

CITY OF DETROIT
DEPARTMENT OF PUBLIC WORKS
CITY ENGINEERING DIVISION



STREET AND ALLEY
STANDARD PLANS

PREPARED BY
BUREAU OF STREETS

MARCH, 2009

CITY OF DETROIT
DEPARTMENT OF PUBLIC WORKS
CITY ENGINEERING DIVISION
BUREAU OF STREETS

STREETS
DETAIL PAVING AND DRAINAGE STANDARDS

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CITY OF DETROIT
DEPARTMENT OF PUBLIC WORKS
CITY ENGINEERING DIVISION
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STREETS
DETAIL PAVING AND DRAINAGE STANDARDS

TABLE OF CONTENTS SHEET NO. 2 OF 2

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REV. K.S.M.
DRAWN BY:
M.F.S.
CHECKED BY:

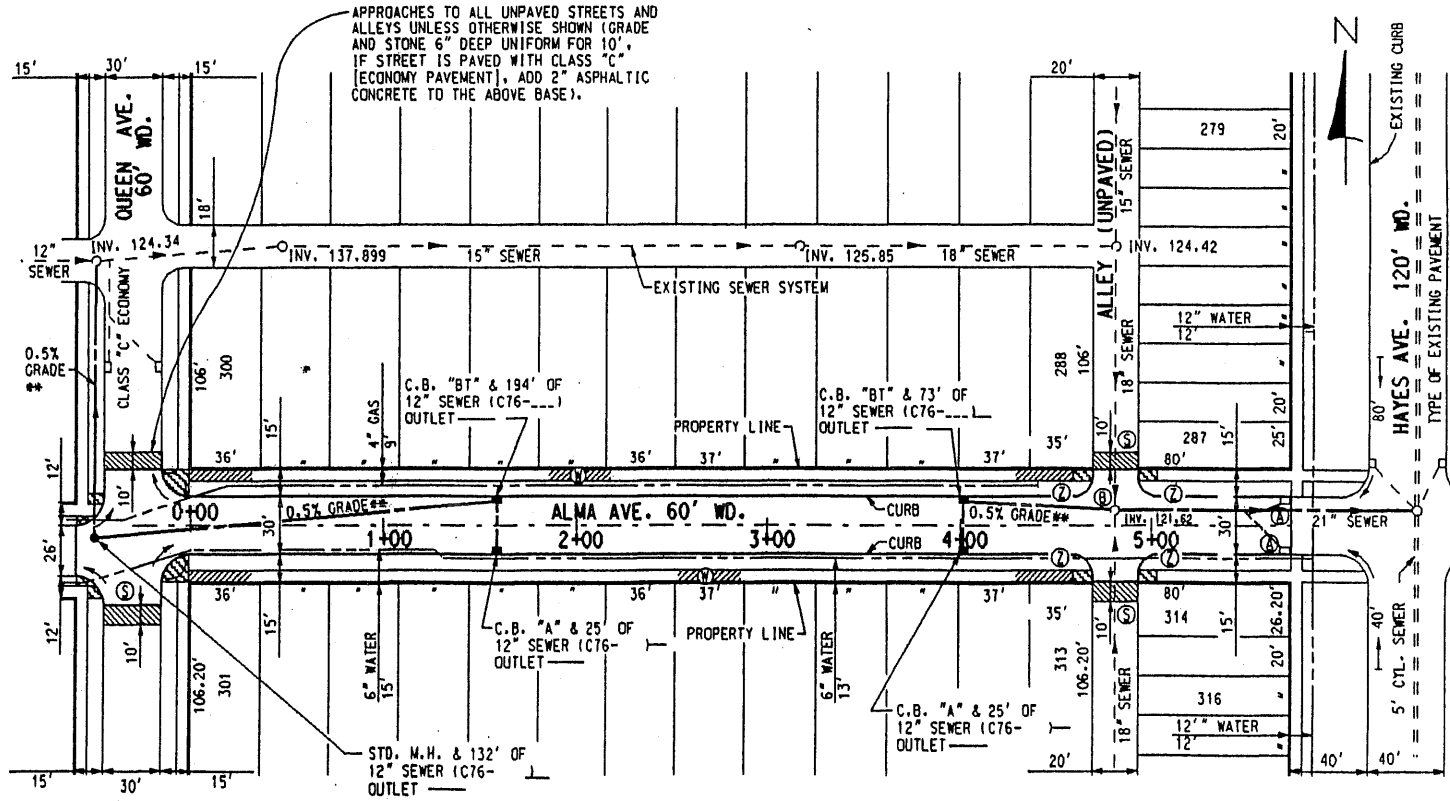
APPROVED
Dorinda Hayden
ENGINEER OF STREETS
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION
STANDARD PLAN FOR
TYPICAL PLAN AND PROFILE
FOR STREET PAVING
DRAWING NO. C-4378
DETAIL STANDARD NO. 1 OF 2

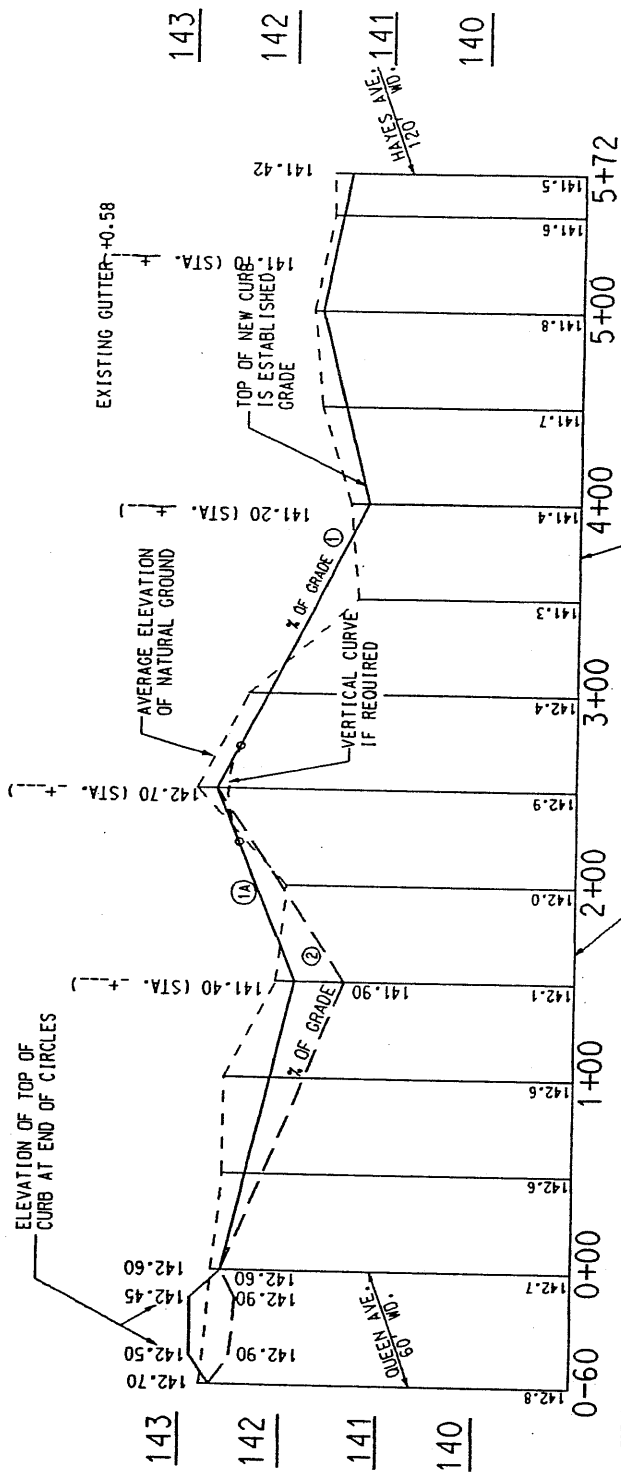
REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002

THIS PLAN, WHICH WAS ORIGINALLY PREPARED AS A GUIDELINE FOR ASSESSED PAVING, EXPLAINS MOST OF THE CONCRETE PAVING PLANS THAT ARE IN OUR FILES. ANY VARIATIONS REFLECT LATER REVISIONS TO POLICIES AND STANDARDS. SEE NOTES FOR MODIFICATIONS. THIS BASIC PLAN CAN STILL BE USED TO PREPARE PLANS FOR SIMILAR PROJECTS.

**SEWER GRADE SHALL BE 0.5% UNLESS OTHERWISE SHOWN ON THE PLANS.



PLAN
SCALE: 1"=100'



CONSTRUCTION SYMBOLS

○	EXISTING SEWER MANHOLE
●	PROPOSED SEWER MANHOLE
□	EXISTING CATCH BASIN
■	PROPOSED CATCH BASIN AND SEWER
Ⓐ	ADJUST EXISTING CATCH BASIN
Ⓑ	ADJUST EXISTING MANHOLE OR HANDHOLE
Ⓒ	CONSTRUCT CATCH BASIN
Ⓓ	CONSTRUCT MANHOLE
Ⓔ	ABANDON EXISTING CATCH BASIN
Ⓕ	STONING AND GRADING
Ⓖ	CONSTRUCT STANDARD 4" CONCRETE SIDEWALK
Ⓗ	CONSTRUCT STANDARD 6" CONCRETE SIDEWALK
Ⓙ	DRAINAGE FLOW IN PAVED STREETS OR SET GRADES AND DISTANCE TO GRADE SUMMIT OR CATCH BASIN

PROFILE
 HOR. : 1" = 100'
 VERT. : 1" = 10'

TOP OF CURB PROFILES
 WHEN ELEVATIONS ARE THE SAME FOR BOTH SIDES, DRAW ONE PROFILE AS SHOWN AT ①. WHEN ELEVATIONS ARE DIFFERENT ON BOTH SIDES, THEN DRAW TWO PROFILES AS SHOWN AT ① FOR NEAR SIDE OF PLAN AND AS SHOWN AT ② FOR FAR SIDE.

THESE FIGURES DENOTE AVERAGE ELEVATION OF NATURAL GRADE OF STREET AS REDUCED FROM SURVEY BOOK

- NOTES:**
- ALIGNMENT: THE APPROVAL OF THE DEPARTMENT OF TRANSPORTATION IS REQUIRED FOR PROPOSED PAVEMENT WIDTHS, RADII, AND OTHER GEOMETRICAL FEATURES.
 - SEWERS: THE APPROVAL OF THE WATER AND SEWERAGE DEPARTMENT IS REQUIRED FOR PROPOSED SEWER LINES, CATCH BASINS, MANHOLES AND CONNECTIONS.
 - INDICATE TYPE OF NEW PAVEMENT WITH A TYPICAL PAVEMENT SECTION.
 - SIDEWALKS ARE 4" THICK EXCEPT AT CERTAIN INTERSECTIONS, ISLAND TURN AROUND AND OTHER DESIGNATED PLACES SHOWN ON THE PLANS WHERE 6" THICKNESS WILL BE REQUIRED. SIDEWALK RAMPS ARE REQUIRED AT ALL STREET INTERSECTIONS AND STEP DOWN DRIVES. SHOW TYPE ON PLAN IN ACCORDANCE WITH THE PAVING STANDARDS. *
 - PROFILES: ABSOLUTE MINIMUM GRADE 0.13% DESIRABLE MINIMUM 0.40% MINIMUM GRADE AROUND STREET RETURN IS ONE THIRD PERCENT OF THE RADIUS LENGTH. SHOW DIRECTION OF WATER FLOW BY MEANS OF AN ARROW. NOT MORE THAN 60' OF STREET DRAINAGE SHALL FLOW AROUND STREET RETURN. A CATCH BASIN SHOULD BE PROPOSED FOR DISTANCES EXCEEDING 60' AROUND RETURN.
 - ALL STREET RETURN RADII ARE 15' AND ALLEY RETURNS ARE 10' UNLESS OTHERWISE SHOWN ON THE PLANS.
 - VERTICAL CURVES: CHECK DESIGNERS TABLES * FOR DETERMINATION.
 - CATCH BASINS AND MANHOLES: FOR INFORMATION ON TYPES, CONNECTIONS, TRAPS, SUMPS, AND OTHER DESIGN DATA USE GUIDELINES * PREPARED BY THE SEWER DIVISION OF THE WATER AND SEWERAGE DEPARTMENT AND THE PAVING STANDARDS. *
- * AVAILABLE AT THE BUREAU OF STREETS.

CITY OF DETROIT
 CITY ENGINEERING DIVISION. D.P.W.
 STANDARD PLAN FOR

TYPICAL PLAN AND PROFILE
FOR STREET PAVING

03/07/98 PLAN DATE	DRAWING NO. 1	DETAIL STANDARD NO. C-4378	SHEET 2 OF 2
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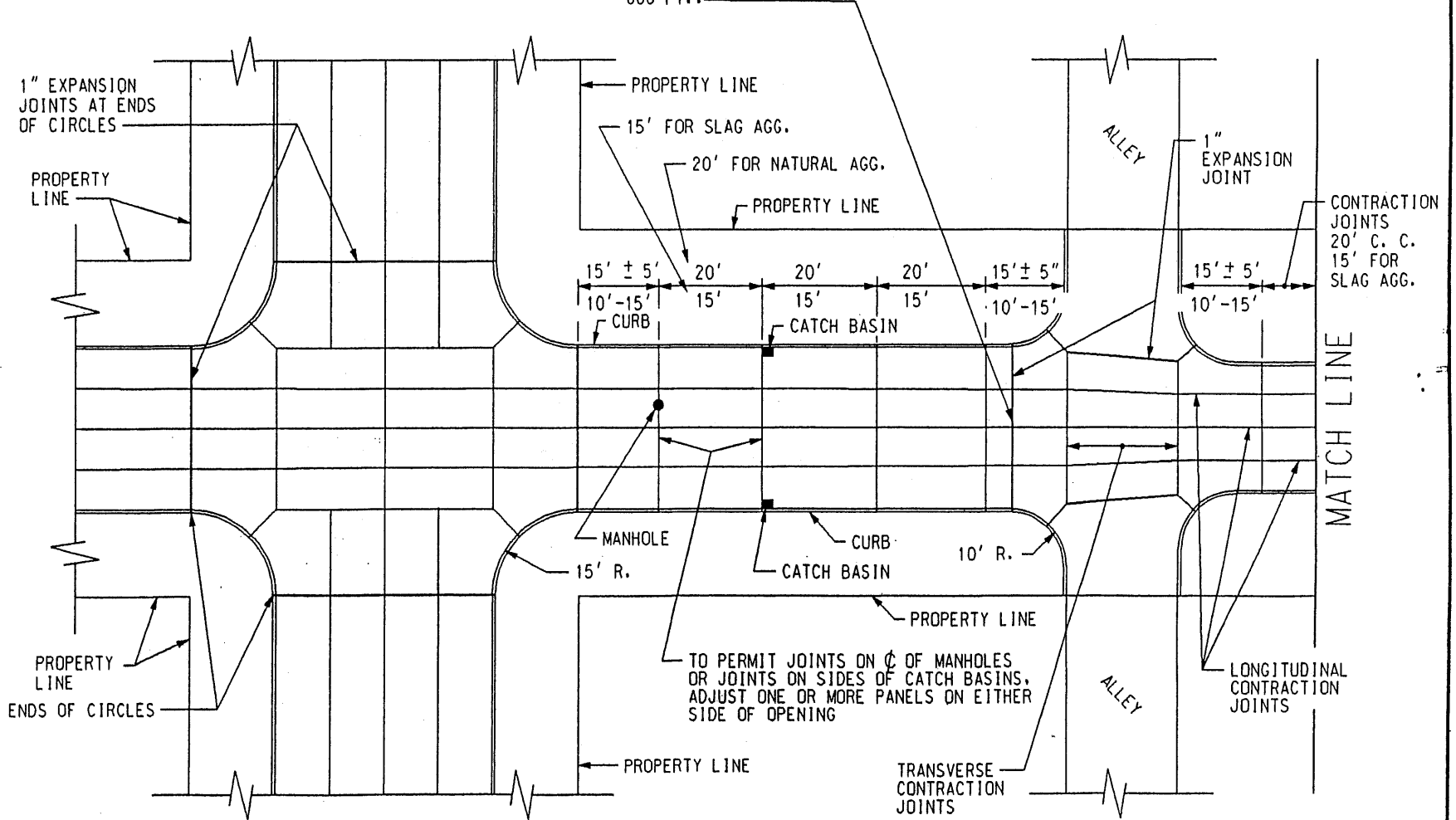
PREPARED BY
 BUREAU OF STREETS
 AND HIGHWAYS
 M.F.S.
 CHECKED BY:
 T.E.V. K.S.M.
 DRAWN BY:
 APPROVED
 T. J. HANCOCK
 ENGINEER OF STREETS
 HEAD ENGINEER
 CITY ENGINEER

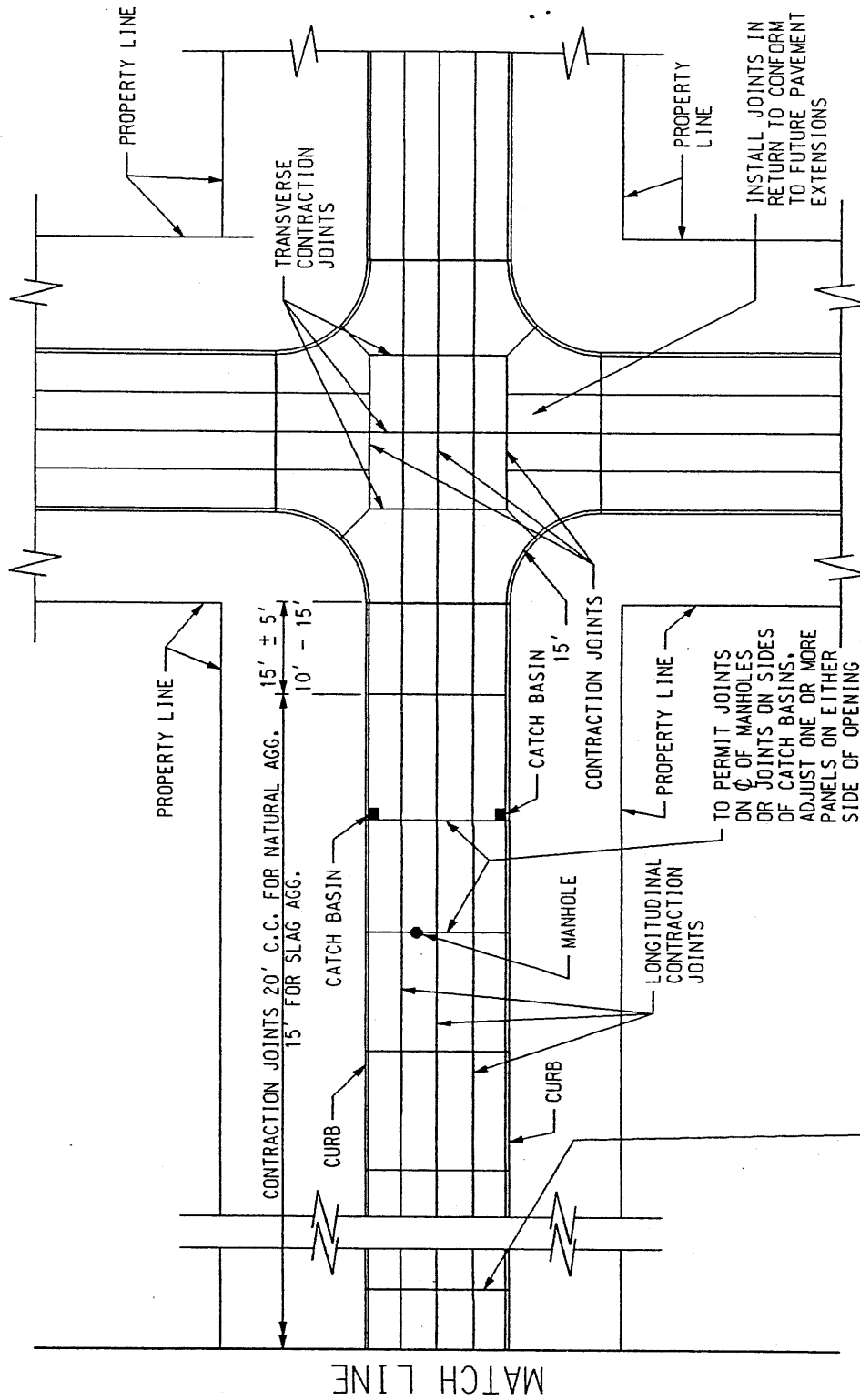
CITY OF DETROIT
 CITY ENGINEERING DIVISION, D.P.W.
 STANDARD PLAN FOR
 TYPICAL JOINT LAYOUT FOR
 NON-REINFORCED CONCRETE PAVEMENT
 03/07/98
 PLAN DATE
 2
 DRAWING NO.
 C-4379
 DETAIL STANDARD NO.
 SHEET
 1 OF 2

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

STANDARD RADII ARE 15' FOR STREETS AND 10' FOR ALLEYS UNLESS OTHERWISE SHOWN ON PLANS.

PLACE EXPANSION JOINTS AT THE ENDS OF CIRCLES AT STREET INTERSECTION ONLY WHERE BLOCK LENGTH IS 600 FT. OR LESS AND A MINIMUM NUMBER OF INTER-MEDIATE EXPANSION JOINTS AT EQUAL INTERVALS NOT TO EXCEED 600 FT. APART WHERE BLOCK LENGTH IS OVER 600 FT..



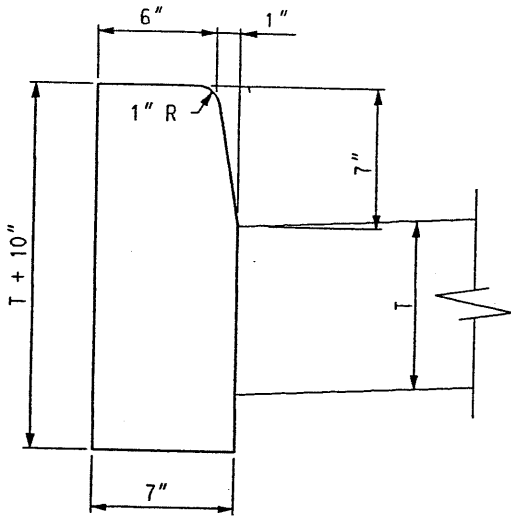


REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

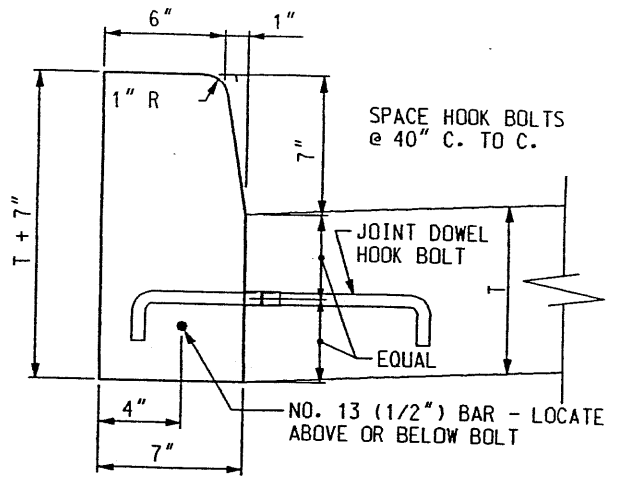
CITY OF DETROIT
 CITY ENGINEERING DIVISION. D.P.W.
 STANDARD PLAN FOR

TYPICAL JOINT LAYOUT FOR
 NONREINFORCED CONCRETE PAVEMENT

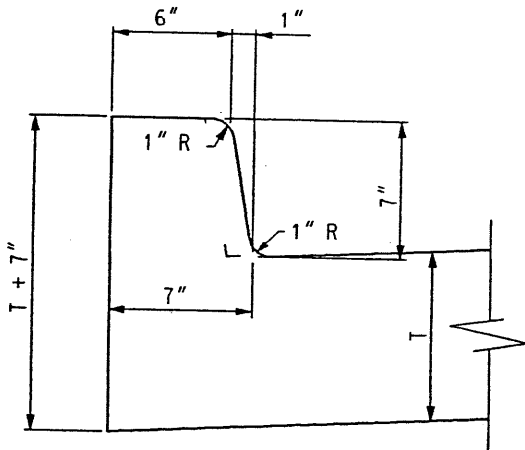
03/07/98 PLAN DATE	DRAWING NO. 2	DETAIL STANDARD NO. C-4379	SHEET 2 OF 2
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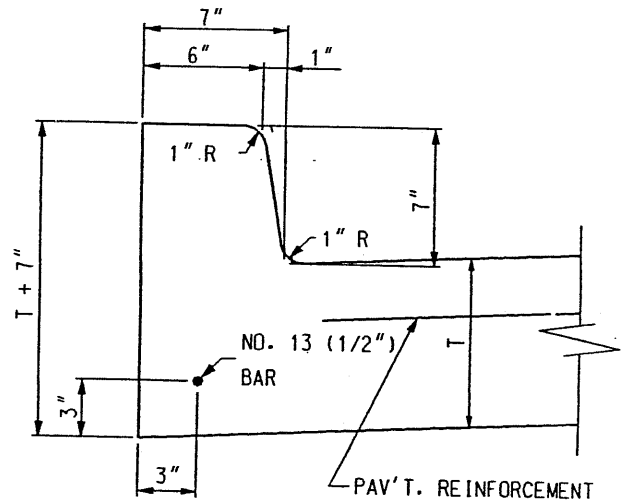
SEPARATE CURB
TYPE II



SEPARATE CURB - REINFORCED
TYPE II R



INTEGRAL CURB
TYPE III



INTEGRAL CURB - REINFORCED
TYPE III R

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



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CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

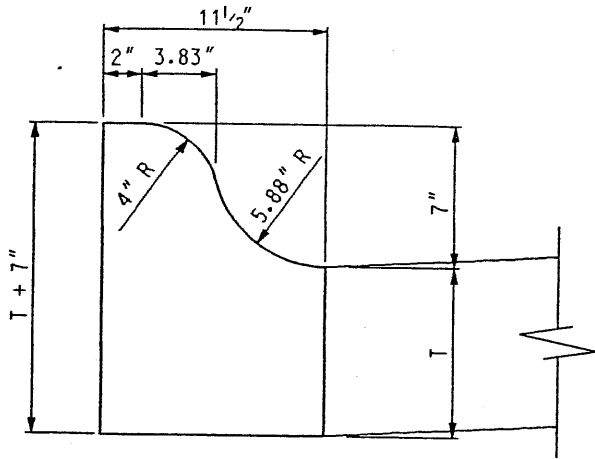
STANDARD CURB DETAILS

03/07/98
PLAN DATE

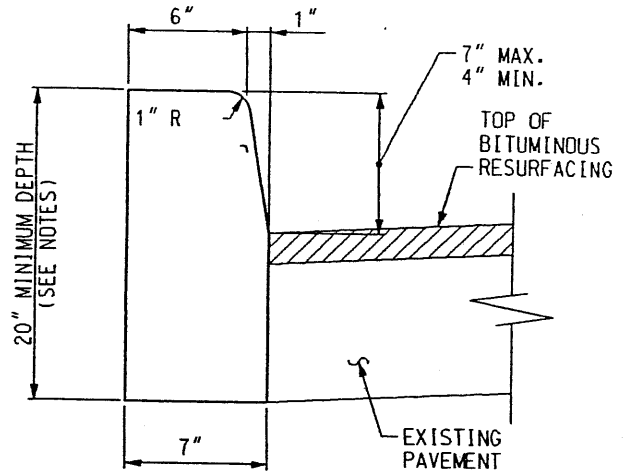
DRAWING NO.
3

DETAIL STANDARD NO.
C-4380

SHEET
1 OF 4



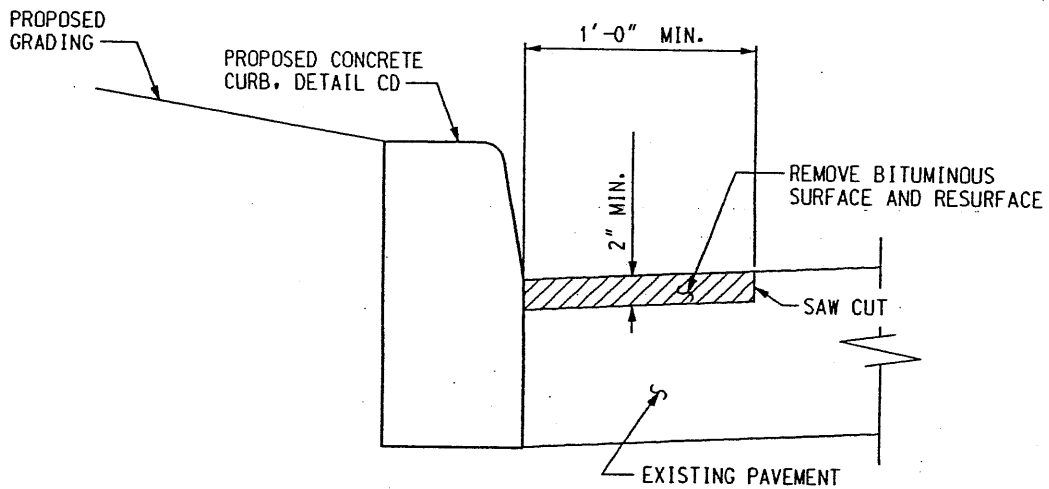
INTEGRAL ROLL CURB
TYPE IV



NOTES:

1. DEPTH OF CURB SHALL BE 20" UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
2. USE WHEN REPLACING CURBS ON EXISTING BITUMINOUS PAVEMENTS TO BE RESURFACED.

CONCRETE CURB, DETAIL CD



THIS DETAIL SHALL BE USED AT LOCATIONS WHERE PROPOSED CURB IS CONSTRUCTED ADJACENT TO EXISTING BITUMINOUS PAVEMENT NOT TO BE RESURFACED.

BITUMINOUS PATCHING AT
PROPOSED CURB EDGE

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

STANDARD CURB DETAILS

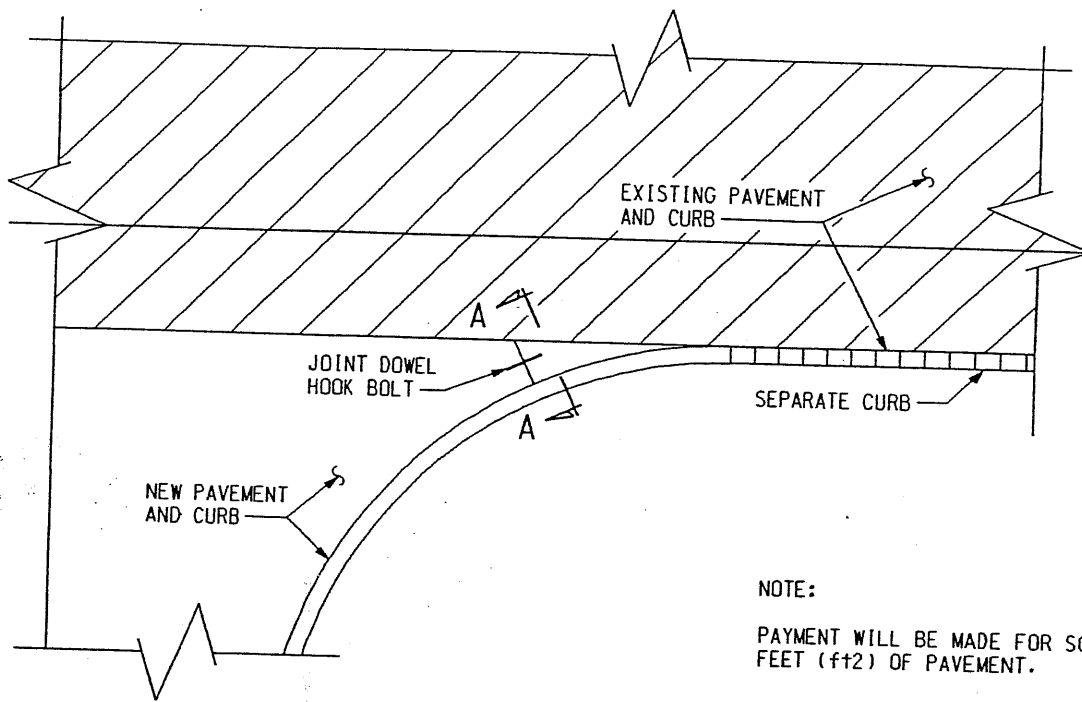
REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

03/07/98
PLAN DATE

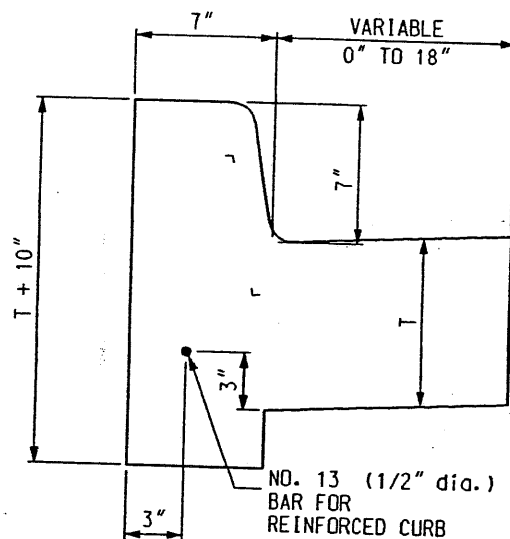
DRAWING NO.
3

DETAIL STANDARD NO.
C-4380

SHEET
2 OF 4



PLAN



SECTION A-A

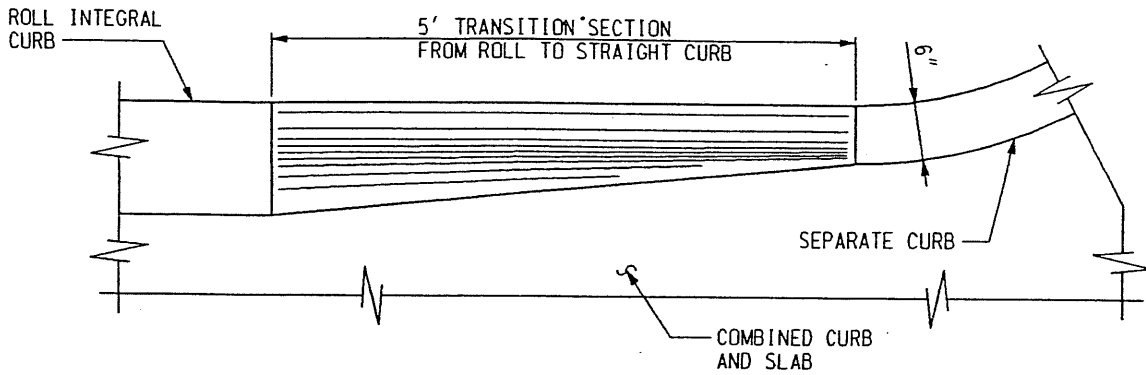
DETAIL SHOWING TREATMENT AT CURB RETURNS

CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR

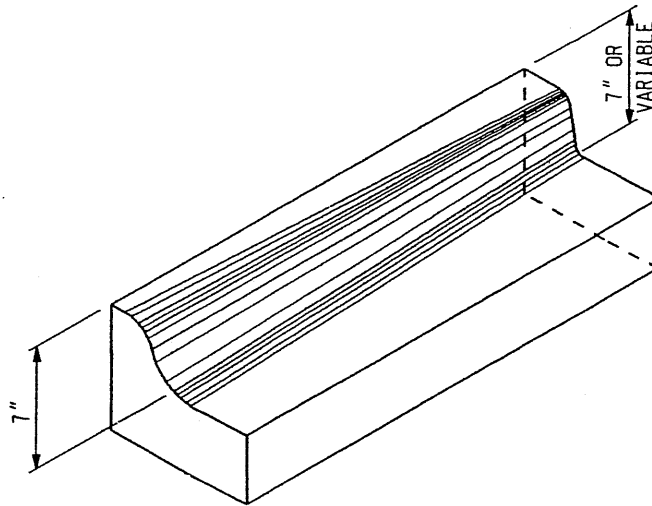
STANDARD CURB DETAILS

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

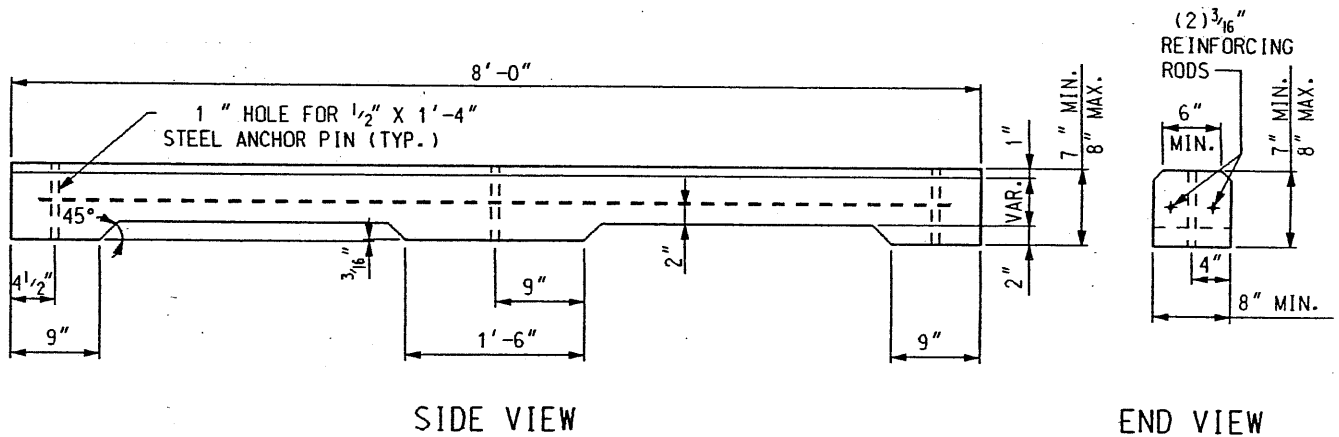
03/07/98 PLAN DATE	DRAWING NO. 3	DETAIL STANDARD NO. C-4380	SHEET 3 OF 4
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PLAN



TRANSITION DETAILS



SIDE VIEW

END VIEW

CONCRETE BUMPER CURB

NOTE:
ALL DIMENSIONS ARE IN INCHES (")
UNLESS OTHERWISE NOTED.

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

STANDARD CURB DETAILS

PREPARED BY
BUREAU OF STREETS



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HEAD ENGINEER
Jasper J. J. J.

APPROVED
FORUM BAKER
ENGINEER OF STREETS

03/07/98

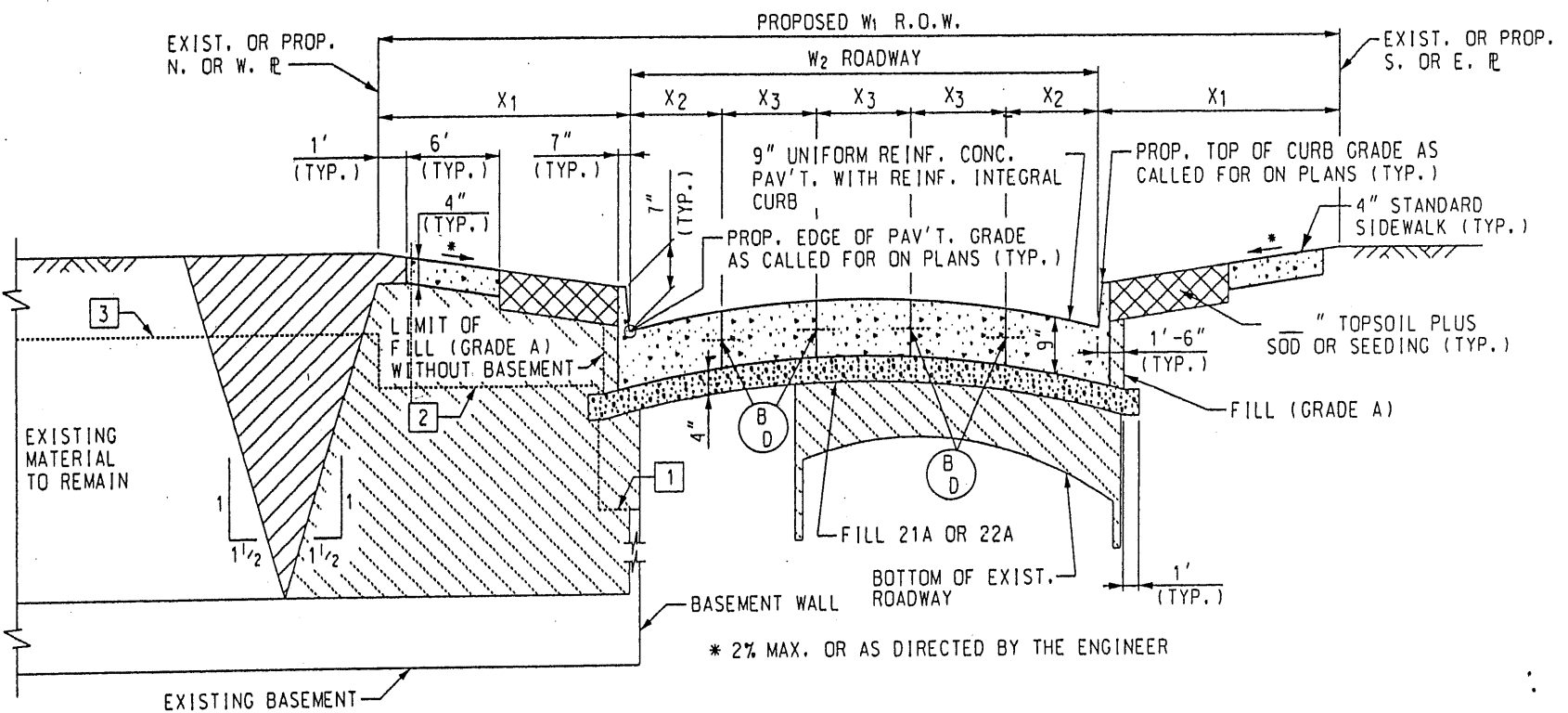
DRAWING NO. 1

DETAIL STANDARD NO. 1201

SHEET

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
TYPICAL PAVEMENT CROSS SECTION
FOR STREET CONSTRUCTION

REVISIONS		DESCRIPTION	Drawn	Checkd	App'd	Date
A	METRIC TO ENGLISH UNIT SYSTEM		KSM	M.S.	N.H.	12/02
B	* SIDEWALK CROSS SLOPE		KSM	M.S.	J.J.	1/07



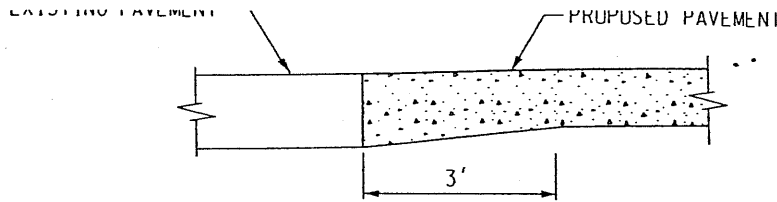
TYPICAL PAVEMENT SECTION

PAVEMENT SECTION LEGEND

CITY DESIGNATION	M.D.O.T. DESIGNATION
FILL 21A OR 22A	Aggregate Base, — "
FILL (GRADE A)	Granular Material, CI II
" TOPSOIL PLUS SOD OR SEEDING	Topsoil Surface, Furn.LM Plus Sodding, Or Seeding, Mixture Tuf
FILL - SELECTED EXCAVATED MATERIAL	Embankment, CIP
PROPOSED CONCRETE * * (4" Standard Sidewalk)	Proposed Concrete * *(Sidewalk, Concrete, 4")

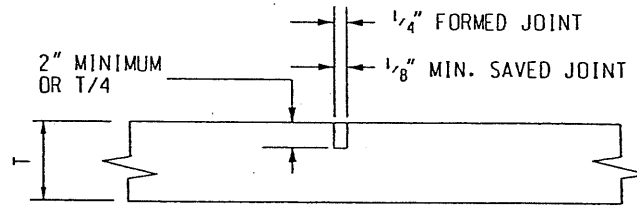
JOINT LEGEND

- LONGITUDINAL BULKHEAD JOINT, ACCORDING TO DETAIL STANDARD NO. C-4943 (M.D.O.T. STANDARD DRAWING R-41-E)
- LONGITUDINAL LANE TIE JOINT WITH TIE BAR, ACCORDING TO DETAIL STANDARD NO. C-4943 (M.D.O.T. STANDARD DRAWING R-41-E)
- OPTIONAL, B OR D JOINT



PROVIDE THIS THICKENED EDGE WHERE PROPOSED PAVEMENT MEETS EXISTING PAVEMENT

DETAIL OF THICKENED EDGE



CONTRACTION JOINT

BASEMENT WALL REMOVAL

CITY CRITERIA	M.D.O.T. CRITERIA
<p>1 REMOVE WALLS 1'-0" BELOW BOTTOM OF PROPOSED PAVEMENT AND 2'-0" BEHIND FACE OF CURB.</p>	<p>REMOVE WALLS 3'-0" BELOW LOWEST POINT OF PROPOSED PAVEMENT SURFACE AND 2'-0" BEYOND FACE OF CURB.</p>
<p>2 REMOVE WALLS 1'-0" MINIMUM BELOW BOTTOM OF PROPOSED SIDEWALK.</p>	<p>REMOVE WALLS TO BOTTOM OF PROPOSED PAVEMENT SLAB IN BERM AREA.</p>
<p>3 SAME AS 2. (OR 1'-0" BELOW GROUND SURFACE WHICHEVER IS DEEPER).</p>	<p>REMOVE WALLS TO 1'-0" BELOW PROPOSED SURFACE ELEVATIONS.</p>

NOTES:

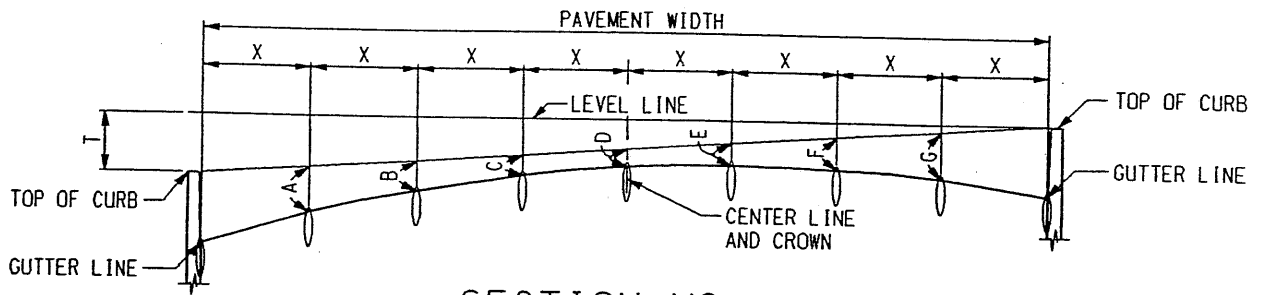
1. VARIABLE WIDTHS:

- W₁ = PROPOSED RIGHT-OF-WAY
- W₂ = PROPOSED ROADWAY
- X₁ = PROPOSED MARGIN
- X₂ = PARKING LANE
- X₃ = MOVING LANE

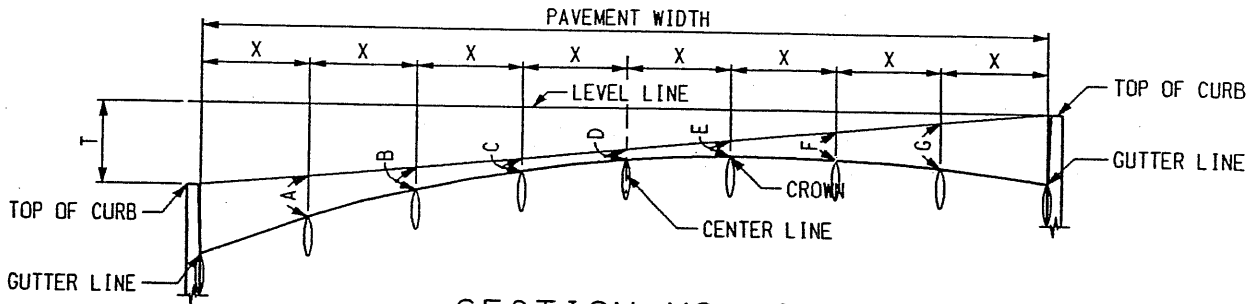
2. NOMENCLATURE ON THE TYPICAL SECTION IS FOR CITY OF DETROIT (CITY) FUNDED PROJECTS. FOR MICHIGAN DEPARTMENT OF TRANSPORTATION (M.D.O.T.) FUNDED PROJECTS, USE M.D.O.T. NOMENCLATURE (SEE LEGENDS).
3. THE PAVEMENT CROWN IS TO BE PARABOLIC IN SHAPE CONSTRUCTED ACCORDING TO AN ELEMENTS TABLE SHOWN ON THE PLANS OR TO CITY ENGINEERING DIVISION CROWN TABLES.
4. THIS TYPICAL SECTION IS INTENDED AS A GUIDELINE ONLY. CERTAIN PARAMETERS SUCH AS PAVEMENT THICKNESS AND SIDEWALK LOCATION MAY VARY.
5. FOR LOCAL STREETS THE CONCRETE PAVEMENT MAY BE NON-REINFORCED, EXCEPT THE TYPE D LANE TIE JOINTS MUST STILL BE USED.
6. THE MINIMUM PAVEMENT THICKNESS IS 9".

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
TYPICAL PAVEMENT CROSS SECTION
FOR STREET CONSTRUCTION

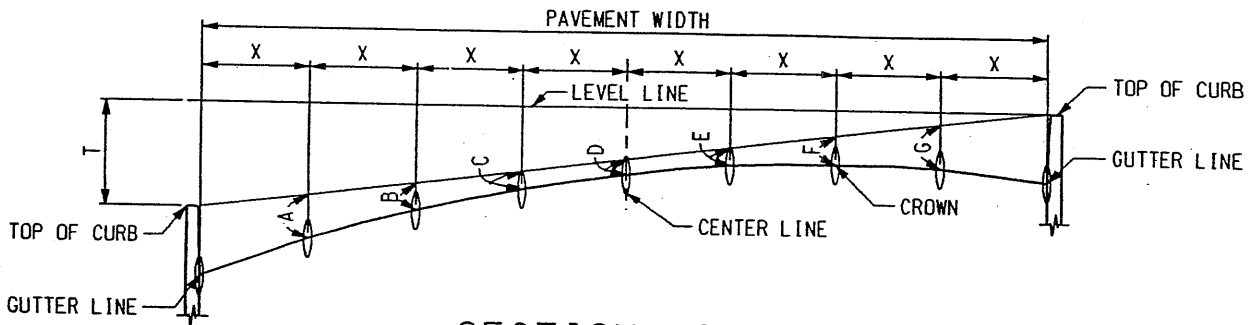
03/07/98 DRAWING NO. 4 DETAIL STANDARD NO. C 4704 SHEET



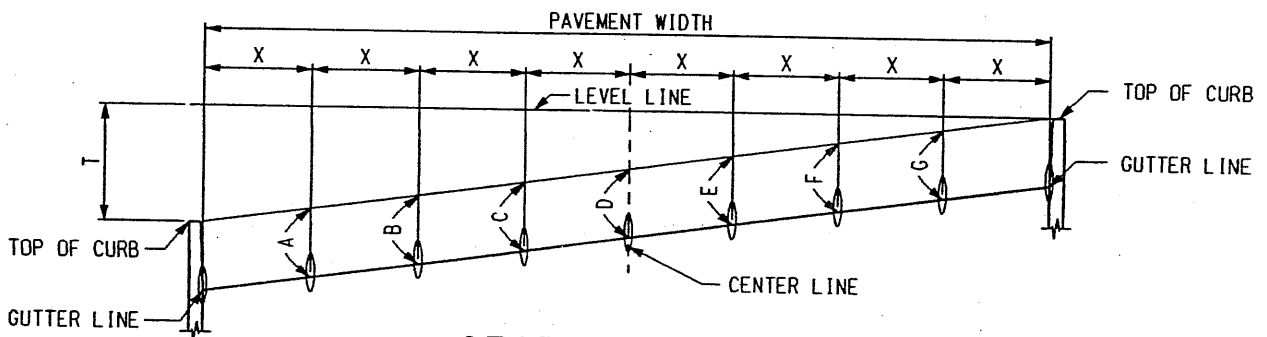
SECTION NO. 1
CROWN AT CENTER LINE



SECTION NO. 2
CROWN 1 DIVISION OUTSIDE OF ϕ



SECTION NO. 3
CROWN 2 DIVISIONS OUTSIDE OF ϕ



SECTION NO. 4
FLAT SLOPED SECTION

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



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M.F.S.

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APPROVED

Dadiv Haidar
ENGINEER OF STREETS
Wing Talley
HEAD ENGINEER
[Signature]
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

ELEMENTS FOR STANDARD
WARPED PAVING SECTIONS

03/07/98
PLAN DATE

DRAWING NO.
5

DETAIL STANDARD NO.
C-4382

SHEET
1 OF 3

PAVEMENT WIDTH	CURB FACE	X	T	A	B	C	D	E	F	G	SEC. NO.
24'	7"	3'-0"	0.3'	4 ⁷ / ₈ "	3 ³ / ₄ "	3 ¹ / ₈ "	3 ¹ / ₄ "	3 ⁷ / ₈ "	4 ⁵ / ₈ "	5 ⁵ / ₈ "	1
			0.4'	5 ¹ / ₈ "	4 ¹ / ₈ "	3 ¹ / ₂ "	3 ³ / ₈ "	3 ³ / ₄ "	4 ¹ / ₂ "	5 ¹ / ₂ "	2
			0.5'	5 ¹ / ₂ "	4 ¹ / ₂ "	3 ⁷ / ₈ "	3 ⁵ / ₈ "	3 ³ / ₄ "	4 ⁵ / ₈ "	5 ³ / ₈ "	3
			0.6'	5 ¹ / ₄ "	4 ¹ / ₈ "	3 ³ / ₈ "	3 ¹ / ₈ "	3 ³ / ₈ "	4 ¹ / ₈ "	5 ¹ / ₄ "	3
			0.7'-0.9'	7"	7"	7"	7"	7"	7"	7"	4
26'	7"	3'-3"	0.3'	4 ⁷ / ₈ "	3 ⁵ / ₈ "	3"	3 ¹ / ₈ "	3 ⁵ / ₈ "	4 ¹ / ₂ "	5 ⁵ / ₈ "	1
			0.4'	5 ¹ / ₈ "	4"	3 ³ / ₈ "	3 ¹ / ₄ "	3 ⁵ / ₈ "	4 ³ / ₈ "	5 ¹ / ₂ "	2
			0.5'	4 ⁷ / ₈ "	3 ⁵ / ₈ "	2 ⁷ / ₈ "	2 ³ / ₄ "	3 ¹ / ₈ "	4"	5 ¹ / ₄ "	2
			0.6'	5 ¹ / ₄ "	4 ¹ / ₈ "	3 ³ / ₈ "	3 ¹ / ₈ "	3 ³ / ₄ "	4 ¹ / ₈ "	5 ¹ / ₄ "	3
			0.7'	5"	3 ³ / ₄ "	3"	2 ³ / ₄ "	3"	3 ³ / ₄ "	5 ¹ / ₈ "	3
		0.8-1'-0"	7"	7"	7"	7"	7"	7"	7"	4	
28'	7"	3'-6"	0.3'	4 ⁷ / ₈ "	3 ¹ / ₂ "	2 ⁷ / ₈ "	3"	3 ⁵ / ₈ "	4 ³ / ₈ "	5 ¹ / ₂ "	1
			0.4'	5 ¹ / ₈ "	4"	3 ¹ / ₄ "	3 ¹ / ₈ "	3 ¹ / ₂ "	4 ¹ / ₄ "	5 ³ / ₈ "	2
			0.5'	4 ⁷ / ₈ "	3 ¹ / ₂ "	2 ³ / ₄ "	2 ⁵ / ₈ "	3"	4"	5 ¹ / ₄ "	2
			0.6'	5 ¹ / ₄ "	4 ¹ / ₈ "	3 ¹ / ₄ "	3 ¹ / ₈ "	3 ¹ / ₄ "	4"	5 ¹ / ₈ "	3
			0.7'	5"	3 ⁵ / ₈ "	2 ⁷ / ₈ "	2 ⁵ / ₈ "	2 ⁷ / ₈ "	3 ⁵ / ₈ "	5"	3
		0.8-1'-0"	7"	7"	7"	7"	7"	7"	7"	4	
30'	7"	3'-9"	0.3'	4 ³ / ₄ "	3 ³ / ₈ "	2 ³ / ₄ "	2 ⁷ / ₈ "	3 ¹ / ₂ "	4 ³ / ₈ "	5 ³ / ₈ "	1
			0.4'	4 ³ / ₈ "	2 ⁷ / ₈ "	2 ¹ / ₈ "	2 ¹ / ₄ "	3"	4"	5 ¹ / ₄ "	1
			0.5'	4 ⁷ / ₈ "	3 ³ / ₈ "	2 ⁵ / ₈ "	2 ¹ / ₂ "	2 ⁷ / ₈ "	3 ⁷ / ₈ "	5 ¹ / ₈ "	2
			0.6'	4 ¹ / ₂ "	3"	2"	1 ⁷ / ₈ "	2 ³ / ₈ "	3 ⁵ / ₈ "	5"	2
			0.7'	5"	3 ⁵ / ₈ "	2 ⁷ / ₈ "	2 ⁵ / ₈ "	2 ⁷ / ₈ "	3 ⁵ / ₈ "	5"	3
		0.8-1'-0"	7"	7"	7"	7"	7"	7"	7"	4	
34'	7"	4'-3"	0.3'	4 ³ / ₈ "	2 ³ / ₄ "	2"	2"	2 ⁵ / ₈ "	3 ⁵ / ₈ "	5"	1
			0.4'	4 ¹ / ₈ "	2 ³ / ₈ "	1 ⁵ / ₈ "	1 ³ / ₄ "	2 ¹ / ₂ "	3 ⁵ / ₈ "	5 ¹ / ₈ "	1
			0.5'	4 ⁵ / ₈ "	3 ¹ / ₈ "	2 ¹ / ₄ "	2"	2 ³ / ₈ "	3 ³ / ₈ "	4 ⁷ / ₈ "	2
			0.6'	4 ¹ / ₂ "	2 ⁷ / ₈ "	1 ⁷ / ₈ "	1 ³ / ₄ "	2 ¹ / ₄ "	3 ³ / ₈ "	4 ⁷ / ₈ "	2
			0.7'	4 ⁷ / ₈ "	3 ¹ / ₂ "	2 ⁵ / ₈ "	2 ¹ / ₄ "	2 ¹ / ₂ "	3 ¹ / ₄ "	4 ³ / ₄ "	3
			0.8'	4 ³ / ₄ "	3 ¹ / ₈ "	2 ¹ / ₄ "	1 ⁷ / ₈ "	2 ¹ / ₄ "	3 ¹ / ₈ "	4 ⁵ / ₈ "	3
			0.9'	4 ¹ / ₂ "	2 ⁷ / ₈ "	1 ³ / ₄ "	1 ¹ / ₂ "	1 ⁷ / ₈ "	2 ⁷ / ₈ "	4 ¹ / ₂ "	3
		1.0'	7"	7"	7"	7"	7"	7"	7"	4	

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

-----ELEMENTS FOR STANDARD-----
WARPED PAVING SECTIONS

03/07/98 PLAN DATE	DRAWING NO. 5	DETAIL STANDARD NO. C-4382	SHEET 2 OF 3
-----------------------	------------------	-------------------------------	-----------------

PAVEMENT WIDTH	CURB FACE	X	T	A	B	C	D	E	F	G	SEC. NO.
36'	7"	4'-6"	0.3'	4 ³ / ₈ "	2 ³ / ₄ "	2"	2"	2 ⁵ / ₈ "	3 ⁵ / ₈ "	5 ¹ / ₈ "	1
			0.4'	4 ¹ / ₈ "	2 ¹ / ₂ "	1 ³ / ₈ "	1 ³ / ₄ "	2 ⁵ / ₈ "	3 ⁵ / ₈ "	5 ¹ / ₈ "	1
			0.5'	4 ¹ / ₂ "	3"	2"	1 ³ / ₄ "	2 ¹ / ₄ "	3 ¹ / ₄ "	4 ³ / ₄ "	1
			0.6'	4 ³ / ₈ "	2 ³ / ₄ "	1 ³ / ₄ "	1 ¹ / ₂ "	1 ¹ / ₈ "	3 ¹ / ₄ "	4 ³ / ₄ "	2
			0.7'	4 ¹ / ₈ "	2 ¹ / ₄ "	1 ¹ / ₄ "	1"	1 ⁵ / ₈ "	2 ⁷ / ₈ "	4 ⁵ / ₈ "	2
			0.8'	4 ⁵ / ₈ "	3 ¹ / ₈ "	2 ¹ / ₈ "	1 ³ / ₄ "	2 ¹ / ₈ "	3"	4 ¹ / ₂ "	3
			0.9'	4 ¹ / ₂ "	2 ³ / ₄ "	1 ³ / ₄ "	1 ¹ / ₂ "	1 ³ / ₄ "	2 ⁷ / ₈ "	4 ¹ / ₂ "	3
			1.0'	7"	7"	7"	7"	7"	7"	7"	4
40'	7"	5'-0"	0.3'	4 ³ / ₈ "	2 ³ / ₄ "	2"	2"	2 ⁵ / ₈ "	3 ⁵ / ₈ "	5 ¹ / ₈ "	1
			0.4'	4"	2 ¹ / ₈ "	1 ³ / ₈ "	1 ¹ / ₂ "	2 ¹ / ₈ "	3 ³ / ₈ "	4 ⁷ / ₈ "	1
			0.5'	3 ⁵ / ₈ "	1 ³ / ₈ "	5 ⁸ / ₈ "	7 ⁸ / ₈ "	1 ³ / ₄ "	2 ¹ / ₂ "	4 ¹ / ₈ "	1
			0.6'	4 ¹ / ₄ "	2 ¹ / ₂ "	1 ¹ / ₂ "	1 ¹ / ₄ "	1 ³ / ₄ "	2 ⁷ / ₈ "	4 ⁵ / ₈ "	2
			0.7'	4"	2"	7 ⁸ / ₈ "	5 ⁸ / ₈ "	1 ¹ / ₄ "	2 ⁵ / ₈ "	4 ¹ / ₂ "	2
			0.8'	3 ³ / ₄ "	1 ³ / ₄ "	1 ¹ / ₂ "	3 ⁸ / ₈ "	1 ¹ / ₈ "	2 ¹ / ₂ "	4 ¹ / ₂ "	2
			0.9'	4 ¹ / ₂ "	2 ³ / ₄ "	1 ³ / ₄ "	1 ³ / ₈ "	1 ³ / ₄ "	2 ³ / ₄ "	4 ³ / ₈ "	3
			1.0'	4 ¹ / ₄ "	2 ³ / ₈ "	1 ¹ / ₄ "	7 ⁸ / ₈ "	1 ¹ / ₄ "	2 ³ / ₈ "	4 ¹ / ₄ "	3

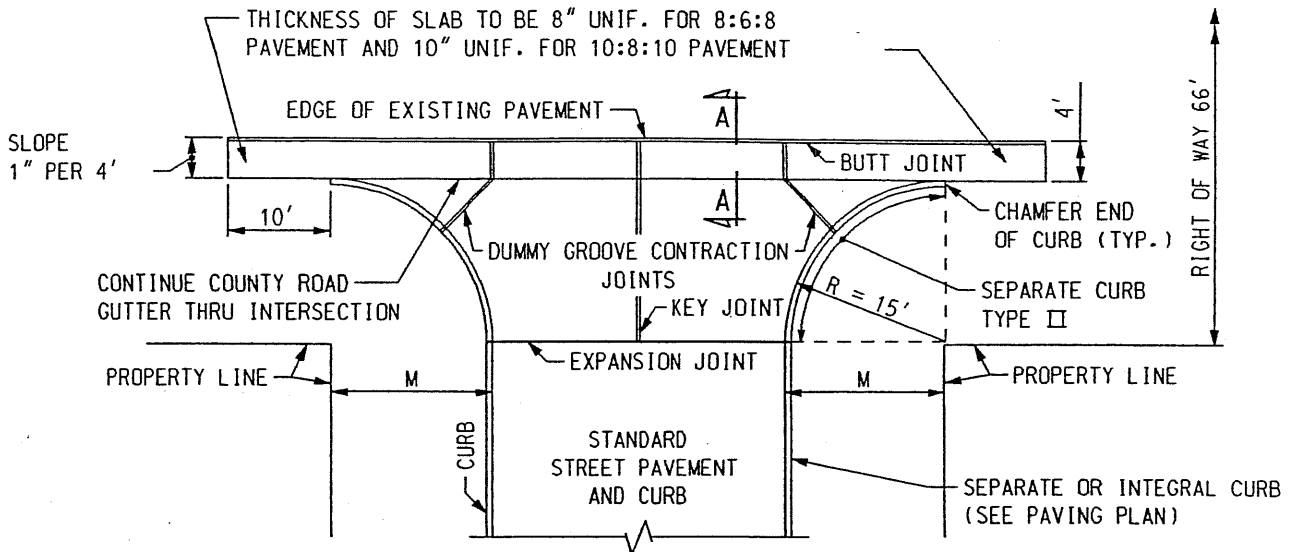
NOTE:
ALL DIMENSIONS ARE IN INCHES(") UNLESS OTHERWISE NOTED.

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002

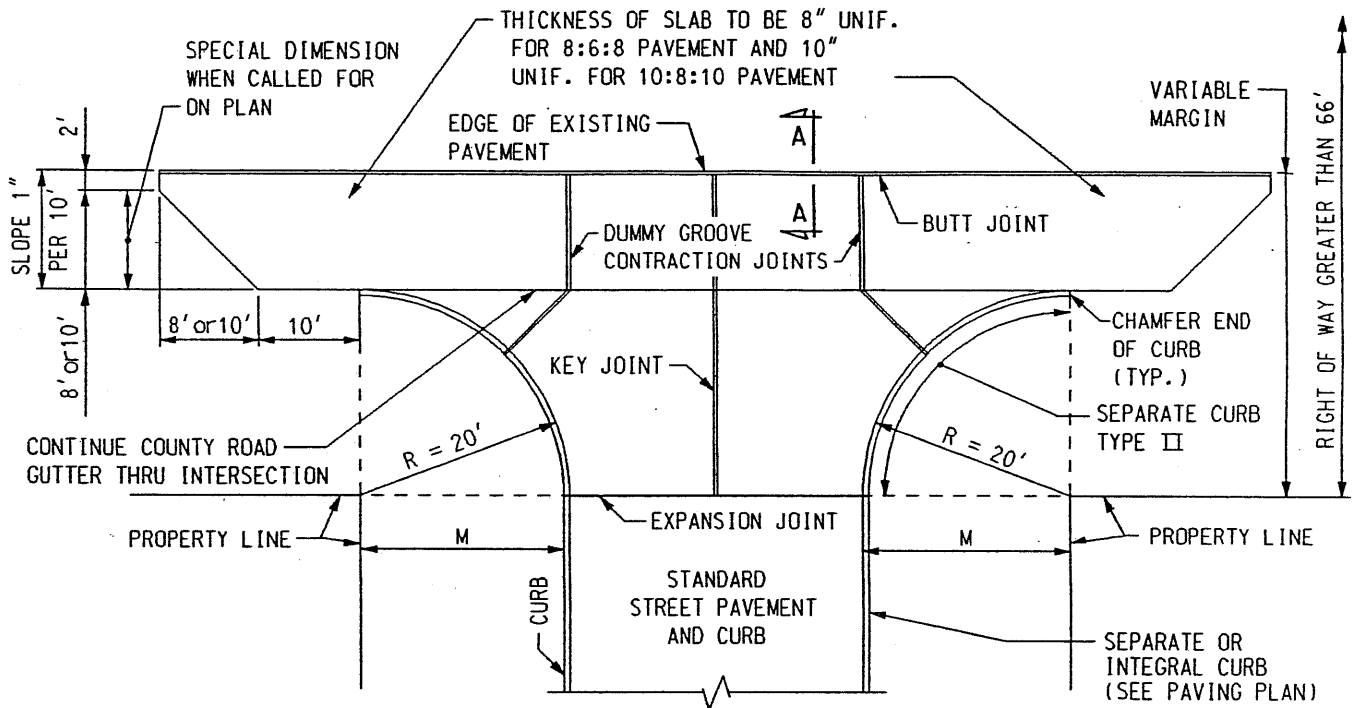
CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

-----ELEMENTS FOR STANDARD-----
-----WARPED PAVING SECTIONS-----

03/07/98 | DRAWING NO. | DETAIL STANDARD NO. | CUECT



USE THIS TYPE ONLY WHEN LIMITED TO A 66' RIGHT OF WAY



USE THIS TYPE WHEN RIGHT OF WAY IS MORE THAN 66'

NOTE:
WHERE 'M' EXCEEDS 'R', EXTEND CURB TO THE PROPERTY LINE.

WHERE 'M' IS LESS THAN 'R', CONSTRUCT COMPLETE CURB CIRCLE.

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



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BUREAU OF STREETS
AND HIGHWAYS

rev. K.S.M.

DRAWN BY:

M.F.S.

CHECKED BY:

APPROVED

Dadun Haidar
ENGINEER OF STREETS
Chris Talley
HEAD ENGINEER
[Signature]
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

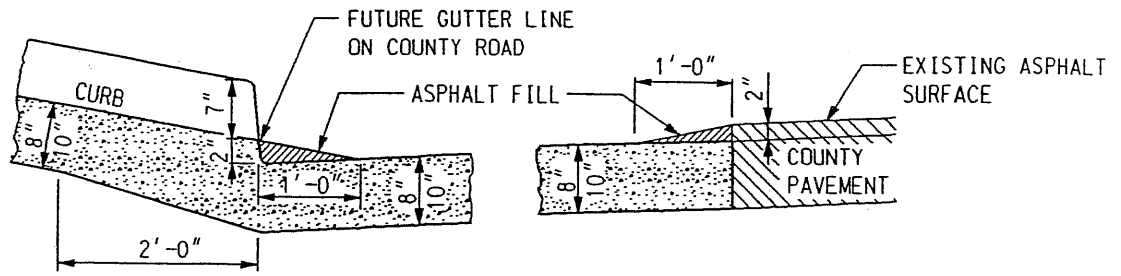
DETAIL OF APPROACH TO EXISTING
COUNTY HIGHWAY PAVEMENTS

03/07/98
PLAN DATE

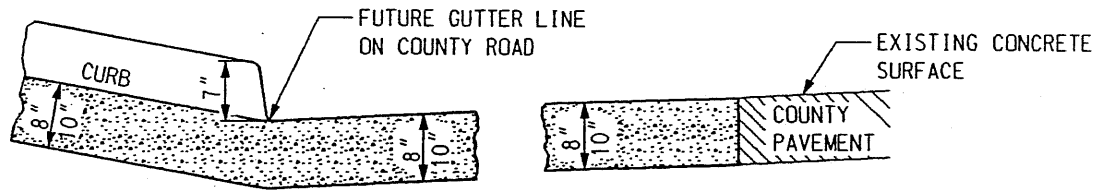
DRAWING NO.
6

DETAIL STANDARD NO.
C-4383

SHEET
1 OF 2

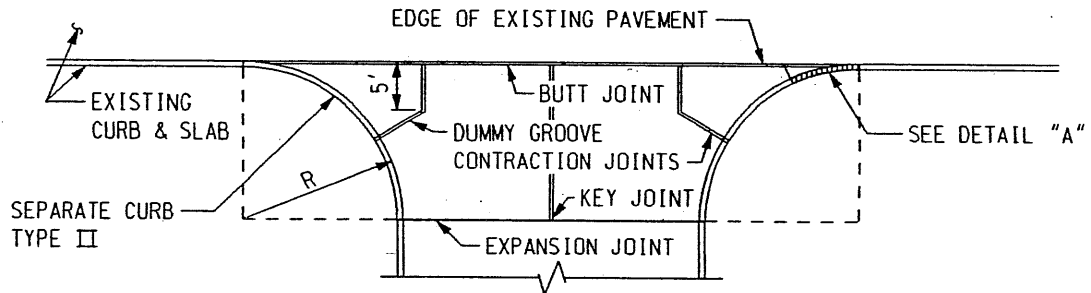


USE THIS SECTION WHEN
COUNTY ROAD IS ASPHALT

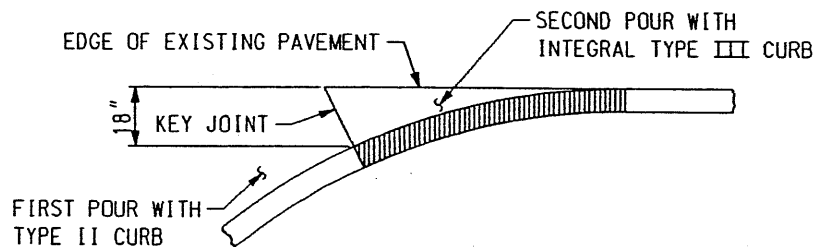


USE THIS SECTION WHEN
COUNTY ROAD IS CONCRETE

SECTION A-A



USE THIS TYPE FOR
JUNCTION WITHOUT WIDENING



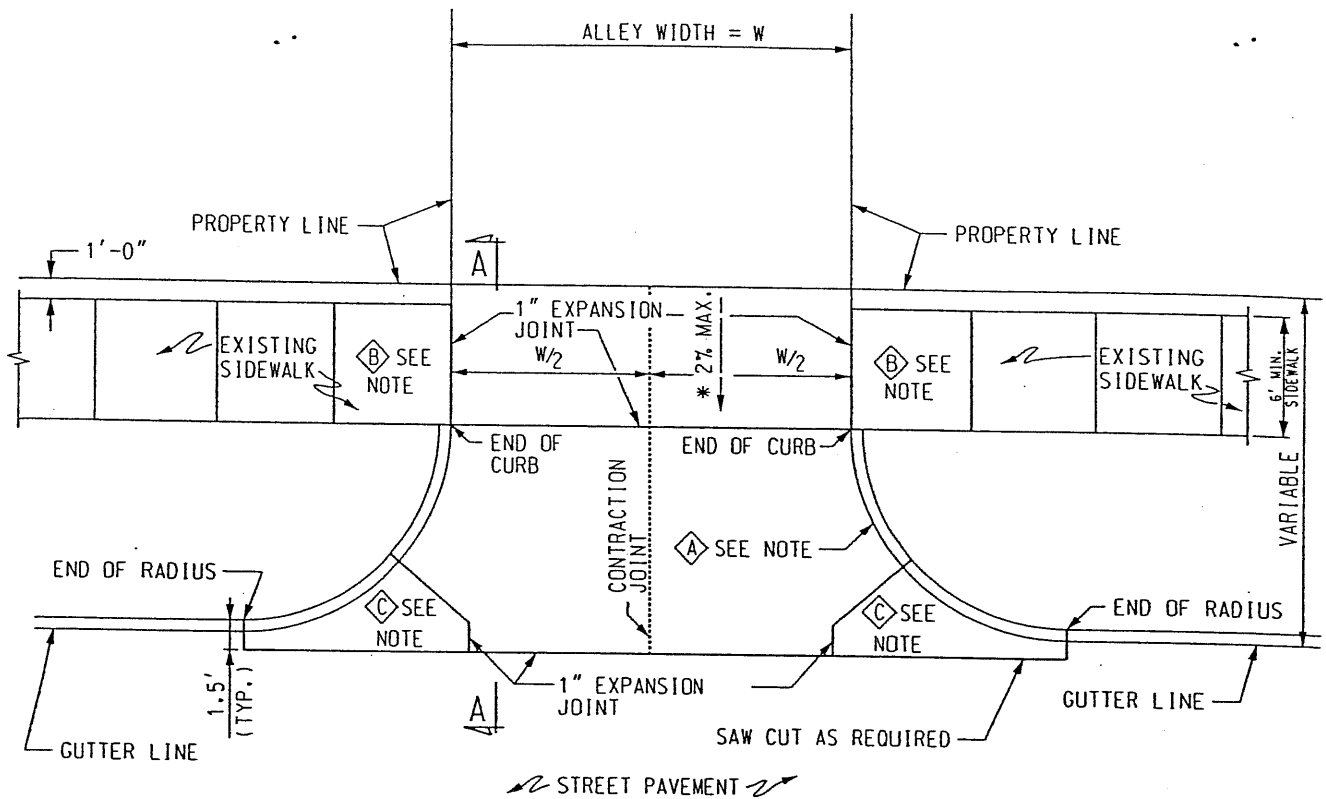
DETAIL - "A"

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

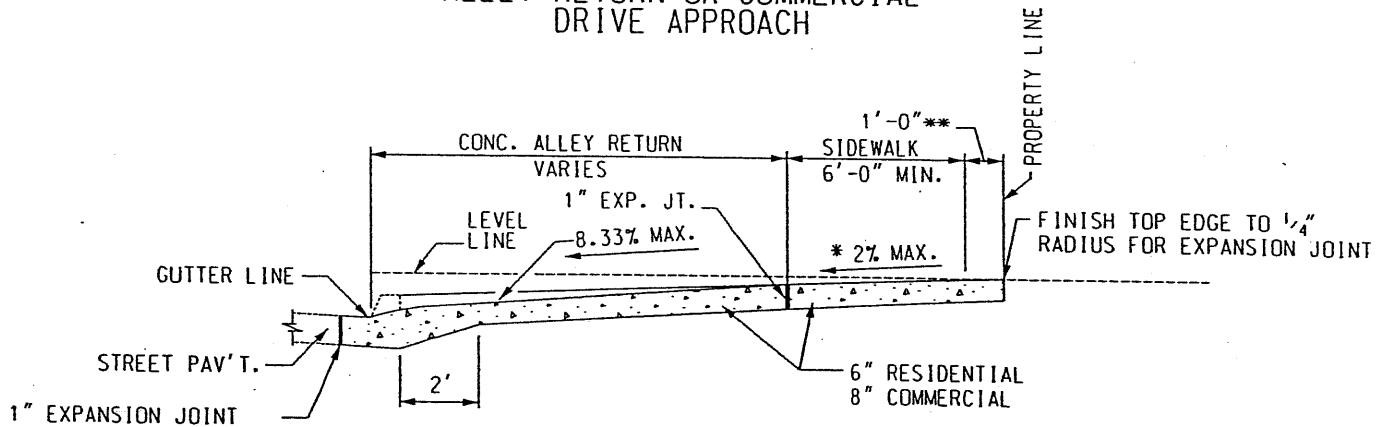
NOTE:

ALL DIMENSIONS ARE IN INCHES ("")
UNLESS OTHERWISE NOTED.

CITY OF DETROIT CITY ENGINEERING DIVISION, D.P.W. STANDARD PLAN FOR			
DETAIL OF APPROACH TO EXISTING COUNTY HIGHWAY PAVEMENTS			
03/07/98 PLAN DATE	DRAWING NO. 6	DETAIL STANDARD NO. C-4383	SHEET 2 OF 2



ALLEY RETURN OR COMMERCIAL DRIVE APPROACH



SECTION A-A

REVISIONS					
NO.	DESCRIPTION	Drawn	Chkd	Appd	Date
C					
B	* SIDEWALK CROSS SLOPE	KSM	J.J.		2/7/07
A	METRIC TO ENGLISH UNIT SYSTEM	KSM	M.S.	N.H.	12/02



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BUREAU OF STREETS
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DRAWN BY:

J.J.
CHECKED BY:

APPROVED

Sam Patel
ENGINEER OF STREETS

HEAD ENGINEER
Jerry Jacob
CITY ENGINEER

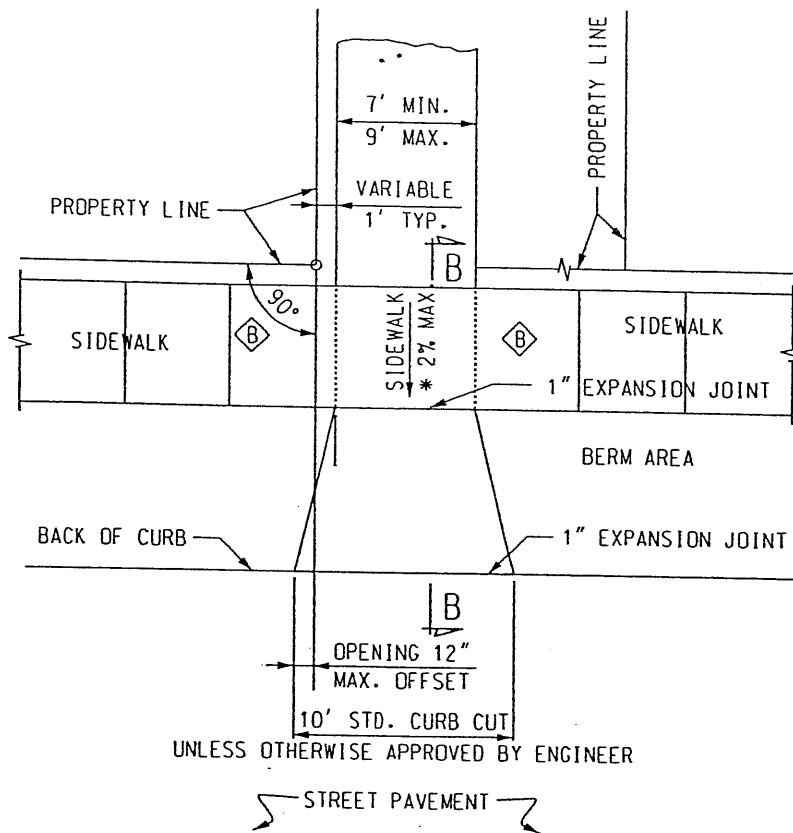
CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
DETAIL OF ALLEY RETURN
AND DRIVE APPROACH

03/07/98
PLAN DATE

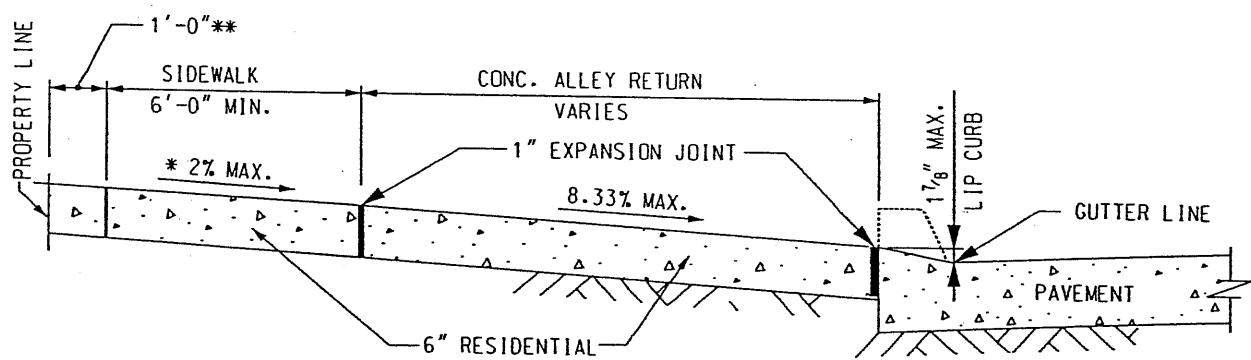
DRAWING NO.
7

DETAIL STANDARD NO.
C-4384

SHEET
1 OF 2



DETAIL OF CURB CUT OPENINGS FOR RESIDENTIAL DRIVEWAY



SECTION B-B

NOTES:

IF ALLEY IS PAVED, CONSTRUCT RETURN WITH 1" EXPANSION JOINT ON PROPERTY LINE.

- A** RADIUS TO BE 10' UNLESS OTHERWISE SHOWN ON PAVING PLAN.
- B** SIDEWALK FLAGS ABUTTING ALLEY SHALL BE 6" THICK. SIDEWALK SHALL BE REPLACED FOR A SMOOTH TRANSITION AND TO ATTAIN A CROSS SLOPE OF 2% MAX. OR AS DIRECTED BY THE ENGINEER.
- C** KEY JOINT OR "B" JOINT IF REINFORCED PAVEMENT.

ALL DIMENSIONS ARE IN INCHES(") UNLESS OTHERWISE NOTED.

* SIDEWALK CROSS SLOPE SHALL BE 2% MAX. OR AS DIRECTED BY THE ENGINEER.

** THE SLOPE OF THE DRIVEWAY IN THE 1 FT. SPACE ADJACENT TO THE PROPERTY LINE MAY BE ALTERED UP TO 10% TO MEET EXISTING CONDITIONS.

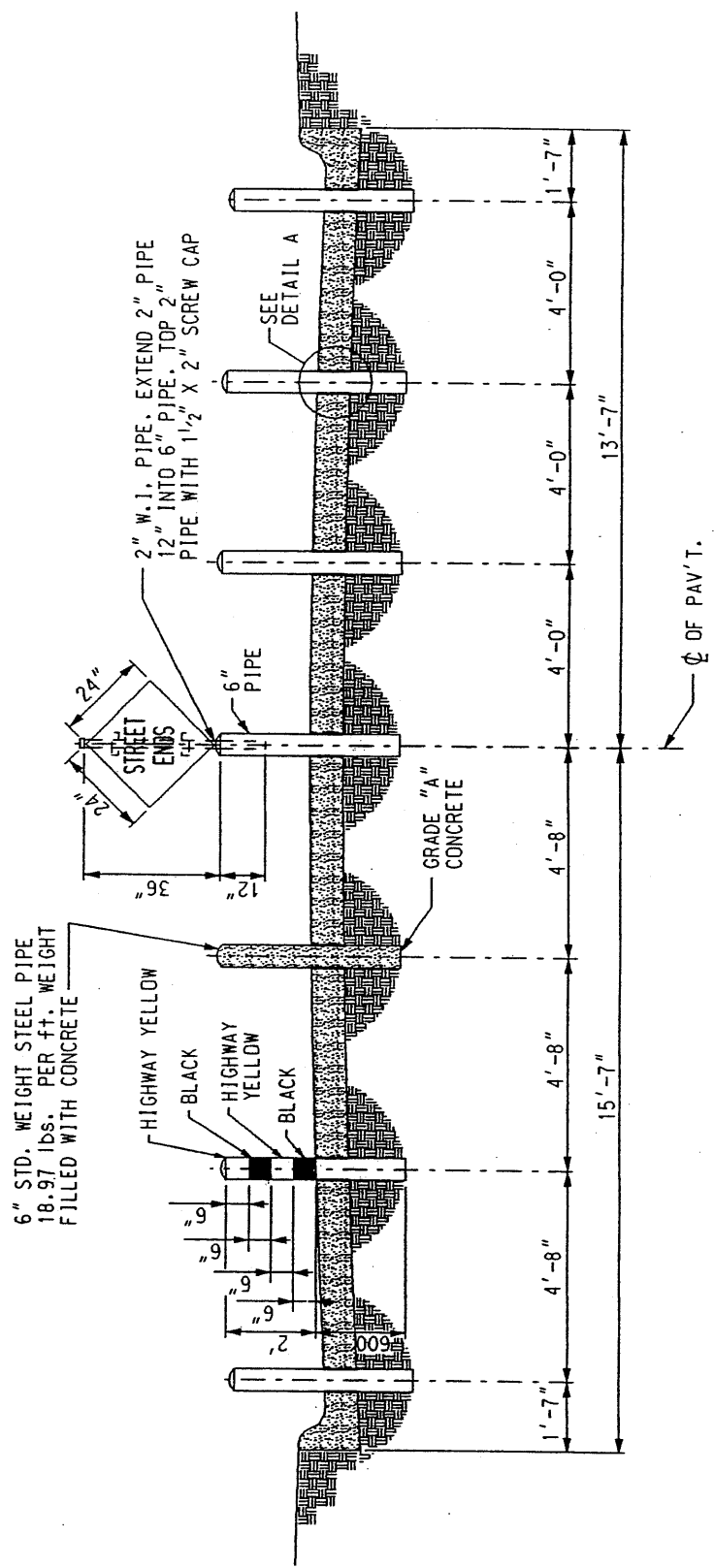
REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

DESCRIPTION	Drwn	Chkd	Appd	Date
C				
B * SIDEWALK CROSS SLOPE	KSM	J. J.		2/7/07
A Chgd. THICKNESS NOTE	KSM	N. H.	W. T.	10/06

REVISIONS

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
DETAIL OF ALLEY RETURN AND DRIVE APPROACH

03/07/98 PLAN DATE	DRAWING NO. 7	DETAIL STANDARD NO. C-4384	SHEET 2 OF 2
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26' PAVEMENT

30' PAVEMENT

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



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ENGINEER OF STREETS
Wm. Kelly
HEAD ENGINEER
[Signature]
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

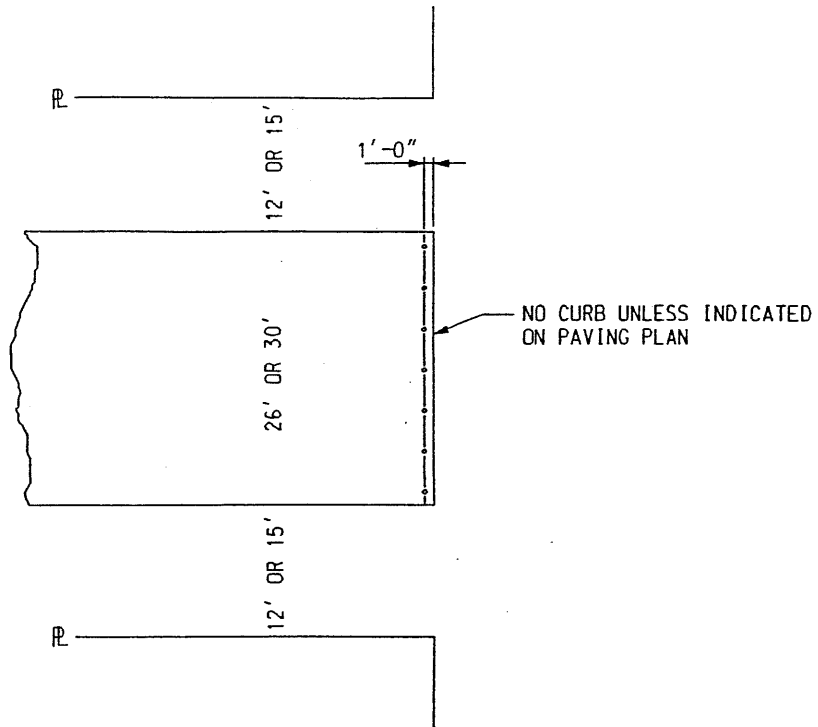
STANDARD STREET BARRICADE

03/07/98
PLAN DATE

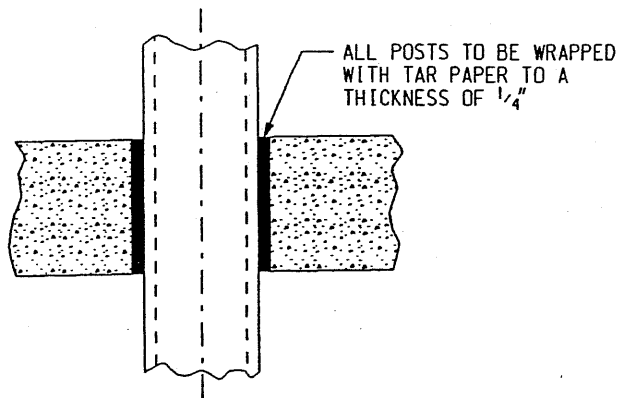
DRAWING NO.
8

DETAIL STANDARD NO.
C-4385

SHEET
1 OF 2



TYPICAL INSTALLATION OF
STREET BARRICADE

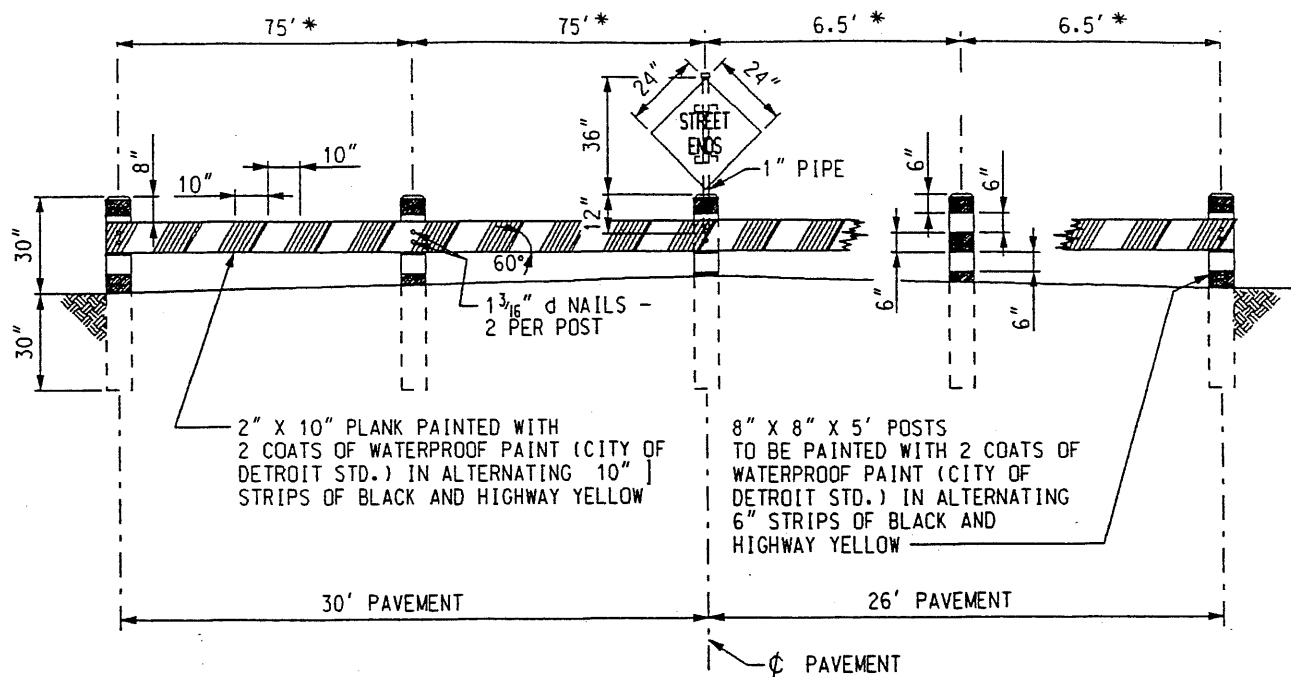


DETAIL A

NOTES:

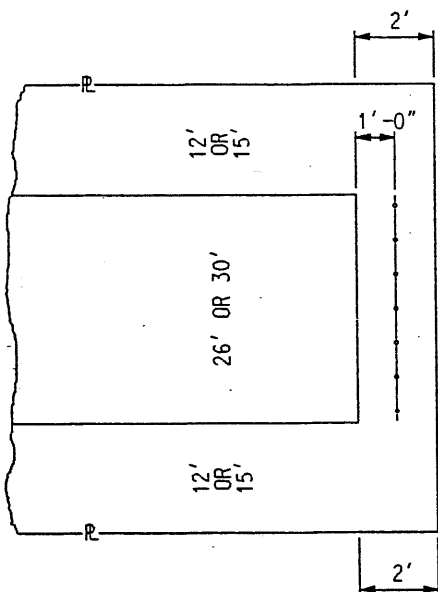
1. INSPECTION DEPT. TO NOTIFY TRAFFIC ENGINEER WHEN THE BARRICADE IS READY FOR SIGN INSTALLATION.
2. ALL POST SHALL BE PAINTED WITH 2 COATS OF WATERPROOF PAINT (CITY OF DETROIT STD.).
3. SIGN AND CLAMPS SUPPLIED BY TRAFFIC ENGINEER.
4. ALL DIMENSIONS ARE IN INCHES(") UNLESS OTHERWISE NOTED.

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
STANDARD STREET BARRICADE



* THESE DIMENSIONS MAY BE VARIED TO SUIT OTHER PAVEMENT WIDTHS.

PAINT BLACK
 PAINT HIGHWAY YELLOW



NOTES:

1. INSPECTION DEPARTMENT TO NOTIFY TRAFFIC ENGINEER WHEN THE BARRICADE IS READY FOR SIGN INSTALLATION.
2. SIGN AND CLAMPS SUPPLIED BY TRAFFIC ENGINEER.
3. POST ARE NOT TO BE EMBEDDED IN CONCRETE.
4. ALL LUMBER DIMENSIONS ARE NOMINAL.
5. ALL DIMENSIONS ARE IN INCHES (") UNLESS OTHERWISE NOTED.

TYPICAL INSTALLATION OF A TEMPORARY STREET BARRICADE

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



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AND HIGHWAYS

rev. K.S.M.

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M.E.S.

CHECKED BY:

APPROVED

Radiu Koida
 ENGINEER OF STREETS
Chris Talley
 HEAD ENGINEER
Gregory
 CITY ENGINEER

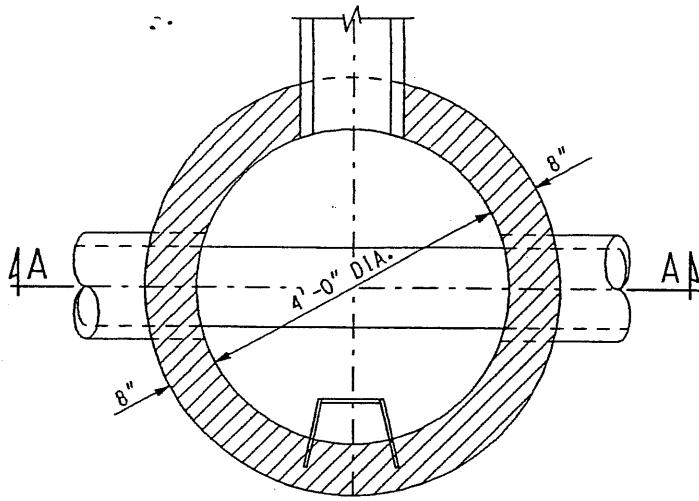
CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
WOOD BARRICADE

03/07/98
PLAN DATE

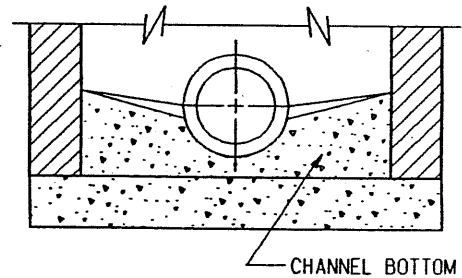
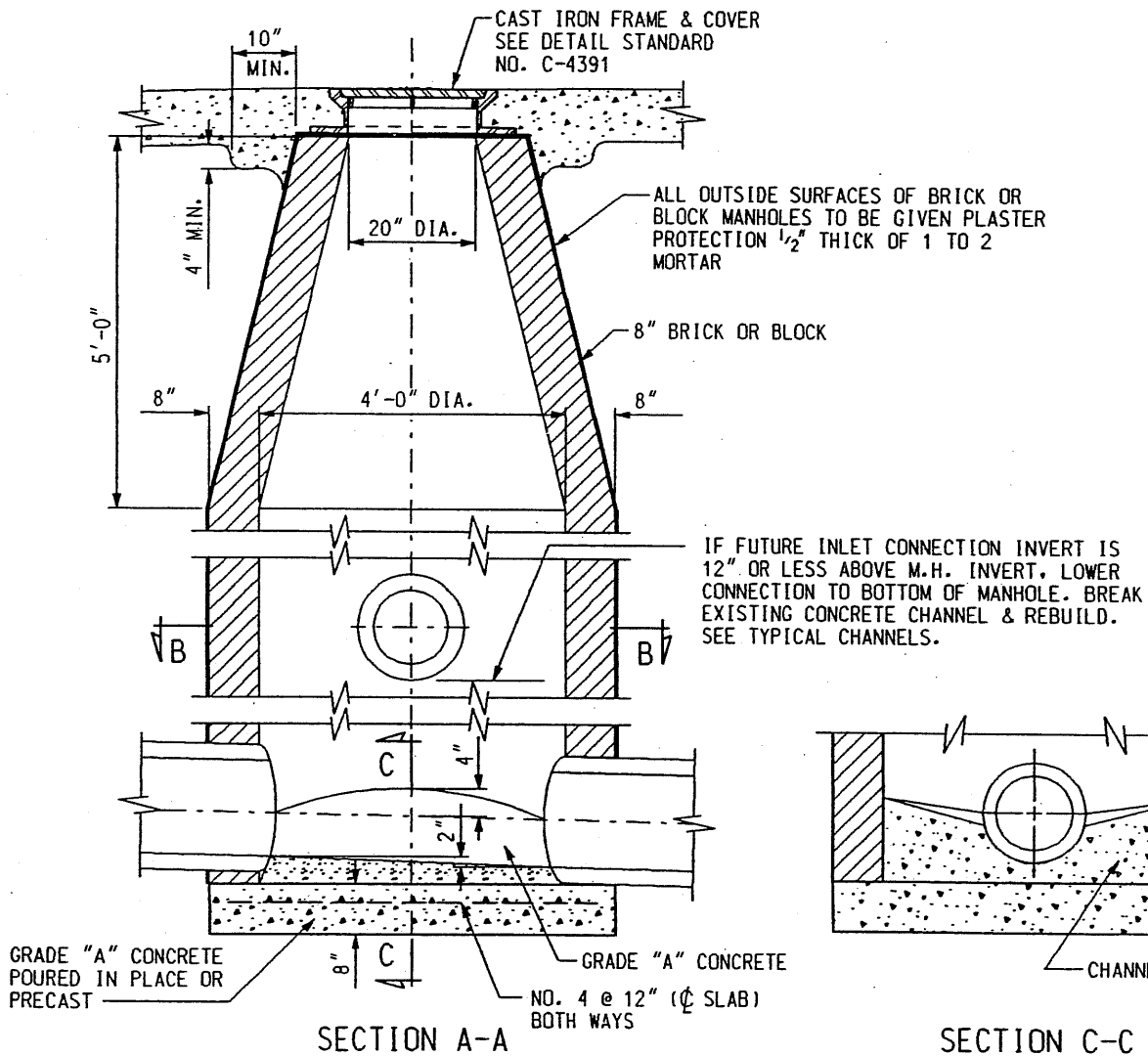
DRAWING NO.
9

DETAIL STANDARD NO.
C-4386

SHEET
1 OF 1



PLAN VIEW AT B-B



SEWER MANHOLE

SECTION C-C

REVISED DATE (METRIC TO
ENGLISH UNIT SYSTEM): DEC. 2002

CITY OF DETROIT

CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

STANDARD SEWER AND
DROP MANHOLES



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rev. K.S.M.

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M.F.S.

CHECKED BY:

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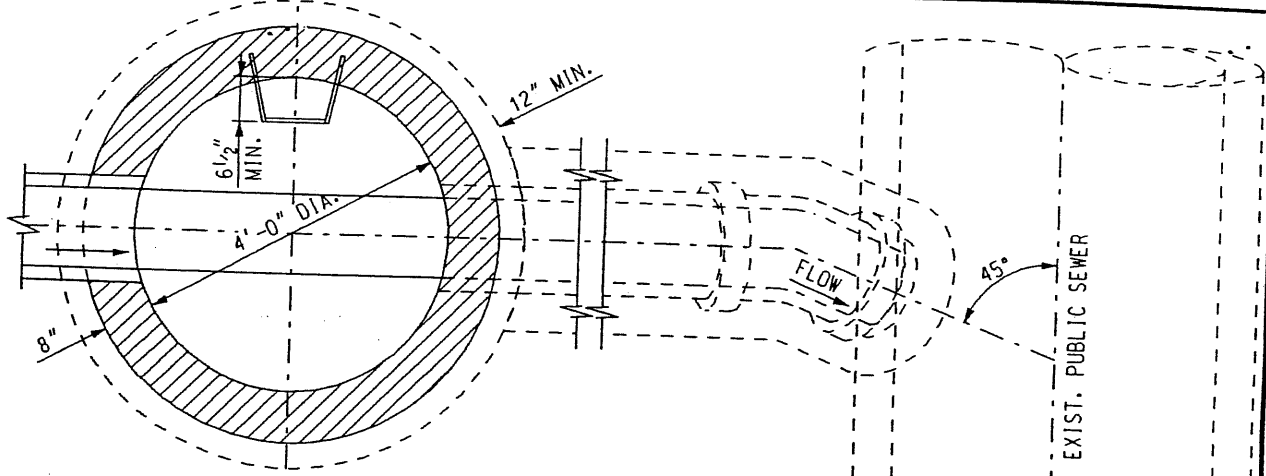
Dadiu Haidar
ENGINEER OF STREETS
Wm. Kelly
HEAD ENGINEER
[Signature]
CITY ENGINEER

03/07/98
PLAN DATE

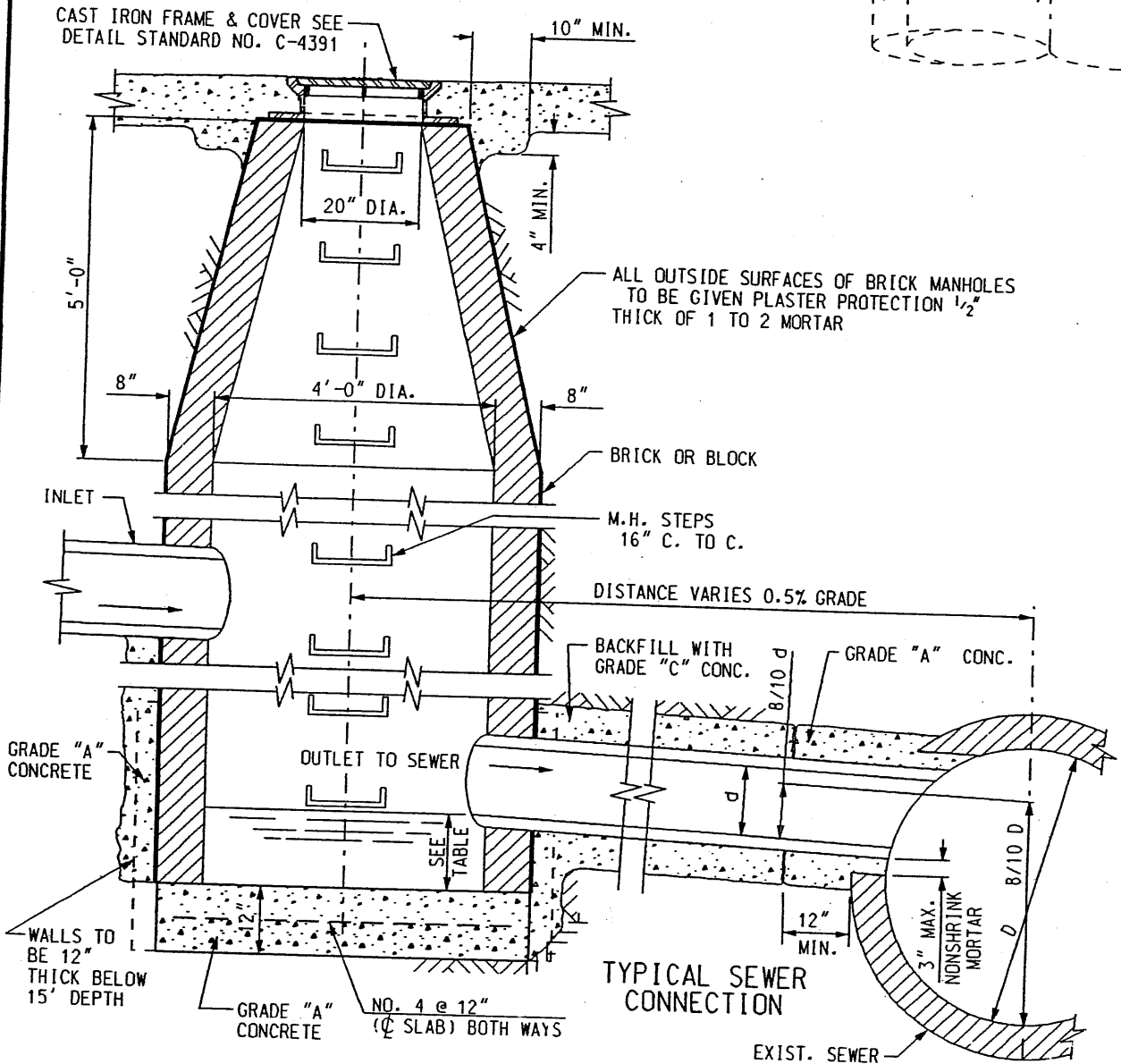
DRAWING NO.
10

DETAIL STANDARD NO.
C-4387

SHEET
1 OF 3



PLAN VIEW



DROP MANHOLE

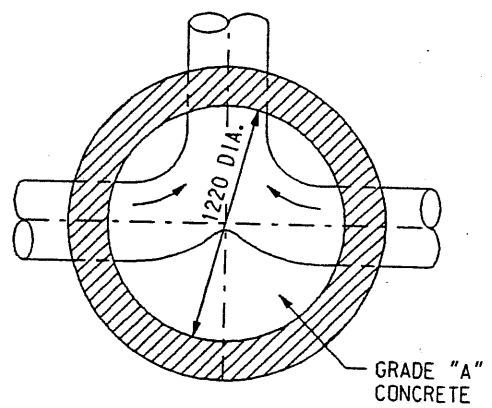
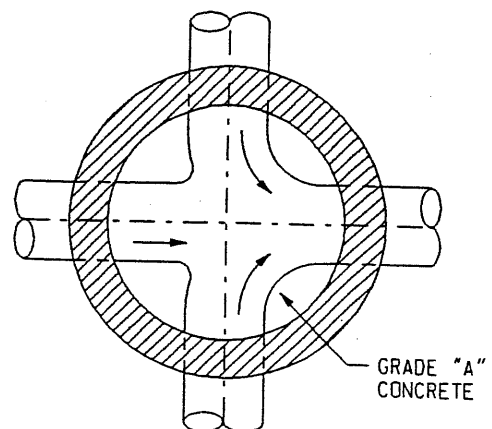
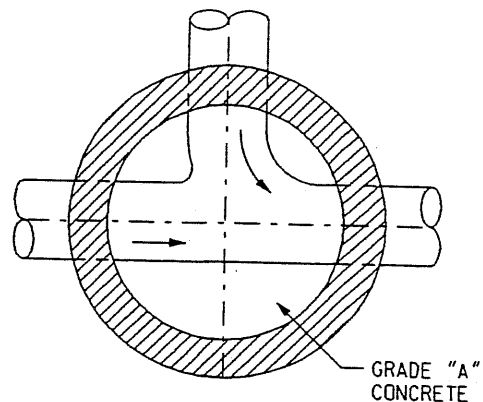
CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
STANDARD SEWER AND
DROP MANHOLES

03/07/98 PLAN DATE	DRAWING NO. 10	DETAIL STANDARD NO. C-4387	SHEET 2 OF 3
-----------------------	-------------------	-------------------------------	-----------------

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

**DEPTH OF WATER CUSHION
IN DROP MANHOLES SHALL
BE AS FOLLOWS**

DIFFERENCE BETWEEN INLET & OUTLET INVERTS:	DEPTH OF CUSHION:
LESS THAN 3'-0"	NOT REQ'D.
3'-0" TO 4'-0"	12"
4'-0" TO 5'-0"	18"
5'-0" TO 8'-0"	24"
8'-0" TO 10'-0"	30"
OVER 10 FEET	36"



NOTES:

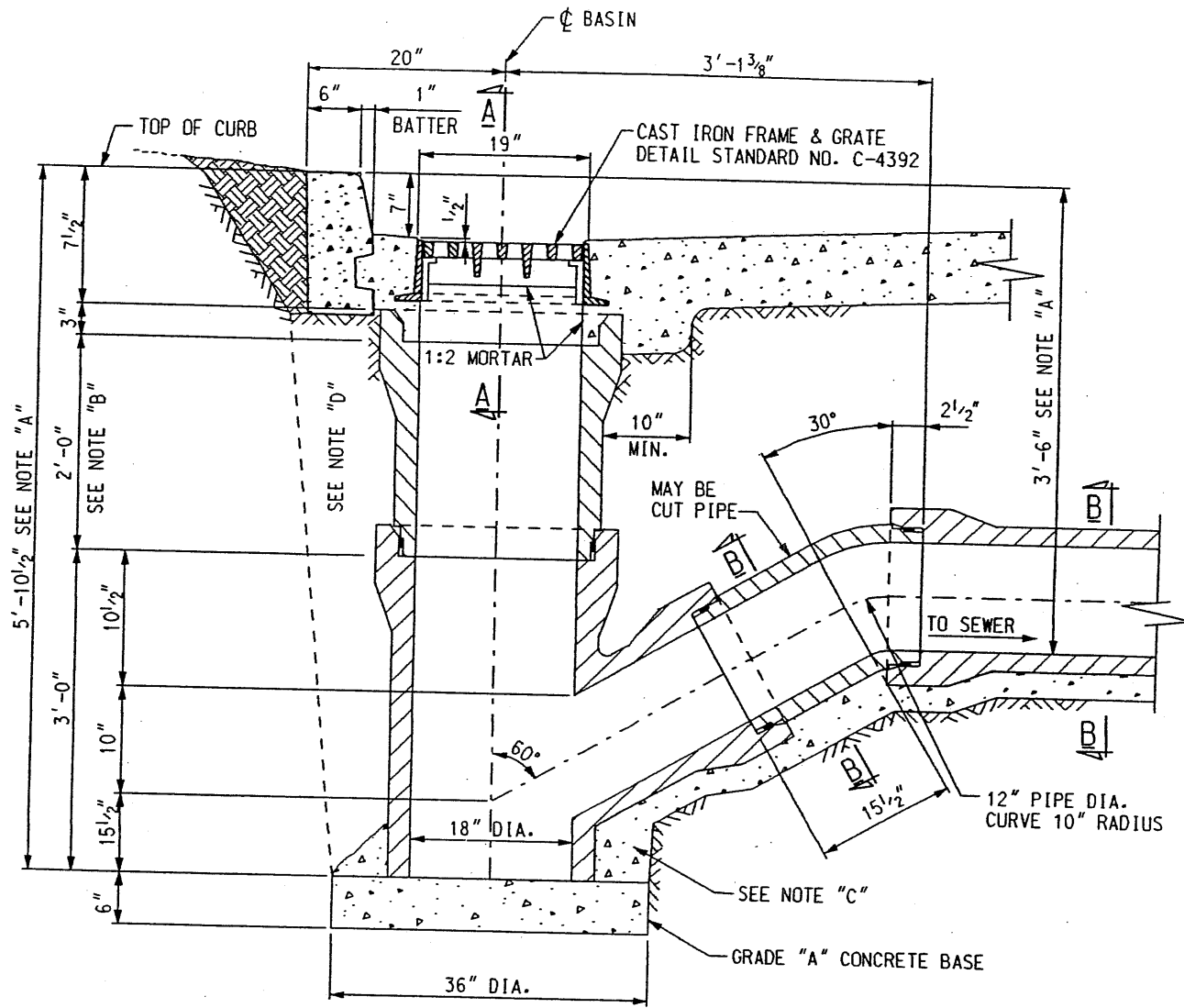
1. FOR ALUMINUM MANHOLE STEP DETAIL SEE DETAIL STANDARDS NO. C-5028.
2. ALL DIMENSIONS ARE IN INCHES(") UNLESS OTHERWISE NOTED.

TYPICAL CHANNELS

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

**STANDARD SEWER AND
DROP MANHOLES**

03/07/98 PLAN DATE	DRAWING NO. 10	DETAIL STANDARD NO. C-1327	SHEET
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REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



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M.F.S.
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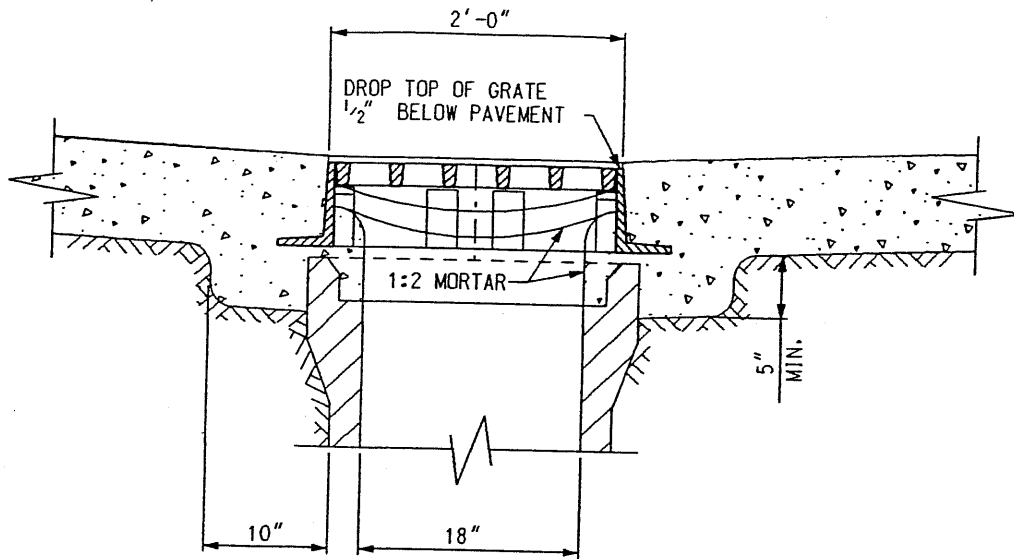
APPROVED

Dadiu Haidou
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Wm. Talley
HEAD ENGINEER
[Signature]
CITY ENGINEER

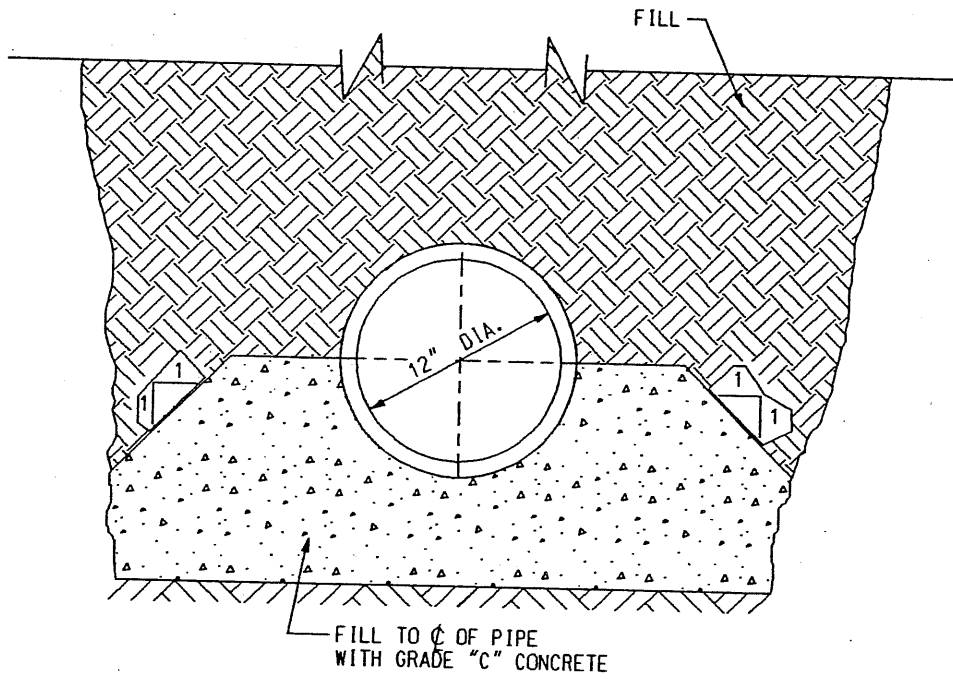
CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR

STANDARD 18" X 12"
SPECIAL "Y" CATCH BASIN

03/07/98 PLAN DATE	DRAWING NO. 11	DETAIL STANDARD NO. C-4388	SHEET 1 OF 3
-----------------------	-------------------	-------------------------------	-----------------



SECTION A-A



SECTION B-B

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

STANDARD 18" X 12"
SPECIAL "Y" CATCH BASIN

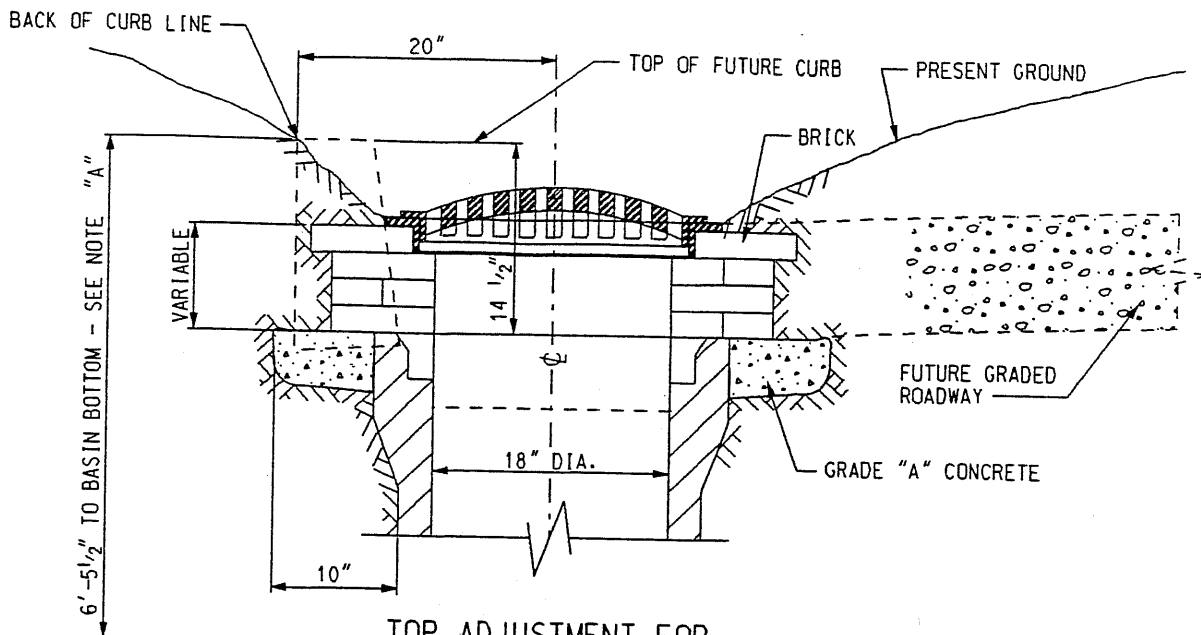
REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

03/07/98
PLAN DATE

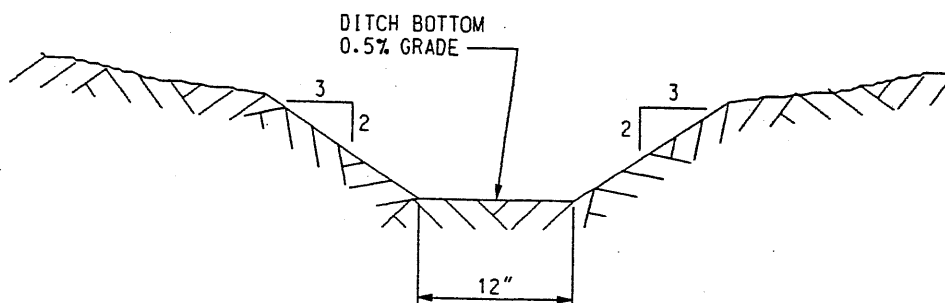
DRAWING NO.
11

DETAIL STANDARD NO.
C-4388

SHEET
2 OF 3



TOP ADJUSTMENT FOR
TEMPORARY GRADES



STANDARD DITCH
CROSS-SECTION
FOR TEMPORARY GRADES

REQUIRED

- 1-FLAT GRATE FRAME AND COVER
 - 1-18" STRAIGHT PIPE
 - 1-18" X 12" SPECIAL "Y"
 - 1-12" 30° CURVE
 - 3 CUBIC yds. EXCAVATION
 - 0.15 CUBIC yds. GRADE "A" CONCRETE
 - FILL CONCRETE
 - GRADE "C" CONCRETE
- } APPROXIMATE QUANTITY
} VARIABLE

NOTES:

"A" THIS DIMENSION BASED ON 2'-0" LENGTH OF STANDARD PIPE. IF SHORTER PIPE IS USED, DECREASE THIS DIMENSION ACCORDINGLY. SEE NOTE "B".

ALL DIMENSIONS ARE IN INCHES ("")
UNLESS OTHERWISE NOTED.

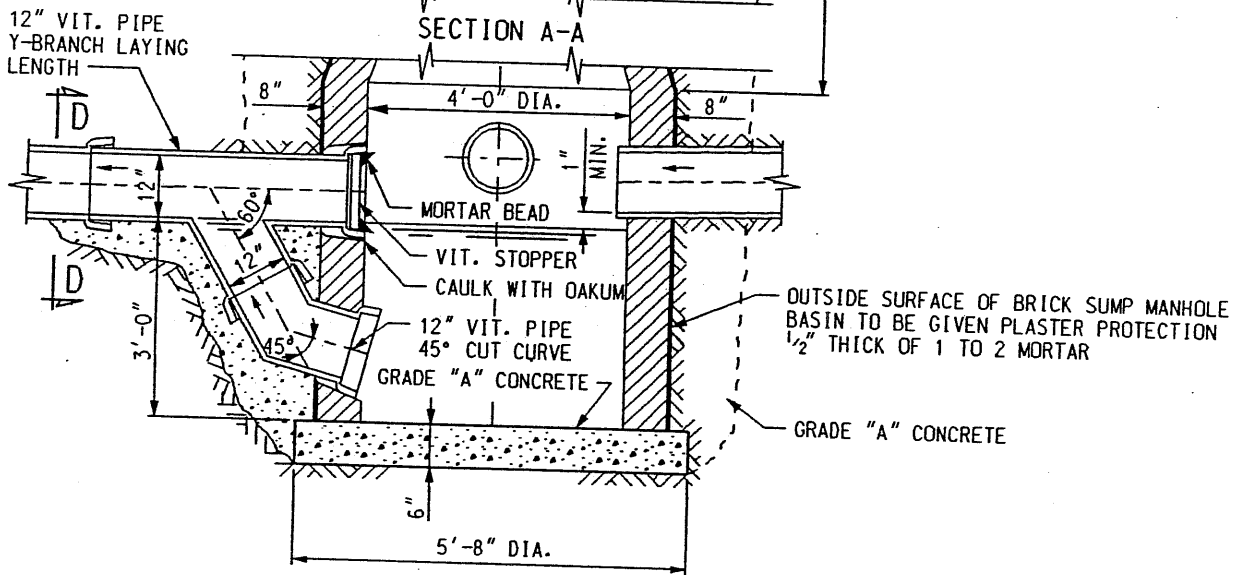
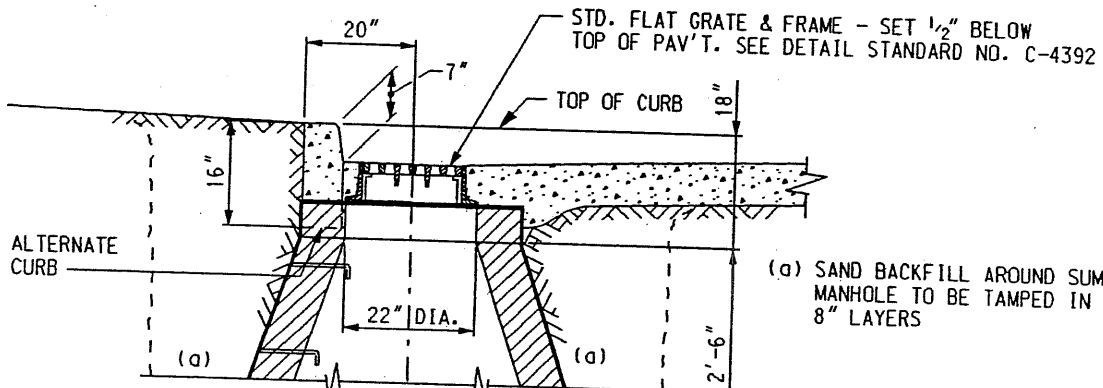
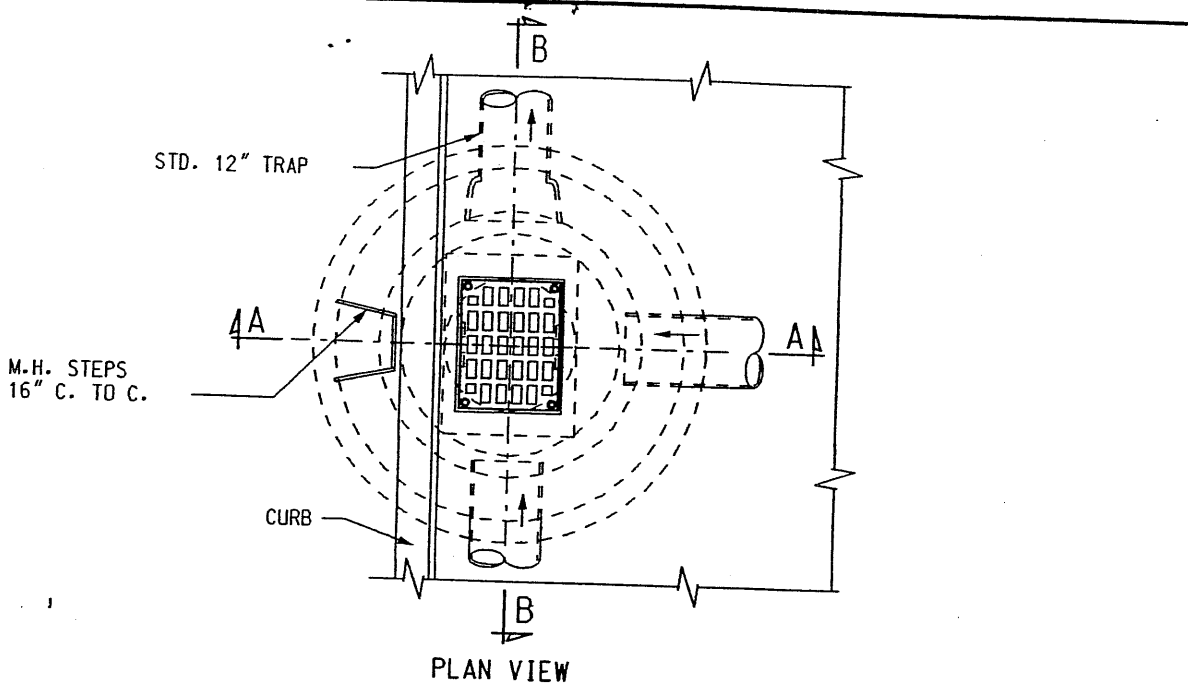
"B" (FOR MODIFIED BASIN)
TO CLEAR AN EXISTING UTILITY LINE AS SHOWN ON THE PLAN, OR TO USE A SHALLOW OUTLET, BASIN MAY BE MODIFIED BY PLACING A 12" LENGTH OF STRAIGHT 18" DIAMETER PIPE ON TOP OF "Y" INSTEAD OF STANDARD 24" LENGTH.

"C" ALL EXCAVATED SPACE BELOW PIPE TO BE FILLED WITH GRADE "C" CONCRETE TO ϕ OF PIPE.

"D" BACKFILL AROUND SUMP SHALL BE TAMPED IN 8" LAYERS. WHERE STANDARD STRENGTH VIT. CLAY PIPE IS USED, ENCASE IN 6" GRADE "A" CONCRETE.

REVISED DATE (METRIC TO
ENGLISH UNIT SYSTEM): DEC. 2002

CITY OF DETROIT			
CITY ENGINEERING DIVISION, D.P.W. STANDARD PLAN FOR			
----- STANDARD 18" X 12" -----			
----- SPECIAL "Y" CATCH BASIN -----			
03/07/98 PLAN DATE	DRAWING NO. 11	DETAIL STANDARD NO. C-4388	SHEET 3 OF 3



SECTION B-B
SUMP MANHOLE BASIN

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



PREPARED BY
BUREAU OF STREETS
AND HIGHWAYS

rev. K.S.M.

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M.F.S.

CHECKED BY:

APPROVED

Dadiin Haidar
ENGINEER OF STREETS
Alan Kelly
HEAD ENGINEER
[Signature]
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

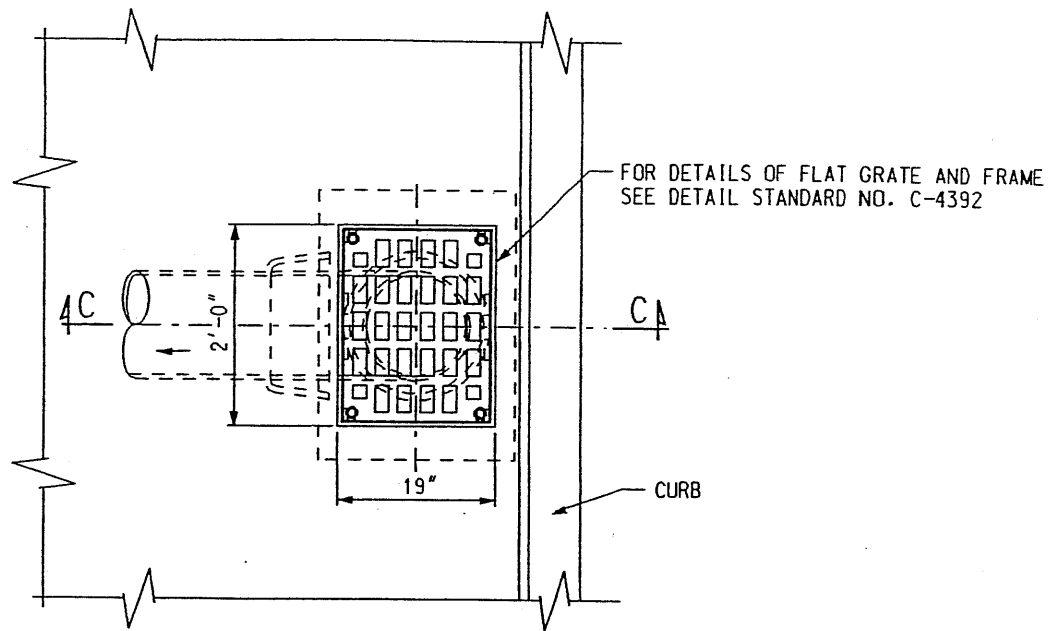
TYPICAL SUMP MANHOLE AND
"L" TYPE CATCH BASIN

03/07/98
PLAN DATE

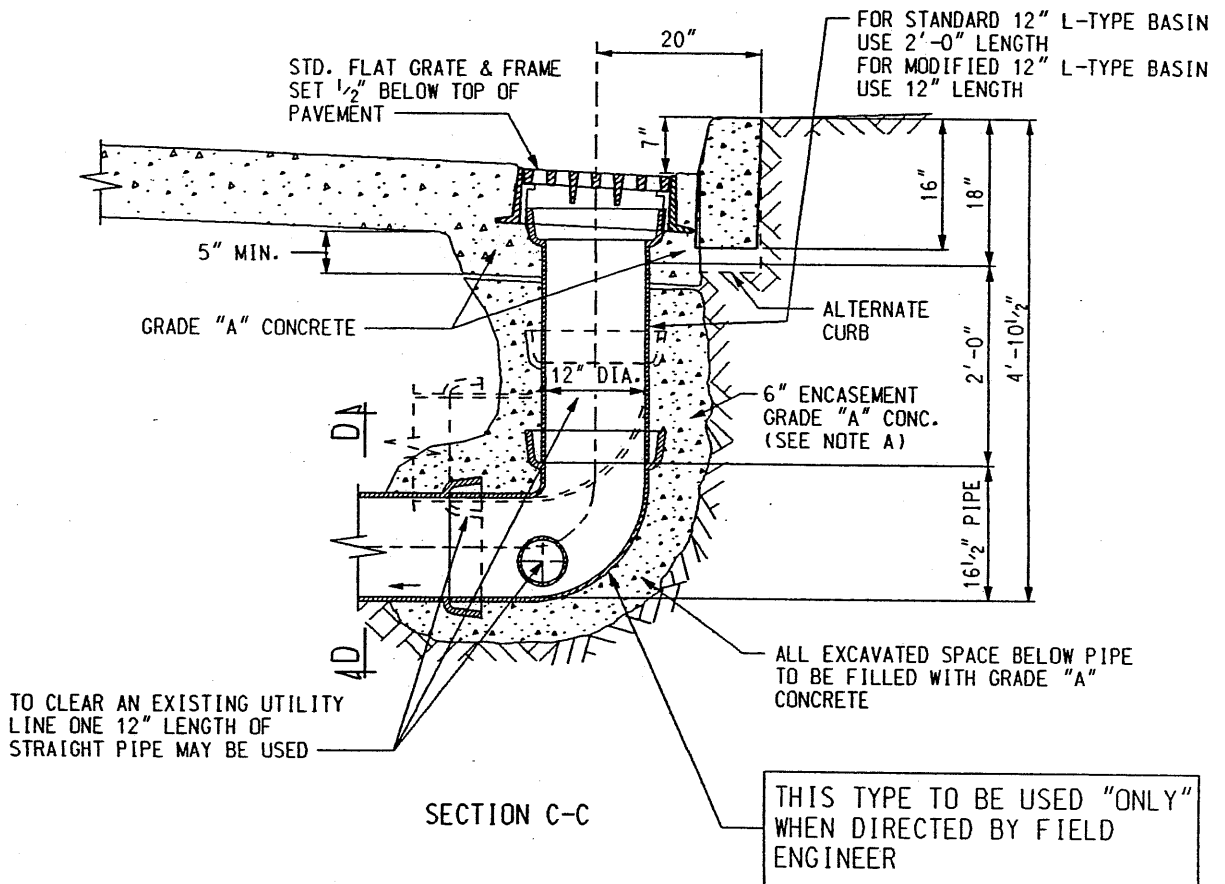
DRAWING NO.
12

DETAIL STANDARD NO.
C-4389

SHEET
1 OF 3



PLAN VIEW



"L" TYPE BASIN

NOTE A.

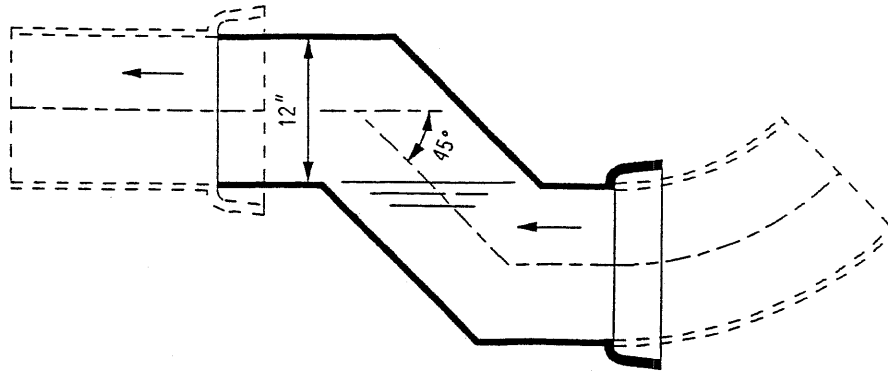
WHERE STANDARD STRENGTH VIT. CLAY PIPE
IS USED ENCASE IN 6" GRADE "A" CONCRETE.

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

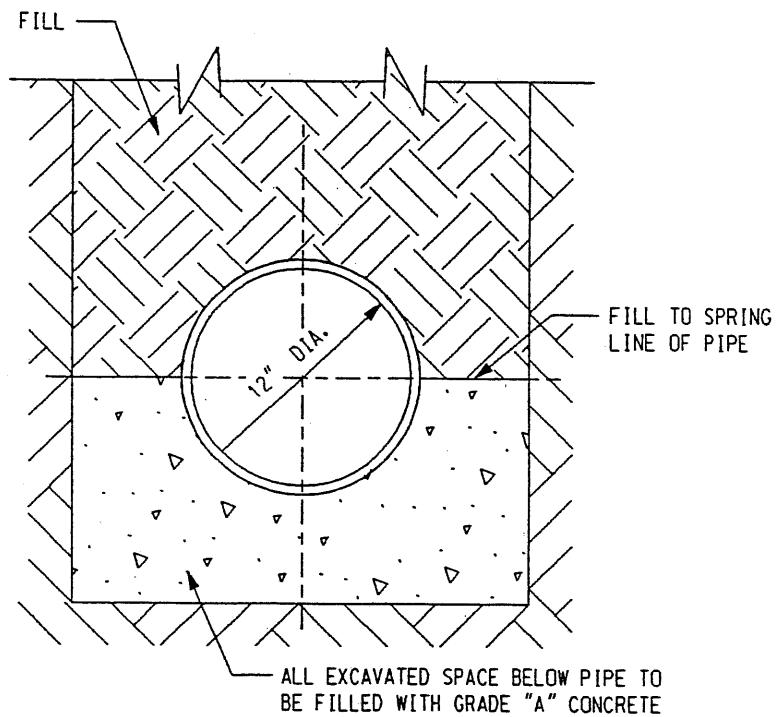
TYPICAL SUMP MANHOLE AND
"L" TYPE CATCH BASIN

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

03/07/98 PLAN DATE	DRAWING NO. 12	DETAIL STANDARD NO. C-4389	SHEET 2 OF 3
-----------------------	-------------------	-------------------------------	-----------------



STANDARD 12" HALF TRAP

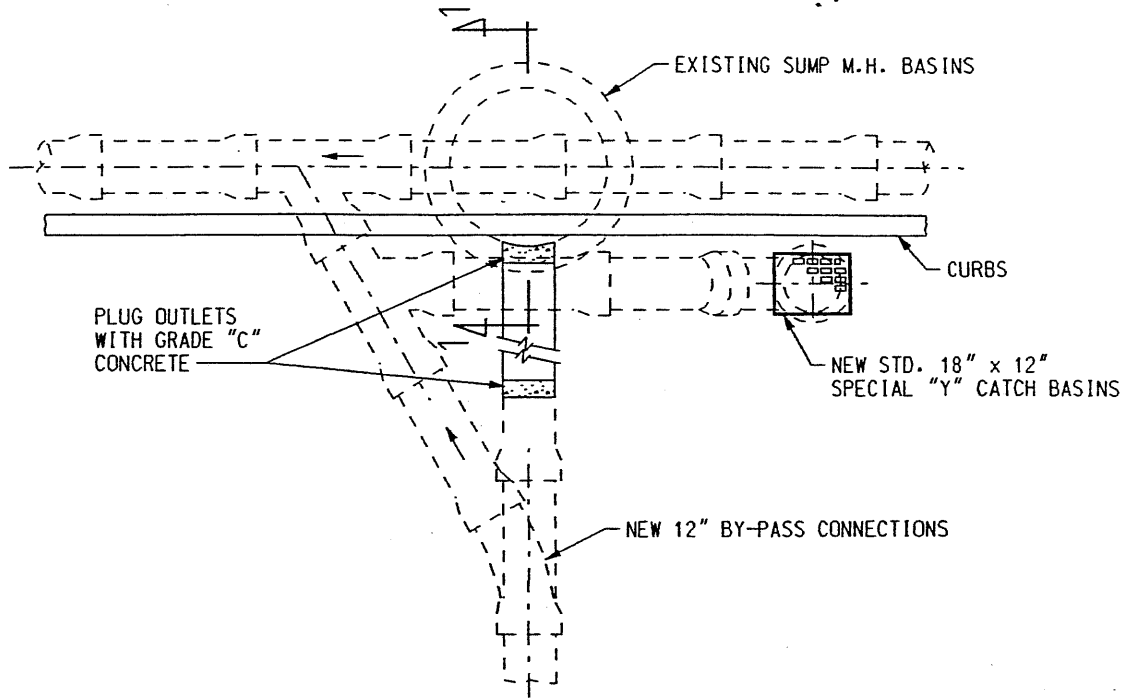


SECTION D-D

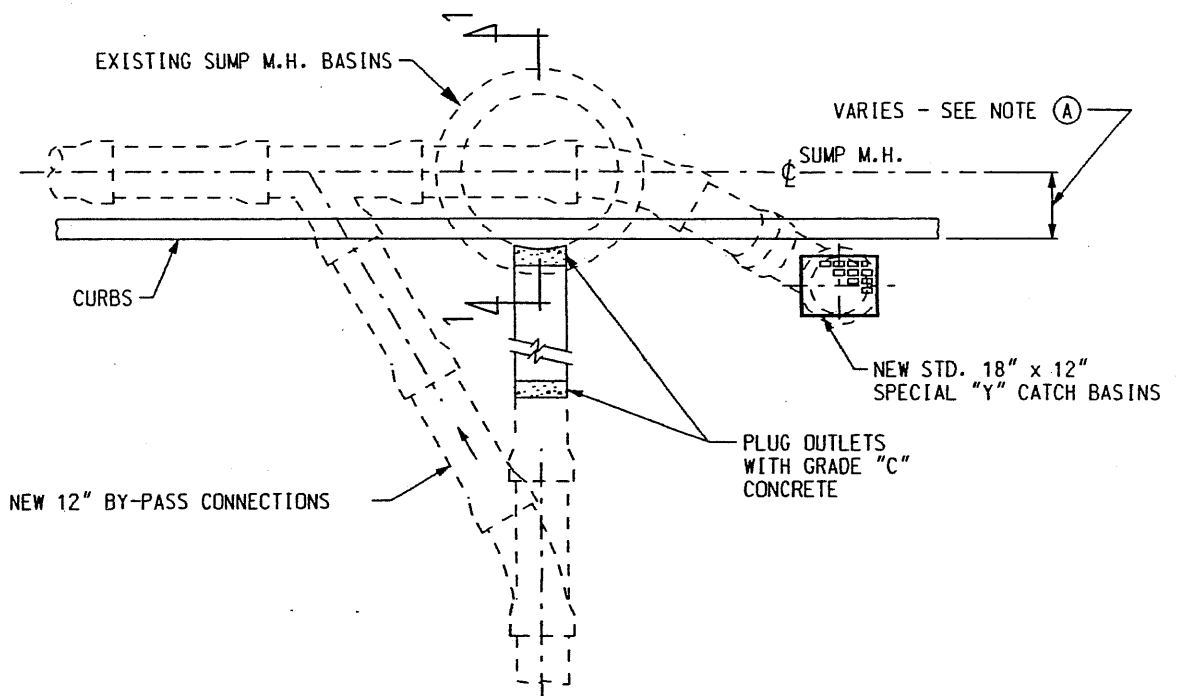
NOTES:

1. SEE STREET PAVING PLAN FOR LOCATION OF CATCH BASIN TO BE INSTALLED.
2. WHEN "L" TYPE BASIN IS ORDERED TO BE USED BY THE FIELD ENGINEER OR CALLED FOR ON DRAWINGS INSTEAD OF THE STANDARD "Y" BASIN, CONTRACTOR SHALL CONSTRUCT A STANDARD HALF TRAP IF DIRECTED TO DO SO BY THE FIELD ENGINEER.
3. ALL DIMENSIONS ARE IN INCHES(") UNLESS OTHERWISE NOTED.

<p>CITY OF DETROIT CITY ENGINEERING DIVISION, D.P.W. STANDARD PLAN FOR</p>			
<p>TYPICAL SUMP MANHOLE AND "L" TYPE CATCH BASIN</p>			
03/07/98 PLAN DATE	DRAWING NO. 12	DETAIL STANDARD NO. C-4389	SHEET 3 OF 3



PLAN - 1

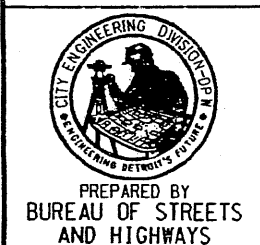


PLAN - 2

DETAIL (A) TYPICAL CONNECTIONS AT ABANDONED SUMP MANHOLE BASINS

(SEE NOTE (A))

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



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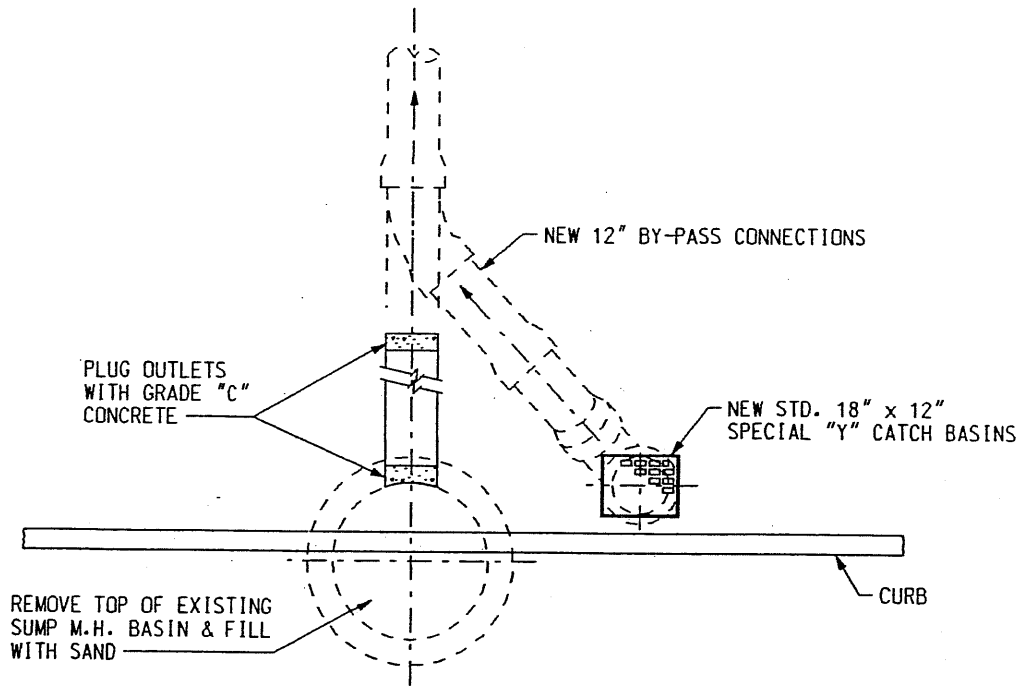
Dadmir Moidan
ENGINEER OF STREETS

Chris Talley
HEAD ENGINEER

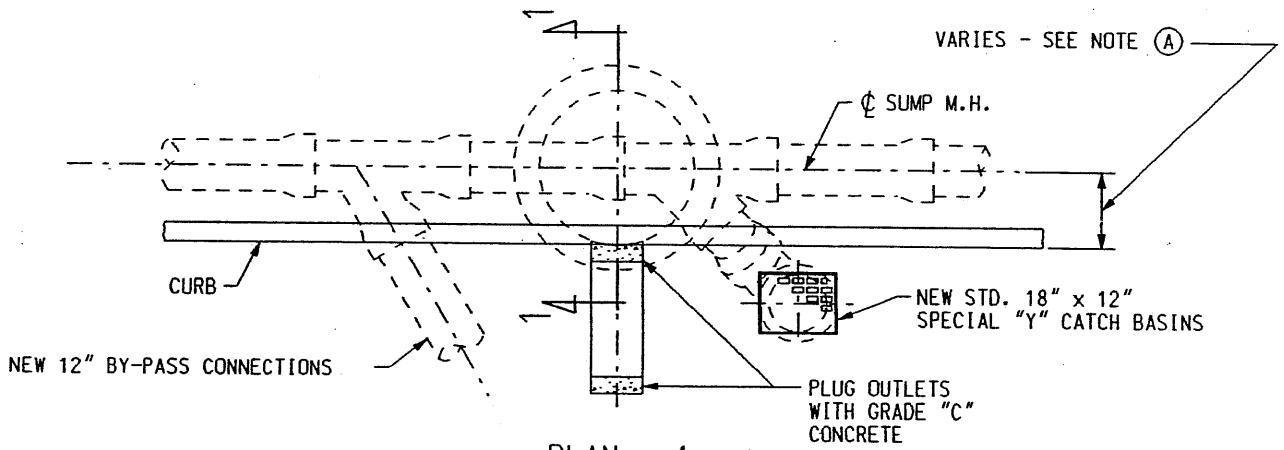
Alfonso Jesimil
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
RECONSTRUCTION OF EXISTING SUMP MANHOLES
AND NEW CATCH BASIN INSTALLATIONS

03/07/98 PLAN DATE	DRAWING NO. 13	DETAIL STANDARD NO. C-4390	SHEET 1 OF 6
-----------------------	-------------------	-------------------------------	-----------------



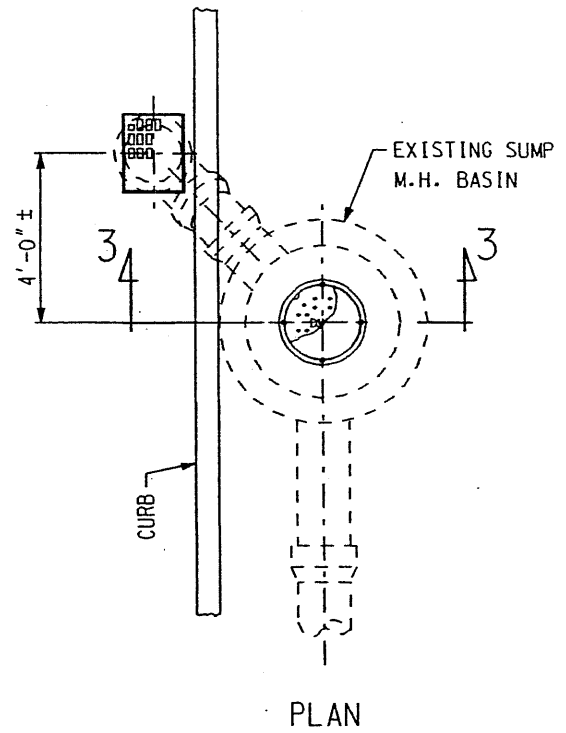
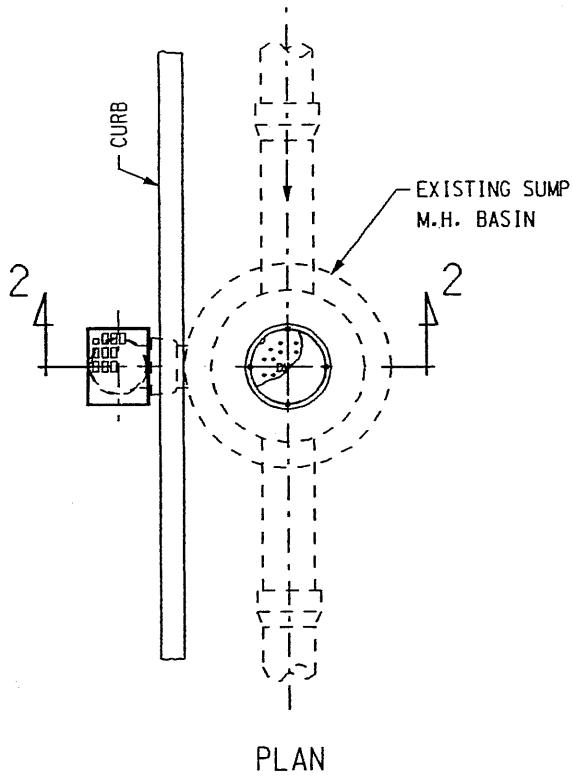
PLAN - 3



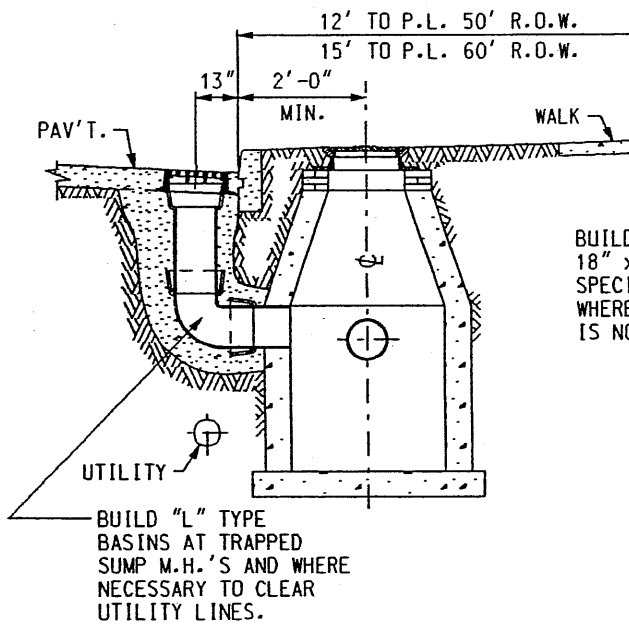
PLAN - 4

DETAIL (A) TYPICAL CONNECTIONS AT ABANDONED SUMP MANHOLE BASINS
 (SEE NOTE (A))

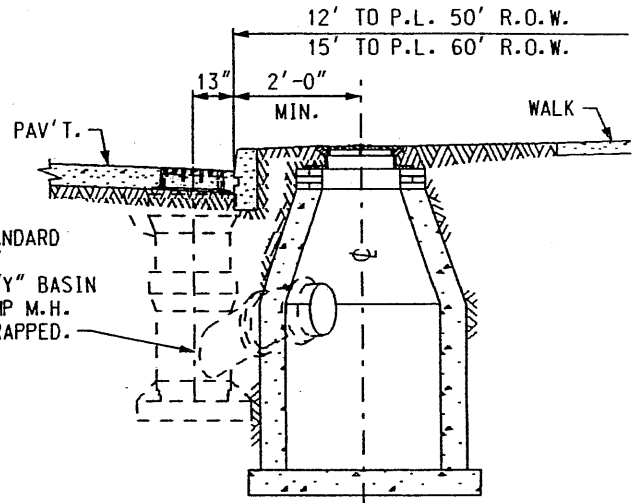
CITY OF DETROIT			
CITY ENGINEERING DIVISION, D.P.W.			
STANDARD PLAN FOR			
RECONSTRUCTION OF EXISTING SUMP MANHOLES			
AND NEW CATCH BASIN INSTALLATIONS			
03/07/98 PLAN DATE	DRAWING NO. 13	DETAIL STANDARD NO. C-4390	SHEET 2 OF 6



CAST IRON M.H. FRAMES



SECTION 2-2

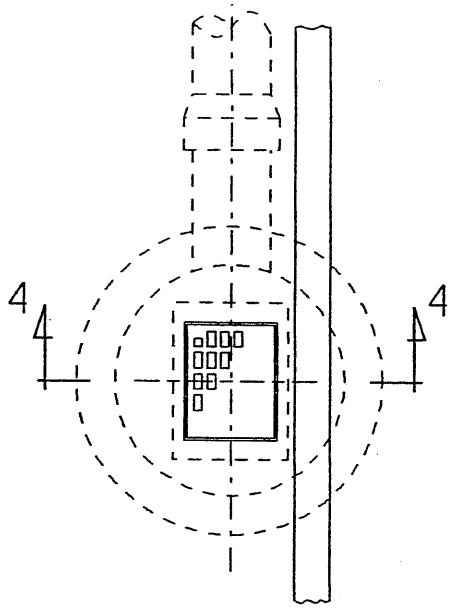


SECTION 3-3

DETAIL (B)

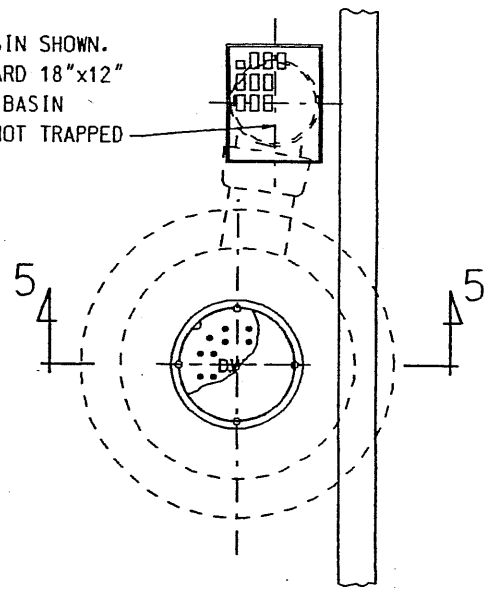
(SEE NOTE (B))

CITY OF DETROIT			
CITY ENGINEERING DIVISION. D.P.W.			
STANDARD PLAN FOR			
RECONSTRUCTION OF EXISTING SUMP MANHOLES			
AND NEW CATCH BASIN INSTALLATIONS			
03/07/98 PLAN DATE	DRAWING NO. 13	DETAIL STANDARD NO. C-4390	SHEET 3 OF 6



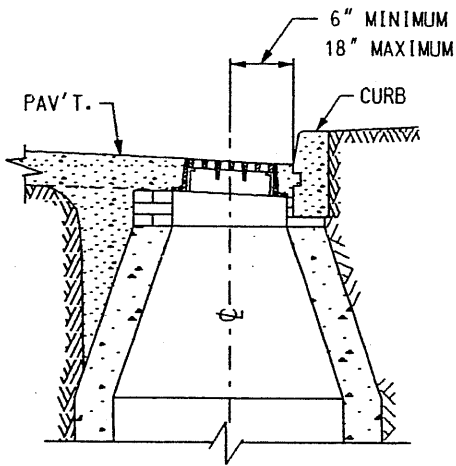
PLAN

"L" TYPE BASIN SHOWN.
 BUILD STANDARD 18"x12"
 SPECIAL "Y" BASIN
 IF LINE IS NOT TRAPPED



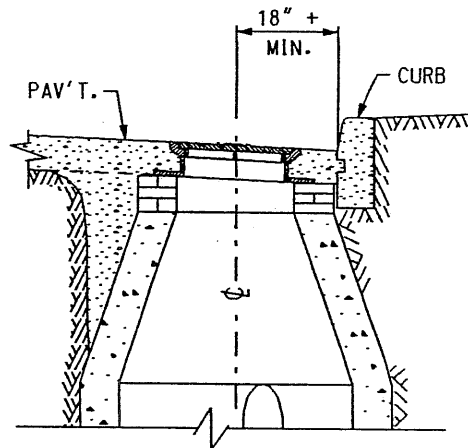
PLAN

CAST IRON M.H. FRAMES



SECTION 4-4

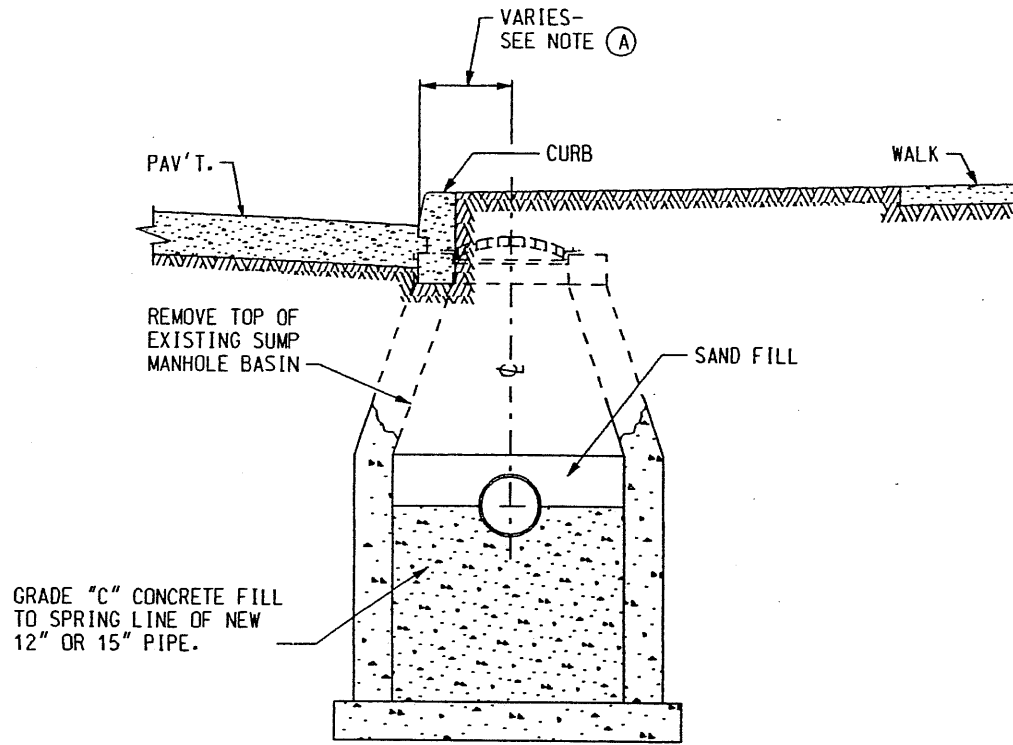
DETAIL (C)
 (SEE NOTE (C))



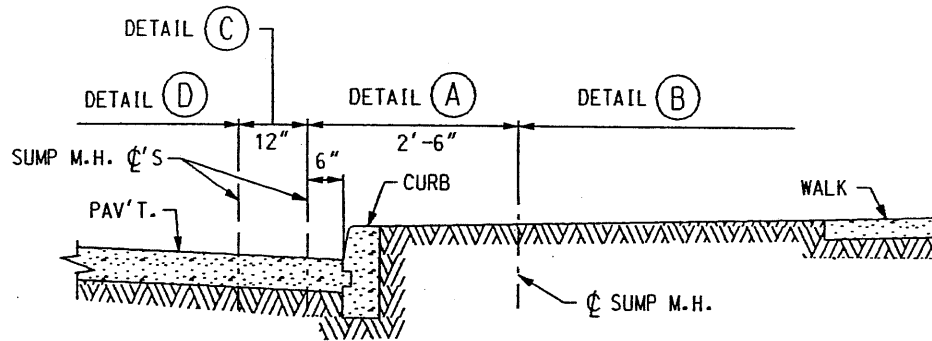
SECTION 5-5

DETAIL (D)
 (SEE NOTE (D))

CITY OF DETROIT			
CITY ENGINEERING DIVISION, D.P.W. STANDARD PLAN FOR			
RECONSTRUCTION OF EXISTING SUMP MANHOLES AND NEW CATCH BASIN INSTALLATIONS			
03/07/98 PLAN DATE	DRAWING NO. 13	DETAIL STANDARD NO. C-4390	SHEET 4 OF 6



SECTION 1-1



KEY LOCATION SKETCH

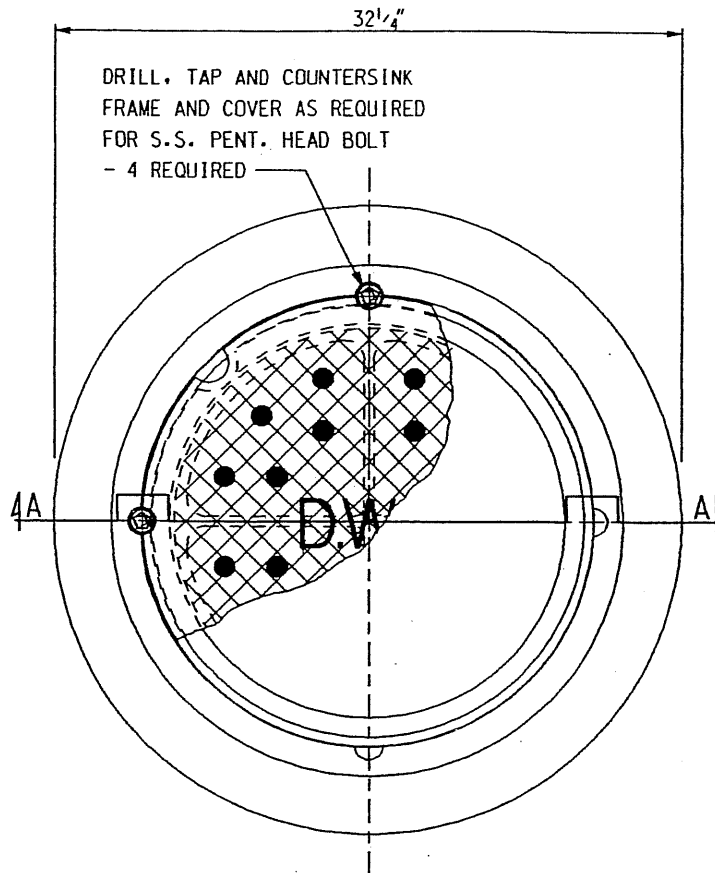
CITY OF DETROIT CITY ENGINEERING DIVISION, D.P.W. STANDARD PLAN FOR RECONSTRUCTION OF EXISTING SUMP MANHOLES AND NEW CATCH BASIN INSTALLATIONS				
REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002	03/07/98 PLAN DATE	DRAWING NO. 13	DETAIL STANDARD NO. C-4390	SHEET 5 OF 6

NOTES:

- (A) EXISTING SUMP MANHOLE BASINS TO BE ABANDONED WHEN ϕ IS LOCATED WITHIN FOLLOWING LIMITS FROM FACE OF CURB:
2'-0" m IN DIRECTION OF WALK.
6" TOWARD ϕ OF STREET.
- (B) EXISTING SUMP M.H. BASINS TO BE USED. RE-SET TOPS WITH STANDARD CAST IRON (SEE DETAIL STD. No. C-4391) MANHOLE FRAME AND COVER.
- (C) EXISTING SUMP M.H. BASINS TO BE USED. RE-SET TOPS WITH STANDARD FLAT TYPE CATCH BASIN FRAMES AND GRATES.
- (D) EXISTING SUMP M.H. BASINS TO BE USED. RE-SET TOPS WITH STANDARD CAST IRON (SEE DETAIL STD. No. C-4391) MANHOLE FRAME AND COVER. CONSTRUCT "L" TYPE BASIN AT CURB LOCATION AND CONNECT TO SUMP MANHOLE.

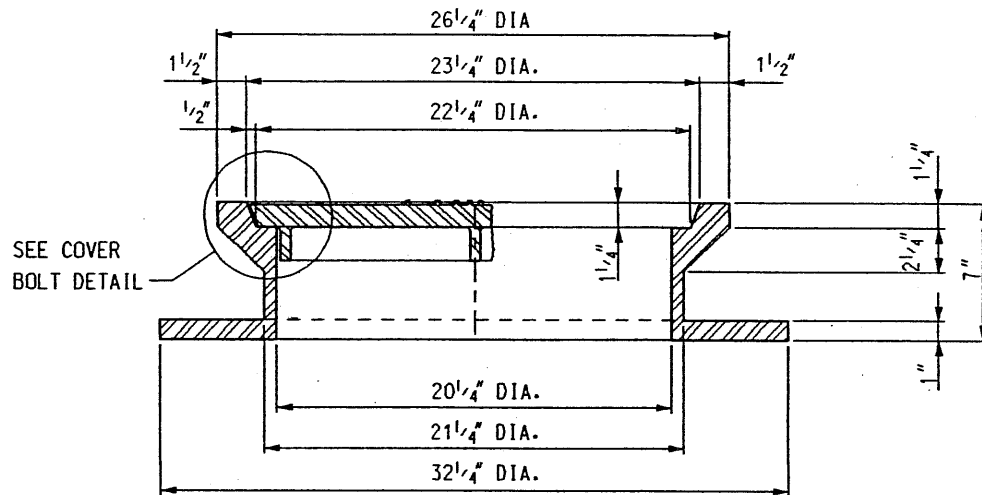
ALL DIMENSIONS ARE IN INCHES(") UNLESS OTHERWISE NOTED.

CITY OF DETROIT			
CITY ENGINEERING DIVISION, D.P.W.			
STANDARD PLAN FOR			
RECONSTRUCTION OF EXISTING SUMP MANHOLES			
AND NEW CATCH BASIN INSTALLATIONS			
03/07/98 PLAN DATE	DRAWING NO. 13	DETAIL STANDARD NO. C-4390	SHEET 6 OF 6



DRILL, TAP AND COUNTERSINK
 FRAME AND COVER AS REQUIRED
 FOR S.S. PENT. HEAD BOLT
 - 4 REQUIRED

PLAN VIEW OF FRAME



SECTION A-A

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



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 BUREAU OF STREETS
 AND HIGHWAYS

rev. K.S.M.

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M.F.S.

CHECKED BY:

APPROVED

Dadun Haidar
 ENGINEER OF STREETS
Wally Talley
 HEAD ENGINEER
[Signature]
 CITY ENGINEER

CITY OF DETROIT
 CITY ENGINEERING DIVISION, D.P.W.
 STANDARD PLAN FOR

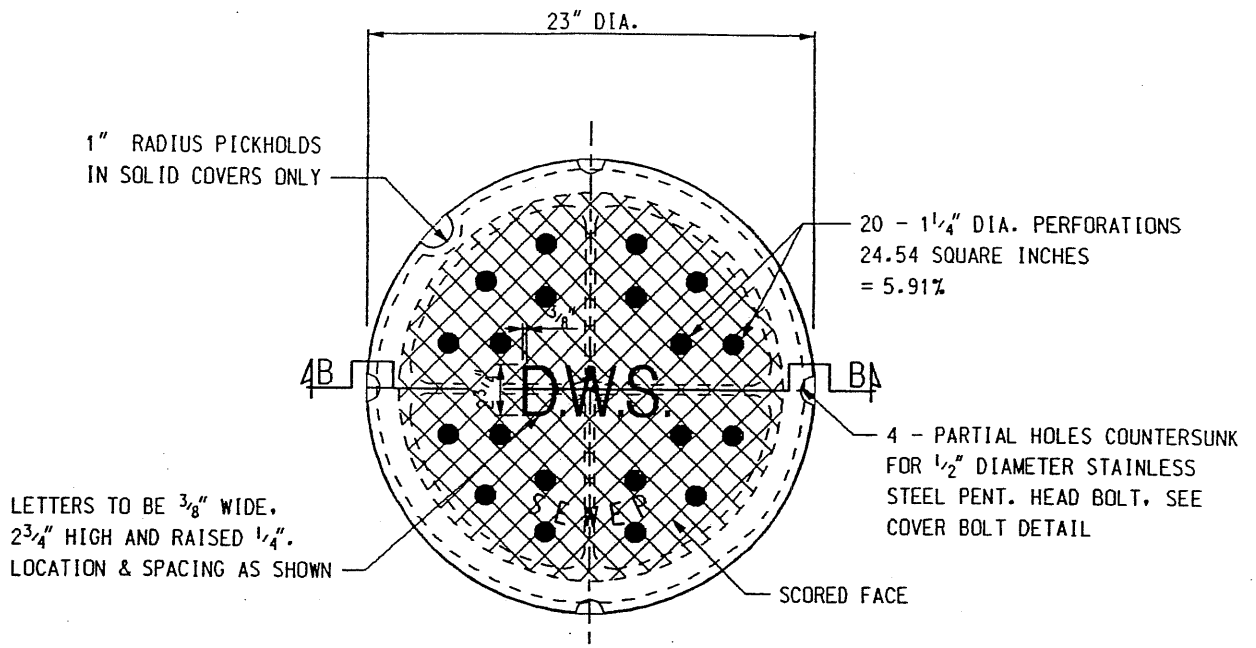
MANHOLE FRAME AND COVER

03/07/98
 PLAN DATE

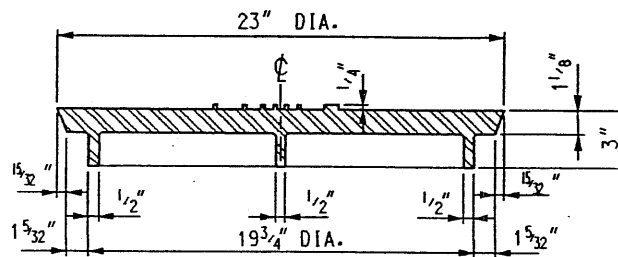
DRAWING NO.
 14

DETAIL STANDARD NO.
 C-4391

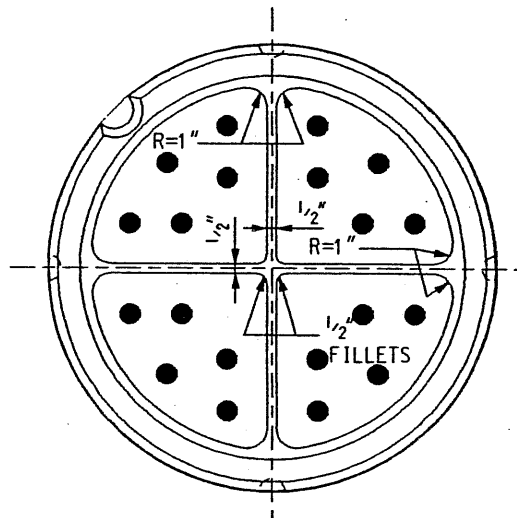
SHEET
 1 OF 3



PLAN VIEW OF COVER



SECTION B-B



BOTTOM VIEW OF COVER

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

MANHOLE FRAME AND COVER

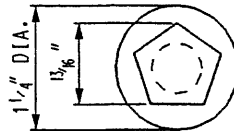
REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

03/07/98
PLAN DATE

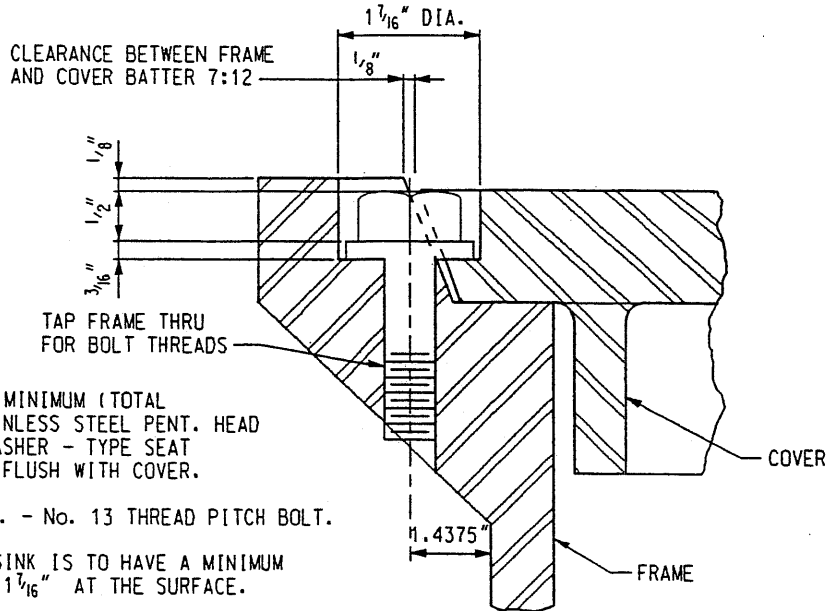
DRAWING NO.
14

DETAIL STANDARD NO.
C-4391

SHEET
2 OF 3



PLAN VIEW OF BOLT

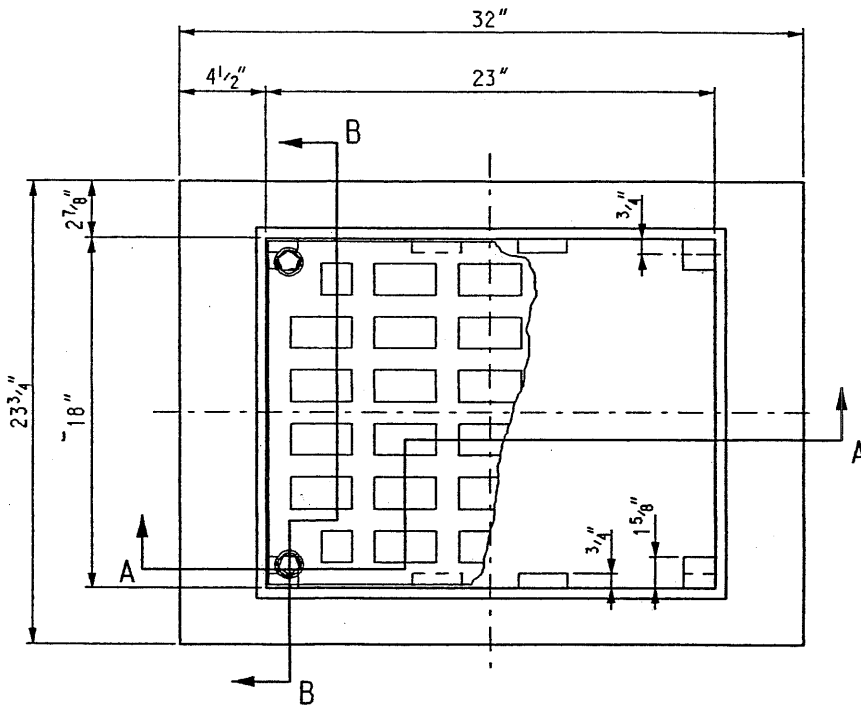


COVER BOLT DETAIL

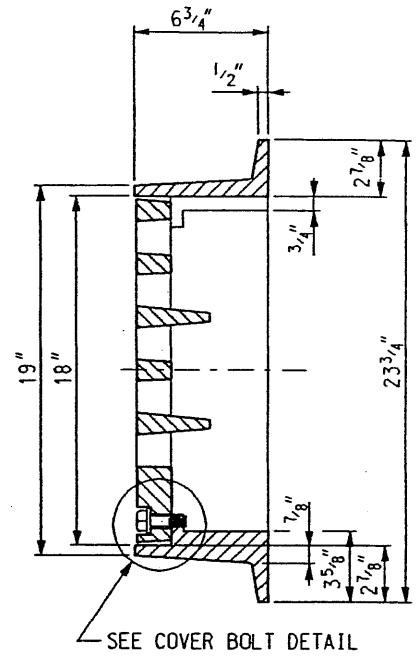
NOTES:

1. FRAME AND COVER TO BE GRAY IRON CASTING, ASTM A48, CLASS 30B
 TOTAL WT. = 410 lbs. (PERF. COVER)
 MANHOLE FRAME = 262 lbs.
 COVER (PERF.) = 148 lbs.
 COVER (BLANK) = 156 lbs.
2. THE SEATING FACE OF THE COVER AND SEAT FOR SAME ON THE FRAME SHALL BE MACHINE FINISHED OR THE EQUIVALENT THEREOF SO THAT THE COVER SHALL HAVE AN EVEN BEARING ON ITS SEAT AT ALL POINTS WITHOUT ROCKING OR TILTING.
3. ALL DIMENSIONS ARE IN INCHES(") UNLESS OTHERWISE NOTED.

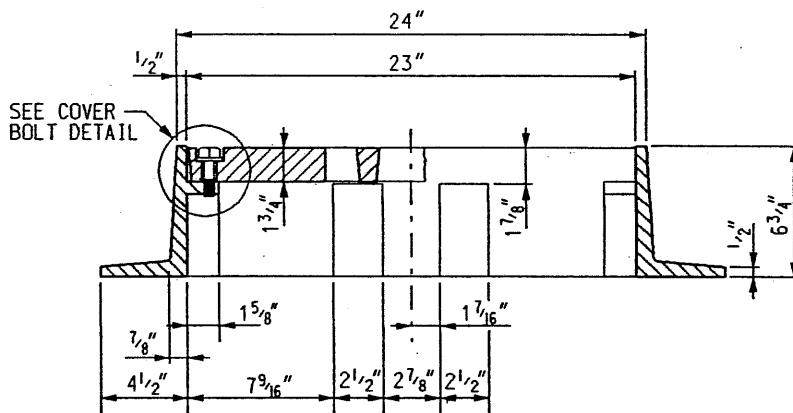
<p>CITY OF DETROIT CITY ENGINEERING DIVISION, D.P.W. STANDARD PLAN FOR MANHOLE FRAME AND COVER</p>			
03/07/98 PLAN DATE	DRAWING NO. 14	DETAIL STANDARD NO. C-4391	SHEET 3 OF 3



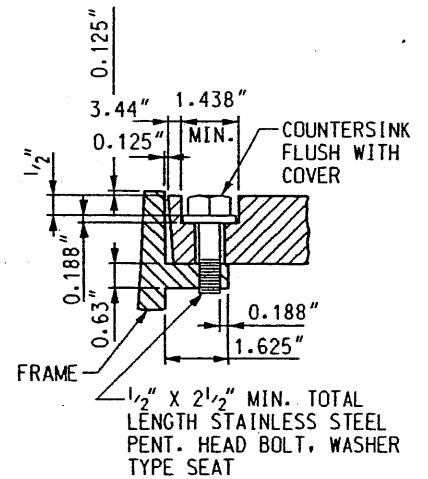
PLAN VIEW OF FRAME



SECTION B-B



SECTION A-A



COVER BOLT DETAIL

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



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APPROVED

Dadiu Haider
ENGINEER OF STREETS
Wm. Talley
HEAD ENGINEER
[Signature]
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

FLAT TYPE

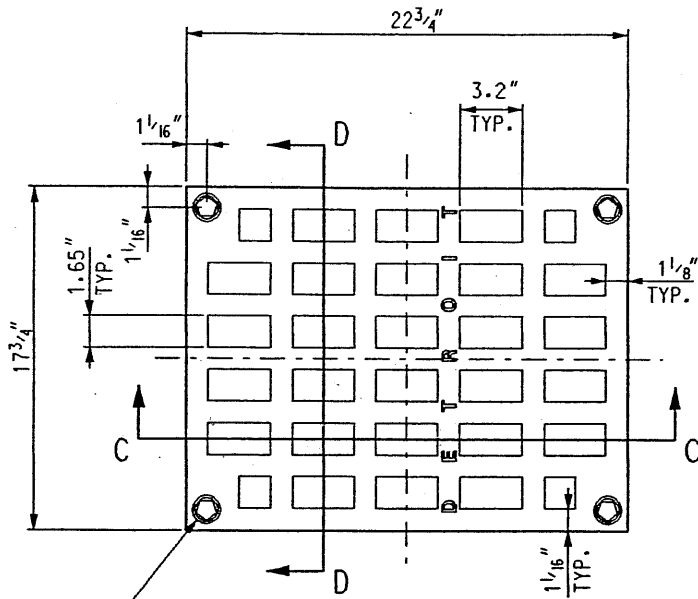
GRATE AND FRAME

03/07/98
PLAN DATE

DRAWING NO.
15

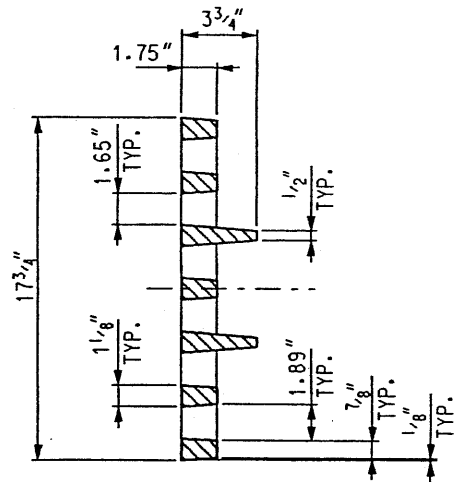
DETAIL STANDARD NO.
C-4392

SHEET
1 OF 2

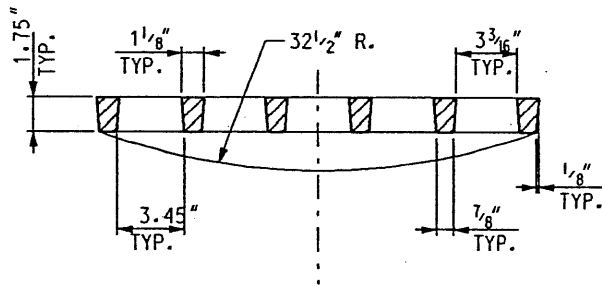


3/16" DIA. HOLE THRU COVER. C'BORE
 1.45" X 0.70" DEEP CORED IN GRATE.
 FRAME DRILLED & TAPPED FOR 1/2" DIA.
 - 0.08" THREAD PITCH BOLT

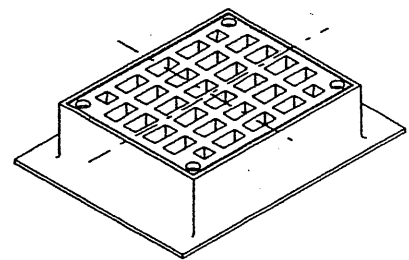
PLAN VIEW OF GRATE



SECTION D-D



SECTION C-C



ISOMETRIC VIEW

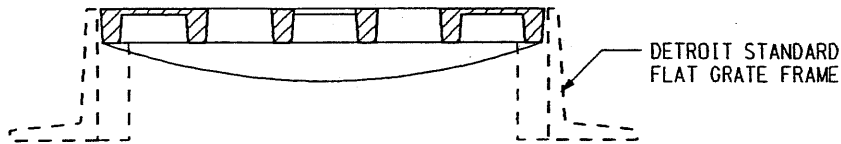
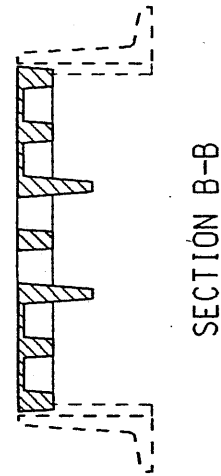
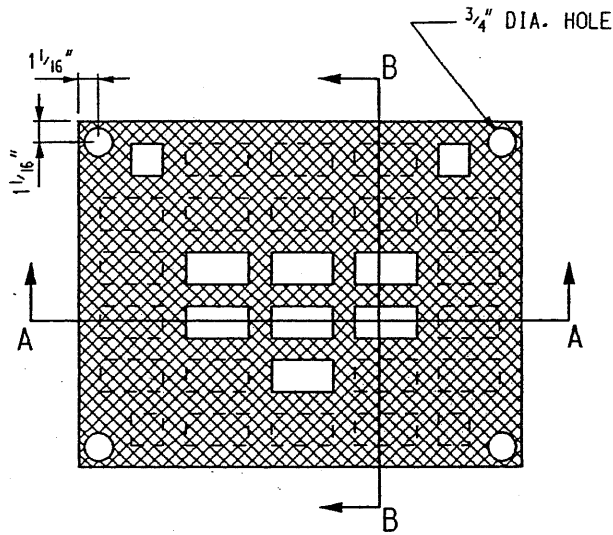
NOTE:

ALL DIMENSIONS ARE IN INCHES(") UNLESS OTHERWISE NOTED.

CITY OF DETROIT
 CITY ENGINEERING DIVISION, D.P.W.
 STANDARD PLAN FOR

 FLAT TYPE

 GRATE AND FRAME



SECTION A-A

TYPE A

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



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CHECKED BY:

APPROVED

Dadiu Haidar
ENGINEER OF STREETS
Walter Talley
HEAD ENGINEER
M. F. S.
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

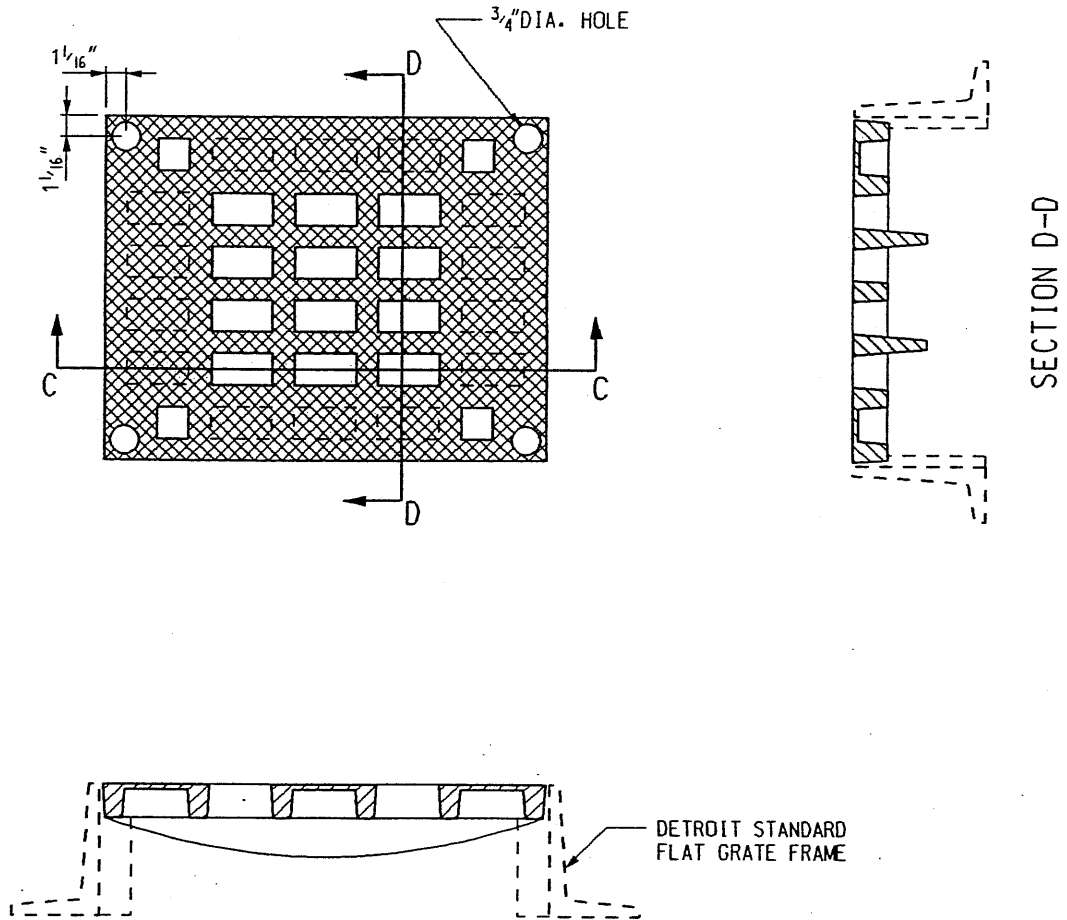
STANDARD THROTTLED
CATCH BASIN COVERS

03/07/98
PLAN DATE

DRAWING NO.
16

DETAIL STANDARD NO.
C-4393

SHEET
1 OF 2

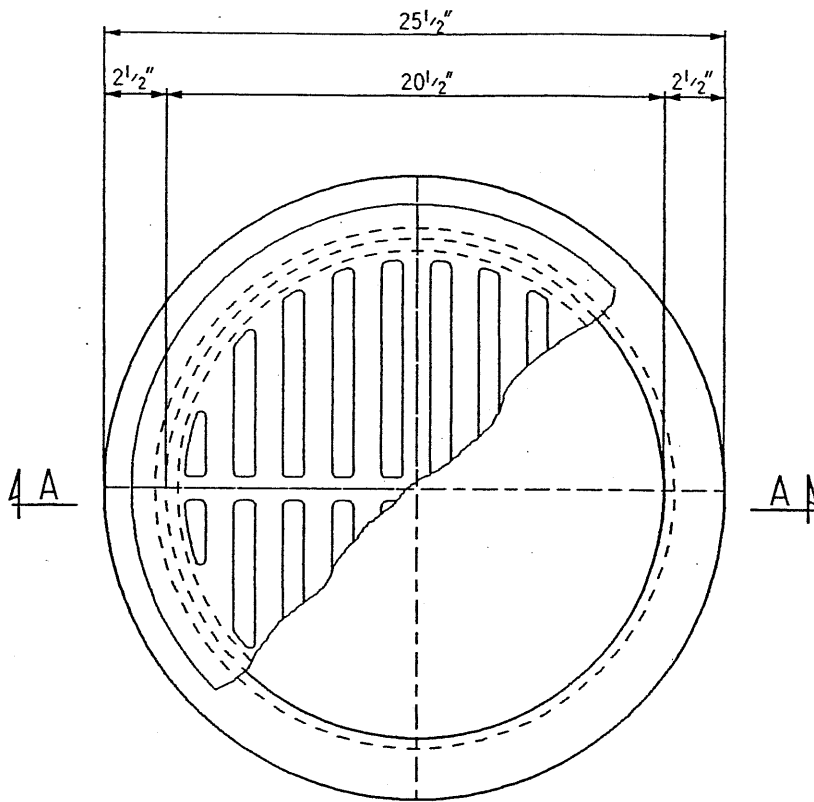


SECTION C-C
TYPE B

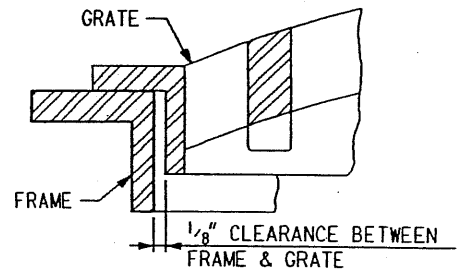
NOTES:

1. CATCH BASIN COVER NO. 5000
EAST JORDAN IRON WORKS,
EAST JORDAN, MICHIGAN; OR EQUIVALENT.
2. TO THROTTLE TO A 6" LINE CAPACITY USE TYPE A.
3. TO THROTTLE TO A 8" LINE CAPACITY USE TYPE B.
4. ALL DIMENSIONS ARE IN INCHES (") UNLESS OTHERWISE NOTED.
5. DRAWING NO. C-4393 IS THE SAME AS C-4392 EXCEPT FOR
THE RESTRICTED GRATE OPENINGS AND COVER TO FRAME BOLTS.

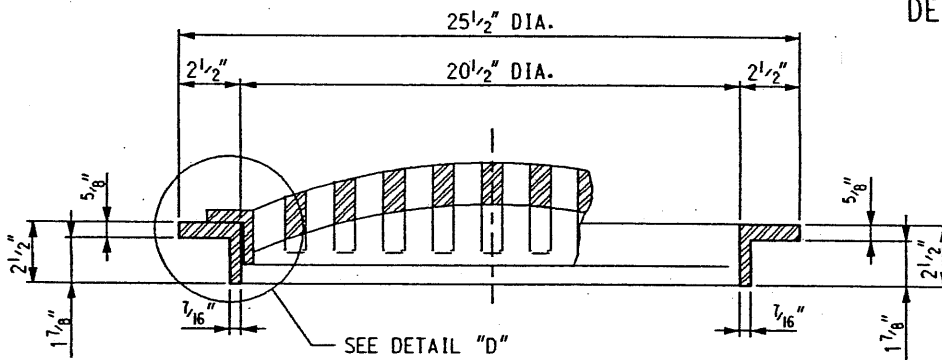
CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
STANDARD THROTTLED
CATCH BASIN COVERS



PLAN VIEW OF FRAME



DETAIL "D"



SECTION A-A

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



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M.F.S.
CHECKED BY:

APPROVED

Dadun Haidar
ENGINEER OF STREETS
Wm. J. Talley
HEAD ENGINEER
[Signature]
CITY ENGINEER

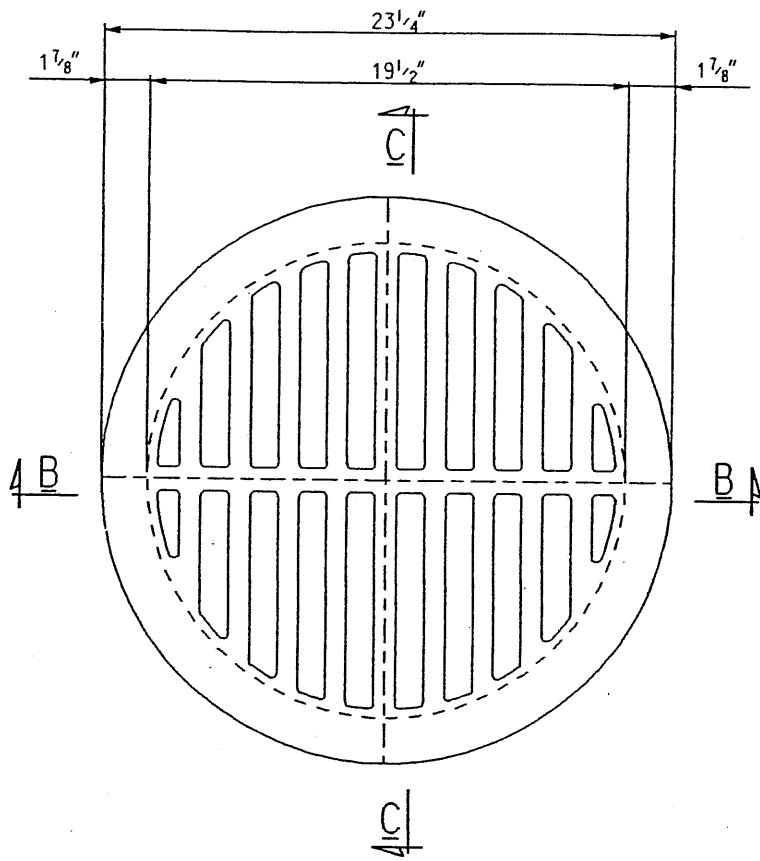
CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
DOME GRATE AND FRAME

03/07/98
PLAN DATE

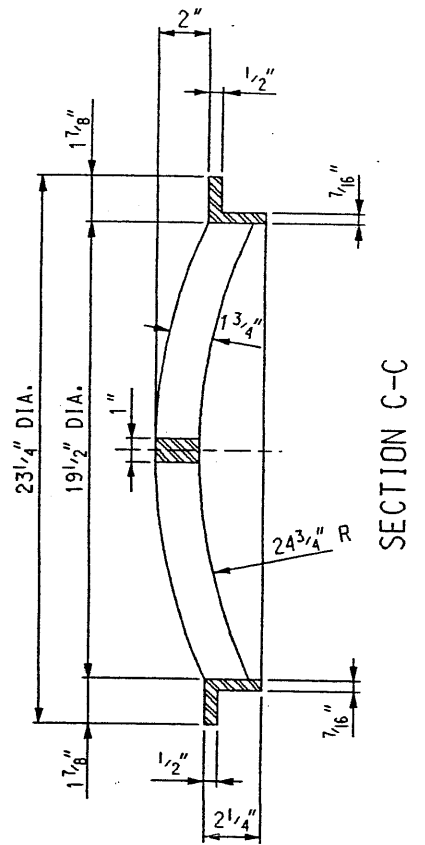
DRAWING NO.
17

DETAIL STANDARD NO.
C-4394

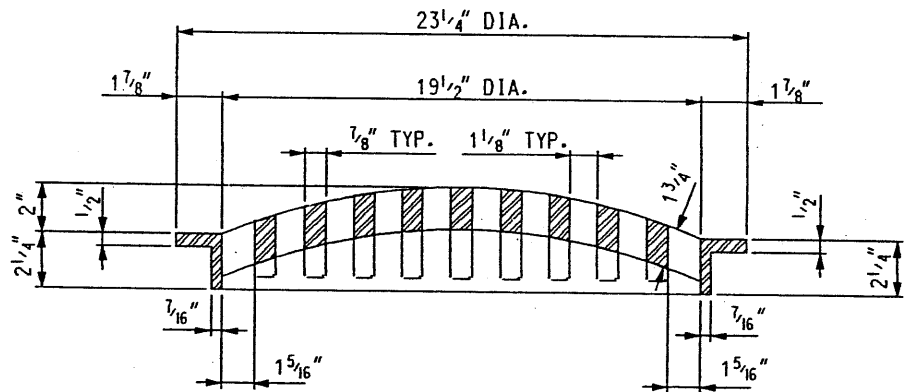
SHEET
1 OF 2



PLAN VIEW OF GRATE



SECTION C-C



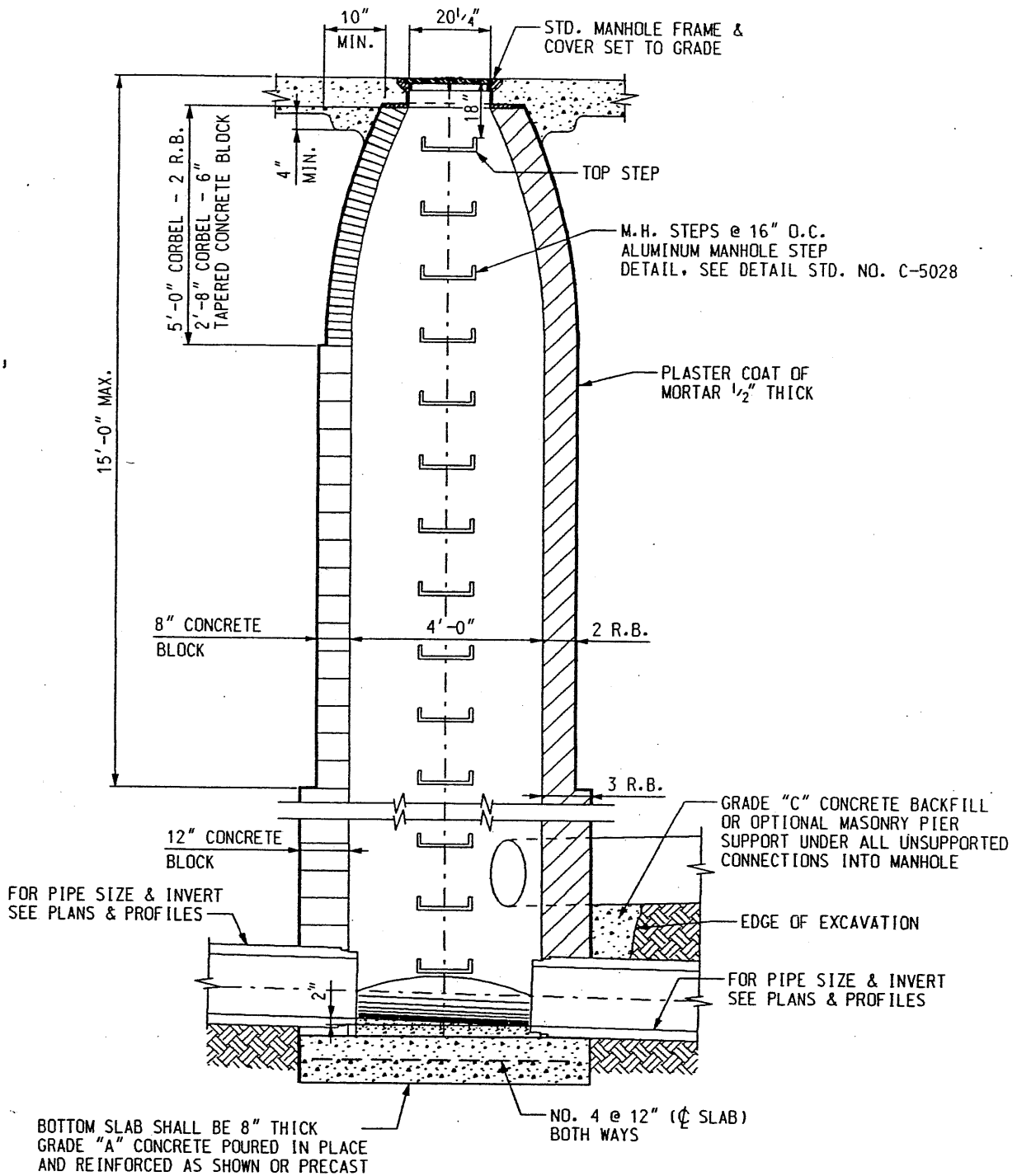
SECTION B-B

NOTE:
ALL DIMENSIONS ARE IN INCHES ("")
UNLESS OTHERWISE NOTED.

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
DOME GRATE AND FRAME

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

03/07/98 PLAN DATE	DRAWING NO. 17	DETAIL STANDARD NO. C-4394	SHEET 2 OF 2
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CONCRETE BLOCK & BRICK OPTION

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



PREPARED BY
BUREAU OF STREETS
AND HIGHWAYS

rev. K.S.M.

DRAWN BY:

M.F.S.

CHECKED BY:

APPROVED

Dadiin Haidar
ENGINEER OF STREETS

Wm. Talley
HEAD ENGINEER

Maizumi
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

STANDARD SEWER MANHOLES
CONSTRUCTION ALTERNATES

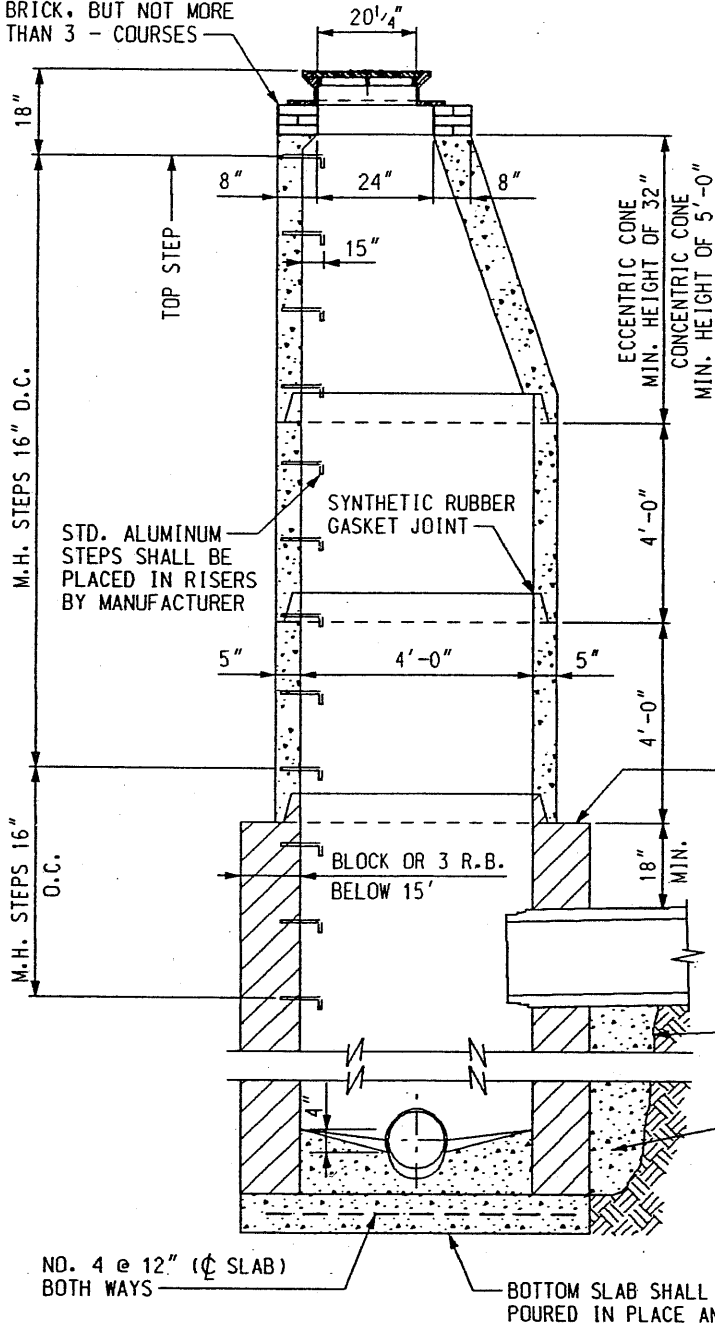
03/07/98
PLAN DATE

DRAWING NO.
18

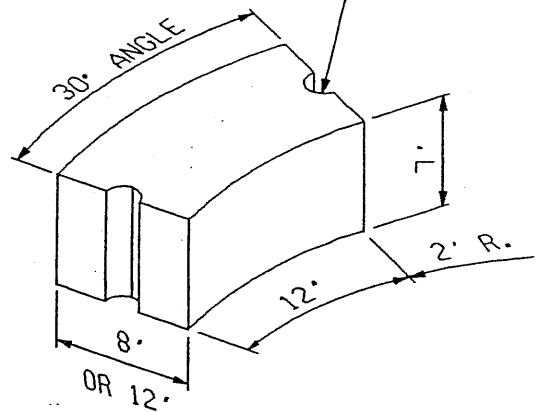
DETAIL STANDARD NO.
C-4395A

SHEET
1 OF 2

AT LEAST 1 - COURSE OF BRICK, BUT NOT MORE THAN 3 - COURSES



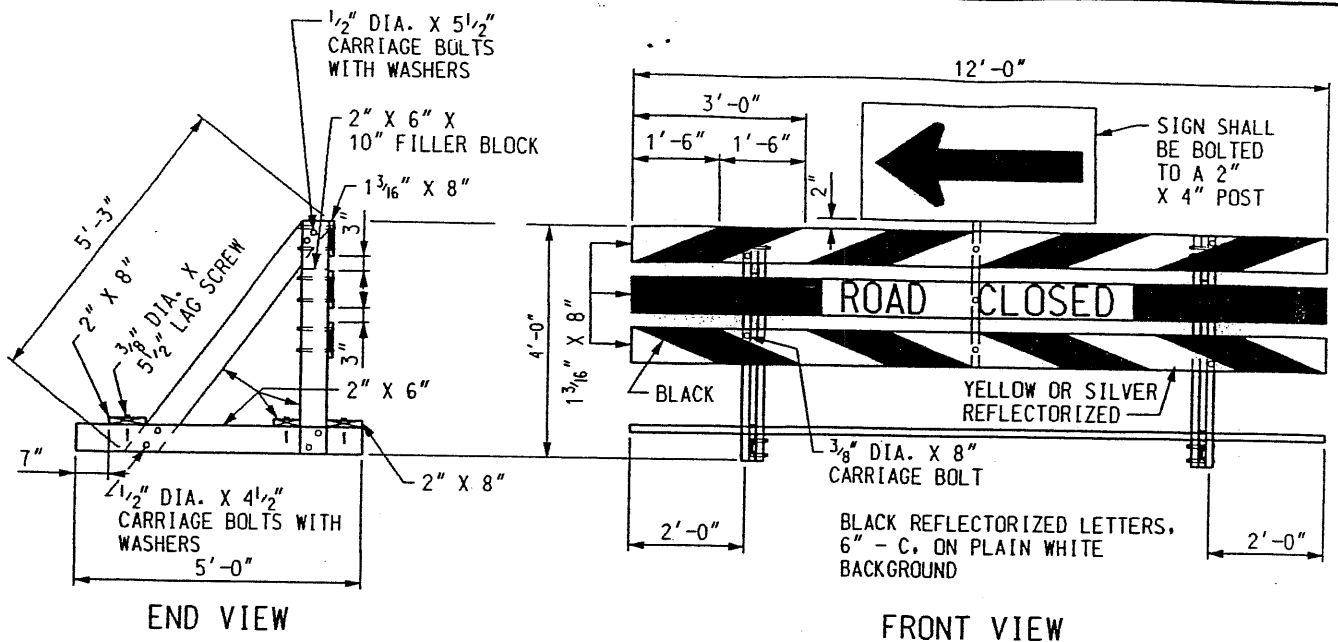
CORE - 1/2 CIRCLE 2" DIA. IN THE CENTER OF THE BLOCK



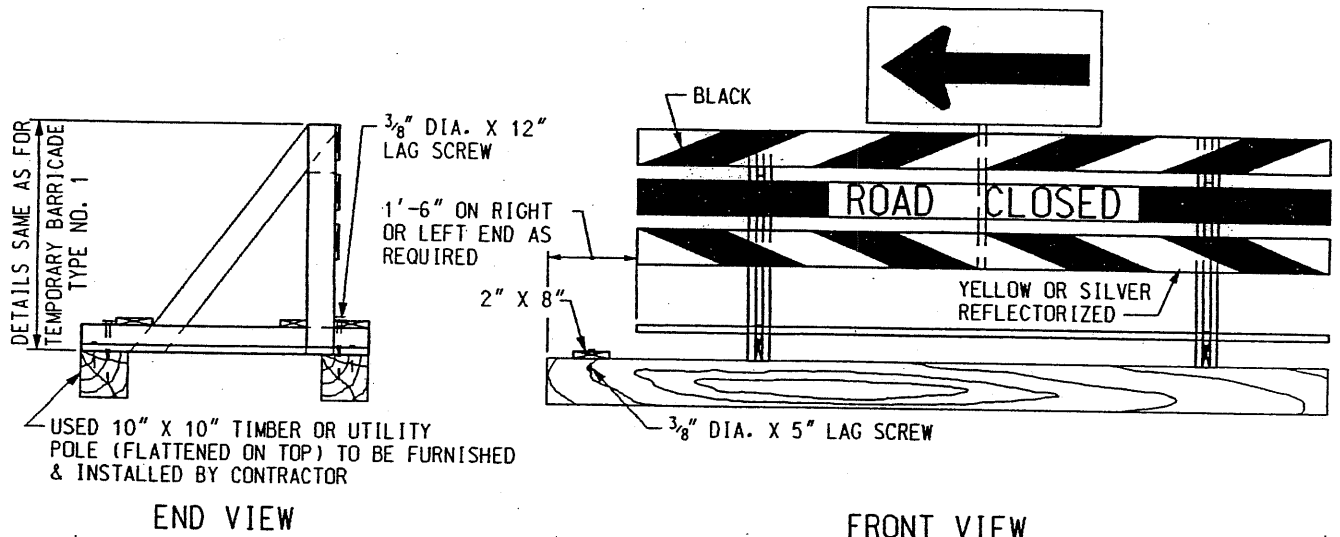
BLOCK DETAIL

PRECAST CONCRETE PIPE OPTION

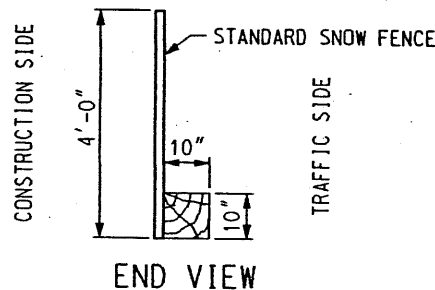
CITY OF DETROIT			
CITY ENGINEERING DIVISION, D.P.W.			
STANDARD PLAN FOR			
STANDARD SEWER MANHOLES			
CONSTRUCTION ALTERNATES			
03/07/98 PLAN DATE	DRAWING NO. 18	DETAIL STANDARD NO. C-4395A	SHEET 2 OF 2



TEMPORARY BARRICADE - TYPE NO. 1




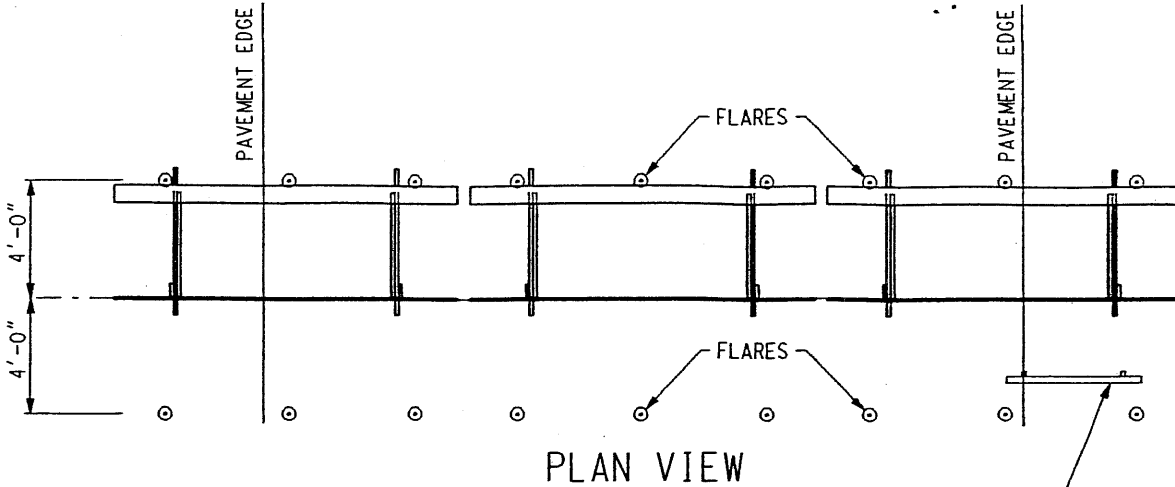
TEMPORARY BARRICADE - TYPE NO. 2



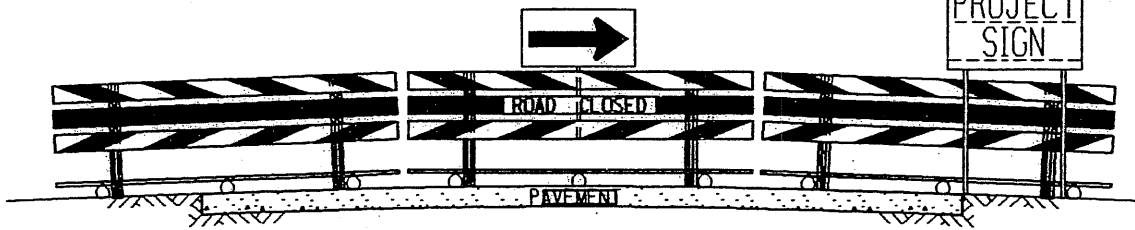
TYPICAL CROSS-SECTION TIMBER AND SNOW FENCE BARRICADE

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

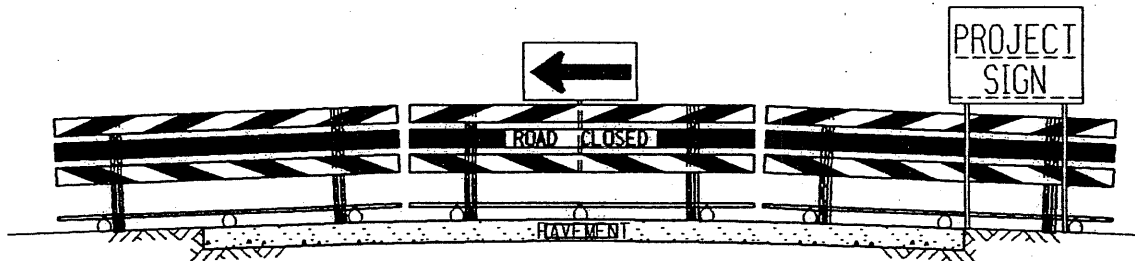
 <p>PREPARED BY BUREAU OF STREETS AND HIGHWAYS</p>	<p>ev. K.S.M. DRAWN BY:</p>	<p>APPROVED</p> <p><i>Dadiu Haidar</i> ENGINEER OF STREETS</p> <p><i>Wm. Tully</i> HEAD ENGINEER</p> <p><i>M. F. S.</i> CITY ENGINEER</p>	<p>CITY OF DETROIT CITY ENGINEERING DIVISION. D.P.W. STANDARD PLAN FOR PORTABLE BARRICADES</p>
	<p>M.F.S. CHECKED BY:</p>	<p>03/07/98 PLAN DATE</p>	<p>DRAWING NO. 19</p>
			<p>SHEET 1 OF 2</p>



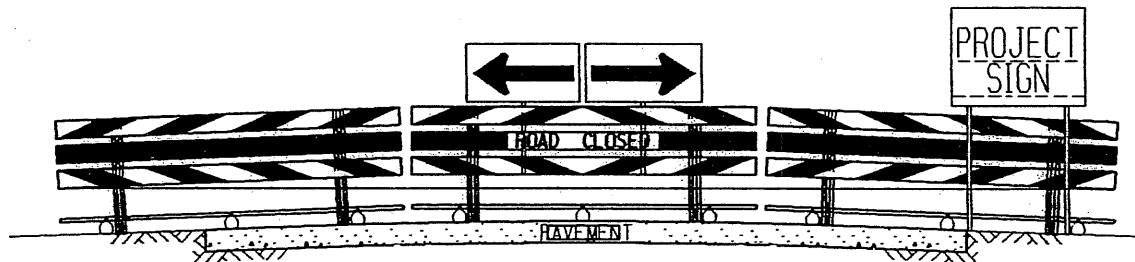
WHEN AVAILABLE, ELECTRICITY SHALL BE USED FOR LIGHTING BARRICADES, WITH OCCASIONAL FLARES.



VIEW OF BARRICADE WHEN TRAFFIC IS DIRECTED TO THE RIGHT



VIEW OF BARRICADE WHEN TRAFFIC IS DIRECTED TO THE LEFT



VIEW OF BARRICADE WHEN TRAFFIC IS DIRECTED TO THE LEFT AND RIGHT
TYPICAL BARRICADE UNITS

NOTES:

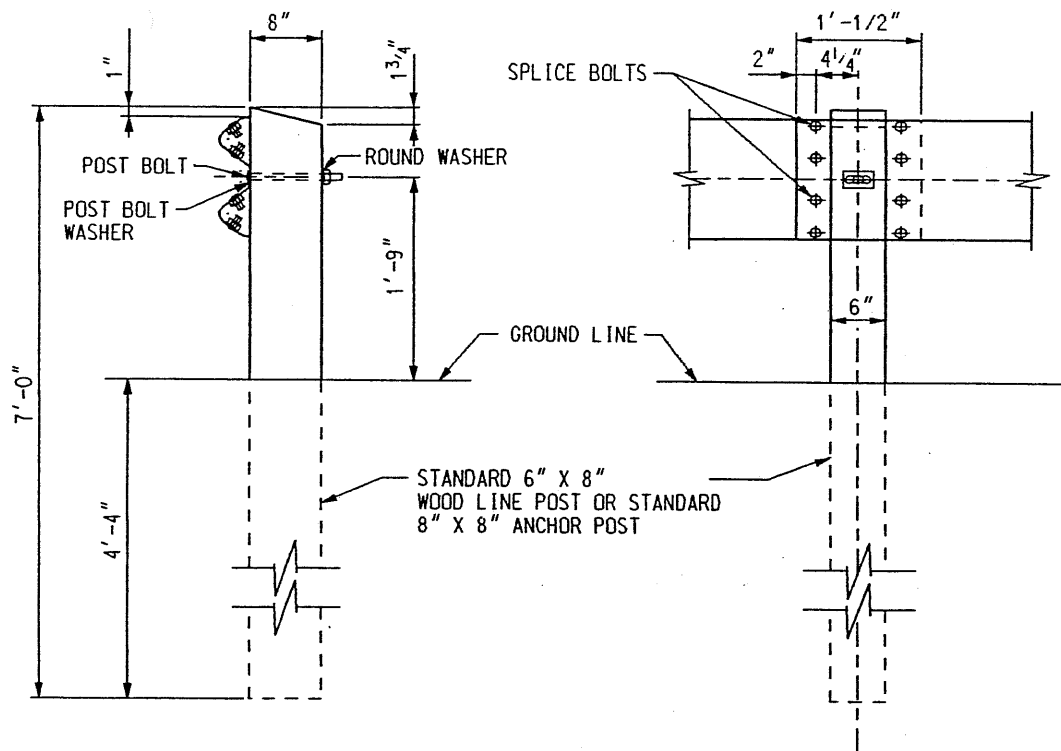
1. SUPPORT SHALL BE LOADED WITH SANDBAGS FOR TEMPORARY BARRICADE TYPE NO. 1 ONLY SANBAGS ARE INCIDENTAL TO THE COST OF ITEM.
2. ALL FACE BOARDS TO BE DOUGLAS FIR. ALL OTHER BOARDS AND POSTS TO BE FIR.
3. ALL LUMBER DIMENSIONS ARE NOMINAL.
4. ALL DIMENSIONS ARE IN INCHES(") UNLESS OTHERWISE NOTED.

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002

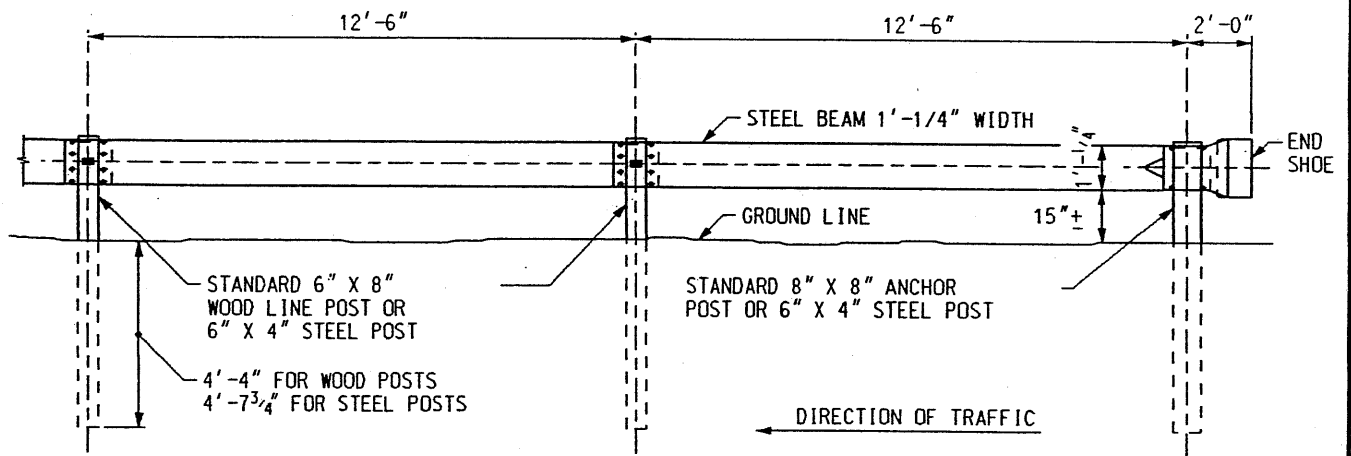
CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

PORTABLE BARRICADES

03/07/98 PLAN DATE	DRAWING NO. 19	DETAIL STANDARD NO. C-4552	SHEET 2 OF 2
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DETAIL SHOWING SPLICE AND ATTACHMENT TO WOOD POSTS



ELEVATION SHOWING POST SPACING

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



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BUREAU OF STREETS
AND HIGHWAYS

rev. K.S.M.

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M.F.S.

CHECKED BY:

APPROVED

Dadiu Haidar
ENGINEER OF STREETS
Wm. Kelly
LEAD ENGINEER
[Signature]
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

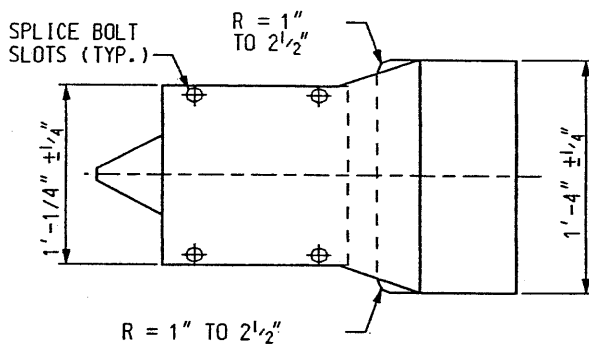
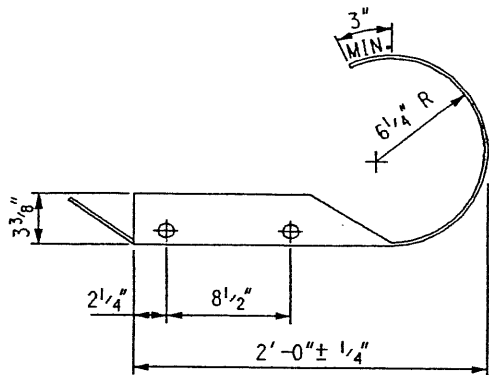
STEEL BEAM GUARD RAIL

03/07/98
PLAN DATE

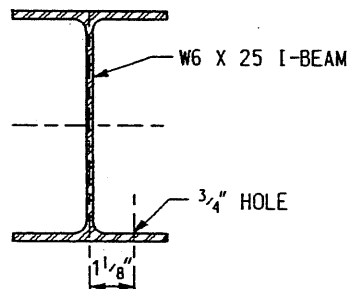
DRAWING NO.
20

DETAIL STANDARD NO.
C-4585

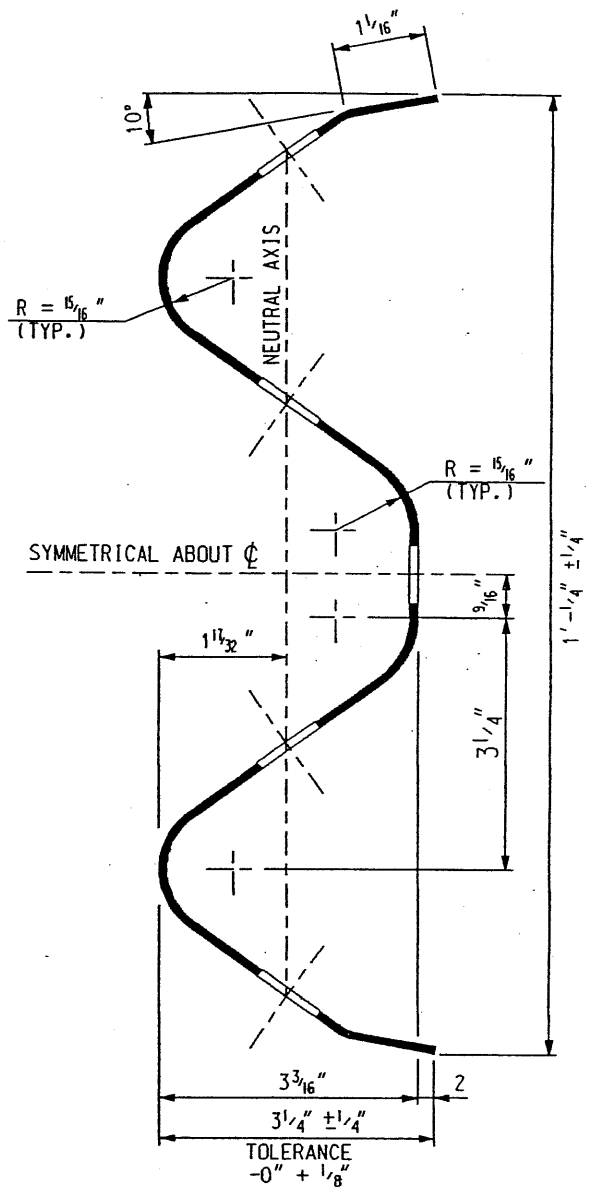
SHEET
1 OF 3



TERMINAL END SHOE

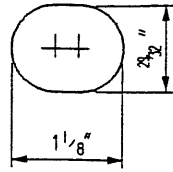


SECTION SHOWING I-BEAM BOLT HOLE LOCATION

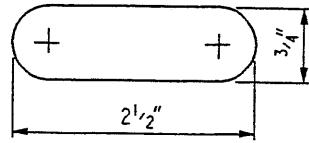


SECTION THROUGH BEAM ELEMENT

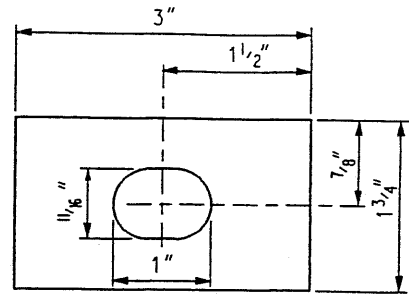
CITY OF DETROIT
 CITY ENGINEERING DIVISION, D.P.W.
 STANDARD PLAN FOR
 ---STEEL BEAM GUARD RAIL---



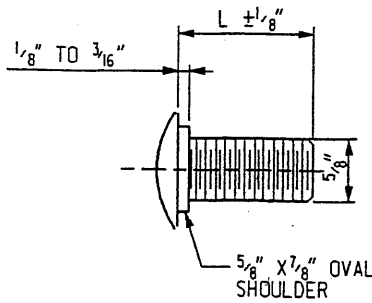
SPLICE BOLT SLOT



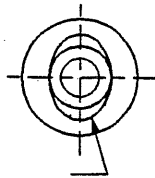
POST BOLT SLOT



$\frac{3}{16}$ " 7 GAGE PLATE
POST BOLT WASHER
1 REQUIRED PER POST BOLT

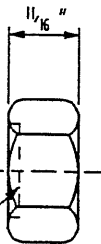


BOLT



RECESS $\frac{1}{8}$ " DEEP X $\frac{11}{16}$ " DIAMETER

NUT



$\frac{11}{16}$ " DIA.
 $\frac{1}{8}$ " THICK
ROUND WASHER

SPLICE BOLT (BEAM)	L = 1 1/4"	- 8 REQUIRED PER SPLICE
SPLICE BOLT (TERMINAL SECTION)	L = 1 1/4"	- 4 REQUIRED PER TERMINAL SECTION
POST BOLT (WOOD)	L = 9 1/2"	- 1 REQUIRED PER POST
POST BOLT (STEEL)	L = 2"	- 1 REQUIRED PER POST

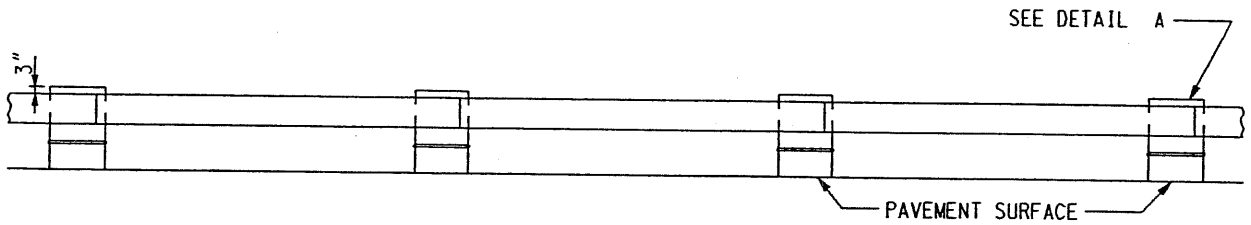
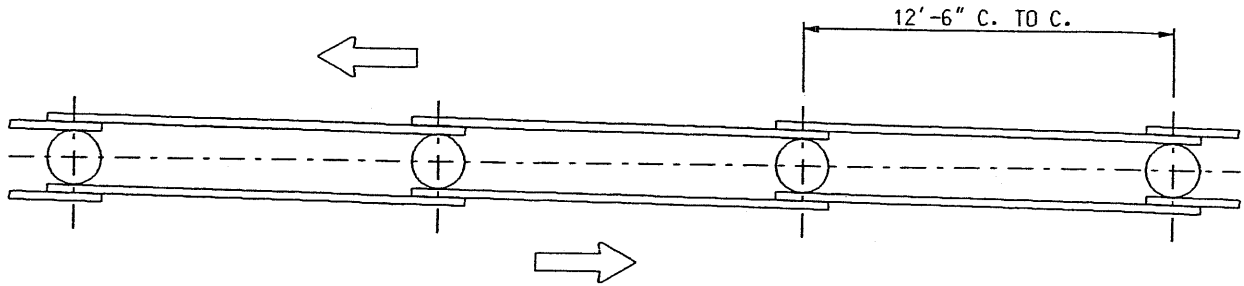
NOTES:

1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARD SPECIFICATIONS.
2. ALL WOOD POSTS SHALL CONFORM TO DIMENSIONS SHOWN AND SHALL BE MADE FROM DOUGLAS FIR, NORWAY PINE, NORTHERN WHITE PINE, SOUTHERN YELLOW PINE, WEST COAST HEMLOCK, RED OAK, WHITE OAK, WHITE ASH, SUGAR MAPLE, RED MAPLE, SOFT ELM, YELLOW BIRCH, HICKORY, BEECH, OR OTHER APPROVED WOOD.
3. THE BEAM ELEMENTS SHALL BE FORMED FROM SHEETS HAVING A THICKNESS OF 12 GAUGE AND MAY BE OF ATMOSPHERIC CORROSION RESISTANT STEEL OR GALVANIZED AS SPECIFIED. TERMINAL END SHOES SHALL BE FORMED FROM SHEETS OF STEEL HAVING A THICKNESS OF $\frac{1}{8}$ " AND GALVANIZED IN ACCORDANCE WITH THE CURRENT STANDARD SPECIFICATIONS.
4. BEAM ELEMENTS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC.
5. ALL FITTINGS, INCLUDING BOLTS, NUTS, AND WASHERS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
6. THE BOLTING PATTERN FOR BEAM ELEMENT SPLICE JOINTS MAY BE OPTIONAL TO CONFORM TO TENSILE STRENGTH REQUIREMENTS FOR ASSEMBLED BEAM ELEMENTS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
7. BEAM ELEMENTS SHALL BE SHOP BENT TO PLAN RADIUS FOR CURVE RADII LESS THAN 150 FEET. A TAG IDENTIFYING THE CURVATURE OF THE SHOP BENT SECTION WILL BE REQUIRED FOR EACH CURVED ELEMENT.
8. POST-BOLT SLOTS WILL BE ALLOWED AT 6'-3" INTERVALS.
9. CORROSION RESISTANT STEEL SHALL CONFORM TO ASTM SPECIFICATION A 588M.
10. ALL LUMBER DIMENSIONS ARE NOMINAL.
11. ALL DIMENSIONS ARE IN INCHES (") UNLESS OTHERWISE NOTED.

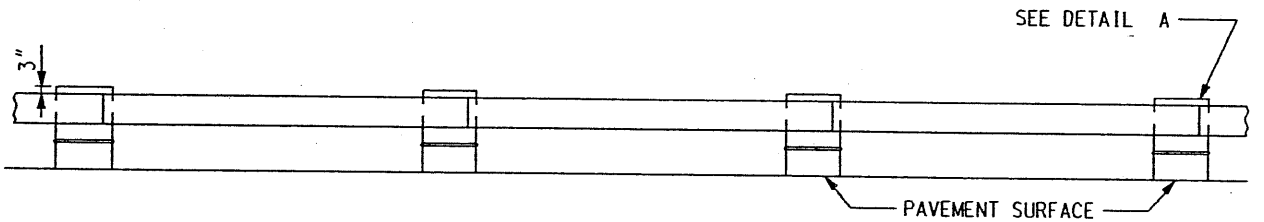
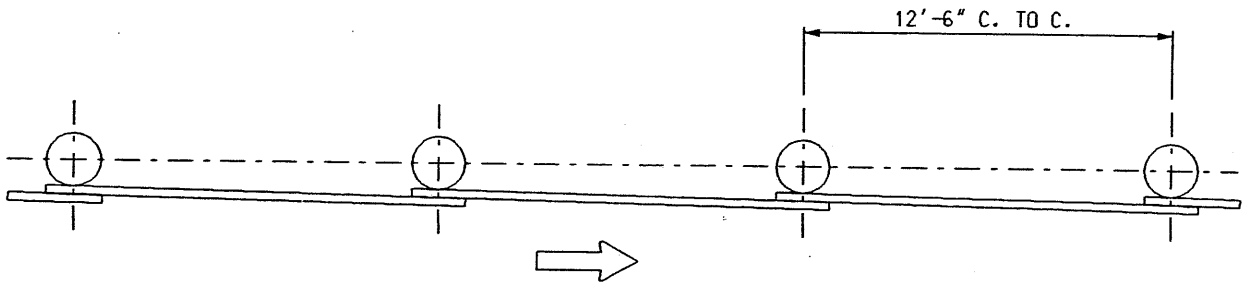
REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
STEEL BEAM GUARD RAIL

03/07/98 PLAN DATE	DRAWING NO. 20	DETAIL STANDARD NO. C-4585	SHEET 3 OF 3
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DOUBLE BEAM BARREL BARRICADE



SINGLE BEAM BARREL BARRICADE

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



PREPARED BY
BUREAU OF STREETS
AND HIGHWAYS

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M.F.S.

CHECKED BY:

APPROVED

Dadiv Haidar
ENGINEER OF STREETS
Way Talley
HEAD ENGINEER
[Signature]
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

SINGLE AND DOUBLE BEAM
BARREL BARRICADE

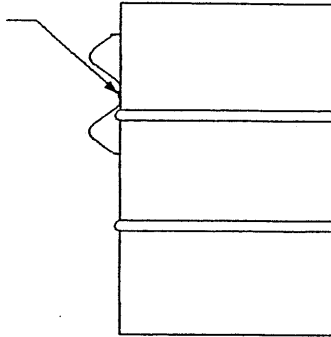
03/07/98
PLAN DATE

DRAWING NO.
21

DETAIL STANDARD NO.
C-4729


SHEET
1 OF 2

USE $\frac{3}{4}$ " DIA. BOLT WITH PLATE WASHER TO ATTACH SECTION TO BARREL.



DETAIL A

NOTES:

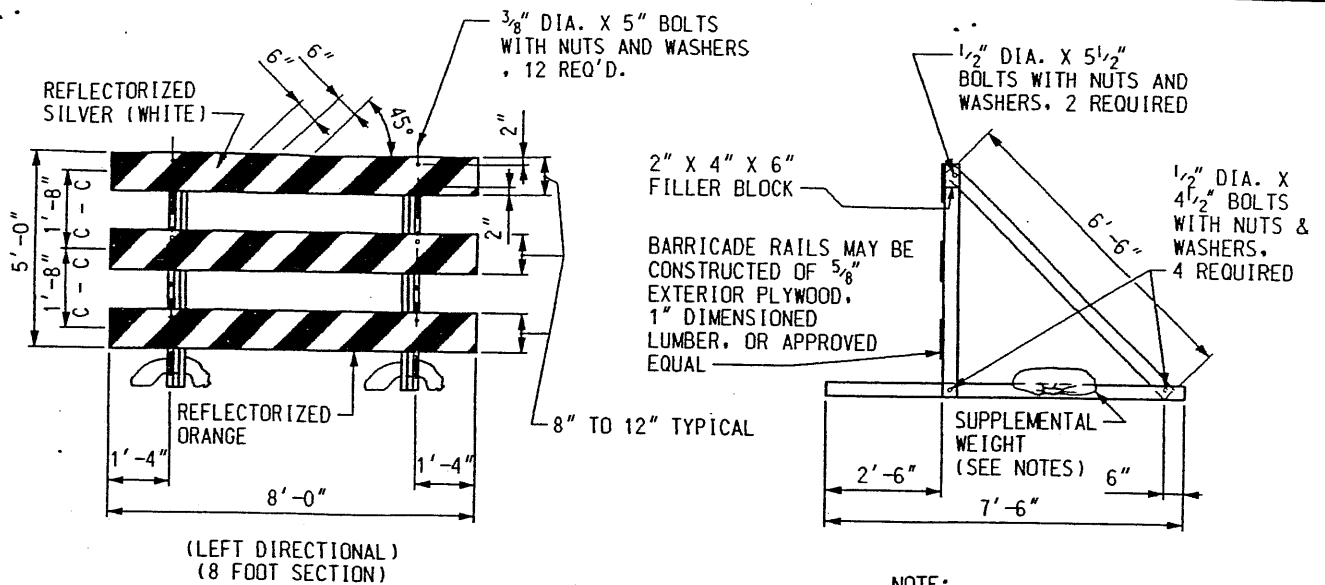
1. BEAM SUPPORTS SHALL BE 55 GALLON SALVAGED BARRELS PAINTED HIGHWAY YELLOW (NON-REFLECTORIZED) AND PROVIDED WITH DRAIN HOLES.
2. FACE OF GUARDRAIL SHALL BE PARTIALLY REFLECTORIZED WITH WHITE OR SILVER BEADED SHEET MATERIAL COVERING 25% OF SURFACE AREA PLACED IN THE FORM OF HORIZONTAL ($1\frac{1}{2}$ " - 2" WIDTH) OR VERTICAL (4" - 6" WIDTH) STRIPES. REMAINING PORTIONS SHALL BE PAINTED WHITE.
3. FOR DETAILS OF BEAM SECTIONS SEE STANDARD DWG. NO. C-4585 ON "STEEL BEAM GUARDRAIL".
4.  DIRECTION OF TRAFFIC.
5. ALL DIMENSIONS ARE IN INCHES(") UNLESS OTHERWISE NOTED.

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

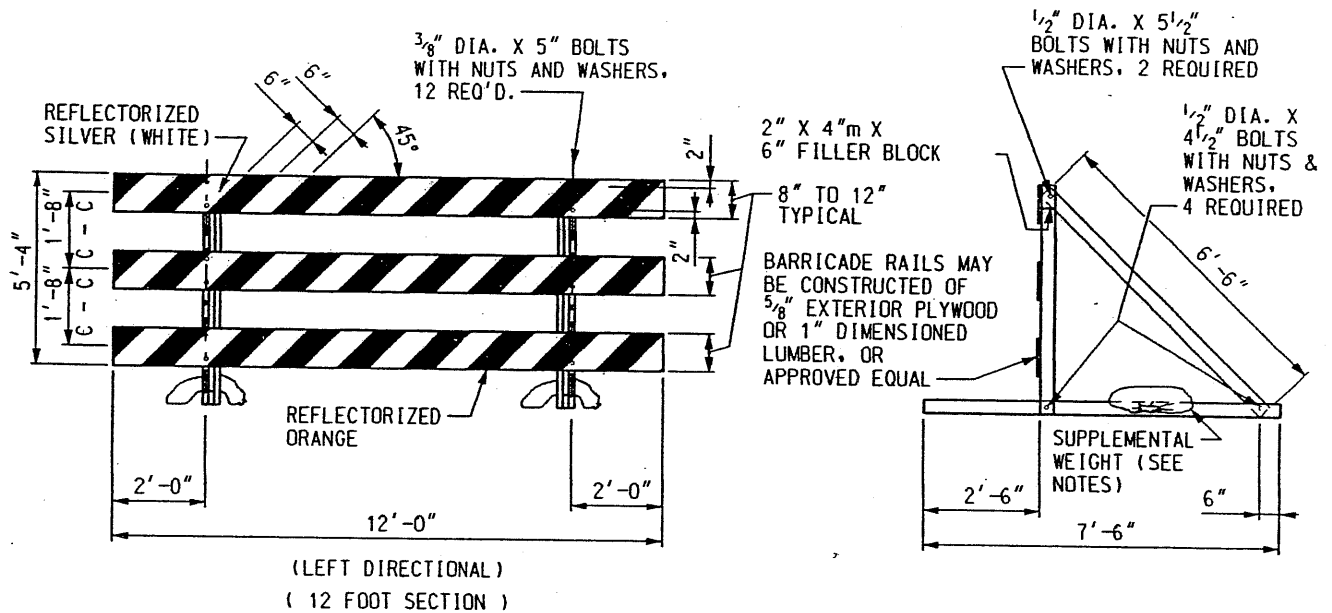
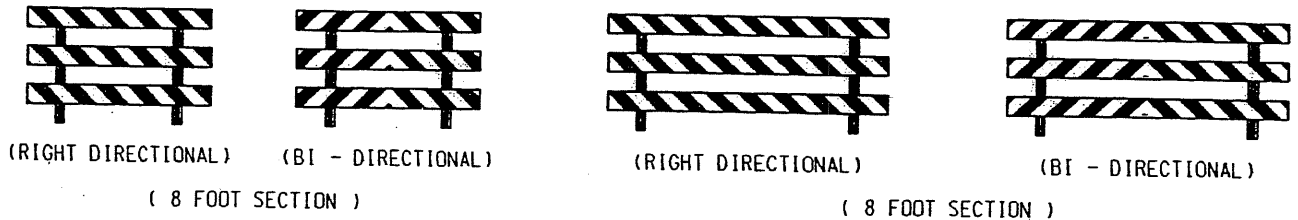
SINGLE AND DOUBLE BEAM
BARREL BARRICADE

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

03/07/98 PLAN DATE	DRAWING NO. 21	DETAIL STANDARD NO. C-4729	SHEET 2 OF 2
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NOTE:
BARRICADE FRAMES SHOWN ARE MADE OF 2"X4" LUMBER STOCK. OTHER FRAMES MAY BE USED WHEN APPROVED BY THE ENGINEER.



TYPE III BARRICADES

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



PREPARED BY
BUREAU OF STREETS
AND HIGHWAYS

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M.F.S.
CHECKED BY:

APPROVED

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ENGINEER OF STREETS
Way Valley
HEAD ENGINEER
Harjoti
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

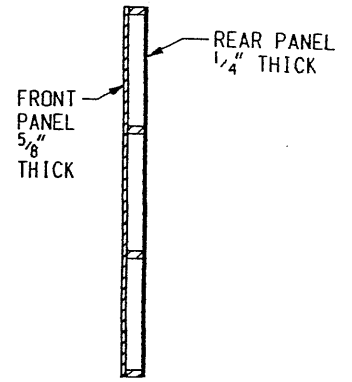
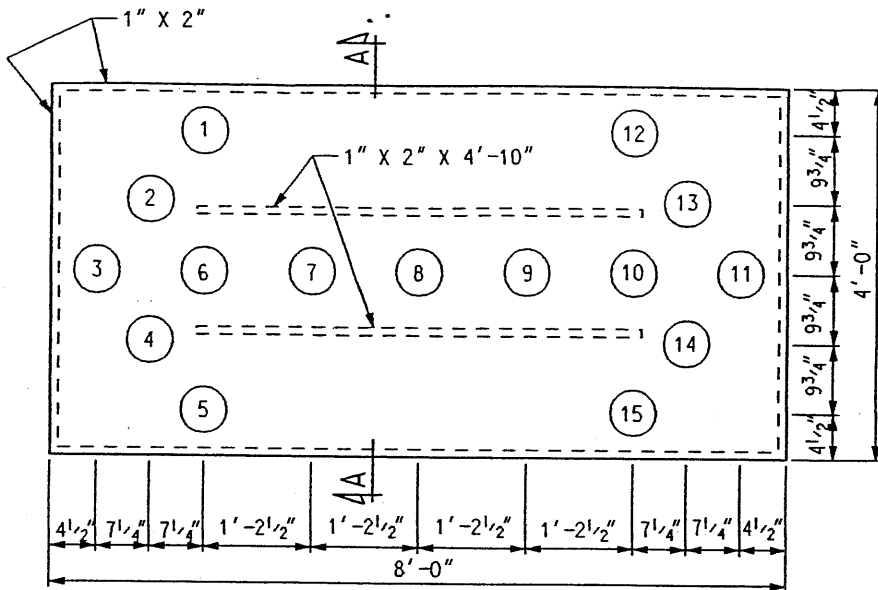
BARRICADES AND
LIGHTED ARROWS

03/07/98
PLAN DATE

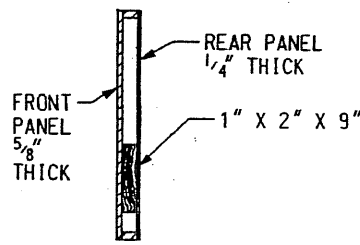
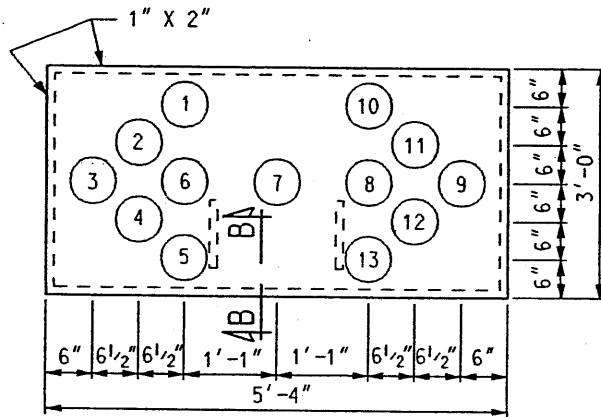
DRAWING NO.
22

DETAIL STANDARD NO.
C-4730

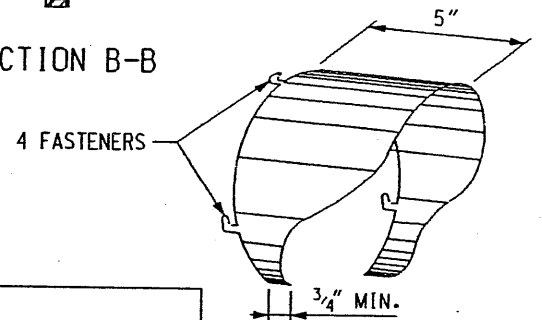
SHEET
1 OF 3



LIGHTED ARROW - TYPE C
(FRONT PANEL - PAINTED FLAT BLACK)



LIGHTED ARROW - TYPE B
(FRONT PANEL - PAINTED FLAT BLACK)



VISOR

OPERATION MODES USE LIGHTS AS FOLLOWS				
LIGHTED ARROW	LEFT ARROW	RIGHT ARROW	LEFT - RIGHT ARROW	BAR
TYPE C	1, 2, 3, 4, 5, 7, 8, 9, 10, & 11 (10 BULBS)	3, 6, 7, 8, 9, 11, 12, 13, 14, & 15 (10 BULBS)	ALL EXCEPT 6 & 10 (13 BULBS)	** 3, 7, 8, 9, & 11 (5 BULBS)
TYPE B	1, 2, 3, 4, 5, 6, 7, 8, & 9 (9 BULBS)	3, 6, 7, 8, 9, 10, 11, 12, & 13 (9 BULBS)	ALL (13 BULBS)	** 3, 6, 7, 8, & 9 (5 BULBS)

** BULBS 6 & 10 ARE OPTIONAL IN THE BAR MODE OF THE LIGHTED ARROW - TYPE C.

NOTE:

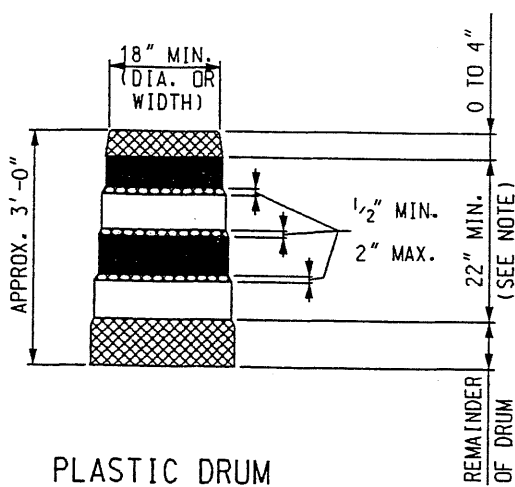
A STANDARD 6" DIAMETER CUTAWAY VISOR SIMILAR TO THE ONE SHOWN SHALL BE MOUNTED OVER EACH LIGHT. THE ARC ENCLOSED BY THE VISOR SHALL BE A MINIMUM OF 290 DEGREES. THE VISOR SHALL BE OF SHEET CORROSION - RESISTANT MATERIAL WITH A MINIMUM THICKNESS OF 0.045". IT SHALL BE PAINTED FLAT BLACK INSIDE AND OUT. THE AXIS OF THE VISOR SHALL BE PERPENDICULAR TO THE PANEL.

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR

BARRICADES AND
LIGHTED ARROWS

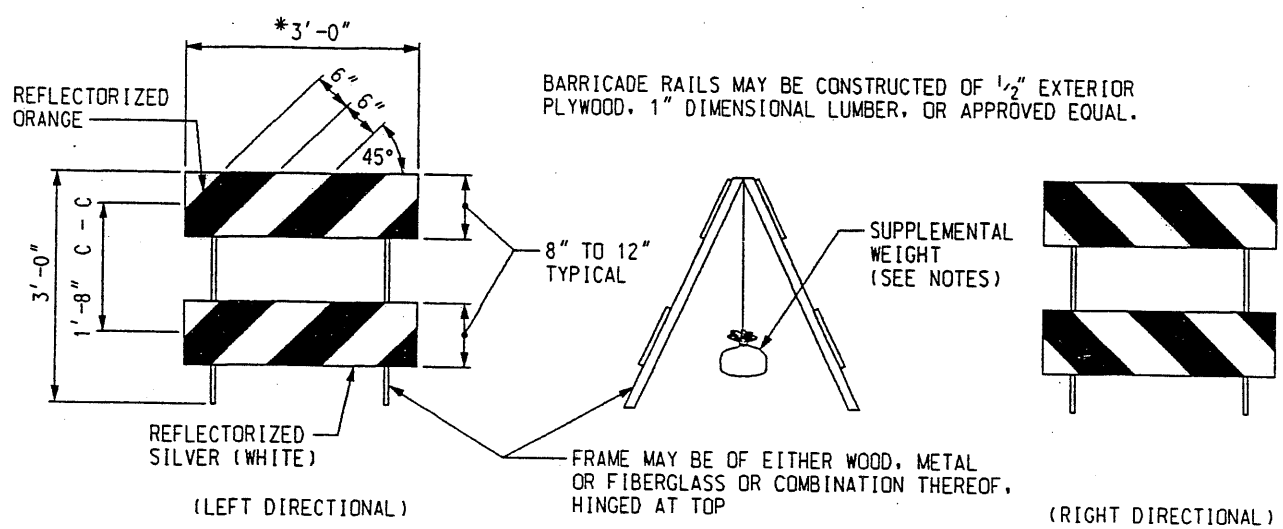
03/07/98 PLAN DATE	DRAWING NO. 22	DETAIL STANDARD NO. C-4730	SHEET 2 OF 3
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- REFLECTORIZED ORANGE
- REFLECTORIZED WHITE
- NONREFLECTORIZED ORANGE

NOTE:
 DRUMS SHALL HAVE AT LEAST 4 HORIZONTAL REFLECTORIZED STRIPES (2 ORANGE AND 2 WHITE) OF 4" TO 8" UNIFORM WIDTH, ALTERNATING IN COLOR WITH THE TOPMOST REFLECTORIZED STRIPE BEING ORANGE. NONREFLECTORIZED SPACES BETWEEN THE HORIZONTAL REFLECTORIZED ORANGE AND WHITE STRIPES SHALL BE ORANGE IN COLOR AND EQUAL IN WIDTH.

PLASTIC DRUM



BARRICADE RAILS MAY BE CONSTRUCTED OF 1/2" EXTERIOR PLYWOOD, 1" DIMENSIONAL LUMBER, OR APPROVED EQUAL.

* TYPE II BARRICADE RAILS MAY HAVE A MINIMUM 2 FOOT LENGTH. TYPE II BARRICADES WITH RAILS LESS THAN 3 FEET LONG SHALL HAVE 4 INCHES WIDE STRIPES.

TYPE II BARRICADE

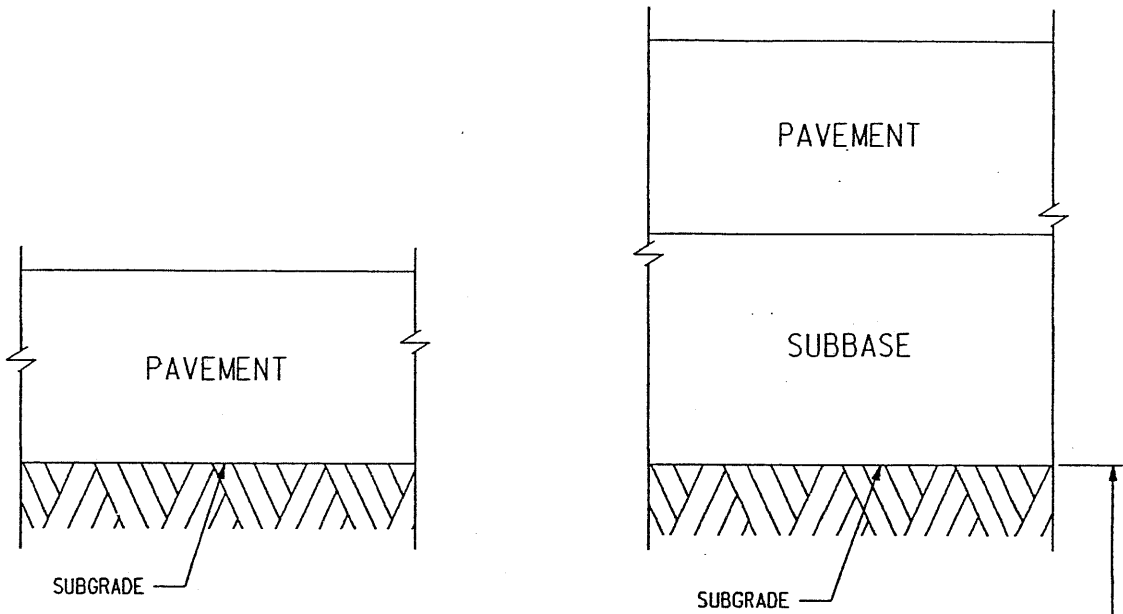
NOTES:

1. FOR WOODEN BARRICADES, ACTUAL LUMBER DIMENSIONS ARE PROVIDED.
2. WARNING LIGHTS SHALL BE PLACED IN ACCORDANCE WITH THE CURRENT MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS WHEN THEY ARE USED ON TYPES II AND III BARRICADES.
3. BARRICADES AND DRUMS SHALL BE FACED WITH PRESSURE - SENSITIVE REFLECTIVE SHEETING TYPE 2 IN ACCORDANCE WITH THE CURRENT STANDARD MICHIGAN DEPARTMENT OF TRANSPORTATION SPECIFICATIONS.
4. PLASTIC DRUMS MAY BE USED AS TYPE II BARRICADES.
5. FIBERGLASS RAILS MAY BE USED ON TYPES II AND III BARRICADES.
6. WHEN SUPPLEMENTAL WEIGHTS ARE REQUIRED TO ACHIEVE STABILITY, THE WEIGHTS SHALL BE SANDBAGS. THE SANDBAGS SHALL BE PLACED SO THEY WILL NOT COVER OR OBSTRUCT ANY REFLECTIVE PORTION OF THE TRAFFIC CONTROL DEVICE. ACCEPTABLE METHODS INCLUDE SUSPENSION OF THE SANDBAG OR DRAPING IT OVER A LOWER SUPPORT MEMBER ON THE TRAILING LEG OF BARRICADE. (SEE ILLUSTRATIONS)
7. ALL DIMENSIONS ARE IN INCHES(") UNLESS OTHERWISE NOTED.

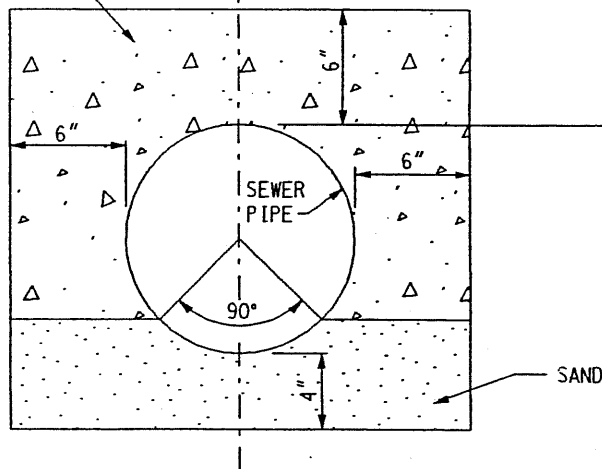
CITY OF DETROIT
 CITY ENGINEERING DIVISION, D.P.W.
 STANDARD PLAN FOR

 BARRICADES AND

 LIGHTED ARROWS



GRADE "A"
CONCRETE



DETAIL OF SEWER PIPE
PARTIAL ENCASEMENT

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



PREPARED BY
BUREAU OF STREETS
AND HIGHWAYS

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M.F.S.

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APPROVED

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Alvin Tolley
HEAD ENGINEER
James Smith
CITY ENGINEER

CITY OF DETROIT

CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR

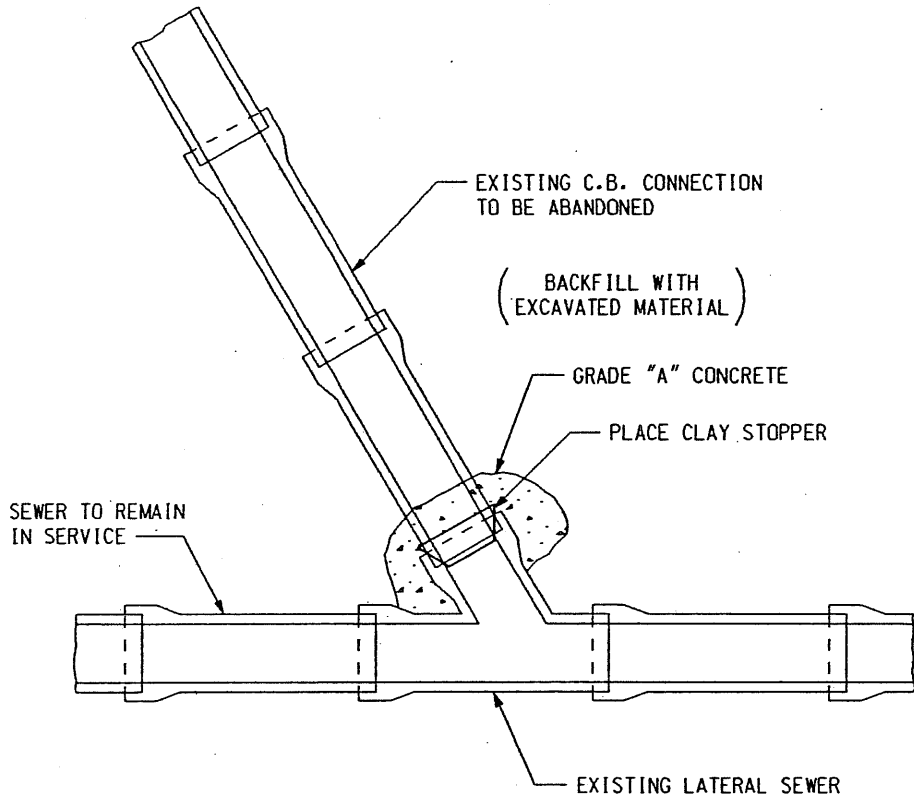
SEWER PIPE PARTIAL ENCASEMENT
AND CATCH BASIN OUTLET PLUG

03/07/98
PLAN DATE

DRAWING NO.
23

DETAIL STANDARD NO.
C-4990

SHEET
1 OF 2



DETAIL OF CATCH BASIN
OUTLET PLUG

NOTES:

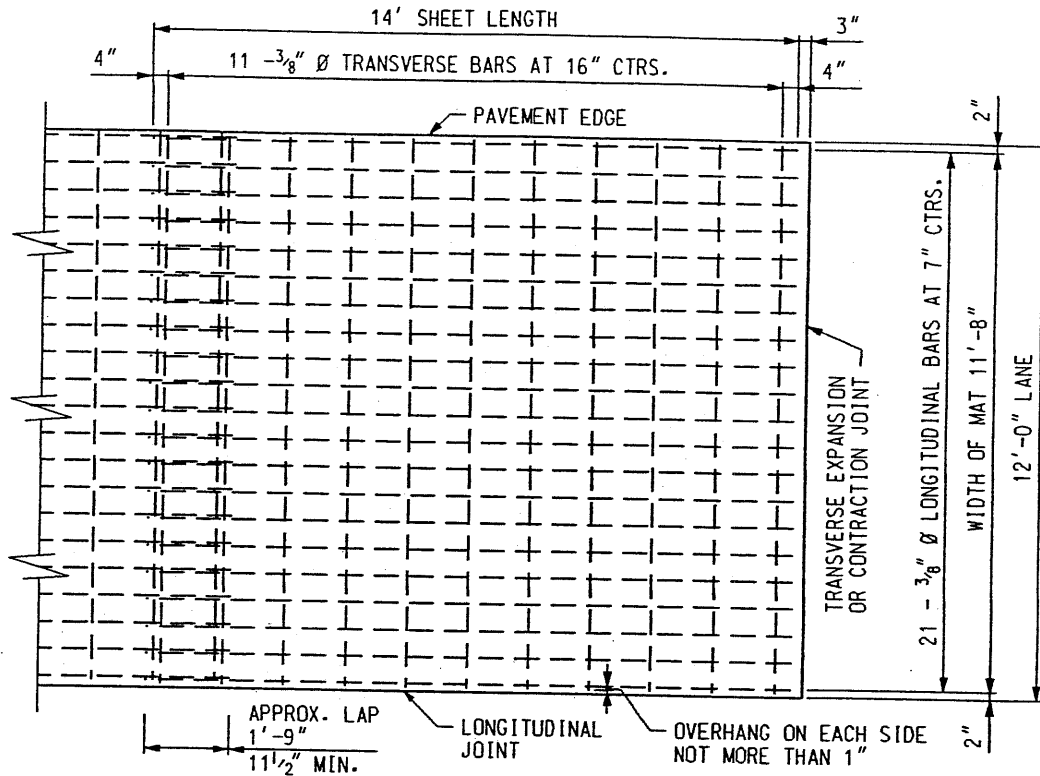
1. DISTANCE FROM CATCH BASIN TO PLUG AS WELL AS DEPTH OF LATERAL SEWER IS UNDETERMINED. CONTRACTOR HAS TO MAKE HIS OWN INVESTIGATION FOR THIS INFORMATION.
2. THIS WORK IS INCLUDED AS PART OF THE ITEM IN THE PROPOSAL "CATCH BASIN-SPECIAL ABANDONMENT" REGARDLESS OF DEPTH AND DISTANCE OF PLUG FROM CATCH BASINS. SEE NOTE "1". THIS INCLUDES ALL EXCAVATION AND BACKFILL REGARDLESS OF THE DEPTH AND DISTANCE.
3. ALL DIMENSIONS ARE IN INCHES(") UNLESS OTHERWISE NOTED.

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
SEWER PIPE PARTIAL ENCASEMENT
AND CATCH BASIN OUTLET PLUG

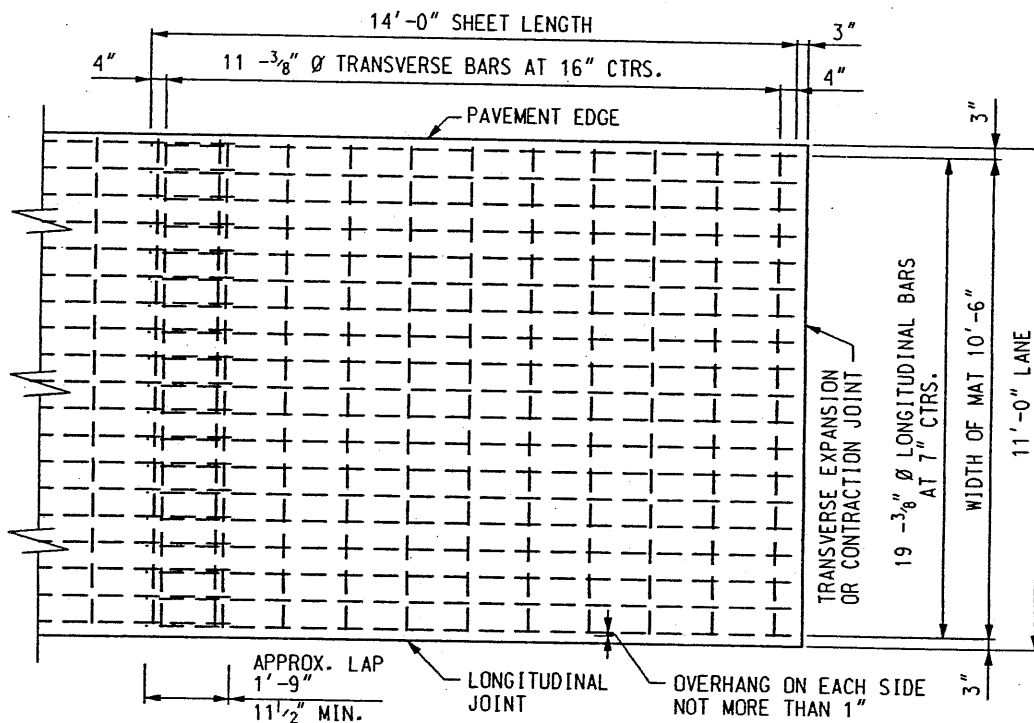
REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

03/07/98 PLAN DATE	DRAWING NO. 23	DETAIL STANDARD NO. C-4990	SHEET 2 OF 2
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BAR MAT REINFORCEMENT



REINFORCEMENT FOR 12'-0" LANES



REINFORCEMENT FOR 11'-0" LANES

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



PREPARED BY
BUREAU OF STREETS
AND HIGHWAYS

rev. K.S.M.

DRAWN BY:

M.F.S.

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APPROVED

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ENGINEER OF STREETS
Wm. Talley
HEAD ENGINEER
John Jesperson
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

PAVEMENT REINFORCEMENT

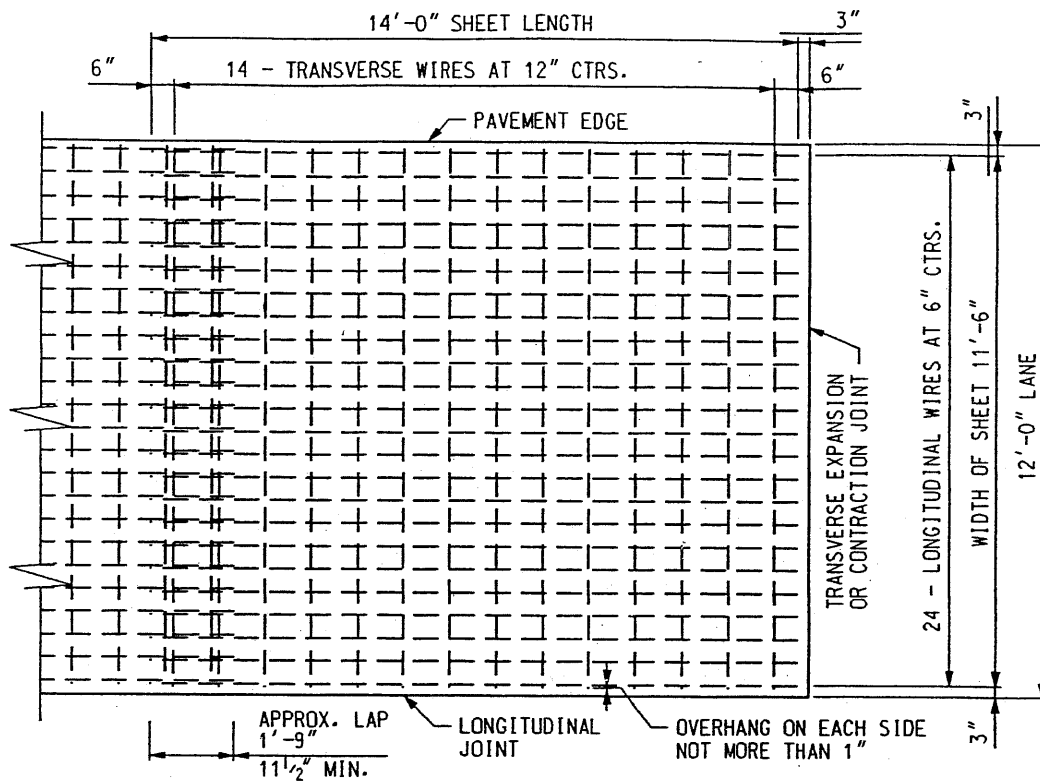
03/07/98
PLAN DATE

DRAWING NO.
24

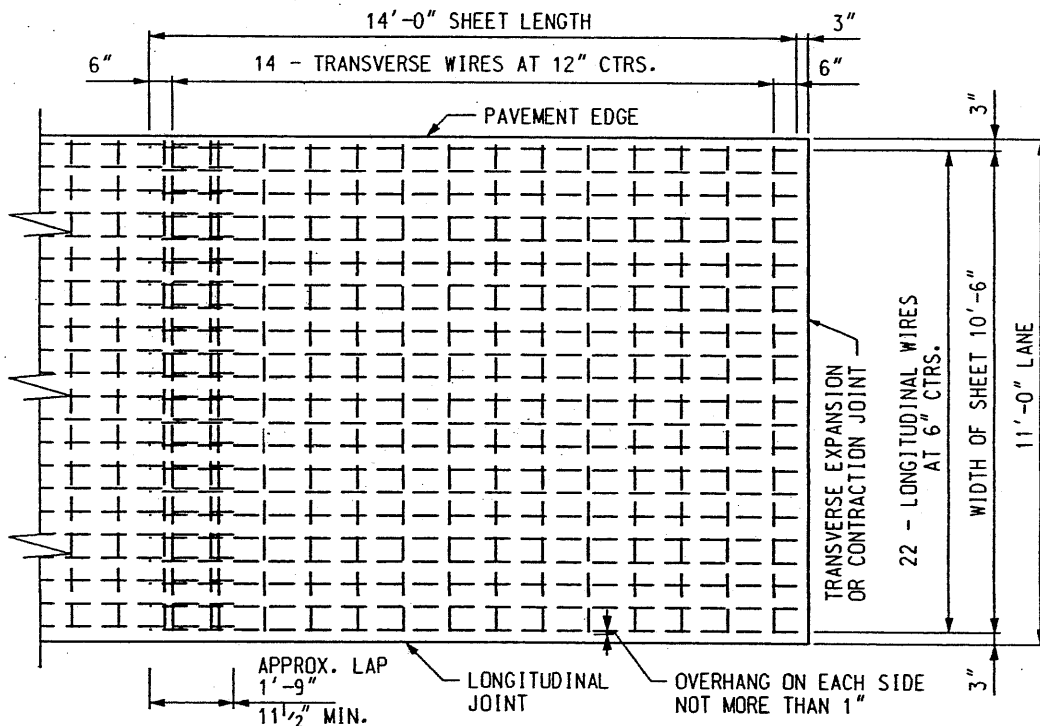
DETAIL STANDARD NO.
C-4942R

SHEET
1 OF 4

MESH REINFORCEMENT



REINFORCEMENT FOR 12'-0" LANES



REINFORCEMENT FOR 11'-0" LANES

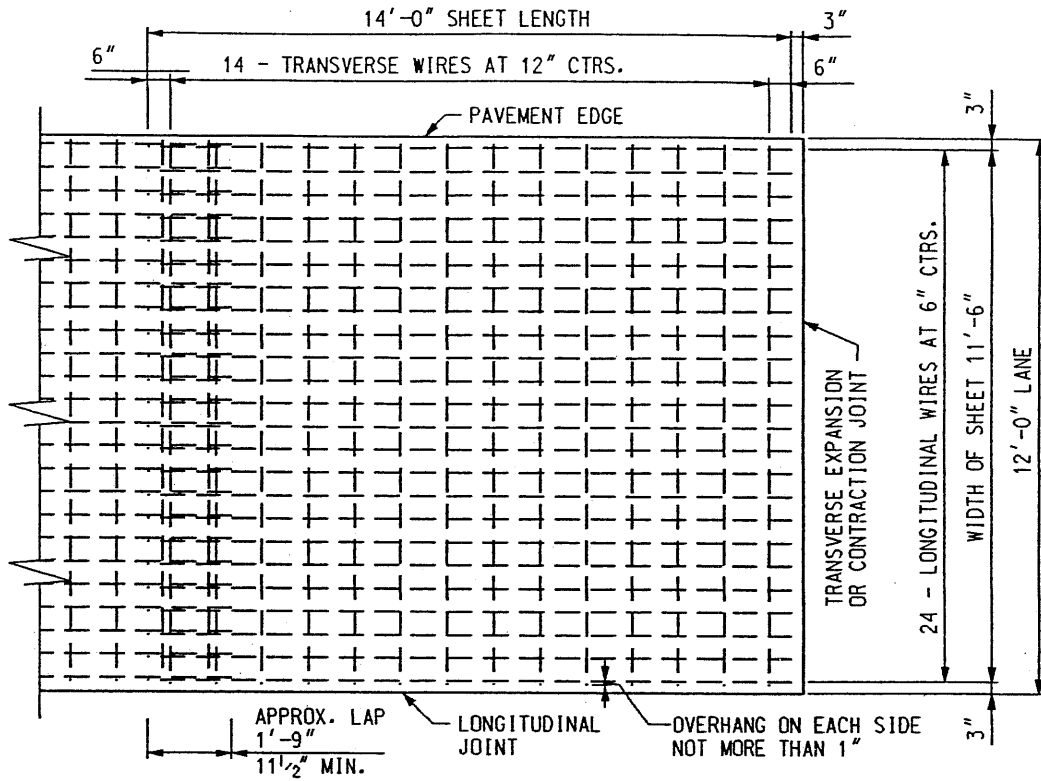
CITY OF DETROIT
 CITY ENGINEERING DIVISION, D.P.W.
 STANDARD PLAN FOR

PAVEMENT REINFORCEMENT

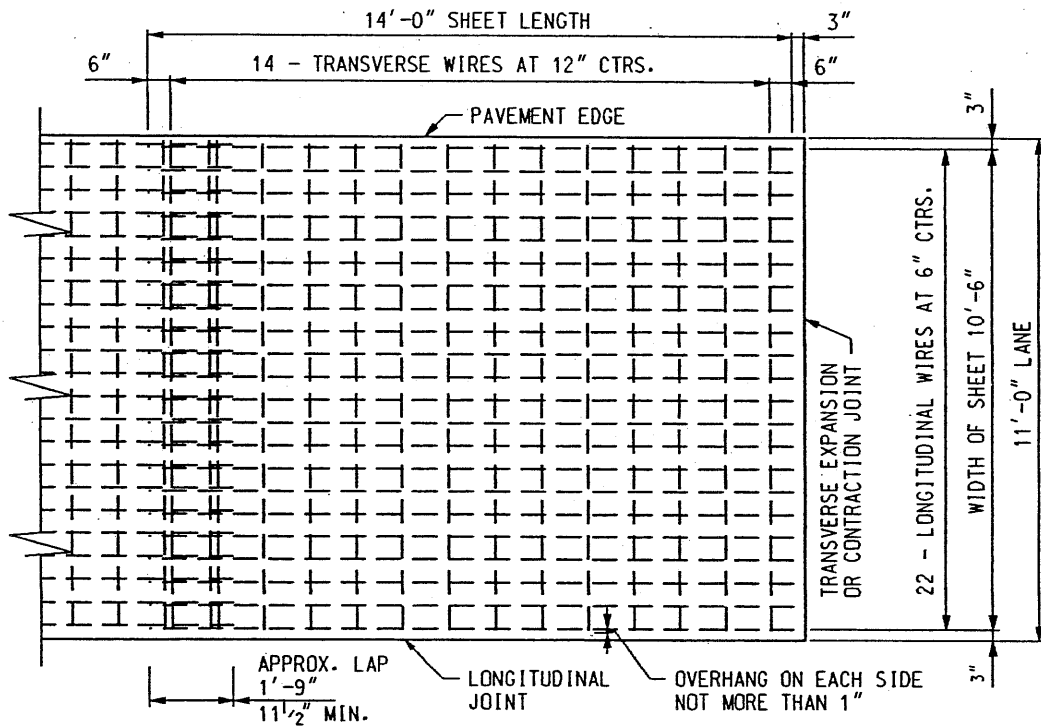
REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002

03/07/98 PLAN DATE	DRAWING NO. 24	DETAIL STANDARD NO. C-4942R	SHEET 2 OF 4
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DEFORMED WIRE MESH REINFORCEMENT



REINFORCEMENT FOR 12'-0" LANES



REINFORCEMENT FOR 11'-0" LANES

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

PAVEMENT REINFORCEMENT

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

03/07/98
PLAN DATE

DRAWING NO.
24

DETAIL STANDARD NO.
C-4942R

SHEET
3 OF 4

COMPUTED WEIGHTS OF STEEL				
TYPE OF REINFORCEMENT	AVERAGE WEIGHT PER SQUARE YARDS(yds.2) OF PAVEMENT (pounds)		WEIGHT PER STANDARD SHEET (pounds)	
	11'-0" LANE	12'-0" LANE	11'-0" LANE	12'-0" LANE
DEFORMED WIRE	7.1	7.1	122.7	134.0
MESH	6.8	6.8	118.1	128.9
BAR MAT	7.4	7.4	128.5	142.2

NOTES:

1. STEEL REINFORCEMENT USED TO FIT 26' JOINT SPACING SHALL HAVE 2 SHEETS OF 14' LENGTH.
2. WHERE THE UNIT WIDTH OF PAVEMENT SLAB IS OTHER THAN SHOWN, THE REINFORCEMENT REQUIREMENTS SHALL BE THE SAME AS SHOWN ON THIS STANDARD PLAN. SPECIAL SHEETS OF THE REQUIRED WIDTH MAY BE USED OR STANDARD SHEETS MAY BE CUT TO THE REQUIRED SIZE OR SPLIT SHEETS MAY BE ADDED TO STANDARD SHEETS TO OBTAIN THE REQUIRED SIZE. SIDE LAPS SHALL BE NOT LESS THAN THE SPACING OF LONGITUDINAL WIRES FOR WIRE MESH OR DEFORMED WIRE, OR OF LONGITUDINAL BAR FOR BAR MAT.
3. WEIGHT FOR WIRE MESH AND DEFORMED WIRE REINFORCEMENT IS ACCORDING TO THE WIRE REINFORCEMENT INSTITUTE TABLES.
4. THE PAVEMENT REINFORCEMENT SHALL BE SHIPPED AND DELIVERED TO THE WORK IN FLAT SHEETS OR MATS.
5. THE REINFORCEMENT SHALL BE PLACED ACCORDING TO THE CURRENT STANDARD PLAN C-4943.
6. ALL DIMENSIONS ARE IN INCHES(") UNLESS OTHERWISE NOTED.

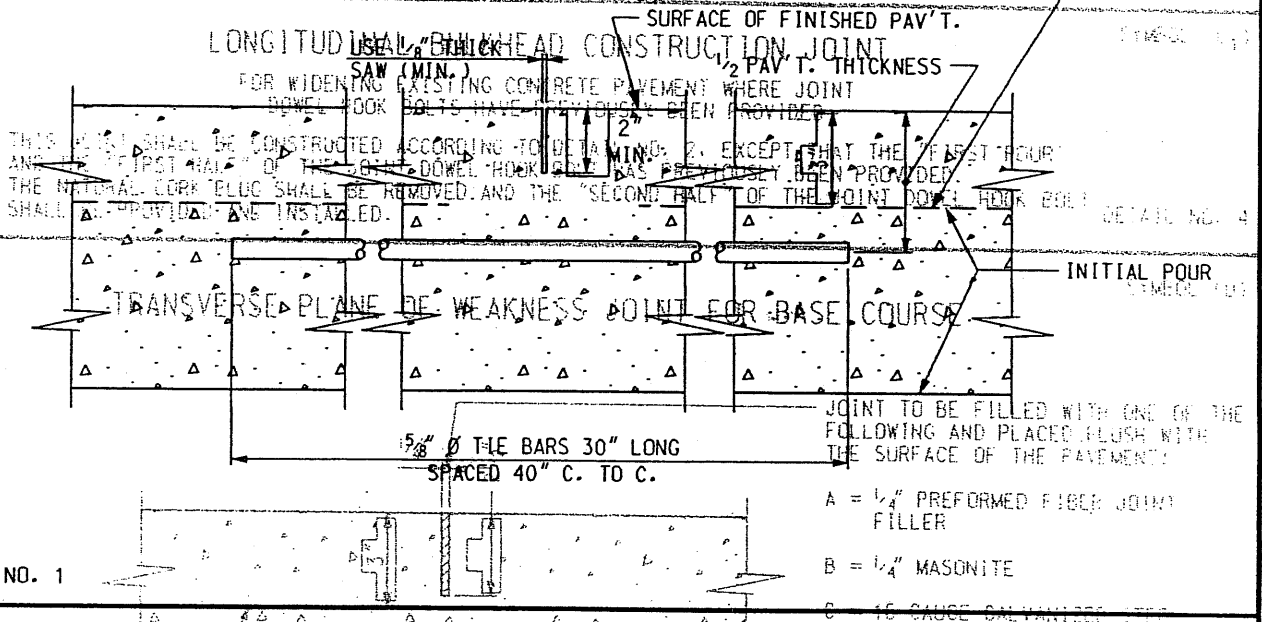
CITY OF DETROIT CITY ENGINEERING DIVISION, D.P.W. STANDARD PLAN FOR			
PAVEMENT REINFORCEMENT			
03/07/98 PLAN DATE	DRAWING NO. 24	DETAIL STANDARD NO. C-4942R	SHEET 4 OF 4

LONGITUDINAL BULKHEAD CONSTRUCTION JOINT
LONGITUDINAL LANE TIE JOINT

SYMBOL (D)

FOR FUTURE PAVEMENT WIDENING

THIS JOINT SHALL BE CONSTRUCTED ACCORDING TO DETAIL NO. 2 EXCEPT THAT THE "SECOND POUR" AND THE "FIRST HALF" OF THE JOINT DOWEL HOOK BOLT SHALL BE OMITTED. THE JOINT SHALL BE FILLED WITH HOT POURED JOINT SEALER. THE REINFORCEMENT SHALL BE PLACED AND PROPERLY SPACED AND EXTREME CARE SHALL BE EXERCISED TO AVOID DISPLACEMENT OF THE TIE BARS.



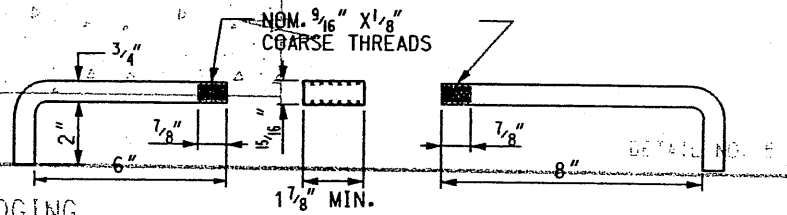
DETAIL NO. 1

LONGITUDINAL BULKHEAD CONSTRUCTION JOINT

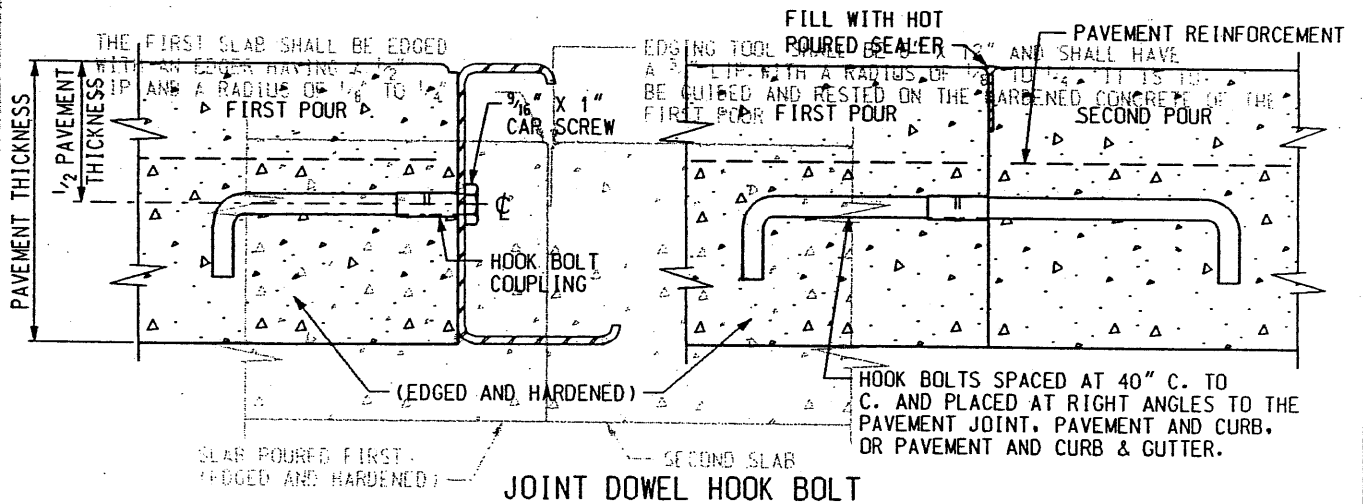
SYMBOL (B)

PAVEMENT REINFORCEMENT (CARRIED THROUGH UNDER JOINT)

OTHER METHODS OF HOLDING THE FIRST HALF OF THE HOOK BOLT IN POSITION WILL BE PERMITTED, IF APPROVED BY THE ENGINEER.



JOINT EDGING



DETAIL NO. 2

JOINT DOWEL HOOK BOLT

REVISIONS: REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



BUREAU OF STREETS AND HIGHWAYS

rev. K.S.M.

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PREPARED BY: M.F.S.

CHECKED BY:

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WHERE ONE SLAB IS POURED AGAINST ANOTHER IN PLACE
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CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

REINFORCED CONCRETE
PAVEMENT JOINTS

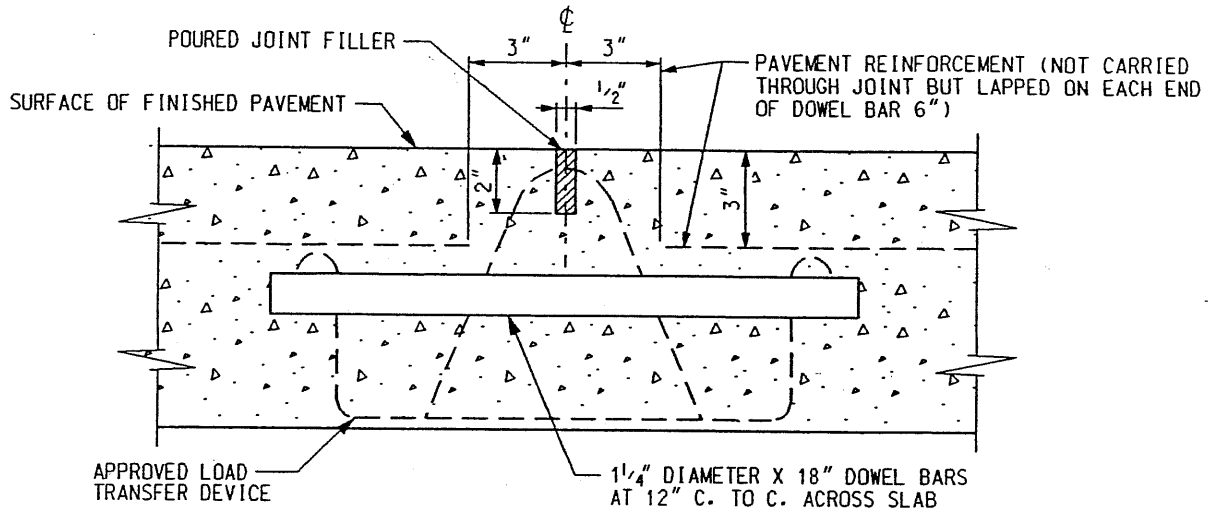
03/07/98
PLAN DATE

DRAWING NO.
25

DETAIL STANDARD NO.
C-4943

SHEET
1 OF 4

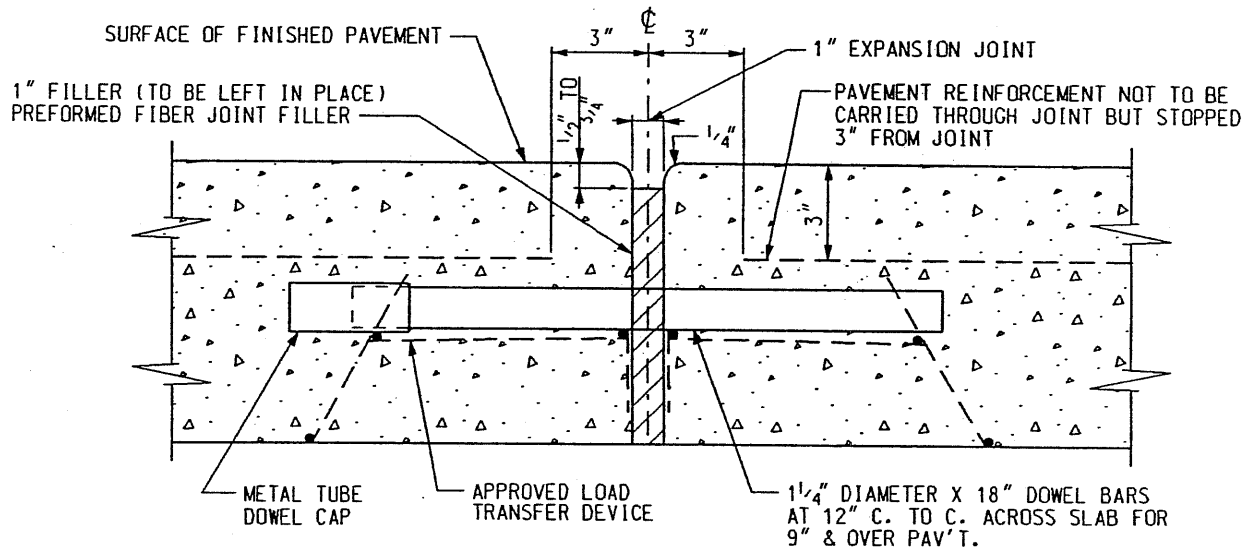
TRANSVERSE CONTRACTION JOINT



DETAIL NO. 6

TRANSVERSE EXPANSION JOINT WITH LOAD TRANSFER

THE FILLER STRIP SHALL BE LEFT IN PLACE AND THE JOINT FORMED WHILE THE CONCRETE IS STILL FRESH AND SHALL BE TRUE TO POSITION AND LINE.



DETAIL NO. 7

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

REINFORCED CONCRETE
PAVEMENT JOINTS

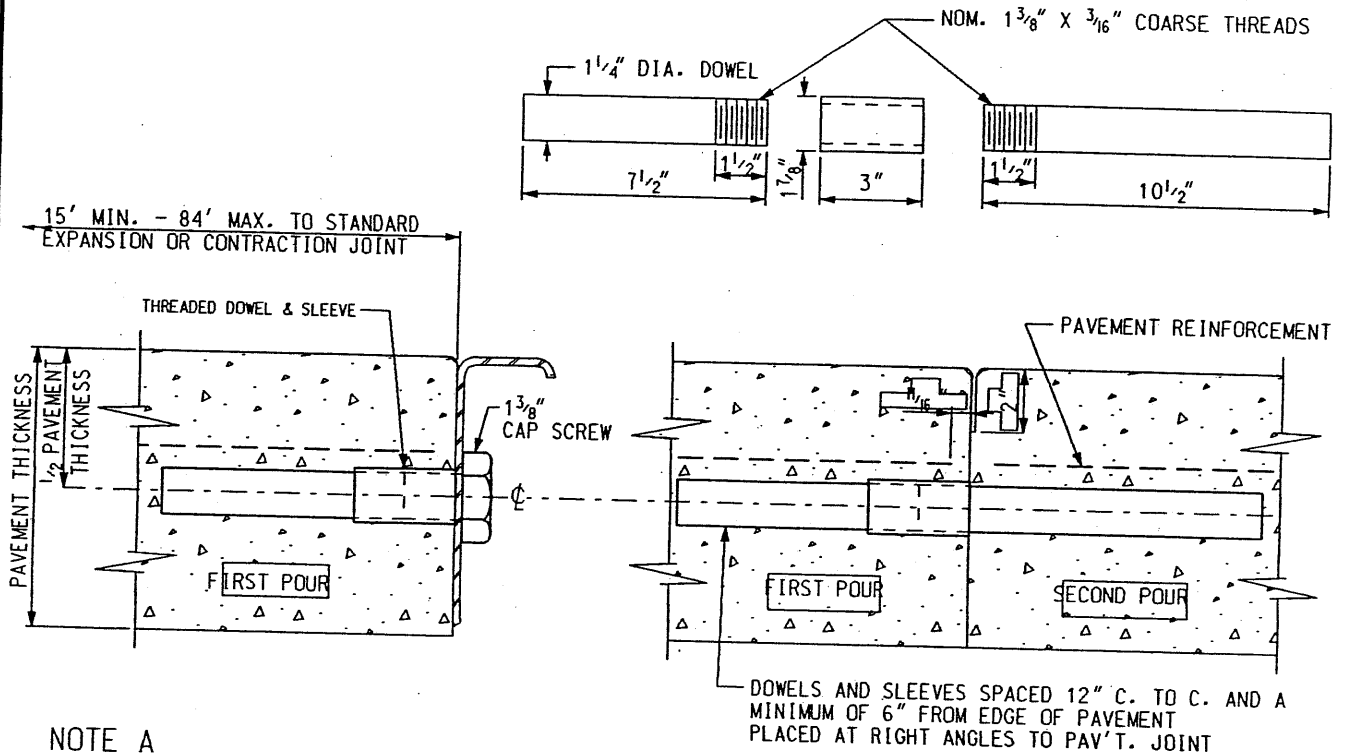
TRANSVERSE END OF POUR CONSTRUCTION JOINT

PRIOR TO PLACING CONCRETE IN FIRST POUR, THE SLEEVED DOWELS AND BULKHEAD SHALL BE SECURELY ASSEMBLED AND FIRMLY SECURED TO THE SUBGRADE, TRUE TO POSITION AND LINE.

THE BULKHEAD SHALL BE METAL SUFFICIENTLY RIGID TO PREVENT DEFORMATION WHEN CONCRETE IS PLACED AND SHALL CONFORM TO THE CROWN OF THE FINISHED PAVEMENT.

PRIOR TO PLACING CONCRETE IN SECOND POUR, THE CAP - SCREWS AND BULKHEAD SHALL BE CAREFULLY REMOVED TO AVOID RUPTURING THE FRESH CONCRETE. THE DOWELS TO THE SECOND POUR SHALL BE SCREWED INTO THE SLEEVES AND COATED.

AFTER THE SECOND POUR, THE JOINT SHALL BE FINISHED ACCORDING TO SPECIFICATIONS FOR CONTRACTION JOINTS. THIS SHALL BE USED IF IT IS ANTICIPATED THAT THE SECOND POUR WILL BE PLACED MORE THAN (7) DAYS AFTER THE FIRST POUR. (SEE NOTE A BELOW)



NOTE A

WHEN THE CONSTRUCTION (SECOND POUR) OF THE PAVEMENT WILL CONTINUE WITHIN (7) DAYS, THE 2 - PIECE DOWELS WILL NOT BE REQUIRED AND THE JOINT WILL BE TREATED AS A STANDARD CONTRACTION OR EXPANSION JOINT.

IF EXPANSION JOINT IS USED, ALL CAPS WILL BE ON ONE SIDE OF THE JOINT.

IF CONTRACTION JOINT IS USED, COAT ALL THE DOWELS ON THE SAME SIDE.

DETAIL NO. 8

NOTES:

1. ALL STEEL BARS, BOLT, AND FILLER USED IN PAVEMENT JOINTS WILL BE CONSIDERED INCIDENTAL TO THE CONSTRUCTION OF PAVEMENT OR BASE COURSE. TIE BARS SHALL BE DEFORMED.
2. ALL DIMENSIONS ARE IN INCHES (") UNLESS OTHERWISE NOTED.

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

REINFORCED CONCRETE
PAVEMENT JOINTS

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

03/07/98 PLAN DATE	DRAWING NO. 25	DETAIL STANDARD NO. C-4943	SHEET 4 OF 4
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SYMBOL

DESCRIPTION

	PROPERTY AND LOT LINES
	PROPOSED CURB LINES AND HEADER AT RETURNS
	EXISTING CURB LINES AND EDGE OF PAVEMENT
	PROPOSED CURB OR PAVING ON INTERSECTING STREET
	PROPOSED SEWER TO CATCH BASIN
	EXISTING LATERAL SEWER
	EXISTING PUBLIC SEWER
	ELEVATION OF SEWER INVERT
	PROPOSED C.B., M.H., & INLET SEWER
	ELEVATION
	EXISTING C.B., M.H., & INLET SEWER
	PROPOSED C.B., M.H., & INLET SEWERS ON INTERSECTING STREETS
	EXISTING GAS LINES
	EXISTING WATER LINES
	DETROIT EDISON ELECTRIC CONDUIT
	DETROIT EDISON STEAM CONDUIT
	WESTERN UNION DUCTS
	AMERITECH DUCTS
	P.L.C. CONDUITS
	DETROIT FIRE OR POLICE DEPT. CONDUITS (P.L.C. COMMUNICATIONS)
	COMCAST CABLE

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



PREPARED BY
BUREAU OF STREETS
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rev. K.S.M.

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M.F.S.

CHECKED BY:

APPROVED

Dadiu Haidar
ENGINEER OF STREETS

Wm. J. Talley
HEAD ENGINEER

[Signature]
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

STANDARD SYMBOLS
FOR UTILITIES

03/07/98
PLAN DATE

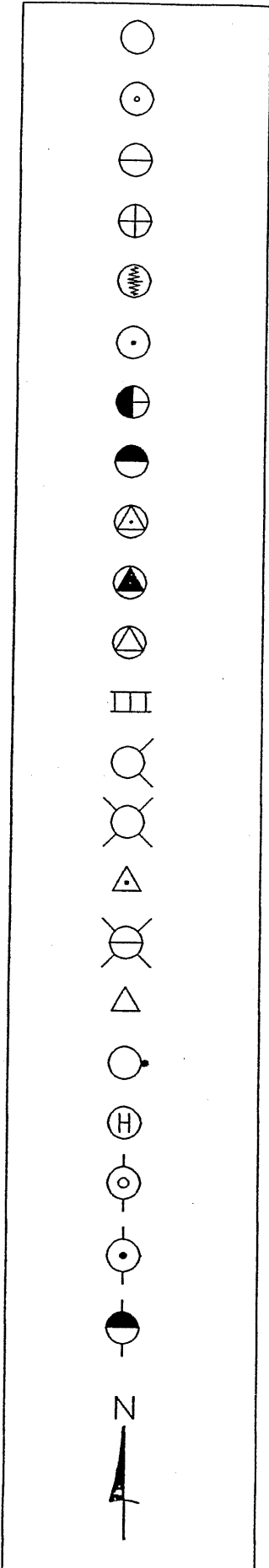
DRAWING NO.
26

DETAIL STANDARD NO.
C-902A

SHEET
.1 OF 3.

SYMBOL

DESCRIPTION



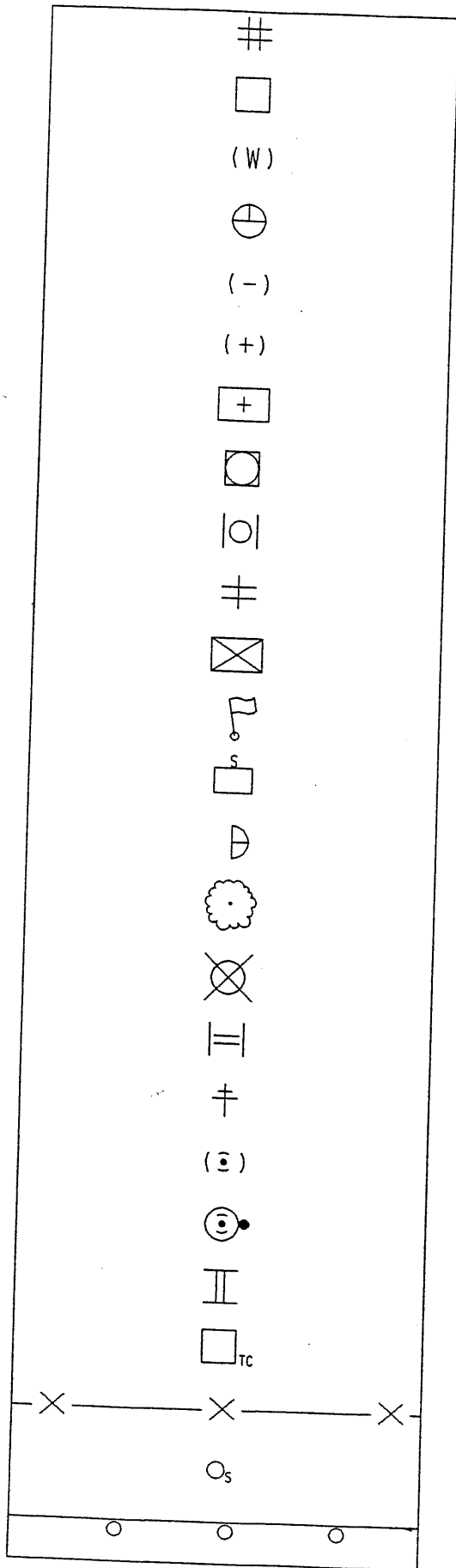
- SEWER MANHOLE
- ⊙ P.L.C. MANHOLE
- ⊖ WATER MANHOLE OR GRATE
- ⊕ GAS MANHOLE OR GRATE
- ⊗ WESTERN UNION MANHOLE
- ⊙ AMERITECH MANHOLE
- ◐ EDISON STEAM MANHOLE
- ◑ EDISON ELECTRIC MANHOLE
- △ FIRE DEPARTMENT MANHOLE
- ◄ COMBINED FIRE & POLICE MANHOLE
- ◕ POLICE DEPARTMENT MANHOLE
- ⏏ D.S.R. MANHOLE
- ⊙ FIRE DEPARTMENT STANDARD HYDRANT
- ⊗ FIRE DEPARTMENT HIGH PRESSURE HYDRANT
- △ FIRE DEPARTMENT CALL BOX
- ⊗ FIRE DEPARTMENT HIGH PRESSURE MANHOLE
- △ POLICE DEPARTMENT CALL BOX
- ⊙ P.L.C. LIGHT POLE
- ⊙(H) P.L.C. HANDHOLE
- ⊙ P.L.C. POLE
- ⊙ TELEPHONE POLE
- ◐ EDISON POLE

STANDARD
NORTH ARROW

CITY OF DETROIT CITY ENGINEERING DIVISION, D.P.W. STANDARD PLAN FOR ----- STANDARD SYMBOLS ----- FOR UTILITIES -----			
03/07/98 PLAN DATE	DRAWING NO. 26	DETAIL STANDARD NO. C-902A	SHEET 2 OF 3

SYMBOL

DESCRIPTION

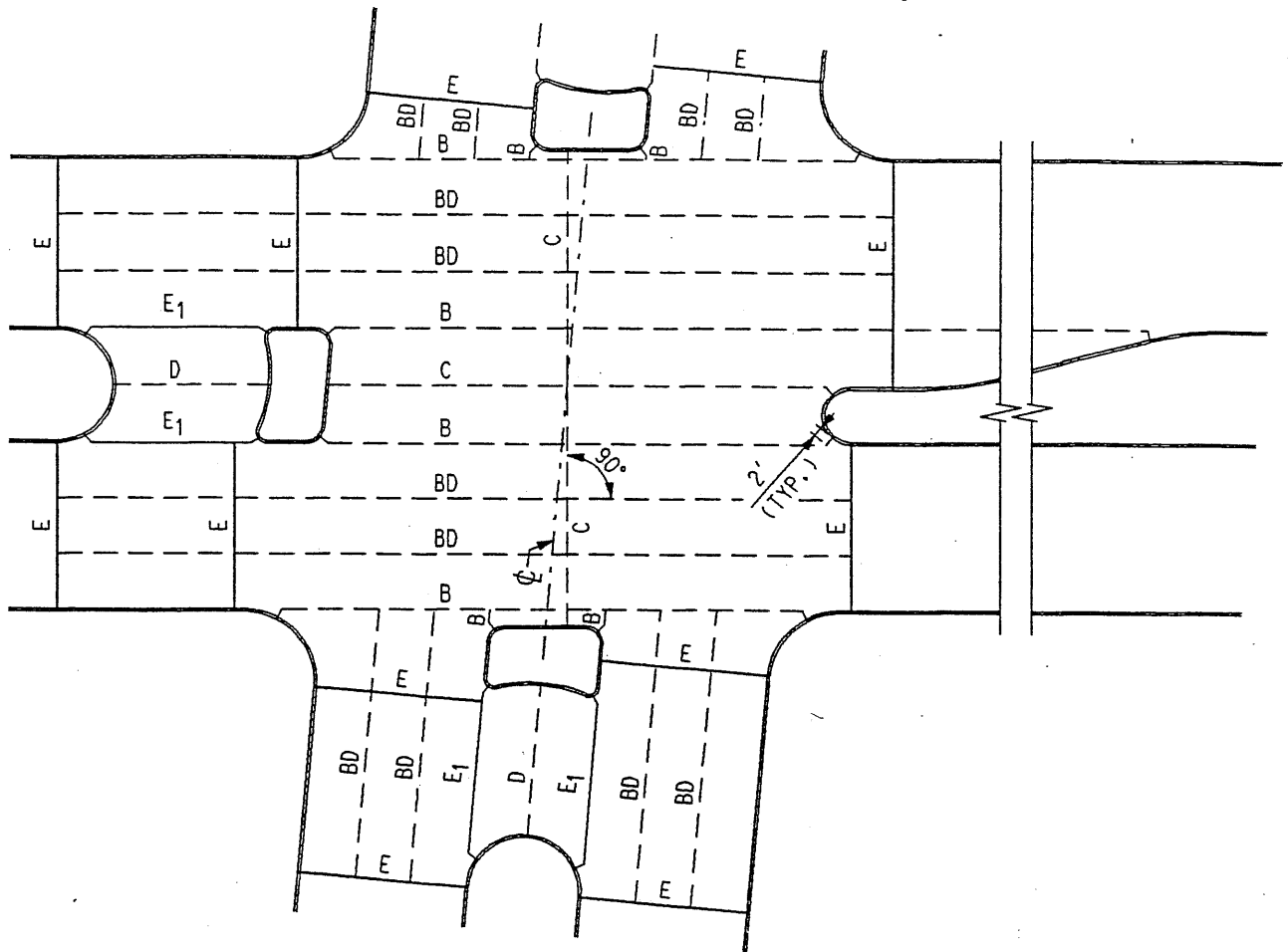


- STREET SIGN POST
- CATCH BASIN
- WATER METER
- WATER STOP BOX
- WATER SHUT-OFF
- GAS SHUT-OFF
- GAS DRIP
- DRAIN OR VENT
- GUY POLE
- MAIL BOX
- AREAWAY OR COAL CHUTE
- FLAG POLE
- SPRINKLER BOX
- DEAD MANHOLE
- TREE OR STUMP
- P.L.C. & F.D. MANHOLE FILLED WITH SAND
- TRACK DRAIN
- TRAFFIC SIGN POST
- TRAFFIC SIGNAL LIGHT
- TRAFFIC SIGNAL ON LIGHT POLE
- D.S.R. DANGER PLATE
- TRASH CONTAINER
- FENCE
- SIGN POST
- GUARDRAIL

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

STANDARD SYMBOLS

FOR UTILITIES



JOINT LEGEND FOR PAVEMENT JOINTS

<u>B</u>	LONGITUDINAL BULKHEAD CONSTRUCTION JOINT
<u>BD</u>	OPTIONAL B OR D JOINT
- - - C	TRANSVERSE CONTRACTION JOINT FOR CONCRETE PAVEMENT
- - - D	LONGITUDINAL LANE TIE JOINT
<u>E</u>	1" TRANSVERSE EXPANSION JOINT WITH LOAD TRANSFER DEVICE
<u>E₁</u>	1" TRANSVERSE EXPANSION JOINT WITHOUT LOAD TRANSFER DEVICE
- - - L	LONGITUDINAL BULKHEAD CONSTRUCTION JOINT FOR FUTURE PAVEMENT WIDENING
- - - L ₁	LONGITUDINAL BULKHEAD CONSTRUCTION JOINT FOR WIDENING EXISTING CONCRETE PAVEMENT JOINT DOWEL HOOK BOLTS HAVE PREVIOUSLY BEEN PROVIDED

NOTES:

1. FOR JOINT DETAILS SEE DETAIL STANDARD NO. C-4943.
2. ALL DIMENSIONS ARE IN INCHES(") UNLESS OTHERWISE NOTED.

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



PREPARED BY
BUREAU OF STREETS
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rev. K.S.M.

DRAWN BY:

M.F.S.

CHECKED BY:

APPROVED

Dadiu Haidar
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Way Valley
HEAD ENGINEER
M. F. S.
CITY ENGINEER

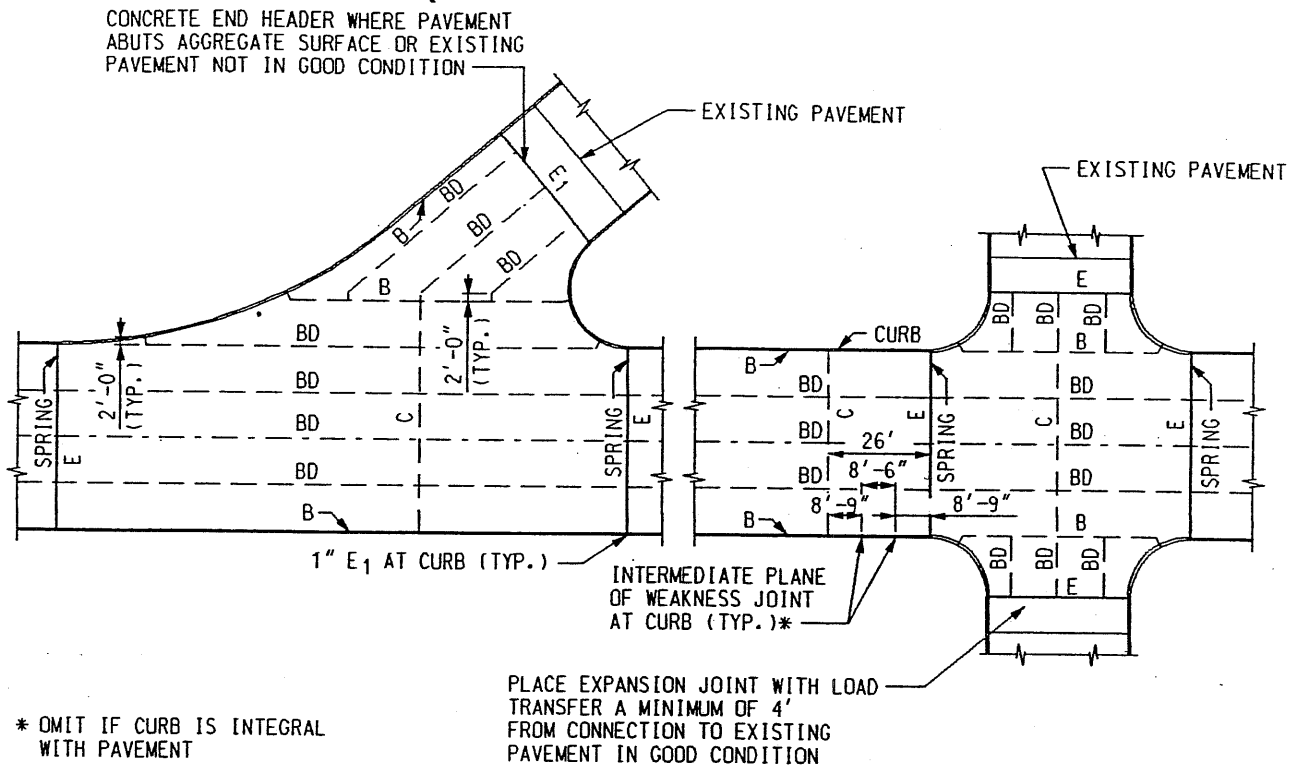
CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
TYPICAL JOINT LAYOUT FOR
REINFORCED CONCRETE PAVEMENT
DIVIDED ROADWAYS INTERSECTION

03/07/98
PLAN DATE

DRAWING NO.
27

DETAIL STANDARD NO.
C-4993

SHEET
1 OF 1



PLAN

JOINT LEGEND FOR PAVEMENT JOINTS

		DETAIL NUMBER
<u> </u> E	1" TRANSVERSE EXPANSION JOINT WITH LOAD TRANSFER DEVICE	7
<u> </u> E1	1" TRANSVERSE EXPANSION JOINT WITHOUT LOAD TRANSFER DEVICE	
<u> </u> D	LONGITUDINAL LANE TIE JOINT	1
<u> </u> C	TRANSVERSE CONTRACTION JOINT FOR CONCRETE PAVEMENT	6
<u> </u> B	LONGITUDINAL BULKHEAD CONSTRUCTION JOINT	2
<u> </u> L	LONGITUDINAL BULKHEAD CONSTRUCTION JOINT FOR FUTURE PAVEMENT WIDENING	3
<u> </u> U	TRANSVERSE PLANE OF WEAKNESS JOINT FOR CONCRETE BASE COURSE	5
<u> </u> L1	LONGITUDINAL BULKHEAD CONSTRUCTION JOINT FOR WIDENING EXISTING CONCRETE PAVEMENT (JOINT DOWEL HOOK BOLTS HAVE PREVIOUSLY BEEN PROVIDED)	4
<u> </u> BD	OPTIONAL B OR D JOINT	


FOR DETAIL CORRESPONDING TO DETAIL NUMBER SHOWN, REFER TO DETAIL STANDARD NO. C-4943.

JOINT LEGEND FOR CURB STRUCTURE AND SIDEWALK

<u> </u> E1	1" TRANSVERSE EXPANSION JOINT WITHOUT LOAD TRANSFER DEVICE
----------------	--

FOR DETAILS OF ALL JOINTS IN CONCRETE SIDEWALK REFER TO THE STANDARD SPECIFICATIONS.

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

 <p>PREPARED BY BUREAU OF STREETS AND HIGHWAYS</p>	<p>rev. K.S.M. DRAWN BY:</p>	<p>APPROVED <i>Dadiu Haider</i> ENGINEER OF STREETS</p>	<p>CITY OF DETROIT CITY ENGINEERING DIVISION, D.P.W. STANDARD PLAN FOR</p>		
	<p>M.F.S. CHECKED BY:</p>	<p><i>Wm. Talley</i> HEAD ENGINEER</p>	<p>TYPICAL JOINT LAYOUT FOR REINFORCED CONCRETE PAVEMENT</p>		
		<p><i>[Signature]</i> CITY ENGINEER</p>	<p>03/07/98 PLAN DATE</p>	<p>DRAWING NO. 28</p>	<p>DETAIL STANDARD NO. C-4991</p>

TRANSVERSE JOINTS IN CURB, GUTTER, CURB AND GUTTER
AND DRIVEWAY RETURNS AND OPENINGS ABUTTING A CONCRETE PAVEMENT

UNLESS OTHERWISE SHOWN ON PLANS, PLACE TRANSVERSE JOINTS AS FOLLOWS:

1" EXPANSION JOINTS IN LINE WITH ALL TRANSVERSE EXPANSION JOINTS IN CONCRETE PAVEMENT.

CONSTRUCTION JOINTS IN LINE WITH ALL TRANSVERSE CONTRACTION JOINTS IN CONCRETE PAVEMENT. PLACE PLANE OF WEAKNESS JOINT AT EACH END OF DRIVEWAY RETURNS AND OPENINGS.

FOR HAND FINISHING, PLACE INTERMEDIATE PLANE OF WEAKNESS JOINTS AT 8'-9" INTERVALS BETWEEN THE ABOVE JOINT.

TRANSVERSE JOINTS IN CONCRETE PAVEMENT

UNLESS OTHERWISE SHOWN ON PLANS, PLACE TRANSVERSE JOINTS AS FOLLOWS:

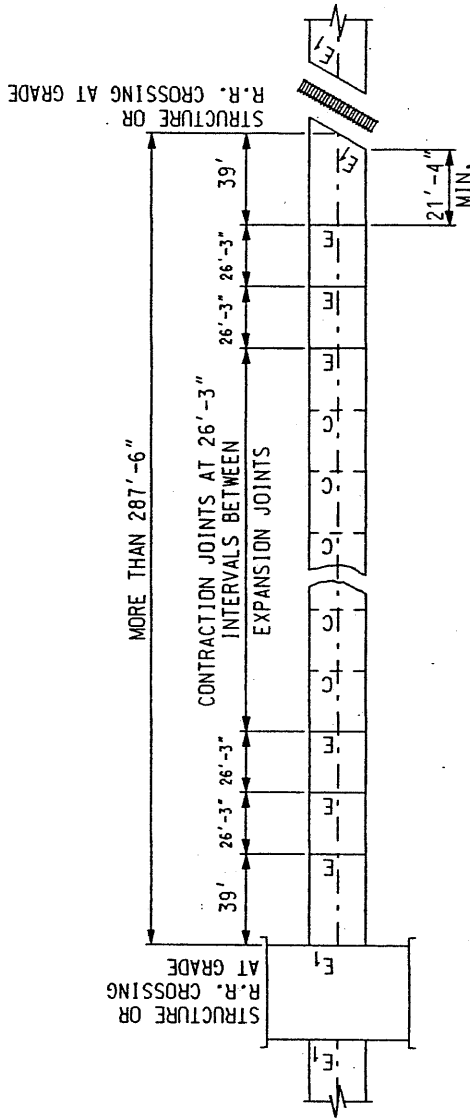
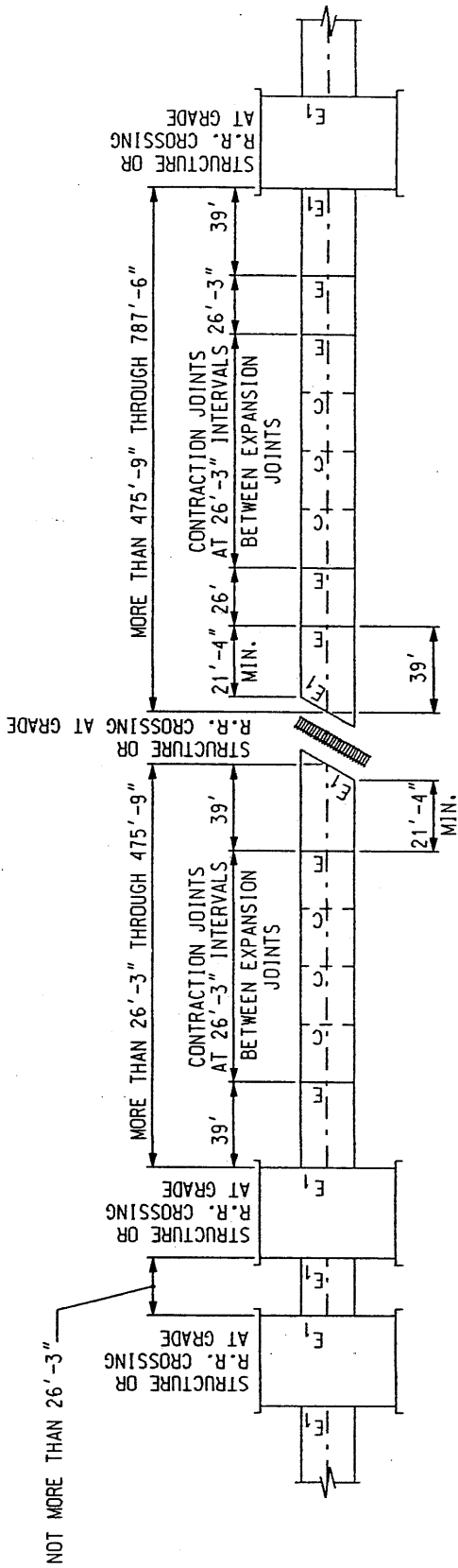
1" EXPANSION JOINTS WITH LOAD TRANSFER DEVICE AT THE SPRING OF RETURNS AND ELSEWHERE AS SHOWN ON SPECIAL DETAILS OR ON THE CURRENT DETAIL STANDARD NO. C-4992.

CONTRACTION JOINTS WITH LOAD TRANSFER DEVICE PLACED AT 26' INTERVALS BETWEEN EXPANSION JOINTS, AND ELSEWHERE AT UNIFORM INTERVALS OF 26'.

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
TYPICAL JOINT LAYOUT FOR
REINFORCED CONCRETE PAVEMENT

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

03/07/98 PLAN DATE	DRAWING NO. 28	DETAIL STANDARD NO. C-4991	SHEET -2 OF 2-
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PLAN VIEW SHOWING TRANSVERSE JOINT LOCATIONS
FOR USE BETWEEN APRIL 15th. AND SEPT. 15th.

PLACE 1" EXPANSION JOINTS WITH LOAD TRANSFER
DEVICE AT P.C. AND P.T. OF ALL CURVES WHERE THE
RADIUS OF THE CURVE IS 2'-3 1/2" OR LESS.

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



PREPARED BY
BUREAU OF STREETS
AND HIGHWAYS

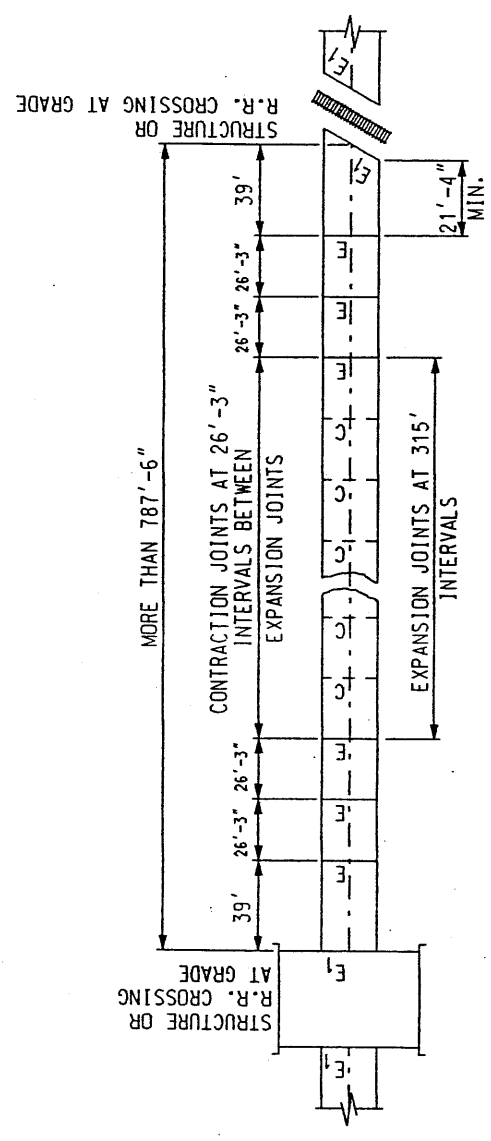
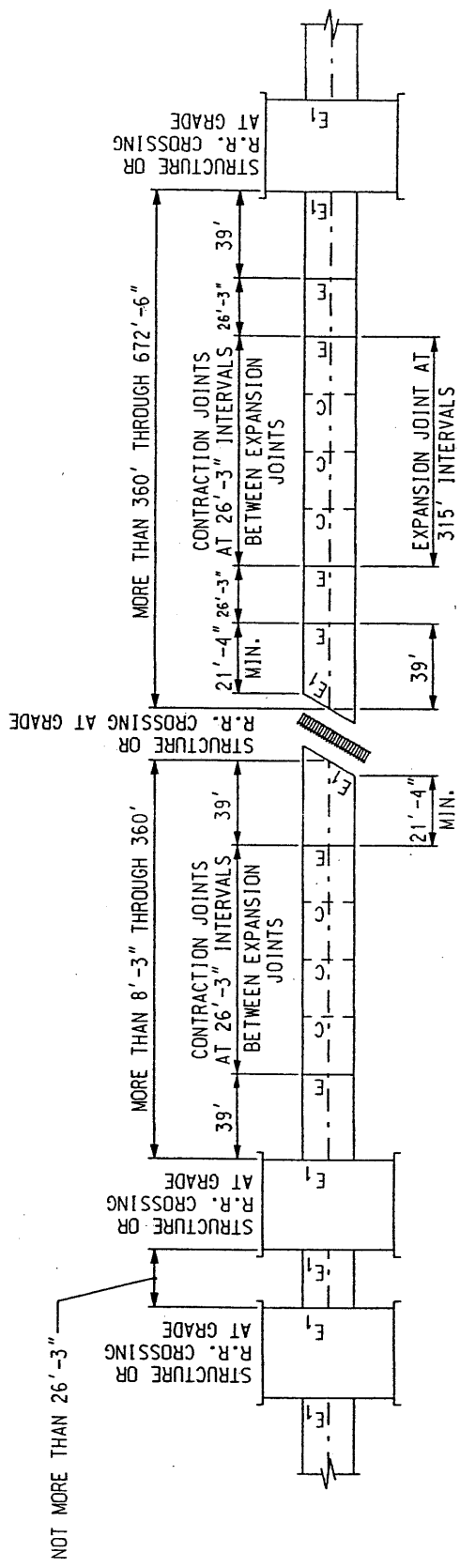
rev. KS.M.
DRAWN BY:
M.F.S.
CHECKED BY:

APPROVED

Darius Haider
ENGINEER OF STREETS
Wm. Talley
ROAD ENGINEER
[Signature]
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
LOCATION OF TRANSVERSE EXPANSION
AND CONTRACTION JOINTS IN
REINFORCED CONCRETE PAVEMENT

03/07/98 PLAN DATE	DRAWING NO. 29	DETAIL STANDARD NO. C-4992	SHEET 1 OF 3
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PLAN VIEW SHOWING TRANSVERSE JOINT LOCATIONS FOR USE BETWEEN SEPT. 15th. AND APRIL 15th.

PLACE 1" EXPANSION JOINTS AT 315' INTERVALS ON CURVES. PLACE CONTRACTION JOINTS AT 26' INTERVALS BETWEEN EXPANSION JOINTS. JOINTS NEED NOT NECESSARILY BE PLACED AT P.C. OR P.T. OF CURVE.

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

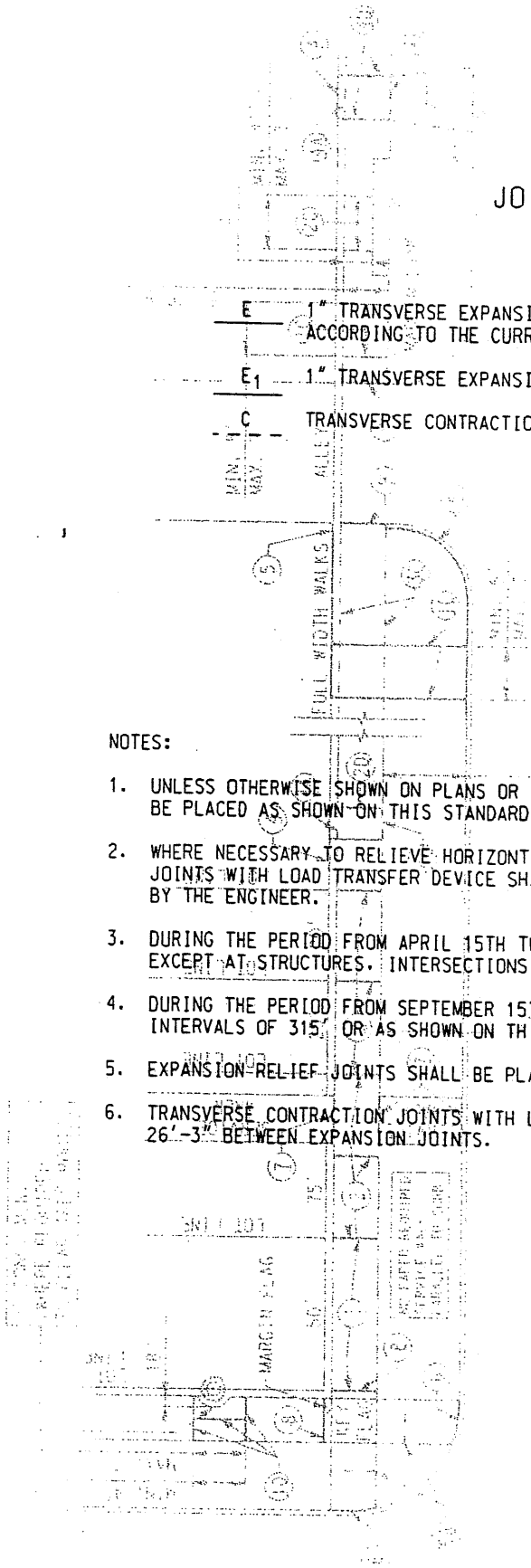
CITY OF DETROIT CITY ENGINEERING DIVISION, D.P.W. STANDARD PLAN FOR LOCATION OF TRANSVERSE EXPANSION AND CONTRACTION JOINTS IN REINFORCED CONCRETE PAVEMENT			
03/07/98 PLAN DATE	DRAWING NO. 29	DETAIL STANDARD NO. C-4992	SHEET 2 OF 3

JOINT LEGEND

- E** 1" TRANSVERSE EXPANSION JOINT WITH LOAD TRANSFER DEVICE ACCORDING TO THE CURRENT STANDARD PLAN.
- E₁** 1" TRANSVERSE EXPANSION JOINT WITHOUT LOAD TRANSFER DEVICE.
- C** TRANSVERSE CONTRACTION JOINT ACCORDING TO THE CURRENT STANDARD.

NOTES:

1. UNLESS OTHERWISE SHOWN ON PLANS OR DIRECTED BY THE ENGINEER, TRANSVERSE JOINTS SHALL BE PLACED AS SHOWN ON THIS STANDARD PLAN AND ON THE CURRENT STANDARD PLANS.
2. WHERE NECESSARY TO RELIEVE HORIZONTAL PRESSURES AT SHARP VERTICAL CURVES 1" EXPANSION JOINTS WITH LOAD TRANSFER DEVICE SHALL ALSO BE PLACED AS SHOWN ON PLANS OR WHERE DIRECTED BY THE ENGINEER.
3. DURING THE PERIOD FROM APRIL 15TH TO SEPTEMBER 15TH, EXPANSION JOINTS SHALL NOT BE PLACED EXCEPT AT STRUCTURES, INTERSECTIONS AND LOCATIONS SPECIFIED.
4. DURING THE PERIOD FROM SEPTEMBER 15TH TO APRIL 15TH, EXPANSION JOINTS SHALL BE SPACED AT INTERVALS OF 315' OR AS SHOWN ON THIS STANDARD PLAN.
5. EXPANSION-RELIEF JOINTS SHALL BE PLACED AT STRUCTURES AND RAILROAD TRACKS AS INDICATED.
6. TRANSVERSE CONTRACTION JOINTS WITH LOAD TRANSFER DEVICE SHALL BE PLACED AT INTERVALS OF 26'-3" BETWEEN EXPANSION JOINTS.



THIS PLAN MUST BE APPROVED BY THE ENGINEER.

CITY OF DETROIT
BUREAU OF STREETS
AND HIGHWAYS

LOT PROPERTY LINES
CURB LINES
WALK AND
OPPOSITE SIDE
EXPANSION JOINT
CONTRACTION JOINT
CONTRACT JOINT
CONTRACT JOINT
ALTERNATE JOINT



REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC 2002

CITY OF DETROIT CITY ENGINEERING DIVISION, D.P.W. STANDARD PLAN FOR LOCATION OF TRANSVERSE EXPANSION AND CONTRACTION JOINTS IN REINFORCED CONCRETE PAVEMENT			
03/07/98 PLAN DATE	29 DRAWING NO.	C-4992 DETAIL STANDARD NO.	3 OF 3 SHEET

EXPANSION JOINTS

ALL EXPANSION JOINT PAPER SHALL EXTEND 1" BELOW THE BOTTOM OF THE THINNER OF ADJOINING PAVEMENT SECTIONS.

- ① PLACE 1/2" PAPER EXPANSION JOINTS AT LOT LINES WHEN LOT LINES ARE BETWEEN 25' AND 50' APART.
- ② PLACE ADDITIONAL 1/2" PAPER EXPANSION JOINTS SO THAT THE DISTANCE BETWEEN JOINTS DOES NOT EXCEED 50' WHEN LOT LINES ARE OVER 50' APART.
- ③ PLACE 1/2" PAPER EXPANSION JOINTS AT EVERY SECOND LOT LINE AND CONTRACTION JOINT AT INTERVENING LOT LINE WHEN LOT LINES ARE LESS THAN 25' APART.
- ④ PLACE 1" PAPER EXPANSION JOINTS AT CURB AND BUILDING OR PROPERTY LINE OR AT ALTERNATE POSITION ④A AS SHOWN FOR DRIVEWAY.
- ⑤ PLACE 1" PAPER EXPANSION JOINTS AT CURB AND BUILDING OR PROPERTY LINE FOR FULL WIDTH SIDEWALK EXCEEDING 7' IN WIDTH.
- ⑥ PLACE 1" PAPER EXPANSION JOINTS AT CURB CIRCLES OR AT ALTERNATE POSITION ⑥A AS SHOWN.
- ⑦ PLACE 1" PAPER EXPANSION JOINTS AT INTERSECTIONS OF SERVICE WALKS AND SIDEWALKS AND SERVICE WALKS AND CURBS.
- ⑧ PLACE 1" PAPER EXPANSION JOINTS AT MARGIN FLAGS AT CROSSWALKS.
- ⑨ PLACE 1" PAPER EXPANSION JOINTS AT ALLEY APRONS.
- ⑩ PLACE 1/2" PAPER EXPANSION JOINT BOTH SIDES OF SIDEWALK FLAG ABUTTING TREE AND ON CENTERLINE JOINT.

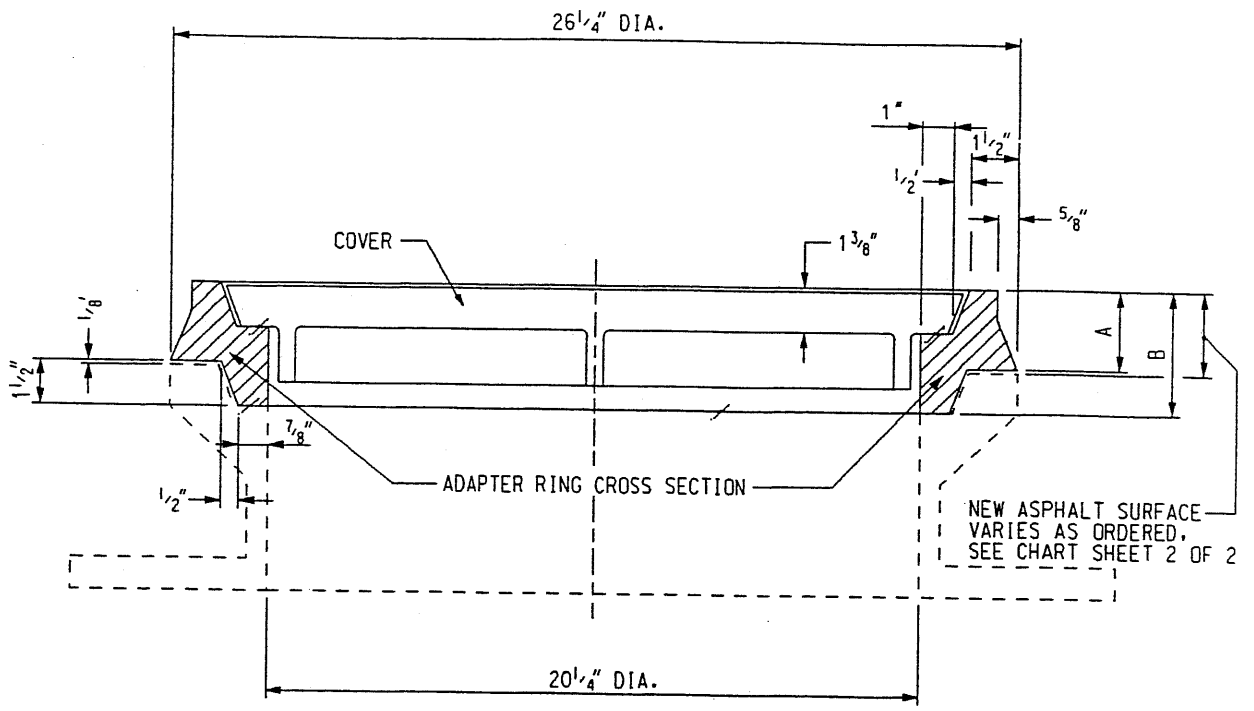
CONTRACTION JOINTS

- ①C PLACE CONTRACTION JOINTS AT INTERVALS OF NOT LESS THAN 5' NOR MORE THAN 7' ON WALKS 5' WIDE OR WIDER, INCLUDING FULL WIDTH WALKS.
- ②C PLACE CONTRACTION JOINTS AT INTERVALS OF NOT LESS THAN 4' NOR MORE THAN 7' ON WALKS 4' WIDE.
- ③C PLACE CONTRACTION JOINTS AT THE MARGIN LINE ON FULL WIDTH WALKS (OPTIONAL).

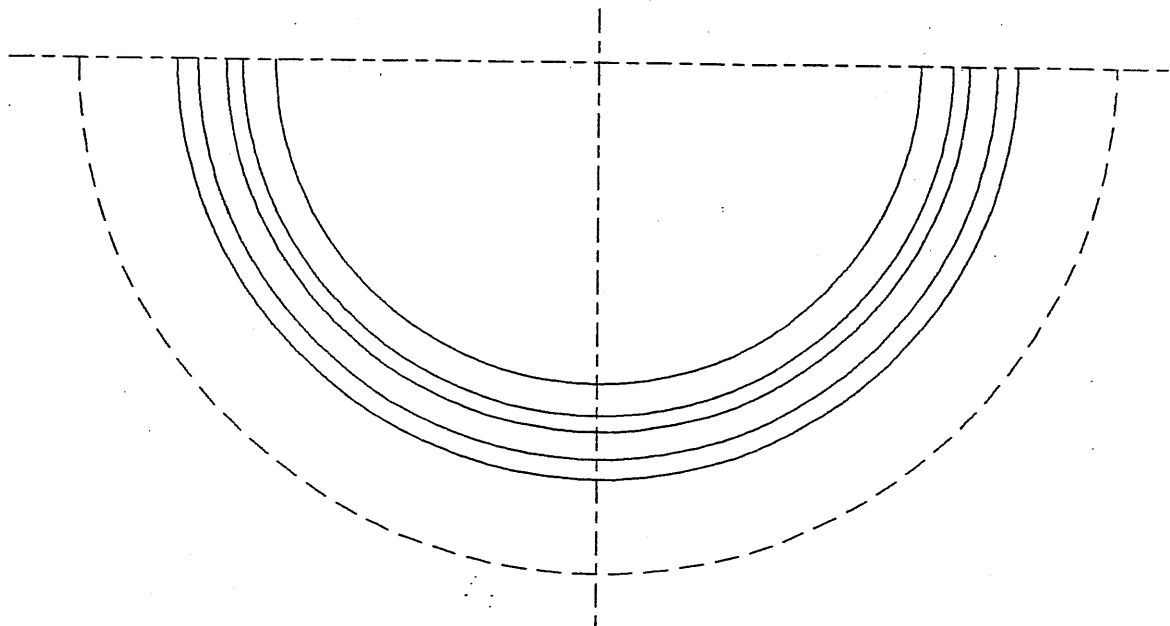
DRIVEWAYS

- ①D PLACE CONTRACTION JOINTS IN DRIVEWAYS SO THAT NO SLAB WILL EXCEED THE DIMENSIONS OF 15' BY 15'
- ②D PLACE 1" PAPER EXPANSION JOINTS ON ALL SIDES OF COMMERCIAL DRIVES.
- ③D PLACE CONTRACTION OR CONTRACTION JOINT ON CENTERLINE WHEN WIDTH OF DRIVEWAY EXCEEDS 15'
- ④D PLACE 1/2" PAPER EXPANSION JOINTS ON BOTH SIDES OF RESIDENTIAL DRIVEWAYS. IF DRIVEWAY EDGE IS WITHIN 2 FEET OF LOT LINE, PLACE THIS EXPANSION PAPER AT PROPERTY LINE.

CITY OF DETROIT			
CITY ENGINEERING DIVISION. D.P.W.			
STANDARD PLAN FOR			
-----SIDEWALK JOINTING-----			
-----STANDARD-----			
03/07/98 PLAN DATE	DRAWING NO. 30	DETAIL STANDARD NO. C-4462	SHEET 2 OF 2



CROSS-SECTION



HALF-PLAN

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



PREPARED BY
BUREAU OF STREETS
AND HIGHWAYS

rev. K.S.M.

DRAWN BY:

M.F.S.

CHECKED BY:

APPROVED

Dadiu Haidan
ENGINEER OF STREETS
Wm. Talley
HEAD ENGINEER
Wm. Yermil
CITY ENGINEER

CITY OF DETROIT

CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

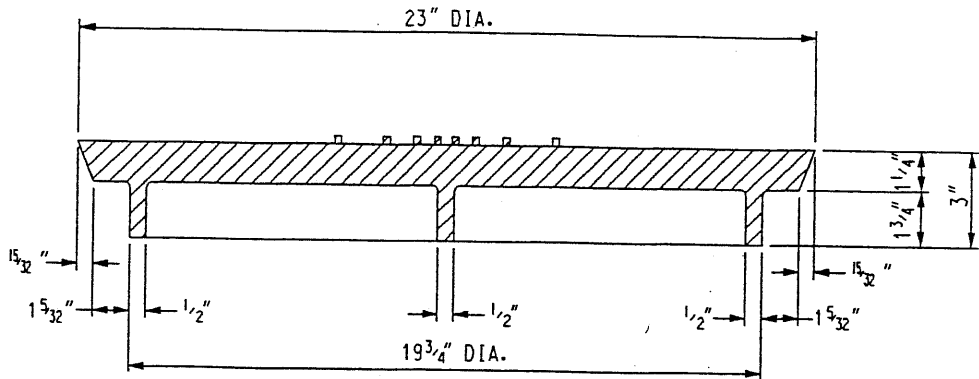
MANHOLE ADAPTER RING

03/07/98
PLAN DATE

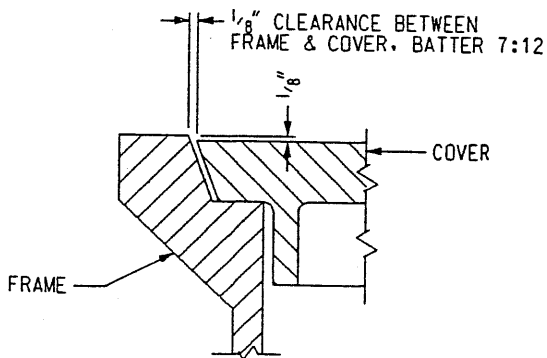
DRAWING NO.
31

DETAIL STANDARD NO.
C-4125A

SHEET
1 OF 2



SECTION THRU COVER



DETAIL OF EXISTING FRAME & COVER

NEW ASPHALT THICKNESS	DIMENSION	
	A	B
2"	1 7/8"	3 3/8"
2 1/2"	2 3/8"	3 7/8"
3"	2 7/8"	4 3/8"

NOTES:

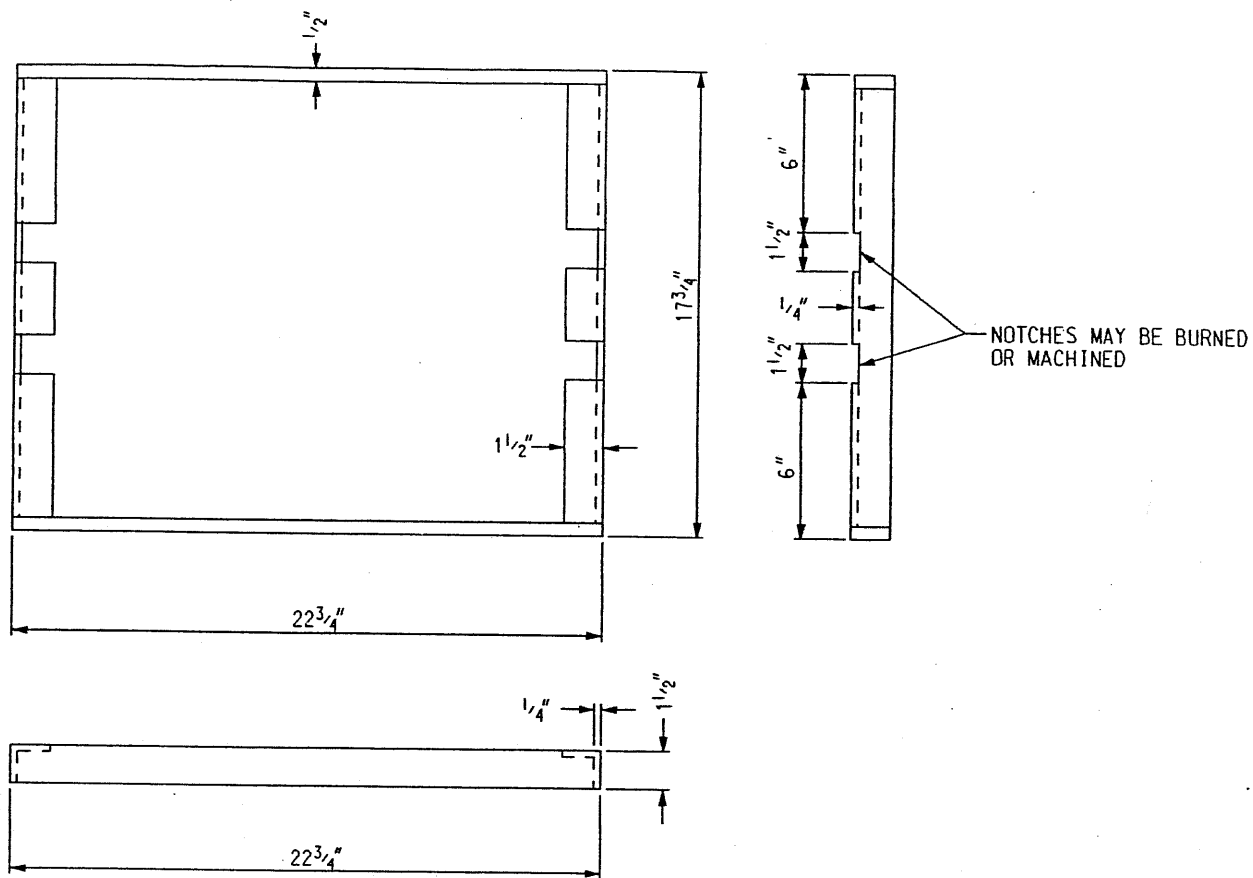
1. THE SEATING FACE OF THE ADAPTER RING SHALL BE MACHINE FINISHED SO THAT THE COVER SHALL HAVE AN EVEN BEARING ON ITS SEAT.
2. ADAPTER RING TO BE GRAY IRON CASTING A.S.T.M. A-48-62 CLASS No. 30.
3. STANDARD SHALL BE EAST JORDAN IRON WORKS ADAPTER RING OR EQUIVALENT.
4. ALL DIMESIONS ARE IN INCHES(") UNLESS OTHERWISE NOTED.

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002

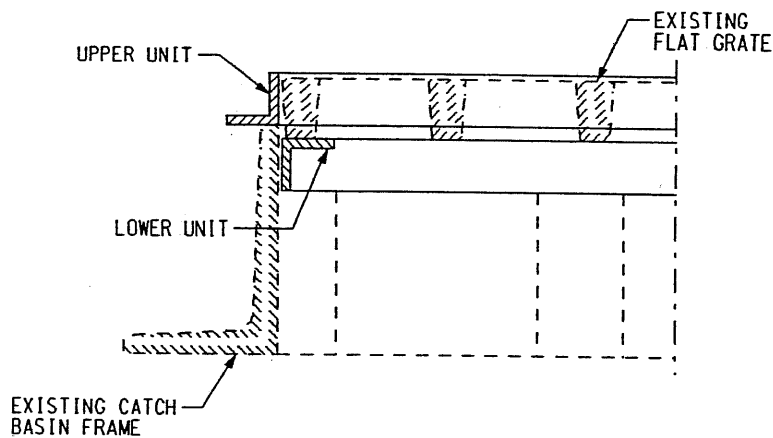
CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

MANHOLE ADAPTER RING

Q3/Q7/98 PLAN DATE	DRAWING NO. 31	DETAIL STANDARD NO. C-4125A	SHEET 2 OF 2
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LOWER UNIT



REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



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CHECKED BY:

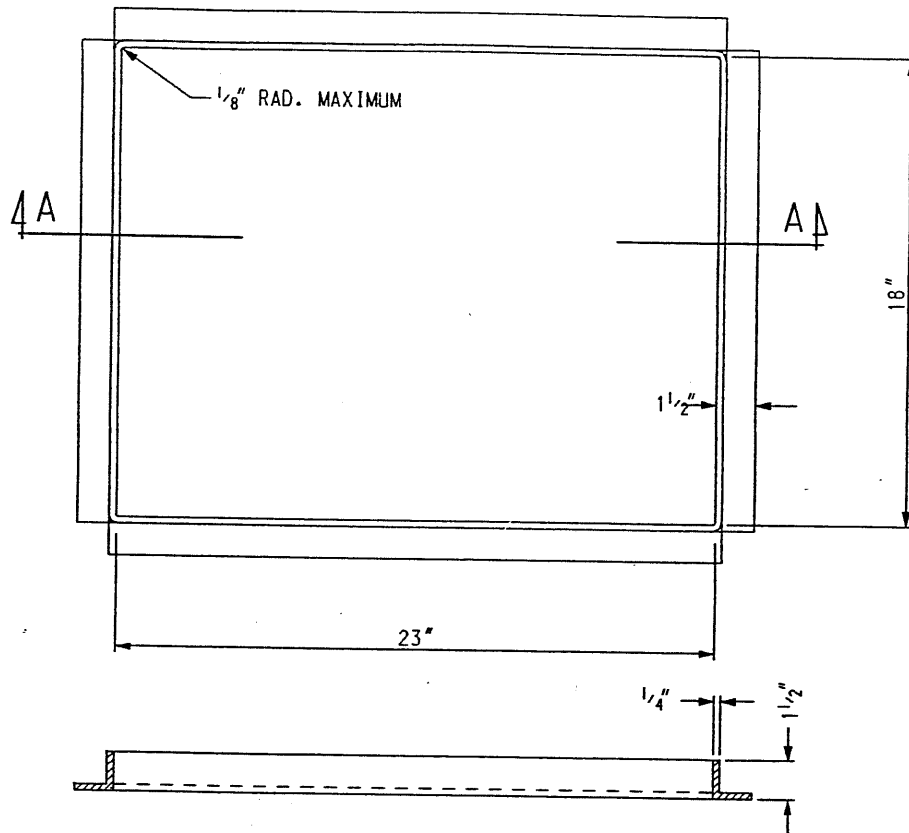
APPROVED

Dadiu Hojdar
ENGINEER OF STREETS
Wm. Talley
HEAD ENGINEER
[Signature]
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

CATCH BASIN ADAPTER

03/07/98 PLAN DATE	DRAWING NO. 32	DETAIL STANDARD NO. C-4285	SHEET 1 OF 2
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SECTION A-A

UPPER UNIT

NOTES:

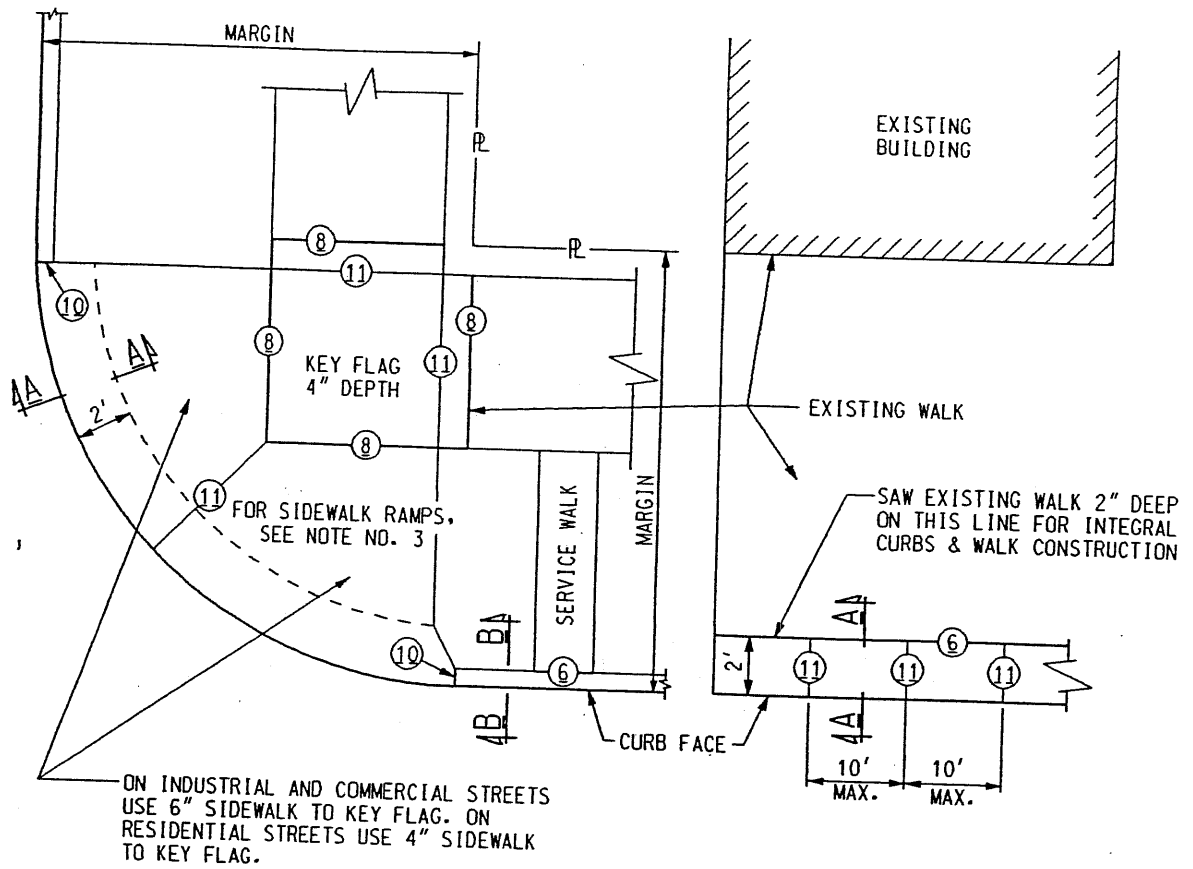
1. UPPER UNIT: TO BE MADE OF 1 1/2" x 1 1/2" x 1/4" ROLLED STRUCTURAL STEEL ANGLE.
2. LOWER UNIT: TO BE MADE OF 1 1/2" x 1/2" HOT ROLLED MILD STEEL BARS AND 1 1/2" x 1 1/2" x 1/4" ROLLED STRUCTURAL STEEL ANGLE.
3. CONTRACTOR TO FABRICATE OR TO HAVE FABRICATED THE ADAPTER AS PER THIS DRAWING.
4. ALL DIMENSIONS ARE IN INCHES (") UNLESS OTHERWISE NOTED.

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

CATCH BASIN ADAPTER

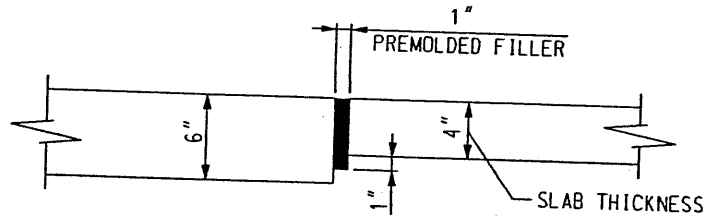
03/07/98 PLAN DATE	DRAWING NO. 32	DETAIL STANDARD NO. C-4285	SHEET 2 OF 2
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ON INDUSTRIAL AND COMMERCIAL STREETS
 USE 6" SIDEWALK TO KEY FLAG. ON
 RESIDENTIAL STREETS USE 4" SIDEWALK
 TO KEY FLAG.

LEGEND

- ⑥ — PLACE 1" EXPANSION JOINT
- ⑧ — PLACE 1" EXPANSION JOINT
- ⑩ — CONTRACTION JOINT
- ⑪ — CONTRACTION JOINT



EXPANSION JOINTS NO. ⑥ - ⑧ - ⑩

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M.F.S.
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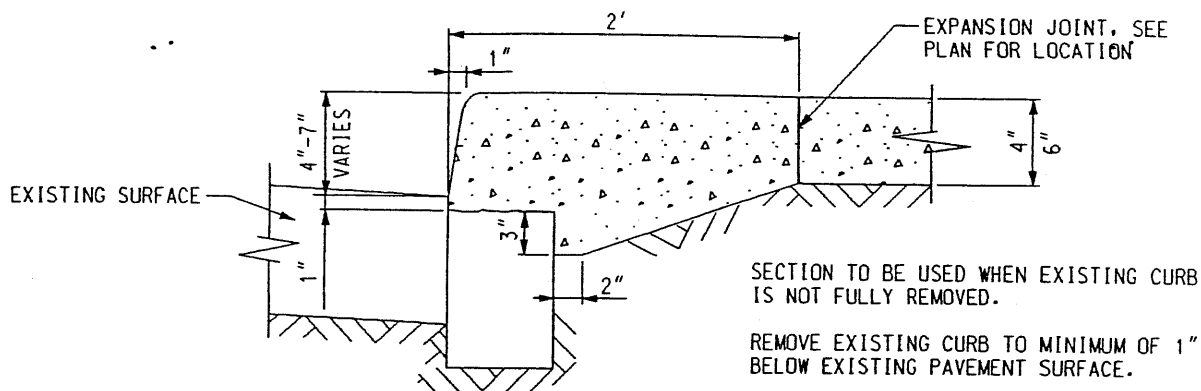
APPROVED

Dadiu Haidar
 ENGINEER OF STREETS
Wm. Talley
 HEAD ENGINEER
John J. ...
 CITY ENGINEER

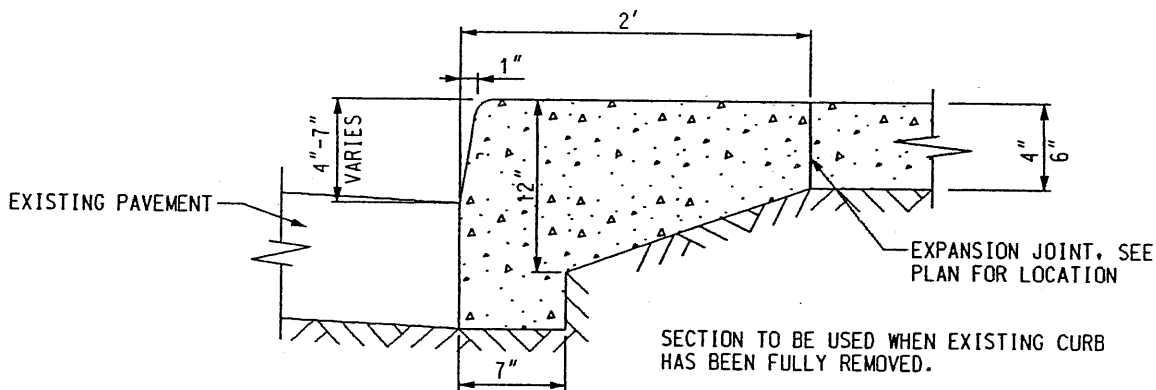
CITY OF DETROIT
 CITY ENGINEERING DIVISION, D.P.W.
 STANDARD PLAN FOR

INTERGRAL CURB AND WALK
 MODIFIED SEPARATE TYPE CURB

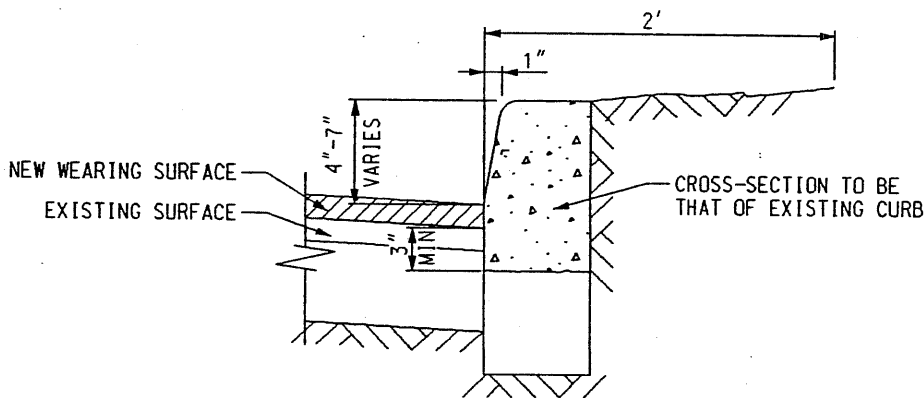
03/07/98 PLAN DATE	DRAWING NO. 33	DETAIL STANDARD NO. C-4550	SHEET 1 OF 2
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SECTION A-A
INTEGRAL CURB AND SIDEWALK



SECTION A-A
INTEGRAL CURB AND SIDEWALK



SECTION B-B
MODIFIED SEPARATE TYPE CURB

NOTES:

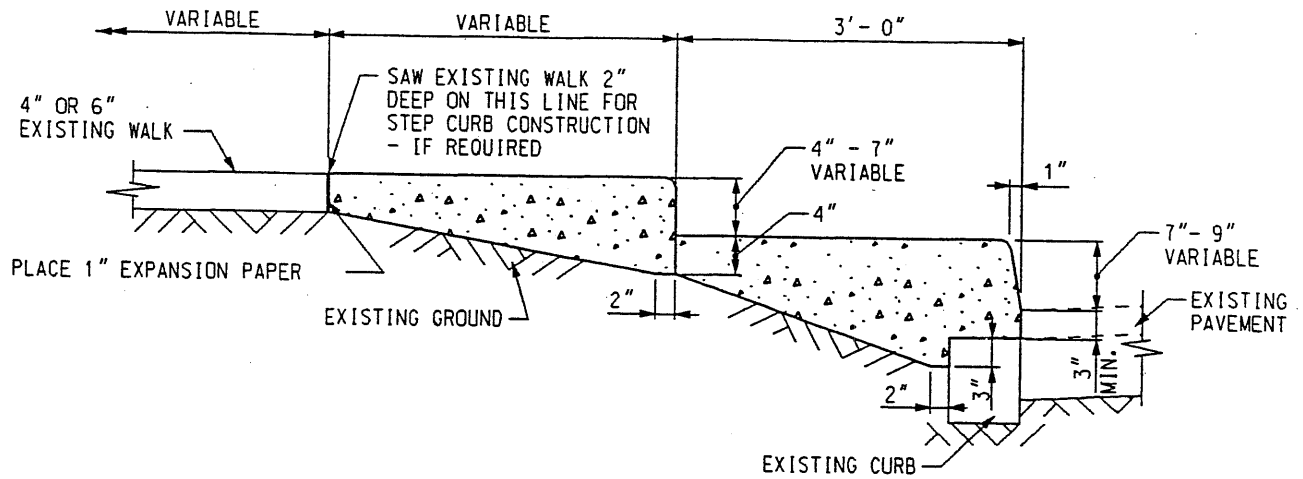
1. WHEN MARGIN DIMENSIONS ARE 20' OR LESS, CONSTRUCT SIDEWALK INTERSECTION AS SHOWN.
2. WHEN MARGIN DIMENSIONS EXCEED 20', CONSTRUCT INTERSECTION OF SEPARATE TYPE CURB AND SIDEWALK AS DIRECTED BY ENGINEER.
3. CONSTRUCT SIDEWALK RAMPS AS SHOWN ON THE PLAN OR AS DIRECTED BY ENGINEER.
4. GRADE "A" CONCRETE TO BE USED FOR CURBS AND INTEGRAL CURB AND SIDEWALK.
5. ALL EXPANSION JOINT PAPER SHALL EXTEND 1" BELOW THE BOTTOM OF THINNEST ADJOINING SECTION.
6. ALL DIMENSIONS ARE IN INCHES ("). UNLESS OTHERWISE NOTED.

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

--- INTEGRAL CURB AND WALK ---
--- MODIFIED SEPARATE TYPE CURB ---

03/07/98 PLAN DATE	DRAWING NO. 33	DETAIL STANDARD NO. C-4550	SHEET .2 OF 2
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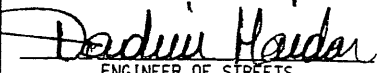
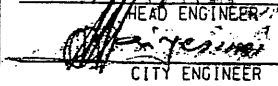


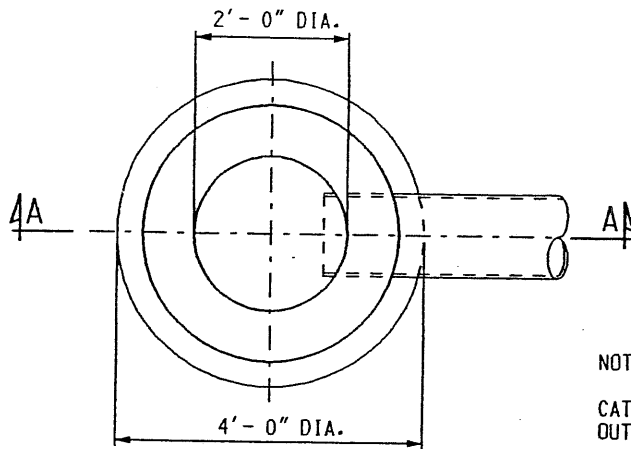
STEP CURB SECTION

NOTES:

1. PLACE CONTRACTION JOINTS AT INTERVALS OF LENGTH NOT LONGER THAN 10'
2. GRADE "A" CONCRETE.
3. ALL DIMENSIONS ARE IN INCHES (") UNLESS OTHERWISE NOTED.

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

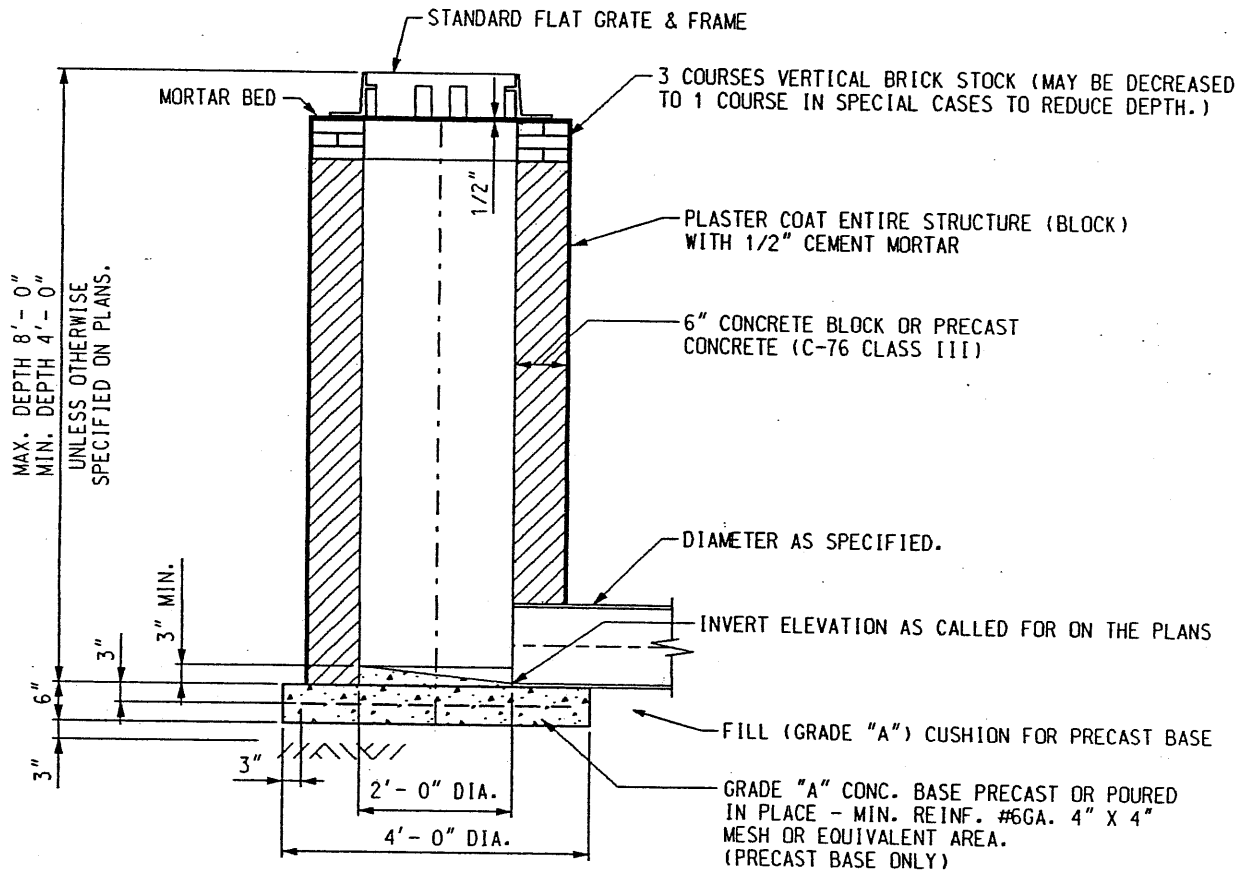
 <p>PREPARED BY BUREAU OF STREETS AND HIGHWAYS</p>	rev. K.S.M. DRAWN BY:	APPROVED  ENGINEER OF STREETS	CITY OF DETROIT CITY ENGINEERING DIVISION. D.P.W. STANDARD PLAN FOR		
	M.F.S. CHECKED BY:	 HEAD ENGINEER CITY ENGINEER	STEP CURB CONSTRUCTION DETAILS		
		03/07/98 PLAN DATE	DRAWING NO. 34	DETAIL STANDARD NO. C-4994	SHEET 1 OF 1



PLAN VIEW

NOTE:

CATCH BASIN "A" WILL BE USED ONLY WHEN OUTLETTING TO A CATCH BASIN "B".



SECTION A-A

CATCH BASIN "A"

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



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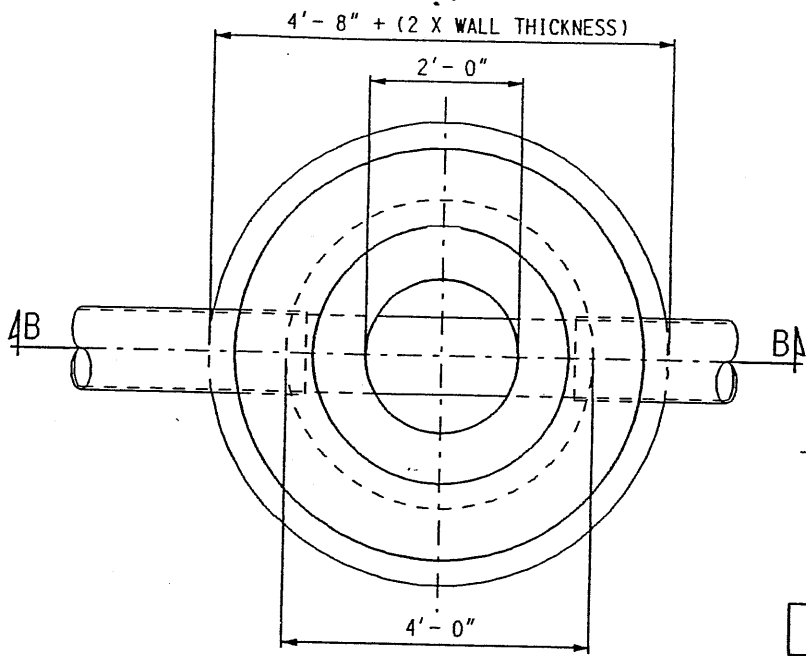
APPROVED

Dadiu Haidar
ENGINEER OF STREETS
Wm. J. Kelly
LEAD ENGINEER
[Signature]
CITY ENGINEER

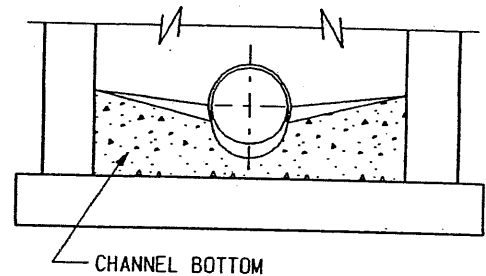
CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR

CATCH BASINS "A" AND "B"
AND FLAT GRATE AND FRAME

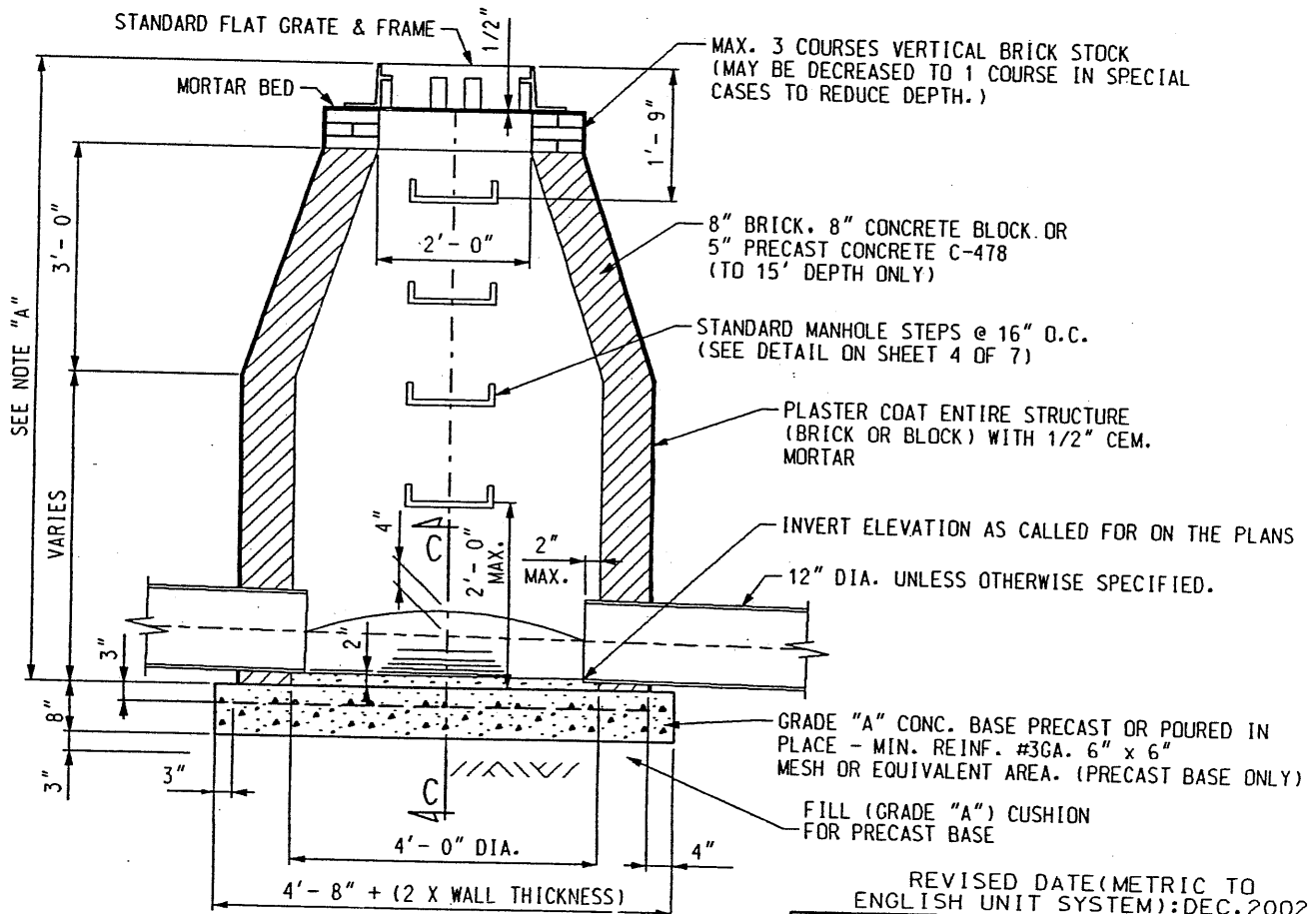
03/07/98 PLAN DATE	DRAWING NO. 35	DETAIL STANDARD NO. C-5028	SHEET 1 OF 7
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PLAN VIEW



SECTION C-C



SECTION B-B

CATCH BASIN "B"

NOTE "A":

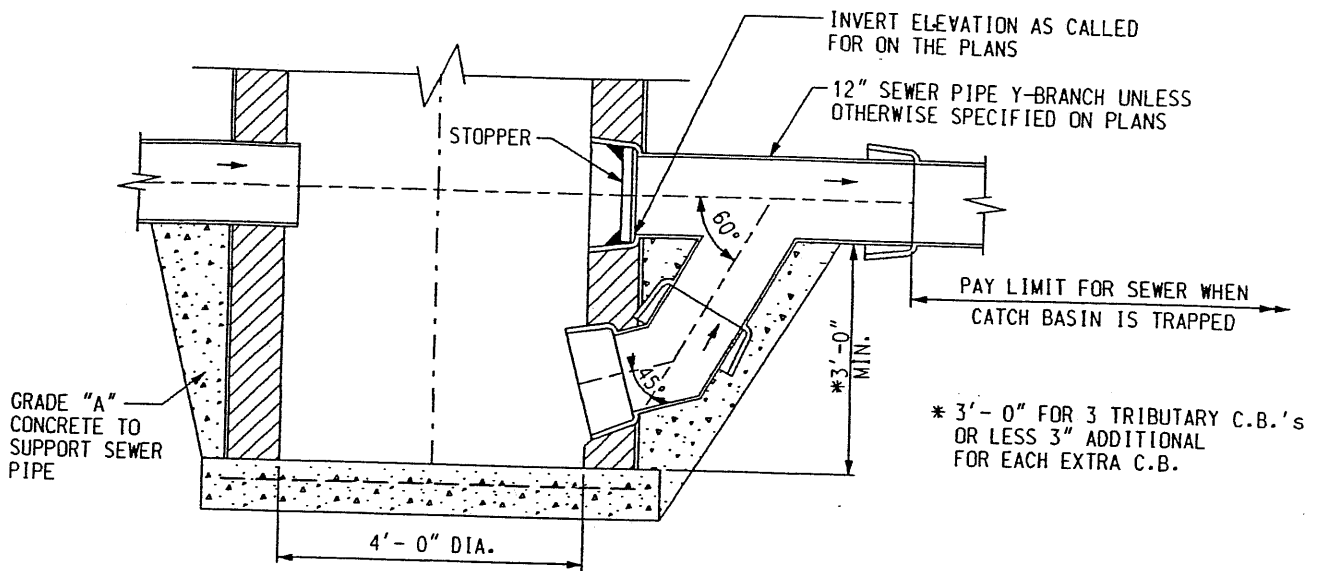
WALL THICKNESS SHALL BE 8" FROM THE TOP OF STRUCTURE TO A DEPTH OF 15'. BELOW 15' THE THICKNESS OF THE WALL SHALL BE 12"

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

CATCH BASINS "A" AND "B"
AND FLAT GRATE AND FRAME

03/07/98 PLAN DATE	DRAWING NO. 35	DETAIL STANDARD NO. C-5028	SHEET 2 OF 7
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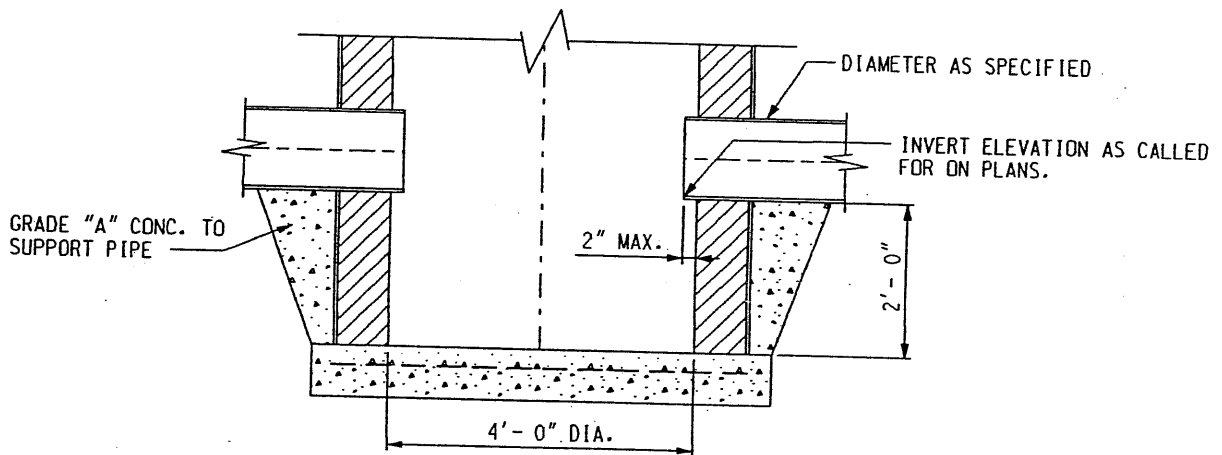


NOTES:

SEWER TRAP TO BE OF THE SAME MAT'L. & STRENGTH AS THE OUTLET SEWER PIPE.

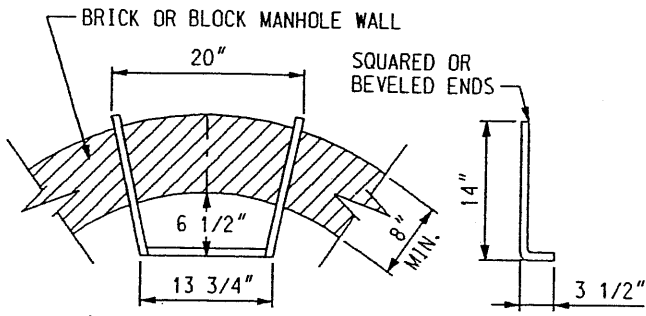
TRAP SHALL BE SUPPORTED BY BLOCKING OR ANY OTHER MEANS UNTIL CATCH BASIN IS COMPLETED AND CONCRETE OR MORTAR AROUND BRICK IS SET. ANY VOIDS BETWEEN THE TRAP AND GROUND UNDERNEATH SHALL BE FILLED WITH GRADE "A" CONCRETE

DETAIL OF TRAP FOR CATCH BASIN "B"

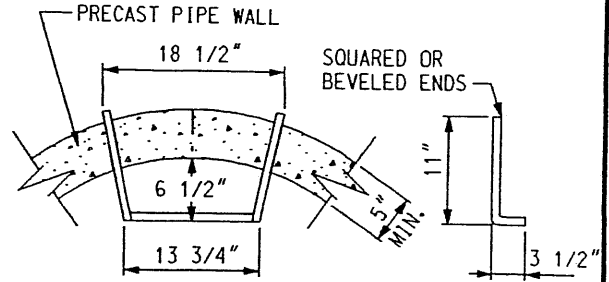


DETAIL OF SUMP FOR CATCH BASIN "B"

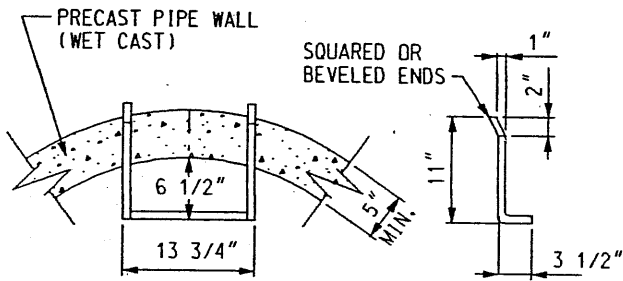
CITY OF DETROIT			
CITY ENGINEERING DIVISION. D.P.W.			
STANDARD PLAN FOR			
CATCH BASINS "A" AND "B"			
AND FLAT GRATE AND FRAME			
REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002	03/07/98 PLAN DATE	DRAWING NO. 35	DETAIL STANDARD NO. C-5028
			SHEET 3 OF 7



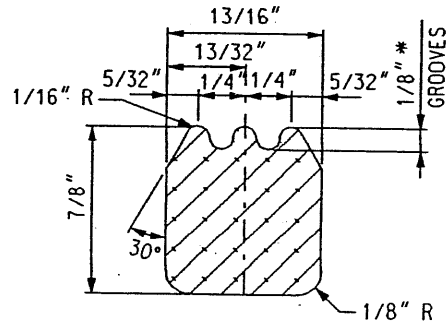
PLAN VIEW
(USE WITH BRICK OR BLOCK M.H.)



PLAN VIEW
(USE WITH PRECAST M.H. UNITS)



PLAN VIEW
(USE WITH WET CAST M.H. UNITS)



CROSS - SECTION

* NOTE:

IN LIEU OF GROOVES, ALTERNATE
FOOT HOLD CONFIGURATIONS WILL
BE CONSIDERED FOR APPROVAL.

ALUMINUM MANHOLE STEP STANDARD DETAILS

NO SCALE

NOTES:

1. MANHOLE STEPS SHALL CONFORM TO THE REQUIREMENTS FOR "ALUMINUM ALLOY EXTRUDED BARS, RODS, SHAPES AND TUBES", A.S.T.M. B221 (CURRENT), ALLOY 6061, TEMPER T-6 OR APPROVED EQUAL.
2. EITHER THE FLARED LEG OR PARALLEL LEG STEP MAY BE USED FOR POURED IN PLACE CONCRETE CONSTRUCTION OR IN WET CAST MANHOLE UNITS.
3. THE PARALLEL LEG STEP SHALL BE USED IN EXISTING STRUCTURES BY PLACING IN DRILLED HOLES AND GROUTING WITH NON-SHRINK GROUT.

REVISED DATE (METRIC TO
ENGLISH UNIT SYSTEM): DEC. 2002

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

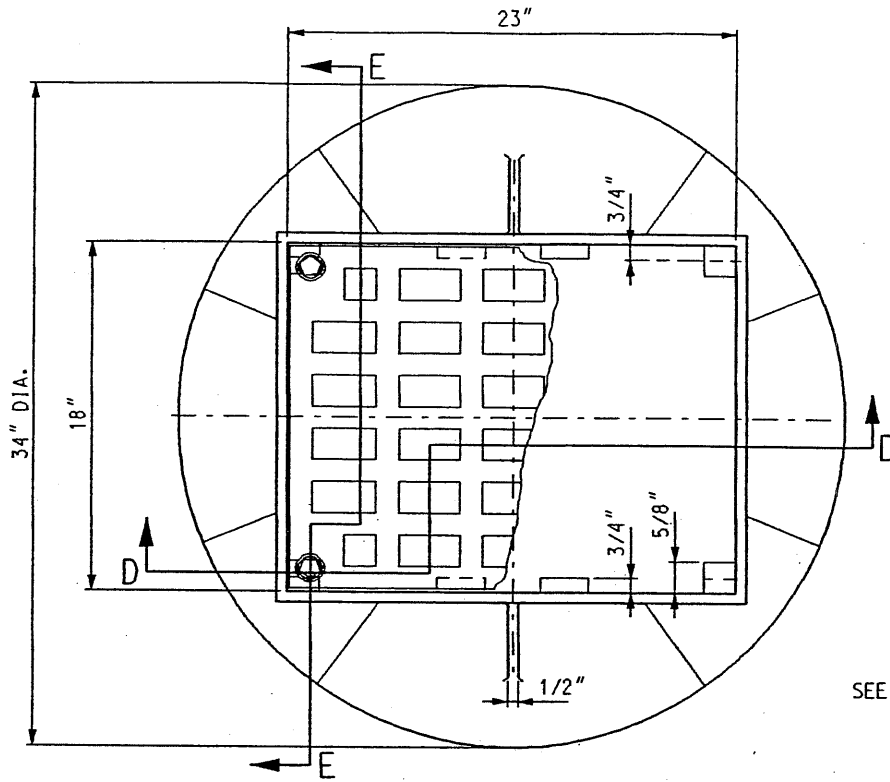
CATCH BASINS "A" AND "B"
AND FLAT GRATE AND FRAME

03/07/98
PLAN DATE

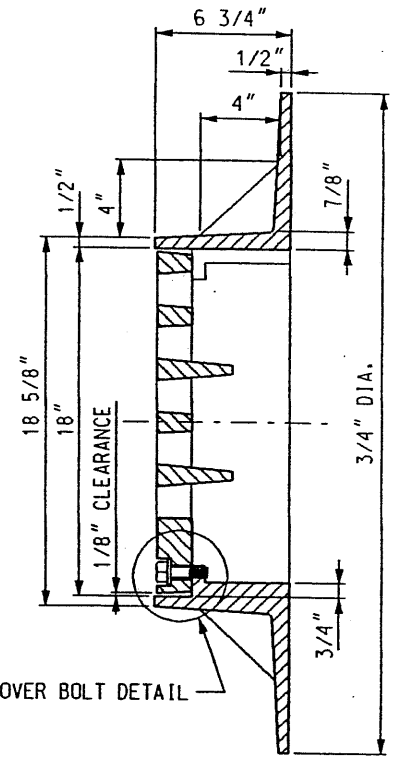
DRAWING NO.
35

DETAIL STANDARD NO.
C-5028

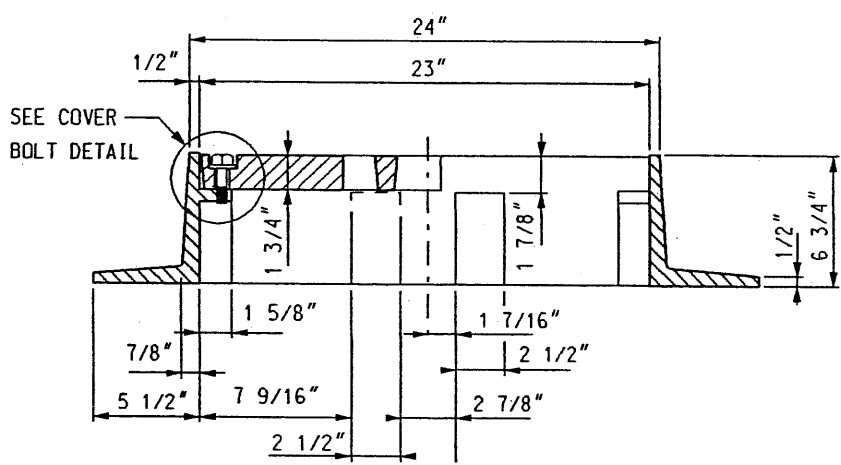
SHEET
4 OF 7



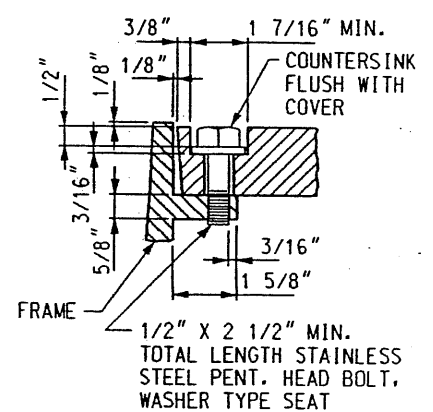
PLAN VIEW OF FRAME



SECTION E-E



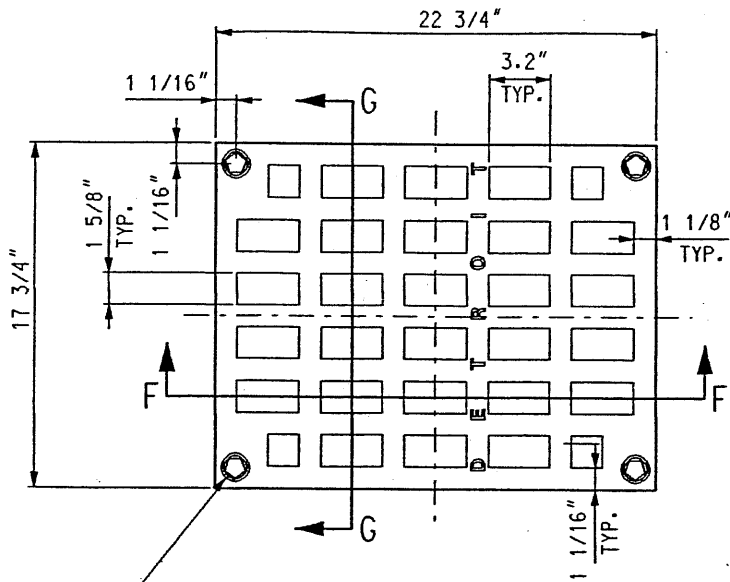
SECTION D-D



COVER BOLT DETAIL

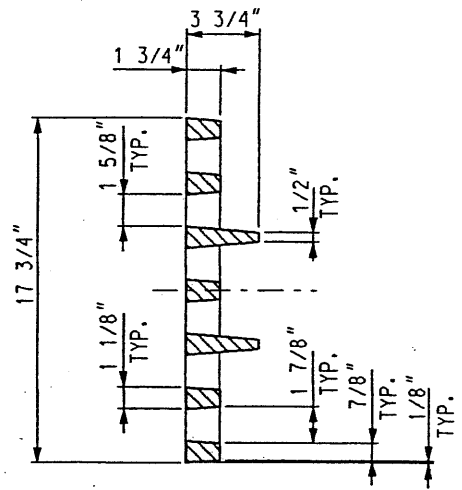
CITY OF DETROIT			
CITY ENGINEERING DIVISION, D.P.W.			
STANDARD PLAN FOR			
CATCH BASINS "A" AND "B"			
AND FLAT GRATE AND FRAME			
03/07/98	DRAWING NO.	DETAIL STANDARD NO.	SHEET
PLAN DATE	35	C-5028	5 OF 7

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002

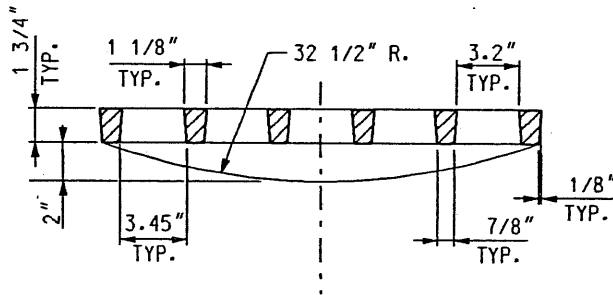


3/4" DIA. HOLE THRU COVER. C' BORE
 1 7/16"x11/16" DEEP CORED IN GRATE.
 FRAME DRILLED & TAPPED FOR 1/2"
 DIA. - 1/16" THREAD PITCH BOLT (TYP.)

PLAN VIEW OF GRATE



SECTION G-G



SECTION F-F

CITY OF DETROIT
 CITY ENGINEERING DIVISION, D.P.W.
 STANDARD PLAN FOR

CATCH BASINS "A" AND "B"
 AND FLAT GRATE AND FRAME

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002

03/07/98 PLAN DATE	DRAWING NO. 35	DETAIL STANDARD NO. C-5028	SHEET 6 OF 7
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GENERAL NOTES

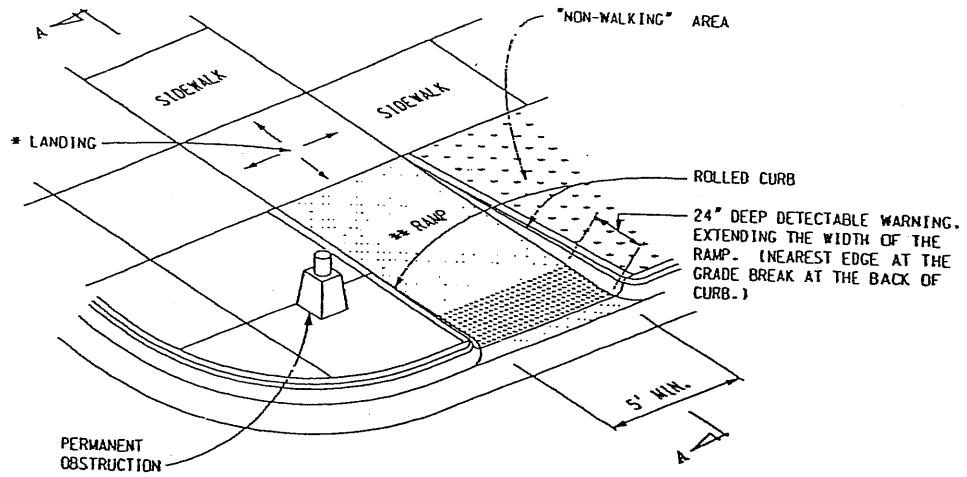
1. CENTER OF CATCH BASIN SHALL BE 20 INCHES FROM BACK OF CURB.
2. ALL SIZES AND FLOW LINES OF PIPES, AND ELEVATIONS FOR TOP AND BOTTOM OF STRUCTURES SHALL BE DETERMINED FROM THE PLANS OR CONSTRUCTION REQUIREMENTS.
THE BELL SHALL BE REMOVED FROM THE FIRST LENGTH OF OUTLET PIPE PROJECTING THROUGH THE WALL OF THE STRUCTURES WHEN ANY STRUCTURE IS CONSTRUCTED OF PRECAST CONCRETE OR CONCRETE BLOCK, THE TOP OF THE MASONRY SHALL BE LEFT SUFFICIENTLY LOW TO PERMIT PROPER ADJUSTMENT OF THE COVER TO GRADE BY THE USE OF MORTAR OR BRICKS AS DIRECTED BY THE ENGINEER.
3. A TRAP, AS DETAILED ON SHEET 3 OF 7, SHALL BE PLACED WHERE CALLED FOR IN THE OUTLET SEWER LINE OF CATCH BASINS "B". THIS TRAP SHALL BE SET INTO THE MASONRY WALL AS SHOWN ON THE DETAIL.
THE SPACE BETWEEN THE FACES OF THE WALL AND THE TRAP SHALL BE COMPLETELY FILLED WITH CEMENT, MORTAR OR CONCRETE, SO AS TO HOLD TRAP SECURELY IN PLACE.
4. THE MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARD SPECIFICATIONS FOR PAVING AND RELATED CONSTRUCTION EXCEPT AS NOTED ON THIS SHEET AND ON THE PLANS.
5. A PLASTER COAT OF MORTAR 1/2" IN THICKNESS SHALL BE APPLIED TO THE OUTER SURFACE OF THE STRUCTURE AS SHOWN. A 1/2" CEMENT PLASTER COAT SHALL BE PLACED ON THE INSIDE OF ALL SUMPS.
6. CONTRACTOR SHALL VERIFY ELEVATIONS OF EXISTING UTILITIES TO ENABLE CONSTRUCTION TO INDICATED ELEVATIONS SHOWN ON DRAWINGS. IF NECESSARY, INVERT ELEVATIONS SHOWN ON THE DRAWINGS MAY BE ALTERED IN THE FIELD TO CLEAR EXISTING UTILITIES. SUCH ALTERATIONS, UPWARD OR DOWNWARD, SHALL BE AT NO CHANGE IN CONTRACT PRICE.
7. WHEN PRECAST CONCRETE PIPE SECTIONS ARE USED FOR CATCH BASINS, EITHER A SECTION OF THE INLET AND OUTLET PIPES OR AN OPENING OR EYE FOR THE INLET AND OUTLET PIPES SHALL BE CAST INTO THE WALL OF THE CATCH BASIN PIPE WHEN IT IS BEING MANUFACTURED. EYES IN PRECAST PIPE SECTIONS SHALL BE FURNISHED TO ACCOMMODATE A FLEXIBLE JOINT CONNECTION SUCH AS PRESS-WEDGE BY PRESS SEAL GASKET CORP. OR RES-SEAL BY SCALES MFG. CORP.
8. PAY LIMIT FOR SEWERS SHALL BE INSIDE FACES OF STRUCTURES UNLESS OTHERWISE NOTED.
9. ALL DIMENSIONS ARE IN INCHES(") UNLESS OTHERWISE NOTED.

CITY OF DETROIT			
CITY ENGINEERING DIVISION, D.P.W.			
STANDARD PLAN FOR			
CATCH BASINS "A" AND "B"			
AND FLAT GRATE AND FRAME			
03/07/98 PLAN DATE	DRAWING NO. 35	DETAIL STANDARD NO. C-5028	SHEET 7 OF 7

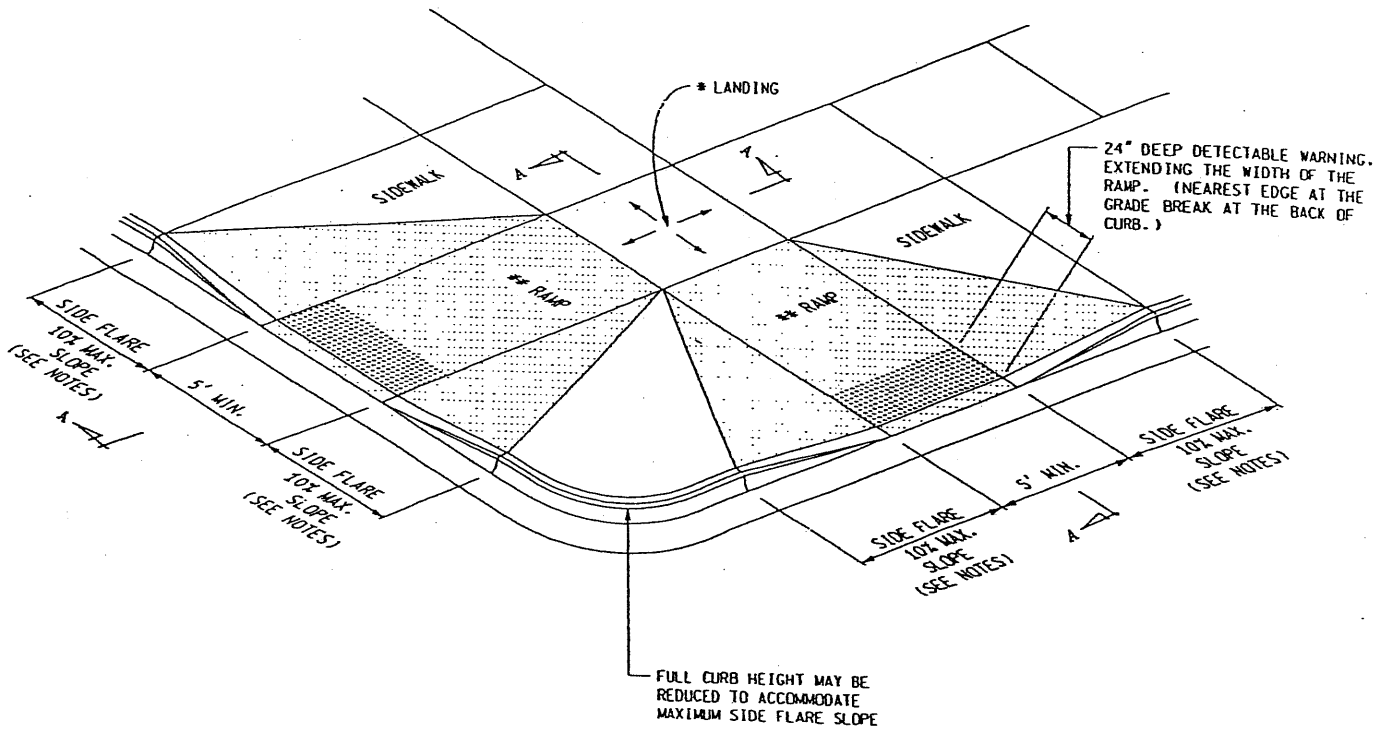
REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

* MAXIMUM LANDING SLOPE IN ANY DIRECTION IS 2.0%. MINIMUM LANDING DIMENSIONS 5' x 5'.

** MAXIMUM CROSS SLOPE ON RAMP IS THE SAME AS THAT FOR SIDEWALK (2.0%). RUNNING SLOPE 5% - 7% (8.3% MAXIMUM) SEE NOTES.



SIDEWALK RAMP TYPE R
(ROLLED SIDES)



SIDEWALK RAMP TYPE F
(FLARED SIDES. TWO RAMPS SHOWN)

Revised March, 2009.



PREPARED BY
BUREAU OF STREETS
AND HIGHWAYS

DRAWN BY:

CHECKED BY:

APPROVED

ENGINEER OF STREETS

HEAD ENGINEER

CITY ENGINEER

Handwritten signature of the Head Engineer

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

SIDEWALK RAMP DETAILS

10/21/08
PLAN DATE

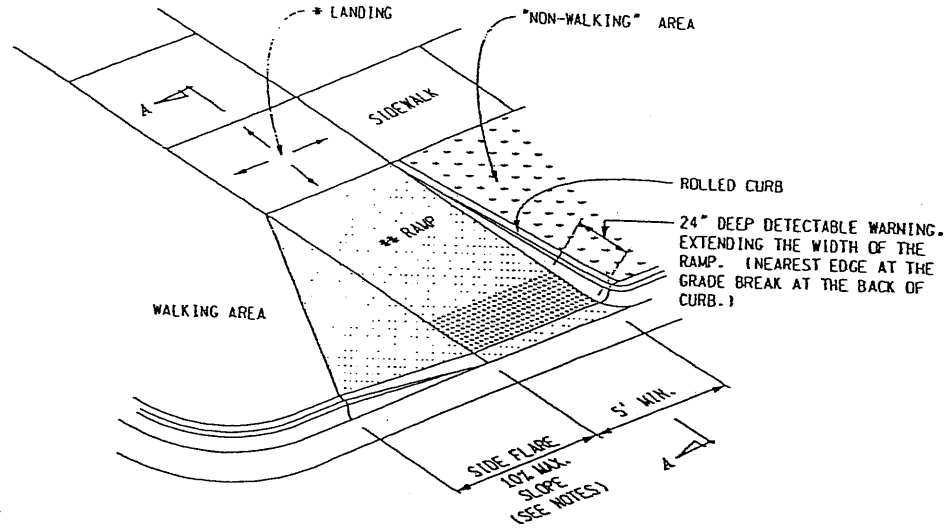
DRAWING NO.
36

DETAIL STANDARD NO.
R-28-F

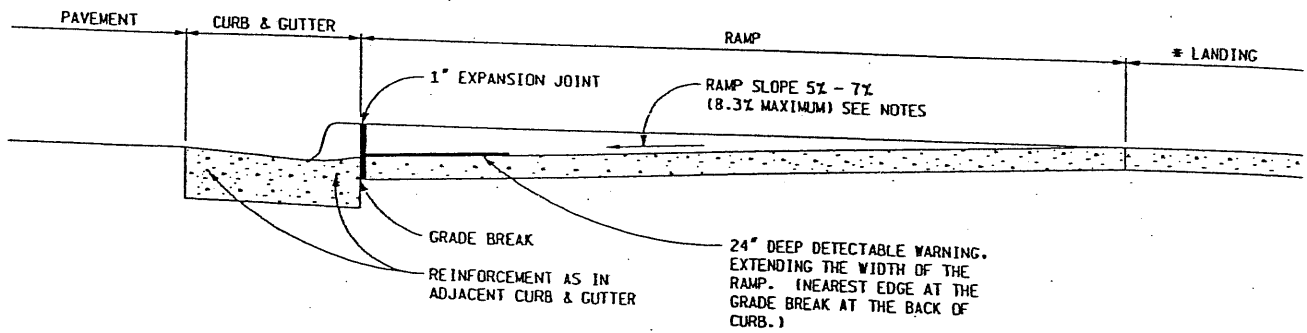
SHEET
1 OF 2

* MAXIMUM LANDING SLOPE IN ANY DIRECTION IS 2.0%. MINIMUM LANDING DIMENSIONS 5' x 5'.

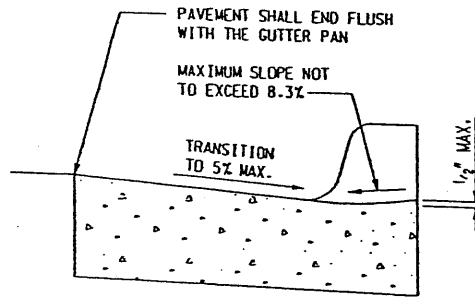
** MAXIMUM CROSS SLOPE ON RAMP IS THE SAME AS THAT FOR SIDEWALK (2.0%). RUNNING SLOPE 5% - 7% (8.3% MAXIMUM) SEE NOTES.



SIDEWALK RAMP TYPE RF
(ROLLED / FLARED SIDES)



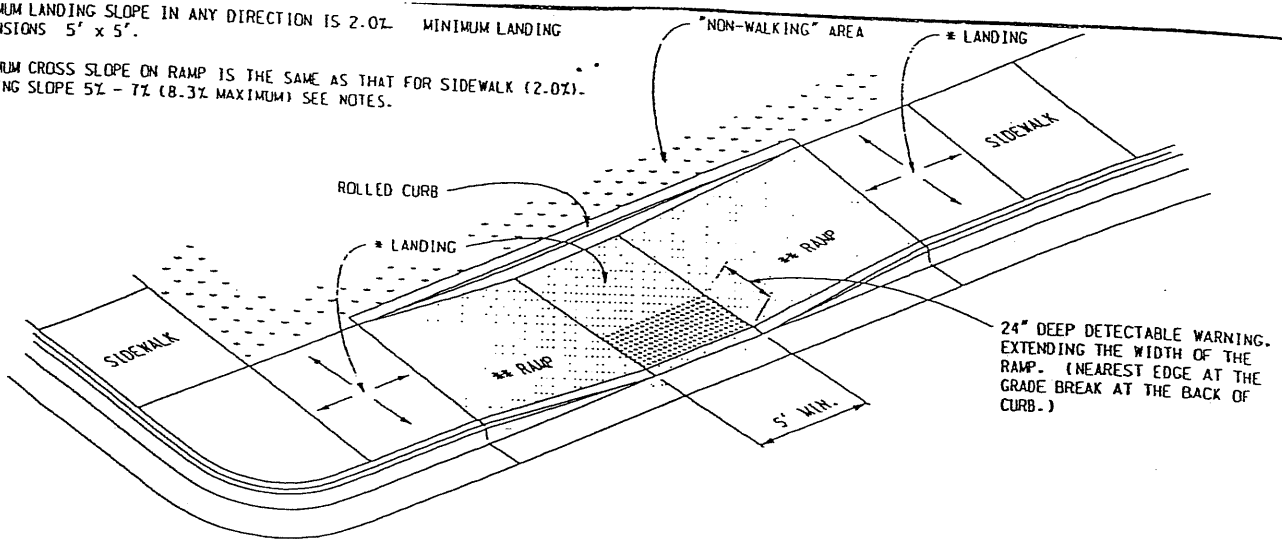
SECTION A-A



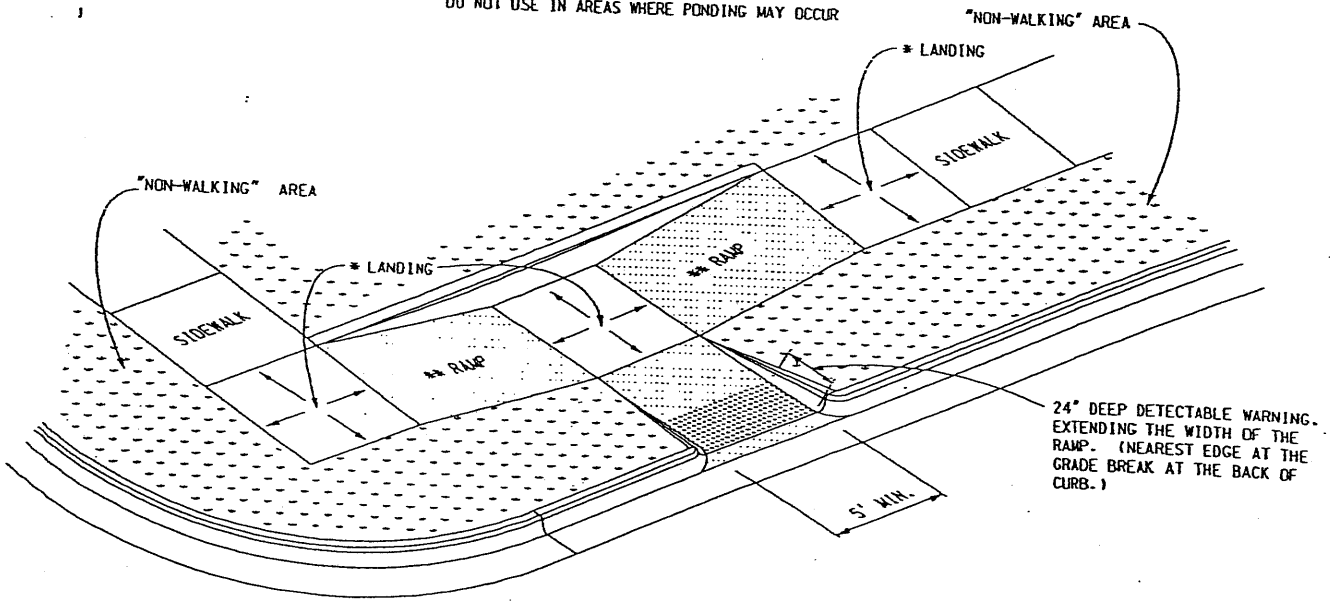
SECTION THROUGH CURB CUT
(TYPICAL ALL RAMP TYPES)

CITY OF DETROIT CITY ENGINEERING DIVISION, D.P.W. STANDARD PLAN FOR SIDEWALK RAMP DETAILS			
10/21/08 PLAN DATE	DRAWING NO. 36	DETAIL STANDARD NO. R-28-F	SHEET 2 OF 1

* MAXIMUM LANDING SLOPE IN ANY DIRECTION IS 2.0%. MINIMUM LANDING DIMENSIONS 5' x 5'.
 ** MAXIMUM CROSS SLOPE ON RAMP IS THE SAME AS THAT FOR SIDEWALK (2.0%). RUNNING SLOPE 5% - 7% (8.3% MAXIMUM) SEE NOTES.

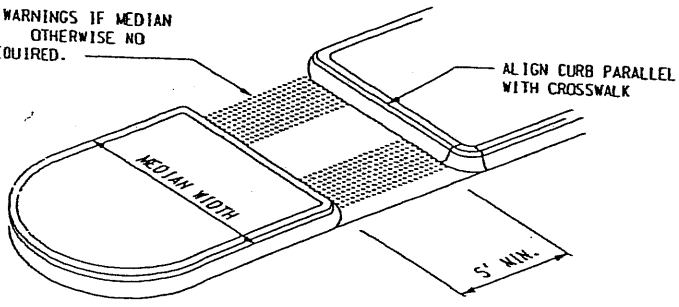


SIDEWALK RAMP TYPE P
 (PARALLEL RAMP)
 DO NOT USE IN AREAS WHERE PONDING MAY OCCUR



SIDEWALK RAMP TYPE C
 (COMBINATION RAMP)

USE 24" DEEP DETECTABLE WARNINGS IF MEDIAN WIDTH IS AT LEAST 6'-0". OTHERWISE NO DETECTABLE WARNING IS REQUIRED.

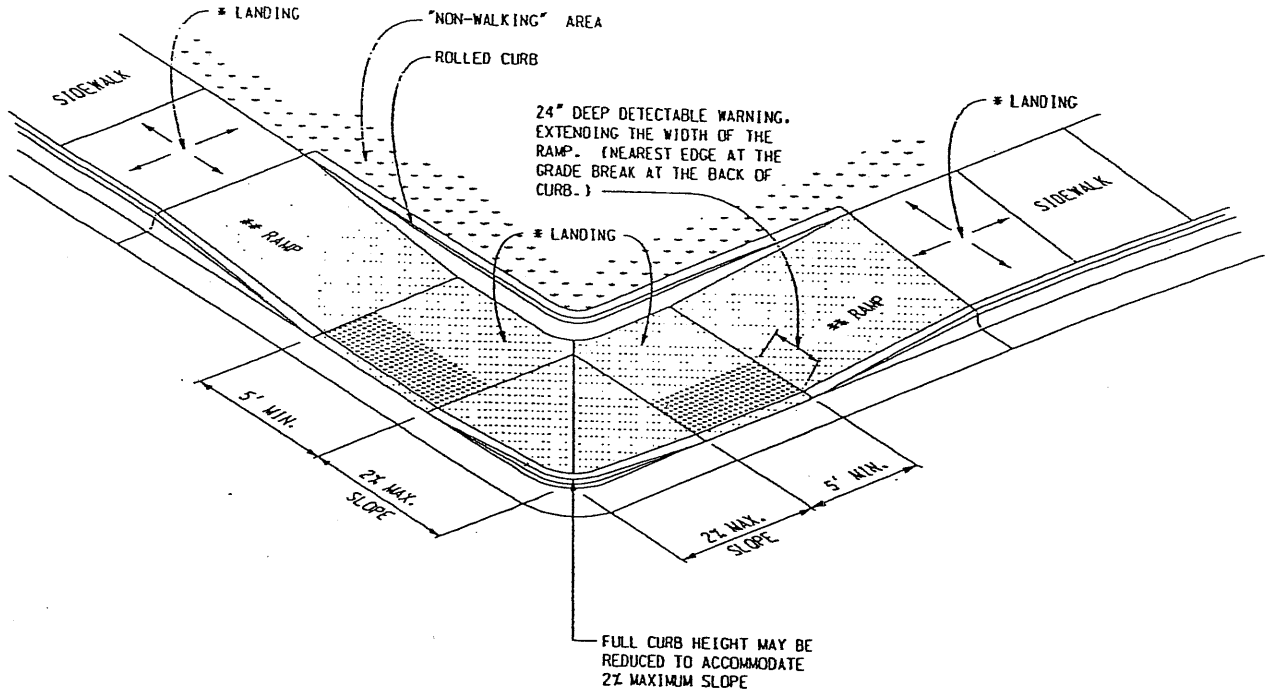


SIDEWALK RAMP TYPE M
 (MEDIAN ISLAND)

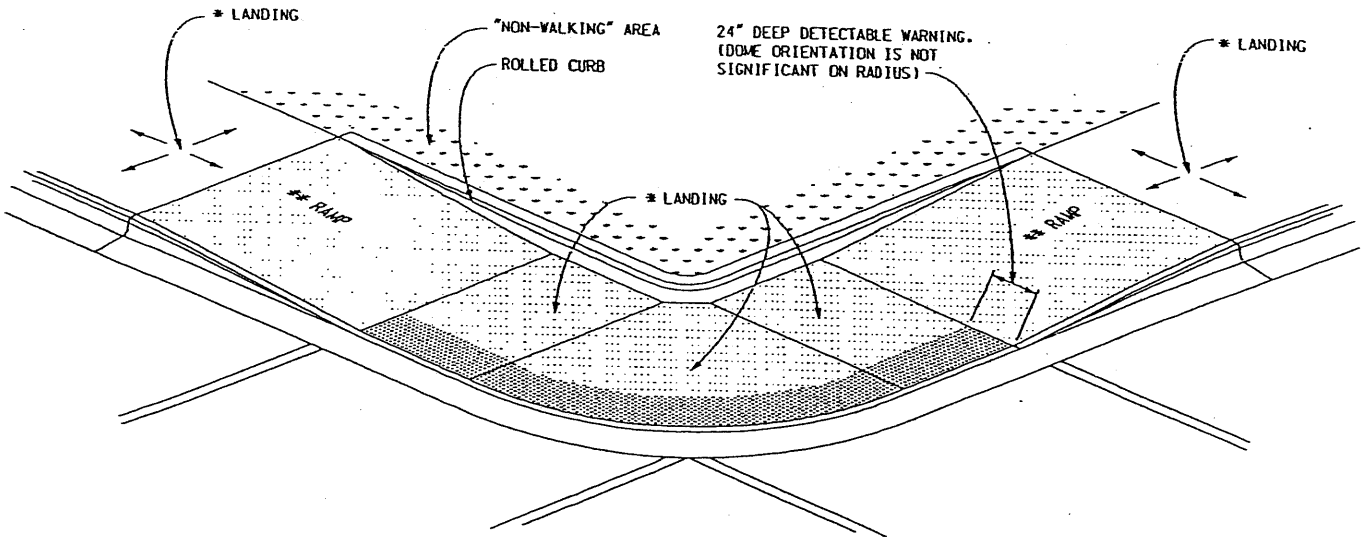
CITY OF DETROIT CITY ENGINEERING DIVISION, D.P.W. STANDARD PLAN FOR SIDEWALK RAMP DETAILS			
10/21/08 PLAN DATE	DRAWING NO. 36	DETAIL STANDARD NO. R-28-E	SHEET 3 OF 7

* MAXIMUM LANDING SLOPE IN ANY DIRECTION IS 2.0%. MINIMUM LANDING DIMENSIONS 5' x 5'.

** MAXIMUM CROSS-SLOPE ON RAMP IS THE SAME AS THAT FOR SIDEWALK (2.0%). RUNNING SLOPE 5% - 7% (8.3% MAXIMUM) SEE NOTES.

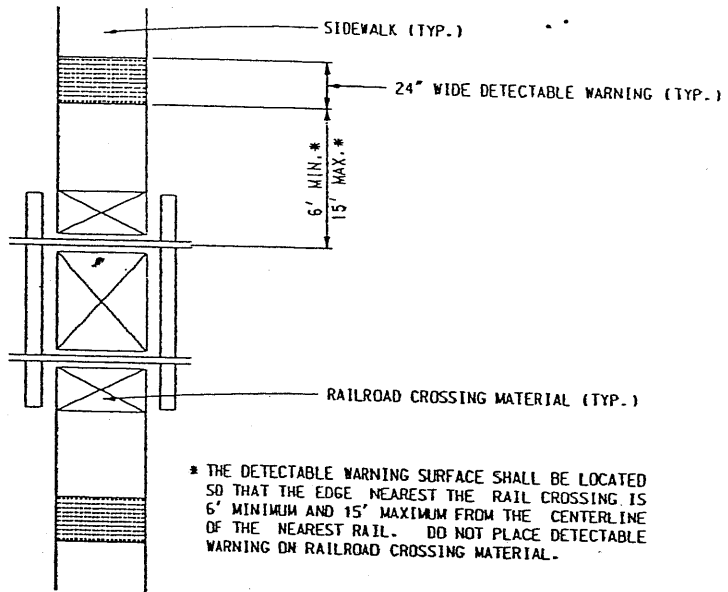


SIDEWALK RAMP TYPE PF
(PARALLEL WITH FLARE)

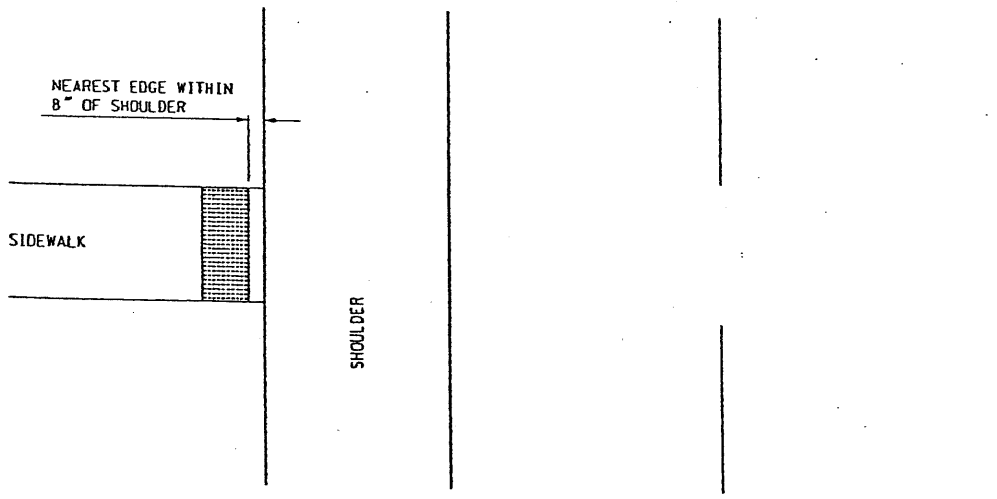


SIDEWALK RAMP TYPE D
(DEPRESSED CORNER)

CITY OF DETROIT CITY ENGINEERING DIVISION, D.P.W. STANDARD PLAN FOR SIDEWALK RAMP DETAILS			
10/21/08 PLAN DATE	DRAWING NO. 36	DETAIL STANDARD NO. R-28-F	SHEET 4 OF 7

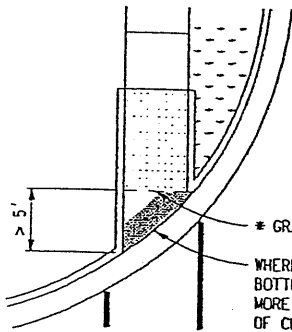


SIDEWALK RAMP TYPE RR
(DETECTABLE WARNING AT RAILROAD CROSSING)



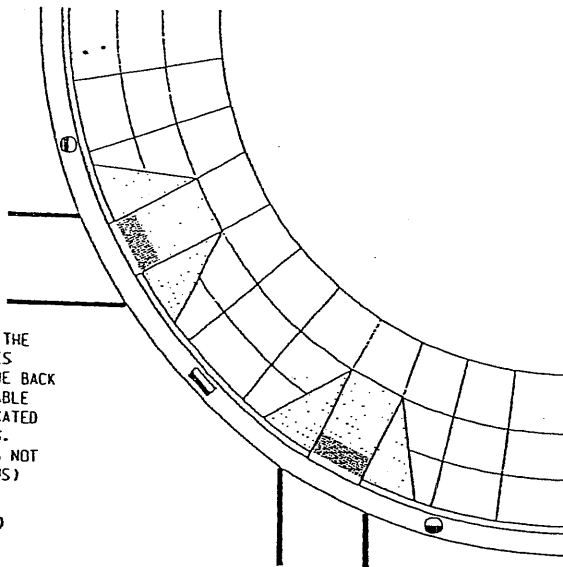
SIDEWALK RAMP TYPE FS
(DETECTABLE WARNING AT FLUSH SHOULDER)

CITY OF DETROIT			
CITY ENGINEERING DIVISION, D.P.W.			
STANDARD PLAN FOR			
-----SIDEWALK RAMP DETAILS-----			
10/21/08 PLAN DATE	DRAWING NO. 36	DETAIL STANDARD NO. R-28-F	SHEET 5 OF 7



* GRADE BREAK
 WHERE EITHER END OF THE BOTTOM GRADE BREAK IS MORE THAN 5' FROM THE BACK OF CURB, THE DETECTABLE WARNING SHALL BE LOCATED ON THE LOWER LANDING. (DOME ORIENTATION IS NOT SIGNIFICANT ON RADIUS)

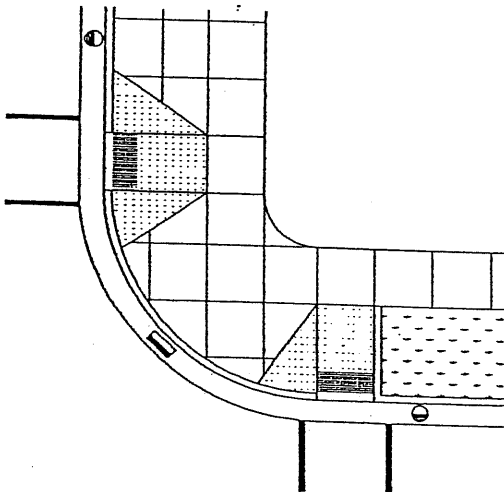
SIDEWALK RAMP LOCATED IN RADIUS (TYPE R SHOWN)
 (GRADE BREAK GREATER THAN 5')



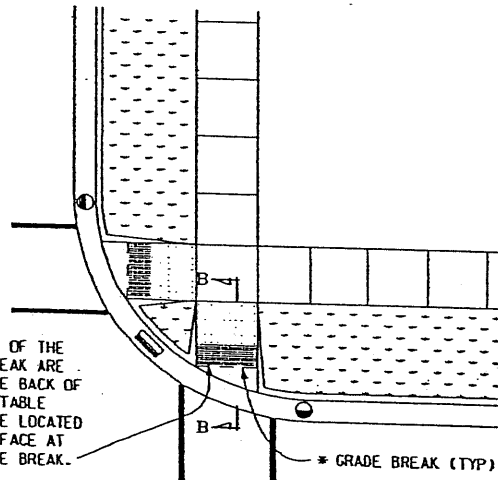
SIDEWALK RAMP PERPENDICULAR TO RADIAL CURB (TYPE F SHOWN)

(USE WITH RADIAL CURB WHEN THE CROSSWALK AND SIDEWALK RAMP ARE NOT ALIGNED)

LEGEND	
	SIDEWALK RAMP
	"NON-WALKING" AREA
	CROSSWALK MARKING
	PREFERRED LOCATION OF DRAINAGE INLET (TYP.)
	ALTERNATE LOCATION OF DRAINAGE INLET (TYP.)



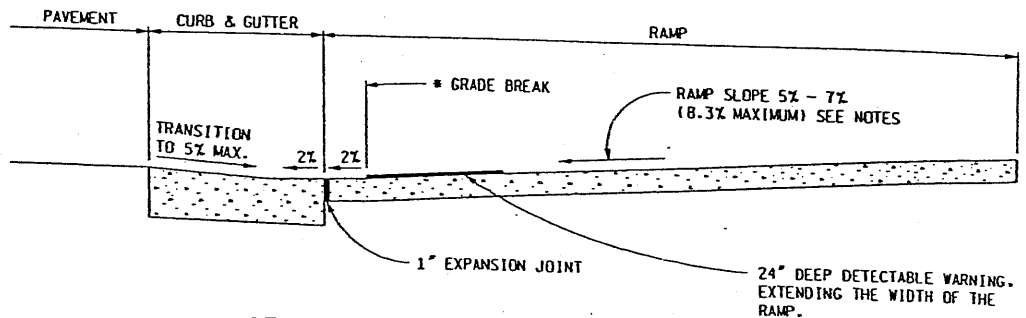
SIDEWALK RAMP PERPENDICULAR TO TANGENT CURB
 (TYPE F AND TYPE RF SHOWN)



WHERE BOTH ENDS OF THE BOTTOM GRADE BREAK ARE WITHIN 5' OF THE BACK OF CURB, THE DETECTABLE WARNING SHALL BE LOCATED ON THE RAMP SURFACE AT THE BOTTOM GRADE BREAK.

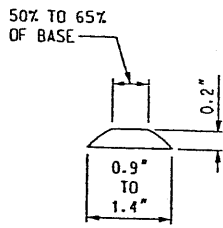
SIDEWALK RAMP LOCATED IN RADIUS (TYPE R SHOWN)
 (GRADE BREAK LESS THAN 5')

* GRADE BREAKS AT THE TOP AND BOTTOM OF PERPENDICULAR CURB RAMPS SHALL BE PERPENDICULAR TO THE DIRECTION OF RAMP RUN. AT LEAST ONE END OF THE BOTTOM GRADE BREAK SHALL BE AT THE BACK OF CURB.

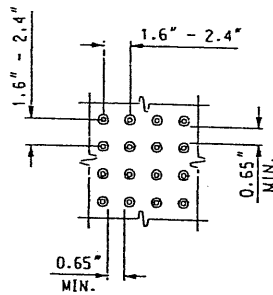


SECTION B-B
 SIDEWALK RAMP ORIENTATION

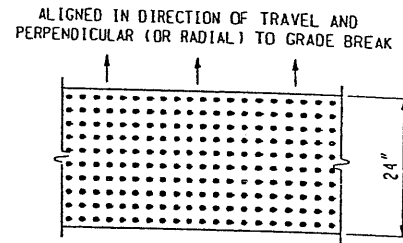
CITY OF DETROIT			
CITY ENGINEERING DIVISION, D.P.W.			
STANDARD PLAN FOR			
SIDEWALK RAMP DETAILS			
10/21/08 PLAN DATE	DRAWING NO. 36	DETAIL STANDARD NO. R-28-F	SHEET 6 OF 7



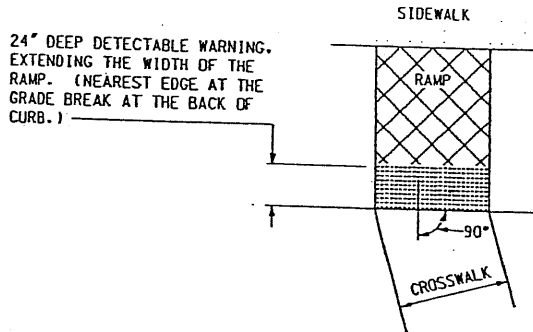
DOME SECTION



DOME SPACING



DOME ALIGNMENT



DETECTABLE WARNING DETAILS

NOTES:

DETAILS SPECIFIED ON THIS PLAN APPLY TO ALL CONSTRUCTION, RECONSTRUCTION, OR ALTERATION OF STREETS, CURBS, OR SIDEWALKS BY ALL PUBLIC AGENCIES AND BY ALL PRIVATE ORGANIZATIONS CONSTRUCTING FACILITIES FOR PUBLIC USE.

SIDEWALK RAMPS ARE TO BE LOCATED AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

RAMPS SHALL BE PROVIDED AT ALL CORNERS OF AN INTERSECTION 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 LARGE ATHLETIC FACILITIES.

SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING, TRANSVERSE TO THE SLOPE OF RAMP.

SIDEWALK 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. WHERE CONDITIONS PERMIT, IT IS DESIRABLE THAT THE SLOPE OF THE RAMP BE IN ONLY ONE DIRECTION, PARALLEL TO THE DIRECTION OF TRAVEL.

RAMP WIDTH SHALL BE INCREASED, IF NECESSARY, TO ACCOMMODATE SIDEWALK SNOW REMOVAL EQUIPMENT NORMALLY USED BY THE MUNICIPALITY.

THE MAXIMUM RUNNING SLOPE OF 8.3% IS RELATIVE TO A FLAT (0%) REFERENCE. HOWEVER, IT SHALL NOT REQUIRE ANY RAMP OR SINGLE RAMP WITHIN A COMBINATION OF RAMPS TO EXCEED 15 FEET IN LENGTH.

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.

THE SLOPE OF THE GUTTER PAN SHALL BE TRANSITIONED TO A MAXIMUM OF 5% IN THE AREA OF THE CURB CUT OF THE SIDEWALK RAMP. MAINTAIN THE NORMAL GUTTER PAN SLOPE ACROSS THE DRAINAGE STRUCTURE INLETS.

THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE.

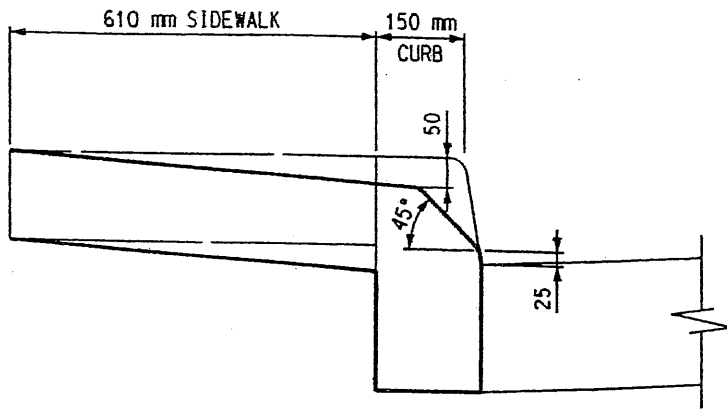
CROSSWALK AND STOP LINE MARKINGS, IF USED, SHALL BE SO LOCATED AS TO STOP TRAFFIC SHORT OF RAMP CROSSINGS. SPECIFIC DETAILS FOR MARKING APPLICATIONS ARE GIVEN IN THE "MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES".

FLARED SIDES WITH A SLOPE OF 10% MAXIMUM, MEASURED ALONG THE CURB LINE, SHALL BE PROVIDED WHERE A CIRCULATION PATH CROSSES THE SIDEWALK RAMP. FLARED SIDES ARE NOT REQUIRED WHERE THE EDGES OF A SIDEWALK RAMP ARE PROTECTED BY LANDSCAPING OR OTHER BARRIERS TO TRAVEL BY WHEELCHAIR USERS OR PEDESTRIANS ACROSS THE EDGE OF THE SIDEWALK RAMP.

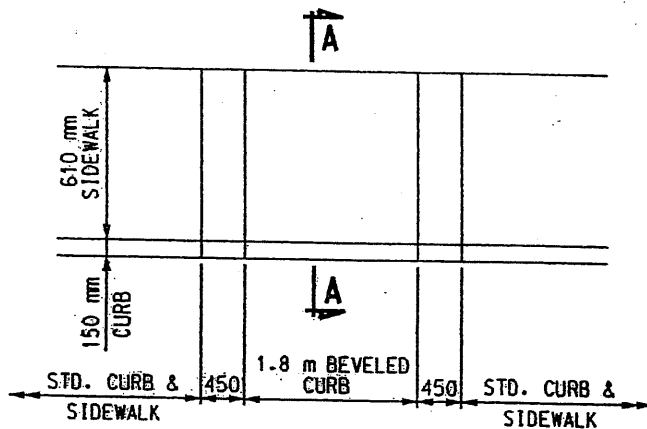
THE DETECTABLE WARNING SURFACE SHALL MEET THE CITY OF DETROIT SUPPLEMENTAL SPECIFICATION FOR "SIDEWALKS, SIDEWALK RAMPS, AND DRIVEWAYS". IN THE CENTRAL BUSINESS DISTRICT, GRANITE OR OTHER SPECIALITY PAVING MATERIALS MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

CITY OF DETROIT
 CITY ENGINEERING DIVISION, D.P.W.
 STANDARD PLAN FOR
 SIDEWALK RAMP DETAILS

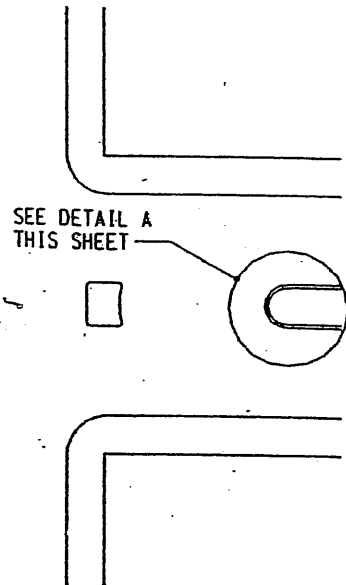
10/21/08 PLAN DATE	DRAWING NO. 36	DETAIL STANDARD NO. R-28-F	SHEET 7 OF 1
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SECTION A-A



PLAN



LOCATION PLAN

NOTES:

1. MOWER RAMPS TO BE LOCATED AT ISLAND TURNAROUNDS; OTHERWISE AS SHOWN ON THE PLANS. EXACT LOCATION WILL VARY.
2. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED.



PREPARED BY
BUREAU OF STREETS
AND HIGHWAYS

APPROVED

Dadiu Haidar
ENGINEER OF STREETS
William K. Talley
HEAD ENGINEER
[Signature]
CITY ENGINEER

DRAWN BY:

N.O.W.

CHECKED BY:

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

SPECIAL MOWER RAMP

03/07/98
PLAN DATE

DRAWING NO.
37

DETAIL STANDARD NO.
C-5239

SHEET
1 OF 1

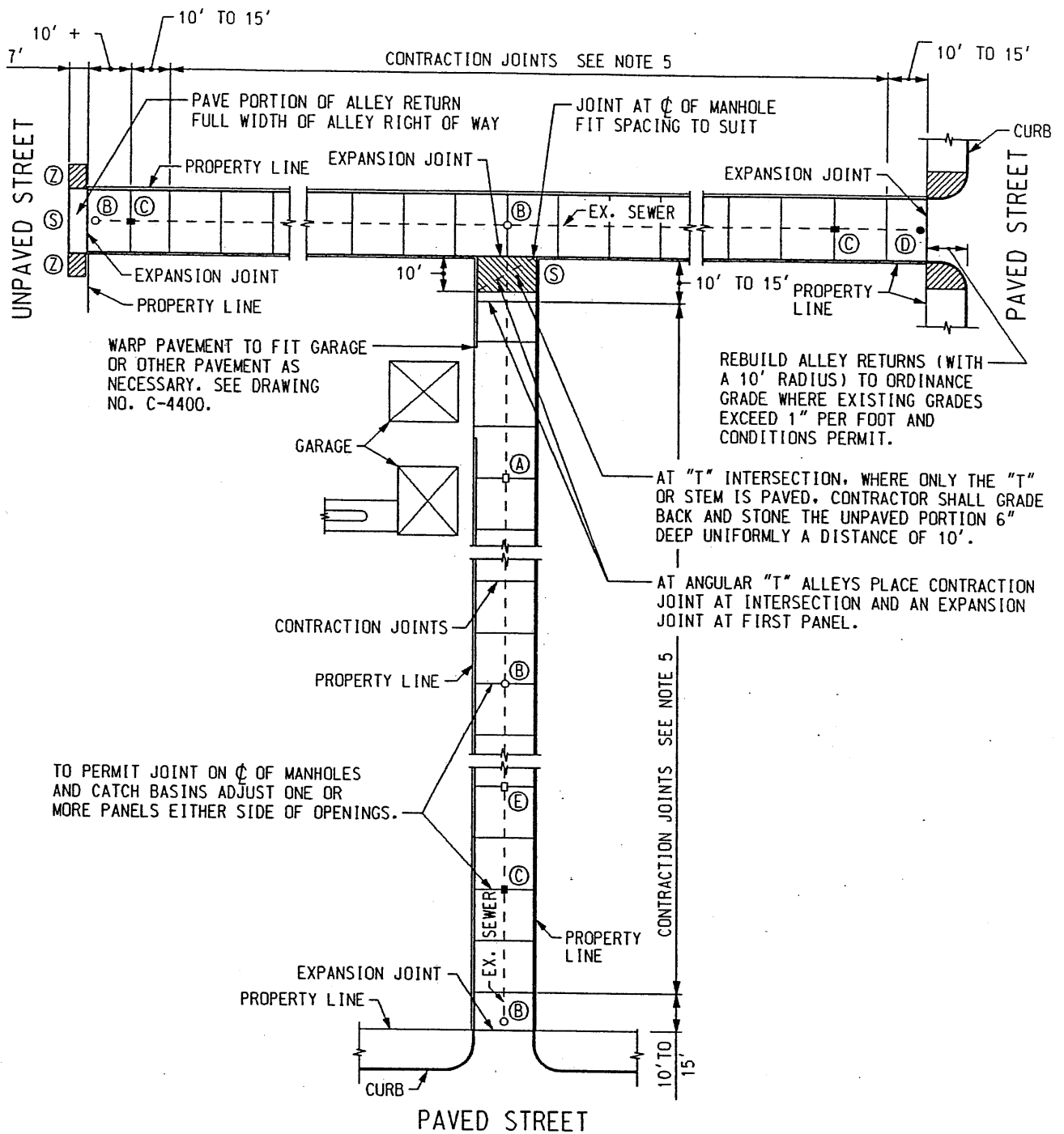
ALLEY

DETAIL PAVING AND DRAINAGE STANDARDS

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2	C-4397	2	DETAIL AND STANDARD JOINTS
3	C-4398	2	STANDARD 18" x 12" SPECIAL "Y" CATCH BASIN
4	C-4399	2	ALLEY INSTALLATION STANDARD 18" x 12" SPECIAL "Y" CATCH BASIN
5	C-4393	2	STANDARD THROTTLED CATCH BASIN COVERS
6	C-4392	2	FLAT TYPE GRATE AND FRAME
7	C-4395A	2	STANDARD SEWER MANHOLE CONSTRUCTION ALTERNATES
8	C-4390	6	RECONSTRUCTION OF EXISTING SUMP MANHOLES AND NEW CATCH BASIN INSTALLATIONS
9	C-4462	2	SIDEWALK JOINING STANDARD
10	C-4400	2	ALLEY PAVING SPECIAL WARPING DETAILS
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12	C-4387	3	STANDARD SEWER AND DROP MANHOLES
13	C-4391	3	MANHOLE FRAME AND COVER

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002



TYPICAL PLAN

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



PREPARED BY
BUREAU OF STREETS
AND HIGHWAYS

rev. K.S.M.
DRAWN BY:

M.F.S.
CHECKED BY:

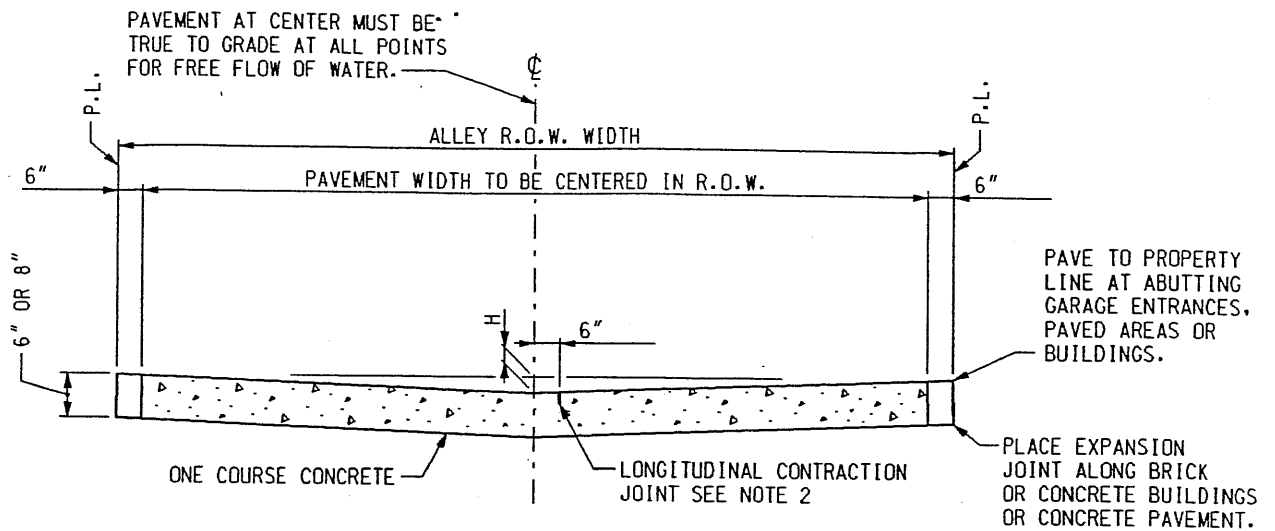
APPROVED

Dadun Haidar
ENGINEER OF STREETS
Wynn Talley
HEAD ENGINEER
...
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

TYPICAL PLAN AND SECTION FOR
CONCRETE ALLEY PAVEMENT

DRAWING NO.	DETAIL STANDARD NO.	SHEET
1	C-4396	1 OF 2
PLAN DATE		



TYPICAL SECTION

ELEMENTS		
ALLEY WIDTH		H
PAV'T	R.O.W.	
19'	20'	5"
17'	18'	4"
15'	16'	3"

NOTES:

1. PLACE EXPANSION JOINTS AT ALL STREET PROPERTY LINES AND ALLEY INTERSECTIONS.
2. LONGITUDINAL CONTRACTION JOINT TO BE CONSTRUCTED IN PAVEMENTS 17' AND OVER IN WIDTH UNLESS OTHERWISE NOTED ON PAVING PLAN.
3. MAXIMUM SPACING BETWEEN EXPANSION JOINTS SHOULD NOT EXCEED 600 FEET.
4. IF STREET IS ECONOMY PAVED THE AREA BETWEEN THE WALK AND EDGE OF PAVEMENT SHALL BE PAVED WITH 6" STONE BASE PLUS 2" OF COLD PATCH MATERIAL. THE WALK FLAG SHALL BE 6" THICK
5. CONTRACTION JOINTS SHALL BE SPACED AT 15' C. TO C. FOR SLAG AGGREGATE AND 6.0 m C. TO C. FOR NATURAL AGGREGATE.

CONSTRUCTION SYMBOLS LEGEND

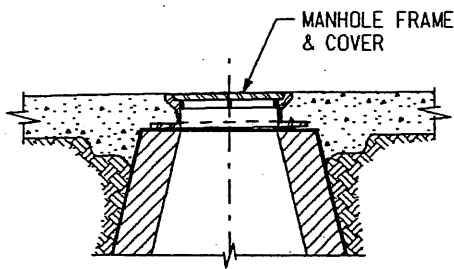
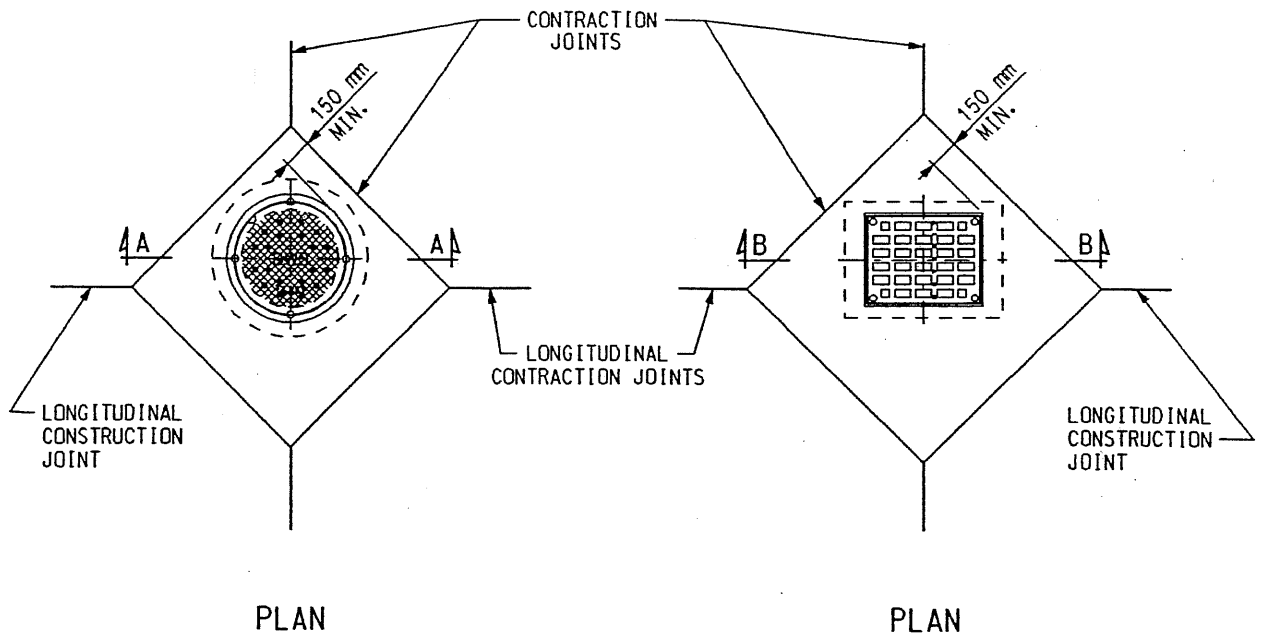
- EXISTING SEWER MANHOLE
- PROPOSED SEWER MANHOLE
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- Ⓐ ADJUST EXISTING CATCH BASIN
- Ⓑ ADJUST EXISTING MANHOLE
- Ⓒ CONSTRUCT CATCH BASIN
- Ⓓ CONSTRUCT MANHOLE
- Ⓔ ABANDON EXISTING CATCH BASIN
- Ⓕ STONING AND GRADING
- Ⓖ CONSTRUCT STANDARD 6" CONCRETE SIDEWALK

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

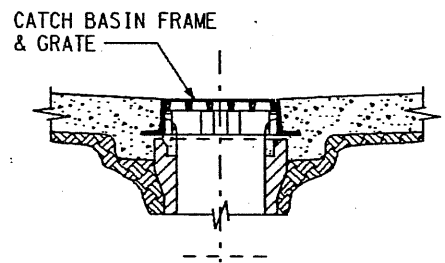
TYPICAL PLAN AND SECTION FOR CONCRETE ALLEY PAVEMENT

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

03/07/98 PLAN DATE	DRAWING NO. 1	DETAIL STANDARD NO. C-4396	SHEET 2 OF 2
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SECTION A-A



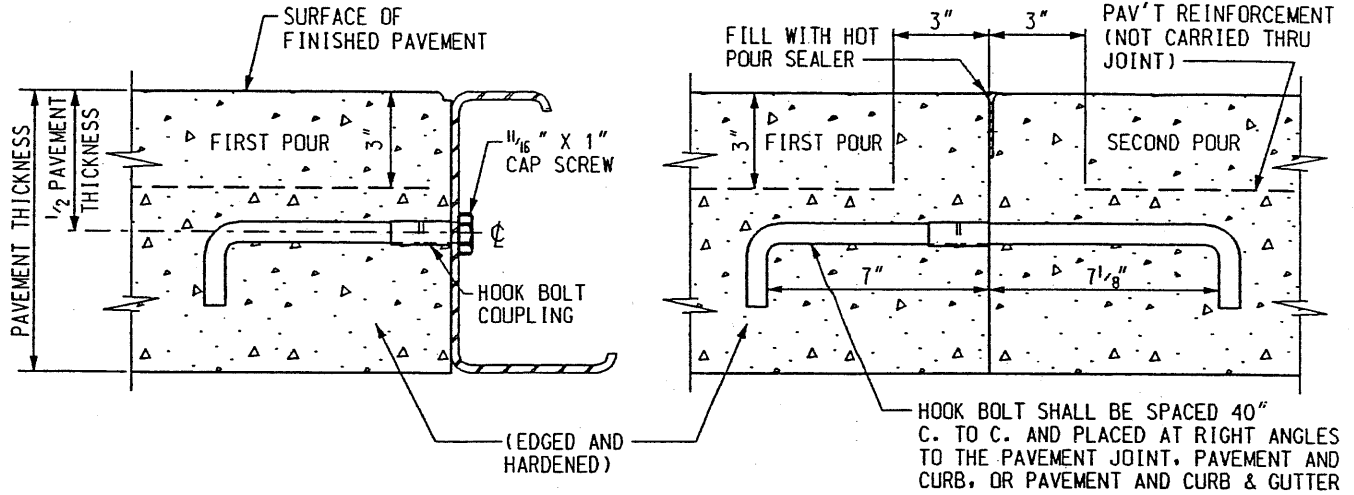
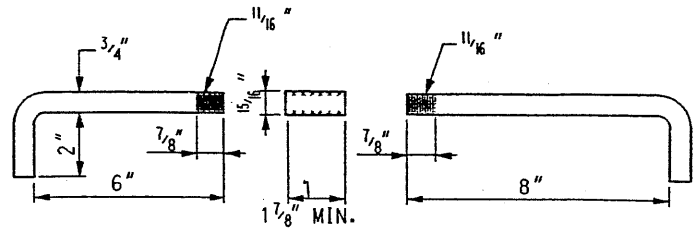
SECTION B-B

MANHOLE AND CATCH BASIN JOINT DETAILS

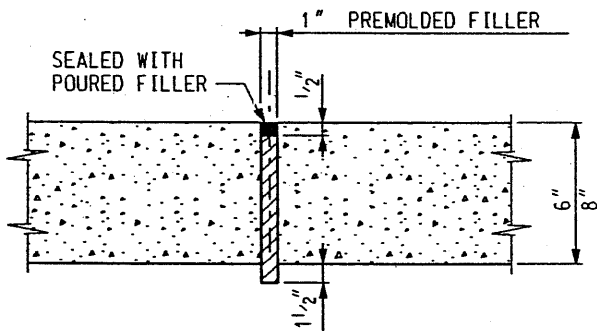
REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

 <p>PREPARED BY BUREAU OF STREETS AND HIGHWAYS</p>	<p>rev. K.S.M. DRAWN BY:</p>	<p>APPROVED</p> <p><i>Dadiu Haidar</i> ENGINEER OF STREETS</p> <p><i>Wm. Talley</i> HEAD ENGINEER</p> <p><i>[Signature]</i> CITY ENGINEER</p>	<p>CITY OF DETROIT CITY ENGINEERING DIVISION, D.P.W. STANDARD PLAN FOR</p> <p>DETAIL AND STANDARD JOINTS</p>		
	<p>M.F.S. CHECKED BY:</p>	<p>03/07/98 PLAN DATE</p>	<p>DRAWING NO. 2</p>	<p>DETAIL STANDARD NO. C-4397</p>	<p>SHEET 1 OF 2</p>

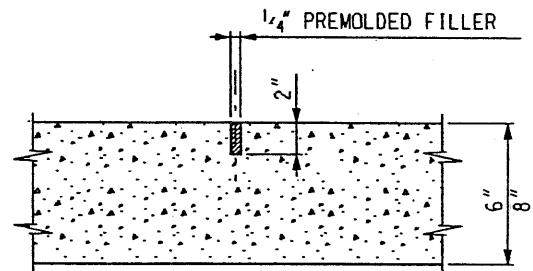
THE FIRST HALF OF THE HOOK BOLT MAY BE HELD IN POSITION BY OTHER METHODS, IF APPROVED BY THE ENGINEER.



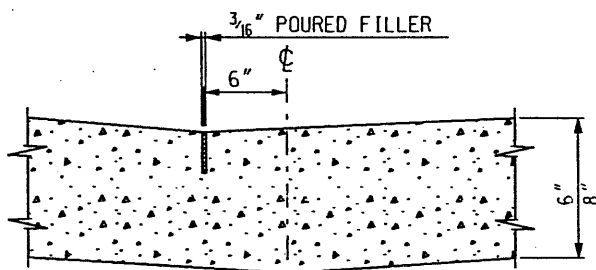
LONGITUDINAL BULKHEAD JOINT WITH JOINT DOWEL HOOK BOLT



EXPANSION JOINT



TRANSVERSE CONTRACTION JOINT



LONGITUDINAL CONTRACTION JOINT.

NOTE:

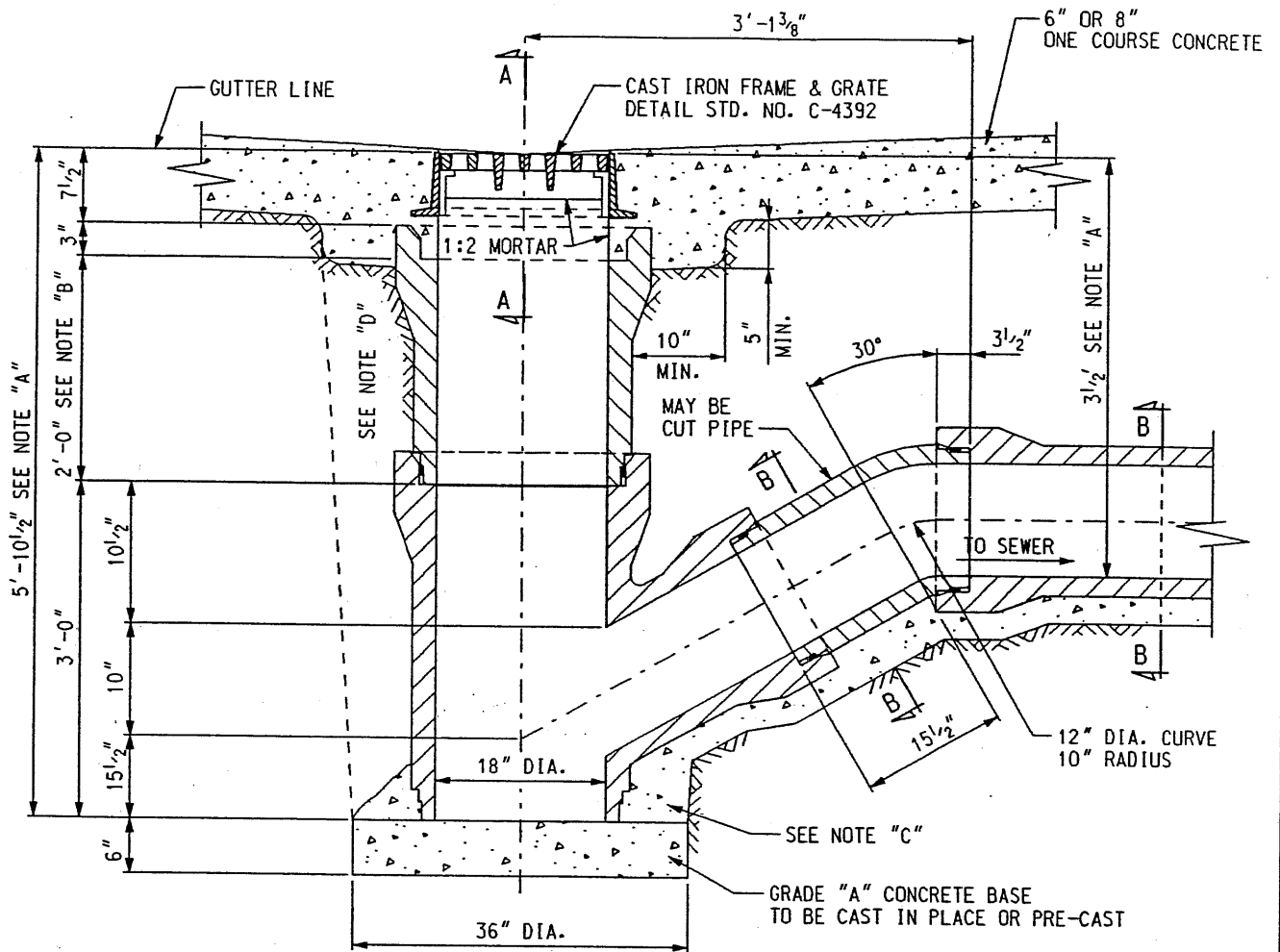
ALL DIMENSIONS ARE IN INCHES (") UNLESS OTHERWISE NOTED.

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

DETAIL AND
STANDARD JOINTS

03/07/98 PLAN DATE	DRAWING NO. 2	DETAIL STANDARD NO. C-4397	SHEET 2 OF 2
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REQUIRED:

- 1 - FLAT GRATE FRAME AND COVER
 - 1 - 18" STRAIGHT PIPE
 - 1 - 18" X 12" SPECIAL "Y"
 - 1 - 12" 30° CURVE
 - 3 CUBIC YARDS (yd³) EXCAVATION
 - 0.15 CUBIC YARDS (yd³) GRADE "A" CONCRETE
 - FILL CONCRETE
 - GRADE "C" CONCRETE
- } APPROXIMATE QUANTITY
} VARIABLE

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



PREPARED BY
BUREAU OF STREETS
AND HIGHWAYS

rev. K.S.M.

DRAWN BY:

M.F.S.

CHECKED BY:

APPROVED

Dariusz Haidar
ENGINEER OF STREETS
Wally Talley
HEAD ENGINEER
Harjivani
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR

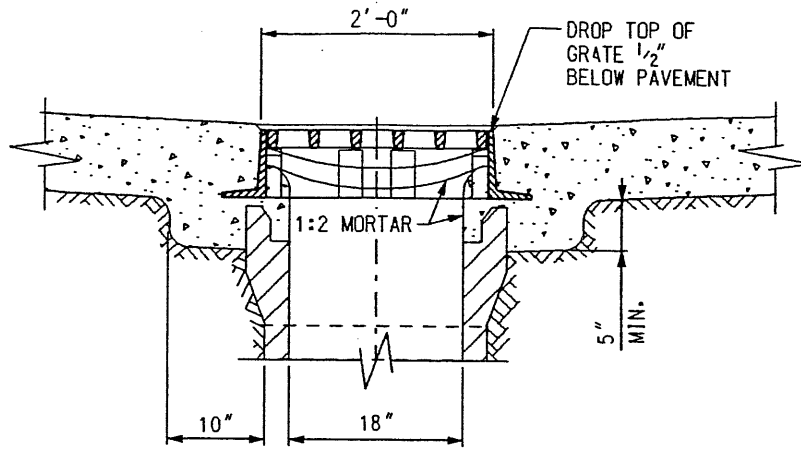
STANDARD 18" X 12"
SPECIAL "Y" CATCH BASIN

03/07/98
PLAN DATE

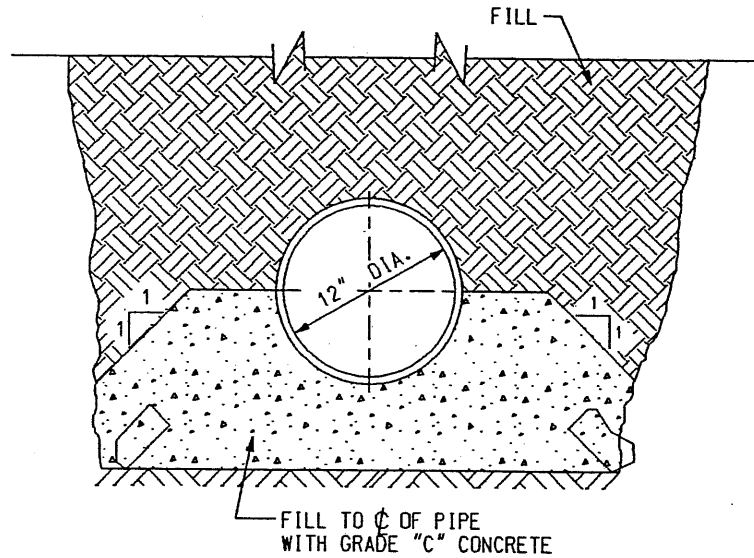
DRAWING NO.
3

DETAIL STANDARD NO.
C-4398

SHEET
1 OF 2



SECTION A-A



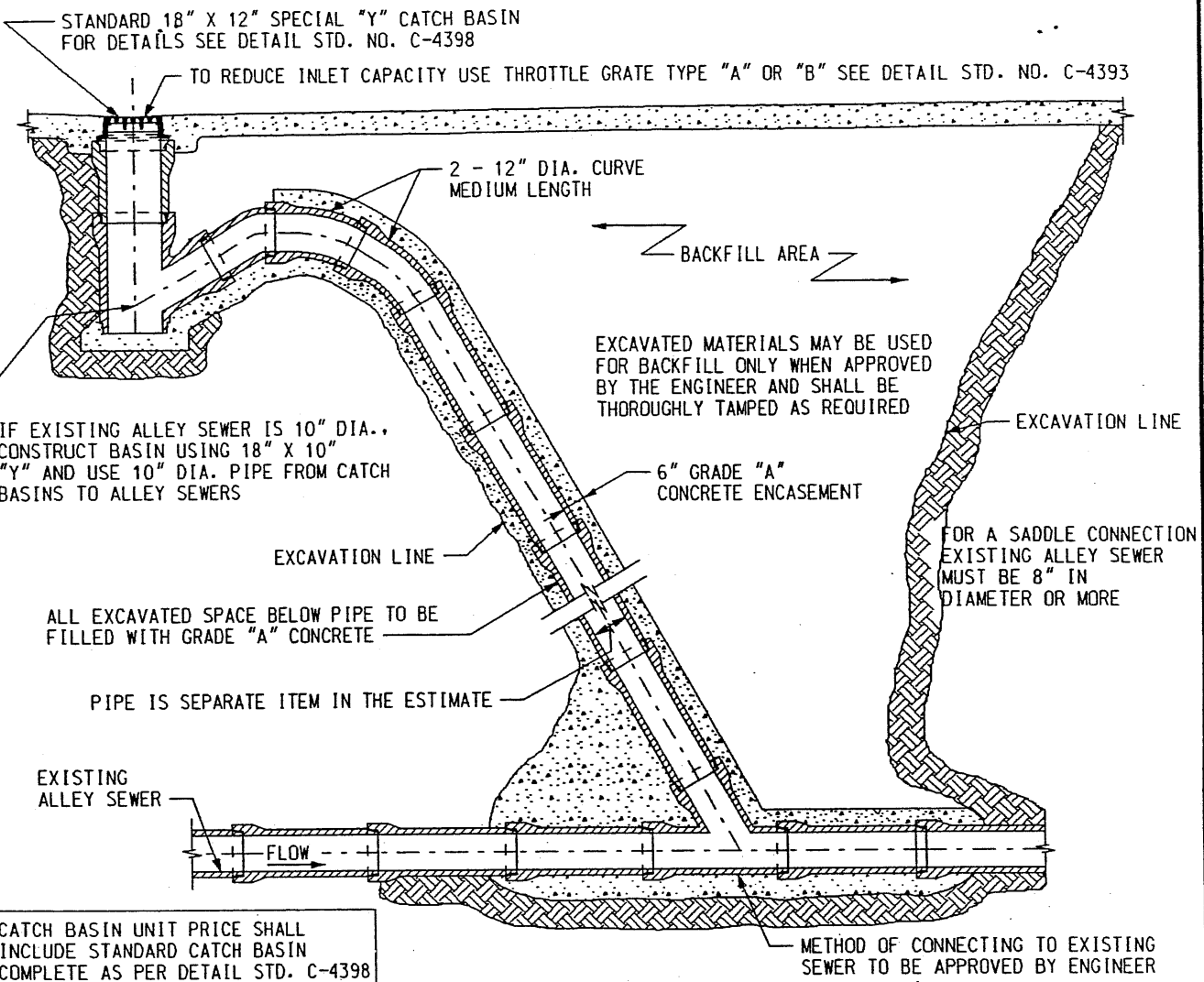
SECTION B-B

NOTES:

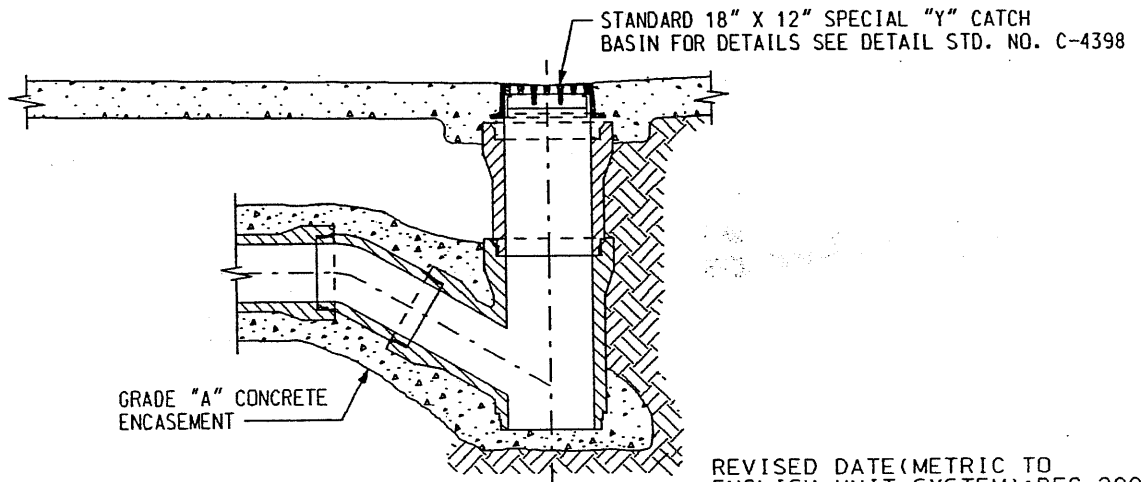
- A. THIS DIMENSION BASED ON 2'-0" LENGTH OF STANDARD PIPE. IF SHORTER PIPE IS USED, DECREASE THIS DIMENSION ACCORDINGLY. SEE NOTE "B".
- B. (FOR MODIFIED BASIN) TO CLEAR AN EXISTING UTILITY LINE AS SHOWN ON THE PLAN, OR TO USE A SHALLOW OUTLET, BASIN MAY BE MODIFIED BY PLACING A 12" LENGTH OF STRAIGHT 18" DIAMETER PIPE ON TOP OF "Y" INSTEAD OF STANDARD 24" LENGTH.
- C. ALL EXCAVATED SPACE BELOW PIPE TO BE FILLED WITH GRADE "C" CONCRETE TO ϕ OF PIPE.
- D. BACKFILL AROUND SUMP SHALL BE TAMPED IN 8" LAYERS. WHERE STANDARD STRENGTH VIT. CLAY PIPE IS USED ENCASE IN 6" GRADE "A" CONCRETE.

CITY OF DETROIT CITY ENGINEERING DIVISION, D.P.W. STANDARD PLAN FOR			
STANDARD 18" X 12" SPECIAL "Y" CATCH BASIN			
03/07/98 PLAN DATE	DRAWING NO. 3	DETAIL STANDARD NO. C-4398	SHEET 2 OF 2

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002




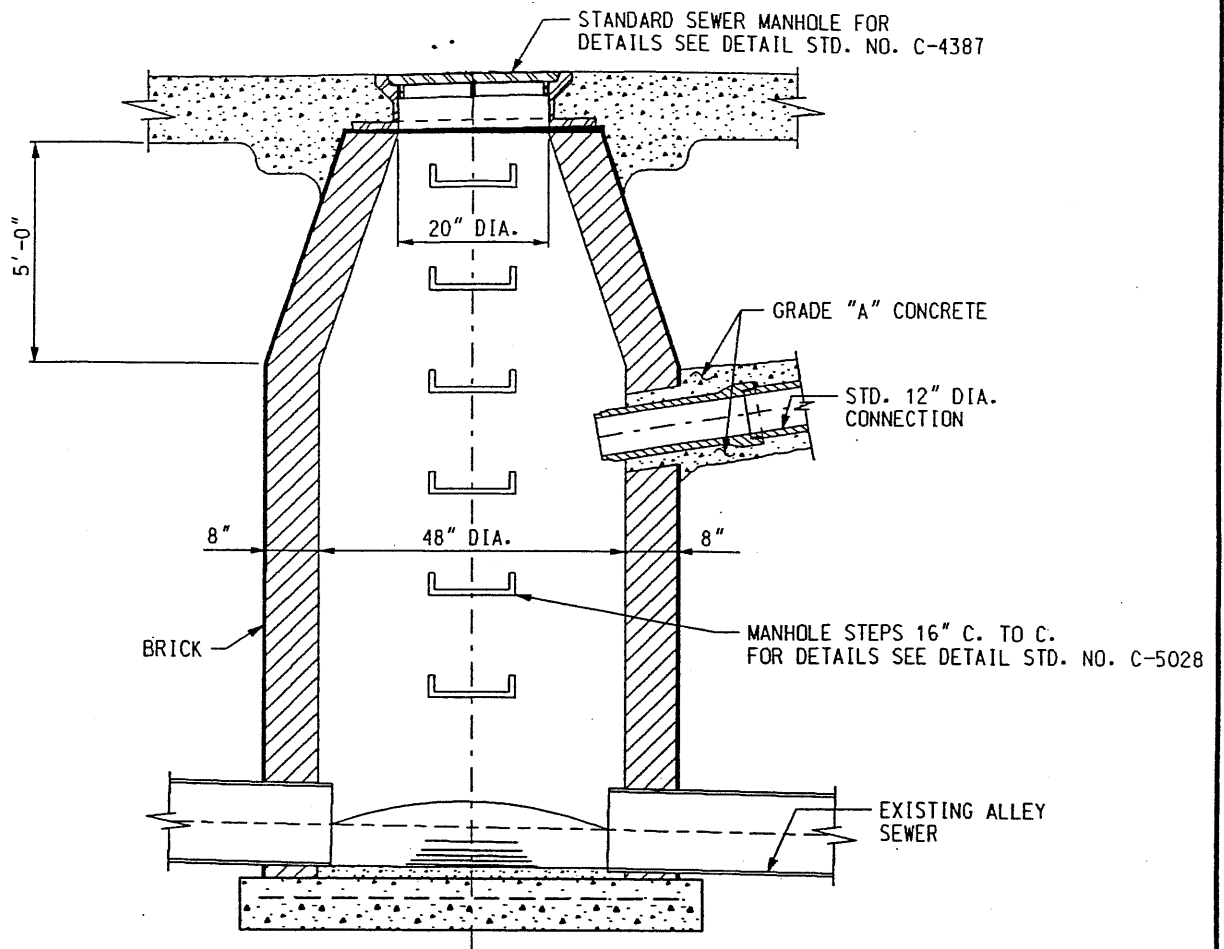
TYPICAL SEWER CONNECTION



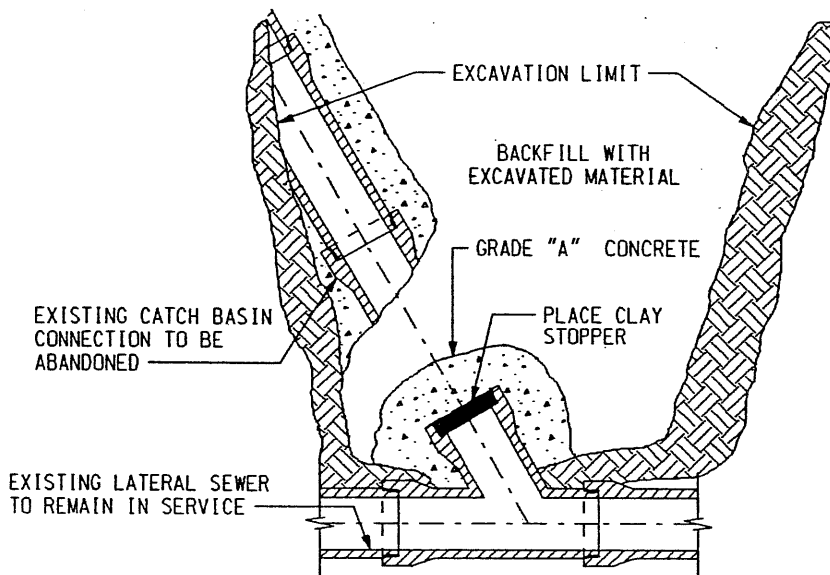
REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

TYPICAL SPECIAL "Y" CONNECTION (TO MANHOLE)

 <p>PREPARED BY BUREAU OF STREETS AND HIGHWAYS</p>	<p>APPROVED</p> <p>rev. K.S.M.</p> <p>DRAWN BY:</p> <p>M.F.S.</p> <p>CHECKED BY:</p>	<p><i>Dadun Haidar</i> ENGINEER OF STREETS</p> <p><i>Wyn Talley</i> HEAD ENGINEER</p> <p><i>Alfonso...</i> CITY ENGINEER</p>	<p>CITY OF DETROIT CITY ENGINEERING DIVISION. D.P.W. STANDARD PLAN FOR ALLEY INSTALLATION STANDARD 18" X 12" SPECIAL "Y" CATCH BASIN</p>		<p>03/07/98 PLAN DATE</p>	<p>DRAWING NO. 4</p>	<p>DETAIL STANDARD NO. C-4399</p>	<p>SHEET 1 OF 2</p>



TYPICAL MANHOLE CONNECTION

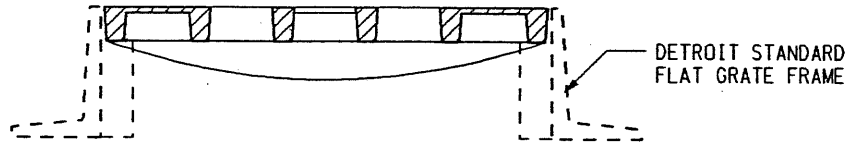
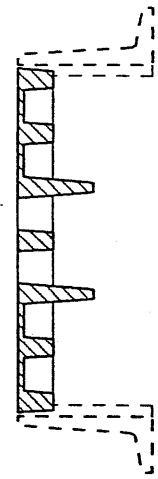
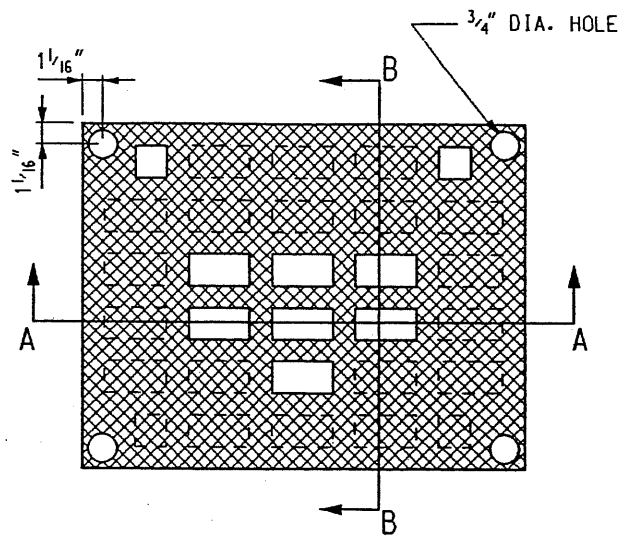


DETAIL FOR ABANDONING CATCH BASIN
SEWER TO REMAIN IN SERVICE

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
ALLEY INSTALLATION
STANDARD 18" X 12"
SPECIAL "Y" CATCH BASIN

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

03/07/98 PLAN DATE	DRAWING NO. 4	DETAIL STANDARD NO. C-4399	SHEET 2 OF 2
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SECTION A-A
TYPE A

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



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BUREAU OF STREETS
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rev. K.S.M.

DRAWN BY:

M.F.S.

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Dadun Haidar
ENGINEER OF STREETS

Wm. Kelly
HEAD ENGINEER

[Signature]
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

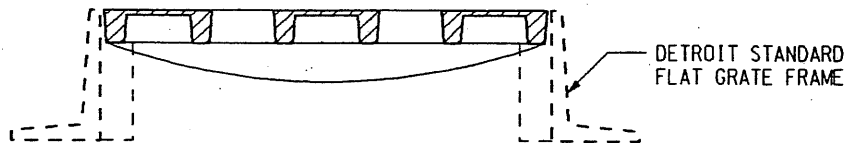
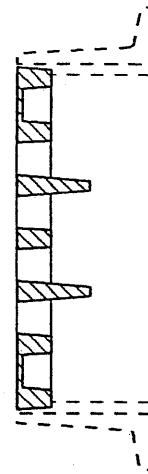
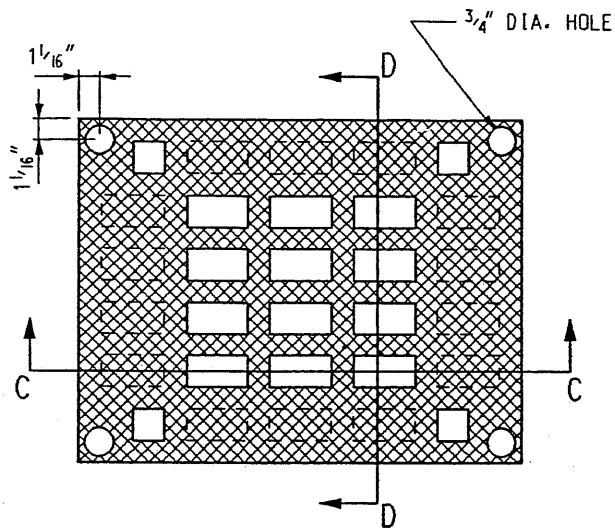
STANDARD THROTTLED
CATCH BASIN COVERS

03/07/98
PLAN DATE

DRAWING NO.
5

DETAIL STANDARD NO.
C-4393

SHEET
1 OF 2



SECTION C-C

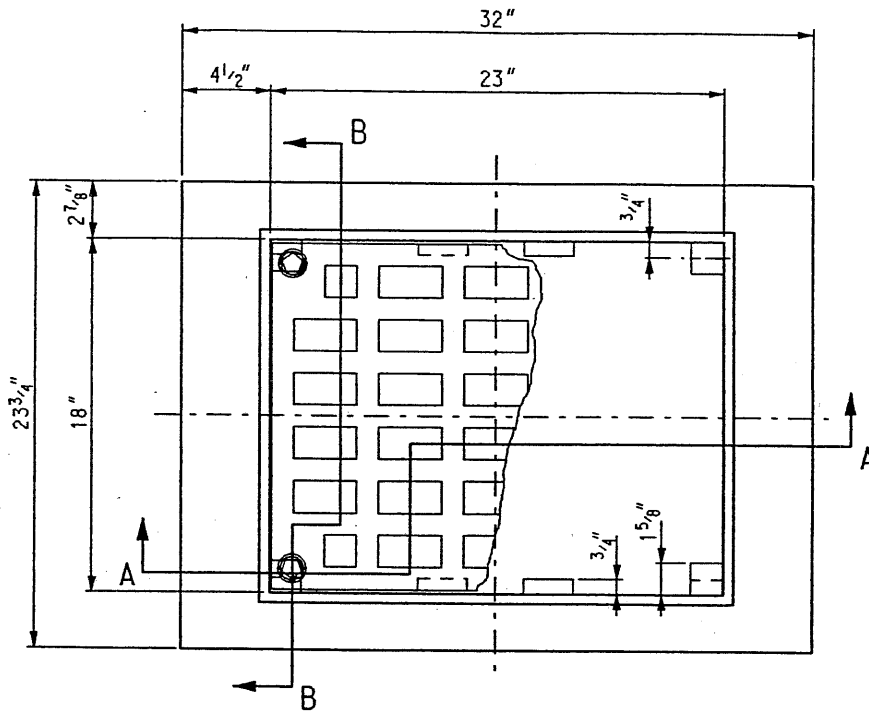
TYPE B

NOTES:

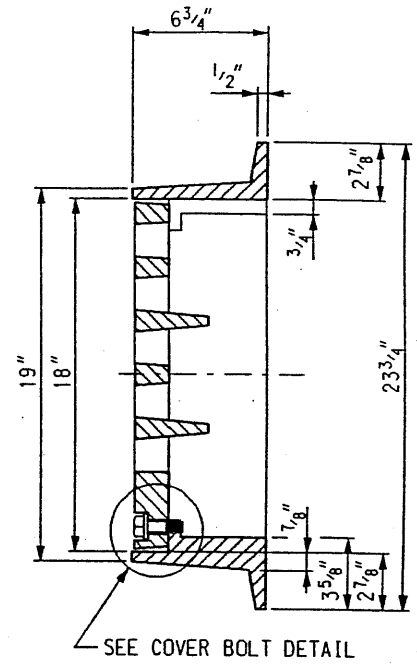
1. CATCH BASIN COVER NO. 5000
EAST JORDAN IRON WORKS,
EAST JORDAN, MICHIGAN; OR EQUIVALENT.
2. TO THROTTLE TO A 6" LINE CAPACITY USE TYPE A.
3. TO THROTTLE TO A 8" LINE CAPACITY USE TYPE B.
4. ALL DIMENSIONS ARE IN INCHES (") UNLESS OTHERWISE NOTED.
5. DRAWING NO. C-4393 IS THE SAME AS C-4392 EXCEPT FOR
THE RESTRICTED GRATE OPENINGS AND COVER TO FRAME BOLTS.

<p>CITY OF DETROIT CITY ENGINEERING DIVISION, D.P.W. STANDARD PLAN FOR</p> <p>STANDARD THROTTLED CATCH BASIN COVERS</p>			
03/07/98 PLAN DATE	DRAWING NO. 5	DETAIL STANDARD NO. C-4393	SHEET 2 OF 2

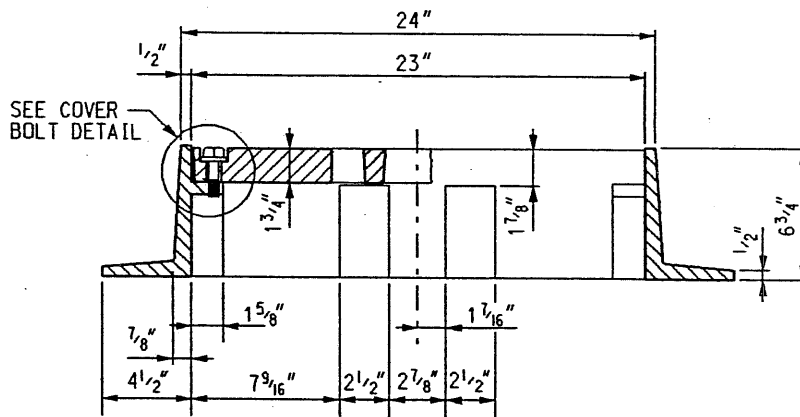
REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



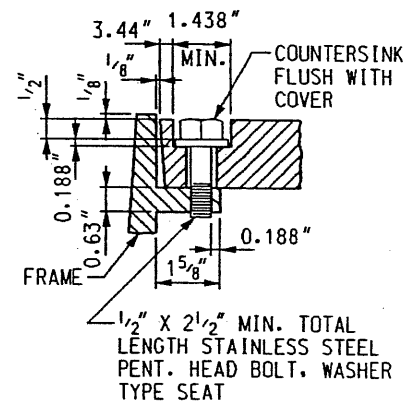
PLAN VIEW OF FRAME



SECTION B-B



SECTION A-A



COVER BOLT DETAIL

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M.F.S.

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APPROVED

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ENGINEER OF STREETS

Cherry Valley
HEAD ENGINEER
[Signature]
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

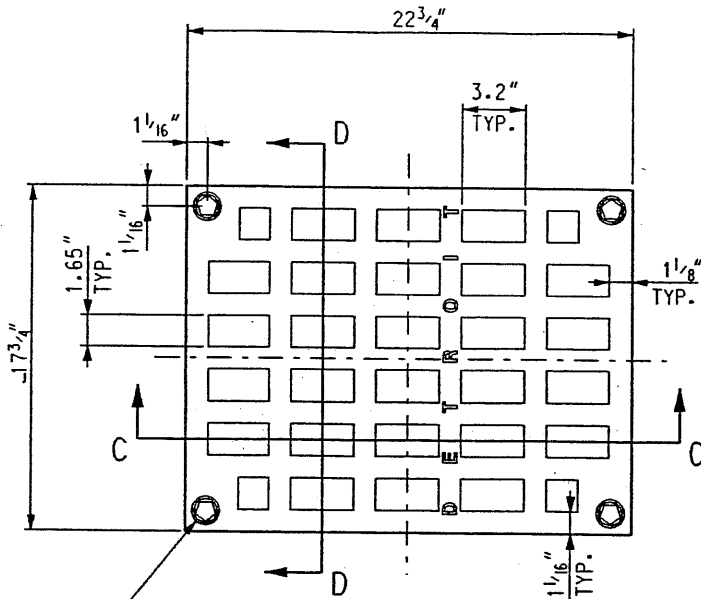
FLAT TYPE
GRATE AND FRAME

03/07/98
PLAN DATE

DRAWING NO.
6

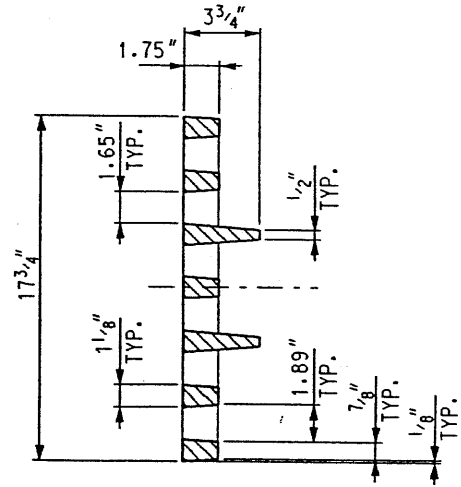
DETAIL STANDARD NO.
C-4392

SHEET
1 OF 2

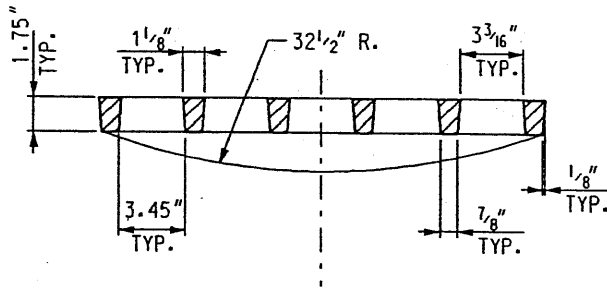


$\frac{3}{16}$ " DIA. HOLE THRU COVER. C' BORE
 1.45" X 0.70" DEEP CORED IN GRATE.
 FRAME DRILLED & TAPPED FOR $\frac{1}{2}$ " DIA.
 - 0.08" THREAD PITCH BOLT

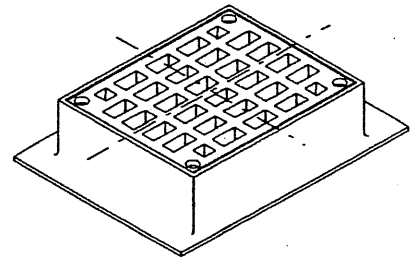
PLAN VIEW OF GRATE



SECTION D-D



SECTION C-C



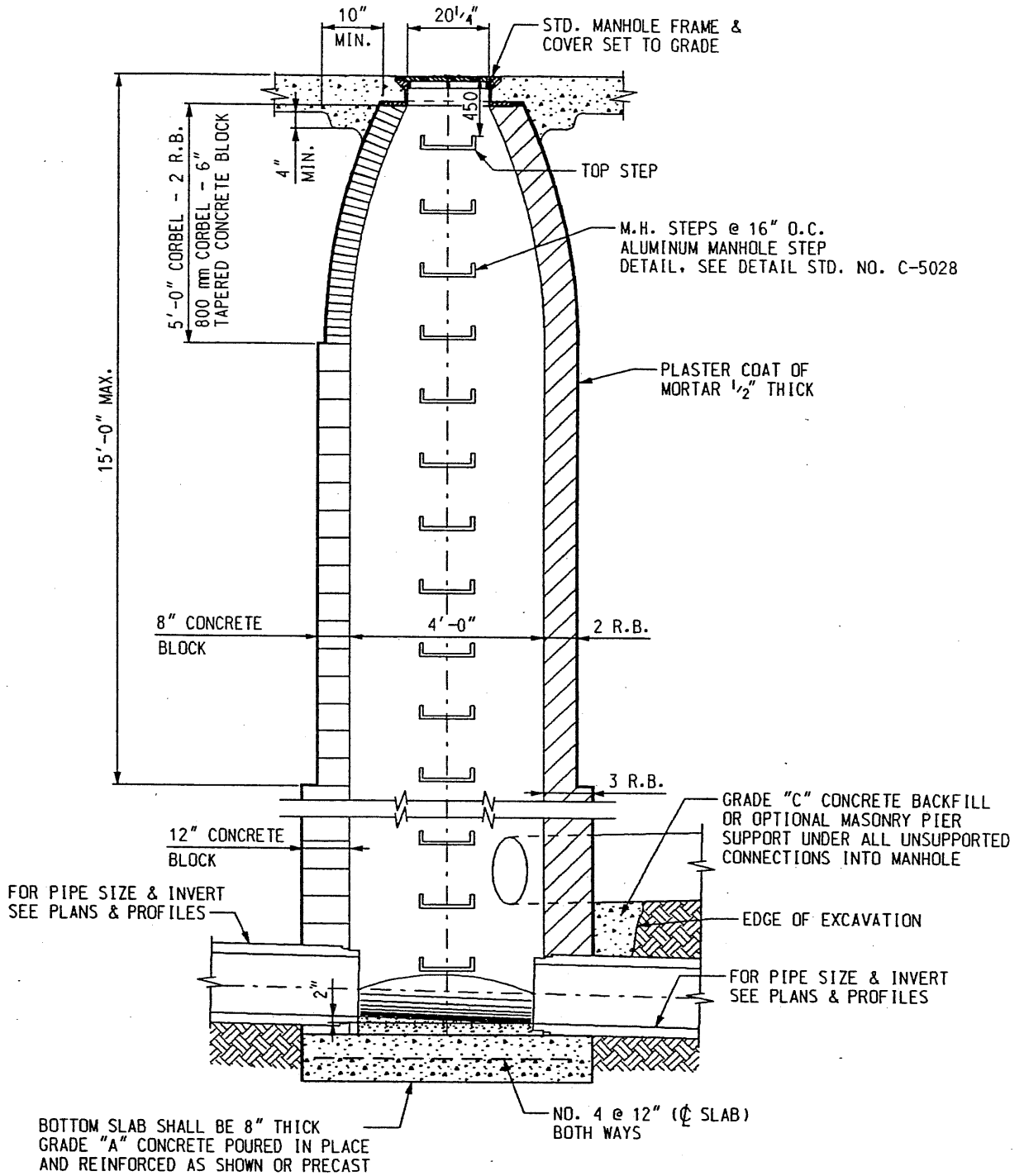
ISOMETRIC VIEW

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002

CITY OF DETROIT
 CITY ENGINEERING DIVISION, D.P.W.
 STANDARD PLAN FOR

FLAT TYPE
 GRATE AND FRAME

03/07/98 PLAN DATE	DRAWING NO. 6	DETAIL STANDARD NO. C-4392	SHEET 2 OF 2
-----------------------	------------------	-------------------------------	-----------------



CONCRETE BLOCK & BRICK OPTION

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



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M.F.S.

CHECKED BY:

APPROVED

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ENGINEER OF STREETS

Wm. Talley
HEAD ENGINEER

[Signature]
CITY ENGINEER

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

STANDARD SEWER MANHOLE
CONSTRUCTION ALTERNATES

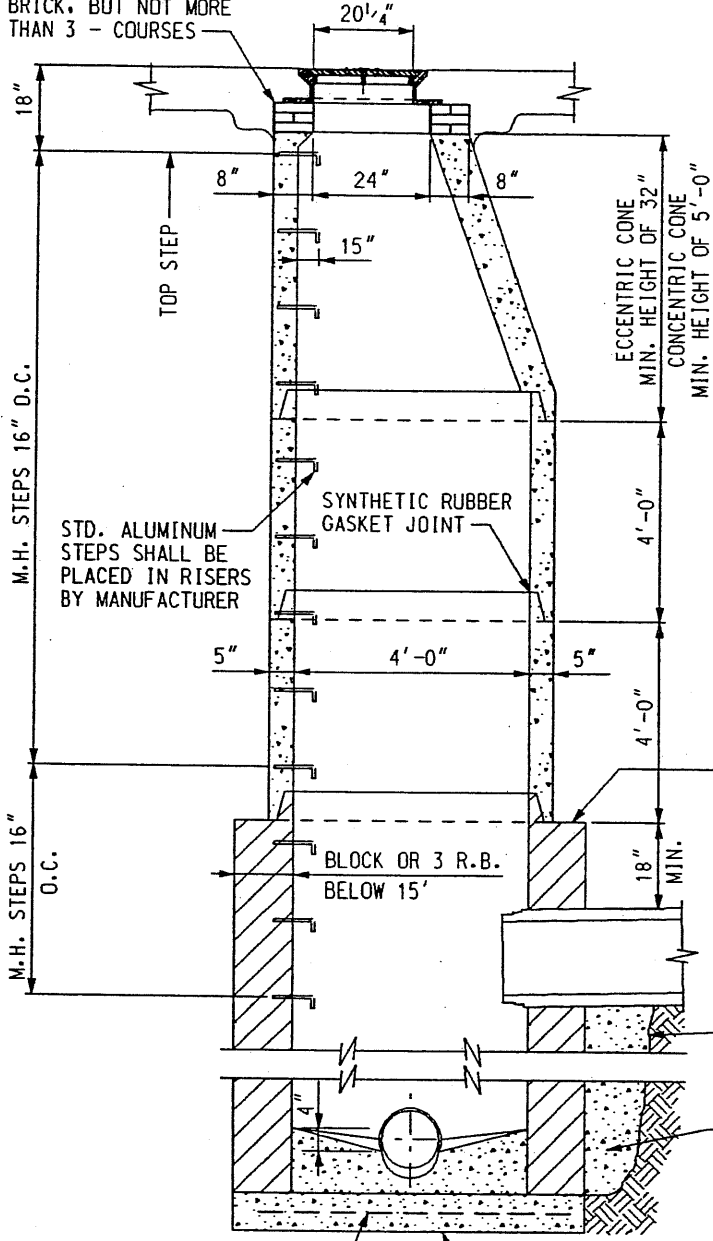
03/07/98
PLAN DATE

DRAWING NO.
7

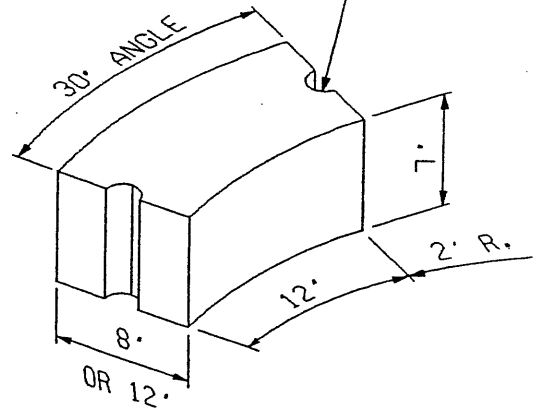
DETAIL STANDARD NO.
C-4395A

SHEET
1 OF 2

AT LEAST 1 - COURSE OF BRICK, BUT NOT MORE THAN 3 - COURSES



CORE - 1/2 CIRCLE 2" DIA. IN THE CENTER OF THE BLOCK



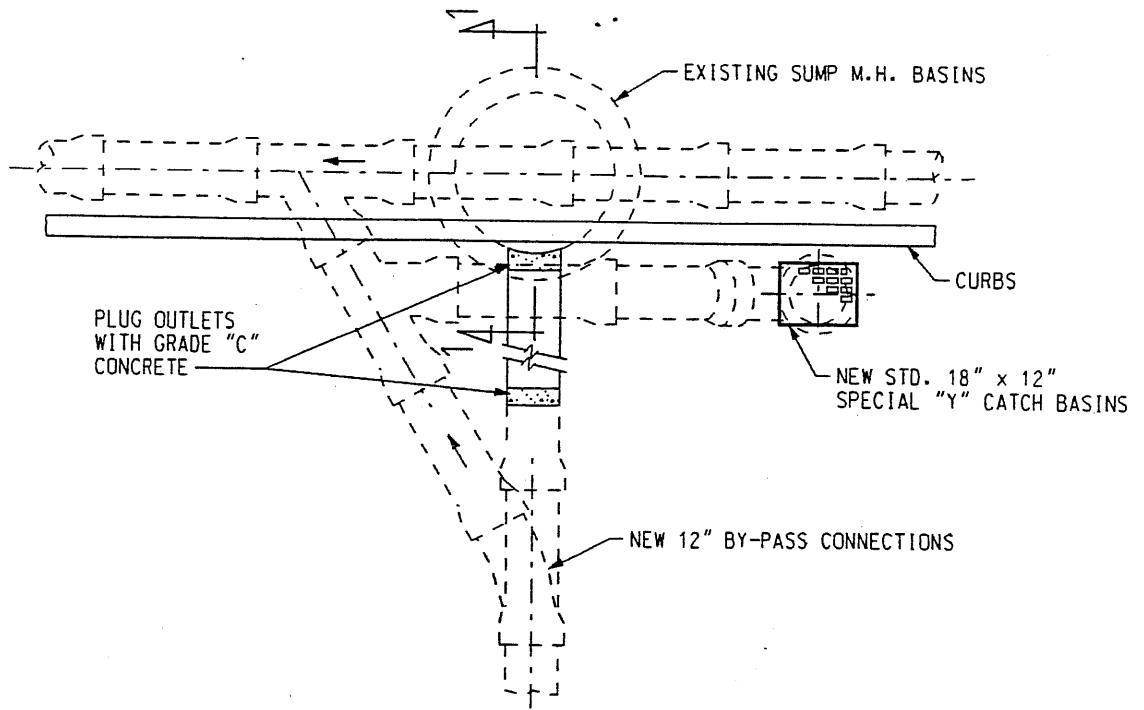
BLOCK DETAIL

NO. 4 @ 12" (Ø SLAB) BOTH WAYS

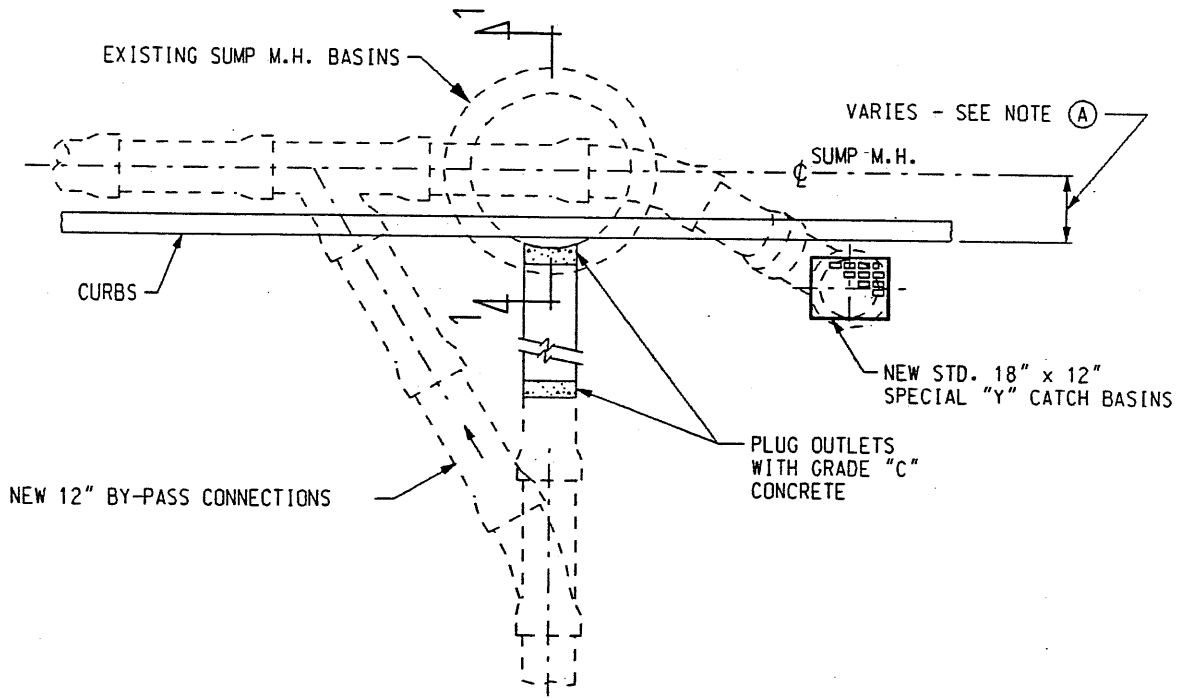
BOTTOM SLAB SHALL BE 8" THICK GRADE "A" CONCRETE POURED IN PLACE AND REINFORCED AS SHOWN OR PRECAST

PRECAST CONCRETE PIPE OPTION

CITY OF DETROIT			
CITY ENGINEERING DIVISION, D.P.W.			
STANDARD PLAN FOR			
STANDARD SEWER MANHOLE			
CONSTRUCTION ALTERNATES			
03/07/98 PLAN DATE	DRAWING NO. 7	DETAIL STANDARD NO. C-4395A	SHEET 2 OF 2



PLAN - 1



PLAN - 2

DETAIL (A) TYPICAL CONNECTIONS AT ABANDONED SUMP MANHOLE BASINS

(SEE NOTE (A))

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



PREPARED BY
BUREAU OF STREETS
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M.F.S.
CHECKED BY:

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Clay Valley
LEAD ENGINEER
Harjeem
CITY ENGINEER

CITY OF DETROIT

CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

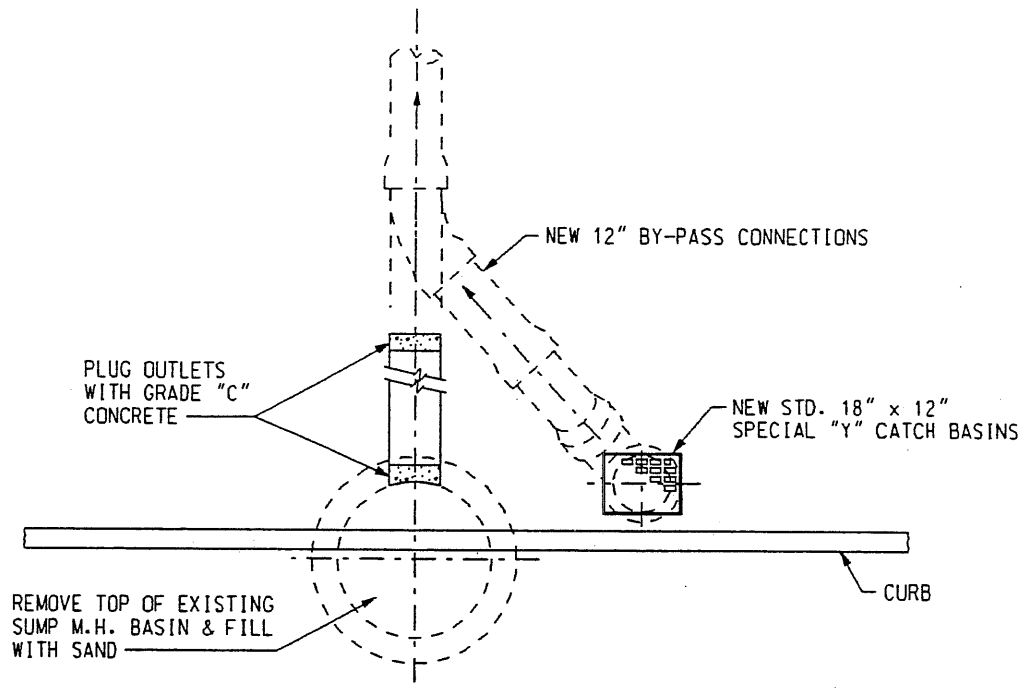
RECONSTRUCTION OF EXISTING SUMP MANHOLES
AND NEW CATCH BASIN INSTALLATIONS

03/07/98
PLAN DATE

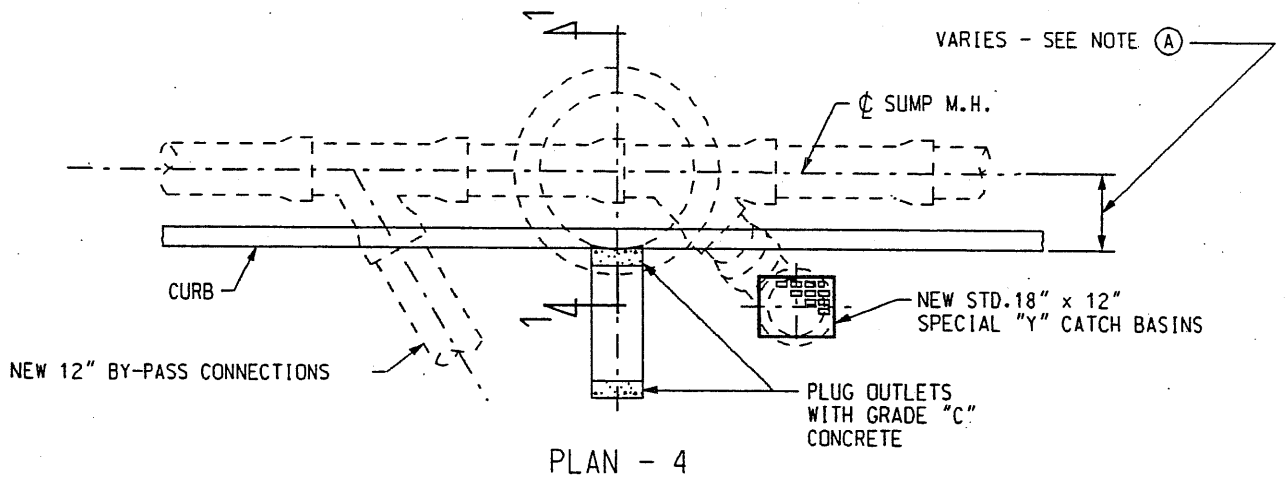
DRAWING NO.
8

DETAIL STANDARD NO.
C-4390

SHEET
1 OF 6



PLAN - 3

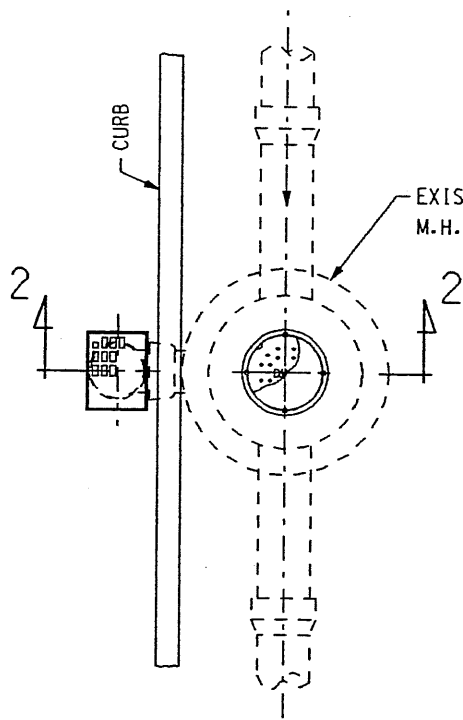


PLAN - 4

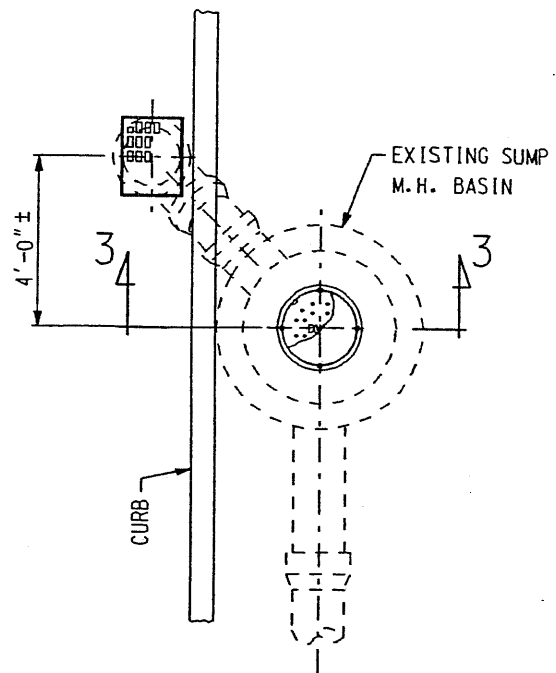
DETAIL (A) TYPICAL CONNECTIONS AT ABANDONED SUMP MANHOLE BASINS
 (SEE NOTE (A))

CITY OF DETROIT			
CITY ENGINEERING DIVISION, D.P.W. STANDARD PLAN FOR			
RECONSTRUCTION OF EXISTING SUMP MANHOLES AND NEW CATCH BASIN INSTALLATIONS			
03/07/98 PLAN DATE	DRAWING NO. 8	DETAIL STANDARD NO. C-4390	SHEET 2 OF 6

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

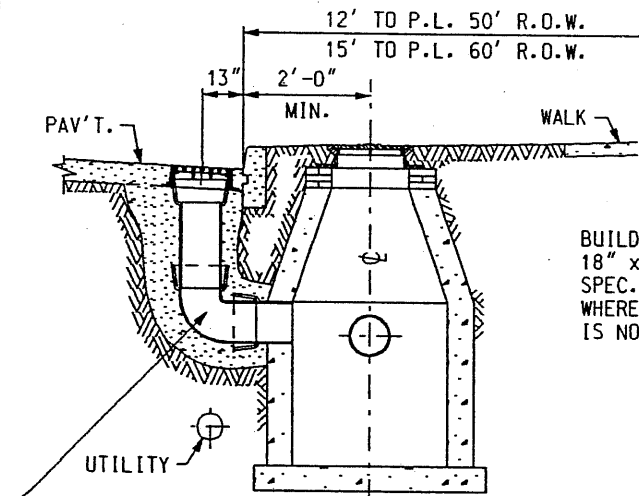


PLAN

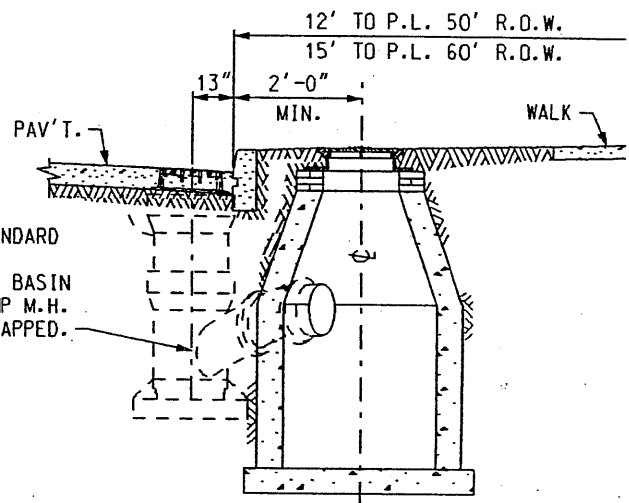


PLAN

CAST IRON M.H. FRAMES



SECTION 2-2



SECTION 3-3

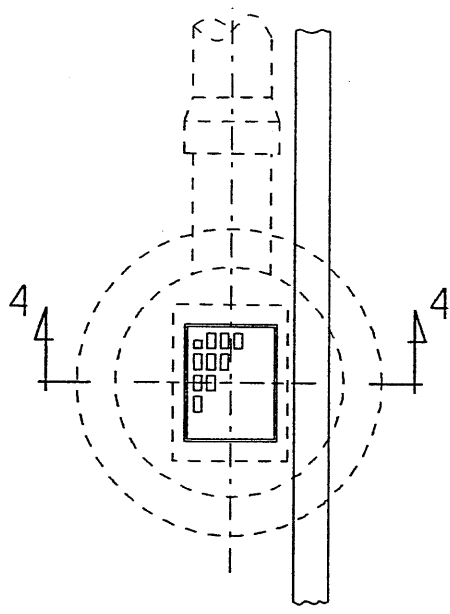
DETAIL (B)

(SEE NOTE (B))

BUILD "L" TYPE
BASINS AT TRAPPED
SUMP M.H.'S AND WHERE
NECESSARY TO CLEAR
UTILITY LINES.

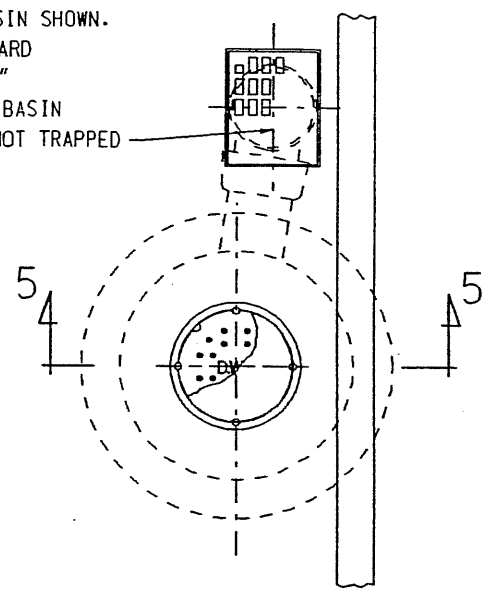
BUILD STANDARD
18" x 12"
SPEC. "Y" BASIN
WHERE SUMP M.H.
IS NOT TRAPPED.

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
RECONSTRUCTION OF EXISTING SUMP MANHOLES
AND NEW CATCH BASIN INSTALLATIONS



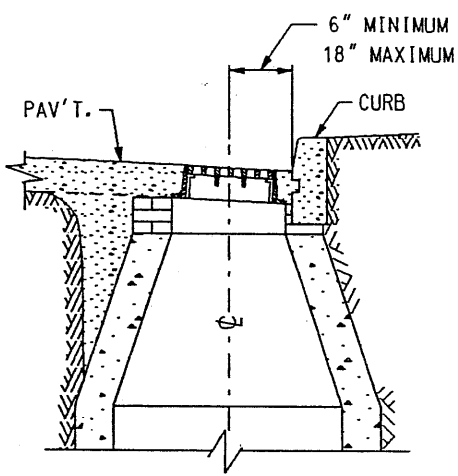
PLAN

"L" TYPE BASIN SHOWN.
 BUILD STANDARD
 18" x 12"
 SPECIAL "Y" BASIN
 IF LINE IS NOT TRAPPED



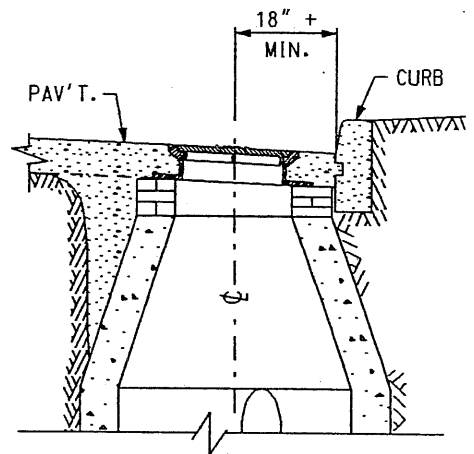
PLAN

CAST IRON M.H. FRAMES



SECTION 4-4

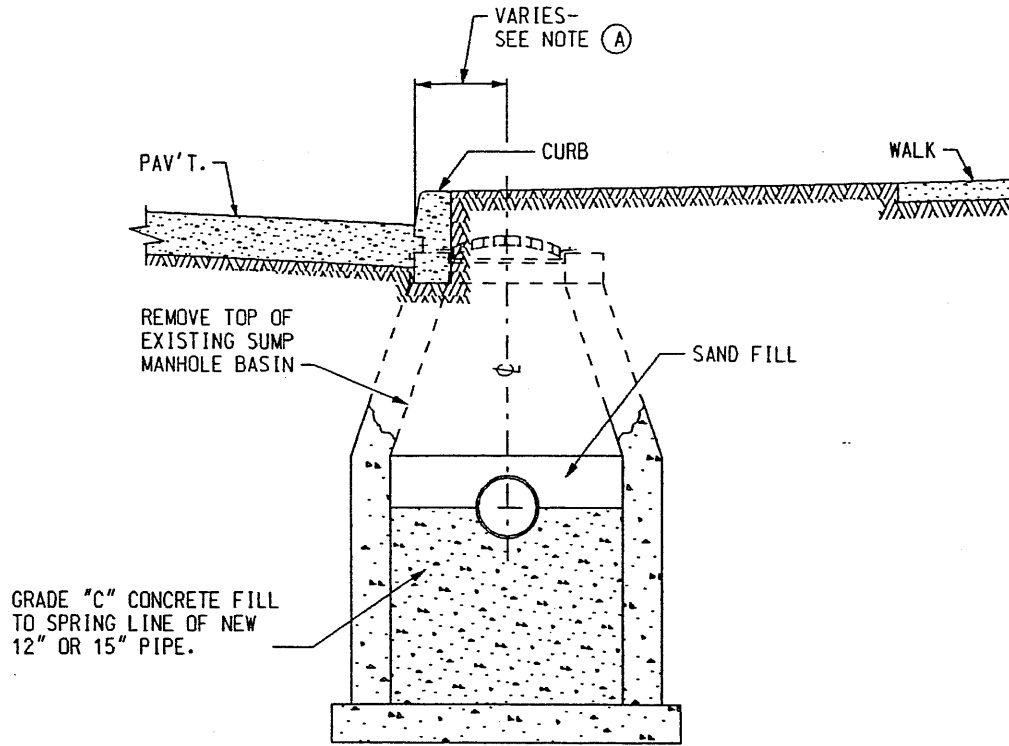
DETAIL (C)
 (SEE NOTE (C))



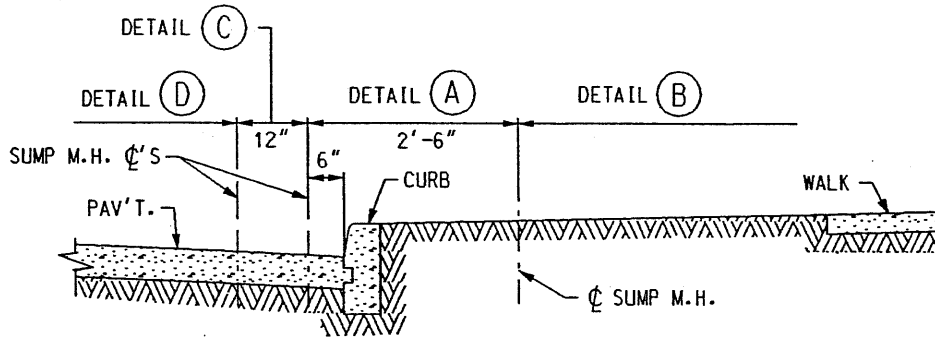
SECTION 5-5

DETAIL (D)
 (SEE NOTE (D))

CITY OF DETROIT CITY ENGINEERING DIVISION, D.P.W. STANDARD PLAN FOR RECONSTRUCTION OF EXISTING SUMP MANHOLES AND NEW CATCH BASIN INSTALLATIONS			
03/07/98 PLAN DATE	DRAWING NO. 8	DETAIL STANDARD NO. C-4390	SHEET 4 OF 6



SECTION 1-1



KEY LOCATION SKETCH

CITY OF DETROIT			
CITY ENGINEERING DIVISION, D.P.W. STANDARD PLAN FOR			
RECONSTRUCTION OF EXISTING SUMP MANHOLES AND NEW CATCH BASIN INSTALLATIONS			
03/07/98 PLAN DATE	DRAWING NO. 8	DETAIL STANDARD NO. C-4390	SHEET 5 OF 6

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

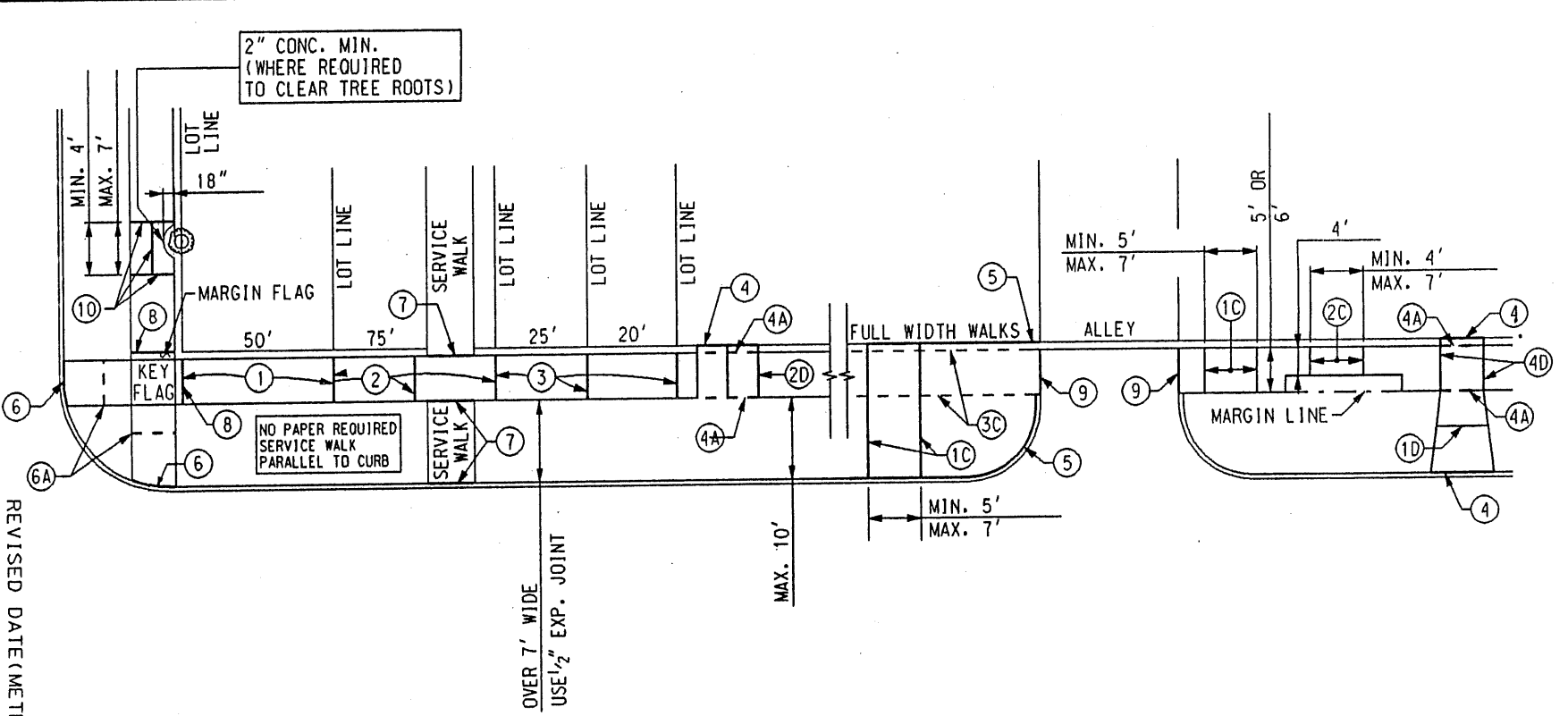
NOTES:

- (A) EXISTING SUMP MANHOLE BASINS TO BE ABANDONED WHEN ϕ IS LOCATED WITHIN FOLLOWING LIMITS FROM FACE OF CURB:
2'-0" IN DIRECTION OF WALK.
6" TOWARD ϕ OF STREET.
- (B) EXISTING SUMP M.H. BASINS TO BE USED. RE-SET TOPS WITH STANDARD CAST IRON (SEE DETAIL STD. NO. C-4391) MANHOLE FRAME AND COVER.
- (C) EXISTING SUMP M.H. BASINS TO BE USED. RE-SET TOPS WITH STANDARD FLAT TYPE CATCH BASIN FRAMES AND GRATES.
- (D) EXISTING SUMP M.H. BASINS TO BE USED. RE-SET TOPS WITH STANDARD CAST IRON (SEE DETAIL STD. NO. C-4391) MANHOLE FRAME AND COVER. CONSTRUCT "L" TYPE BASIN AT CURB LOCATION AND CONNECT TO SUMP MANHOLE.


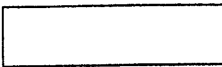





ALL DIMENSIONS ARE IN INCHES (") UNLESS OTHERWISE NOTED.

CITY OF DETROIT			
CITY ENGINEERING DIVISION. D.P.W. STANDARD PLAN FOR			
RECONSTRUCTION OF EXISTING SUMP MANHOLES AND NEW CATCH BASIN INSTALLATIONS			
03/07/98 PLAN DATE	DRAWING NO. 8	DETAIL STANDARD NO. C-4390	SHEET 6 OF 6

REVISED DATE(METRIC TO ENGLISH UNIT SYSTEM):DEC.2002



LEGEND

-  LOT PROPERTY AND CURB LINES
-  WALK AND DRIVEWAY AREA
-  EXPANSION JOINT
-  EXPANSION JOINT ALTERNATE POSITION
-  CONTRACTION JOINT
-  CONTRACTION JOINT ALTERNATE POSITION
-  MARGIN LINE

VARIATION FROM THIS PLAN MUST
BE APPROVED BY THE ENGINEER.

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

EXPANSION JOINTS

ALL EXPANSION JOINT PAPER SHALL EXTEND 1" BELOW THE BOTTOM OF THE THINNER OF ADJOINING PAVEMENT SECTIONS.

- ① PLACE 1/2" PAPER EXPANSION JOINTS AT LOT LINES WHEN LOT LINES ARE BETWEEN 25' AND 50' APART.
- ② PLACE ADDITIONAL 1/2" PAPER EXPANSION JOINTS SO THAT THE DISTANCE BETWEEN JOINTS DOES NOT EXCEED 15.2 m WHEN LOT LINES ARE OVER 15.240 m APART.
- ③ PLACE 1/2" PAPER EXPANSION JOINTS AT EVERY SECOND LOT LINE AND CONTRACTION JOINT AT INTERVENING LOT LINE WHEN LOT LINES ARE LESS THAN 25' APART.
- ④ PLACE 1" PAPER EXPANSION JOINTS AT CURB AND BUILDING OR PROPERTY LINE OR AT ALTERNATE POSITION (4A) AS SHOWN FOR DRIVEWAY.
- ⑤ PLACE 1" PAPER EXPANSION JOINTS AT CURB AND BUILDING OR PROPERTY LINE FOR FULL WIDTH SIDEWALK EXCEEDING 7' IN WIDTH.
- ⑥ PLACE 1" PAPER EXPANSION JOINTS AT CURB CIRCLES OR AT ALTERNATE POSITION (6A) AS SHOWN.
- ⑦ PLACE 1" PAPER EXPANSION JOINTS AT INTERSECTIONS OF SERVICE WALKS AND SIDEWALKS AND SERVICE WALKS AND CURBS.
- ⑧ PLACE 1" PAPER EXPANSION JOINTS AT MARGIN FLAGS AT CROSSWALKS.
- ⑨ PLACE 1" PAPER EXPANSION JOINTS AT ALLEY APRONS.
- ⑩ PLACE 1/2" PAPER EXPANSION JOINT BOTH SIDES OF SIDEWALK FLAG ABUTTING TREE AND ON CENTERLINE JOINT.

CONTRACTION JOINTS

- 1C PLACE CONTRACTION JOINTS AT INTERVALS OF NOT LESS THAN 5' NOR MORE THAN 7' ON WALKS 5' WIDE OR WIDER, INCLUDING FULL WIDTH WALKS.
- 2C PLACE CONTRACTION JOINTS AT INTERVALS OF NOT LESS THAN 4' NOR MORE THAN 7' ON WALKS 4' WIDE.
- 3C PLACE CONTRACTION JOINTS AT THE MARGIN LINE ON FULL WIDTH WALKS (OPTIONAL).

DRIVEWAYS

- 1D PLACE CONTRACTION JOINTS IN DRIVEWAYS SO THAT NO SLAB WILL EXCEED THE DIMENSIONS OF 15' BY 15'.
- 2D PLACE 1" PAPER EXPANSION JOINTS ON ALL SIDES OF COMMERCIAL DRIVES.
- 3D PLACE CONSTRUCTION OR CONTRACTION JOINT ON CENTERLINE WHEN WIDTH OF DRIVEWAY EXCEEDS 15'
- 4D PLACE 1/2" PAPER EXPANSION JOINTS ON BOTH SIDES OF RESIDENTIAL DRIVEWAYS. IF DRIVEWAY EDGE IS WITHIN 2' OF LOT LINE, PLACE THIS EXPANSION PAPER AT PROPERTY LINE.

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

SIDEWALK JOINTING
STANDARD

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

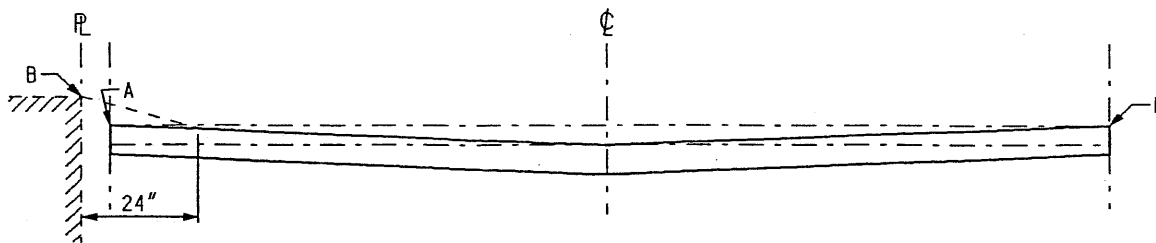
03/07/98
PLAN DATE

DRAWING NO.
9

DETAIL STANDARD NO.
C-4462

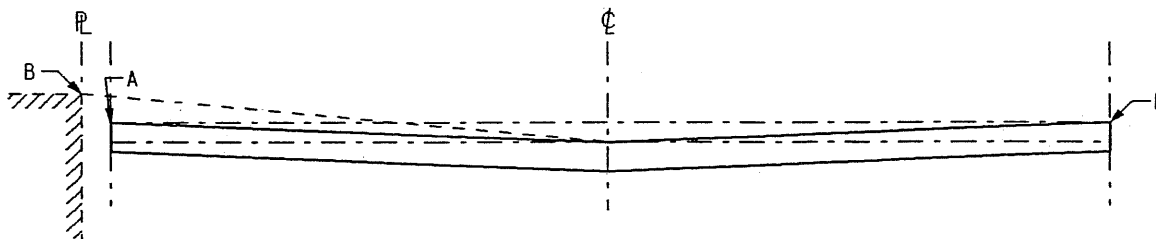
SHEET
2 OF 2

STD. GUTTER - NO WARP IN DESIGN GRADE



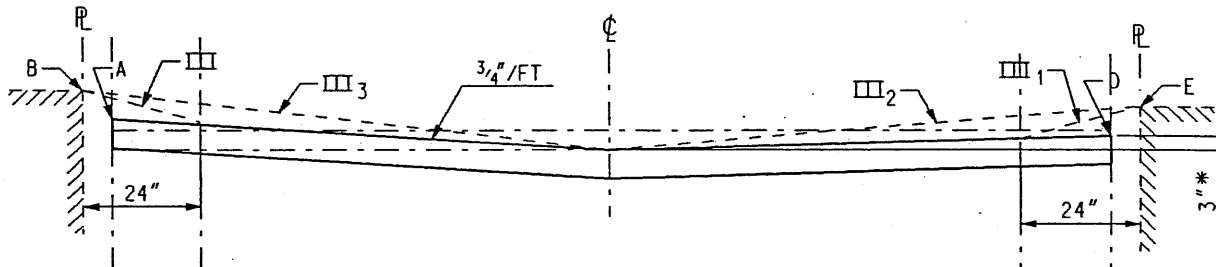
CASE I

STD. GUTTER - NO WARP



CASE II

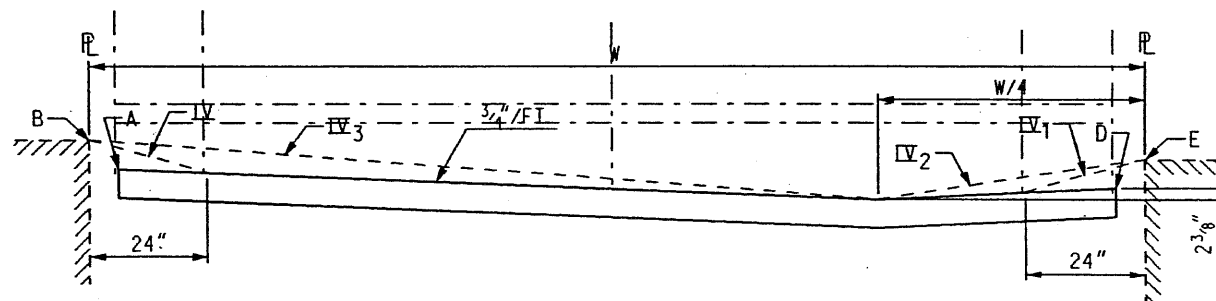
GUTTER ON ϕ - MAX. SLOPE OF WARPED SIDE 3/4" / FT.



* 2 3/8" GUTTER ON LOW SIDE FOR 16' WIDE ALLEY

CASE III, III₁, III₂ & III₃

GUTTER ON 1/4 POINT - MAX. SLOPE OF WARPED SIDE 3/4" / FT



CASE IV, IV₁, IV₂ & IV₃

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



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Wm. Talley
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CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

ALLEY PAVING
SPECIAL WARPING DETAILS

03/07/98
PLAN DATE

DRAWING NO.
10

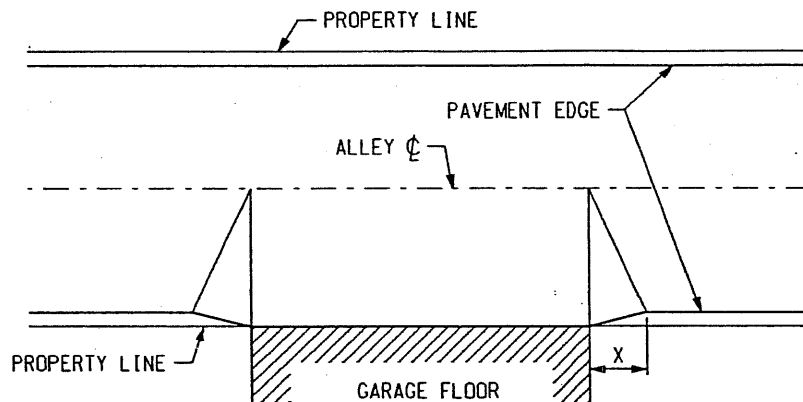
DETAIL STANDARD NO.
C-4400

SHEET
1 OF 2

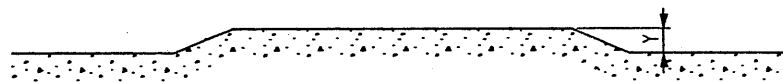
ALLEY PAVING SPECIAL WARPING DETAILS						
DIFFERENCE IN ELEVATION BETWEEN A & B *OR D & E *(IN FEET)						
CASE NO.	20' ALLEY		18' ALLEY		16" ALLEY	
	HIGH SIDE	LOW SIDE	HIGH SIDE	LOW SIDE	HIGH SIDE	LOW SIDE
I	0 - 0.4'		0 - 0.4'		0 - 0.4'	
II	0.4' - 0.8'		0.4' - 0.8'		0.4' - 0.8'	
II	WITH EXTREME CARE IN CONSTRUCTION MAX. = 1.0'					
III	0 - 0.4'		0 - 0.4'		0 - 0.4'	
III ₁		0 - 0.4'		0 - 0.4'		0 - 0.4'
III ₂		0 - 0.8'		0 - 0.8'		0 - 0.8'
III ₃	0.4' - 0.7'		0.4' - 0.6'		0.4' - 0.5'	
IV	0 - 0.4'		0 - 0.4'		0 - 0.4'	
IV ₁		0 - 0.4'		0 - 0.4'		0 - 0.3'
IV ₂		0 - 0.4'		0 - 0.4'		0 - 0.4'
IV ₃	0.4' - 0.8'		0.4' - 0.8'		0 - 0.6'	

* A & D ARE GRADE ELEVATION (EDGE OF PAVEMENT).

* B & E ARE ELEVATIONS OF GARAGE FLOOR OR OTHER PAVEMENT ON PROPERTY LINE.



PLAN



PROFILE

X = 10 x Y MINIMUM

X = TRANSITION DISTANCE BETWEEN RAMPED SECTION AND ALLEY GRADE

Y = DISTANCE EDGE OF PAVEMENT IS RAISED FOR RAMP TO GARAGE

NOTE:

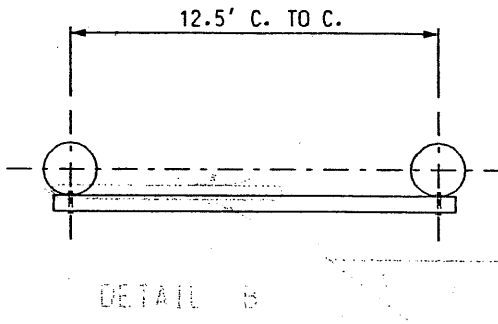
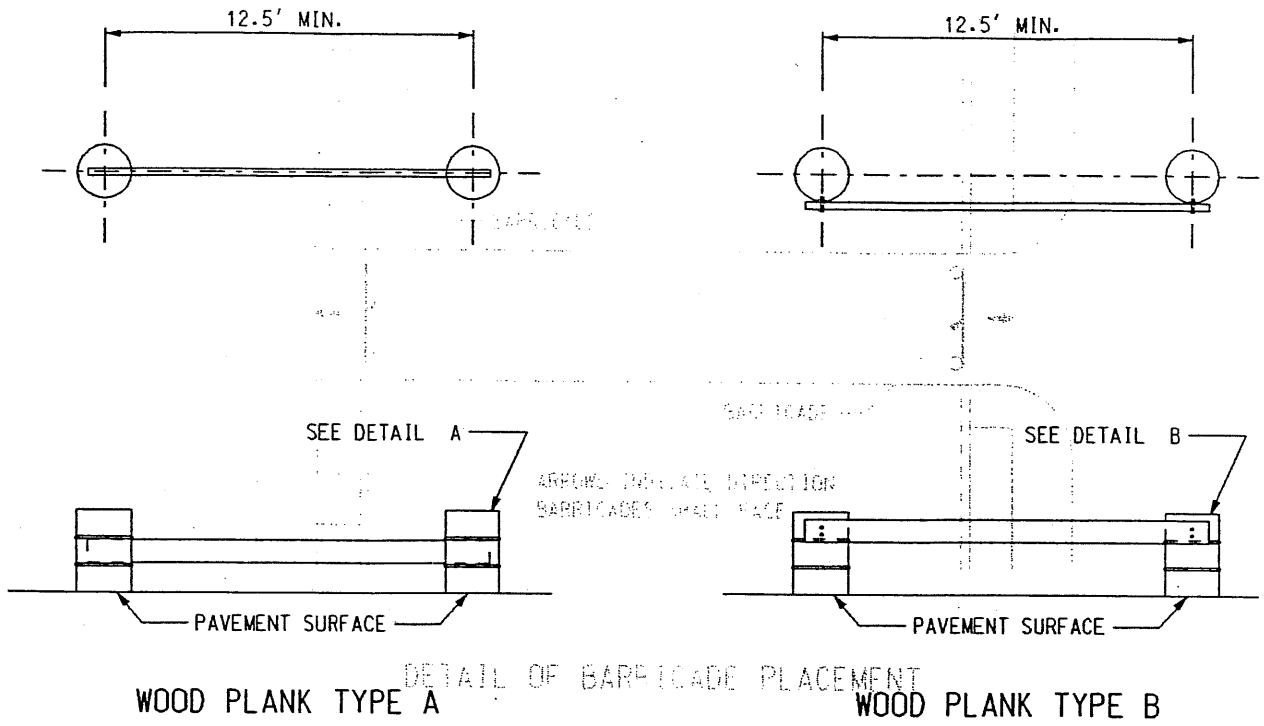
1. ALL DIMENSIONS ARE IN INCHES (") UNLESS OTHERWISE NOTED.

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CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

ALLEY PAVING
SPECIAL WARPING DETAILS

03/07/98 PLAN DATE	DRAWING NO. 10	DETAIL STANDARD NO. C-4400	SHEET 2 OF 2
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REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



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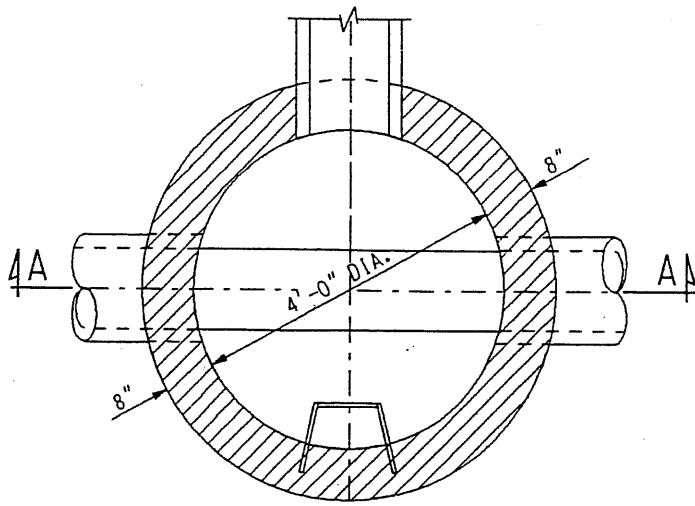
CITY OF DETROIT
CITY ENGINEERING DIVISION. D.P.W.
STANDARD PLAN FOR
TEMPORARY ALLEY
BARRICADE

03/07/98
PLAN DATE

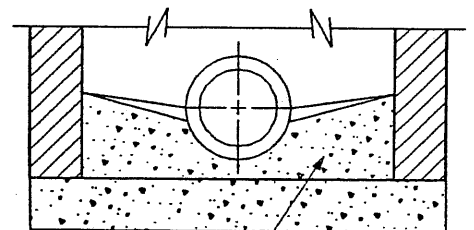
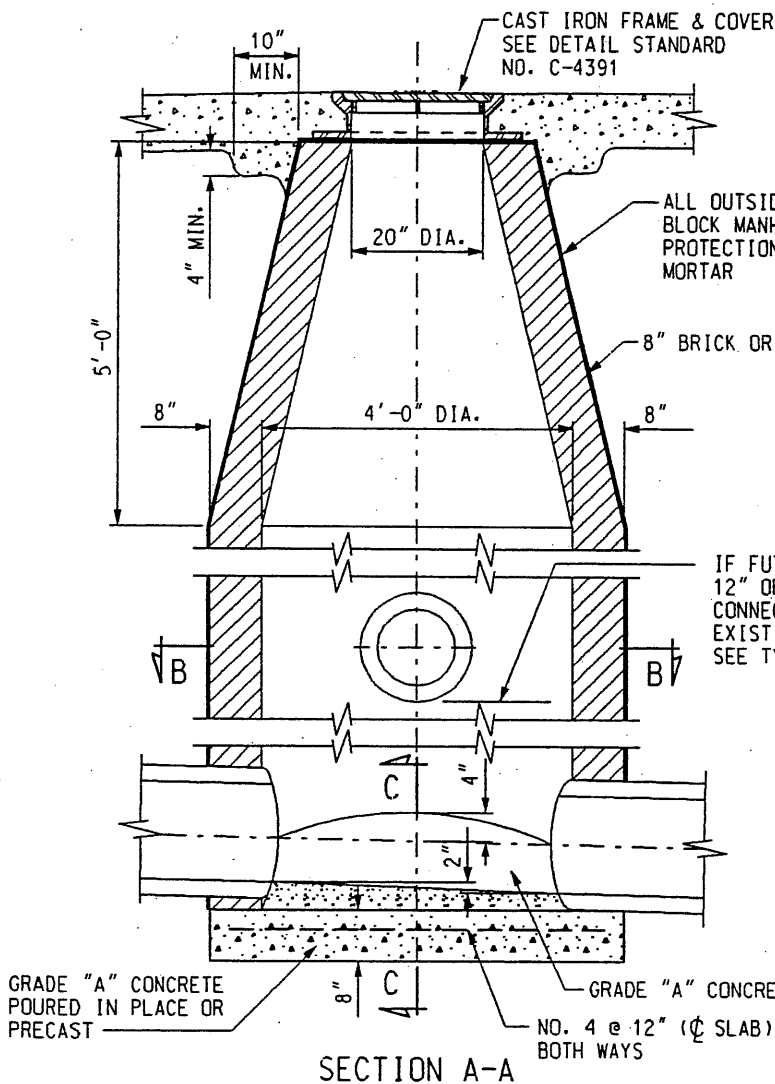
DRAWING NO.
11

DETAIL STANDARD NO.
C-4647R

SHEET
1 OF 2



PLAN VIEW AT B-B



SECTION C-C
CHANNEL BOTTOM

SEWER MANHOLE

REVISED DATE (METRIC TO
ENGLISH UNIT SYSTEM): DEC. 2002



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CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR

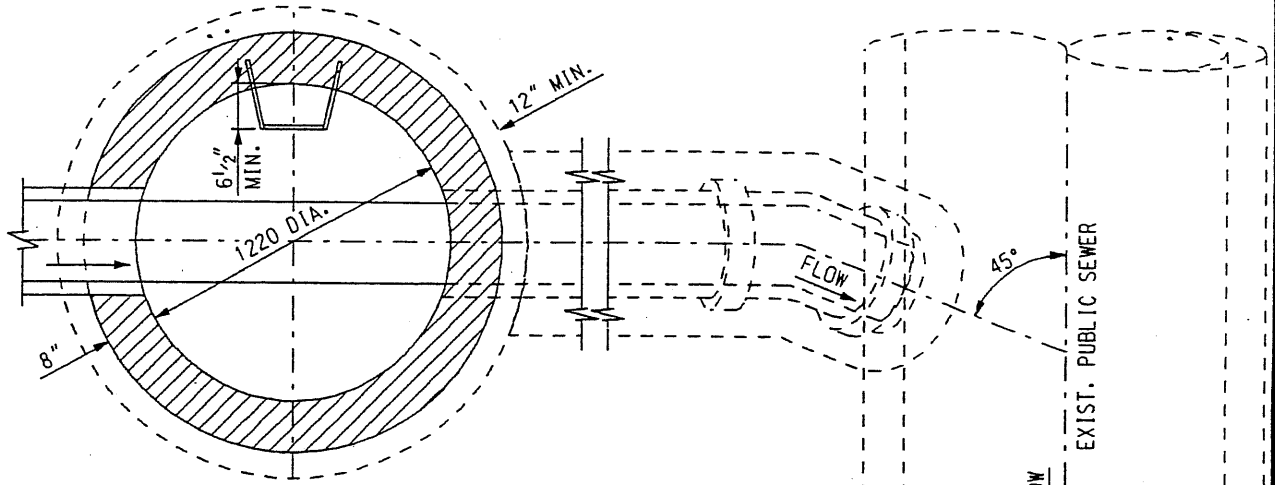
STANDARD SEWER AND
DROP MANHOLES

03/07/98
PLAN DATE

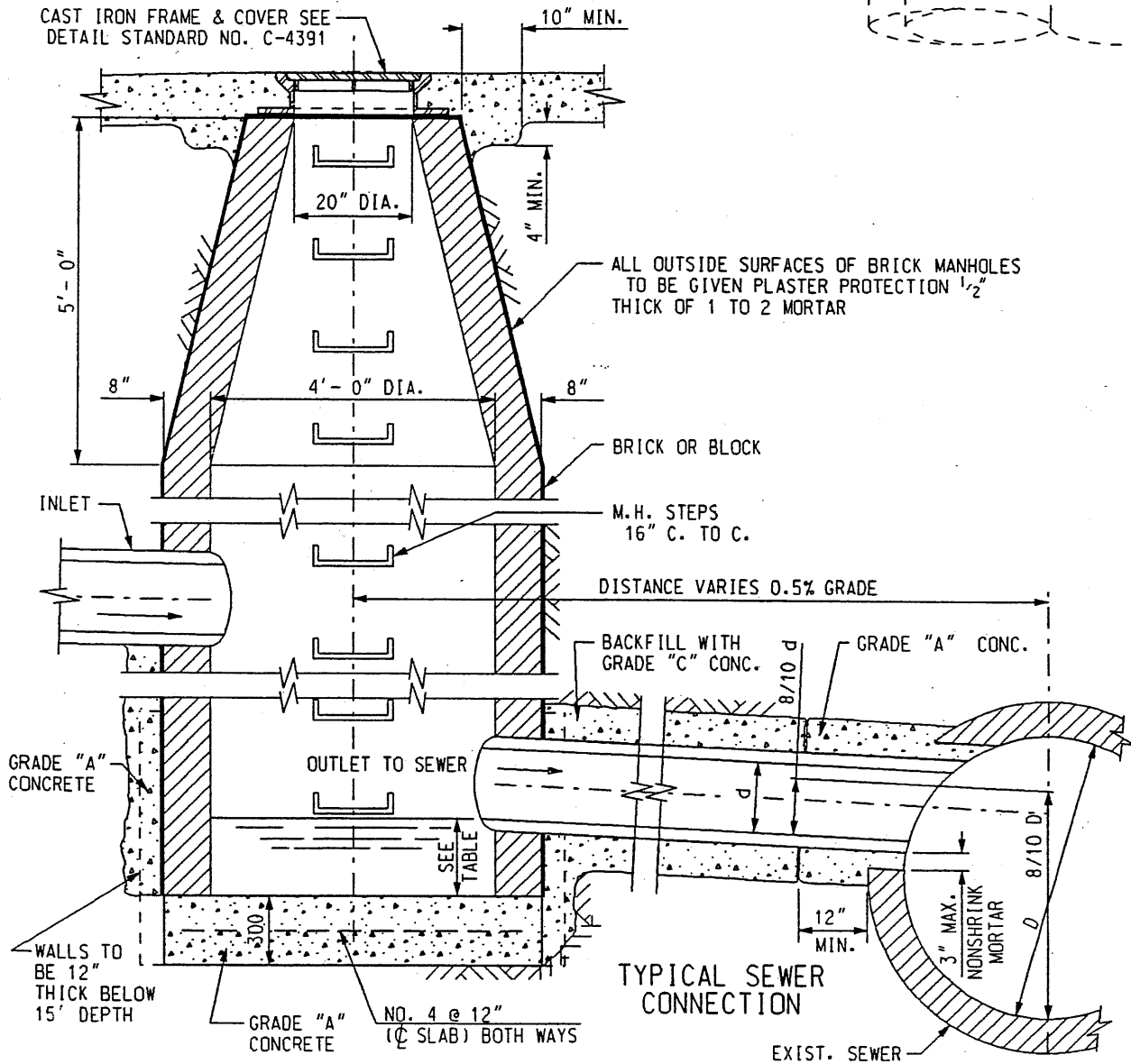
DRAWING NO.
12

DETAIL STANDARD NO.
C-4387

SHEET
1 OF 3



PLAN VIEW



DROP MANHOLE

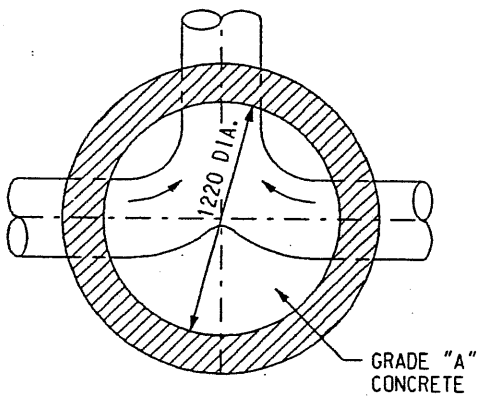
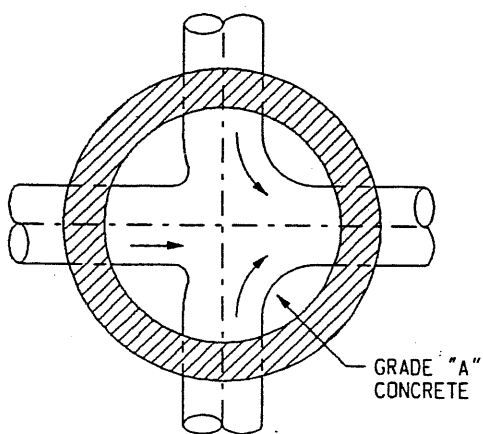
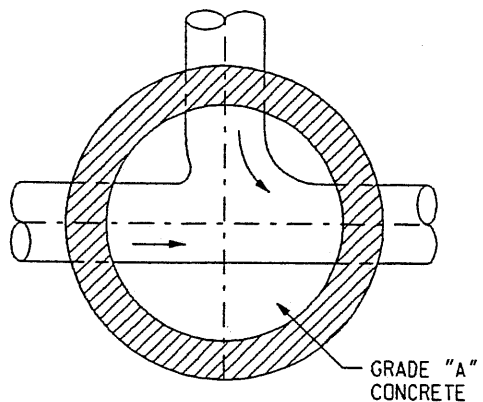
CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
STANDARD SEWER AND
DROP MANHOLES

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002

03/07/98 PLAN DATE	DRAWING NO. 12	DETAIL STANDARD NO. C-4387	SHEET 2 OF 3
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**DEPTH OF WATER CUSHION
IN DROP MANHOLES SHALL
BE AS FOLLOWS**

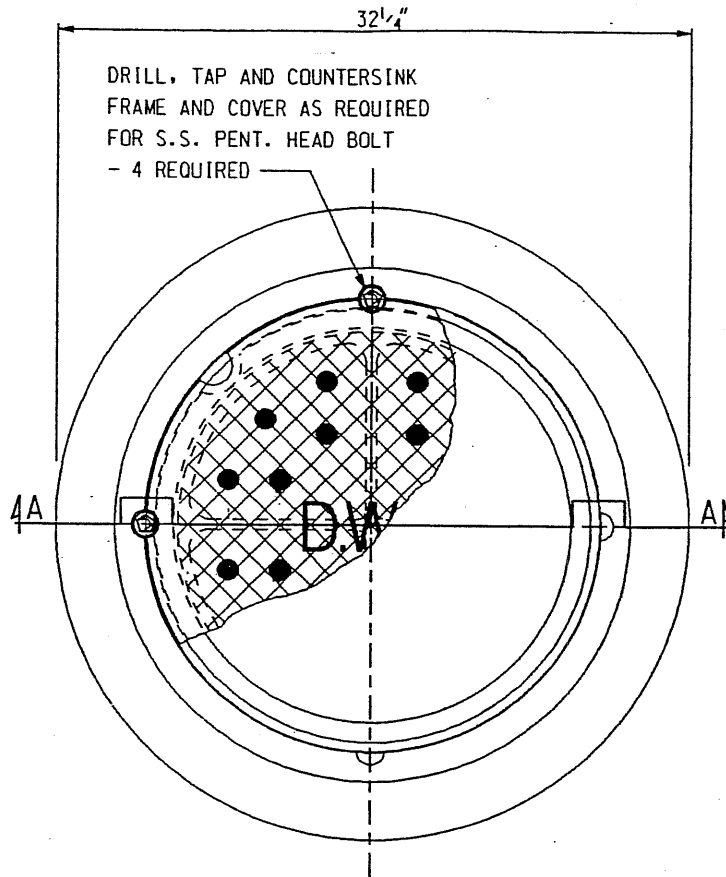
DIFFERENCE BETWEEN INLET & OUTLET INVERTS:	DEPTH OF CUSHION:
LESS THAN 3'-0"	NOT REQ'D.
3'-0" TO 4'-0"	12"
4'-0" TO 5'-0"	18"
5'-0" TO 8'-0"	24"
8'-0" TO 10'-0"	30"
OVER 10'-0"	36"



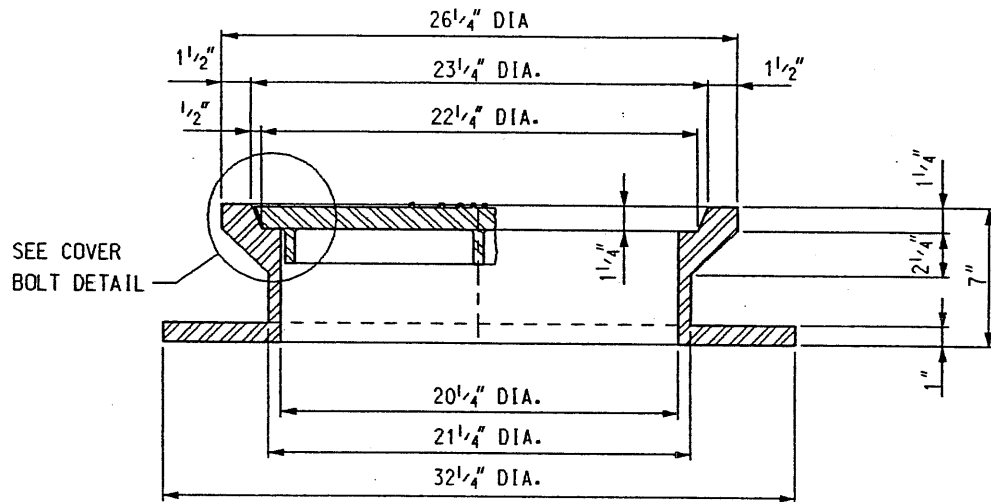
- NOTES:
- FOR ALUMINUM MANHOLE STEP DETAIL SEE
DETAIL STANDARD NO. C-5028.
 - ALL DIMENSIONS ARE IN INCHES (")
UNLESS OTHERWISE NOTED.

TYPICAL CHANNELS

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
STANDARD SEWER AND
DROP MANHOLES



PLAN VIEW OF FRAME



SECTION A-A

REVISED DATE (METRIC TO ENGLISH UNIT SYSTEM): DEC. 2002



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APPROVED

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ENGINEER OF STREETS
Wm. Talley
HEAD ENGINEER
John J. ...
CITY ENGINEER

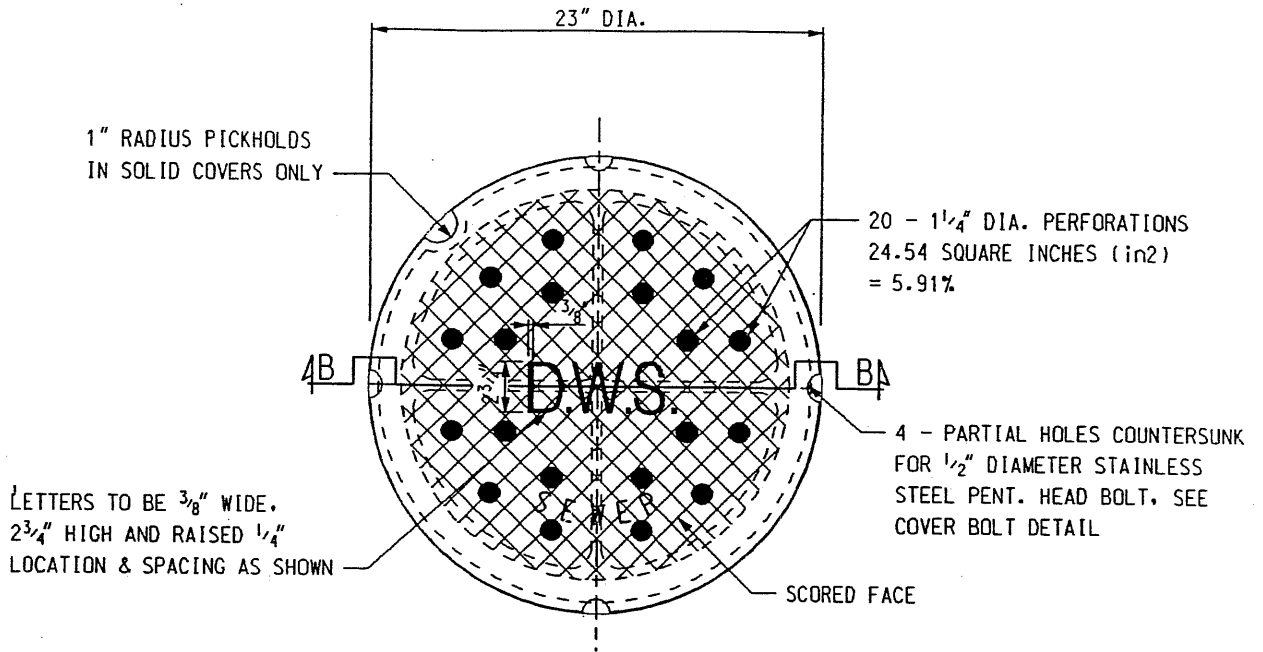
CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
MANHOLE FRAME AND COVER

03/07/98
PLAN DATE

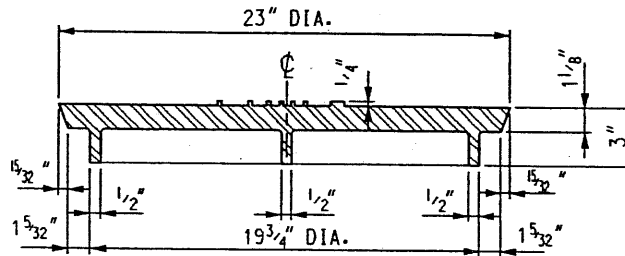
DRAWING NO.
13

DETAIL STANDARD NO.
C-4391

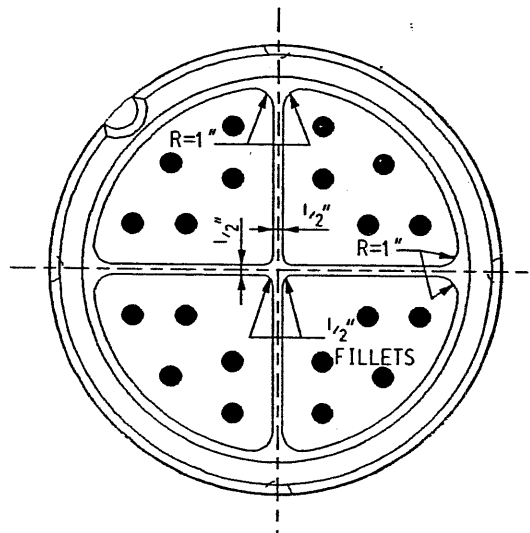
SHEET
1 OF 3



PLAN VIEW OF COVER

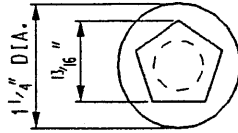


SECTION B-B

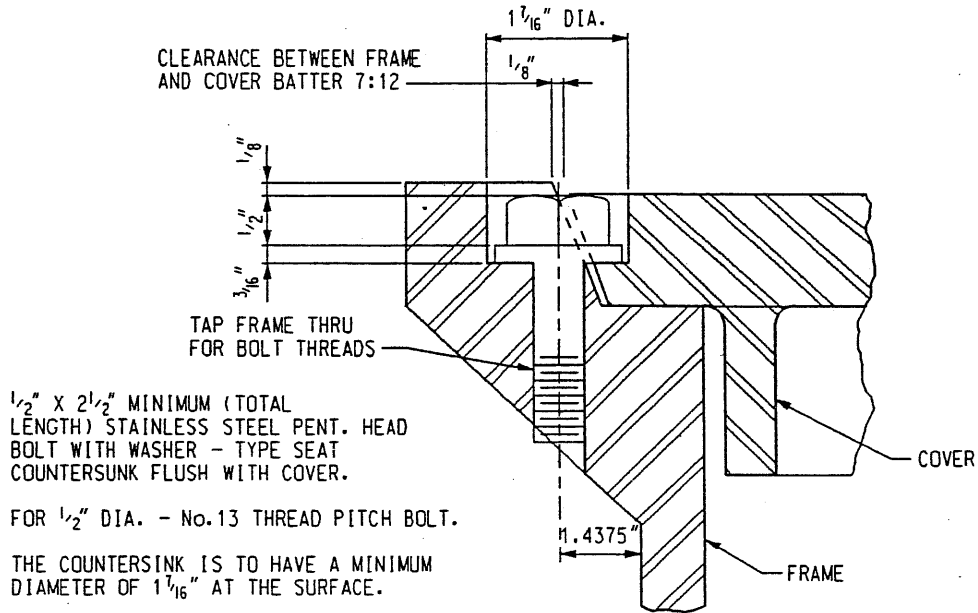


BOTTOM VIEW OF COVER

CITY OF DETROIT
CITY ENGINEERING DIVISION, D.P.W.
STANDARD PLAN FOR
MANHOLE FRAME AND COVER



PLAN VIEW OF BOLT



COVER BOLT DETAIL

NOTES:

1. FRAME AND COVER TO BE GRAY IRON CASTING, ASTM A48, CLASS 30B
 TOTAL WT. = 410 Lbs. (PERF. COVER)
 MANHOLE FRAME = 262 Lbs.
 COVER (PERF.) = 148 Lbs.
 COVER (BLANK) = 156 Lbs.
2. THE SEATING FACE OF THE COVER AND SEAT FOR SAME ON THE FRAME SHALL BE MACHINE FINISHED OR THE EQUIVALENT THEREOF SO THAT THE COVER SHALL HAVE AN EVEN BEARING ON ITS SEAT AT ALL POINTS WITHOUT ROCKING OR TILTING.
3. ALL DIMENSIONS ARE IN INCHES (") UNLESS OTHERWISE NOTED.

CITY OF DETROIT
 CITY ENGINEERING DIVISION, D.P.W.
 STANDARD PLAN FOR
 MANHOLE FRAME AND COVER