where there is existing or proposed sidewalk and curb. Ramps shall also be provided at walk locations in mid-block in the vicinities of hospitals, medical centers and athletic stadiums.

Details shown on this sheet apply to all construction or reconstruction of streets, curbs or sidewalks. Use of sidewalk ramp Type 2 shall be restricted to locations where is is not feasible to use Types 1 or 3.

Curb cut ramps are to be located as shown on the plans or as directed by the Engineer.

If possible, drainage structures should not be placed in line with ramps. Except where existing drainage structures are being utilized in the new construction, location of the ramp should take precedence over location of drainage structure.

Sidewalks shall be ramped where the driveway curb is extended across the walk.

Care shall be taken to assure a uniform grade on the ramp, free of sags and short grade changes.

Expansion joints shall be placed in sidewalks as follows: In long runs, expansion joints shall be with the surface, at a maximum spacing of 125'. This same joint should be 3/4" redwood boards flush used at sidewalk junctions as shown in Typical Plan.

Where the end of the sidewalk abuts a curb, a 3/4" redwood board flush with the surface shall be used. Where the sidewalk is parallel and adjacent to a rigid structure, a 1/2" premoulded joint filler (Non- extruding, Type B) shall be used.

Sidewalk shall slope toward the street at a 50:1 or flatter, and where necessary, may be depressed or sloped to fit alleys and entrances as shown on the plans or as directed by the Engineer.

Where clear width of sidewalk between top of ramp and building or other obstruction is less than 48 inches, the slope of the flared sides shall be 12:1 or flatter.

Where sidewalk is shown to be constructed back of an entrance it shall be 6" thick with welded gauge and spacing of wires as in entrance pavement, as shown wire mesh reinforcement of the same gauge and spacing of wires as in entrance pavement, as shown in the Reinforcement Diagram. Bid item will be "Sidewalk Construction (6") either with or without air entrainment.

Class A Concrete (AE) shall be used throughout. Payment will be made as square yards of Sidewalk Construction. Surface texture of the ramp shall be that obtained by a wooden float or brushed finish to the slope of the ramp.

Ramp slopes in new construction shall be 12:1 or flatter. Desirable ramp slopes on existing sites shall be 12:1 or flatter. Where space limitations prohibit construction of 12:1 slopes at existing sites slopes shall be as follows:
8:1 or flatter for a maximum rise of 3 inches
10:1 or flatter for a maximum rise of 6 inches

⌀ Landing slopes shall be 48:1 or flatter. Landings shall be the same width as the ramp and min. 5'-0" in length.

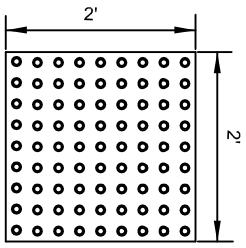
The counter slope shall be 20:1 or flatter at the base of sidewalk ramps. Refer to standard drawing SD21-6B for additional curb and gutter details.

● Detectable warning installation is typical and required on Sidewalk Ramps Type 1, Type 2, Type 3, median ramp crossings and other locations as shown in the plans. Refer to standard drawing SD21-6B for additional details.

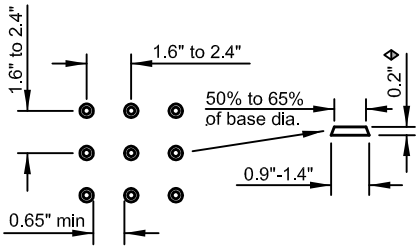
SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	SIDEWALK AND STEPS DETAIL	APPROVED BY: _____ DATE: DEC. 2003	REVISED 09-15-08	STANDARD DETAIL SD21-6B

ROB



PRESTRESSED RAMP PANEL
WITH
TRUNCATED DOME SURFACE



TRUNCATED DOME DIMENSIONS
for SQUARE PATTERN
(Parallel Alignment)

GENERAL REQUIREMENTS

1. Any manufacturer producing ADA-compliant ramp panels under this specification must be currently prequalified. Procedures for prequalification are outlined in **subsection 4.0**.

2. Provide a non-rusting prestressed support system integrated into the lower portion of the panel. The system is required to impact pressure in excess of 200 psi (1.4 Mpa) in both horizontal directions on a fully cured panel.

3. Provide KDOT Type "C" Certification.

CONSTRUCTION REQUIREMENTS

1. Recess areas to receive prestressed panels below finished grade prior to the concrete achieving initial set. Use a wood float or any tool recommended by the manufacturer to achieve the proper depth and refinish the disturbed area. Prior to placement, pre-dampen the back of the panel with clean water. Follow the manufacturer's recommendations for preparing the panel if there is to be any type of grout between the panel and fresh concete.

2. Install the panels immediately in fresh concrete and lightly tap the panels to grade using a rubber mallet to establish bond and 100% surface contact. Square the edges of the panels to provide a symmetrical alignment. Set the depth to be flush with the adjacent surfaces. Keep the tolerances between panels and surrounding surfaces within $\frac{1}{16}$ inch (1.5 mm).

3. Maintain a $\frac{3}{16}$ inch (5mm) caulk joint between panels and seal with a Type NS silicon sealant.

4. Edge around the panels as shown in the documents. Clean any concrete residue off of the panels with a damp sponge to provide a clean appearance.

5. Protect the panels from concrete curing compounds overspray.

1. **Material Specifications**, Provide ADA-compliant ramp panels that comply with the flowing requirements:

Property	Test Method	Requirement
UV Protection	ASTM G 155	No visible change to the panel
Compressive Strength	ASTM C 39	8,000 psi (55 Mpa)
Slip Resistant	ASTM D 2047	> 0.80

1. **Dimensions,** Provide a 2 x 2 foot (600 x600 mm) panels that comply with the dimensions and details specified by the ADA guidelines.

SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	AUXILIARY DETAILS FOR SIDEWALK AND STEPS	APPROVED BY: _____ DATE: SEPT. 2008	REVISED _____ _____ _____	STANDARD DETAIL SD21-6E

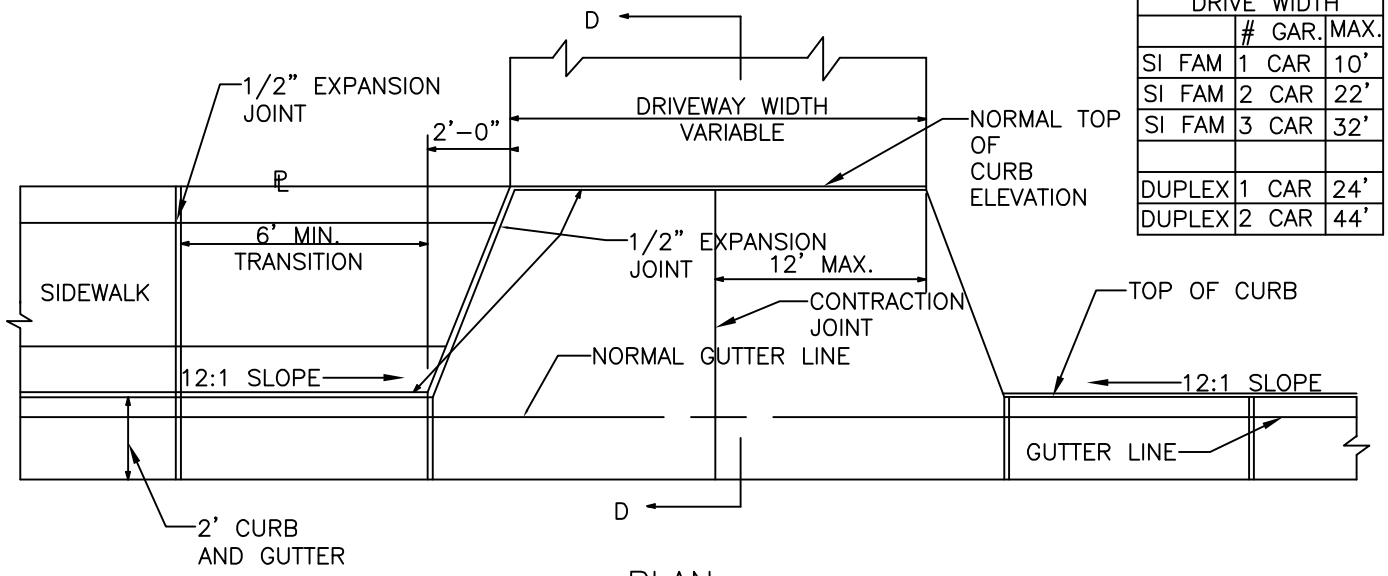
ROV

CITY OF LANSING

DEPARTMENT OF PUBLIC WORKS

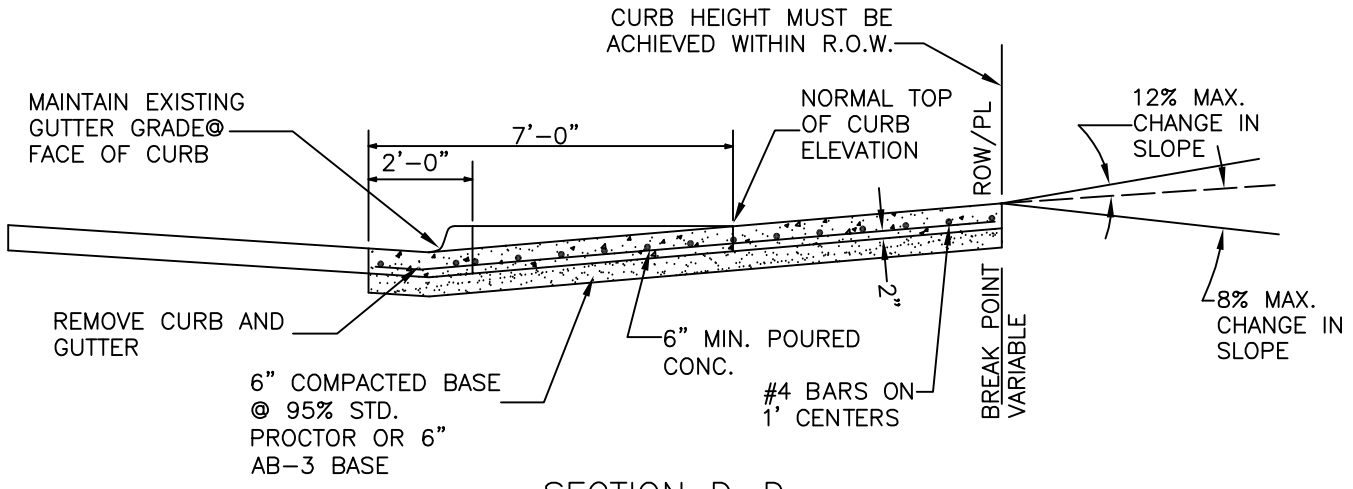
RESIDENTIAL DRIVE DETAIL

DRIVE WIDTH		
	# GAR.	MAX.
SI FAM	1 CAR	10'
SI FAM	2 CAR	22'
SI FAM	3 CAR	32'
DUPLEX	1 CAR	24'
DUPLEX	2 CAR	44'



PLAN

DRIVE WITHOUT S/W



SECTION D-D

SCALE: NOT TO SCALE

APPROVED BY:

DATE: 8 SEPTEMBER 2003

REVISED 09-15-08

STANDARD DETAIL SD21-8

ROW

CITY OF LANSING

DEPARTMENT OF PUBLIC WORKS

RESIDENTIAL ENTRANCE DRIVE AT NON-CURBED STREET

APPROVED BY:

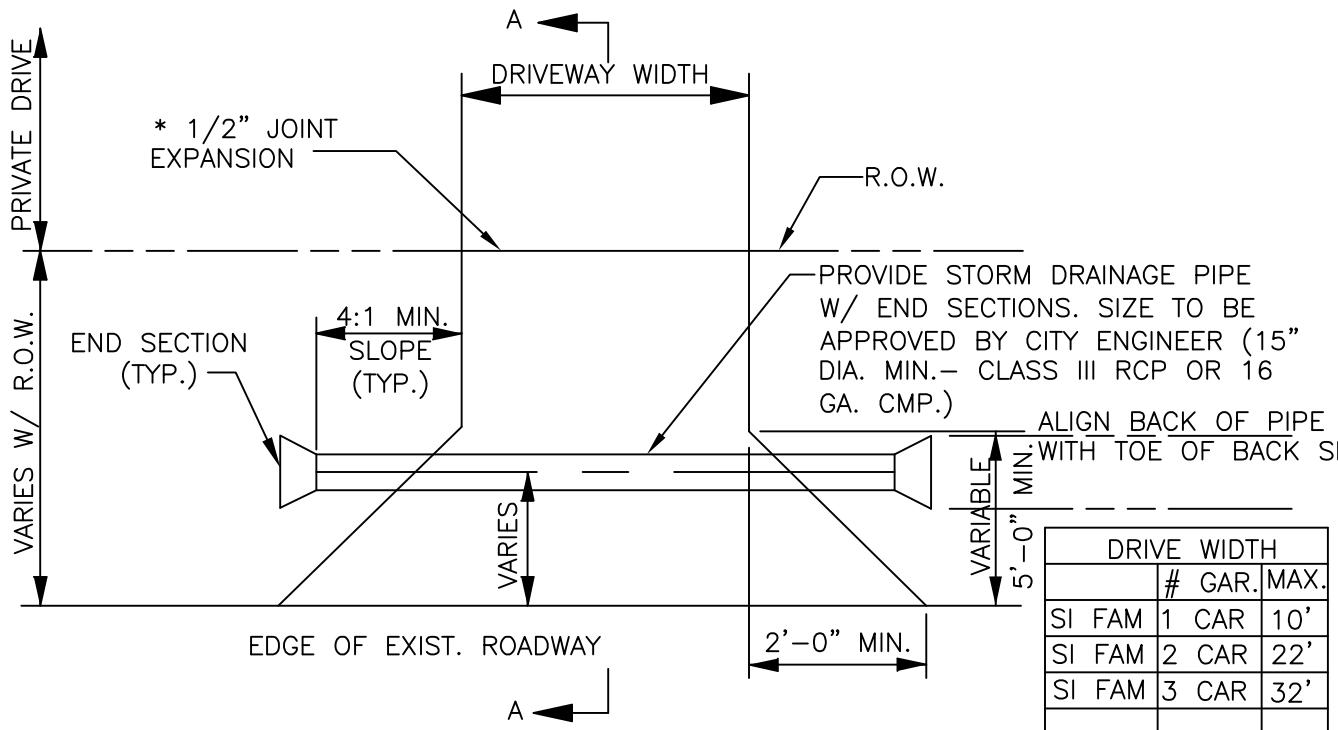
DATE: 8 SEPTEMBER 2003

REVISED 09-15-08

STANDARD DETAIL SD21-9

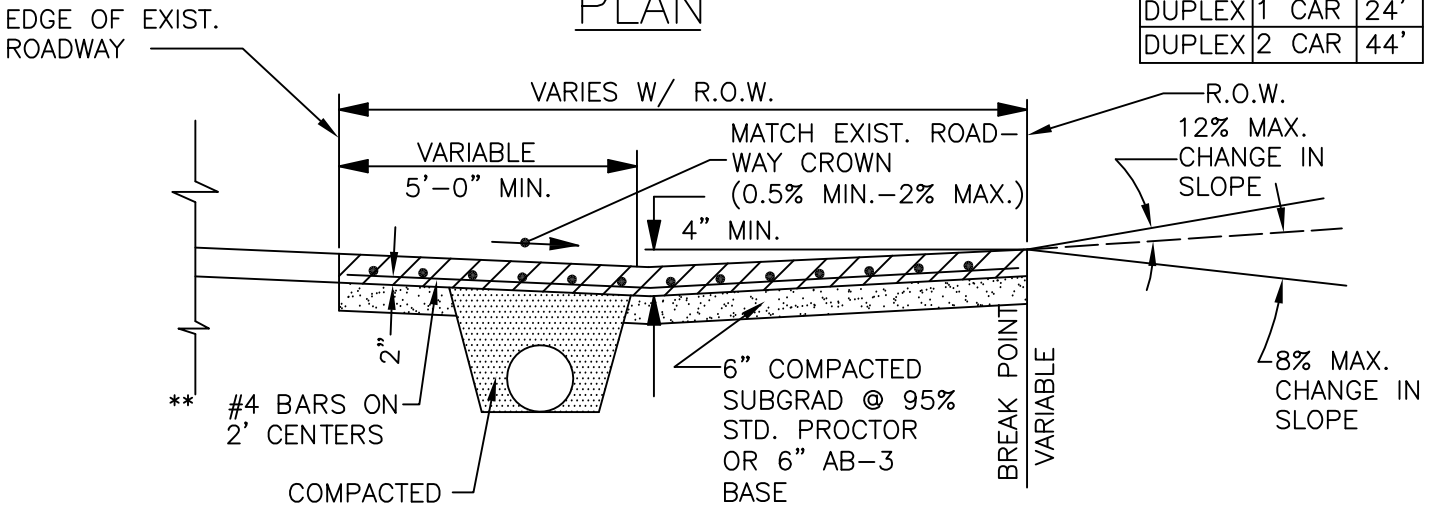
ROW

SCALE: NOT TO SCALE



PLAN

DRIVE WIDTH		
	# GAR.	MAX.
SI FAM	1 CAR	10'
SI FAM	2 CAR	22'
SI FAM	3 CAR	32'
DUPLEX	1 CAR	24'
DUPLEX	2 CAR	44'



SECTION A–A

* REQUIRED WITH CONCRETE DRIVEWAY CONSTRUCTION ONLY

** OPTION 6X6X9 GAUGE PAVING MESH

CITY OF LANSING

DEPARTMENT OF PUBLIC WORKS

STANDARD CURB INLET

APPROVED BY: _____

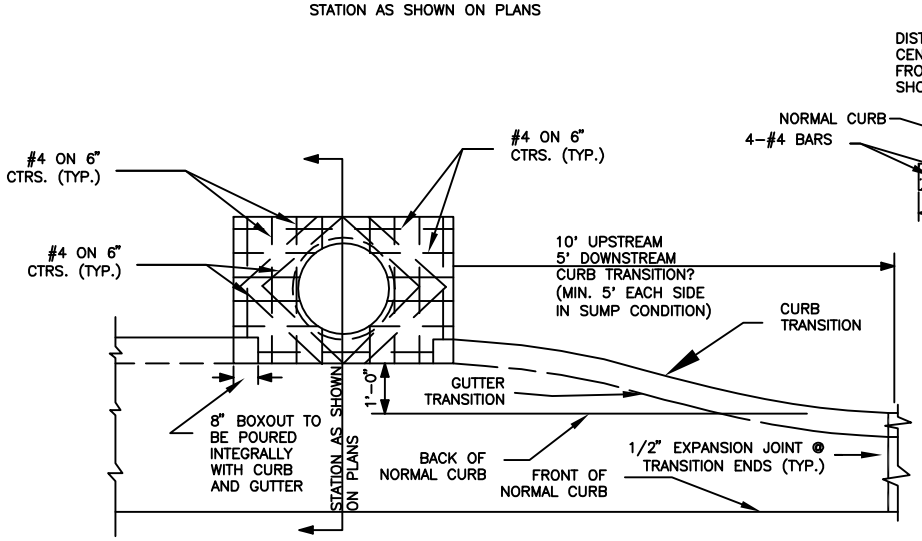
REVISED 10-17-05, 09-15-08

DATE: 8 AUGUST 2003

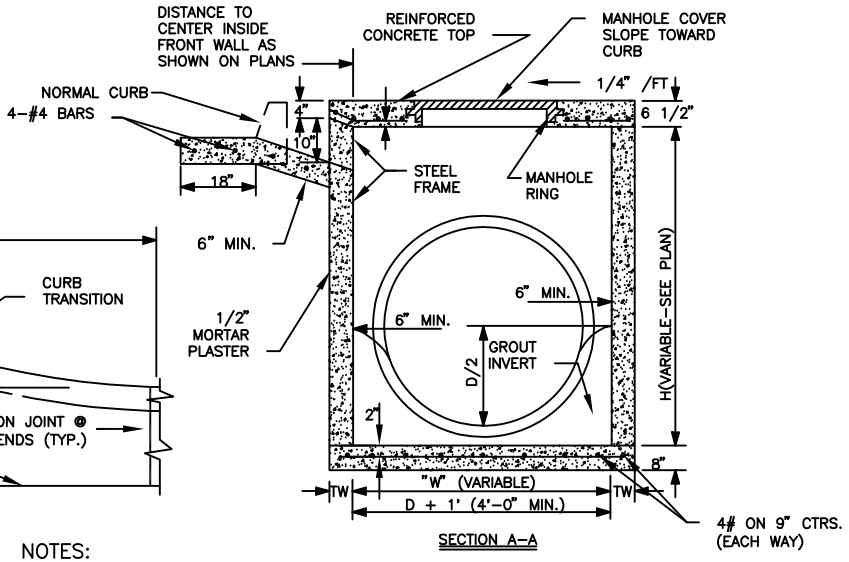
STANDARD DETAIL SD40-1

ROW

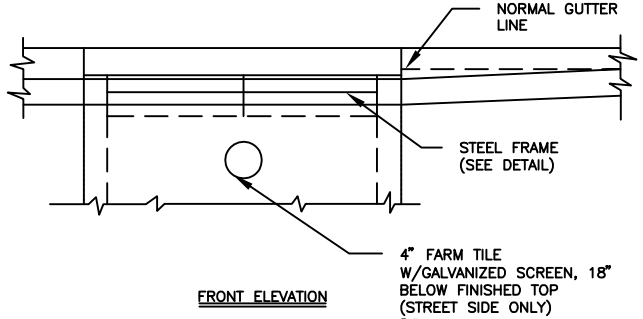
SCALE: NOT TO SCALE



PLAN VIEW



SECTION A-A



FRONT ELEVATION

NOTES:

1. CONTRACTOR SHALL PROVIDE STEPS SPACED AT 1'-4" O.C. WHERE INLET OR MANHOLE DEPTH IS GRATER THAN 4'-0". STEPS SHALL BE M.A. INDUSTRIES, INC. MODEL PS-2-PF OR APPROVED EQUAL
2. USE OF PRECAST CONCRETE REQUIRES DESIGN ENGINEER'S APPROVAL OF SHOP DRAWINGS.
3. MANHOLE RING AND LID SHALL BE CLAY & BAILEY NO. 2020, OR AN APPROVED EQUAL.
4. SPACER SHALL BE PLACED AT EQUAL INTERVALS ACCORDING TO THE FOLLOWING: L=7'-0", 2 SPACES; L=8'-0", 3 SPACES; L=10'-0", 3 SPACES.
5. THE FIRST DIMENSION IN THE PLAN NOTATIONS REFERS TO THE "L" DIMENSION.
6. THE SECOND DIMENSION IN THE PLAN NOTATIONS REFERS TO THE "W" DIMENSION.
7. "JUNCTION BOX" AS CALLED FOR IN THE PLANS, SHALL BE CONSTRUCTED TO CONFORM, WHERE APPLICABLE, WITH THE DIMENSIONS, THICKNESS AND DETAILS SHOWN.
8. ALL METAL SURFACES SHALL BE GALVANIZED.
9. CURB CONTRACTOR SHALL HAND FORM AND FINISH GUTTER WITHIN THE INLET THROAT TO THE REAR OF FRONT INLET WALL AT THE TIME THE FINISHING OF NORMAL CURB IS ACCOMPLISHED
10. THE INVERT SHALL HAVE A TROWEL FINISH TO SECURE SMOOTH INVERT SLOPING TO OUTLET PIPE
11. OUTLET OR INLET PIPE SHALL BE PLACED AS SPECIFIED OR AS DIRECTED BY THE ENGINEER. REINFORCING STEEL SHALL BE BENT AROUND PIPE.
12. USE KSS CLASS A (4000 PSI) CONCRETE FOR ALL STANDARD CATCH BASINS AND INLETS.
13. STORM SEWER PIPE SHALL BE CUT FLUSH WITH INSIDE WALLS OF INLET.

CASING PIPE AND END SEAL DETAIL ⑥

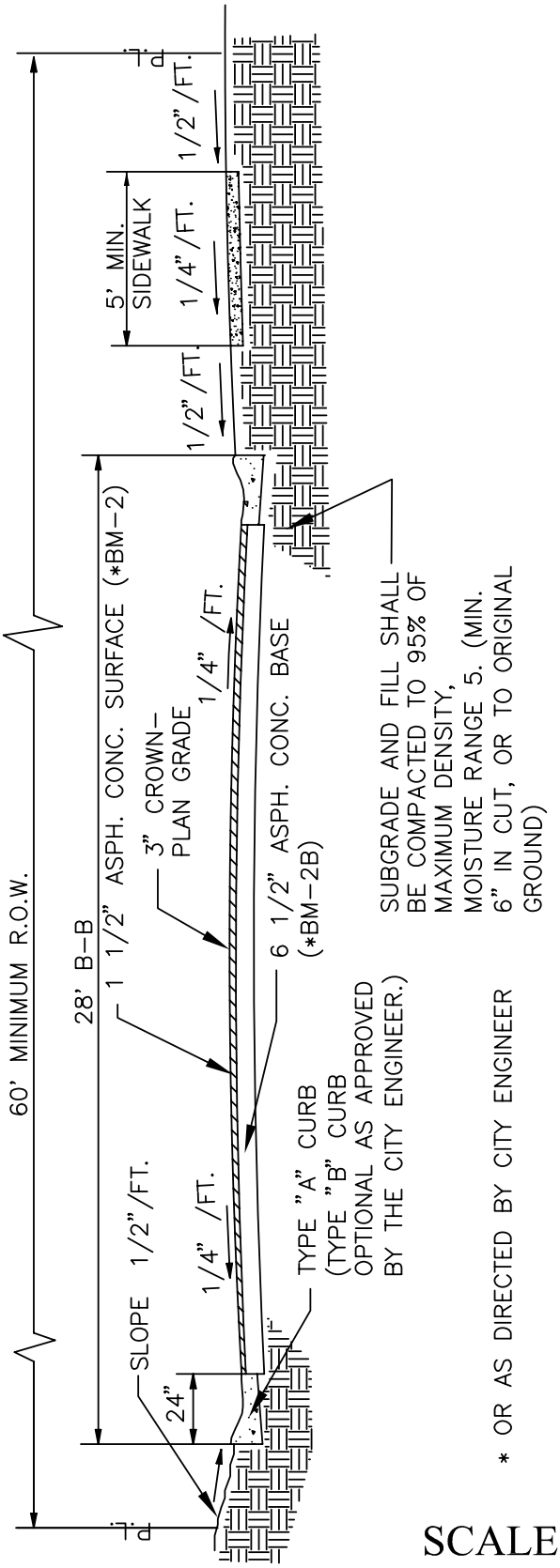
N.T.S.

NOTE: THIS DETAIL ONLY FOR SIZES OF PIPE FOR WHICH CHOCKS & SEALS AS SHOWN ON SD 50-3 ARE NOT MANUFACTURED.

SCALE: NOT TO SCALE

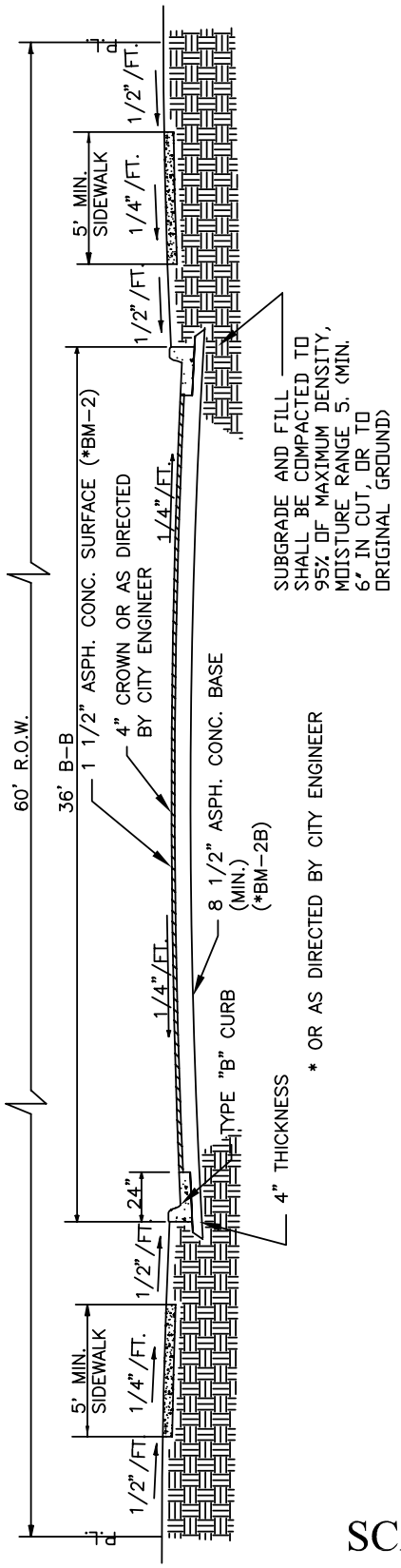
CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	LARGE DIAMETER CASING PIPE DETAIL MINIMUM DESIGN	APPROVED BY: _____ DATE: 1 JULY 2003	REVISED 09-15-08	STANDARD DETAIL SD50-4

ROV



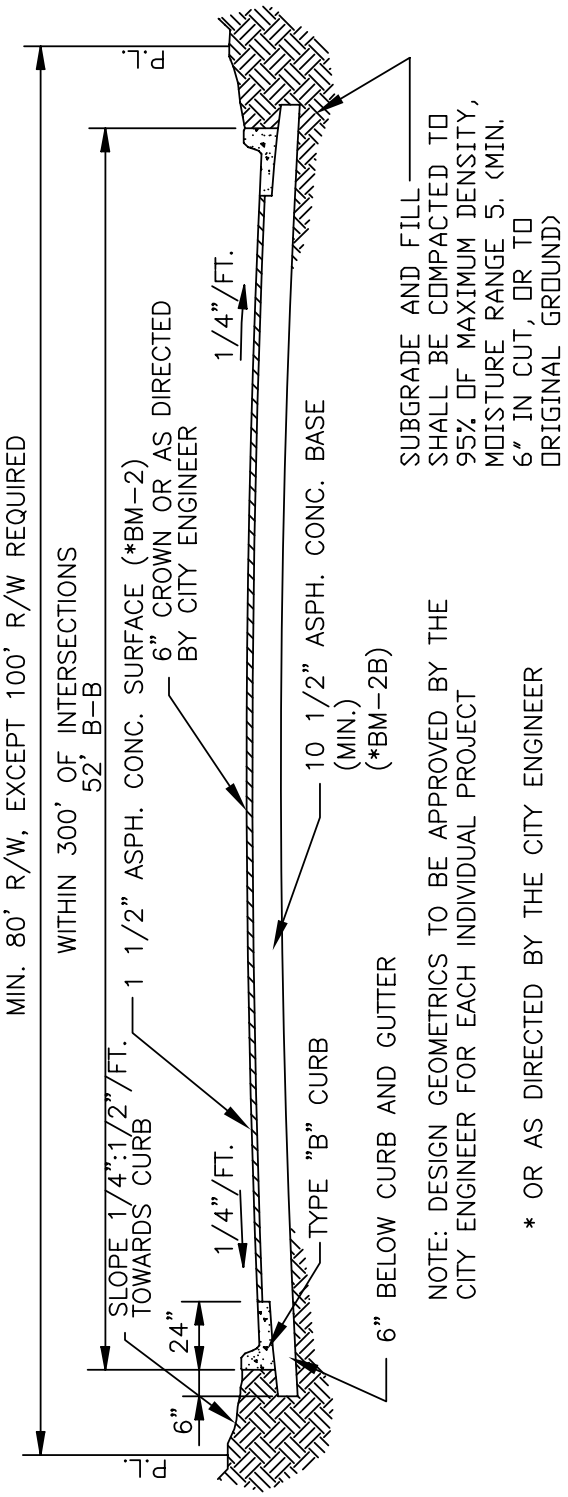
SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	TOTAL ASPHALT LOCAL STREET DETAIL MINIMUM DESIGN	APPROVED BY: DATE: 1 JULY 2003	REVISED 10-17-05	STANDARD DETAIL SD13-1



SCALE: NOT TO SCALE

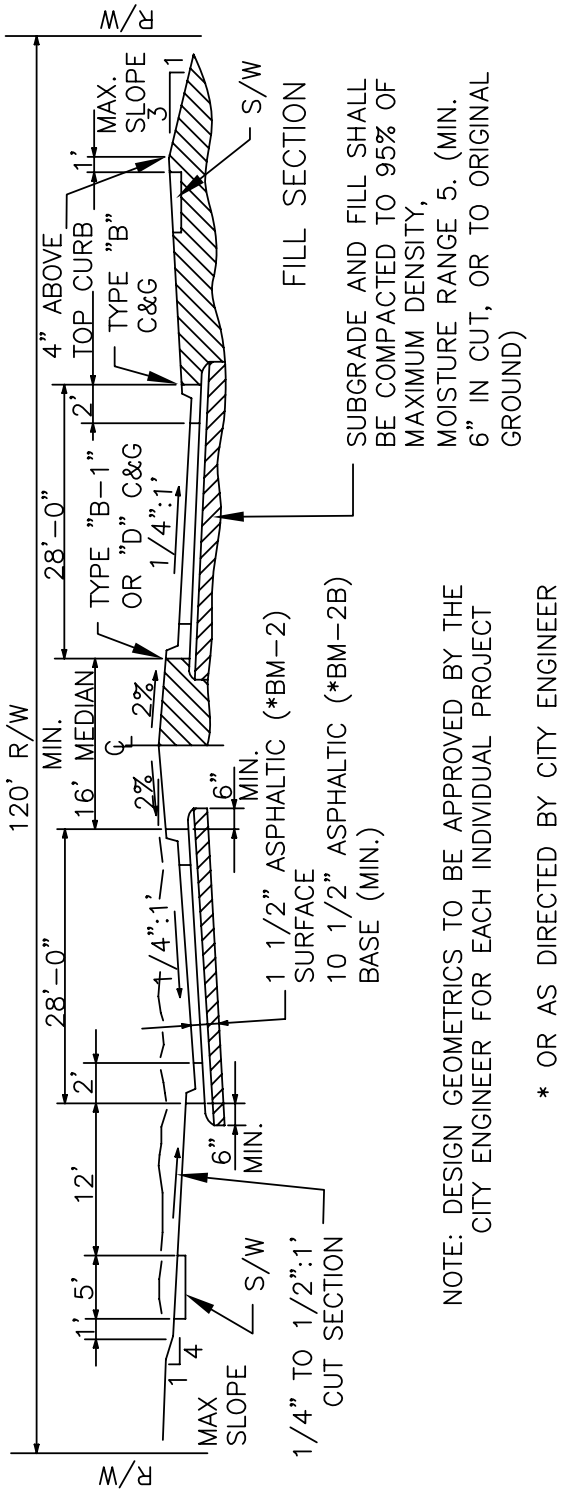
CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	TOTAL ASPHALT COLLECTOR/ SERVICE DETAIL MINIMUM DESIGN	APPROVED BY: _____ DATE: 8 SEPTEMBER 2003	REVISED 10-17-05	STANDARD DETAIL SD13-2



SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	TOTAL ASPHALT THOROUGHFARE STREET DETAIL MINIMUM DESIGN	APPROVED BY: _____ DATE: 8 SEPTEMBER 2003	REVISED _____ _____ _____	STANDARD DETAIL SD13-3

ROV



NOTE: DESIGN GEOMETRICS TO BE APPROVED BY THE CITY ENGINEER FOR EACH INDIVIDUAL PROJECT

* OR AS DIRECTED BY CITY ENGINEER

SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	TOTAL ASPHALT PARKWAY STREET DETAIL MINIMUM DESIGN	APPROVED BY: _____ DATE: 8 SEPTEMBER 2003	REVISED _____ _____ _____	STANDARD DETAIL SD13-4

ROY

CITY OF LANSING
DEPARTMENT OF PUBLIC WORKS

TYPICAL THOROUGHFARE MEDIAN DETAIL

APPROVED BY:

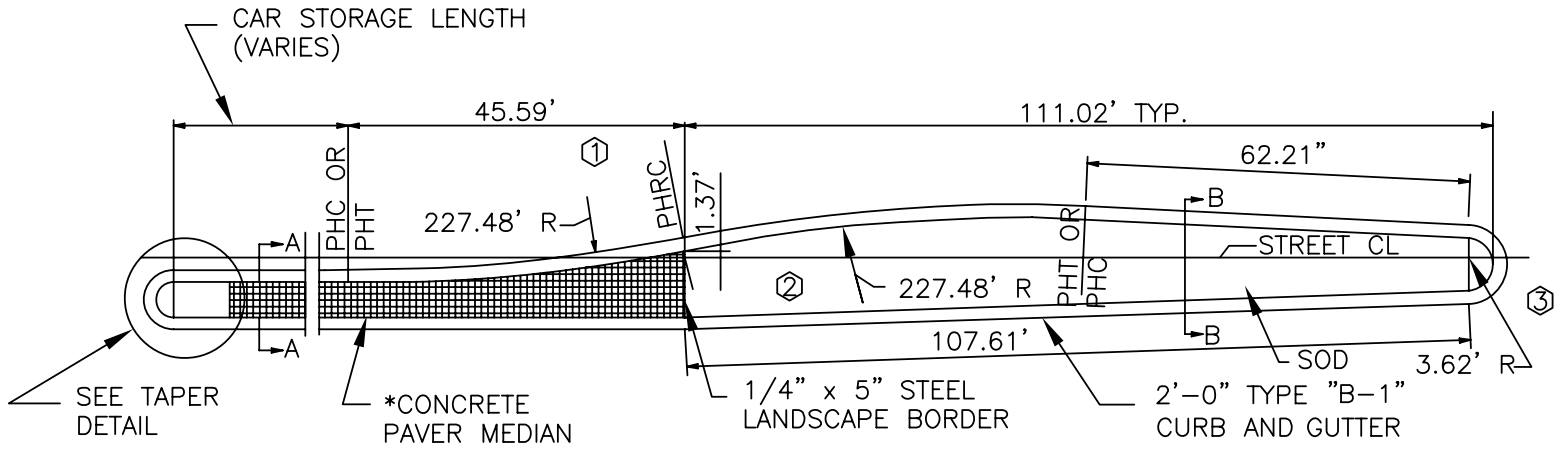
DATE: 8 SEPTEMBER 2003

REVISED

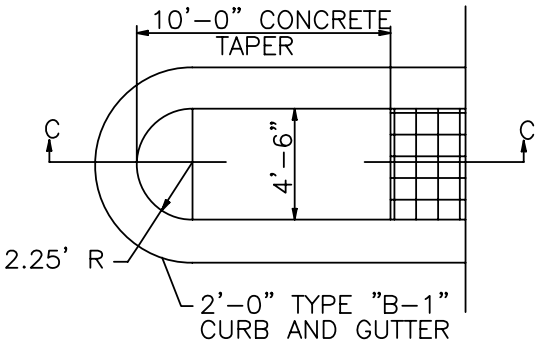
STANDARD DETAIL
SD13-5

ROY

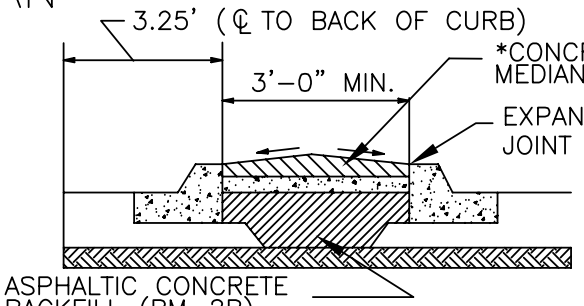
SCALE: NOT TO SCALE



PLAN



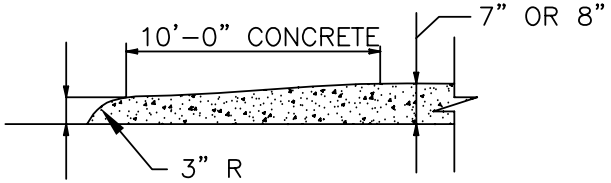
TAPER DETAIL



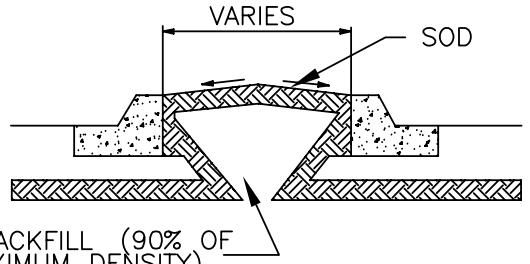
SECTION A-A

CURVE INFO.

①	A=	45.67
	C=	45.59
	Δ=	11.50
	R=	227.48
	T=	22.91
②	A=	45.67
	C=	45.59
	Δ=	11.50
	R=	227.48
	T=	22.91
③	A=	11.65
	C=	7.23
	Δ=	175.69
	R=	3.62
	T=	96.16



SECTION C-C
NOSE DETAIL
LEFT TURN BAY ISLANDS



SECTION B-B

* RED COLORED CONCRETE PAVERS WITH A RUNNING BOND PATTERN TO BE SET ON 1" OF SAND LAYING COURSE.

CITY OF LANSING
DEPARTMENT OF PUBLIC WORKS

TYPICAL PARKWAY MEDIAN DETAIL

APPROVED BY:

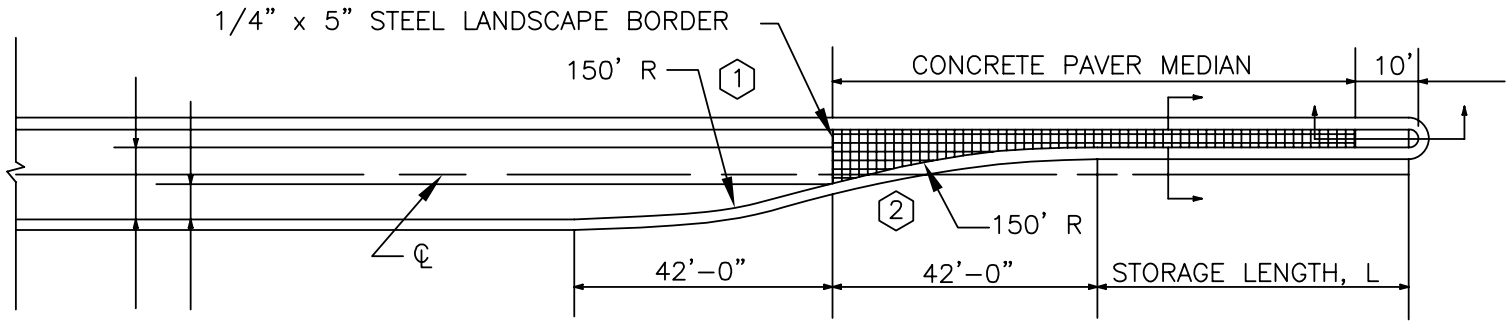
DATE: 8 SEPTEMBER 2003

REVISED

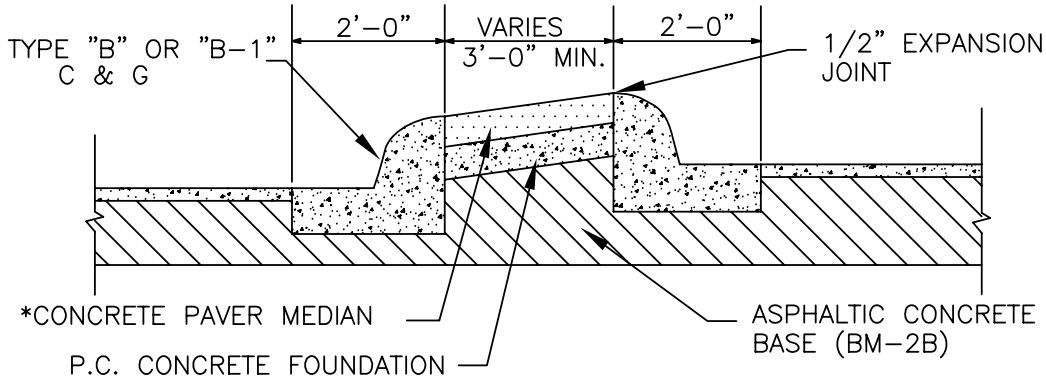
STANDARD DETAIL
SD13-6

ROY

SCALE: NOT TO SCALE



TYPICAL LEFT TURN LANE

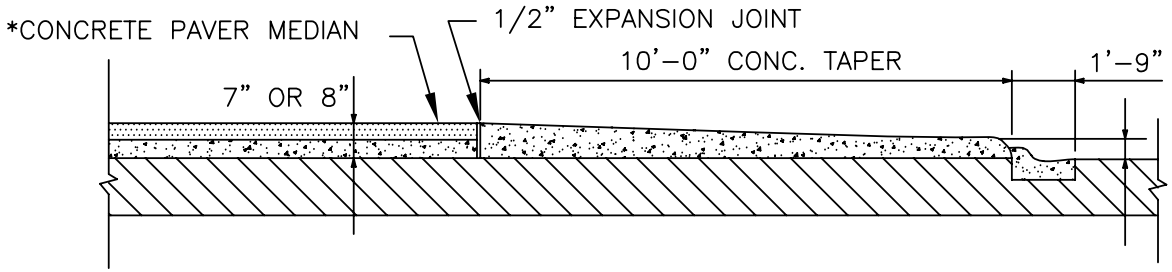


CURVE INFO.

1
A= 42.14
C= 42.00
Δ= 16.10
R= 150.00
T= 21.21

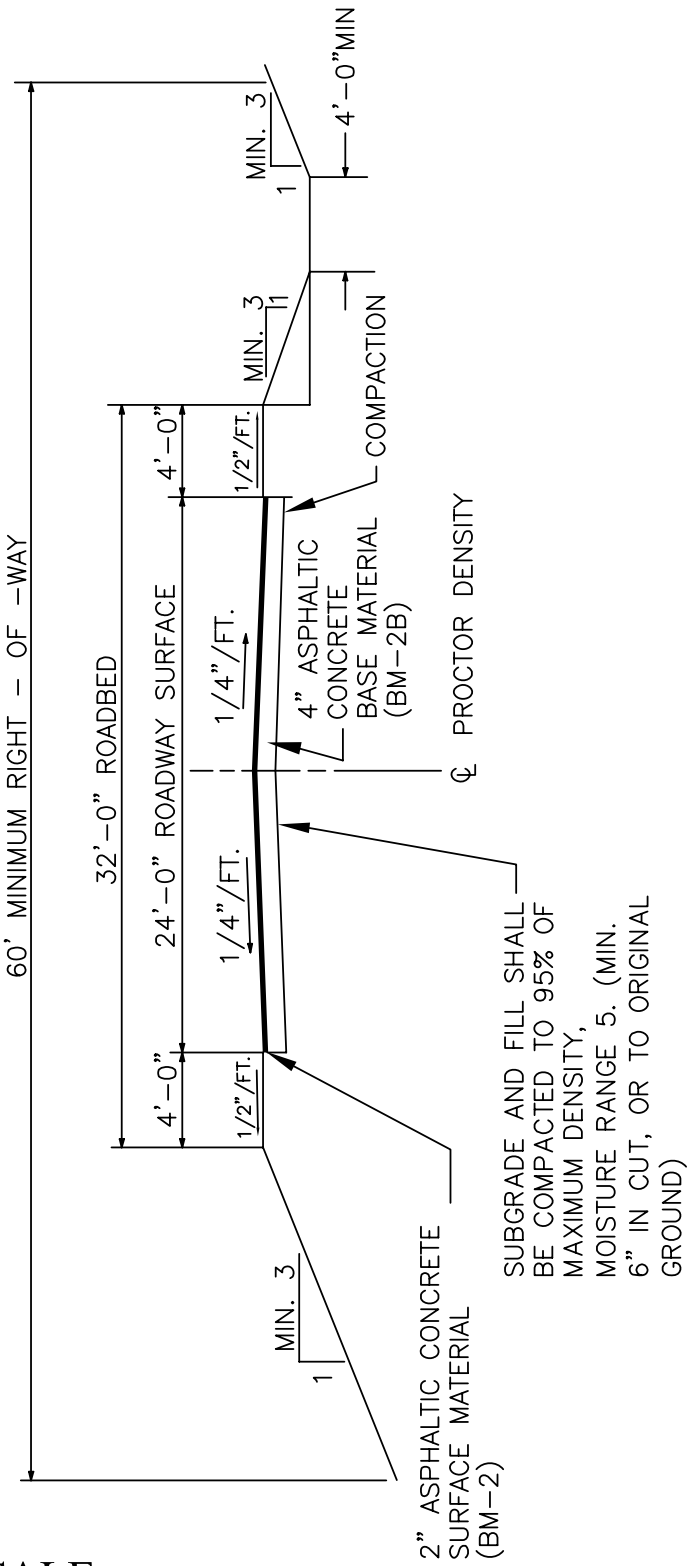
2
A= 42.14
C= 42.00
Δ= 16.10
R= 150.00
T= 21.21

SECTION A-A



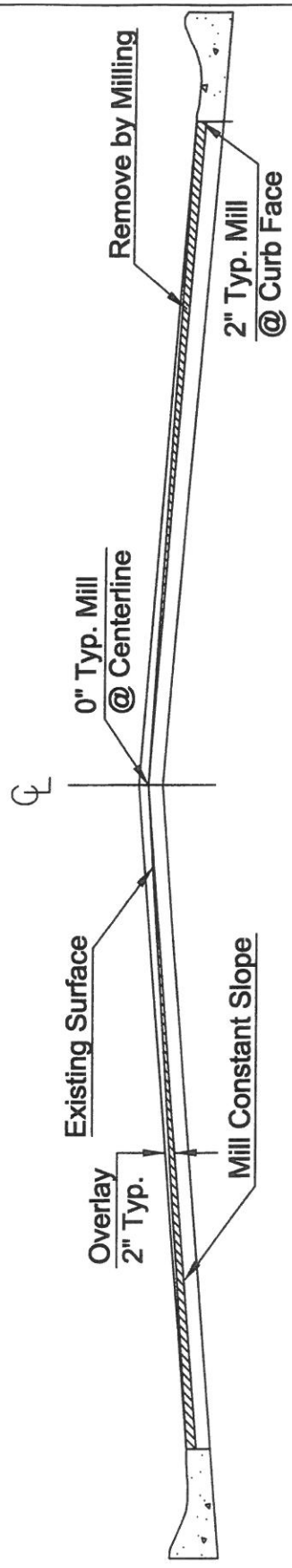
SECTION B-B

* RED COLORED CONCRETE PAVERS WITH A RUNNING BOND PATTERN TO BE SET ON 1" OF SAND LAYING COURSE.



SCALE: NOT TO SCALE

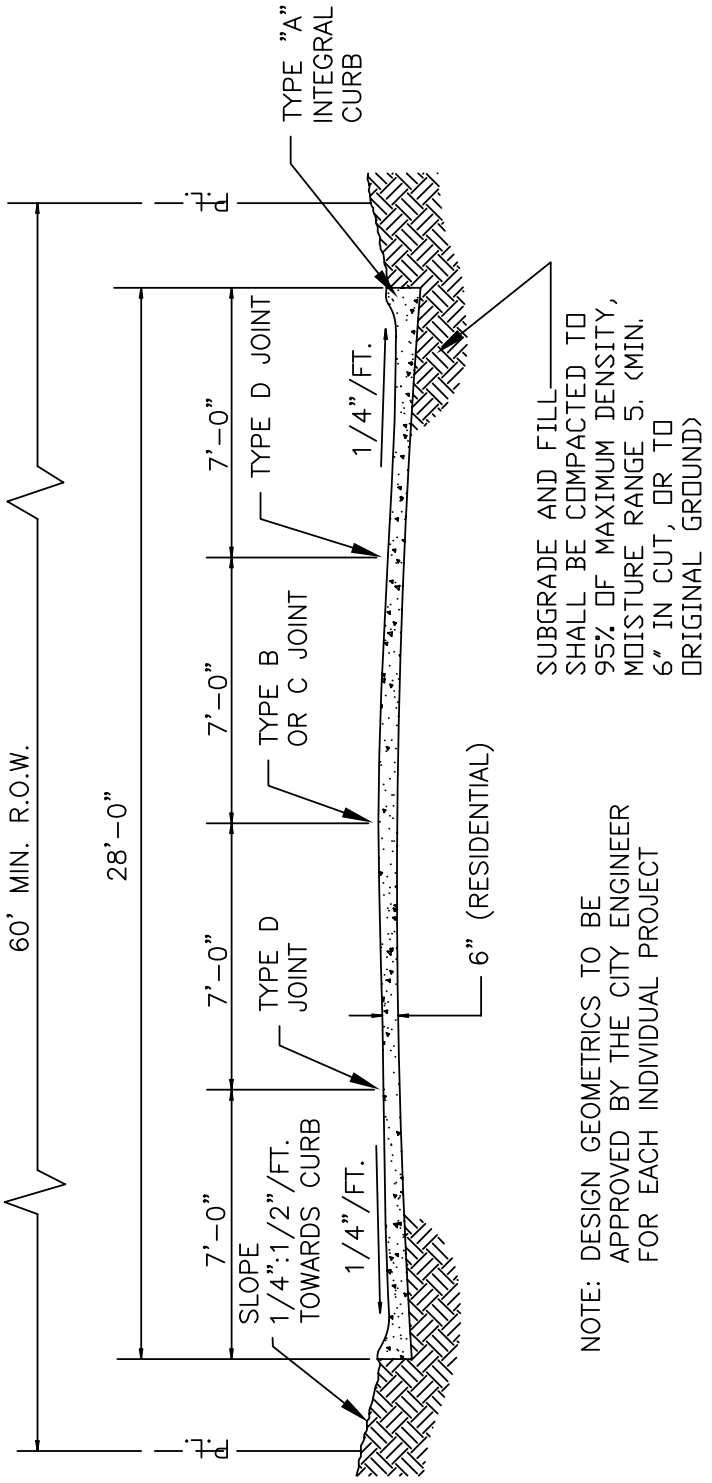
CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	DITCH SECTION ROADWAY MINIMUM DESIGN	APPROVED BY: DATE: 8 SEPTEMBER 2003	REVISED	STANDARD DETAIL SD13-7



SCALE: NOT TO SCALE

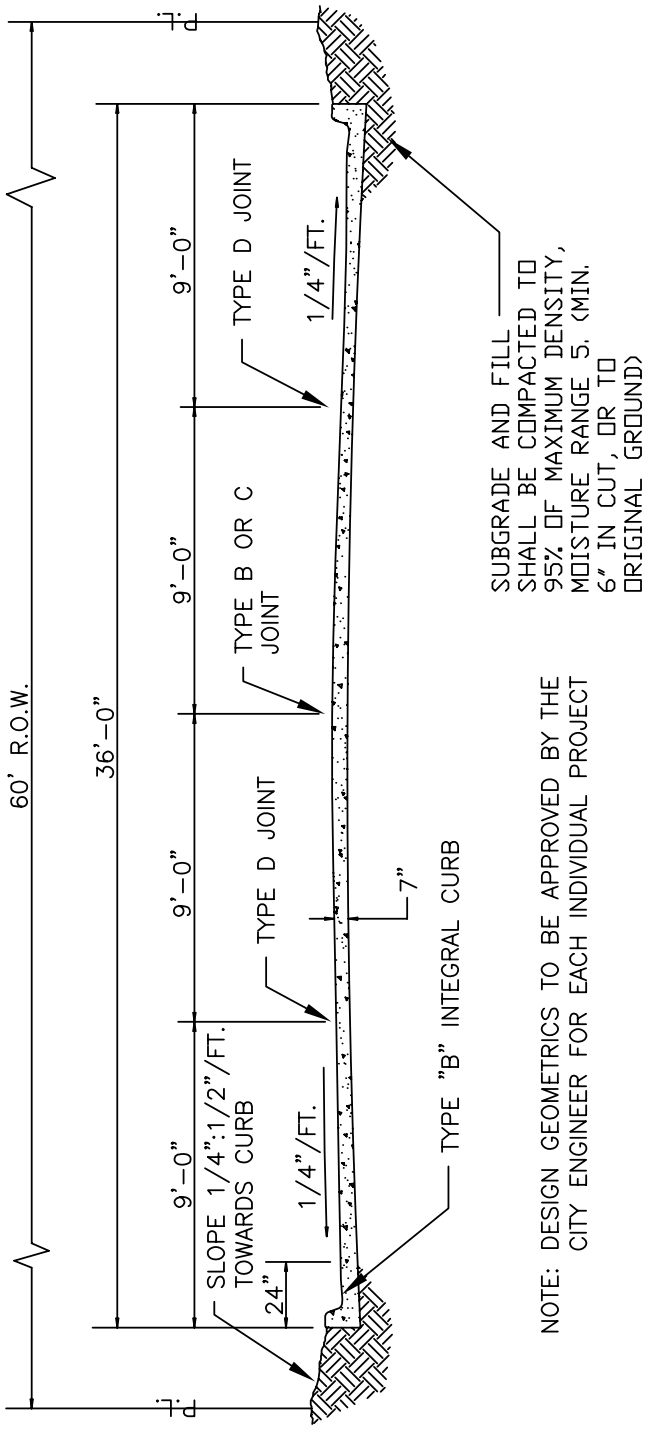
CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	MILLING & OVERLAY DETAIL TYP.	APPROVED BY: DATE: 25 APRIL 2011	REVISED	STANDARD DETAIL SD13-9

DCT



SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	CONCRETE PAVING PAVEMENT CROSS SECTION AND JOINT LOCATIONS (LOCAL STREET SECTIONS)	APPROVED BY: DATE: 8 SEPTEMBER 2003	REVISED	STANDARD DETAIL SD14-1

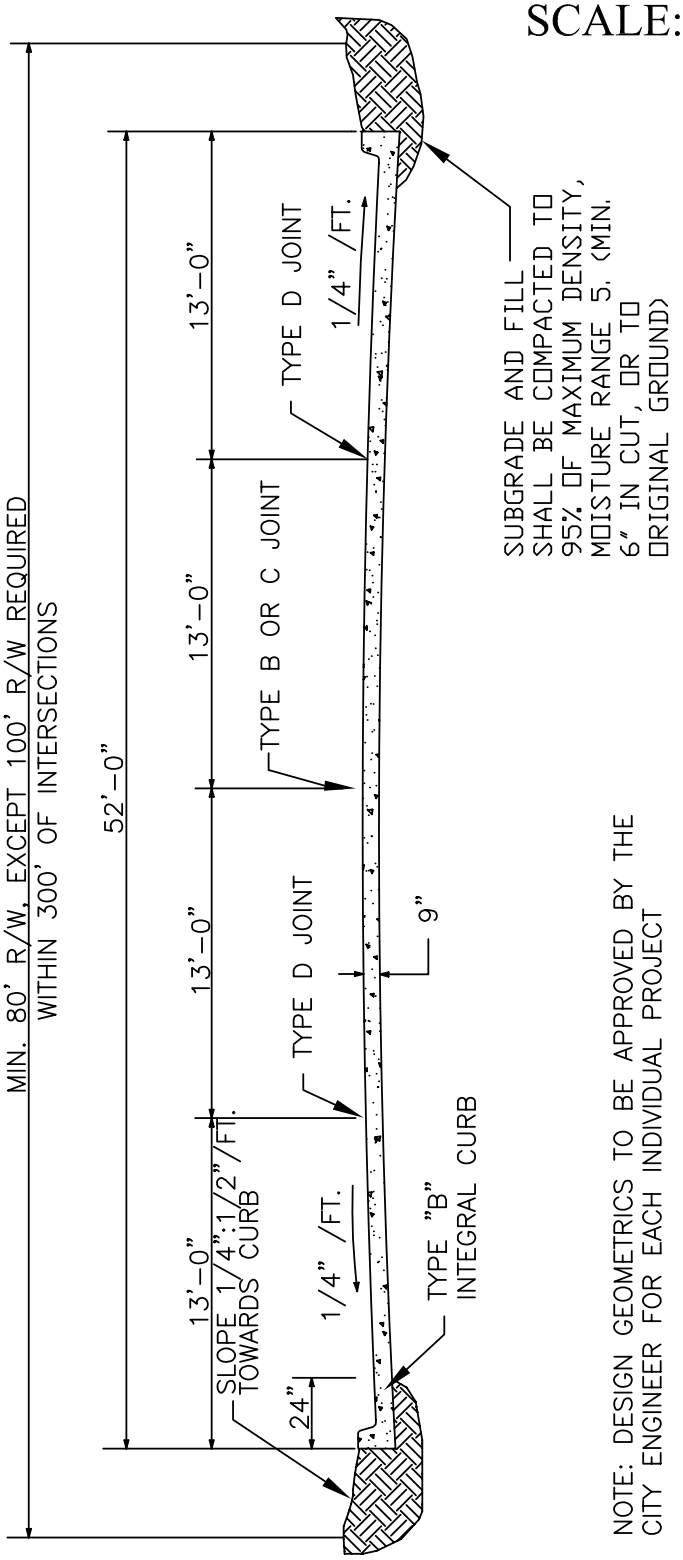


NOTE: DESIGN GEOMETRICS TO BE APPROVED BY THE CITY ENGINEER FOR EACH INDIVIDUAL PROJECT

SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	CONCRETE PAVING COLLECTOR / SERVICE DETAIL	APPROVED BY: _____ DATE: 8 SEPTEMBER 2003	REVISED _____ _____ _____	STANDARD DETAIL SD14-2

SCALE: NOT TO SCALE

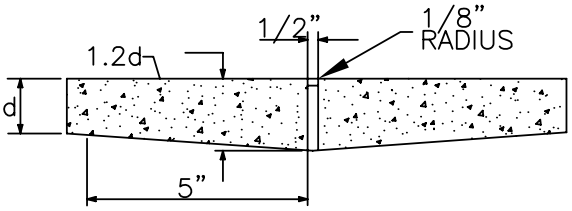


NOTE: DESIGN GEOMETRICS TO BE APPROVED BY THE CITY ENGINEER FOR EACH INDIVIDUAL PROJECT

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	CONCRETE PAVING THOROUGHFARE STREET DETAIL	APPROVED BY: _____ DATE: 8 SEPTEMBER 2003	REVISED _____ _____ _____	STANDARD DETAIL SD14-3

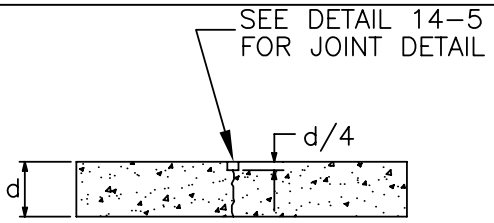
ROV

SCALE: NOT TO SCALE



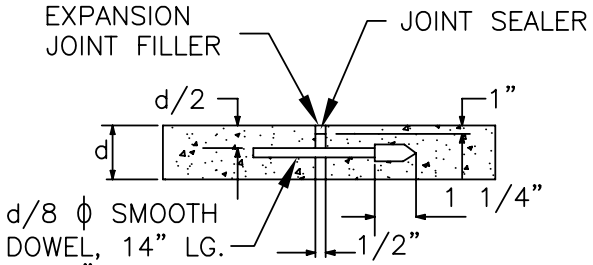
TYPE A

EXPANSION JOINT



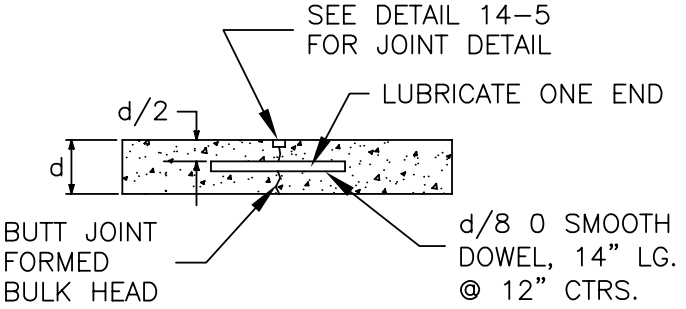
TYPE D

SAWED LONGITUDINAL OR TRANSVERSE



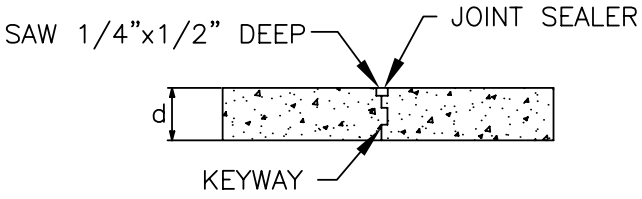
TYPE A

ALTERNATE EXPANSION JOINT



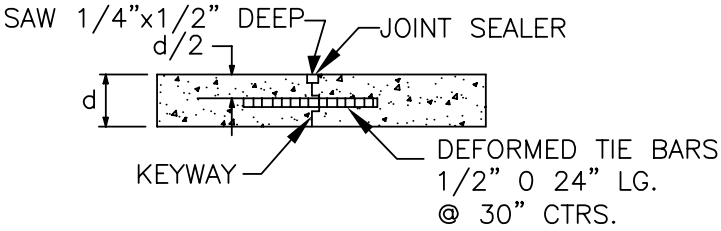
TYPE E

PLANNED TRANSVERSE CONSTRUCTION JOINT
(USED AT NORMAL JOINT SPACING



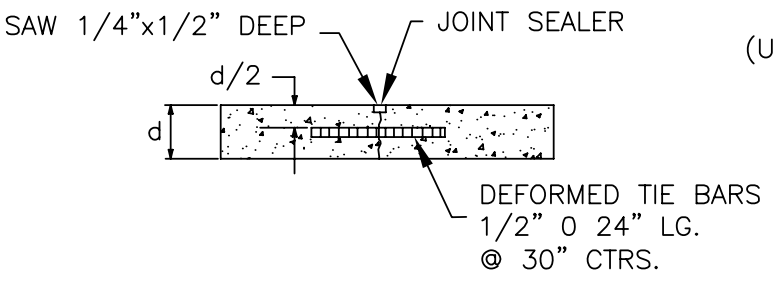
TYPE B

LONGITUDINAL CONSTRUCTION JOINT



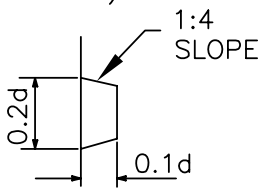
TYPE F

EMERGENCY TIED TRANSVERSE
CONSTRUCTION JOINT
(USED AT MIDDLE THIRD NORMAL
JOINT SPACING)



TYPE C

TIED BUTT LONGITUDINAL CONSTRUCTION JOINT

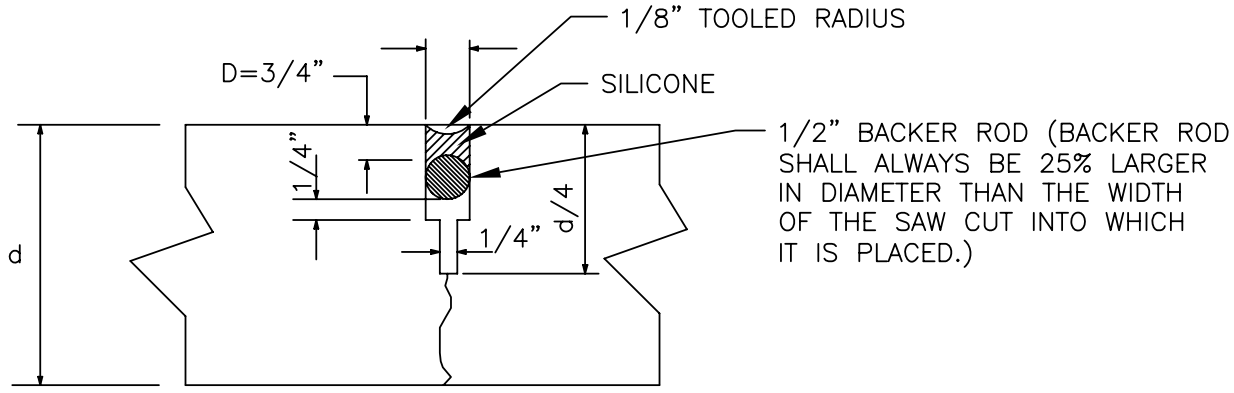


KEYWAYS FOR TYPE B AND F
CONSTRUCTION JOINT

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	CONCRETE PAVING JOINT DETAILS	APPROVED BY: _____ DATE: 8 SEPTEMBER 2003	REVISED _____ _____ _____	STANDARD DETAIL SD14-4

NOTES:

1. SILICONE JOINT SEALING MATERIAL SHALL BE COLD–APPLIED. SINGLE COMPONENT TYPE CONFORMING TO REQUIREMENTS OF FED. SPEC.TT–S–1543, DOW CORNING "888 SILICONE HIGHWAY JOINT SEALANT". SEALING MATERIAL SHALL BE PRESSURE MACHINE APPLIED IN ACCORDANCE WITH THE SEALING MATERIAL MANUFACTURER'S RECOMMENDATIONS. THE MATERIAL FURNISHED FOR THE BACKER ROD SHALL BE A REILIENT, CLOSED CELL POLYETHYLENE FOAM ROD AS RECOMMENDED BY THE MANUFACTURE OF THE SEALANT.
2. d = DEPTH OF SLAB
3. D = DEPTH TO TOP OF BACKER ROD. DEPTH "D" SHALL ALWAYS BE TWICE THE WIDTH OF THE JOINT.

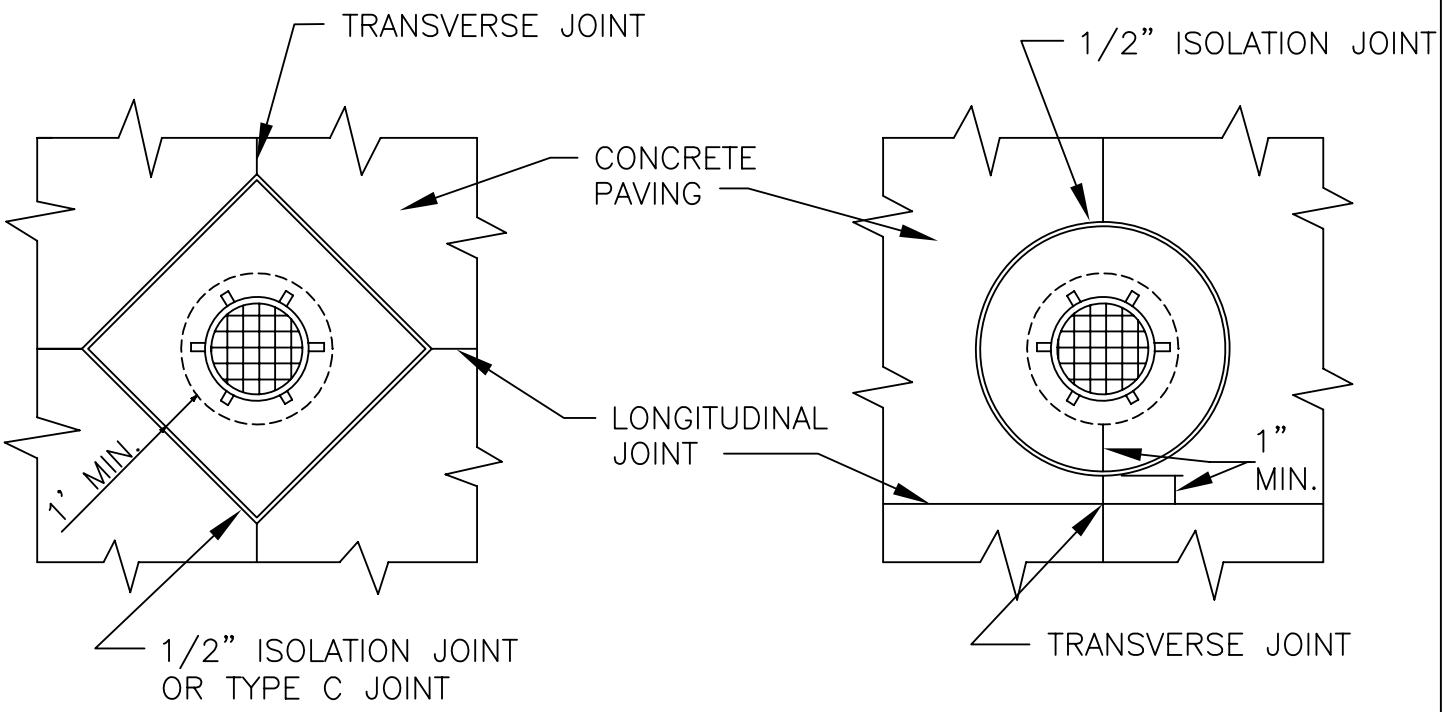


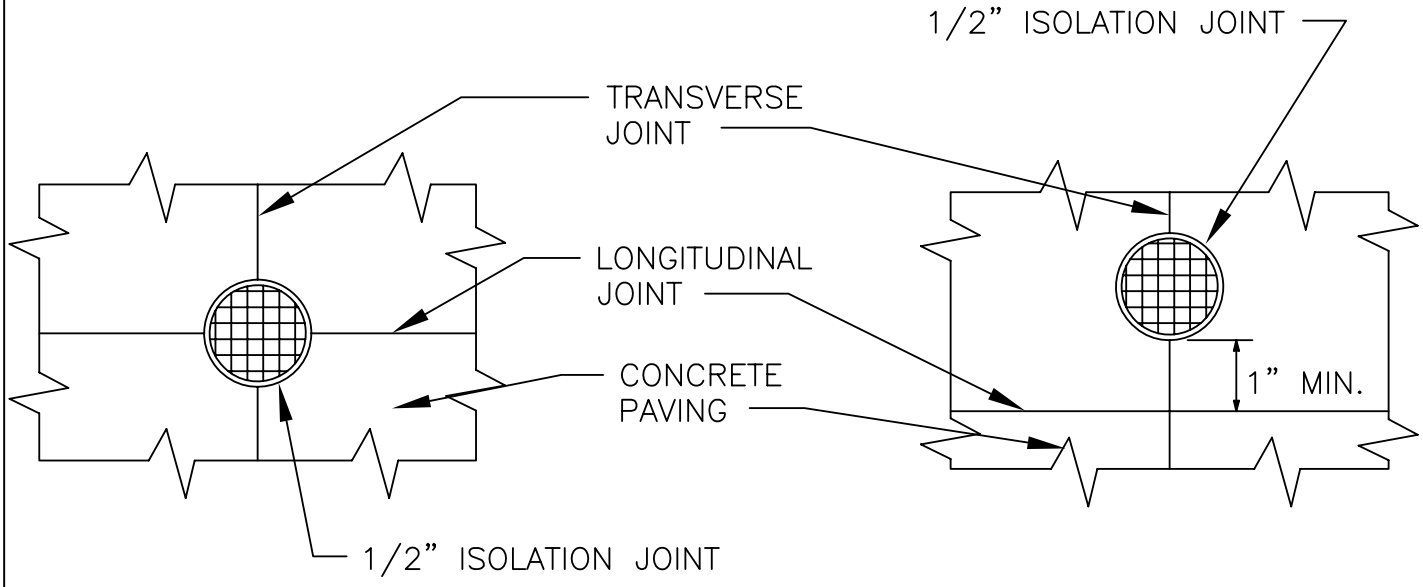
TYPICAL SECTION

SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	CONCRETE PAVING JOINT SEALING DETAIL	APPROVED BY:	REVISED	STANDARD DETAIL SD14-5
		DATE: 8 SEPTEMBER 2003		

ROV

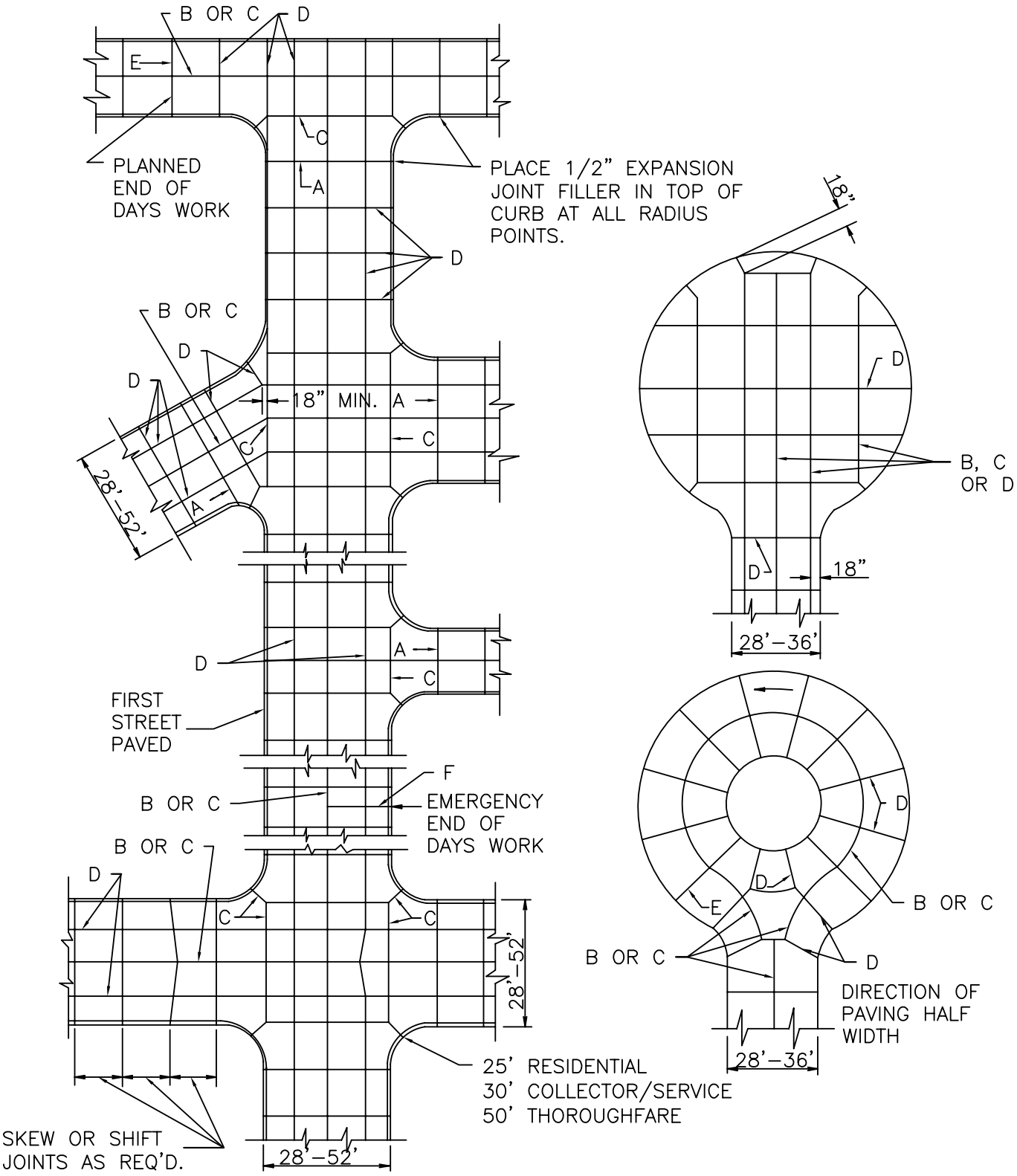




SCALE: NOT TO SCALE

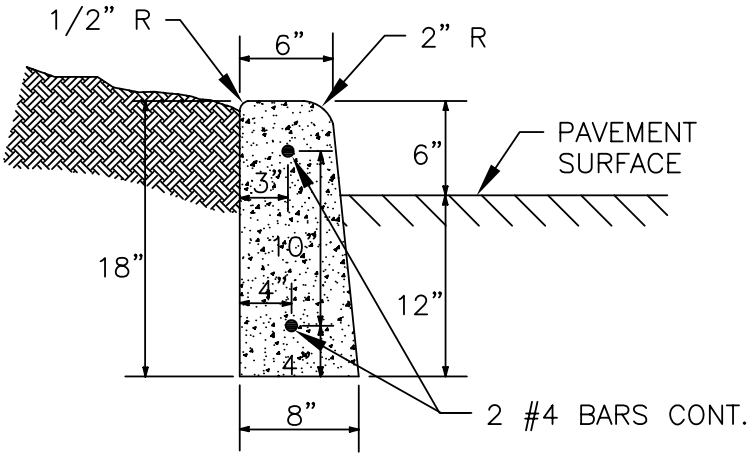
CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	CONCRETE PAVING STRUCTURE DETAILS DETAIL	APPROVED BY: _____ DATE: 8 SEPTEMBER 2003	REVISED _____ _____ _____	STANDARD DETAIL SD14-6

ROY

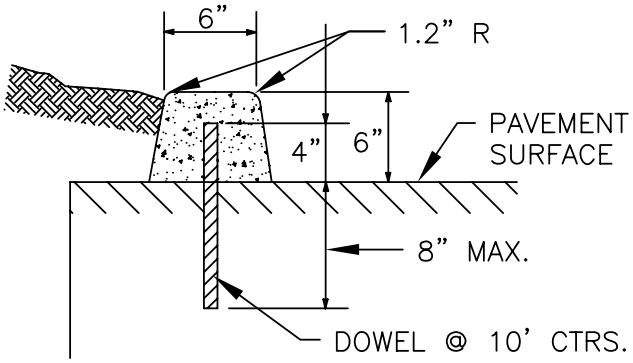


SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	CONCRETE PAVING JOINT LOCATIONS	APPROVED BY: _____ DATE: 8 SEPTEMBER 2003	REVISED _____ _____ _____	STANDARD DETAIL SD14-7 ROY



TYPE "E"



TYPE "F"

NOTE:
1. EXPANSION, CONTRACTION, OR CONSTRUCTION JOINTS ARE TO BE SIMILAR TO NOTES ON TYPE "A" CURB AND GUTTER DETAIL.
2. KS CLASS A(AE) CONCRETE SHALL BE USED THROUGHOUT.

SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	TYPE "E", "F" CURB DETAILS	APPROVED BY: DATE: 8 SEPTEMBER 2003	REVISED	STANDARD DETAIL SD21-2

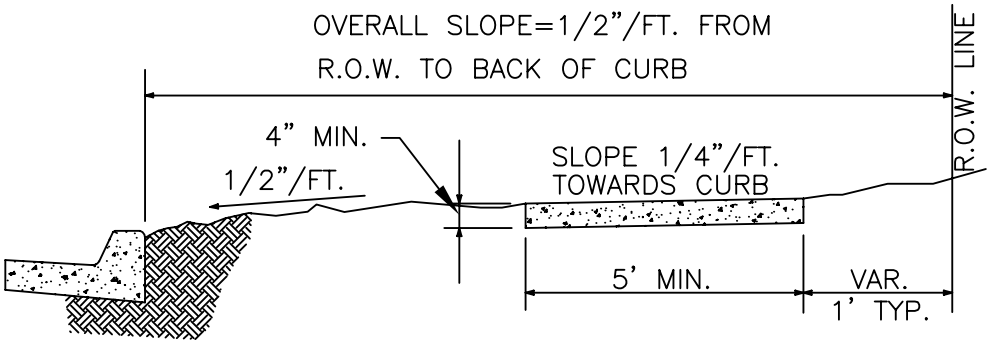
NOTES:

1. JOINTS SHALL BE FORMED AT RIGHT ANGLES TO THE ALIGNMENT OF THE SIDEWALK AND TO THE DEPTHS INDICATED BELOW.

2. THE SIDEWALK SHALL BE MARKED OFF INTO SQUARE STOMES BY CONTRACTION JOINTS. CONTRACTION JOINTS SHALL BE ONE–EIGHTH (1/8) INCH WIDE BY ONE (1) INCH DEEP AND MAY BE FORMED BY TOOLING OR BY USE OF A CONCRETE SAW.

3. EXPANSION JOINTS SHALL BE FORMED BY A ONE–HALF (1/2) INCH THICK PERFORMED JOINT FILLER, EXTENDING THE FULL DEPTH OF THE SLAB, AND SECURED SO THAT THEY ARE NOT MOVED BY DEPOSITING AND COMPACTING THE CONCRETE AT THESE JOINTS.

4. EXPANSION JOINTS SHALL BE PLACED WHERE SIDEWALK ABUTS OTHER STRUCTURES AND SHALL NOT BE SPACED MORE THAN 50 FEET APART ON STRAIGHT RUNS FOR HAND LAID SIDEWALKS AND NOT MORE THAN 100 FEET APART ON STRAIGHT RUNS FOR MACHINE LAID SIDEWALKS.



(RESIDENTIAL STREETS – ONE SIDE)
(5'– COLLECTOR AND THOROUGHFARE STREETS BOTH SIDES)

KS CLASS A(AE) CONCRETE SHALL BE USED THROUGHOUT.

SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	SIDEWALK DETAIL	APPROVED BY: _____ DATE: 8 SEPTEMBER 2003	REVISED 10-17-05	STANDARD DETAIL SD21-3

ROY

NOTES:

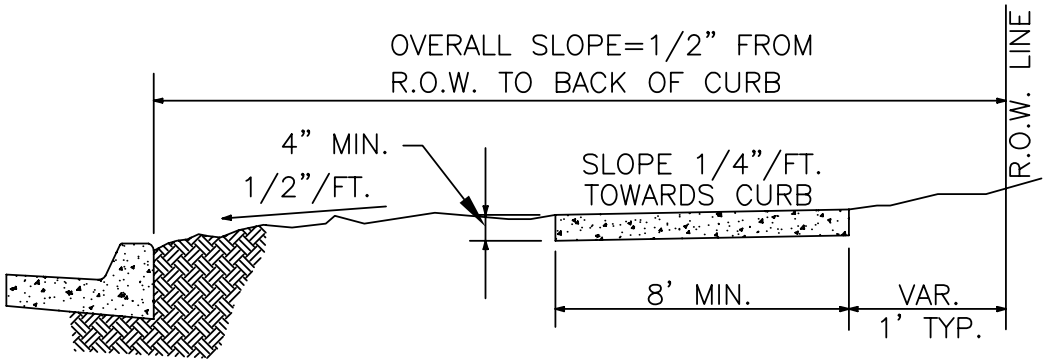
1. JOINTS SHALL BE FORMED AT RIGHT ANGLES TO THE ALIGNMENT OF THE SIDEWALK AND TO THE DEPTHS INDICATED BELOW.

2. THE SIDEWALK SHALL BE MARKED OFF INTO SQUARE STONES BY CONTRACTION JOINTS. CONTRACTION JOINTS SHALL BE ONE-EIGHTH (1/8) INCH WIDE BY ONE (1) INCH DEEP AND SHALL BE FORMED BY USE OF A CONCRETE SAW.

3. EXPANSION JOINTS SHALL BE FORMED BY A ONE-HALF (1/2) INCH THICK REDWOOD JOINT FILLER, EXTENDING THE FULL DEPTH OF THE SLAB, AND SECURED SO THAT THEY ARE NOT MOVED BY DEPOSITING AND COMPACTING THE CONCRETE AT THESE JOINTS.

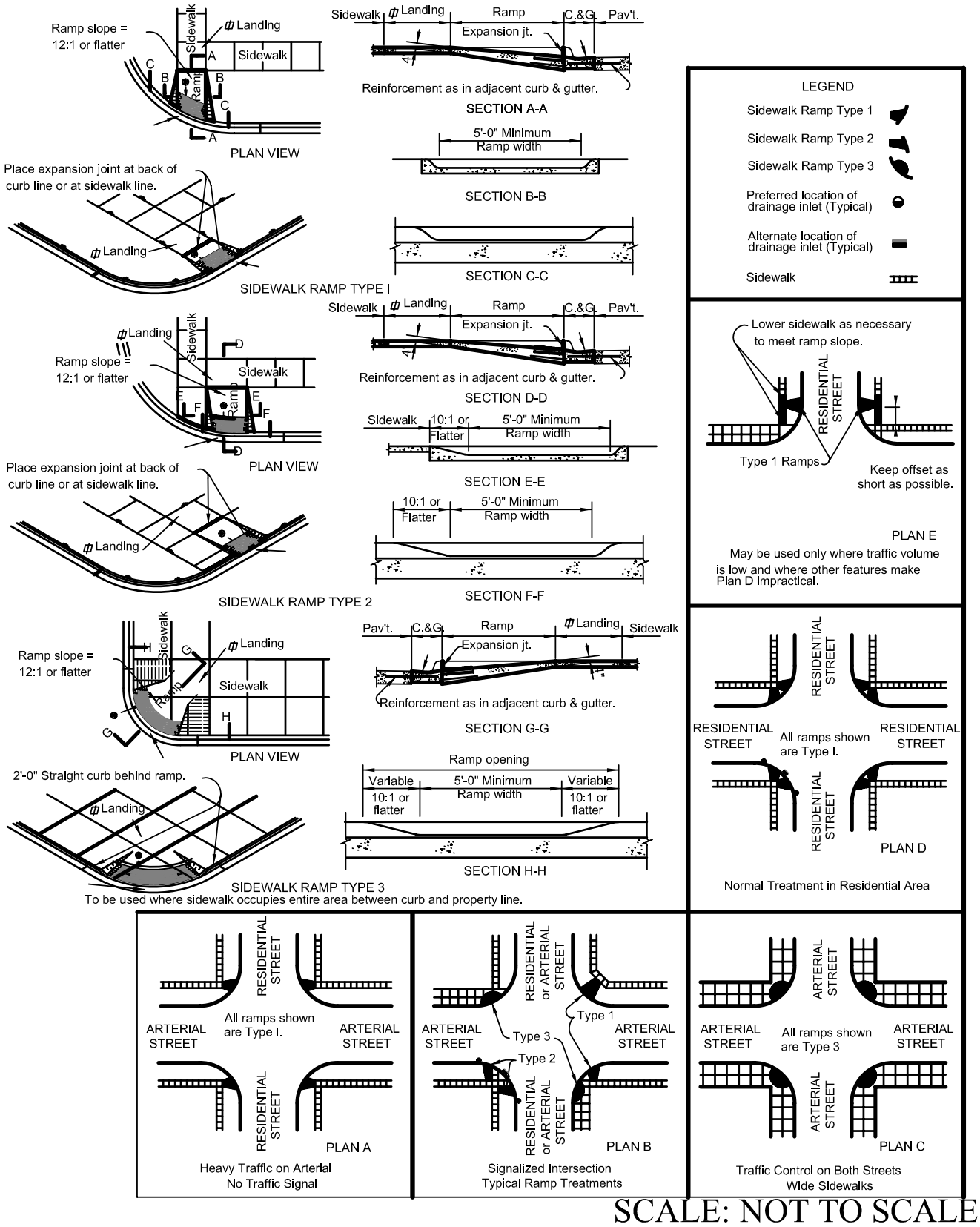
4. EXPANSION JOINTS SHALL BE PLACED WHERE SIDEWALK ABUTS OTHER STRUCTURES AND SHALL NOT BE SPACED MORE THAN 50 FEET APART ON STRAIGHT RUNS FOR HAND LAID SIDEWALKS AND NOT MORE THAN 100 FEET APART ON STRAIGHT RUNS FOR MACHINE LAID SIDEWALKS.

5. KS CLASS A(AE) WITH FIBER MESH REINFORCEMENT CONCRETE SHALL BE USED FOR THE CONSTRUCTION OF THE BICYCLE TRAILS LOCATED WITHIN CITY STREET R-O-W. AT THE DISCRETION OF THE CITY ENGINEER, A 4" THICK ASPHALT SIDEWALK 8 FEET WIDE ON 4" THICK AB-3 BASE MAY BE CONSTRUCTED ON CITY R-O-W NOT ADJACENT TO A STREET.



SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	BICYCLE TRAIL DETAIL	APPROVED BY: _____ DATE: 8 SEPTEMBER 2003	REVISED 10-17-05	STANDARD DETAIL SD21-4



SCALE: NOT TO SCALE

CITY OF LANSING

N:\LANSING\CITY DETAILS\citydetail.bmp

DEPARTMENT OF PUBLIC WORKS

SIDEWALK AND STEPS DETAIL

APPROVED BY: _____

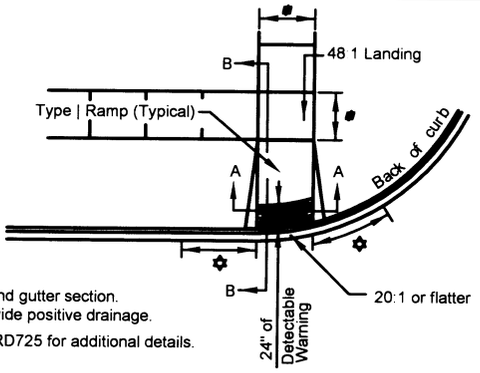
DATE: DEC. 2003

REVISED _____ _____ _____

STANDARD DETAIL

SD21-6A

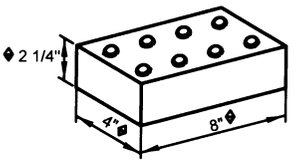
ROB



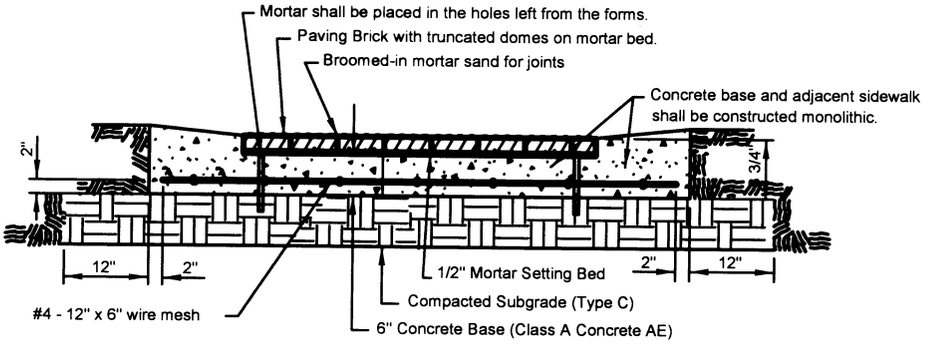
Transition to normal curb and gutter section. Gutter shall be shaped to provide positive drainage.

See Standard Drawing No. RD725 for additional details.

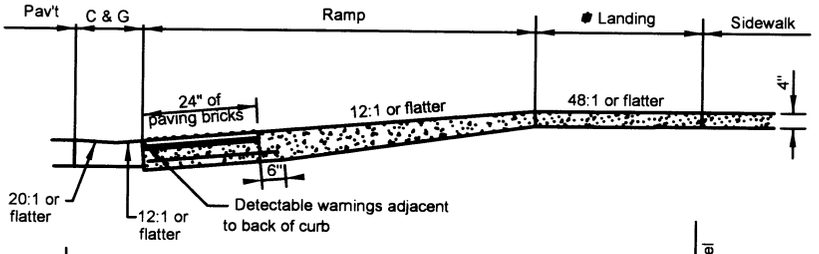
TYPICAL PLAN



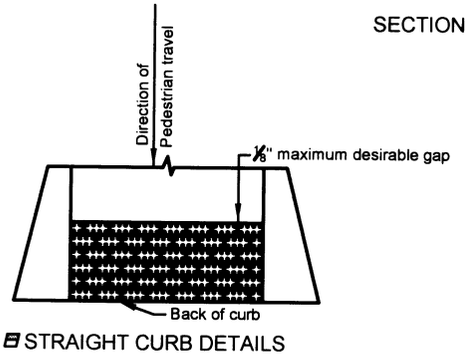
PAVER BRICK WITH TRUNCATED DOME SURFACE



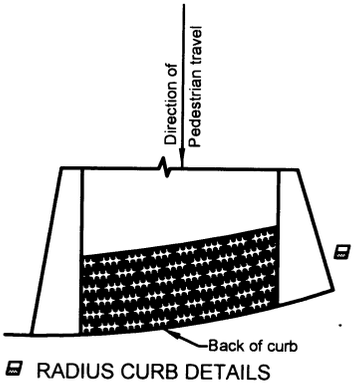
TYPICAL SECTION OF PAVER BRICK
SECTION A-A



SECTION B-B



STRAIGHT CURB DETAILS



RADIUS CURB DETAILS

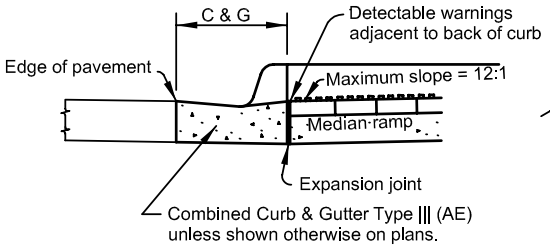
The installation pattern shown for the detectable warning paving bricks is running bond. Other patterns may be used upon the approval of the Engineer. The truncated domes on the bricks shall be placed in a parallel alignment for the direction of pedestrian travel as shown. The running bond pattern may be rotated 90^ to reduce the spacing between the bricks for radius installations. The spacing between bricks for radius curb installations may vary for each site. This spacing shall be kept to a minimum upon review and approval of the Engineer.

SCALE: NOT TO SCALE

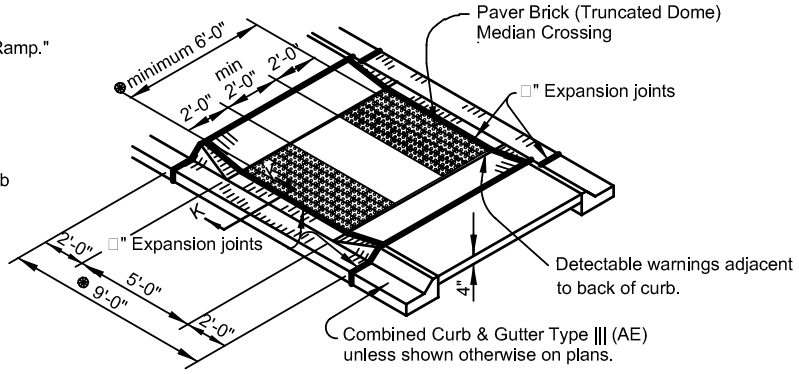
CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	AUXILIARY DETAILS FOR SIDEWALK AND STEPS	APPROVED BY: _____ DATE: DEC. 2003	REVISED _____ _____ _____	STANDARD DETAIL SD21-6C

ROY

● Median ramp crossing limits will be paid for as "Sidewalk Ramp."
◆ These dimensions are nominal.

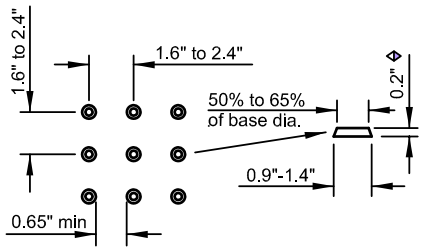


SECTION K-K

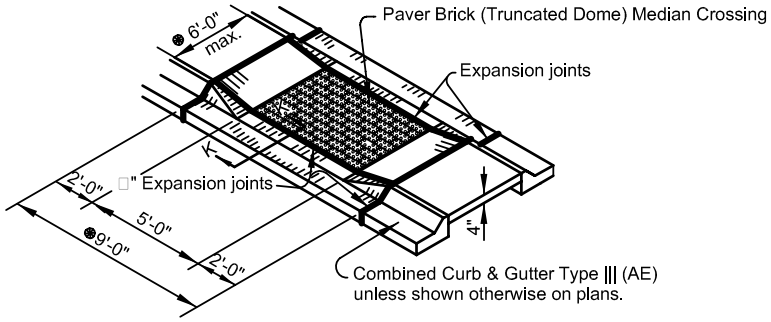


WIDE MEDIAN RAMP CROSSING

Note: A Median Ramp Crossing shall be constructed at Crosswalk locations. Wider median islands will result in a 2' minimum gap between the truncated dome areas.



TRUNCATED DOME DIMENSIONS
for SQUARE PATTERN
(Parallel Alignment)



NARROW MEDIAN RAMP CROSSING

Note: A Median Ramp Crossing shall be constructed at Crosswalk locations.

GENERAL NOTES

The details depicted here may not be appropriate for all locations. Designs shall meet this criteria on all new construction projects unless impracticable by site restrictions. For an existing sidewalk facility where the sidewalk will be replaced, this sidewalk will be replaced according to this drawing to the maximum extent feasible.

Paving Brick (Truncated Dome Surface) units shall meet the requirements of the standard specifications.

The bricks shall be placed in a pattern that conforms to this drawing and aligned in the direction of pedestrian travel.

The bricks shall have a truncated dome top surface for detectable warning to pedestrians and comply with the American Disabilities Act.

The truncated dome surface shall cover the width of the ramp and extend a length of 24" as shown on this drawing and standard drawing RD725.

The truncated dome surface shall be a contrasting color to the adjacent surfaces.

The bricks shall be saw cut only and any brick shall not be less than 25% of a full brick.

The mortar setting bed and joint mortar sand shall meet the requirements in the standard specifications.

The entire ramp or median crossing as shown will be bid as "Sidewalk Ramp" and payment for this work will be measured by the square yard.

All materials and labor to install the sidewalk ramp shall be subsidiary to the bid item "Sidewalk Ramp."

SCALE: NOT TO SCALE

CITY OF LANSING N:\LANSING\CITY DETAILS\citydetail.bmp DEPARTMENT OF PUBLIC WORKS	AUXILIARY DETAILS FOR SIDEWALK AND STEPS	APPROVED BY: _____ DATE: DEC. 2003	REVISED _____ _____ _____	STANDARD DETAIL SD21-6D

ROY

CITY OF LANSING

DEPARTMENT OF PUBLIC WORKS

COMMERCIAL & INDUSTRIAL ENTRANCE DRIVE DETAIL

APPROVED BY:

DATE: 8 SEPTEMBER 2003

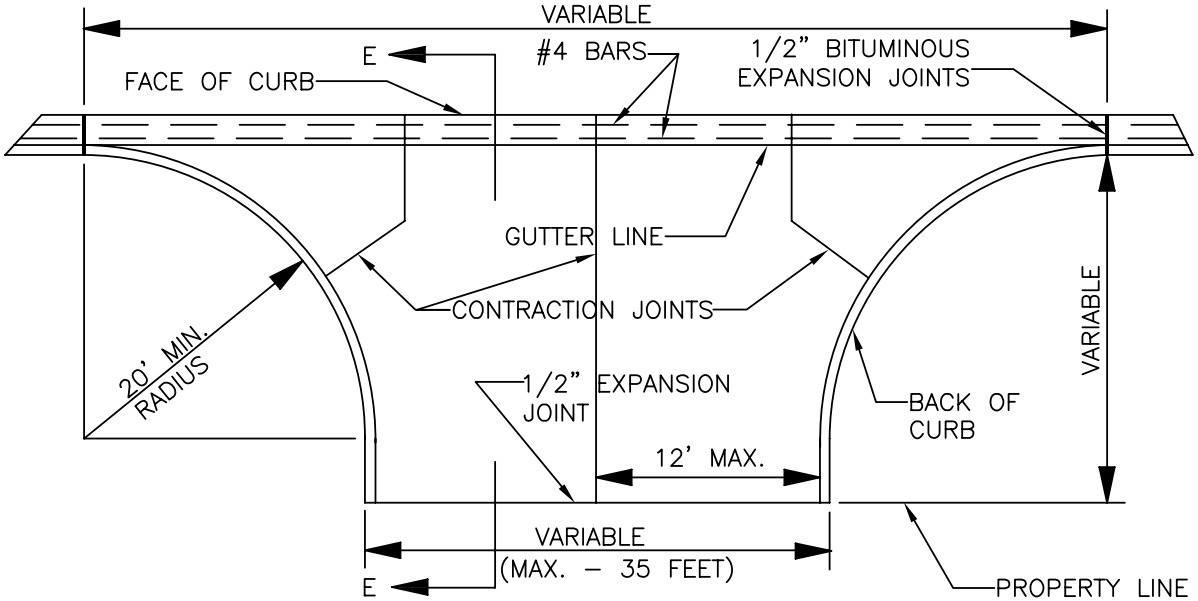
REVISED

STANDARD DETAIL

SD21-7

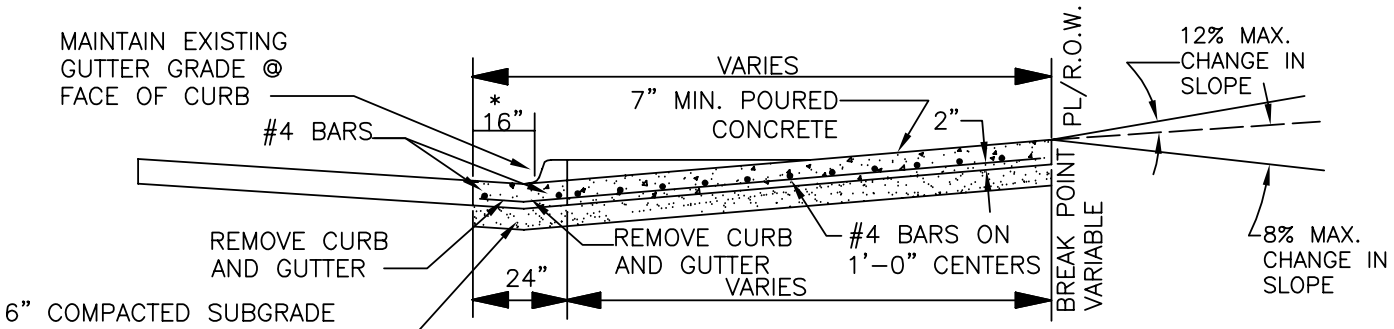
ROY

SCALE: NOT TO SCALE



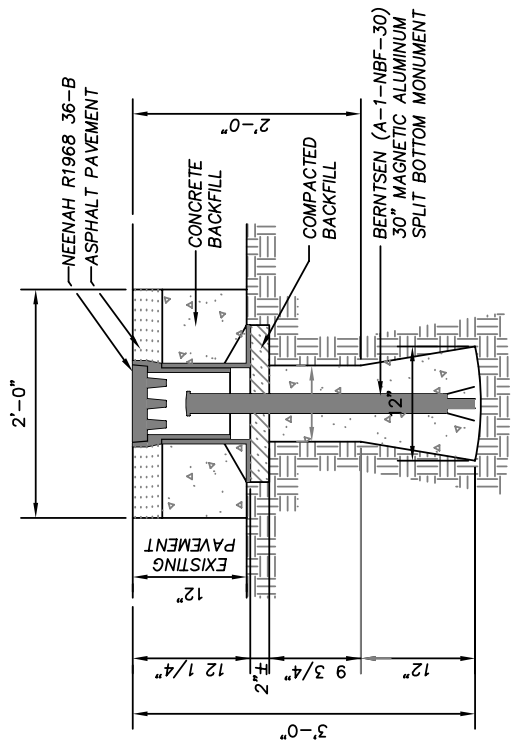
NOTE: ENTRANCE TO DRIVE TO BE POURED MONOLITHICALLY

PLAN

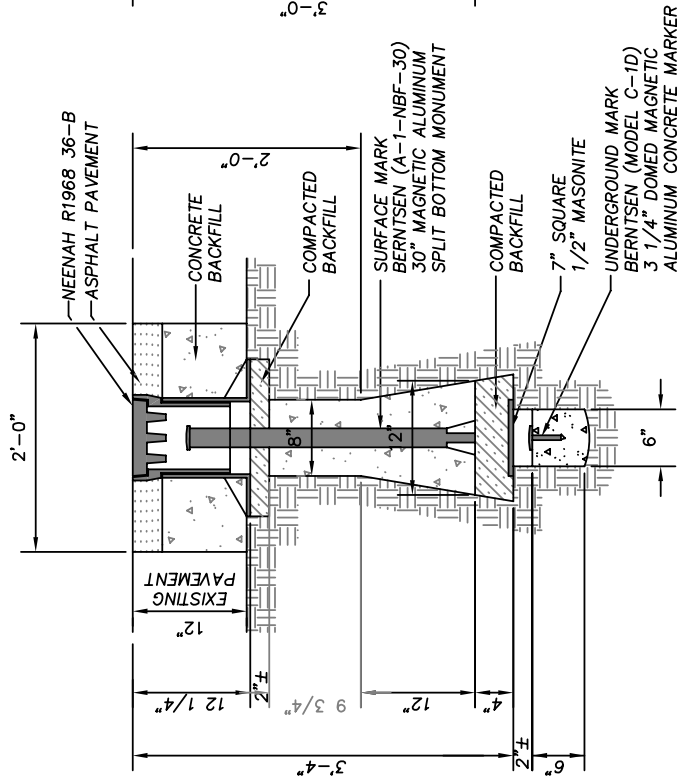


* = SLOPE AS PER STREET CROSS SECTION

SECTION E–E



MONUMENT BOX
SCALE 1"=1'-0"

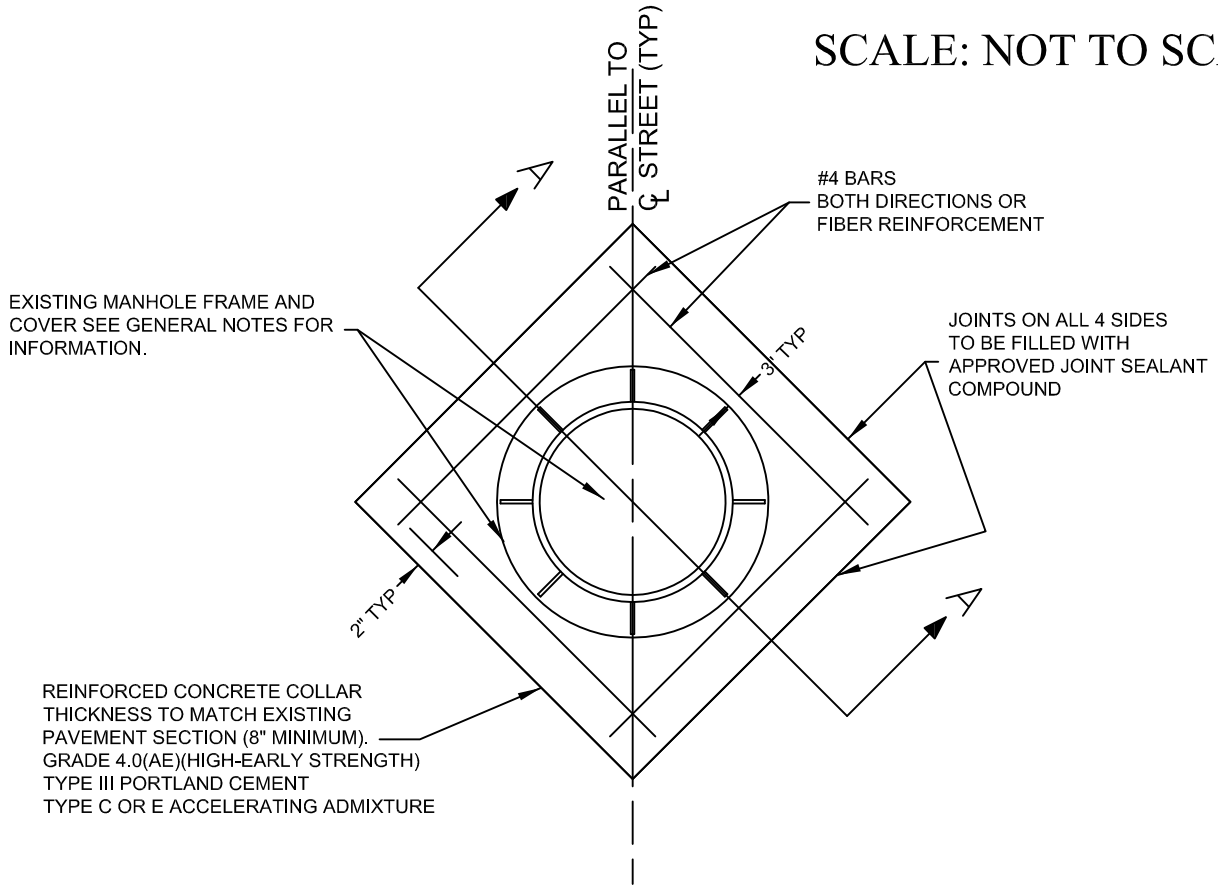


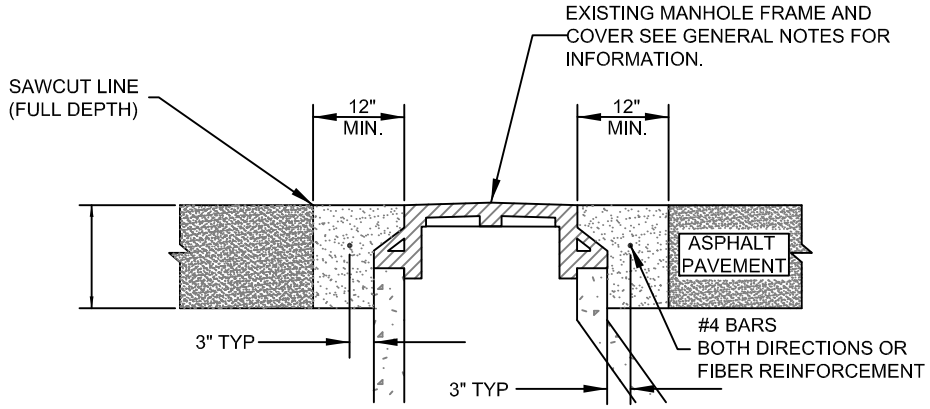
MONUMENT BOX /DUAL MARKS
SCALE 1"=1'-0"

SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	MONUMENT BOX DETAIL MINIMUM DESIGN	APPROVED BY: DATE: 1 JULY 2003	REVISED	STANDARD DETAIL SD21-10

SCALE: NOT TO SCALE





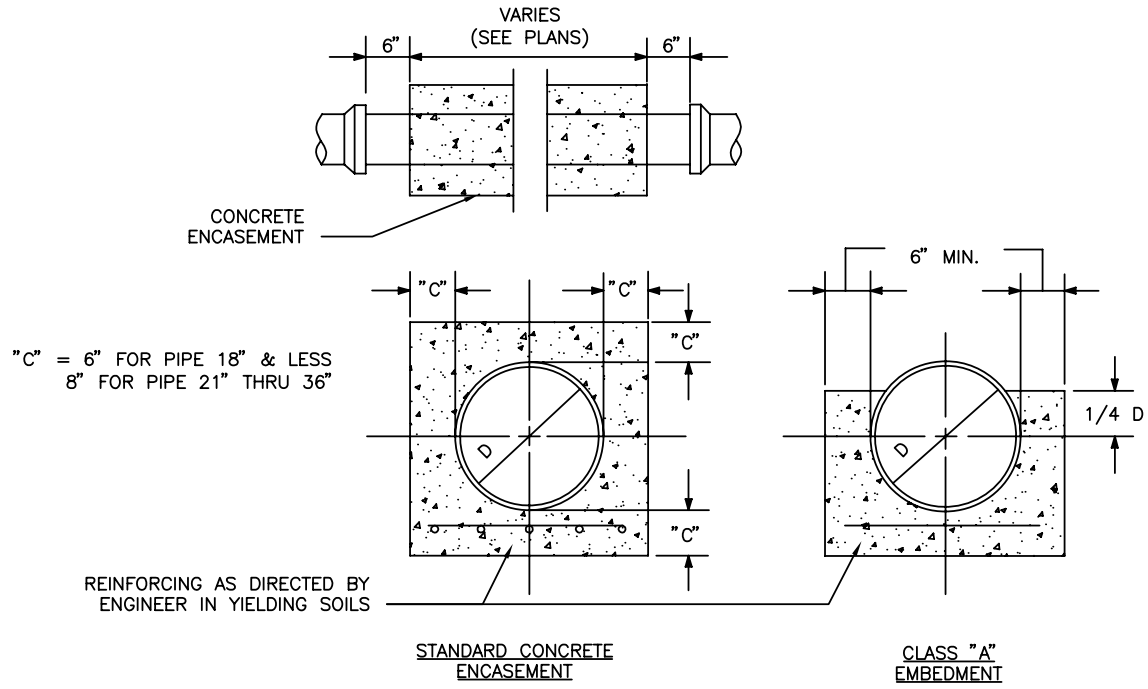
SECTION A–A

GENERAL NOTES

1. ADJUST MANHOLE FRAME AND COVER TO FINISH GRADE AND SLOPE WITH CONCRETE ADJUSTMENT RINGS AND LEVELING MORTAR AS REQUIRED.
2. THE ORIENTATION OF THE REINFORCED CONCRETE COLLAR SHALL BE AS SHOWN, OR SHALL BE DETERMINED THE ENGINEER IN THE FIELD.
3. ALL ITEMS SHOWN ABOVE ARE SUBSIDIARY TO THE BID ITEM "MANHOLE ADJUSTMENT".

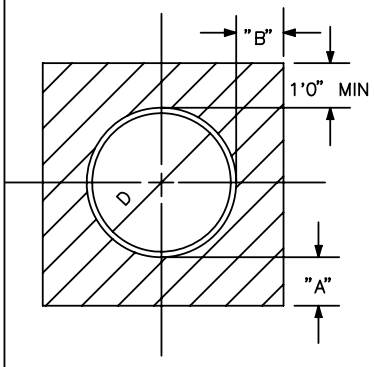
CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	STANDARD MANHOLE ADJUSTMENT MINIMUM DESIGN	APPROVED BY: _____ DATE: 10 JUNE 2010	REVISED _____ _____ _____	STANDARD DETAIL SD21-11

ROV

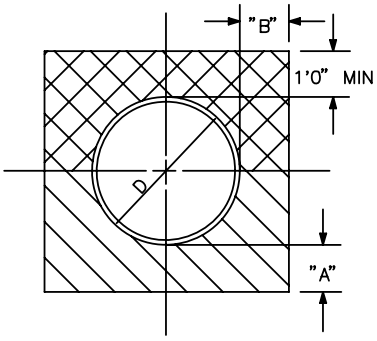


TYPE	P	LOAD FACTOR
REINFORCED	0.40%	3.5
REINFORCED	1.00%	4.8
PLAIN		2.8

TABLE OF BEDDING DEPTHS & SIDE CLEARANCES				
D	ROCK A	ROCK B	SOIL A	SOIL B
4"–18"	6"	6"	4"	6"
21"–24"	9"	9"	4"	7"
27"–30"	9"	9"	4"	8"



FLEXIBLE PIPE
EMBEDMENT



CLASS "B" EMBEDMENT
(RIGID PIPE)

HAND PLACED & HAND TAMPED BACKFILL

GRANULAR FILL

CONCRETE

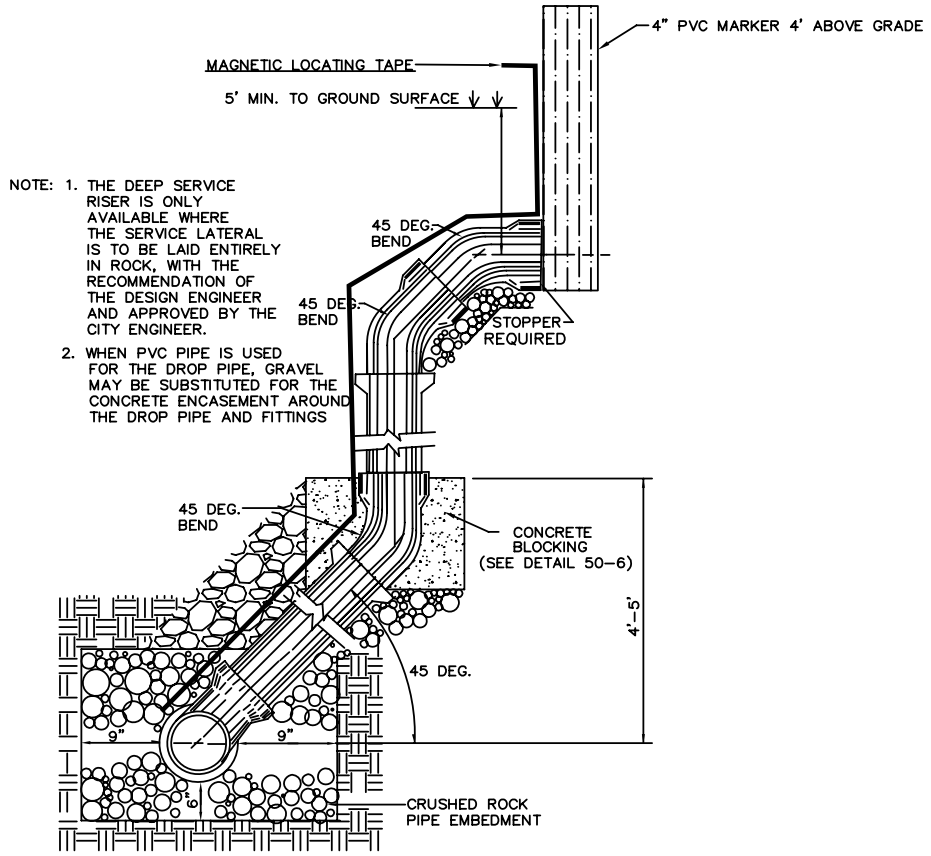
D NOMINAL PIPE SIZE
A FILL BELOW PIPE (SEE TABLE)
B SIDE CLEARANCES (SEE TABLE)
P AREA TRANSVERSE STEEL EXPRESSED AS A % OF AREA OF CONCRETE

STANDARD EMBEDMENTS

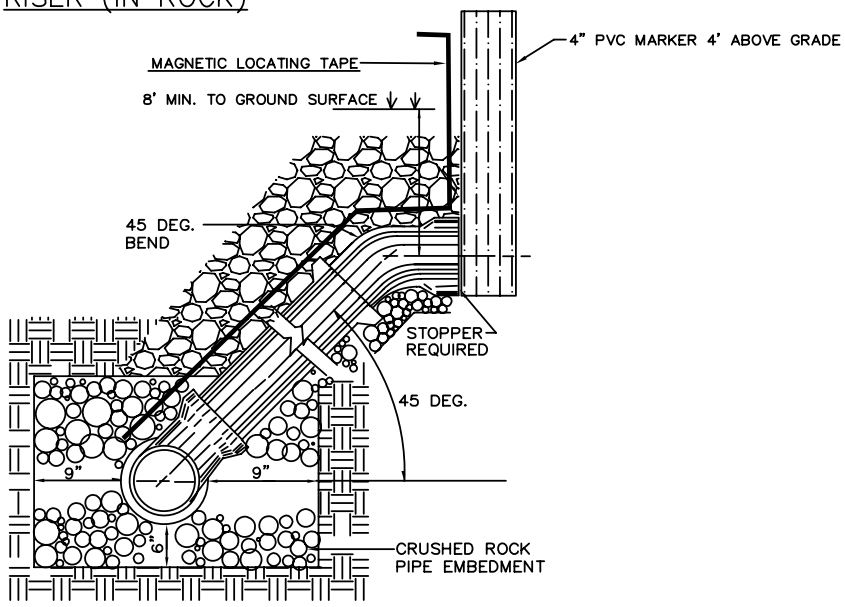
REFER TO TECHNICAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS
N.T.S.

SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	CONCRETE ENCASEMENT, CONCRETE CRADLE, & BEDDING DETAILS	APPROVED BY: _____ DATE: 8 AUGUST 2003	REVISED _____ _____ _____	STANDARD DETAIL SD30-1



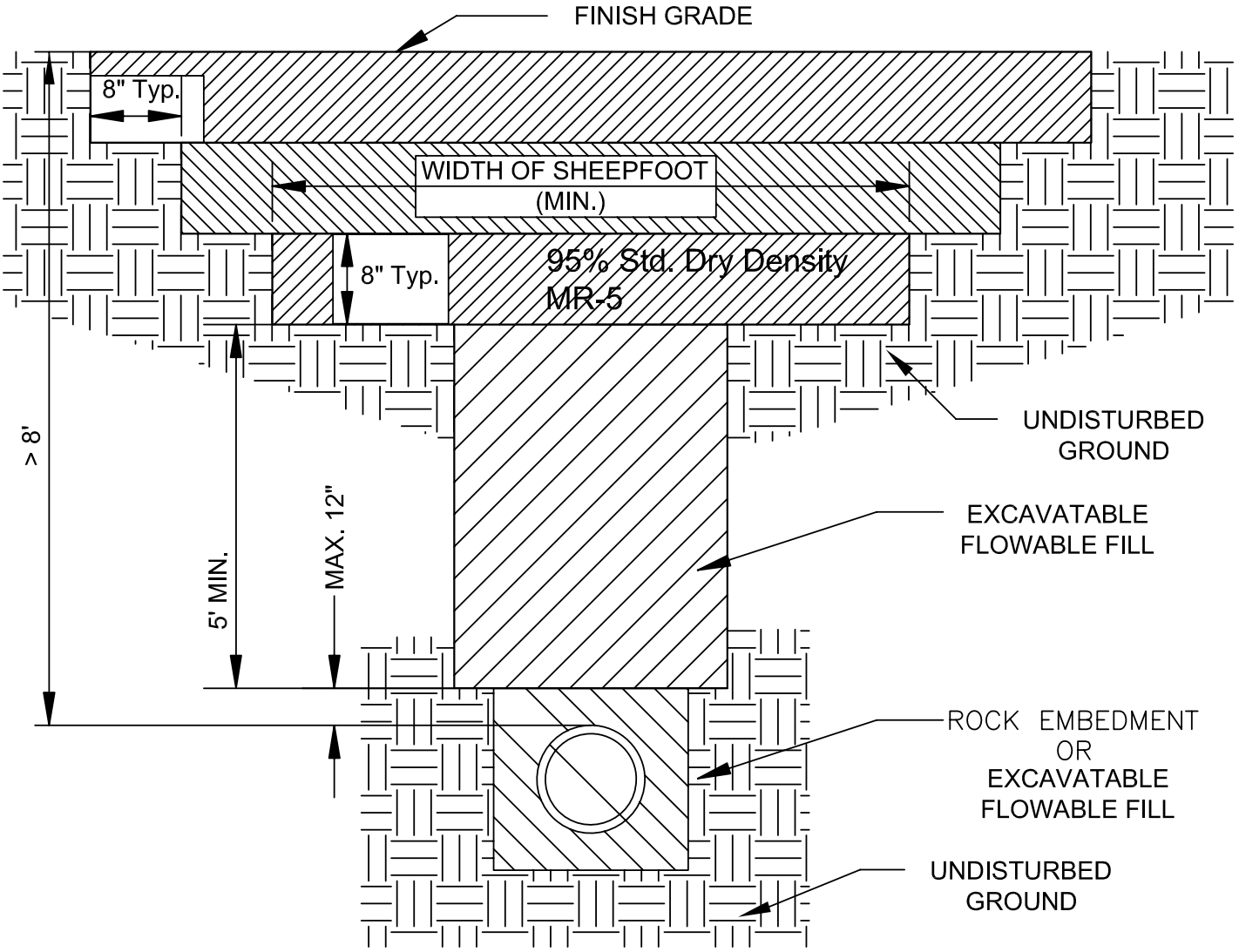
DEEP TRENCH SERVICE RISER (IN ROCK)



STANDARD DEEP TRENCH SERVICE RISER

SCALE: NOT TO SCALE

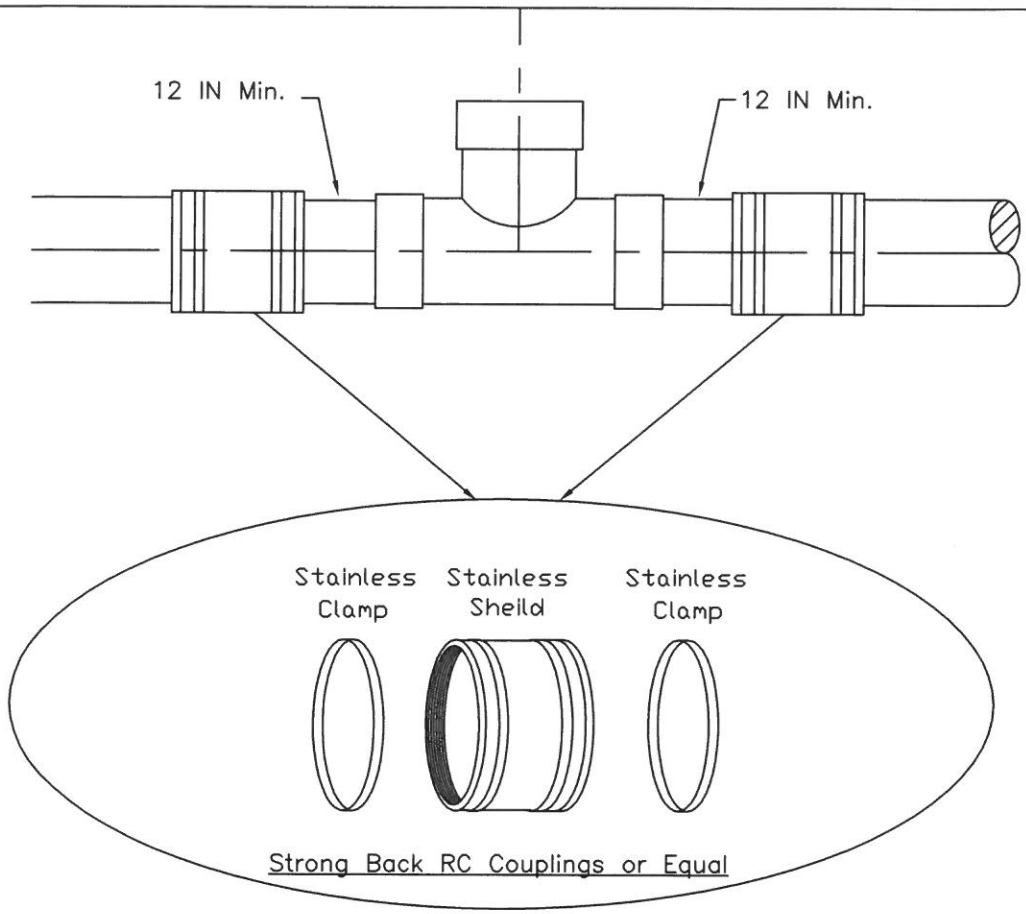
CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	RISER DETAIL MINIMUM DESIGN	APPROVED BY: DATE: 21 NOV. 2005	REVISED 11-21-05	STANDARD DETAIL SD30-2



Crossing in excess of 8' depth from finish grade to top of pipe (<8' fill entire trench above embedment w/excavatable flowable fill)

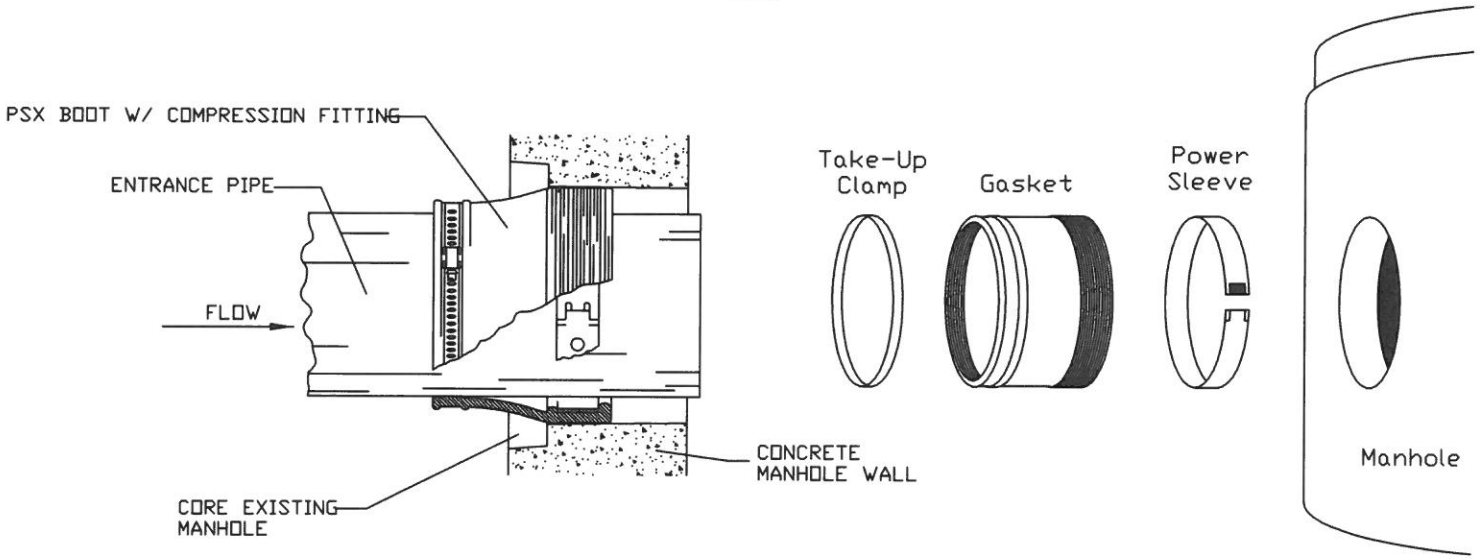
SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	STREET CROSSING FOR SANITARY SEWER NEW CONSTRUCTION	APPROVED BY: _____ DATE: 18 Oct. 2005	REVISED _____ _____ _____	STANDARD DETAIL SD30-3



STUB LINE CONNECTION TO MAIN

N.T.S.



CONCRETE MANHOLE ADAPTER

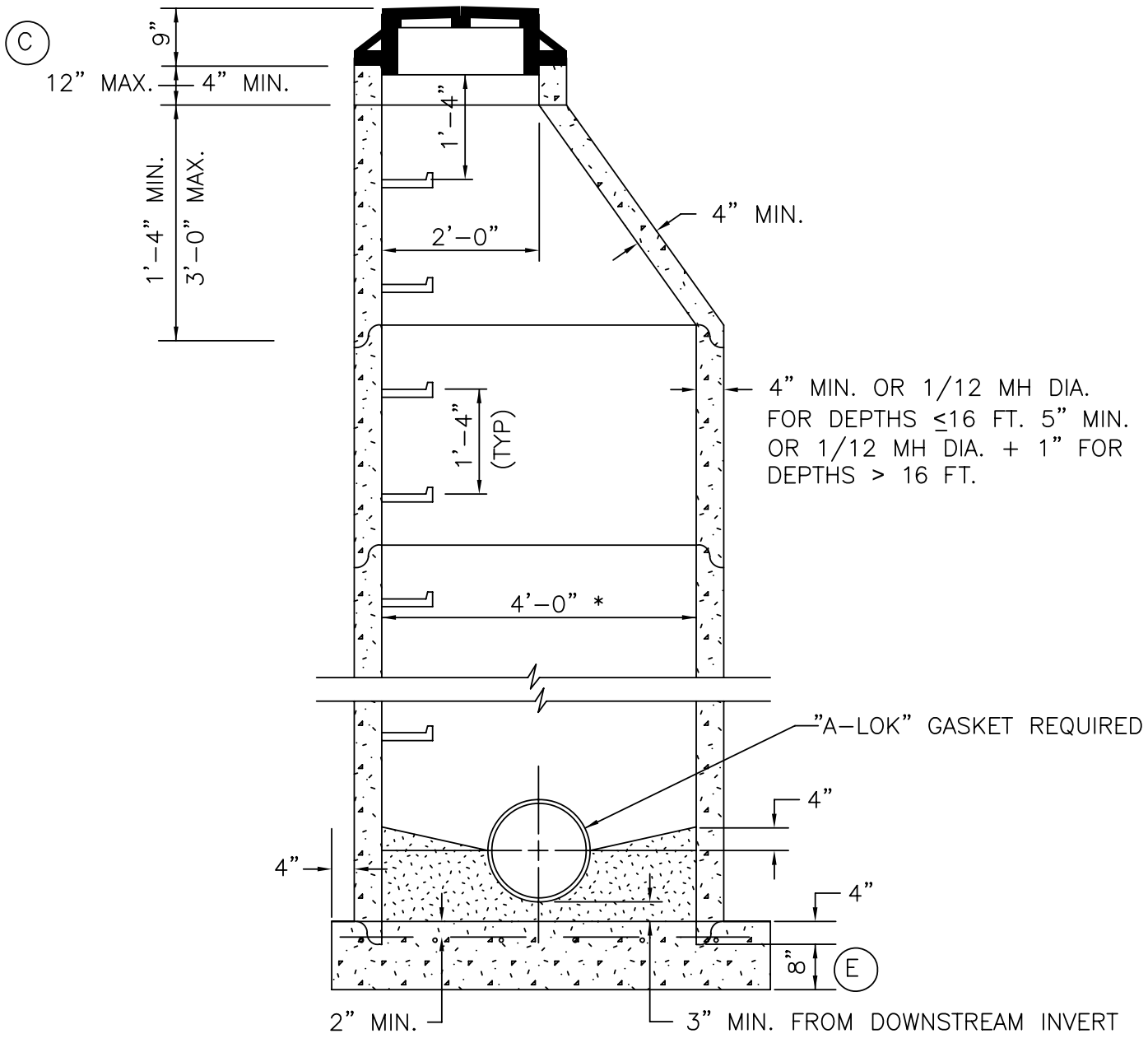
N.T.S.

(USE FOR PIPES ENTERING EXISTING MANHOLE WALLS)
(CORE EXISTING MANHOLE & USE PSX BOOT W/ COMPRESSION FITTING)

SCALE: NOT TO SCALE

NOTE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	MANHOLE ADAPTER & STUB CONNECTION TO MAIN MINIMUM DESIGN	APPROVED BY: DATE: 1 JULY 2003	REVISED 11-21-05 06-24-14	STANDARD DETAIL SD30-4



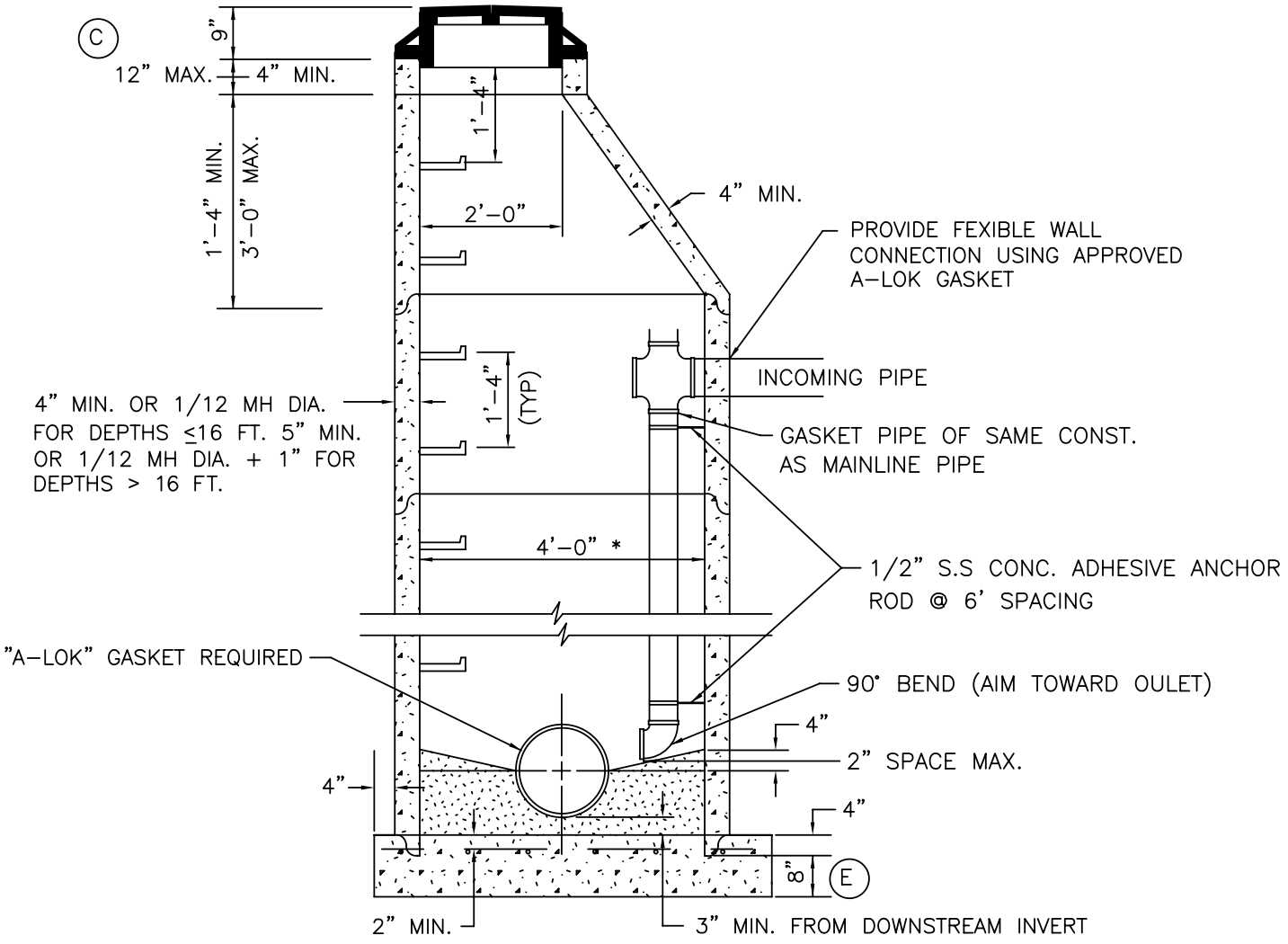
* UNLESS OTHERWISE NOTED ON PLANS

STANDARD PRECAST MANHOLE (ECCENTRIC CONE)

N.T.S.

SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	STANDARD PRECAST MANHOLE DETAIL	APPROVED BY: _____ DATE: 1 JULY 2003	REVISED 10-17-05	STANDARD DETAIL SD31-1



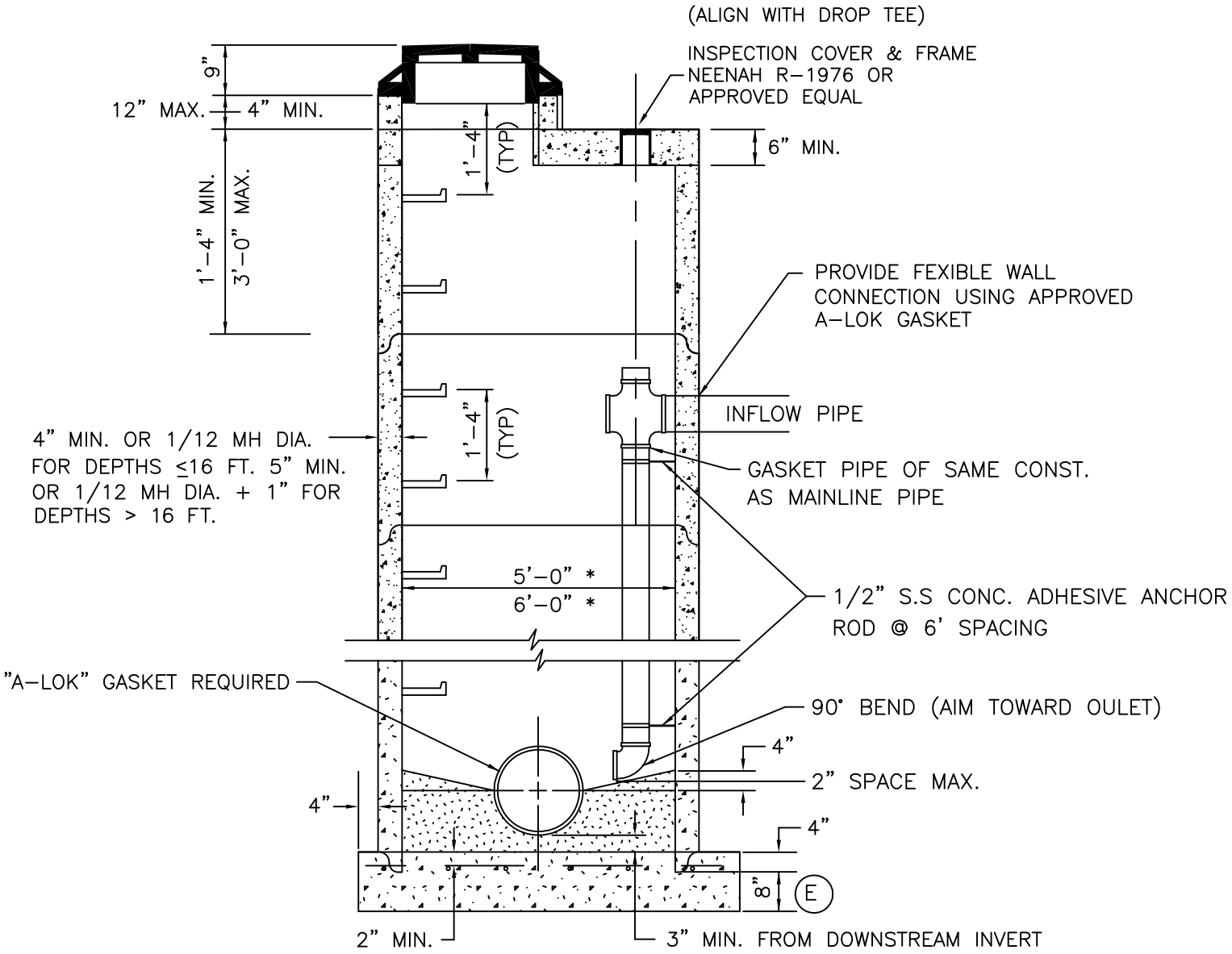
* UNLESS OTHERWISE NOTED ON PLANS

STANDARD PRECAST MANHOLE WITH INSIDE DROP (ECCENTRIC CONE)

N.T.S.

SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	STANDARD PRECAST MANHOLE DETAIL WITH INSIDE DROP	APPROVED BY: DATE: 21 OCT. 2005	REVISED	STANDARD DETAIL SD31-2



*Note: Inflow Pipe > 12", 6FT Dia. Manhole Required
Inflow Pipe < 12", Standard or 5FT Dia. Manhole Required

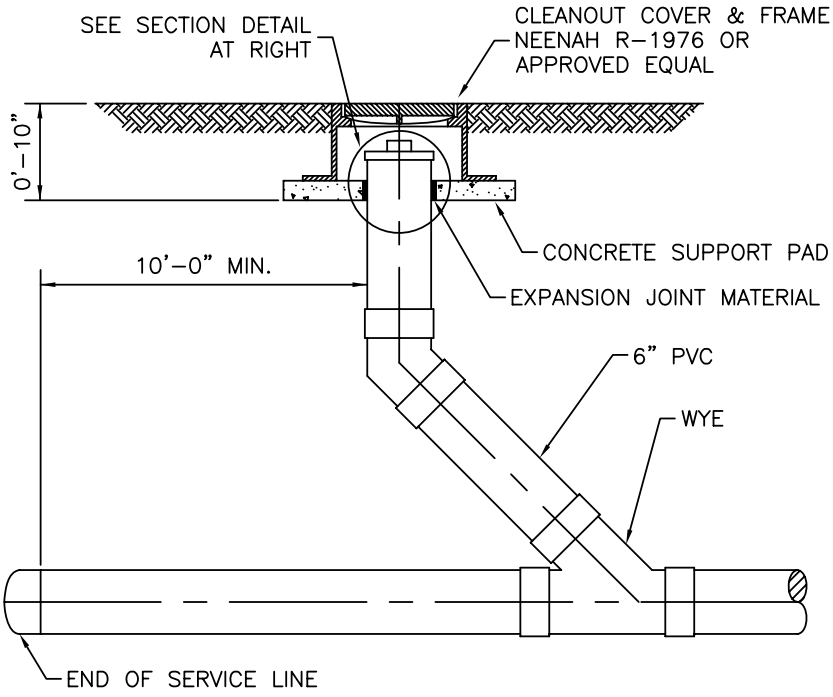
STANDARD PRECAST MANHOLE WITH INSIDE DROP
(FLAT TOP W/INSPECTION HOLE)

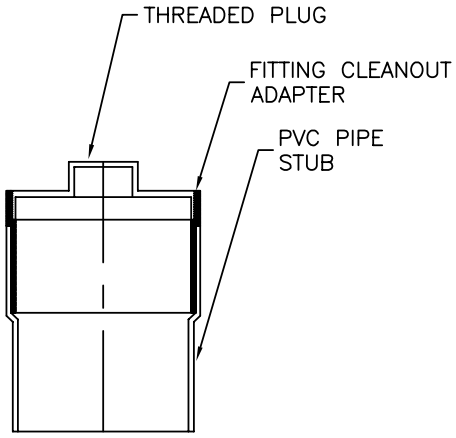
N.T.S.

SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	STANDARD PRECAST MANHOLE DETAIL WITH INSIDE DROP	APPROVED BY: DATE: 05 March 2012	REVISED	STANDARD DETAIL SD31-3

DCT





CLEANOUT DETAIL

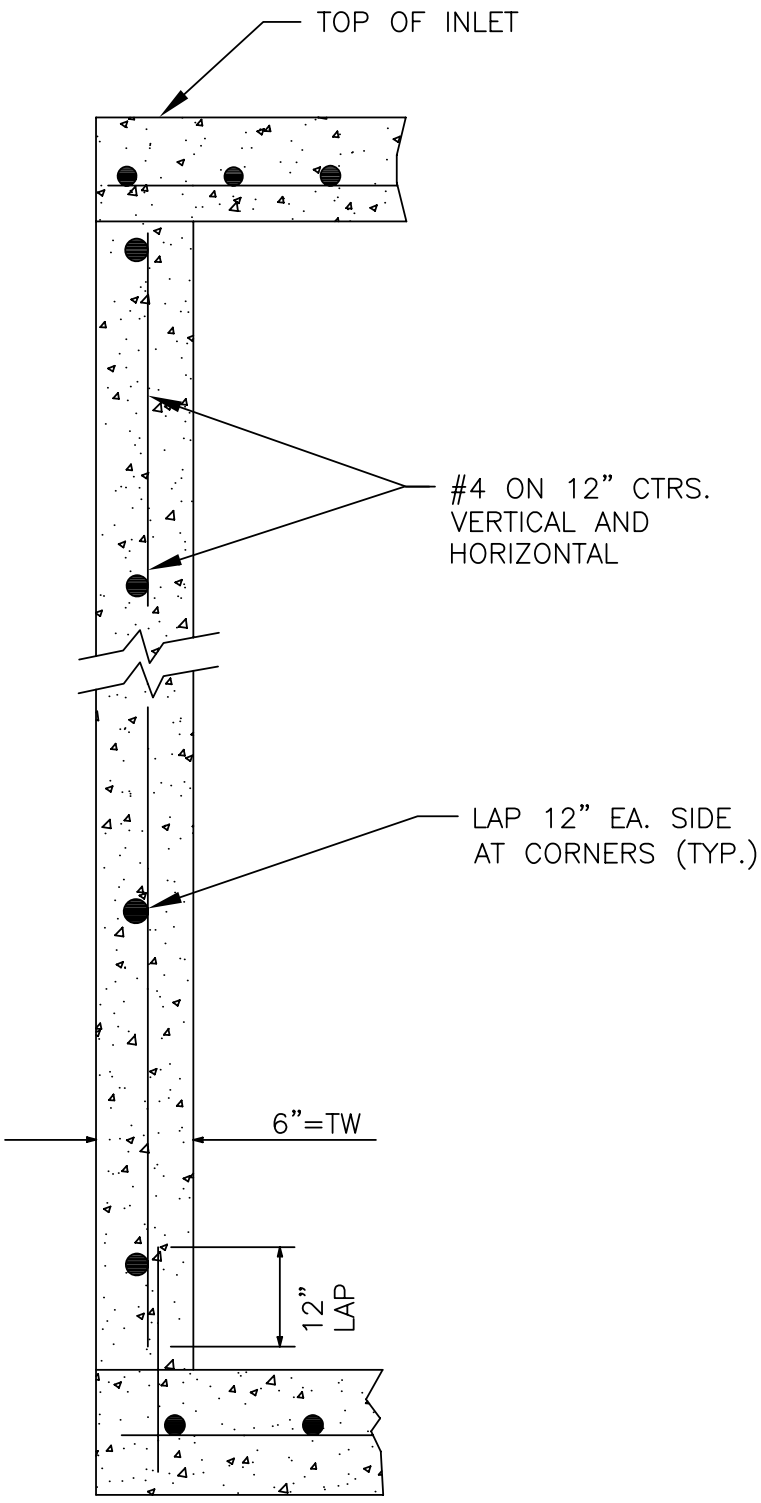
N.T.S.

(F)

SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	CLEANOUT DETAIL	APPROVED BY: DATE: 1 JULY 2003	REVISED	STANDARD DETAIL SD31-5

ROV



CONCRETE

SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	WALL SECTION (PRE-CAST OR CAST IN PLACE CONCRETE)	APPROVED BY: _____ DATE: 8 SEPTEMBER 2003	REVISED _____ _____ _____	STANDARD DETAIL SD40-2

ROY

CITY OF LANSING
DEPARTMENT OF PUBLIC WORKS

STREET INLET FRAME DETAIL

APPROVED BY:

DATE: 8 SEPTEMBER 2003

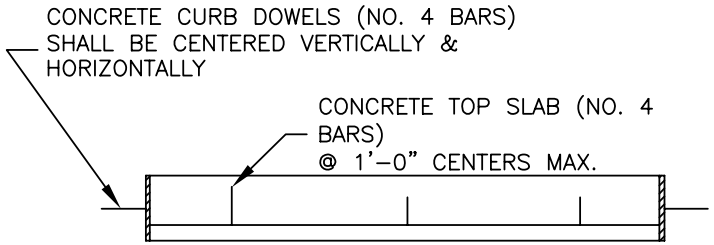
REVISED

STANDARD DETAIL
SD40-3

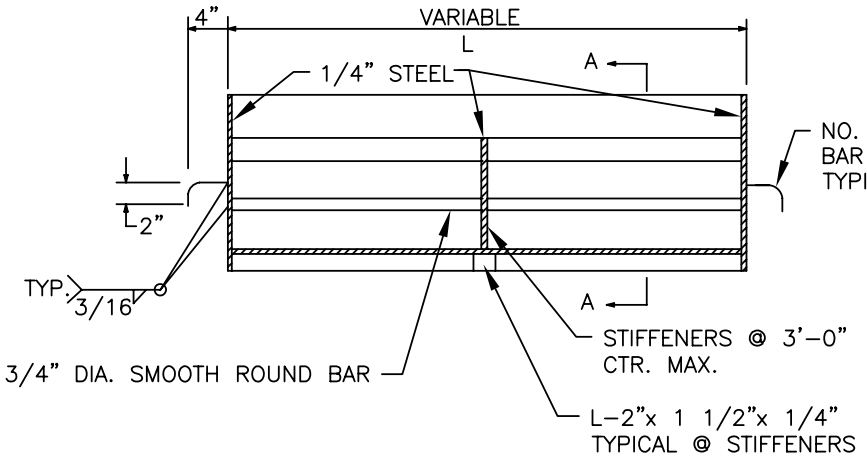
ROY

SCALE: NOT TO SCALE

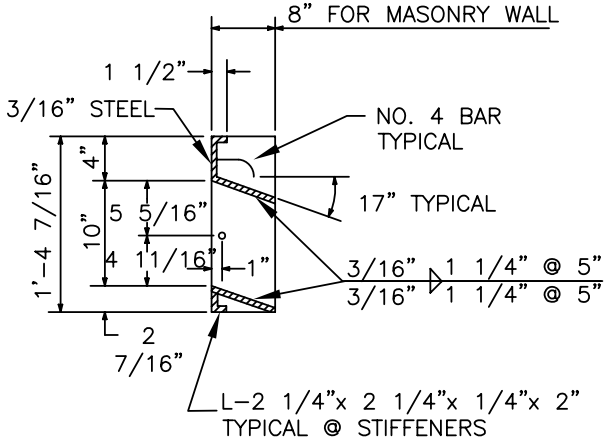
NOTES:
1. ALL METAL SURFACES ARE TO BE GALVANIZED.
2. ALL WELDS ARE 3/16" FILLET WELD.



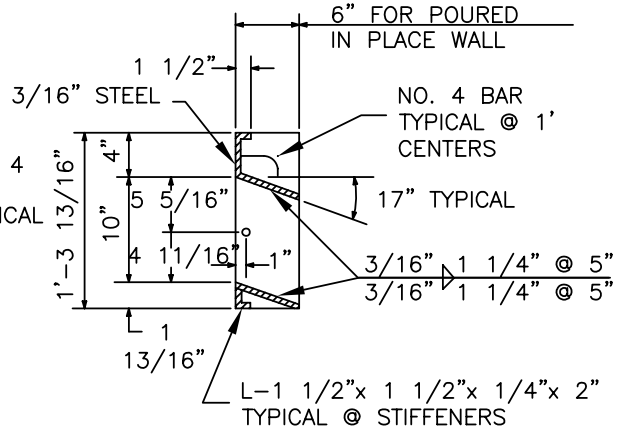
TOP VIEW
SCALE: 1 1/2"=1'-0"



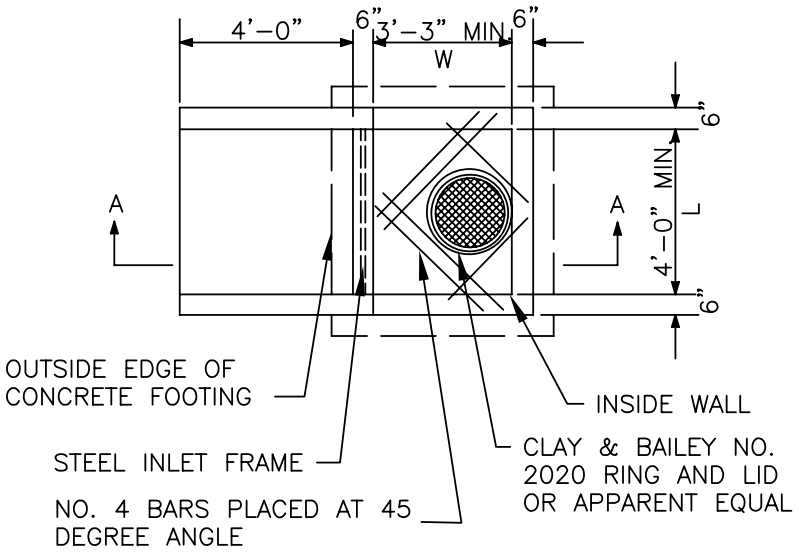
FRONT VIEW



SECTION A-A
8" CONCRETE WALL
SCALE: 1 1/2"=1'-0"

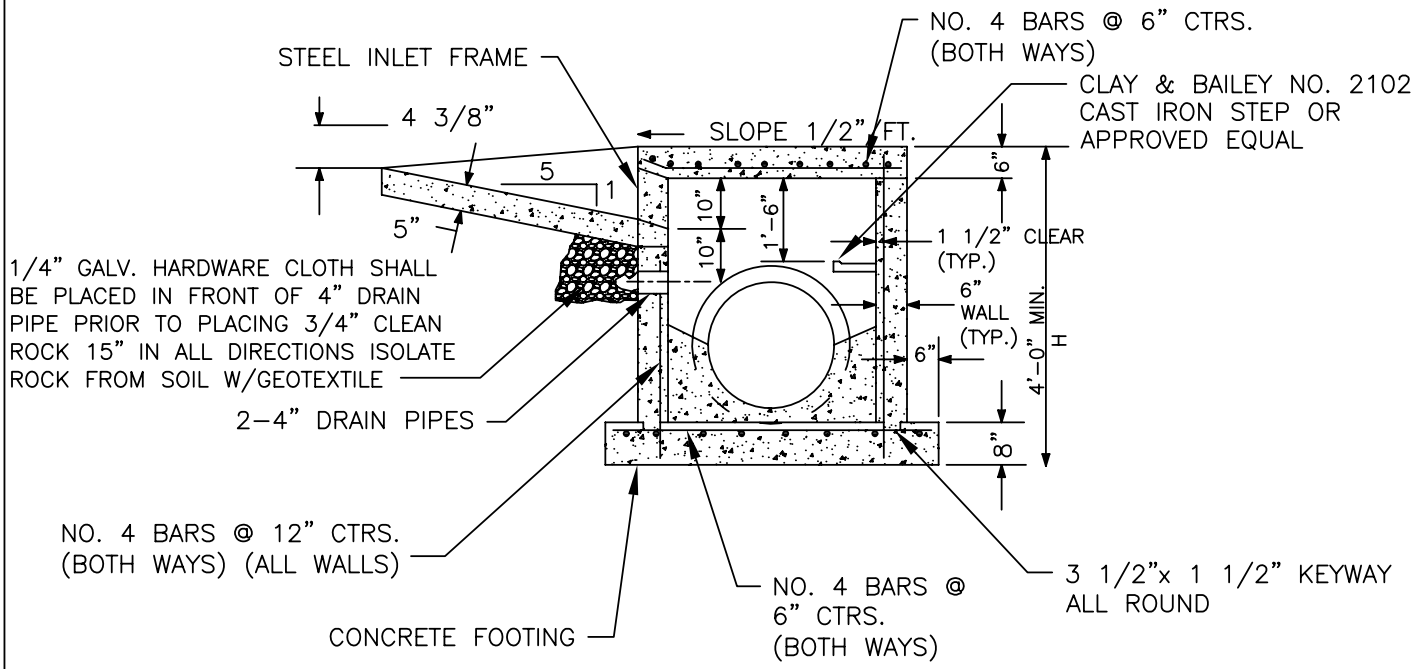


SECTION A-A
6" CONCRETE WALL



PLAN

NOTES:
1. USE CLASS "A" CONCRETE (AE) THROUGHOUT (4000 PSI).
2. THE FIRST DIMENSION LISTED IN THE CONSTRUCTION NOTES IS THE "L" DIMENSION. THE SECOND DIMENSION IS THE "W" DIMENSION.
3. FLOOR OF INLET SHALL BE SHAPED WITH NON-REINFORCED CLASS "A" CONCRETE (AE) INVERT TO PROVIDE SMOOTH FLOW.
4. STEEL INLET FRAME SPACERS SHALL BE PLACED AT EQUAL SPACINGS NOT TO EXCEED 4'-0".
5. CAST IRON STEPS SHALL BE SPACED AT 1'-4" O.C. VERTICALLY.
6. BEVEL ALL EXPOSED EDGES WITH 3/4" TRIANGULAR MOULDING.
7. WALLS MAY EITHER BE POURED IN PLACE OR PRE-CAST.
8. ALL CRUSHED STONE USED AS AGGREGATE FOR CONCRETE CONSTRUCTION SHALL BE OBTAINED FROM QUARRIES AND BEDS DESIGNATED BY THE KANSAS DEPARTMENT OF TRANSPORTATION AS MEETING DURABILITY REQUIREMENTS OF CLASS 1 OR CLASS 6, AS SHOWN ON FILE IN THE OFFICE OF THE CITY ENGINEER.

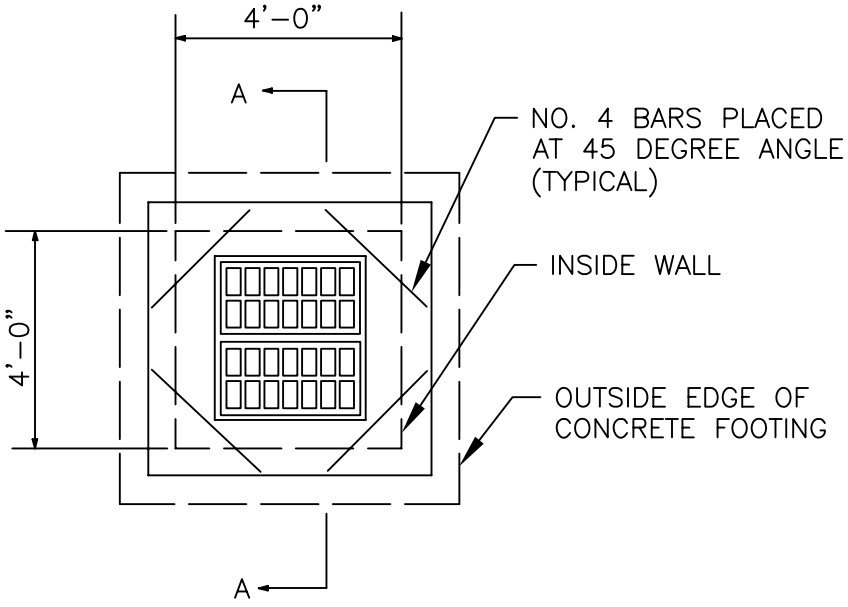


SECTION A-A

SCALE: NOT TO SCALE

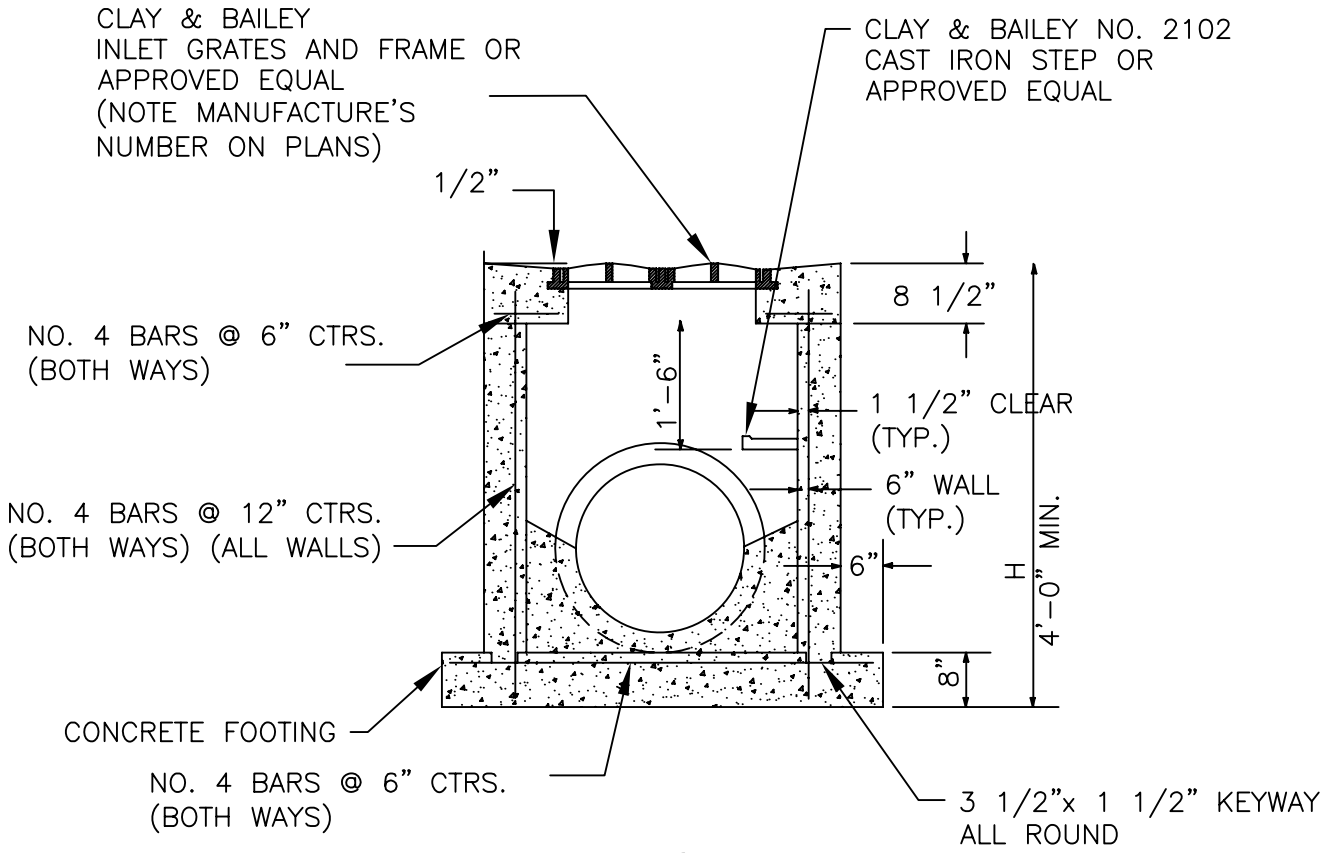
CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	AREA INLET DETAIL	APPROVED BY:	REVISED	STANDARD DETAIL SD40-4
		DATE: 8 SEPTEMBER 2003		

ROY



PLAN

NOTES:
1. USE CLASS "A" CONCRETE (AE) THROUGHOUT (4000 PSI).
2. FLOOR OF INLET SHALL BE SHAPED WITH NON–REINFORCED CLASS "A" CONCRETE (AE) INVERT TO PROVIDE SMOOTH FLOW.
3. CAST IRON STEPS SHALL BE SPACED AT 1'–4" O.C. VERTICALLY.
4. BEVEL ALL EXPOSED EDGES WITH 3/4" TRIANGULAR MOULDING.
5. WALLS MAY EITHER BE POURED IN PLACE OR PRE–CAST.
6. ALL CRUSHED STONE USED AS AGGREGATE FOR CONCRETE CONSTRUCTION SHALL BE OBTAINED FROM QUARRIES AND BEDS DESIGNATED BY THE KANSAS DEPARTMENT OF TRANSPORTATION AS MEETING DURABILITY REQUIREMENTS OF CLASS 1 OR CLASS 6, AS SHOWN ON FILE IN THE OFFICE OF THE CITY ENGINEER.

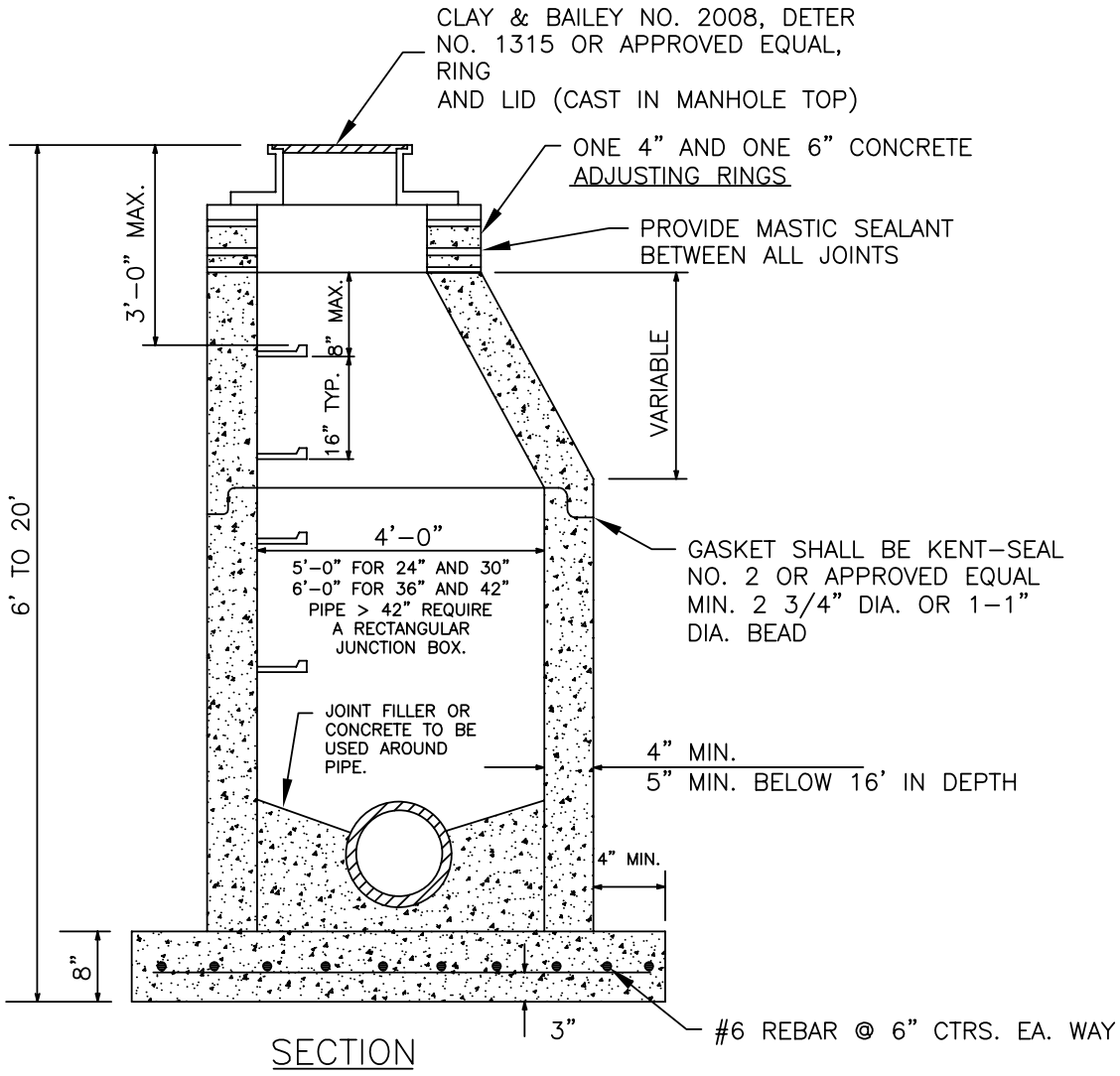


SECTION A–A

SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	GRATE INLET DETAIL	APPROVED BY: _____ DATE: 8 SEPTEMBER 2003	REVISED _____ _____ _____	STANDARD DETAIL SD40-5

ROY



SECTION

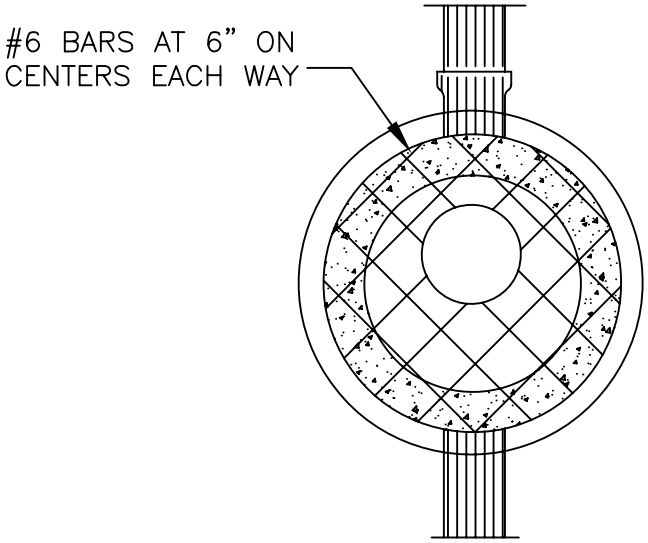
NOTE:

1. PRECAST CONCRETE MANHOLES SHALL CONFORM TO ASTM C478 EXCEPT AS MODIFIED BY THE SPECIFICATIONS.
2. BASES NOT BUILT MONOLITHIC WITH BOTTOM SECTION SHALL BE POURED OF CLASS 1 3000 PSI CONCRETE.
3. MANHOLE MAY BE TRANSITIONED TO 4'-0" DIA., 8' ABOVE F.L. OF OUTFALL FOR 5'-0" AND 6'-0" MANHOLES.
4. THE BOTTOM SECTION OF ALL PRECAST MANHOLES NOT BUILT MONOLITHIC WITH THE BASE SHALL BE SET INTO A STEEL REINFORCED POURED CONCRETE BASE A MINIMUM OF 4". (#4 @ 6" E.W.)
5. THE COMPRESSIVE STRENGTH OF CONCRETE USED IN THE CONSTRUCTION OR PRECAST REINFORCED CONCRETE MANHOLES SHALL NOT BE LESS THAN 4000 PSI.
6. ONLY ECCENTRIC MANHOLE CONES WILL BE ALLOWED UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.

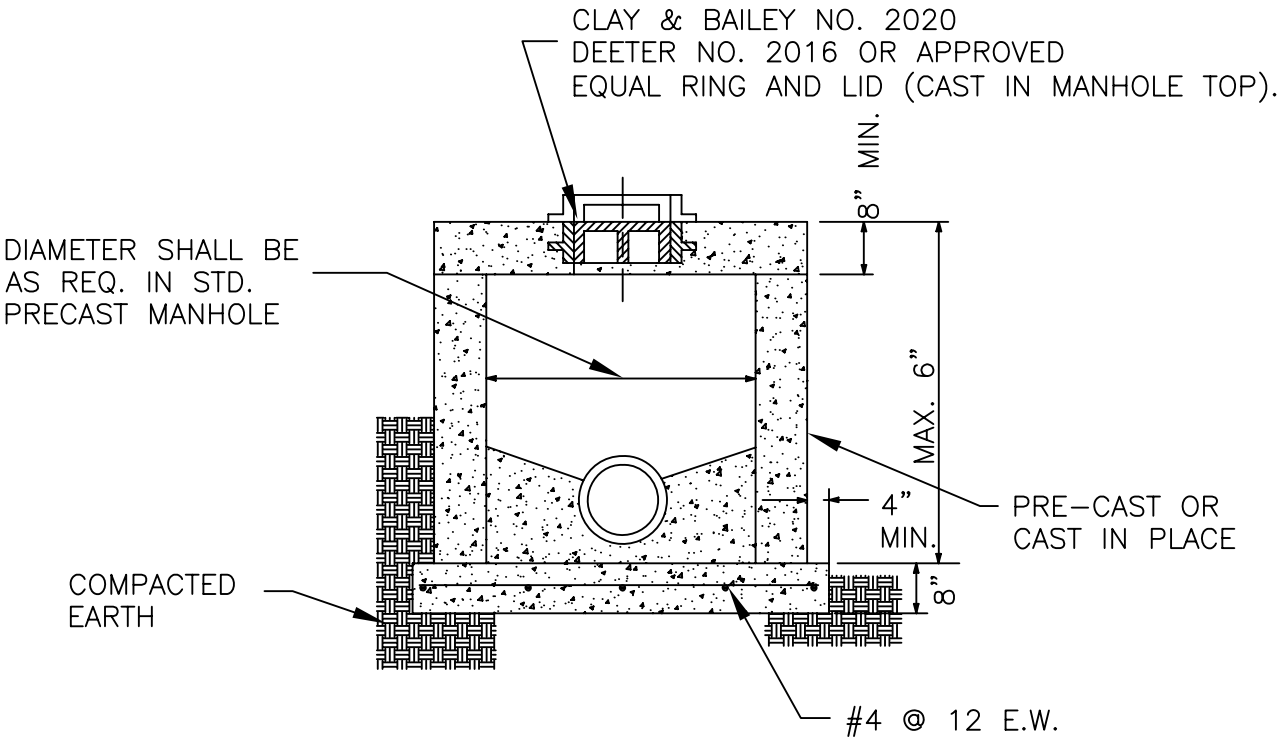
SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	STANDARD STORM SEWER MANHOLE	APPROVED BY: DATE: 8 SEPTEMBER 2003	REVISED	STANDARD DETAIL SD40-6

NOTES:
1. POINTS OF ATTACHMENT PROVIDED FOR LIFTING PRECAST TOPS SHALL NOT BE LOCATED ON THE TOP SIDE OF INLET TOP.
2. USE OF A STANDARD LID AND RING WILL BE ALLOWED WHERE GRADE PERMITS. (SEE SPEC. FOR APPROVED TYPES)
3. CONTRACTOR SHALL PROVIDE STEPS SPACED AT 1'–4" O.C. WHERE INLET OR MANHOLE DEPTH IS GREATER THAN 4'–0". STEPS SHALL BE M.A. INDUSTRIES, INC. MODEL PS–2–PF OR APPROVED EQUAL.



PLAN

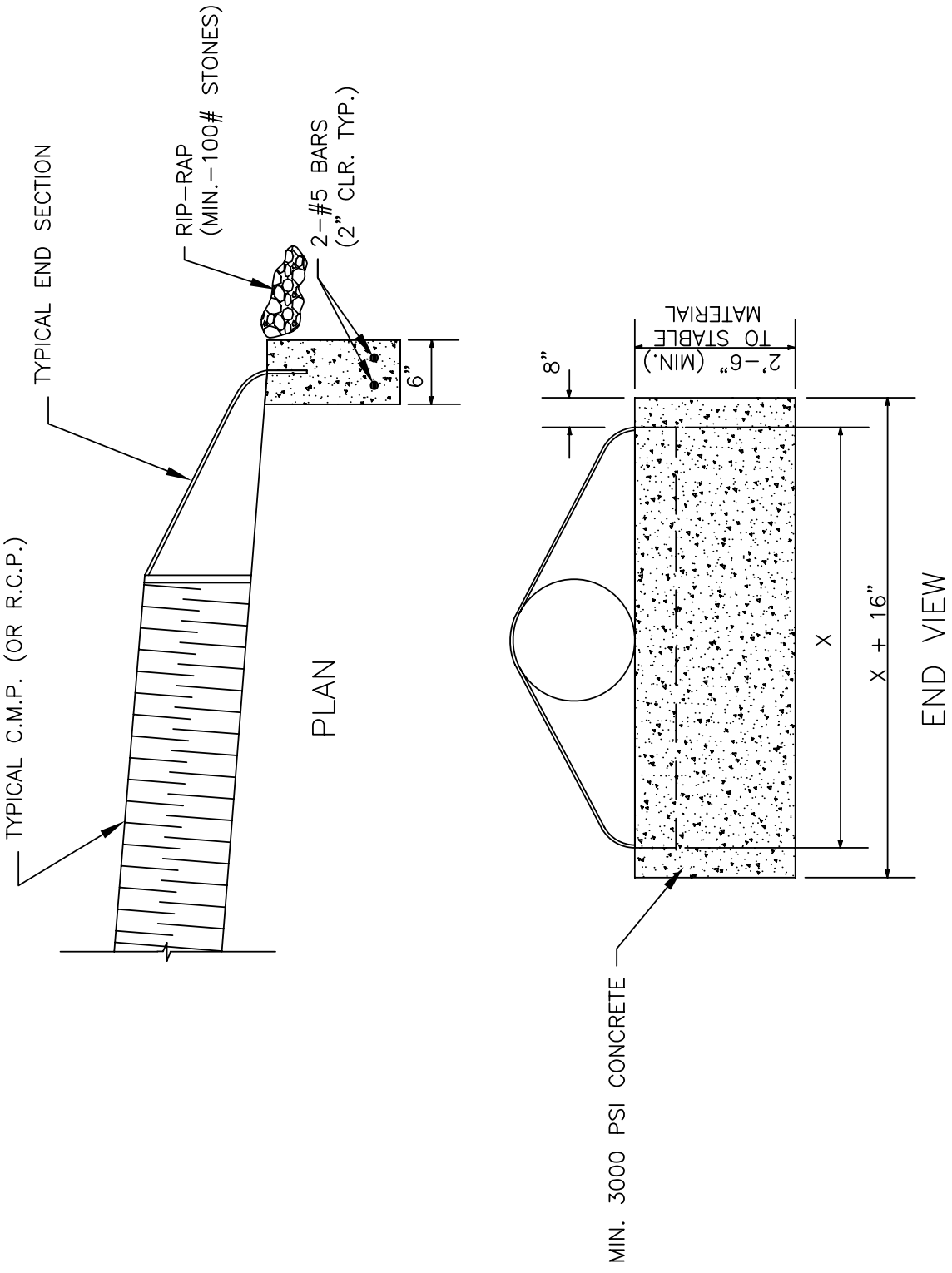


SECTION

SCALE: NOT TO SCALE

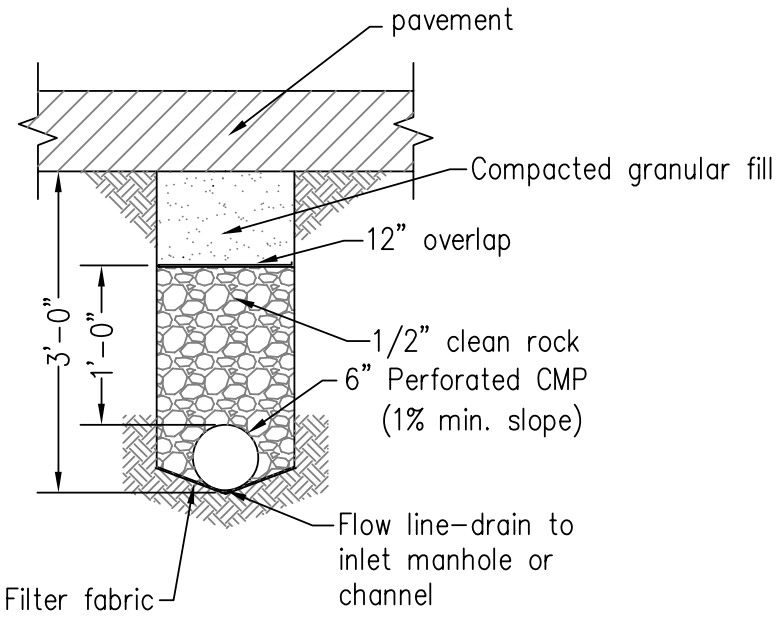
CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	SHALLOW JUNCTION BOX DETAIL	APPROVED BY: _____ DATE: 8 SEPTEMBER 2003	REVISED _____ _____ _____	STANDARD DETAIL SD40-7

ROY



SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	TYPICAL END SECTION DETAIL	APPROVED BY: DATE: 8 SEPTEMBER 2003	REVISED	STANDARD DETAIL SD40-8



UNDERDRAIN DETAIL

NOTES:

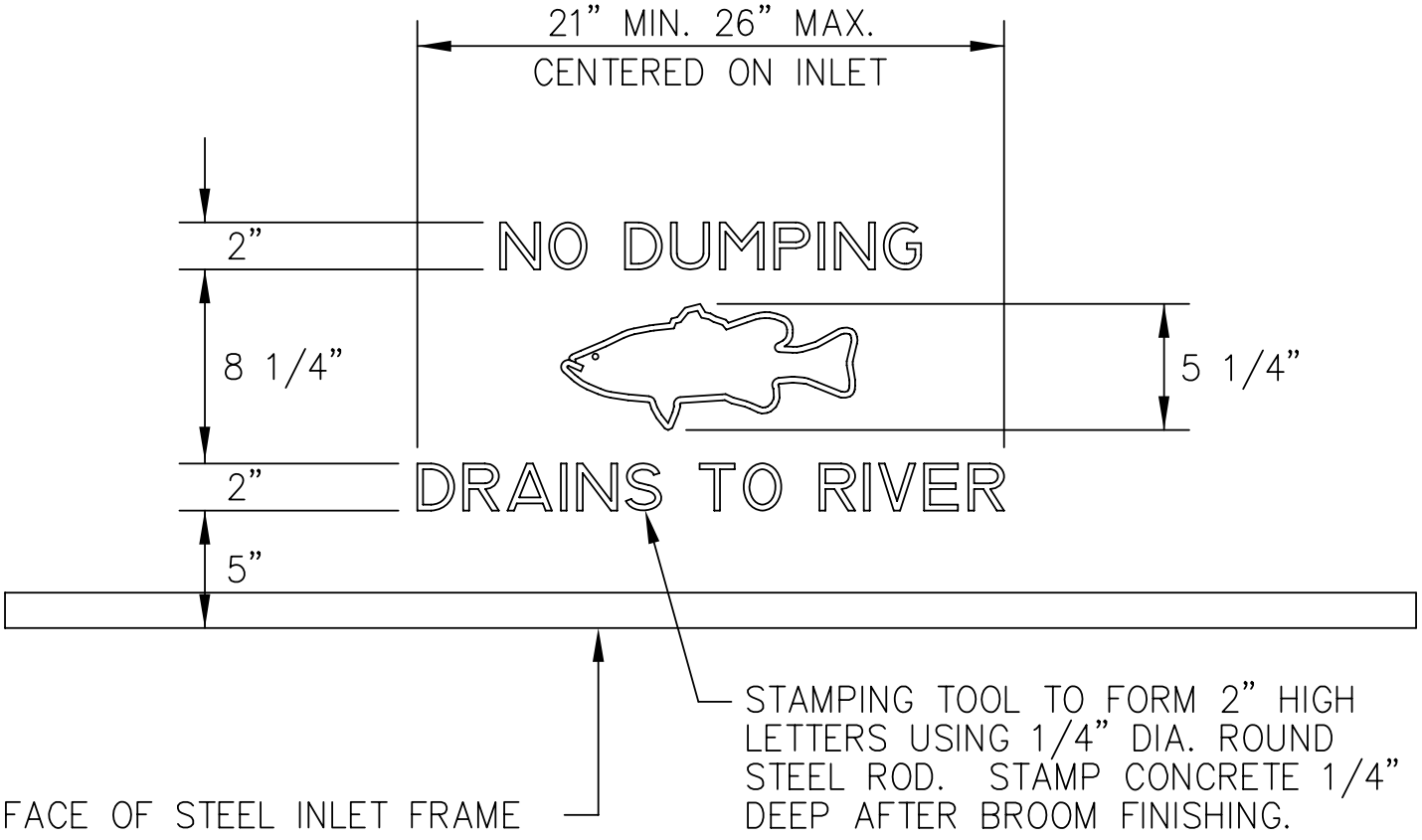
1. GRANULAR FILL TO BE CRUSHED STONE OR PEA GRAVEL WITH NOT LESS THAN 95% PASSING $\frac{1}{2}$" AND NOT LESS THAN 95% TO BE RETAINED ON A #4, FILL TO BE PLACED IN NOT MORE THAN 6" LAYERS AND COMPACTED.

2. FILTER FABRIC TO BE MIRAFI 140N OR EQUIVALENT, AS APPROVED BY ENGINEER

SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	UNDERDRAIN	APPROVED BY: DATE: NOV. 2003	REVISED	STANDARD DETAIL SD40-9

ROB



SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	CURB INLET STAMP NEW CONSTRUCTION	APPROVED BY: _____ DATE: 20 October 2005	REVISED _____ _____ _____	STANDARD DETAIL SD40-10

ROV

BACKFILL UNDER STREETS & WITHIN 2' FROM BACK OF CURB

TYPICAL TRENCH DETAIL
WHERE DEPTH ("D") TO TOP OF PIPE IS ≤ 6 FT.

TYPICAL TRENCH DETAIL
WHERE DEPTH ("D") TO TOP OF PIPE IS ≥ 6 FT.

SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	BACKFILL AND EMBEDMENT FOR CONDUITS UNDER STREETS	APPROVED BY: DATE: 18 Oct. 2005	REVISED	STANDARD DETAIL SD50-1A

ROB

TABLE OF EMBEDMENT DEPTH BELOW PIPE		
D	a MIN. SOIL	a MIN. ROCK
27" AND SMALLER	3"	6"
30" TO 60"	4"	9"
66" AND LARGER	6"	12"

LEGEND

BC OUTSIDE DIA. OF PIPE
H COVER ABOVE TOP OF PIPE
D NOMINAL PIPE SIZE
a EMBEDMENT BELOW PIPE

HAND PLACED COMPACTED EMBEDMENT

GRANULAR EMBEDMENT

CONCRETE

NOTES:

GRANULAR EMBEDMENT SHALL BE KSS TYPE CA-5, TO BE PLACED IN NOT MORE THAN 6" LAYERS AND COMPACTED.

HAND PLACED COMPACTED EMBEDMENT SHALL BE FINELY DIVIDED JOB EXCAVATED MATERIAL FREE FROM DEBRIS, ORGANIC MATERIAL, AND STONES, PLACED IN UNIFORM LAYERS NOT MORE THAN 8" THICK, AND COMPACTED TO THE REQUIREMENTS SPECIFIED IN SECTION 6018 "TRENCH BACKFILL" OF THIS SPEC. GRANULAR EMBEDMENT MAY BE SUBSTITUTED FOR ALL OR PART OF HAND PLACED COMPACTED EMBEDMENT.

SCALE: NOT TO SCALE

CITY OF LANSING
DEPARTMENT OF PUBLIC WORKS

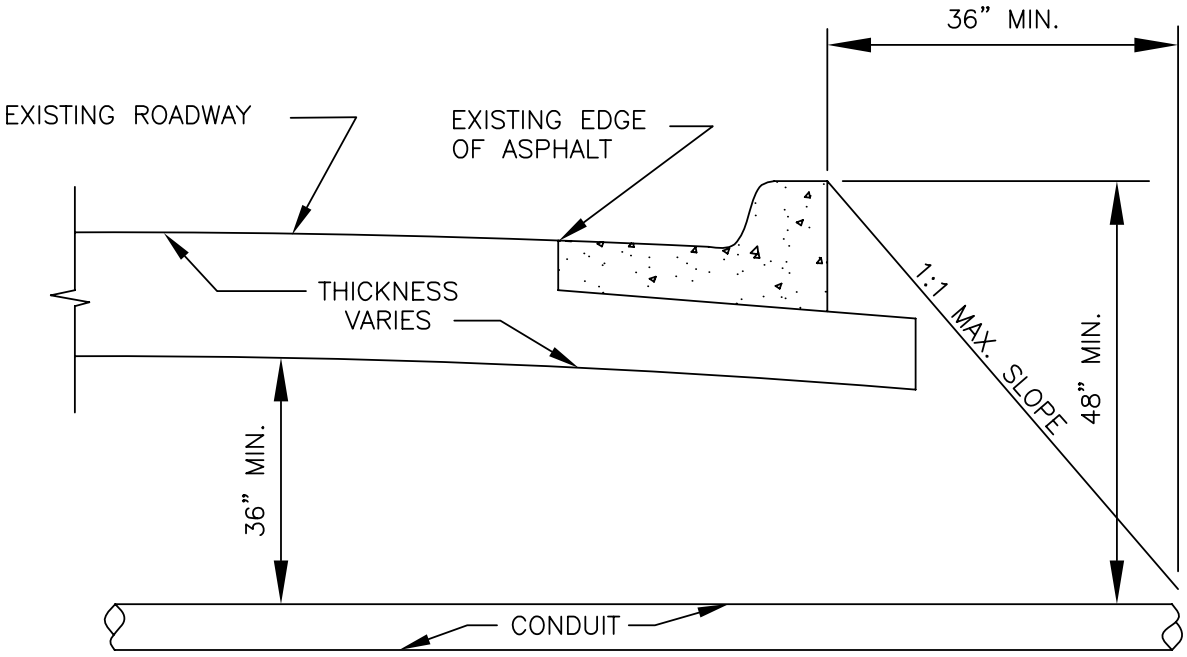
EMBEDMENTS FOR CONDUITS NOT UNDER PAVEMENT

APPROVED BY: _____
DATE: 8 SEPTEMBER 2003

REVISED _____ _____ _____

STANDARD DETAIL
SD50-1

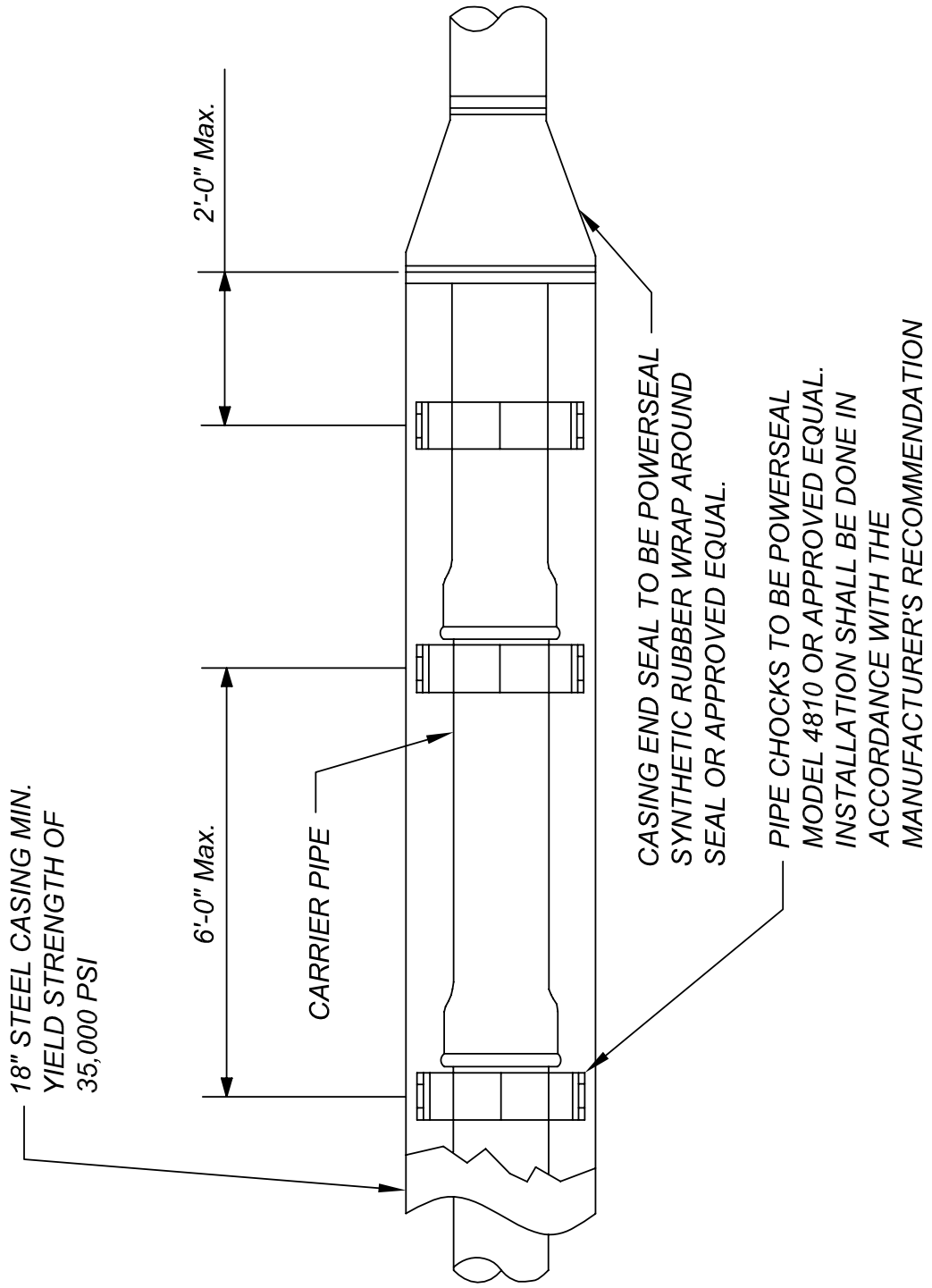
ROV



SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	ROADWAY CONDUIT CROSSING DETAIL GEOMETRY ONLY	APPROVED BY: _____ DATE: 8 SEPTEMBER 2003	REVISED _____ _____ _____	STANDARD DETAIL SD50-2

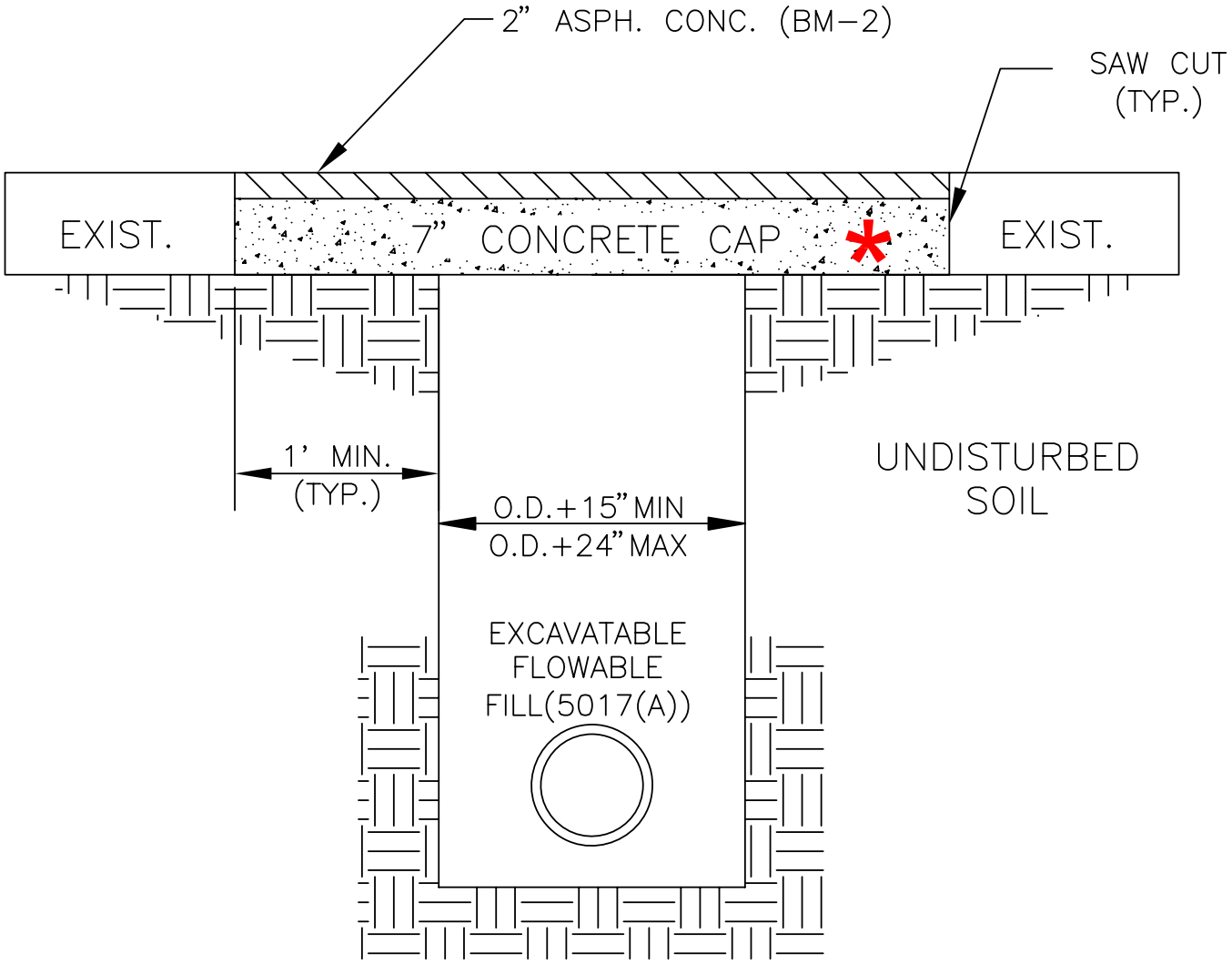
ROV



SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	CASING PIPE DETAIL	APPROVED BY: DATE: 06 AUGUST 2003	REVISED	STANDARD DETAIL SD50-3

SECTION 6000 – RESTORATION OF SURFACE CONSTRUCTION



NOTE:
1. THE 1 FT. OF PAVEMENT ON EITHER SIDE OF ACTUAL TRENCH WIDTH SHALL NOT BE REMOVED UNTIL THE TRENCH HAS BEEN FILLED.

2. FOR DEPTHS TO TOP OF PIPE ≥6 FT. SEE SD 50-1A.

* SEC 2005 HIGH EARLY STRENGTH CONCRETE

SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	STREET PATCH DETAIL	APPROVED BY:	REVISED	STANDARD DETAIL
		DATE: 1 JULY 2003		SD60-1

ROV

CITY OF LANSING

DEPARTMENT OF PUBLIC WORKS

MINIMUM STREET LIGHTING POLE AND BASE DETAILS TYPE "B" AND "C"

APPROVED BY:

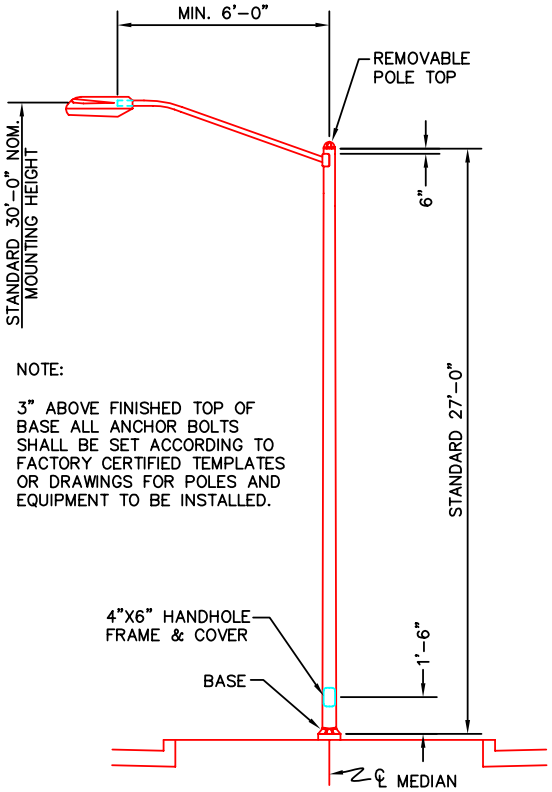
DATE: DEC. 2003

REVISED

STANDARD DETAIL SD80-1

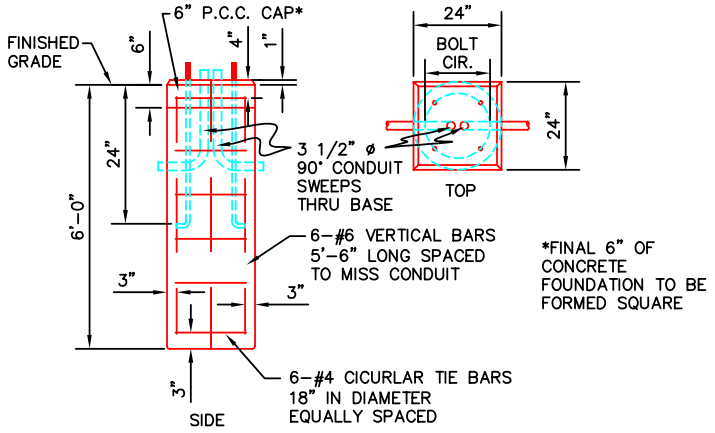
ROB

SCALE: NOT TO SCALE

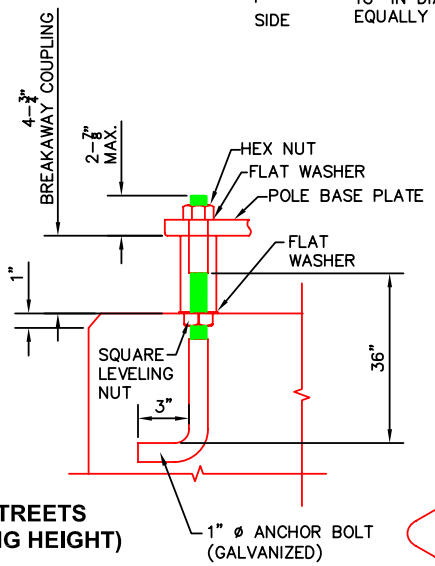


NOTE:

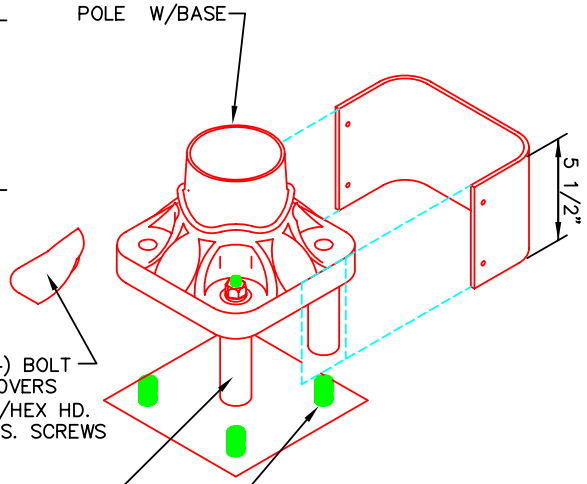
3" ABOVE FINISHED TOP OF BASE ALL ANCHOR BOLTS SHALL BE SET ACCORDING TO FACTORY CERTIFIED TEMPLATES OR DRAWINGS FOR POLES AND EQUIPMENT TO BE INSTALLED.



*FINAL 6" OF CONCRETE FOUNDATION TO BE FORMED SQUARE



150 WATT-H.P.S. LAMP FOR LOCAL & COLLECTOR STREETS
250 WATT-H.P.S. FOR ARTERIAL STREETS (40' MOUNTING HEIGHT)



ALTERNATE POLE/BASE CONFIGURATIONS MAY BE USED WITH APPROVAL OF THE ENGINEER.

SCREWTYPE POLE BASES MAY BE USED ONLY WITH WRITTEN APPROVAL OF THE ENGINEER.

FRANGIBLE BASE APPROVED BY WESTAR SHALL BE USED FOR ALL LIGHTS ON COLLECTOR & ATERIAL STREETS, OR OTHER LOCATIONS REQUIRED BY THE ENGINEER.

BREAKAWAY COUPLING ASSEMBLY–BREAKAWAY COUPLING DEVICE SHALL BE PRECISION PFI 200–1, OR APPROVED EQUAL.

ANCHOR BOLTS/THREADED STUD PROJECTING BETWEEN 2 1/2'–3" ABOVE FOUNDATION (AS PER MANUFACTURER'S RECOMMENDATIONS)

CITY OF LANSING

DEPARTMENT OF PUBLIC WORKS

STREET LIGHTING POLE AND BASE DETAILS TYPE "D"

APPROVED BY:

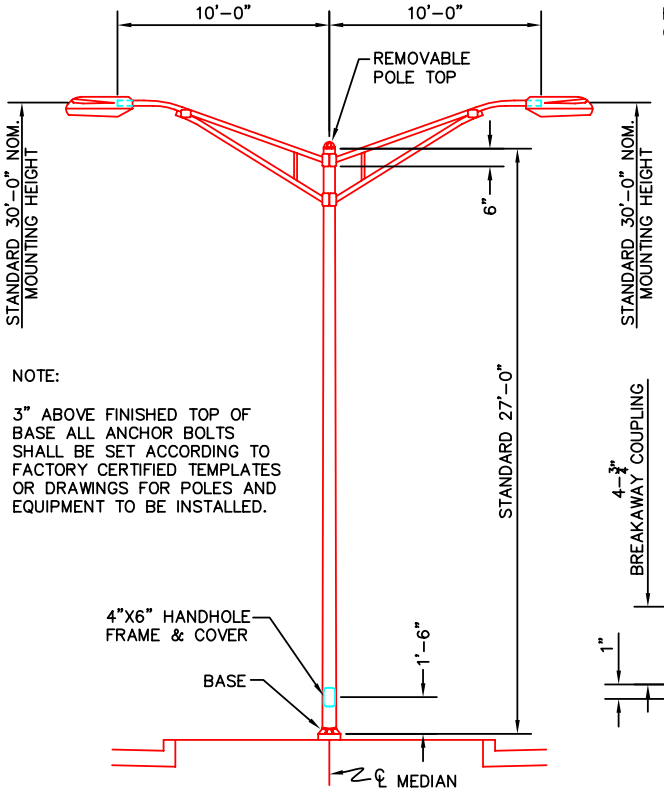
DATE: DEC. 2003

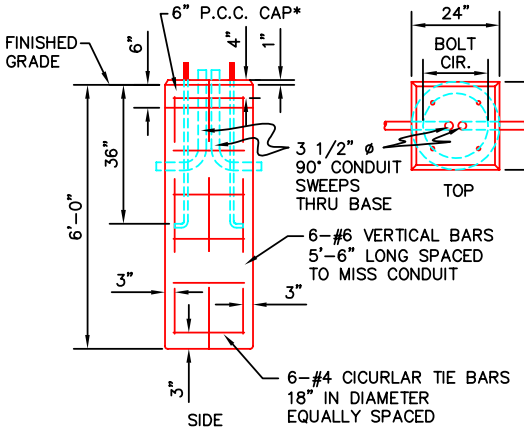
REVISED

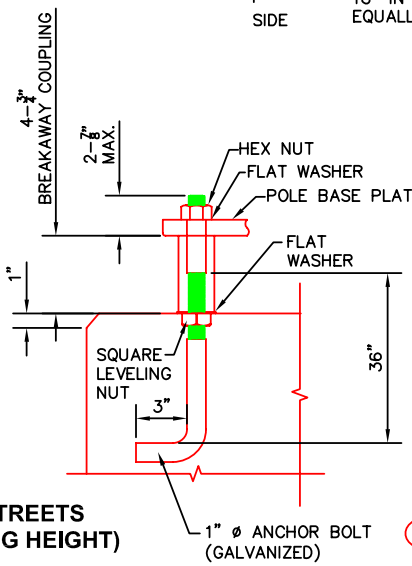
STANDARD DETAIL SD80-2

ROB

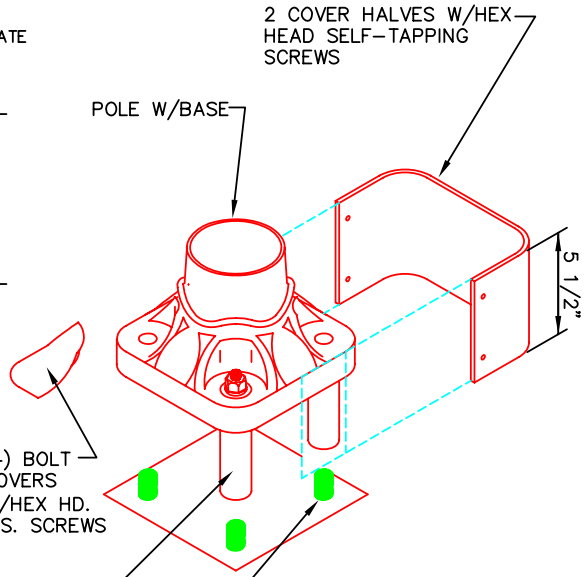
SCALE: NOT TO SCALE







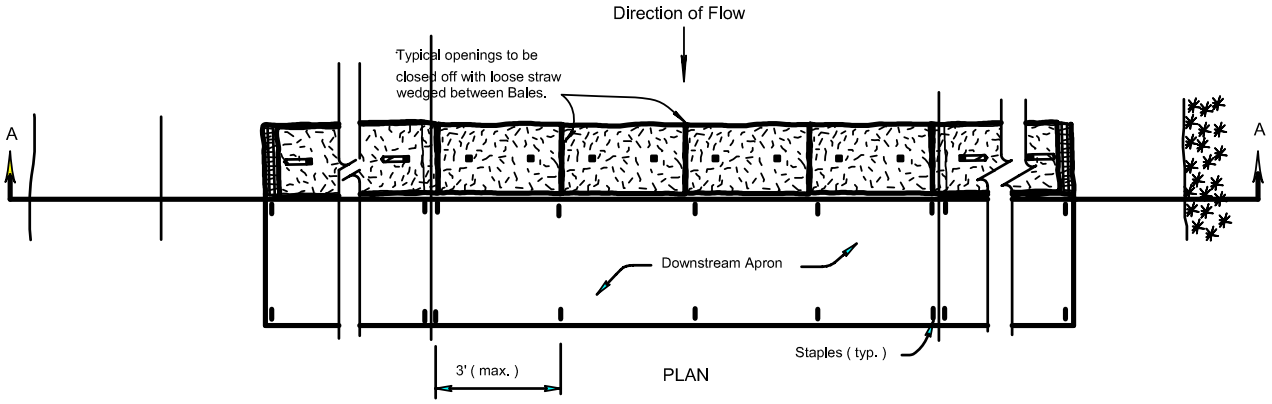
150 WATT-H.P.S. LAMP FOR LOCAL & COLLECTOR STREETS
250 WATT-H.P.S. FOR ARTERIAL STREETS (40' MOUNTING HEIGHT)

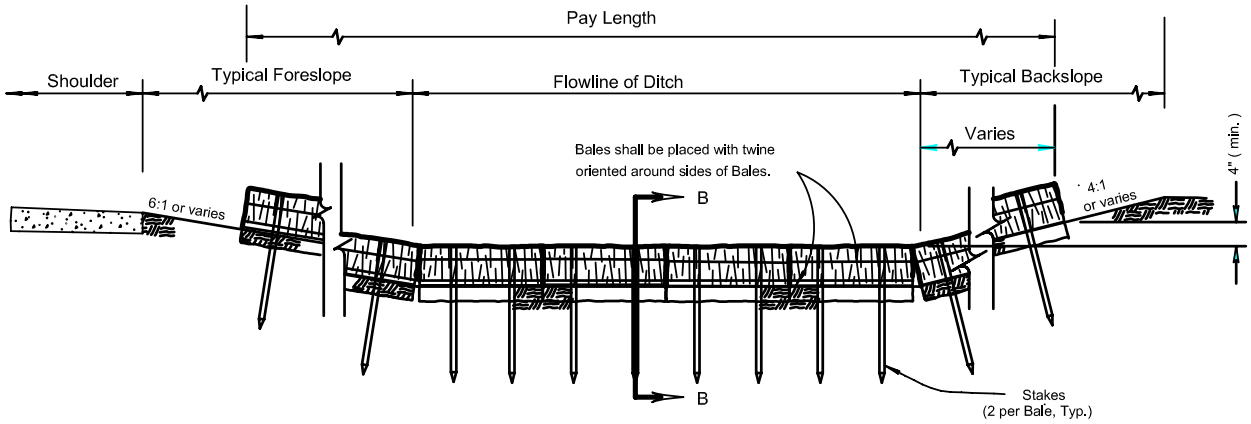


ALTERNATE POLE/BASE CONFIGURATIONS MAY BE USED WITH APPROVAL OF THE ENGINEER.

SCREWTYPE POLE BASES MAY BE USED ONLY WITH WRITTEN APPROVAL OF THE ENGINEER.

FRANGIBLE BASE APPROVED BY WESTAR SHALL BE USED FOR ALL LIGHTS ON COLLECTOR & ATERIAL STREETS, OR OTHER LOCATIONS REQUIRED BY THE ENGINEER.





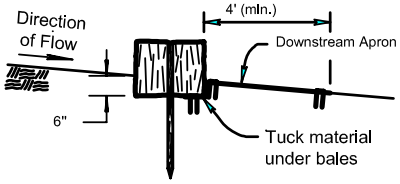
SECTION A-A

STRAW BALE DITCH CHECK

NO SCALE

TEMPORARY DITCH CHECK SPACING	
DITCH Q_ SLOPE (%)	SPACING INTERVAL (FEET)
1.0	200
2.0	100
3.0	65
4.0	50
5.0	40
6.0	33

NOTE: Use this spacing for all I except Rock Ditch Checks.



SECTION B-B

GENERAL NOTES:

1) Use only rock checks in situations where the ditch slope exceeds 6 percent.
3) Ditch checks damaged by Contractor's negligence, including improper maintenance or lack of maintenance, shall be repaired by Contractor.

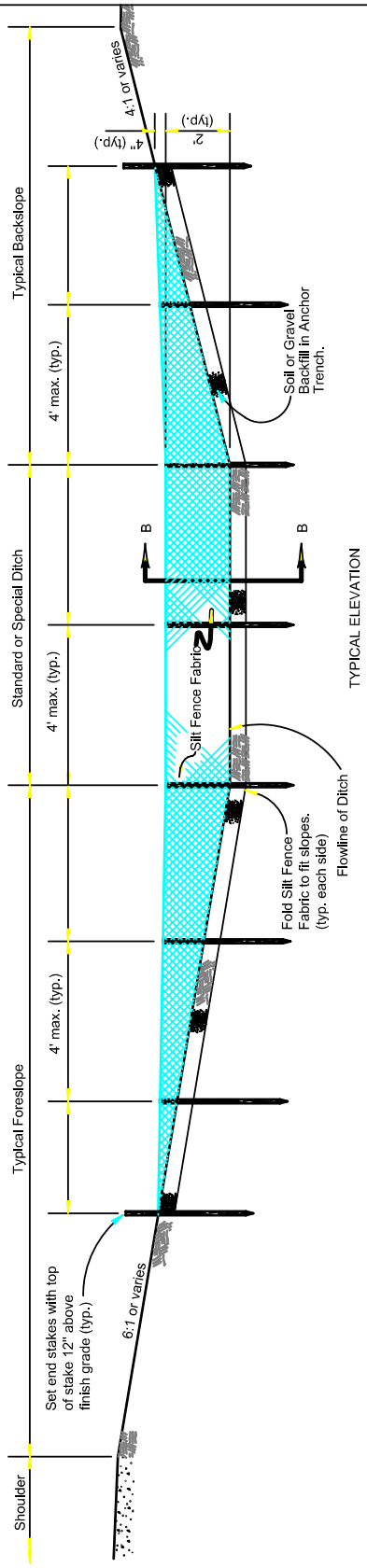
STRAW OR HAY BALE NOTES:

1. Place bales tightly together, with loose straw or hay wedged between bales to close off openings.
2. Wood stakes shall be 2" x 2" (nom.) x 4' (min.) long.
3. Use as many bales as necessary to completely block the ditch and to prevent water from flowing around the ends of the ditch check.
4. Use only twine to bind bales. The use of wire binding is prohibited because it does not readily biodegrade.
5. Use silt fence material as the downstream apron to prevent scour below the ditch check.
6. Wire staples shall be 6" long by 1" wide, minimum.

SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	TEMPORARY EROSION AND POLLUTION CONTROL STRAW BALE DITCH CHECKS	APPROVED BY: DATE: DEC. 2003	REVISED	STANDARD DETAIL SD90-1

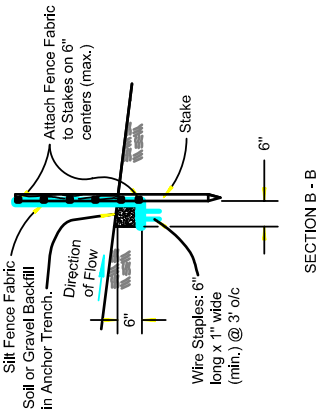
ROB



TYPICAL ELEVATION

SILT FENCE DITCH CHECK

NO SCALE



SECTION B - B

SILT FENCE NOTES:

1. Stakes shall be 4' (min.) long and of one of the following materials:
   a. Hardwood - 1 9/16" x 1 9/16":
   b. Southern Pine (No. 2) - 2 7/16" x 2 7/16":
   c. Steel U, T, L, or C Section - 1.33 lbs. per 1'-0"; or
   d. Synthetic - same strength as wood stakes.
2. Attach fence fabric to stakes with staples, wire or nails.
3. Refer to plan sheets to estimate the length of Silt Fence required.
4. Use support fencing when tributary area is greater than 2.4 acres or when ditch gradient is greater than 2 percent.

SCALE: NOT TO SCALE

CITY OF LANSING

DEPARTMENT OF PUBLIC WORKS

TEMPORARY EROSION AND POLLUTION CONTROL

SILT FENCE DITCH CHECK

APPROVED BY:

DATE: DEC. 2003

REVISED

STANDARD DETAIL

SD90-2

ROB

ROCK DITCH CHECK NOTES:

1. Rock shall be clean aggregate, D50 = 6".
2. Place rock in such manner that water will flow over ditch check, not around ditch check.
3. Do not use rock ditch checks in clear zone.

SECTION A - A

TYPICAL ELEVATION

ROCK DITCH CHECK

NO SCALE

TEMPORARY ROCK DITCH CHECK SPACING	
DITCH Q, SLOPE (%)	SPACING INTERVAL (FEET)
5.0	60
6.0	50
7.0	43
8.0	36
9.0	33
10.0	29

NOTE: Use this spacing only for Rock Ditch Checks.

SCALE: NOT TO SCALE

CITY OF LANSING

DEPARTMENT OF PUBLIC WORKS

TEMPORARY EROSION AND POLLUTION CONTROL

ROCK DITCH CHECK

APPROVED BY: _____

DATE: DEC. 2003

REVISED _____ _____ _____

STANDARD DETAIL

SD90-3

ROB

GENERAL NOTES

1) The slope barriers shall be placed along contour lines, with a short section turned upgrade at each end of the barrier.
2) At culverts, the Straw Bales or Silt Fence shall be placed over the culvert, not through the streambed flowline.
3) Barriers damaged by Contractor's negligance, including improper maintenance or lack of maintenance, shall be repaired immediately by Contractor.

INSTALLATION NOTES

STRAW BALES:

1. Place bales tightly together, with loose straw wedged between bales to close off openings.
2. Wood stakes shall be 2" x 2" (nom.) x 4' (min.) long.
3. Refer to plans sheets to estimate the length of bales required.
4. Use only twine to bind bales. The use of wire binding is prohibited because it does not readily biodegrade.

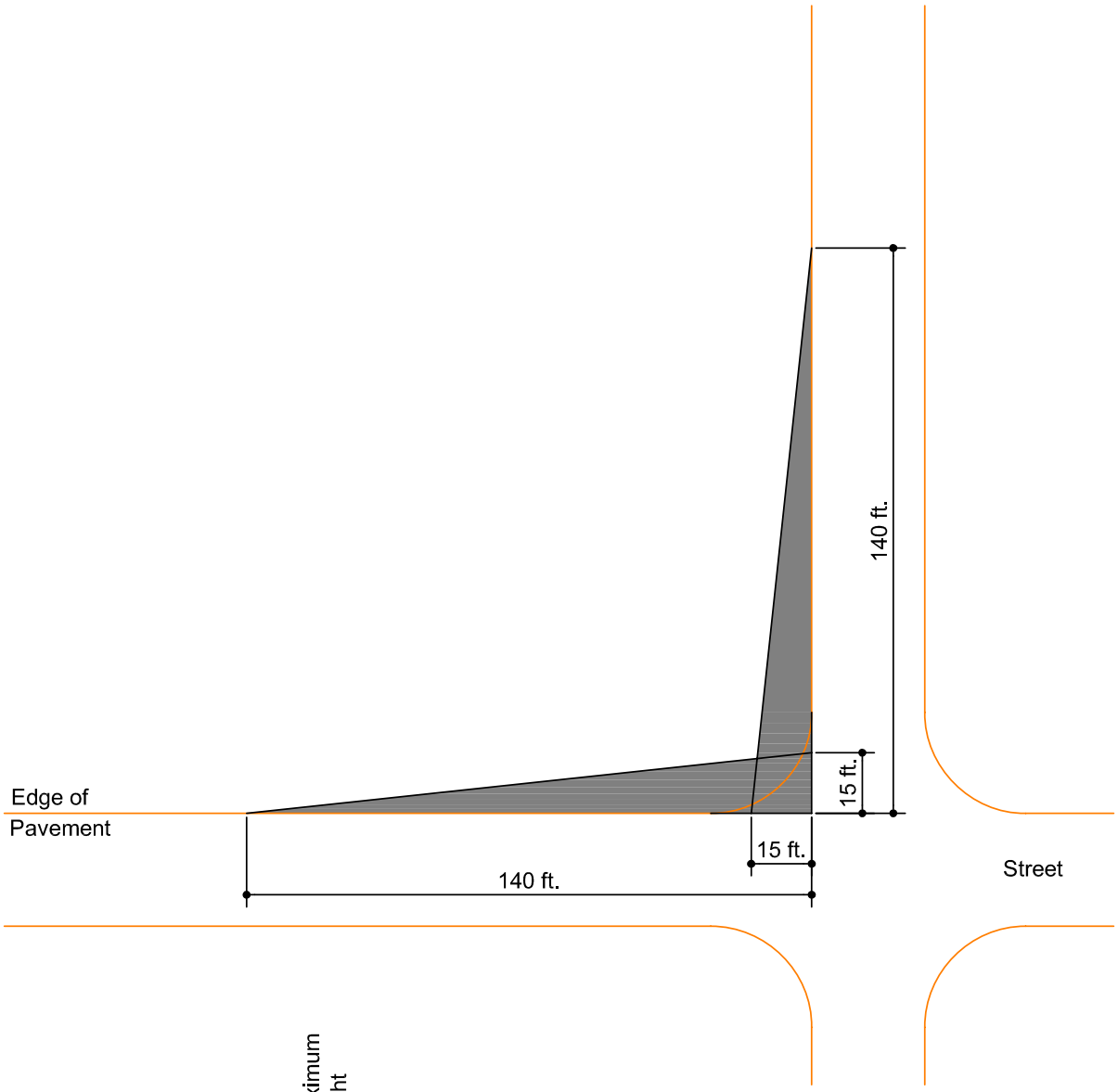
SILT FENCE:

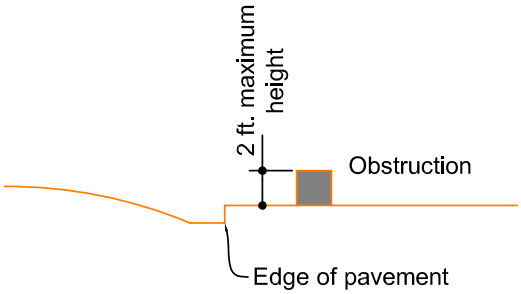
1. Stakes shall be 4' (min.) long and of one of the following materials:
   a. Hardwood - 1 $\frac{3}{16}$" X 1 $\frac{3}{16}$"
   b. Southern Pine (No. 2) - 2 $\frac{9}{16}$" X 2 $\frac{9}{16}$"
   c. Steel U, T, L, or C Section - 1.33 lbs. per 1'-0"; or
   d. Synthetic - same strength as wood stakes.
2. Attach fence fabric to stakes with staples, wire or nails.
3. Refer to plan sheets to estimate the length of Silt Fence required.

SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	TEMPORARY EROSION AND POLLUTION CONTROL SILT FENCE SLOPE BARRIER AND STRAW BALE SLOPE BARRIER	APPROVED BY: _____ DATE: DEC. 2003	REVISED _____ _____ _____	STANDARD DETAIL SD90-4

ROB





SCALE: NOT TO SCALE

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	SIGHT DISTANCE TRIANGLE	APPROVED BY: _____ DATE: FEB. 2004	REVISED _____ _____ _____	STANDARD DETAIL DA3-3

ROB

CIRCULAR CULVERT PIPE

DIAMETER (inches)	GAUGE		ANNULAR CORRUGATIONS (inches)
	Not under road	Under road*	
8	16 ga.	16 ga.	1–1/2 x ¼
10	16 ga.	16 ga.	1–1/2 x ¼
12	16 ga.	16 ga.	2–2/3 x ½
15	16 ga.	16 ga.	2–2/3 x ½
18	16 ga.	16 ga.	2–2/3 x ½
21	16 ga.	16 ga.	2–2/3 x ½
24	16 ga.	16 ga.	2–2/3 x ½
30	16 ga.	14 ga.	2–2/3 x ½
36	16 ga.	14 ga.	2–2/3 x ½
42	16 ga.	14 ga.	3 x 1
48	16 ga.	14 ga.	3 x 1
54	16 ga.	14 ga.	3 x 1
60	16 ga.	14 ga.	3 x 1
66	16 ga.	14 ga.	3 x 1
72	16 ga.	14 ga.	3 x 1
78	14 ga.	14 ga.	3 x 1
84	14 ga.	12 ga.	3 x 1
90	14 ga.	12 ga.	3 x 1
96	14 ga.	12 ga.	3 x 1
102	12 ga.	12 ga.	3 x 1
108	12 ga.	12 ga.	3 x 1
114	12 ga.	12 ga.	3 x 1
120	12 ga.	12 ga.	3 x 1

* Reinforced concrete pipe or reinforced box culvert required under street in new construction.

CITY OF LANSING DEPARTMENT OF PUBLIC WORKS	MINIMUM GAGE REQUIREMENTS (CIRCULAR C.M.P. CULVERT PIPE)	APPROVED BY: DATE: NOV. 2003	REVISED 10-18-05	STANDARD DETAIL DA4-9 ROB

ARCH CULVERT PIPE

EQUIVALENT ROUND DIAMETER (inches)	SPAN (inches)	RISE (inches)	GAUGE		ANNULAR CORRUGATIONS (inches)
			Not under road (inches)	Under road* (inches)	
15	17	13	16ga.	16ga.	2–2/3 x ½
18	21	15	16ga.	16ga.	2–2/3 x ½
21	24	18	16ga.	16ga.	2–2/3 x ½
24	28	20	16ga.	16ga.	2–2/3 x ½
30	35	24	14ga.	14ga.	2–2/3 x ½
36	42	29	14ga.	14ga.	2–2/3 x ½
42	46	36	14ga.	14ga.	3 x 1
48	53	41	14ga.	14ga.	3 x 1
54	60	46	14ga.	14ga.	3 x 1
60	66	51	14ga.	14ga.	3 x 1
66	73	55	14ga.	12ga.	3 x 1
72	81	59	14ga.	12ga.	3 x 1
78	87	63	14ga.	12ga.	3 x 1
84	95	67	14ga.	12ga.	3 x 1
90	103	71	14ga.	12ga.	3 x 1
96	112	75	12ga.	12ga.	3 x 1
102	117	79	12ga.	12ga.	3 x 1
108	128	83	12ga.	10ga.	3 x 1
114	137	87	12ga.	10ga.	3 x 1
120	142	91	12ga.	10ga.	3 x 1

Span and rise dimensions are industry standards. However, span and rise dimensions can be varied within AASHTO tolerances to allow additional cover at critical fill height installations.

It should be noted that when using arch culvert pipe, the designer should take into account the reduction in hydraulic capacity when compared to that of circular pipe.

* Reinforced concrete pipe or reinforced box culvert required under street in new construction.

CITY OF LANSING
DEPARTMENT OF PUBLIC WORKS

MINIMUM GAGE REQUIREMENTS (ARCH C.M.P. CULVERT PIPE)

APPROVED BY: _____

DATE: NOV. 2003

REVISED 10-18-05

STANDARD DETAIL

DA4-10

ROB