

CITY OF NEWARK
DELAWARE

**DETAIL
STANDARDS**

**FOR
ROAD & UTILITY
CONSTRUCTION**

JANUARY 30, 2001

CITY OF NEWARK
Delaware

DETAIL STANDARDS

FOR

ROAD AND UTILITY CONSTRUCTION

REVISIONS

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CITY OF NEWARK
Delaware

DETAIL STANDARDS

FOR

ROAD AND UTILITY CONSTRUCTION

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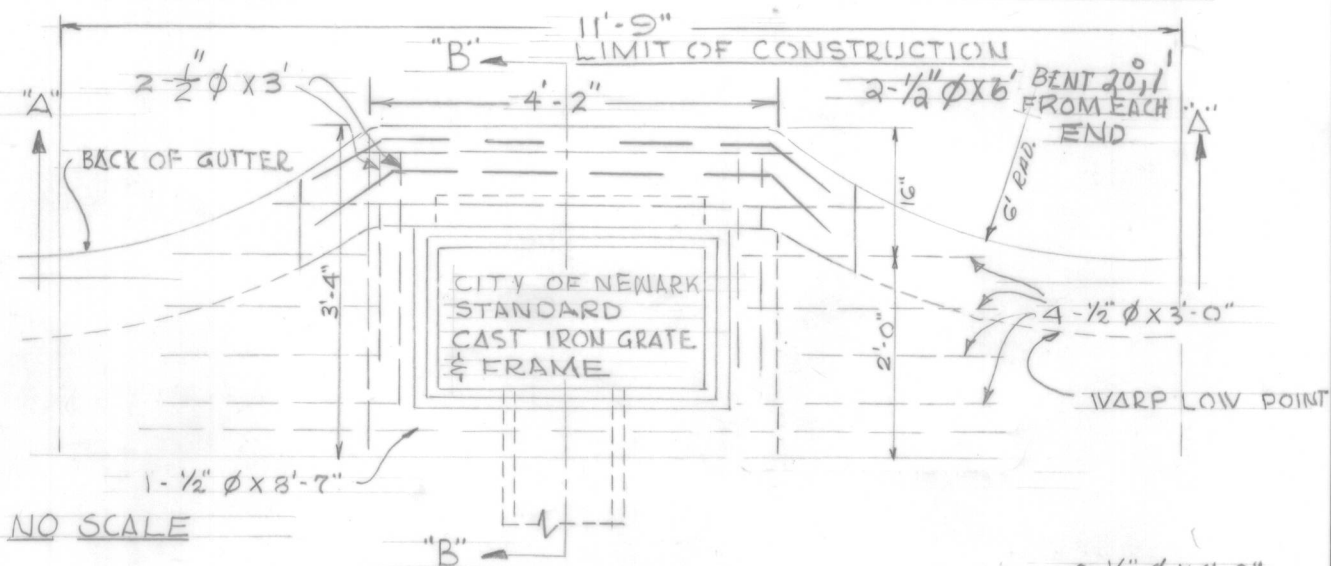
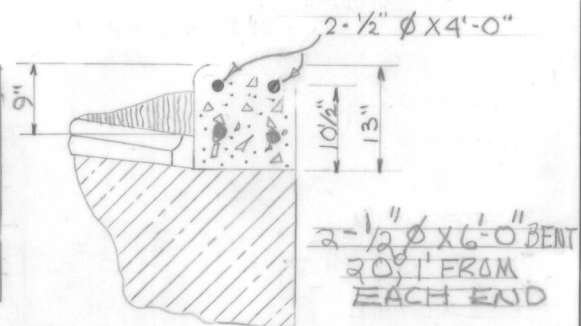


TABLE FOR REINFORCEMENT

TYPE	SIZE	LENGTH	QTY	TOTAL LTH	WT.
ROUND BAR	1/2"	4'-0"	2	8'-0"	5.3
"	1/2"	3'-0"	12	36'-0"	24.0
"	1/2"	8'-7"	1	8'-7"	5.7
"	1/2"	6'-0" BENT	2	12'-0"	8.0
TOTAL	1/2"	—	17	60'-7"	43.0



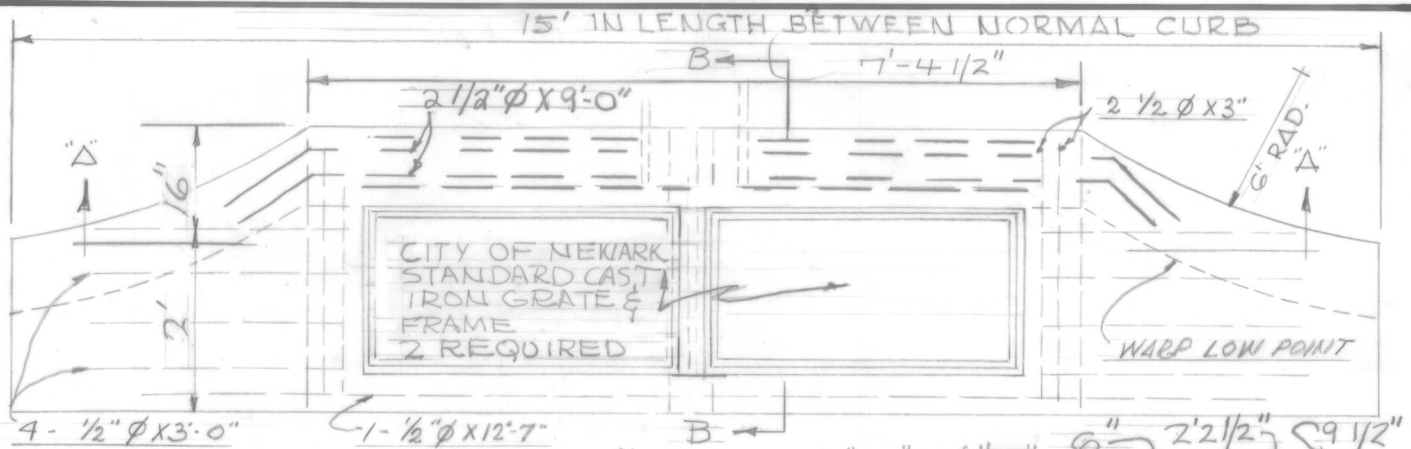
SECTION "C-C"

NOTE:

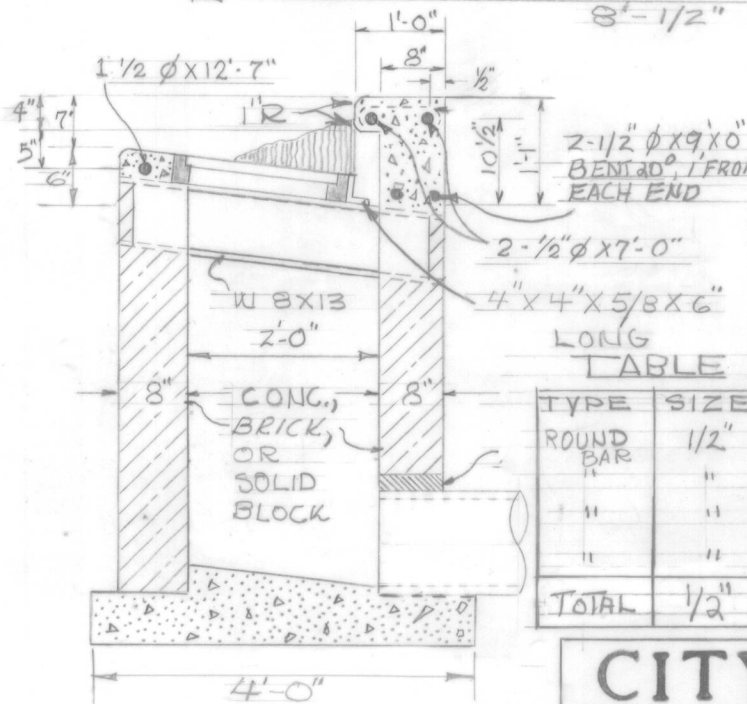
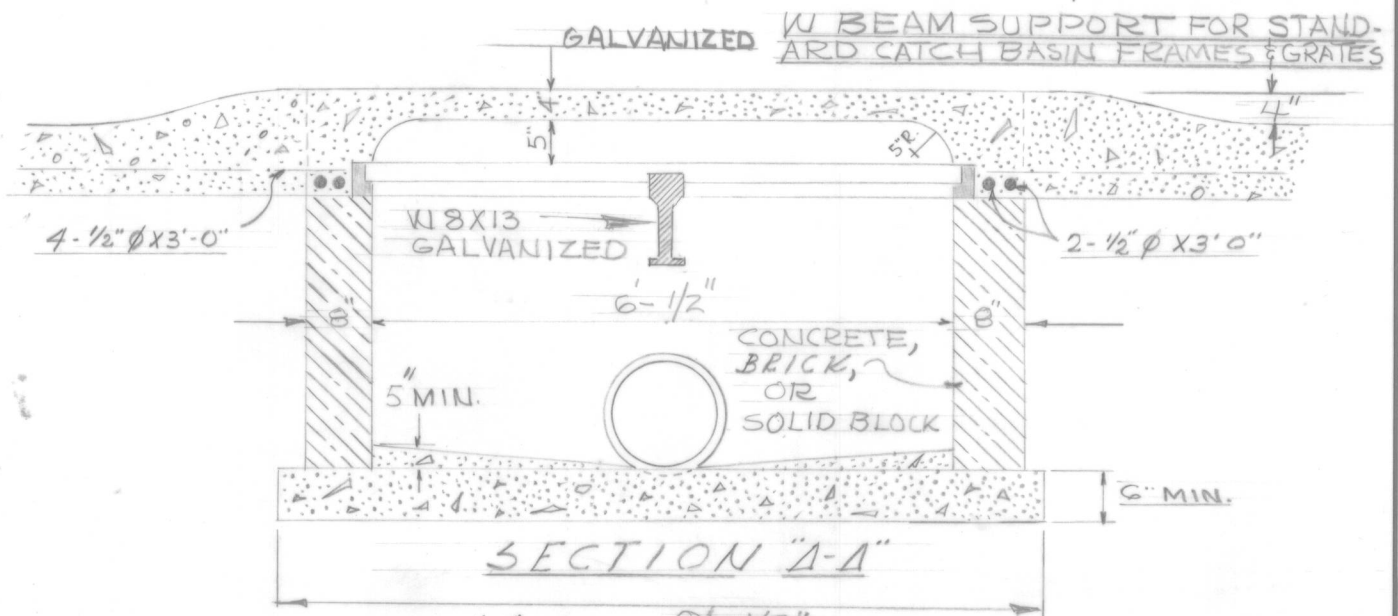
1. REPLACEMENT OF ROLLED CURB ONLY
2. COVER OUTSIDE WITH $\frac{1}{2}$ " CEMENT PLASTER
3. PLACE JOINT AT POINTS WHERE CATCH BASIN GUTTER BECOMES NORMAL GUTTER
4. CONCRETE TO BE 3500 #/A/E

5. CATCH BASIN MAY BE PRECAST -
CONTRACTOR MUST SUBMIT DETAILED
PLANS TO THE CITY ENGINEER
FOR APPROVAL.

CITY OF NEWARK
ROLLED CURB INLET CATCH
BASIN TYPE - "A"



PLAN VIEW



SECTION "B-B"

NOTE:

- COVER OUTSIDE OF STRUCTURE WITH 1/2" CEMENT PLASTER COAT.
- ALL CONCRETE TO BE 3500 # A/E

TABLE FOR REINFORCEMENT

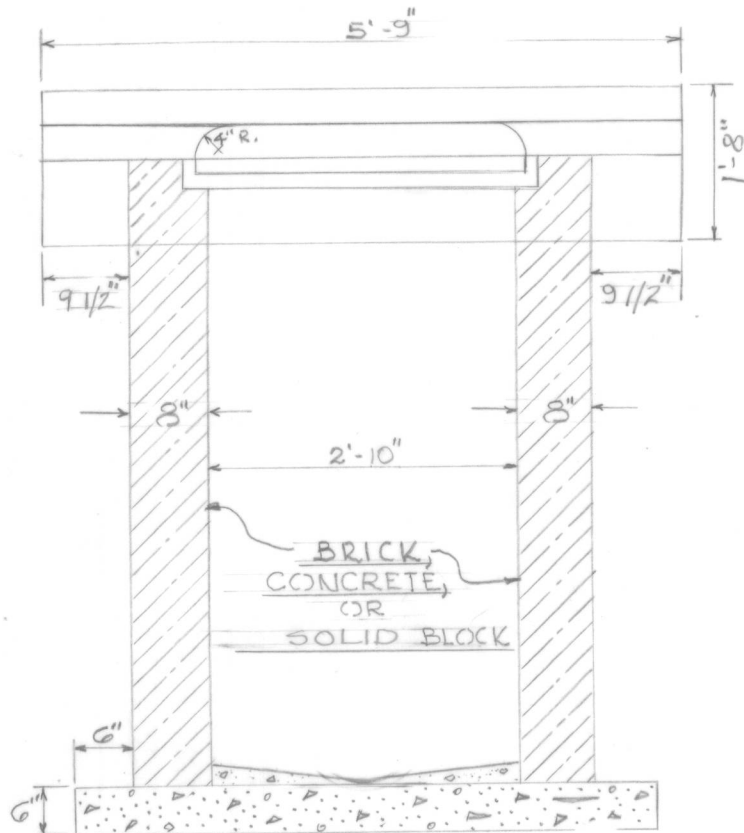
TYPE	SIZE	LENGTH	QTY.	TOTAL LENGTH
ROUND BAR	1/2"	3'-0"	12	36'-0"
"	"	7'-0"	2	14'-0"
"	"	9'-0" (BENT)	2	18'-0"
"	"	12'-7"	1	12'-7"
TOTAL	1/2"	—	17	81'-7"

CITY OF NEWARK

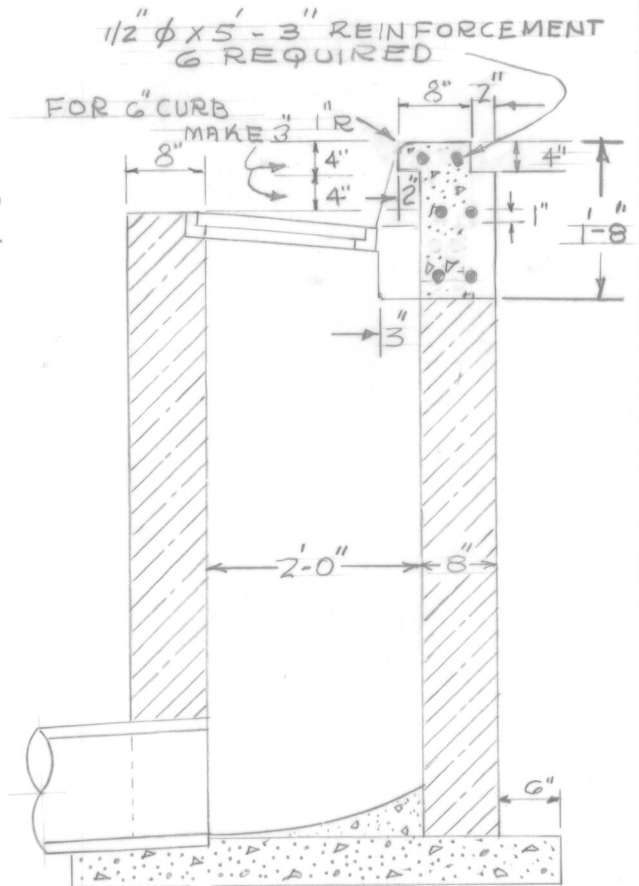
DOUBLE ROLLED CURB

CATCH BASIN

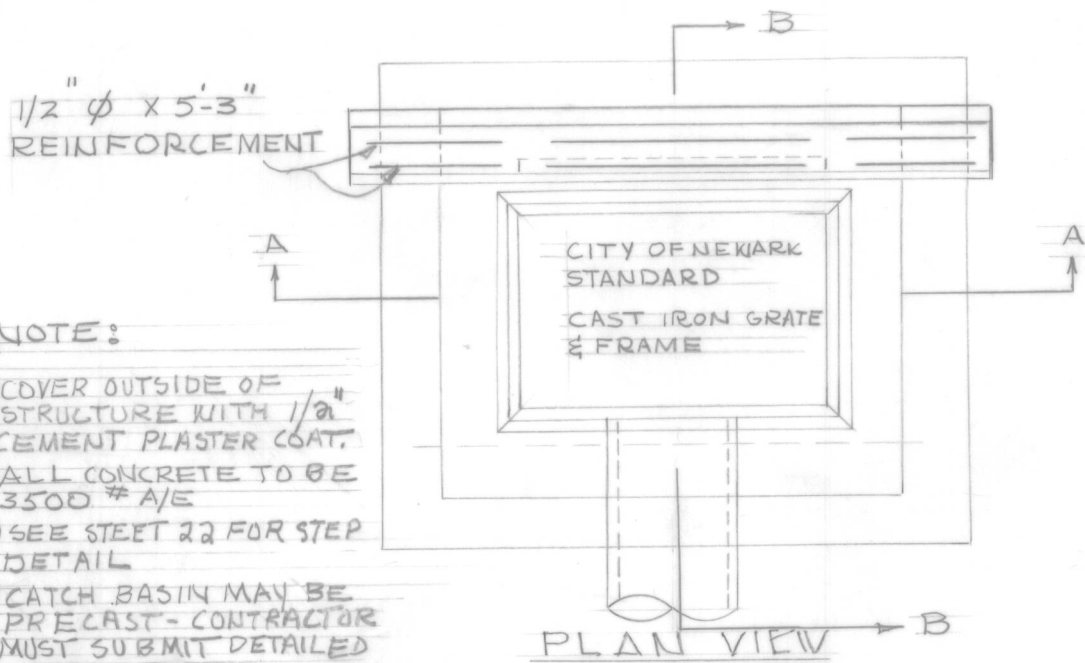
(2)



SECTION A-A



SECTION B-B



NO SCALE

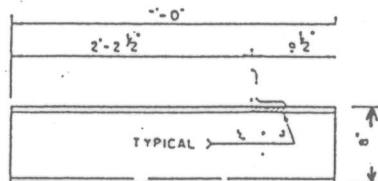
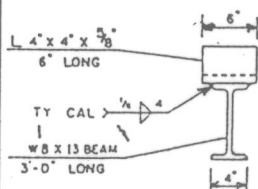
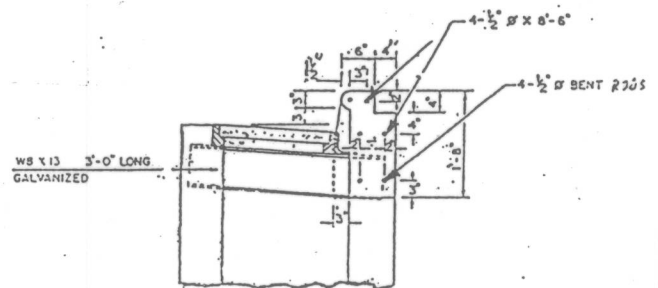
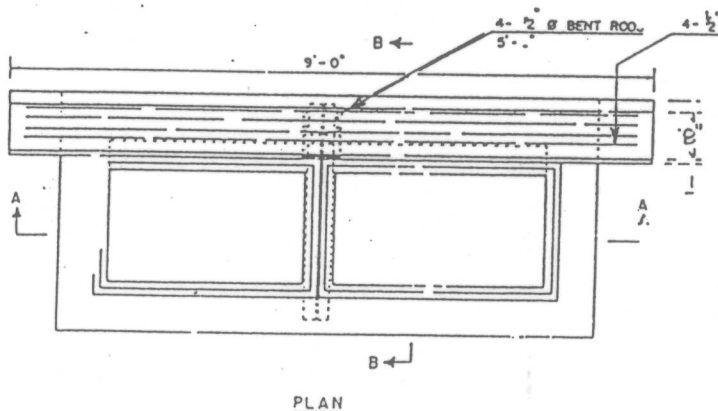
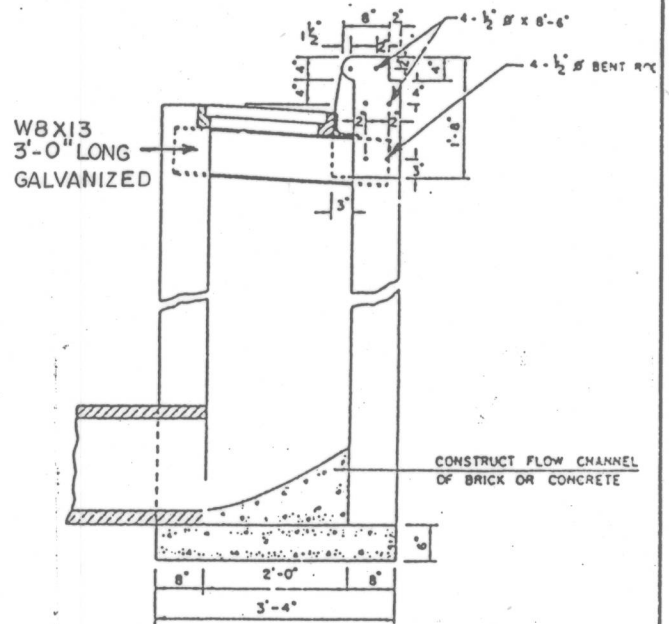
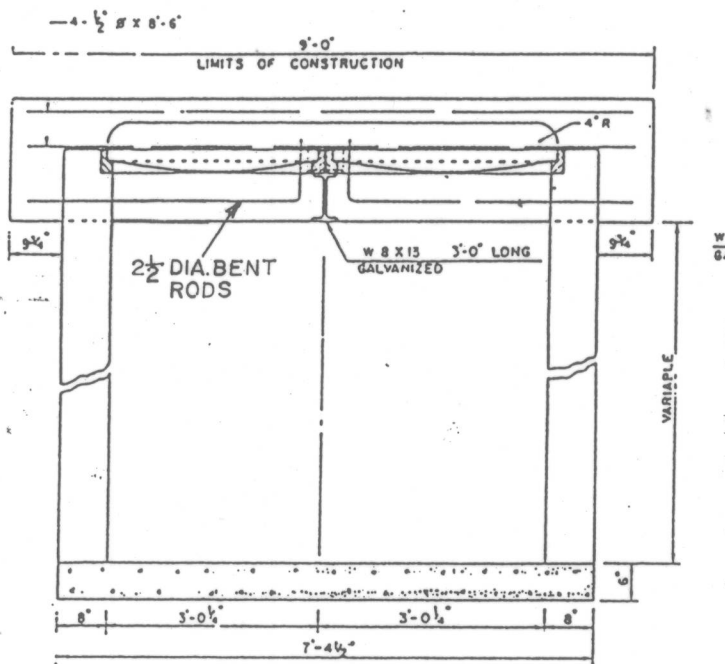
NOTE:

- 1) COVER OUTSIDE OF STRUCTURE WITH 1/2" CEMENT PLASTER COAT.
- 2) ALL CONCRETE TO BE 3500 # A/E
- 3) SEE STEEL 22 FOR STEP DETAIL
- 4) CATCH BASIN MAY BE PRECAST - CONTRACTOR MUST SUBMIT DETAILED PLANS TO THE CITY ENGINEER FOR APPROVAL

CITY OF NEWARK

VERTICAL CURB INLET CATCH BASIN TYPE "A"

3



TO BE GALVANIZED AFTER WELDING

W BEAM SUPPORT FOR STANDARD CATCH BASIN FRAMES AND GRATES

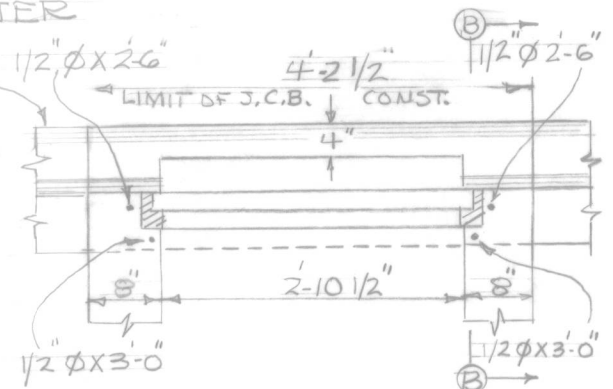
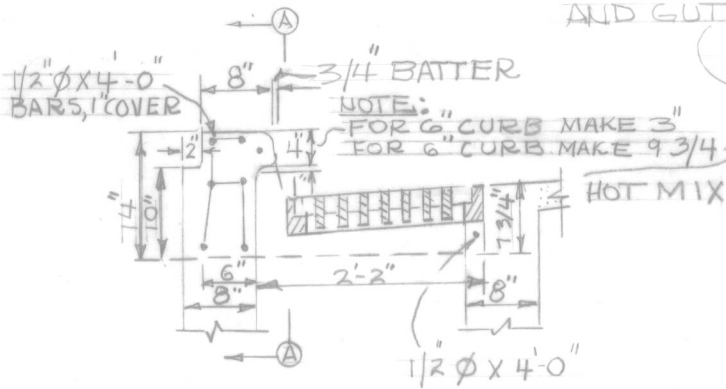
NOTE:

1. ALL CONCRETE MUST BE 3500 P.S.I. A/E
2. COVER OUTSIDE OF STRUCTURE WITH 1/2 PLASTER COAT.
3. CATCH BASIN MAY BE PRECAST- CONTRACTOR MUST SUBMIT DETAILED PLANS TO CITY ENGINEER FOR APPROVAL.

CITY OF NEWARK

DOUBLE VERTICAL CURB INLET ④
CATCH BASIN "DOUBLE A"

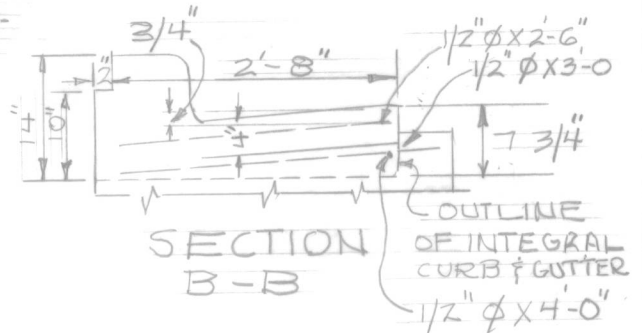
INTEGRAL CURB AND GUTTER



NOTE:

1. USE STANDARD C.B. FRAME & GRATE
2. COVER OUTSIDE OF STRUCTURE WITH 1/2" CEMENT PLASTER COAT
3. ALL CONCRETE TO BE 3500# A/E
4. CATCH BASIN MAY BE PRECAST. CONTRACTOR MUST SUBMIT DETAILED PLANS TO THE CITY ENGINEER FOR APPROVAL

SECTION A-A

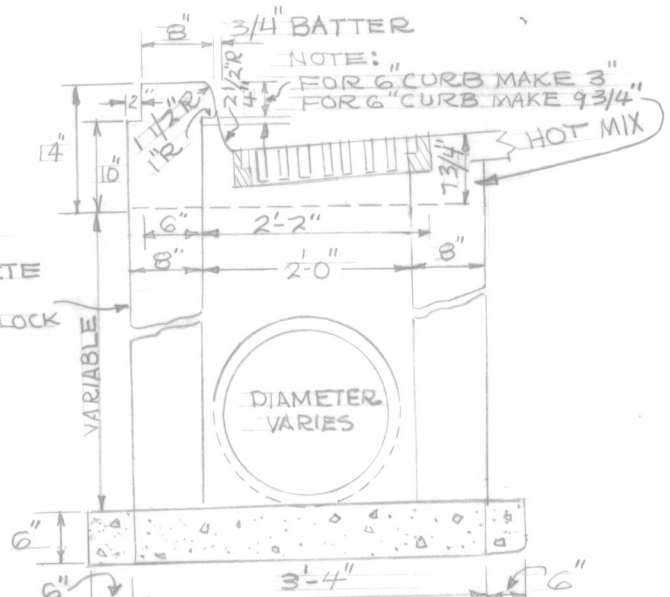


SECTION B-B

SEE PLATE
22 FOR STEP
DETAIL



J. MODIFIED CATCH BASIN
FOR INTEGRAL CURB
AND GUTTER ONLY

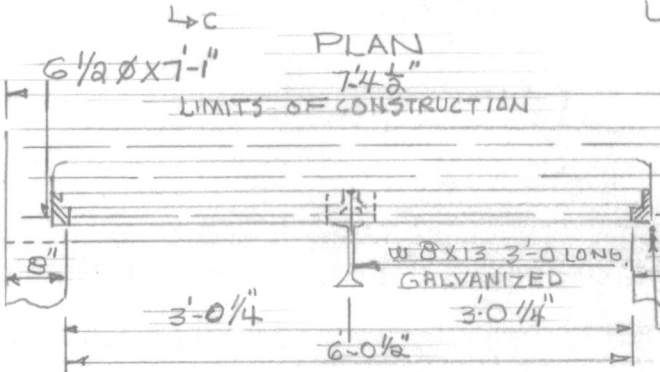
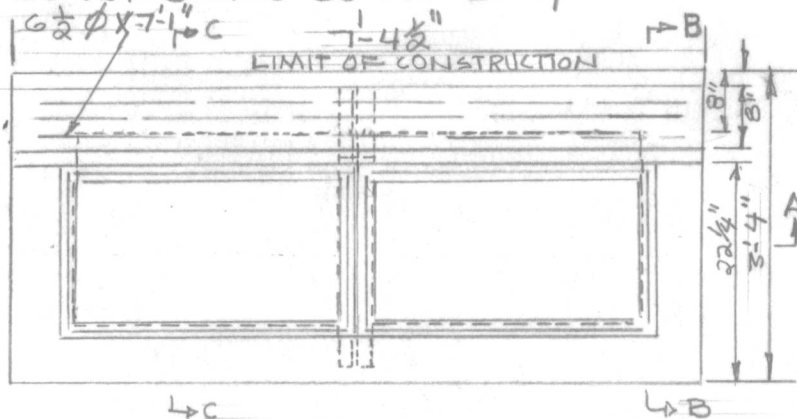


J. CATCH BASIN FOR
INTEGRAL CURB & GUTTER

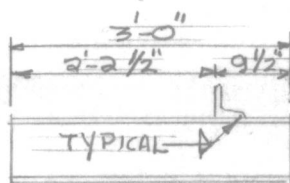
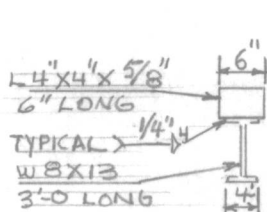
CITY OF NEWARK

INTEGRAL CURB INLET
CATCH BASIN - TYPE "J"

DOUBLE J CATCH BASIN FOR INTEGRAL CURB AND GUTTER ONLY



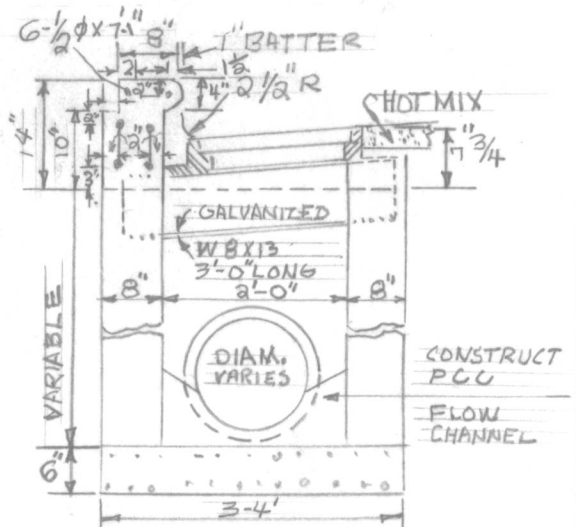
SECTION A-A



TO BE GALVANIZED AFTER WELDING

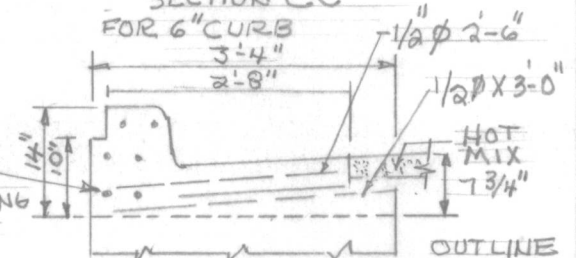
W. BEAM SUPPORT FOR STANDARD CATCH BASIN FRAMES & GRATES

REFER TO SECTION C-C FOR REINFORCING STEEL



SECTION C-C FOR 8" CURB

SECTION C-C FOR 6" CURB



SECTION B-B

OUTLINE OF INT. CURB & GUTTER

NOTE:

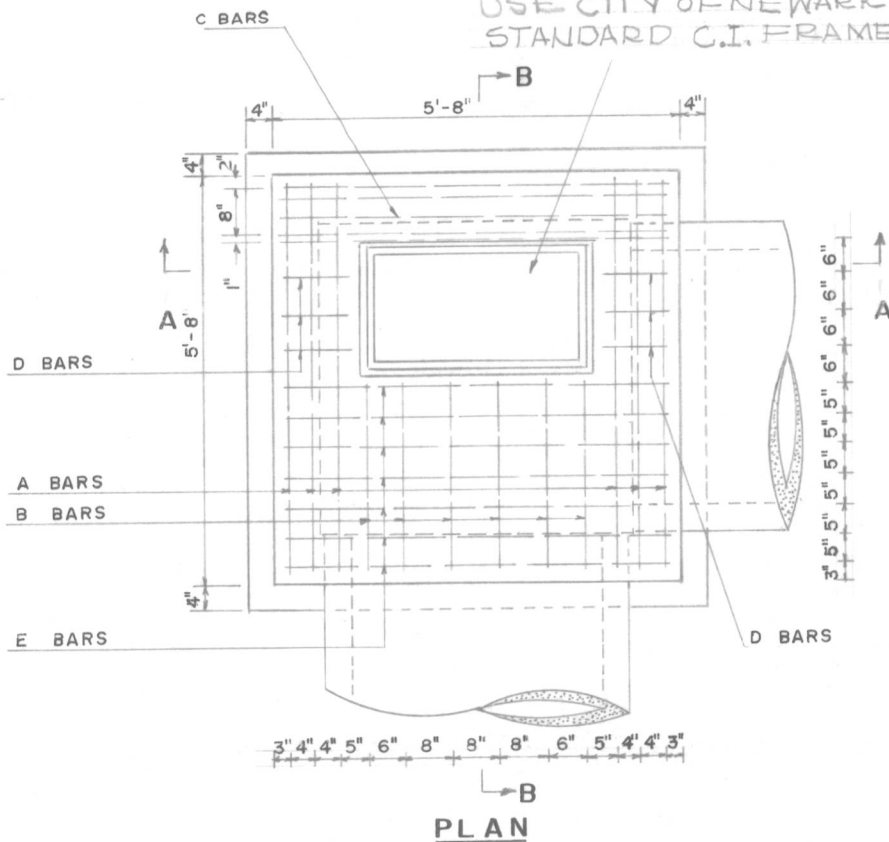
- 1) ALL CONCRETE TO BE 3500 #/E
- 2) COVER OUTSIDE OF STRUCTURE WITH 1/2" CEMENT PLASTER COAT
- 3) CATCH BASIN MAY BE PRECAST- CONTRACTOR MUST SUBMIT DETAILED PLANS TO CITY ENGINEER FOR APPROVAL

CITY OF NEWARK

DOUBLE INTEGRAL CURB INLET CATCH BASIN-TYPE DOUBLE J

6

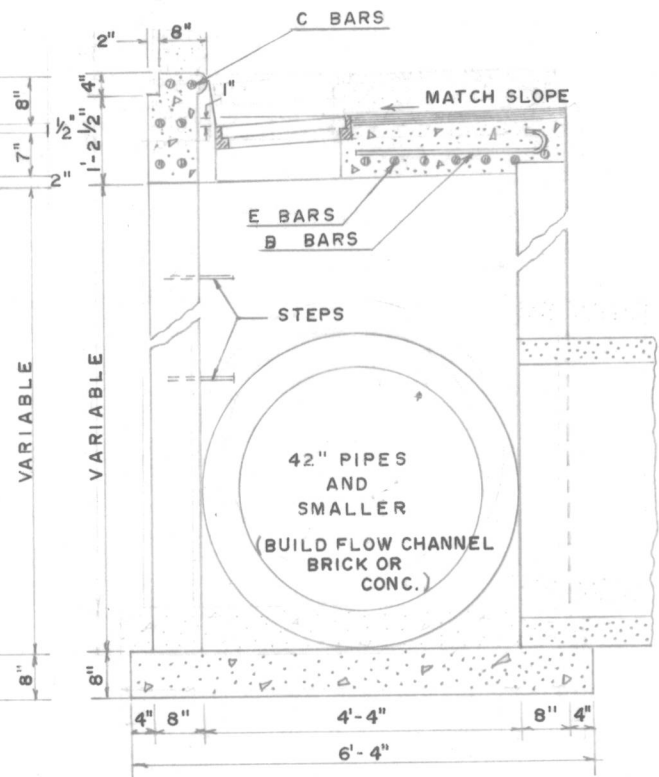
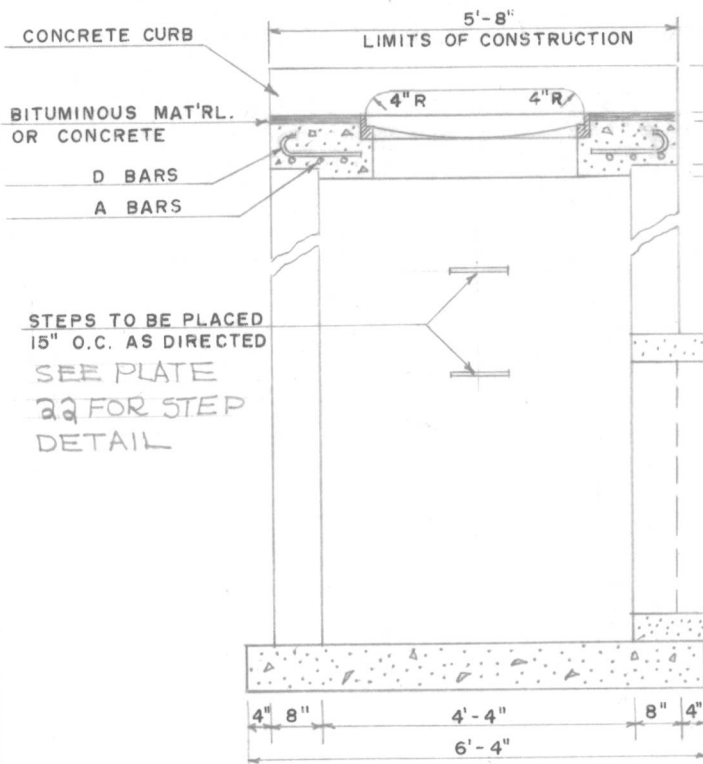
USE CITY OF NEWARK
STANDARD C.I. FRAME & GRATE



BILL OF MATERIAL				
BENT BARS			BENDING DIAGRAM	
NO	SIZE	LEN'H	MARK	ALL DIMENSIONS ARE OUT-OUT
7	5/8	6'-6"	E	8" 5'-2" 8"
6	"	5'-11"	A	8" 5'-3" 8"
6	"	3'-4"	B	2'-8"
8	"	1'-9"	D	1'-1"
STRAIGHT BARS				
NO	SIZE	LEN'H	MARK	
6	5/8	5'-4"	C	

NOTE: ALL REINFORCING STEEL TO BE INCLUDED IN UNIT PRICE BID FOR CATCH BASIN

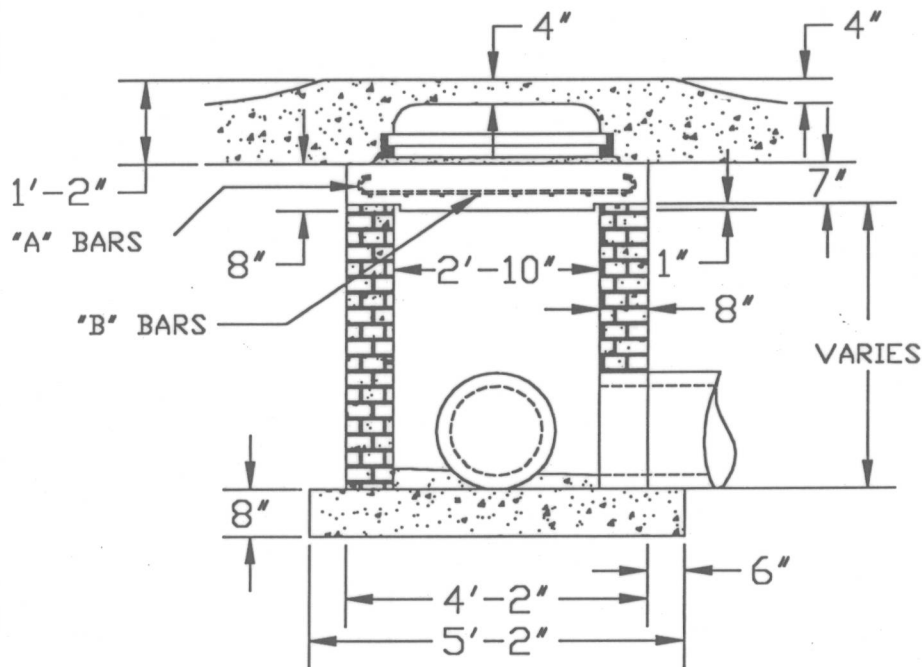
NOTE:
CATCH BASIN MAY BE
PRECAST-CONTRACTOR
MUST SUBMIT DETAILED
PLANS TO THE CITY
ENGINEER FOR APPROVAL.



NOTE:
1. COVER OUTSIDE OF STRUCTURE
WITH 1/2" CEMENT PLASTER COAT.
UPPER 12" OF STRUCTURE TO BE
OF P.C.C. MASONARY
2. ALL CONCRETE TO BE 3500 #
A/E.

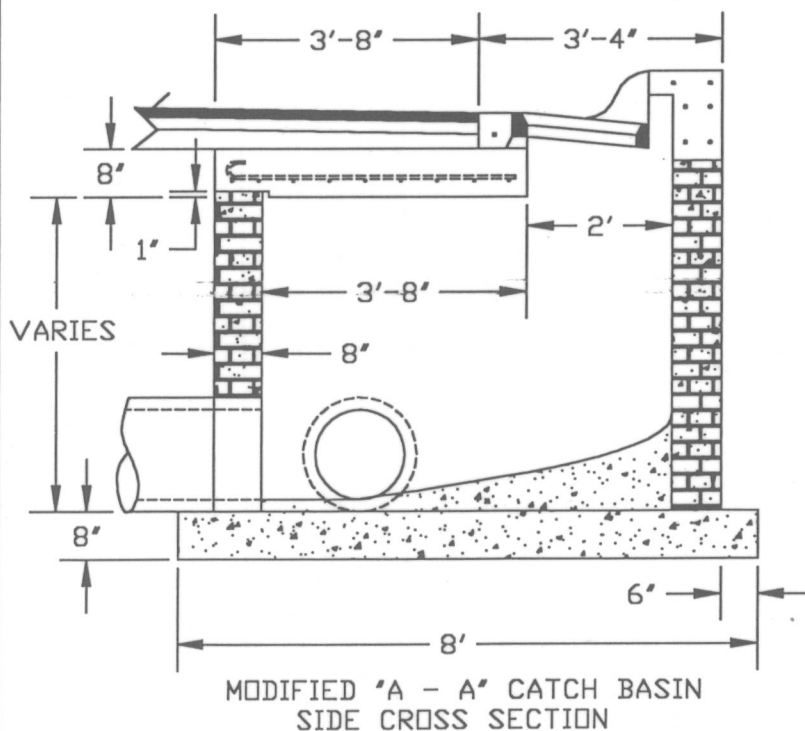
CITY OF NEWARK

A-A CATCH BASIN-DETAILS

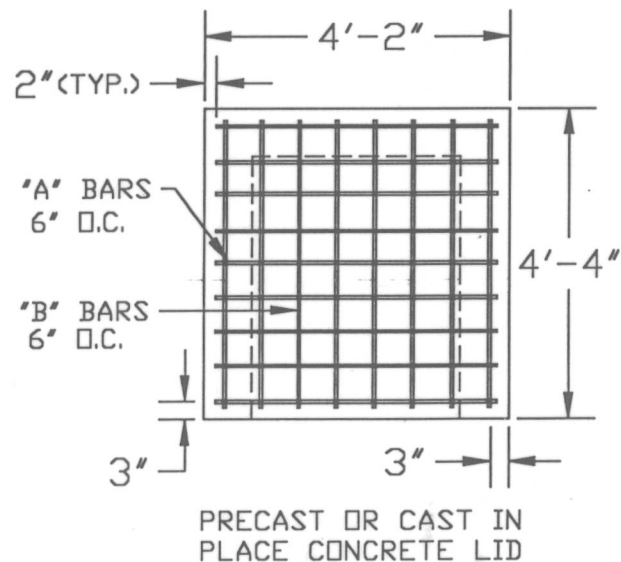


MODIFIED "A - A" CATCH BASIN
FRONT CROSS SECTION

BILL OF MATERIALS				
BENT BARS		BENDING DIAGRAM		
NO.	SIZE	LENGTH	MARK	ALL DIMENSIONS ARE OUT TO OUT
8	5/8"	5'-2"	A	
9	5/8"	4'-8"	B	
NOTE: ALL REINFORCING STEEL TO BE INCLUDED IN UNIT PRICE BID FOR C.B.				



MODIFIED "A - A" CATCH BASIN
SIDE CROSS SECTION



PRECAST OR CAST IN
PLACE CONCRETE LID

ALL CONCRETE TO BE 3500 PSI

IF PRECAST CATCH BASINS ARE USED,
SHOP DRAWINGS MAY BE REQUIRED TO BE
FURNISHED TO THE CITY FOR APPROVAL

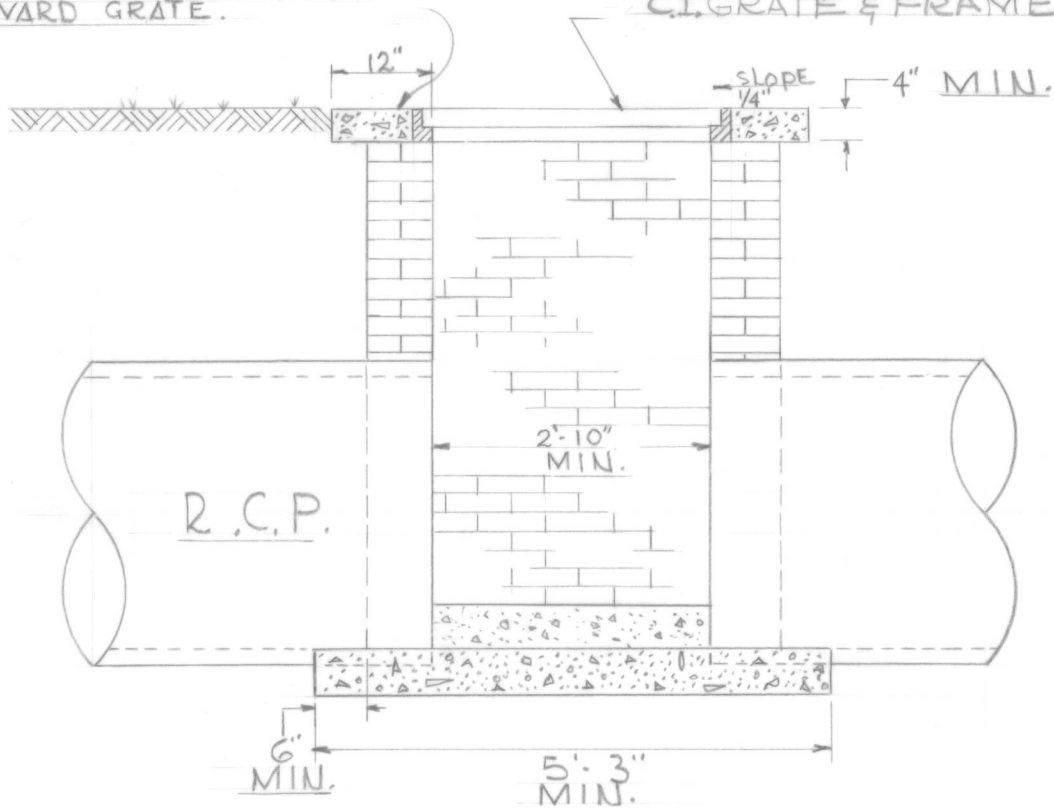
CITY OF NEWARK

TYPE "A-A" MODIFIED CATCH
BASIN WITH ROLLED CURB

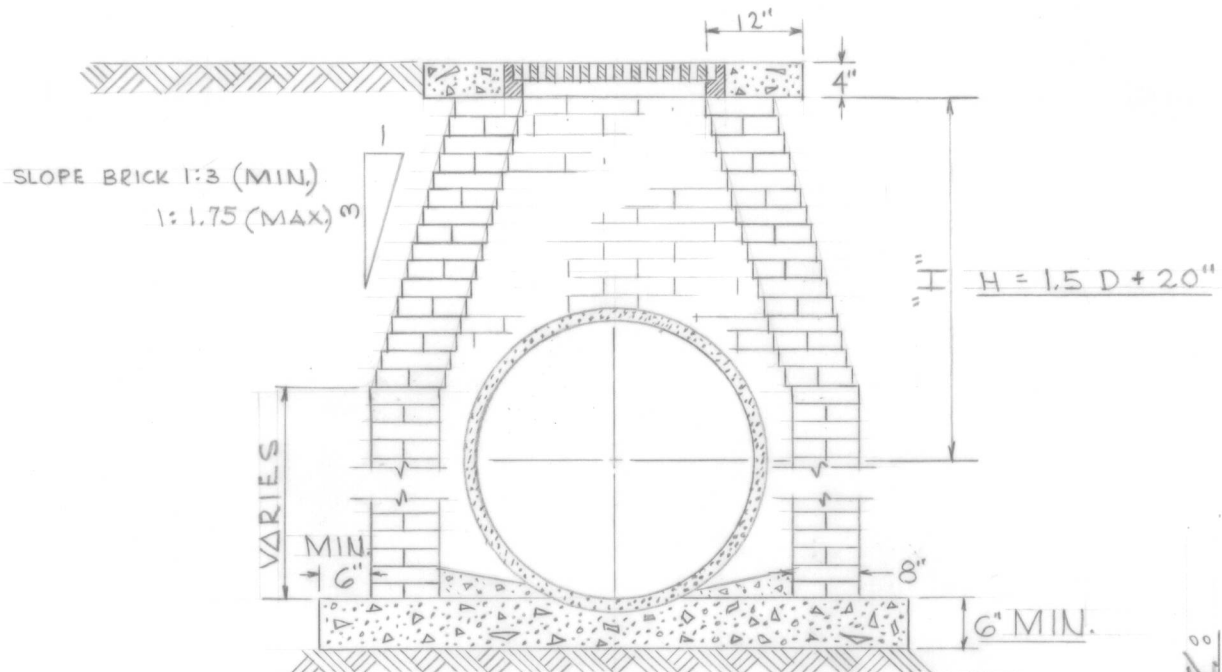
7A

NOTE: SLOPE $\frac{1}{4}$ " - 4 SIDES
TOWARD GRATE.

CITY OF NEWARK STANDARD
C.I. GRATE & FRAME



THRU SECTION ~ SIDE ELEVATION



THRU SECTION ~ END ELEVATION

NOTE:

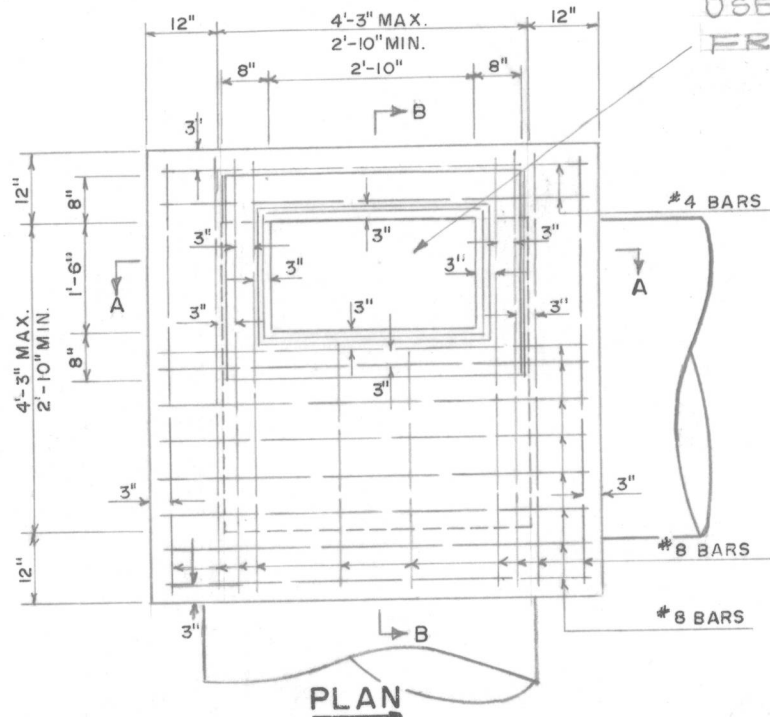
THIS TYPE CATCH BASIN TO BE USED ONLY WHERE DRAINAGE PIPE IS 30" OR
OVER.

NOTE:

1. COVER OUTSIDE WITH $\frac{1}{2}$ " CEMENT PLASTER COAT
2. ALL CONCRETE TO BE 3500 #
3. CATCH BASIN MAY BE PRECAST IF APPROVED BY CITY ENGINEER.

CITY OF NEWARK
STANDARD CATCH BASIN
TYPE "B"

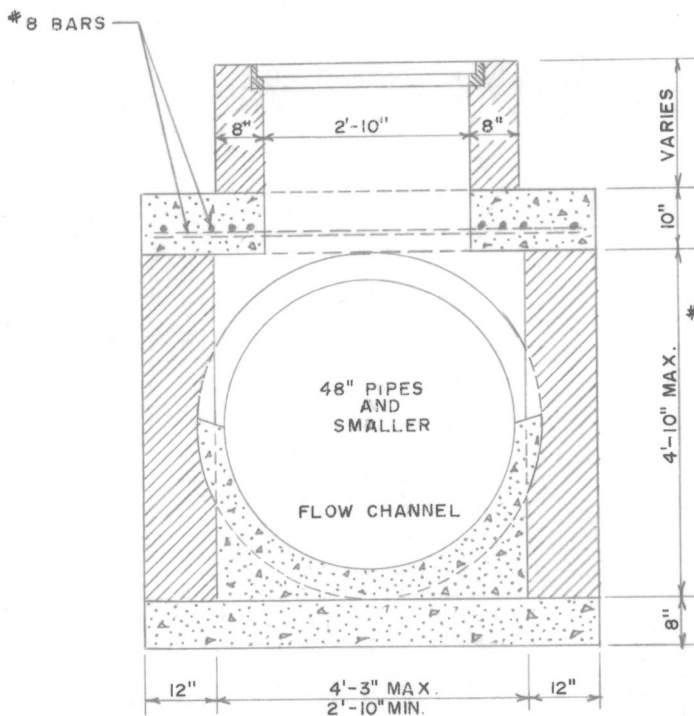
8



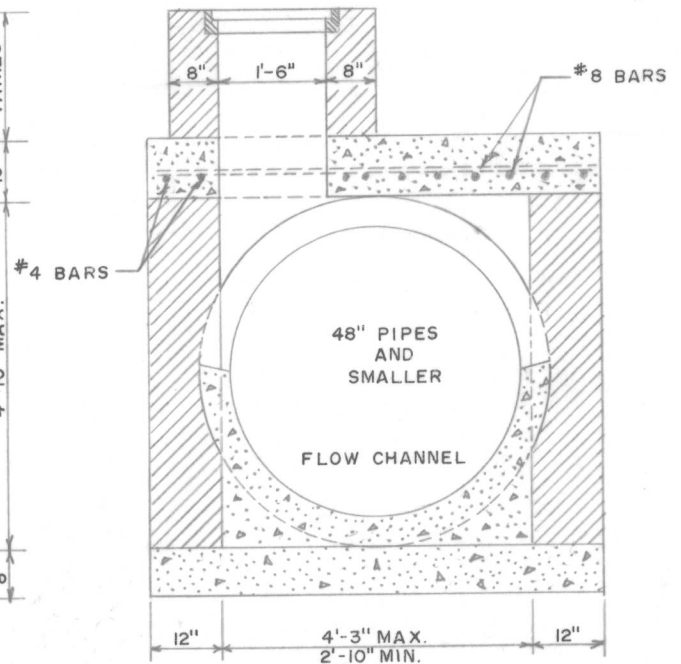
USE CITY OF NEWARK C.I. FRAME AND GRATE

NOTE:

- 1) ALL CONCRETE TO BE 3500# A.E.
- 2) COVER OUTSIDE WITH 1/2" CEMENT PLASTER COAT.
- 3) CATCH BASIN MAY BE PRE-CAST. CONTRACTOR MUST SUBMIT DETAILED PLANS TO THE CITY ENGINEER FOR APPROVAL.



SECTION A-A

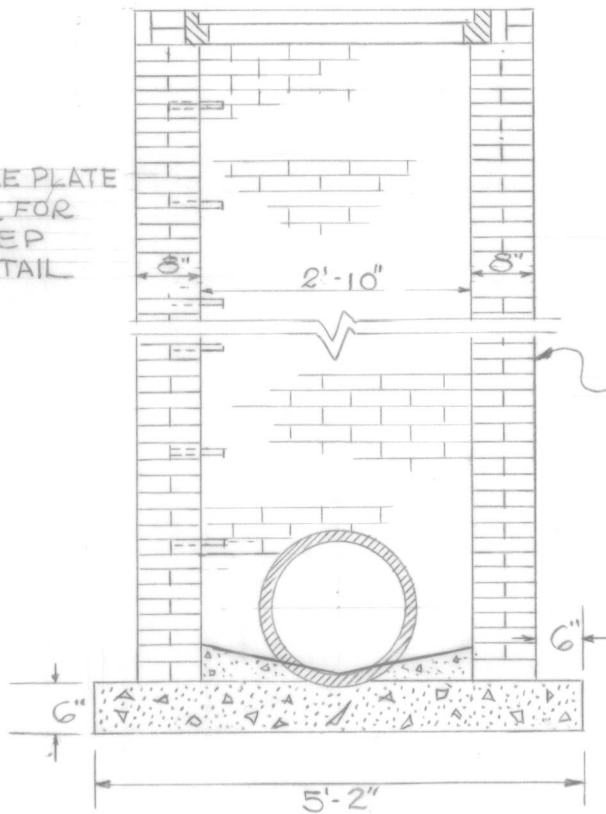


SECTION B-B

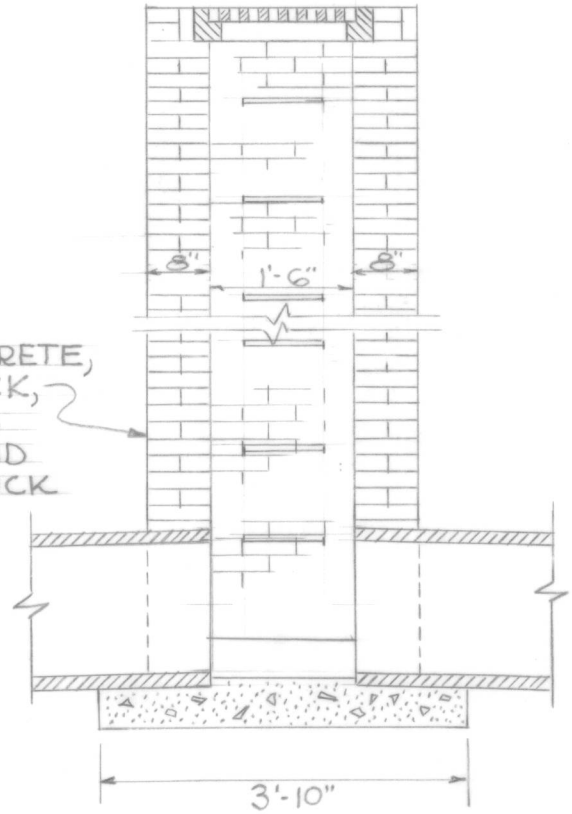
CITY OF NEWARK

B-2 CATCH BASIN

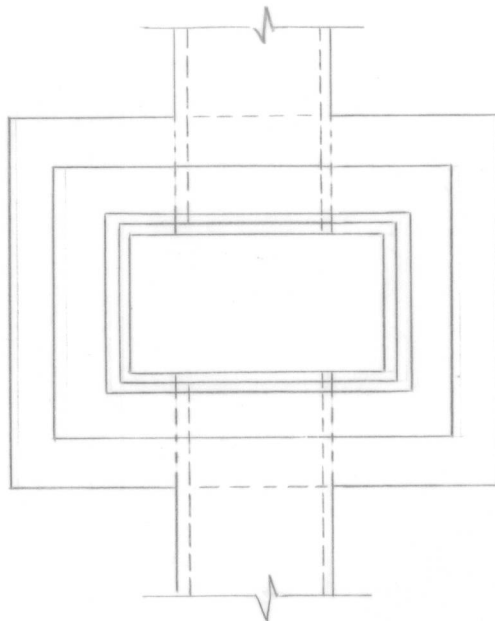
SEE PLATE
22 FOR
STEP
DETAIL



CONCRETE,
BRICK,
OR
SOLID
BLOCK



NO SCALE



NOTES

1. ACTUAL PIPE LAYOUT USED TO SUITE DESIGN REQUIREMENTS.
2. COVER OUTSIDE OF STRUCTURE WITH 1/2" CEMENT PLASTER.
3. ALL CONCRETE TO BE 3500 # A/E
4. CATCH BASIN MAY BE PRECAST- DETAILED PLANS MUST BE SUBMITTED TO THE CITY ENGINEER FOR APPROVAL.

CITY OF NEWARK

STANDARD CATCH BASIN
TYPE "C"

10

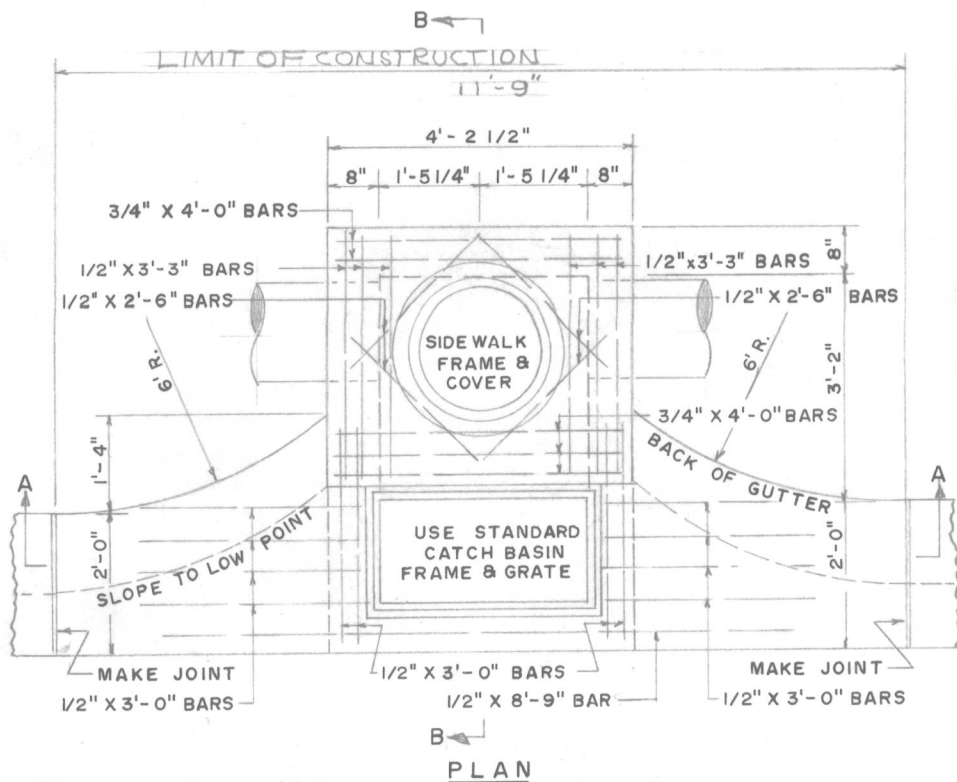
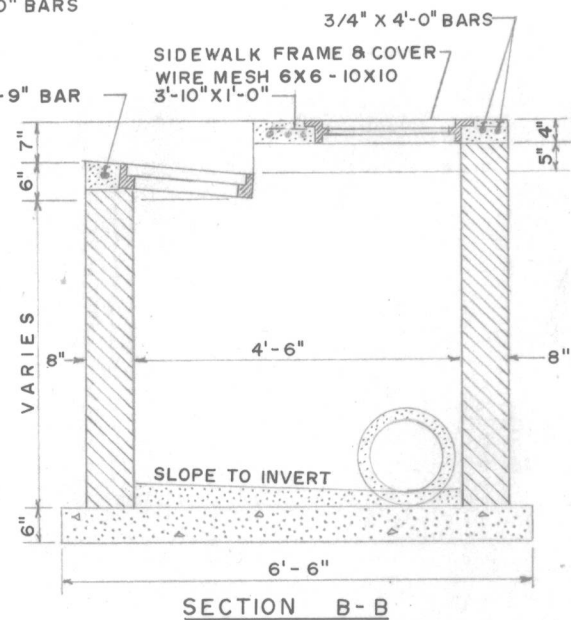
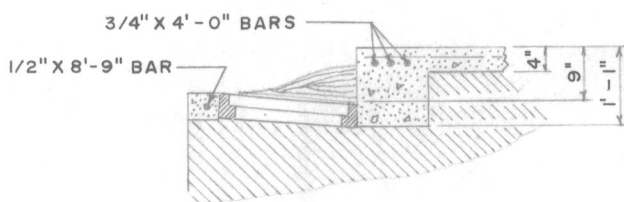
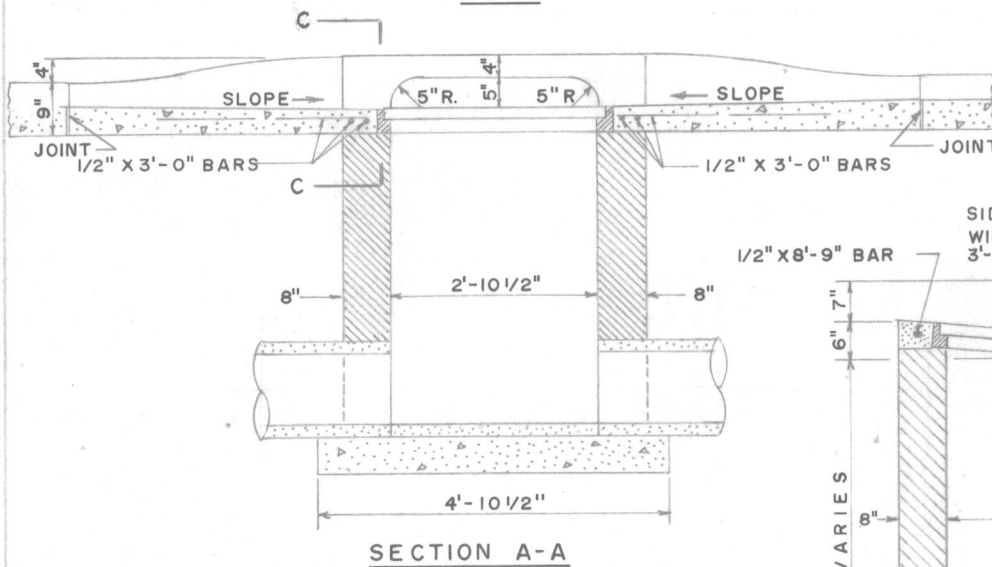


TABLE OF REINFORCEMENT			
SIZE	LENGTH	QUANTITY	TOTAL LENGTH
$1/2"$ $\emptyset$	$2'-6"$	4	$10'-0"$
"	$3'-0"$	12	$36'-0"$
"	$3'-3"$	6	$19'-6"$
"	$8'-9"$	1	$8'-9"$
$3/4"$ $\emptyset$	$4'-0"$	5	$20'-0"$
WIRE MESH	$3'-10"$	1	$3'-10"$
6X6-10X10	$1'-0"$		$1'-0"$

NOTE:
BAR SCHEDULE FOR ESTIMATING PURPOSES ONLY.

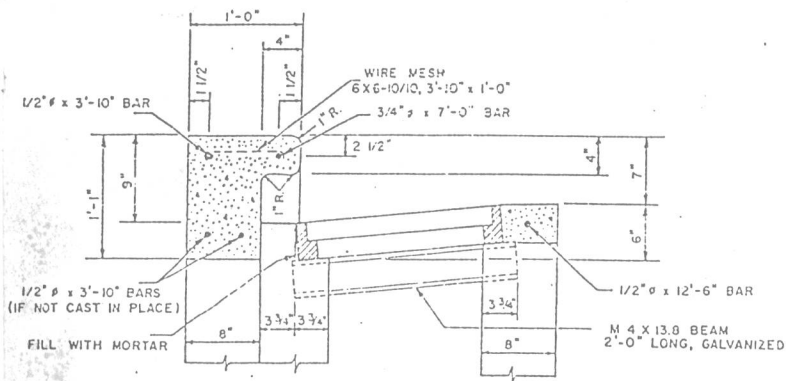
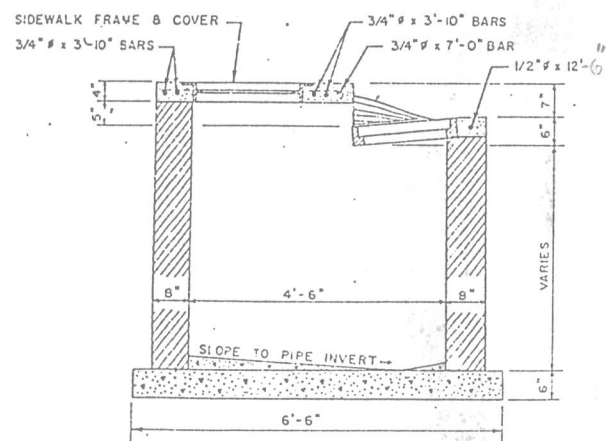
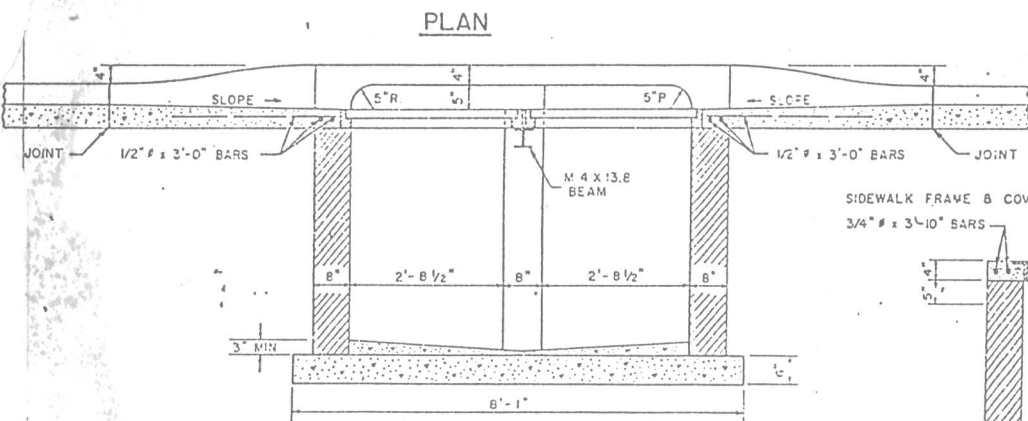
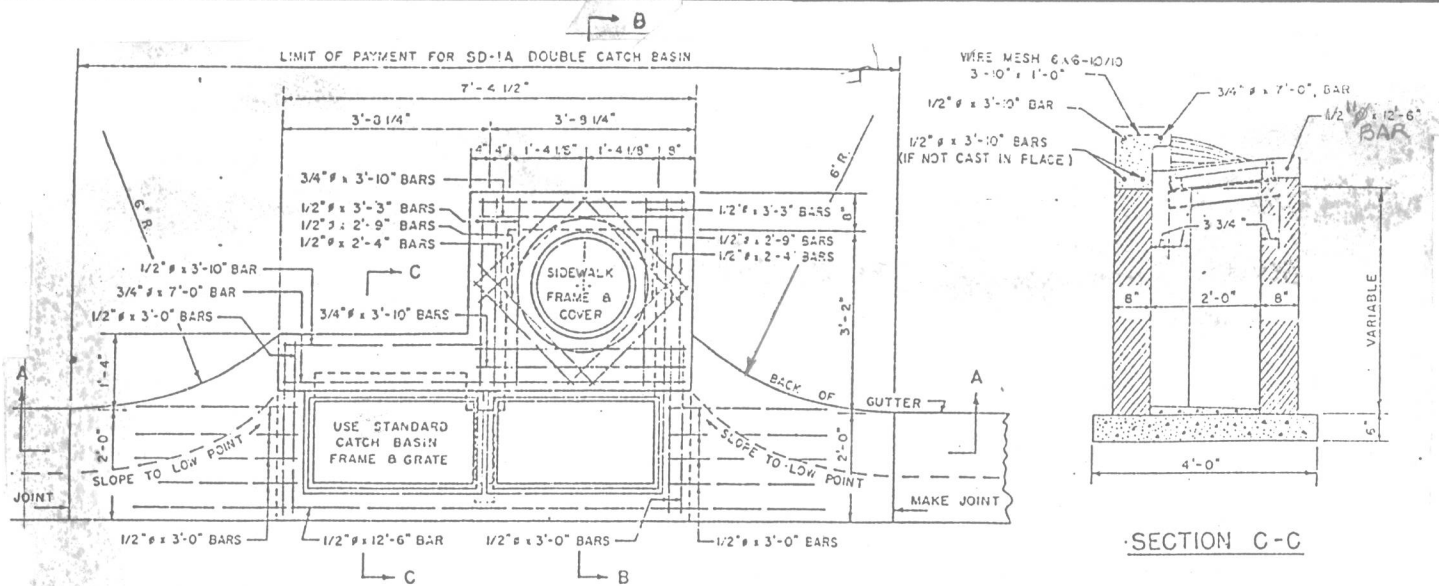


NOTE:

1. COVER OUTSIDE OF STRUCTURE WITH $1/2"$ CEMENT PLASTER COAT. UPPER $12"$ OF STRUCTURE TO BE OF P.C.C. MASONRY.
2. ALL CONCRETE TO BE 3500 A.E.
3. PRECAST CATCH BASIN MAY BE USED IF APPROVED BY THE CITY ENGINEER.

CITY OF NEWARK

CATCH BASIN WITH ADJOINING
MANHOLE FRAME AND COVER



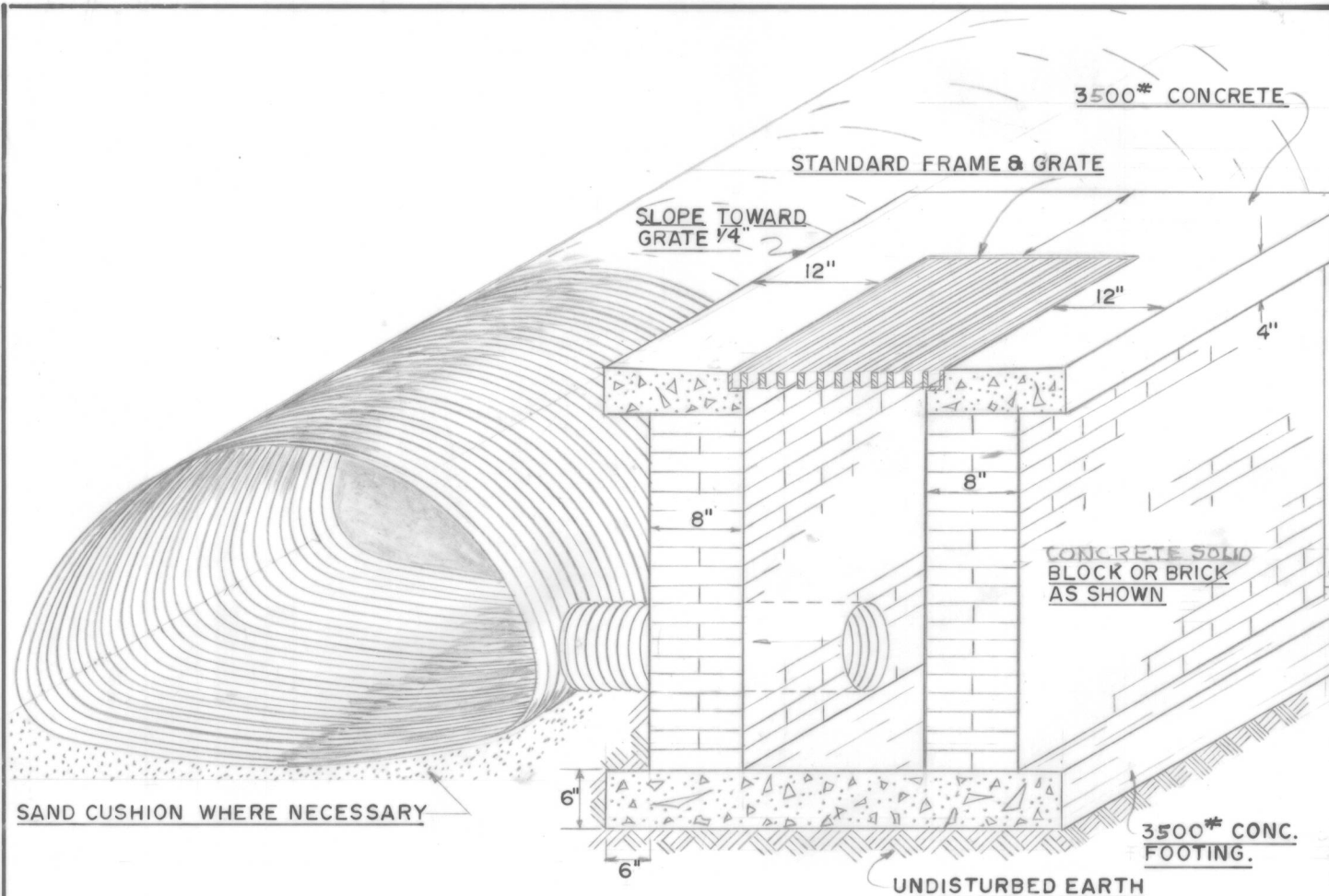
NOTES:

- BUILD COLUMN SUPPORT FOR GRATES INTEGRALLY WITH BACK WALL OF CATCH BASIN.
- SLOPE CONCRETE FLOOR TO INVERT OF OUTLET PIPE.
- PLACE M 4x13.8 2'-0" LONG, GALVANIZED, AS SUPPORT FOR STANDARD CATCH BASIN FRAME AND GRATE. COST TO BE INCLUDED IN UNIT PRICE BID FOR STRUCTURE.
- COVER OUTSIDE OF STRUCTURE WITH 1/2" CEMENT PLASTER COAT.
- UPPER 12" OF STRUCTURE TO BE OF P.C.C. MASONRY.

SIZE	LENGTH	QUANTITY	TOTAL LENGTH
1/2" #	12'-6"	1	12'-6"
"	3'-10"	1	3'-10"
"	3'-3"	6	19'-6"
"	3'-0"	12	36'-0"
"	2'-9"	4	11'-0"
"	2'-4"	4	9'-4"
3/4" #	7'-0"	1	7'-0"
"	3'-10"	4	15'-4"
WIRE MESH 6x6-10/10	3'-10" x 1'-0"	2	7'-8" x 1'-0"

NOTE:
BAR SCHEDULE FOR ESTIMATING PURPOSES ONLY.

CITY OF NEWARK
DOUBLE CATCH BASIN WITH ADJOINING MANHOLE FRAME AND COVER (12)



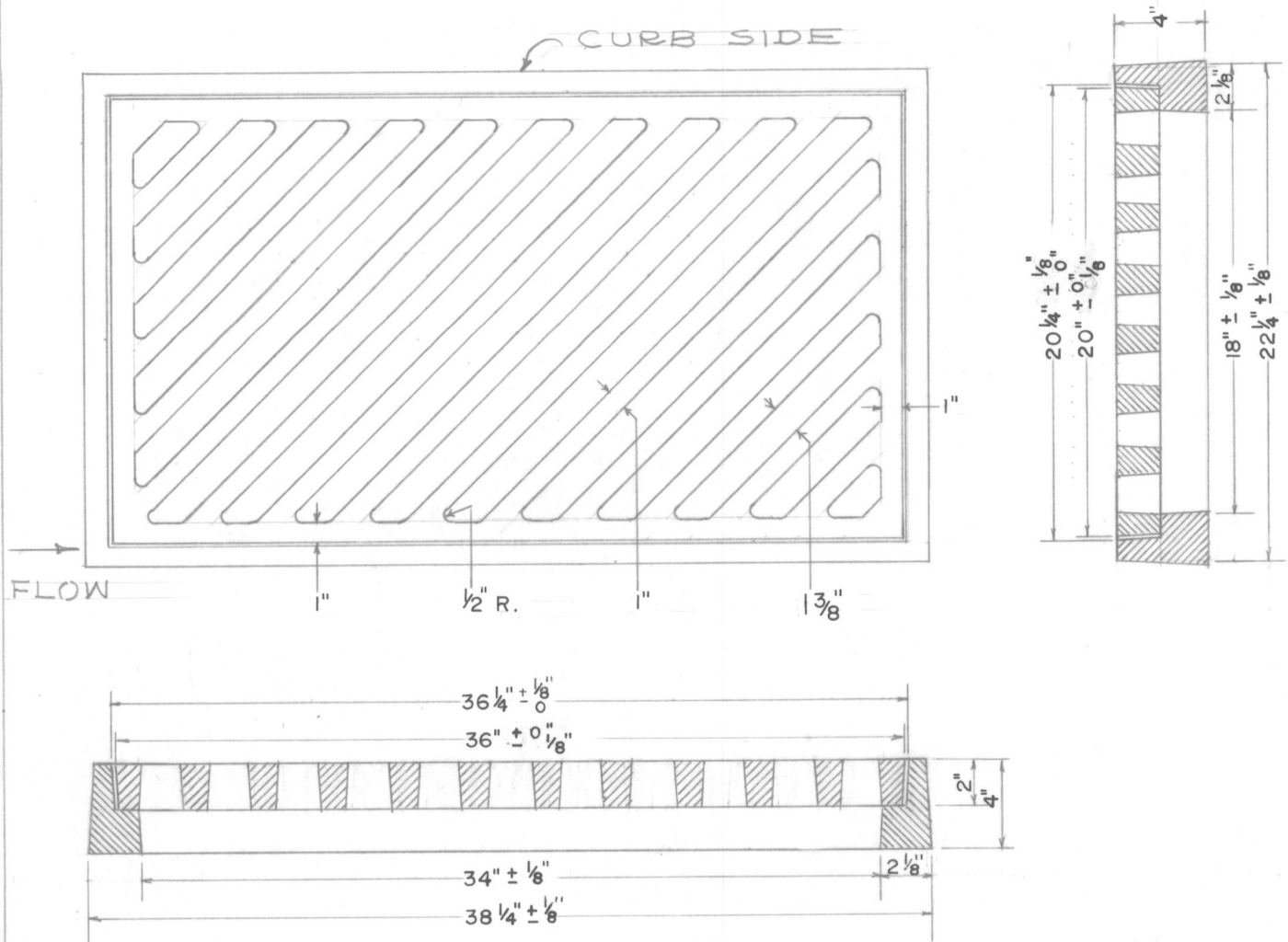
CORRUGATED STEEL PIPE - ARCH PIPE - ATTACHED CATCH BASIN

NOTES

1. CORRUGATED STEEL PIPE COULD BE ALSO A REINFORCED CONCRETE ROUND, OR ARCH PIPE.
2. BACKFILL MATERIAL SHALL BE DRY CLEAN, SELECT BORROW, BORROW OR QUARRY WASTE IF NEEDED, AND AS DIRECTED BY THE ENGINEER
3. LAYING OF PIPE AND BACK FILLING SHALL CONFORM TO COMPACTION STANDARDS TO MEET THE REQUIRED DENSITIES.
4. COVER OUTSIDE C.B. MASONRY WITH 1/2" CEMENT PLASTER COAT
5. CATCH BASIN MAY BE PRECAST-CONTRACTOR MUST SUBMIT DETAILED PLANS TO THE CITY ENGINEER FOR APPROVAL

CITY OF NEWARK

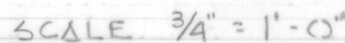
STANDARD ARCHED PIPE & CATCH
BASIN



STANDARD FRAME & GRATE 45° REVERSABLE GRATE

NOTES:

- 1) MATERIAL - GREY IRON ASTM A48
CLASS 30 LOADING - H-20
- 2) NF-24289 MANUFACTURED BY
NEENAH FOUNDRY CO. NEENAH
WISCONSIN OR APPROVED EQUAL



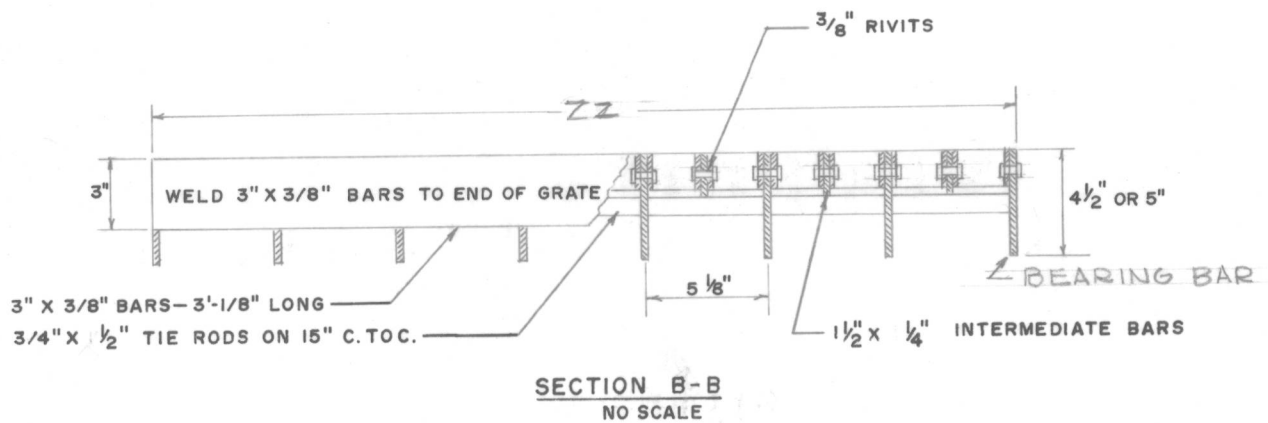
FRONT VIEW

CAST IRON FRAME & GRATE BY CAMPBELL
FOUNDRY OF HARRISON, NEW JERSEY
OR APPROVED EQUAL



-
- Diagram illustrating the cross-section (SECTION A-A) of a flow channel structure. The structure is shown with a central circular flow channel, surrounded by a concrete structure. The dimensions are specified as follows:
- Top width: 5" (left), 3" (middle), 3" (middle), 5" (right).
 - Bottom width: 8" (left).
 - Height: 5" (top), 6" (bottom).
 - Channel height: VARIABLE.
 - Channel width: PW-3 & PW-4 TO BE 5 1/2.
 - Channel material: BUILD FLOW CHANNEL OF BRICK OR CONCRETE.
 - Section label: SECTION A-A.
 - Scale: NO SCALE.

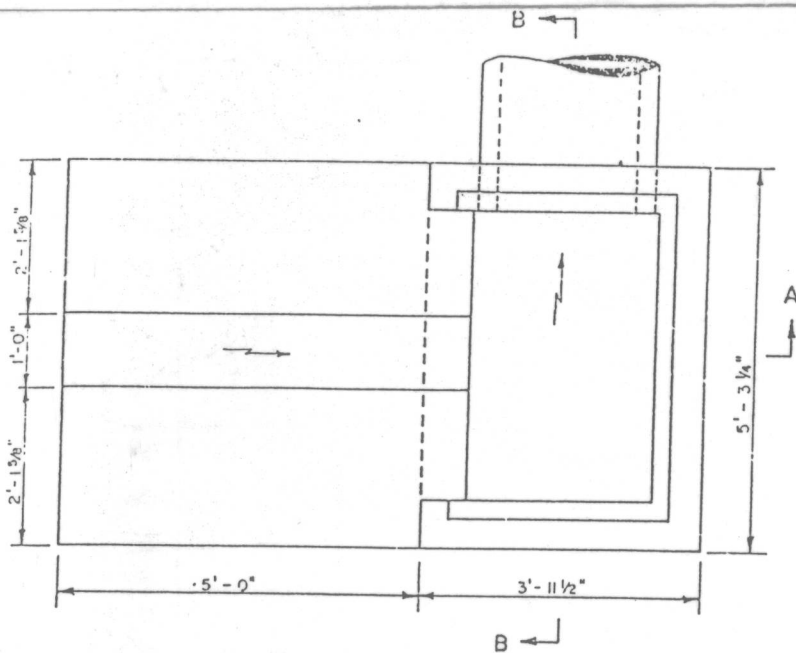
PARKWAY CATCH BASIN FRAME & RETICULINE GRATING



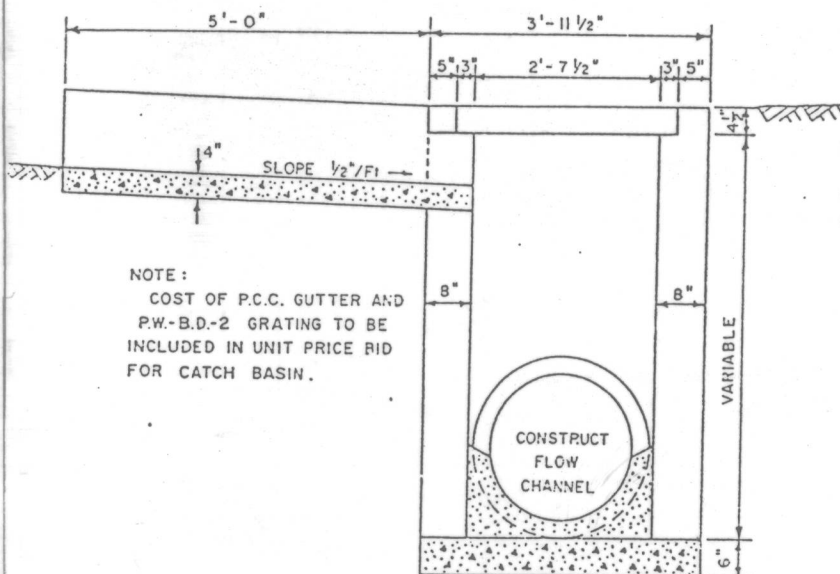
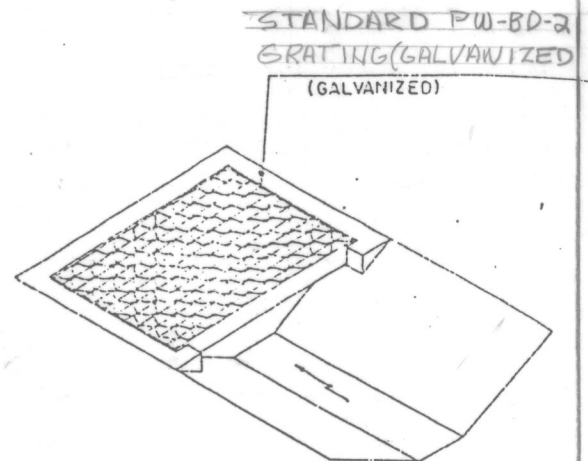
CATCH BASIN AND DRAIN GRATE DATA											
NO. OF CATCH BASINS	LARGEST PIPE SIZE		CATCH BASIN DATA					GRATING DATA			
	A-A	B-B	WALL THICK.	A-A OUTSIDE	B-B OUTSIDE	C-C INSIDE	D-D INSIDE	BEARING BAR SIZES	Y-Y	Z-Z	GRATING AREA & WEIGHT
P. W. - B. D. 1	30"	15"	8"	4'-5 1/2"	3'-3 7/8"	3'-11 1/2"	1'-11 7/8"	4 1/2 x 1/4"	3'-6 1/4"	2'-4 7/16"	8.39 S.F. 178 LBS.
P. W. - B. D. 2	36"	24"	8"	5'-3 1/4"	3'-11 1/2"	3'-11 1/4"	2'-7 1/2"	4 1/2 x 1/4"	4'-4 1/4"	3'-0 1/8"	13.11 S.F. 273 LBS.
P. W. - B. D. 3	42"	24"	8"	5'-8 1/4"	3'-11 1/2"	4'-4 1/4"	2'-7 1/2"	5" x 1/4"	4'-9 1/4"	3'-0 1/8"	14.36 S.F. 311 LBS.
P. W. - B. D. 4	48"	24"	8"	6'-11 1/4"	3'-11 1/2"	4'-9 1/4"	2'-7 1/2"	5" x 1/4"	5'-2 1/4"	3'-0 1/8"	15.62 S.F. 336 LBS.

CITY OF NEWARK

PARKWAY CATCH BASIN & GRATE (17)
DETAILS



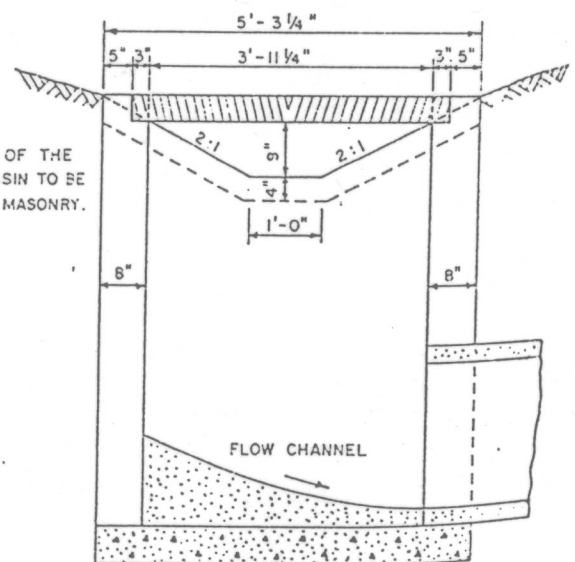
PLAN



NOTE:
COST OF P.C.C. GUTTER AND
P.W.-B.D.-2 GRATING TO BE
INCLUDED IN UNIT PRICE BID
FOR CATCH BASIN.

SECTION A-A

NOTE:
TOP 12" OF THE
CATCH BASIN TO BE
OF P.C.C. MASONRY.



SECTION B-B

NOTES:

- 1) COVER OUTSIDE OF STRUCTURE WITH 1/2" OF CEMENT PLASTER COAT.
- 2) ALL CONCRETE MUST BE 3500 A.E.
- 3) USE P.W.-BD 2 CATCH BASIN GRATE AND DIMENSIONS ON PAGE 17.

CITY OF NEWARK

PARKWAY CATCH BASIN
MODIFIED

(18)

Architectural drawing showing a cross-section of a building. The drawing includes a central vertical shaft and a horizontal section. Dimensions are provided for the vertical and horizontal sections.

Vertical Dimensions (Left Side):

- Top section: $2' - 1\frac{5}{8}"$
- Middle section: $1' - 0"$
- Bottom section: $2' - 1\frac{3}{8}"$

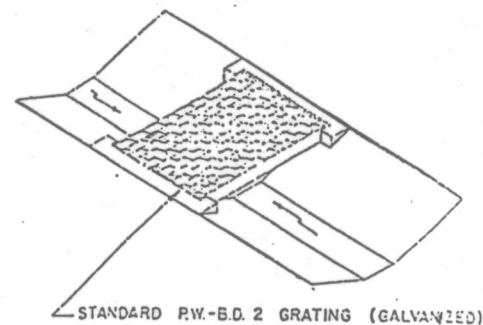
Horizontal Dimensions (Bottom):

- Left side: $5' - 0"$
- Central shaft: $3' - 11\frac{1}{2}"$
- Right side: $5' - 0"$

Other Dimensions:

- Right side vertical dimension: $5' - 3\frac{1}{4}"$

The drawing also includes a section line labeled "A" and a section line labeled "B".



NOTE:
COST OF P.C.C. GUTTER AND
P.W.-B.D.-2 GRATING TO BE
INCLUDED IN UNIT PRICE BID
FOR CATCH BASIN.

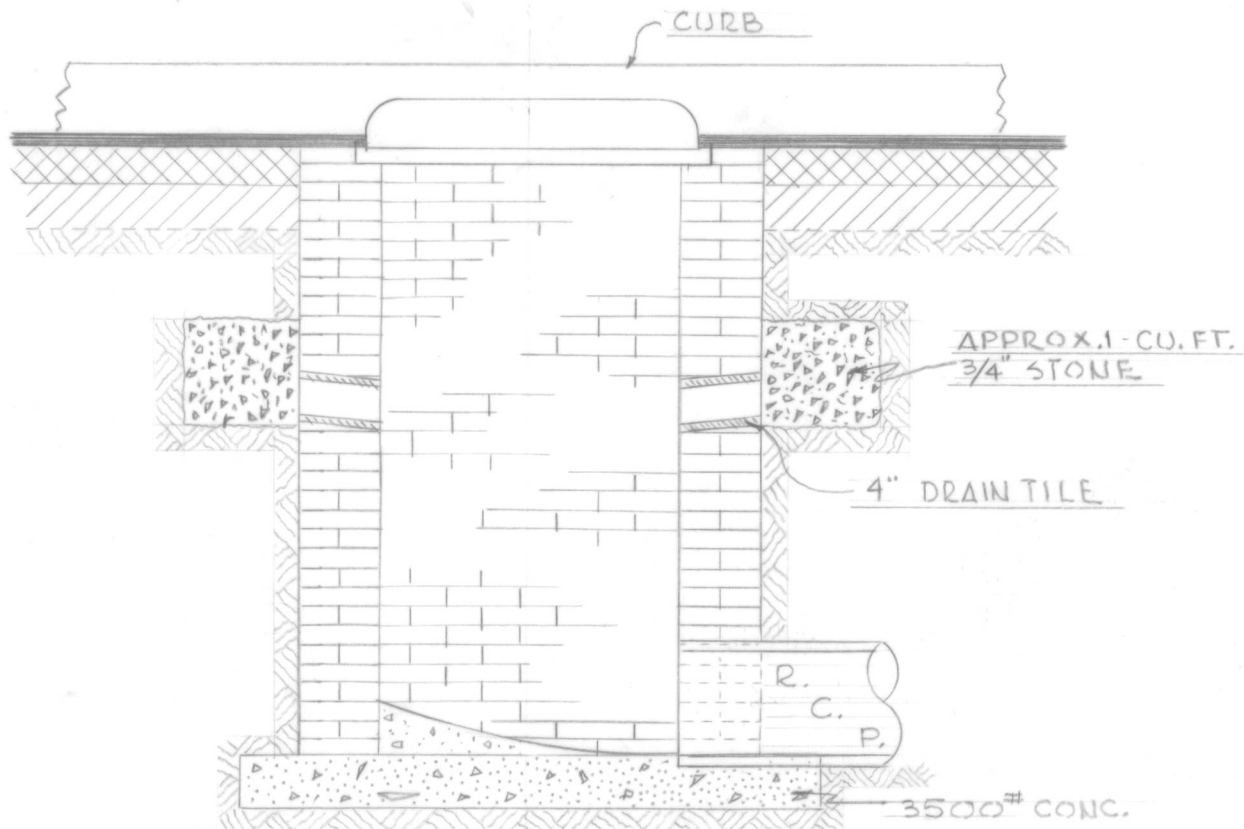
Diagram illustrating a cross-section of a ditch or channel. The ditch is lined with concrete (C.C. MASONRY). The top width is 5'-3 1/4". The bottom width is 1'-0". The depth is 1'-0". The side slopes are 2:1. The ditch is 8" wide at the top. The ditch is 12" of the ditch basin to be C.C. MASONRY.

..NOTES:

- 1) COVER OUTSIDE OF STRUCTURE WITH 1/2" CEMENT PLASTER COAT.
- 2) ALL CONCRETE TO BE 3500 A/E.
- 3) USE P.W. = B.D. - 2 CATCH BASIN GRATE AND DIMENSIONS ON PAGE 17.

PARKWAY CATCH BASIN
MODIFIED #2

(19)



TYPICAL CATCH BASIN - WITH SUB-SURFACE DRAIN



1/4" MESH HARDWARE CLOTH.

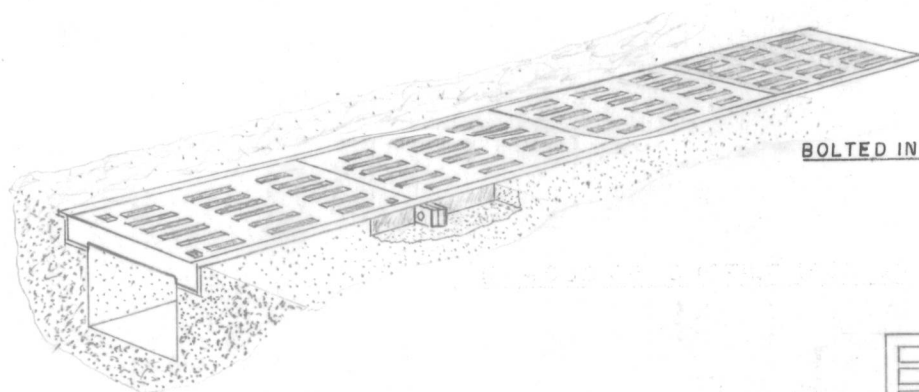
NOTE:

1. COVER OUTSIDE WITH 1/2" CEMENT PLASTER COAT.
2. PLACE 12X12 PIECE OF 1/4" MESH HARDWARE CLOTH OVER HOLE, CRIMP & MORTAR INTO BRICK JOINT
3. NUMBER AND EXACT LOCATION OF TILES WILL BE DETERMINED BY ENGINEER

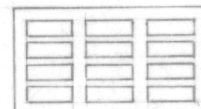
CRIMP TOP & BOTTOM SEAL INTO MORTAR

CITY OF NEWARK

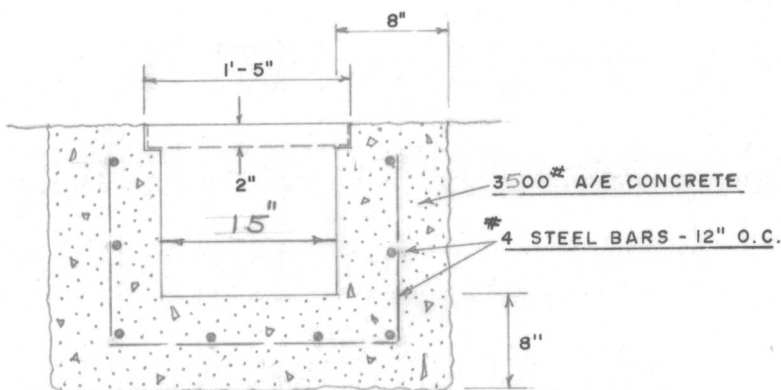
SUB - SURFACE DRAIN AT CATCH BASIN



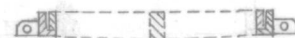
BOLTED IN PLACE FRAME



TYPE "C" GRATE



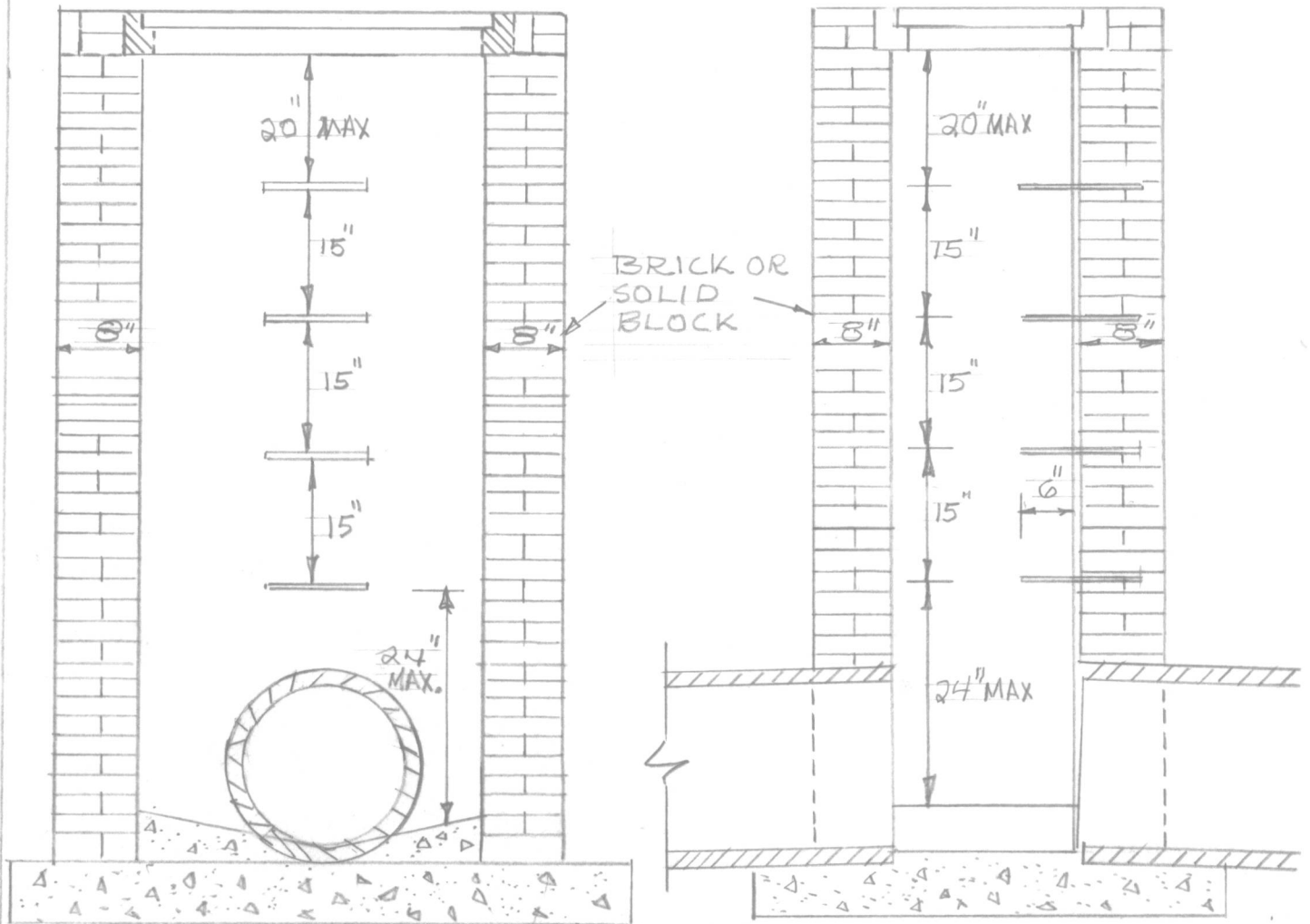
CONCRETE TRENCH SECTION



TYPE "L" FRAME

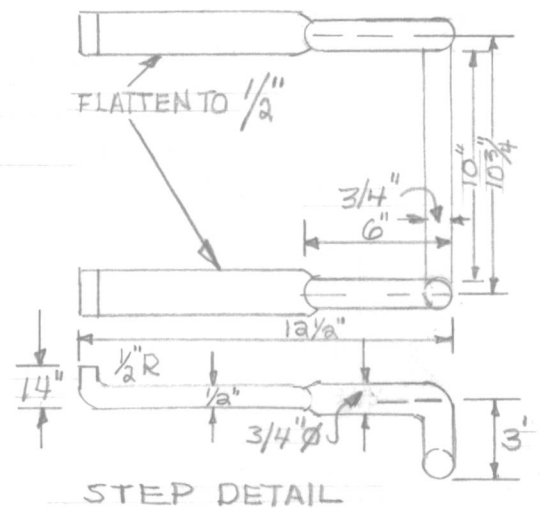
NOTES:

1. REINFORCING STEEL BARS MAY VARY WITH A CHANGE OF THE TRENCH SECTION.
2. GRATE TO BE MANUFACTURED BY NEENAH FOUNDARY CO. - TYPE R-4999 EF DUCTILE IRON 60-40-18 OR APPROVED EQUAL.
3. CONCRETE TRENCH MAY BE PRECAST - CONTRACTOR MUST SUBMIT DETAILED PLANS TO THE CITY ENGINEER FOR APPROVAL.



NOTE:

- 1) STEPS REQUIRED IN ANY STRUCTURE EXCEEDING 4' IN DEPTH FROM TOP OF GRATE TO LOWEST PIPE INVERT.
- 2) STEPS SHALL BE OF ALUMINUM, GALVANIZED STEEL OR STAINLESS STEEL.
- 3) FOR PRECAST STRUCTURES REFER TO STEP DETAIL ON SHEET 77 & 77-A.



CITY OF NEWARK 22

TYPICAL STEP INSTALLATION FOR STORM SEWER CATCH BASINS, MANHOLES AND JUNCTION BOXES

NEENAH FOUNDRY

R-1642 FRAME & TYPE B LID

(OR APPROVED
EQUAL)

NEENAH FOUNDRY SKETCH NF42795

TYPE B LID DESIGN
DEPRESSED
POCKETS

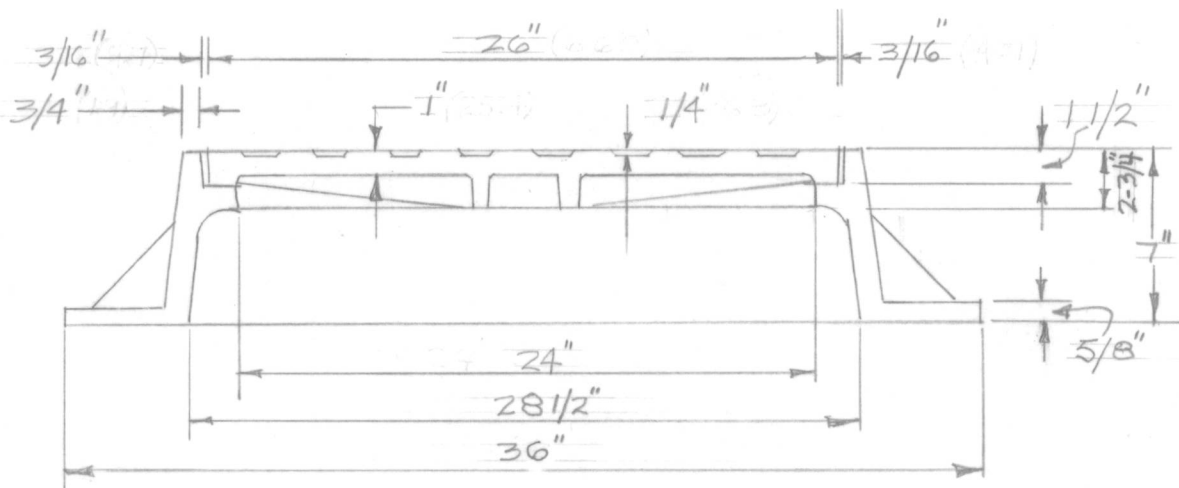
6-3/4" DIA CORED
VENTS ON A 20"
DIA. CIRCLE

NEWARK DEL.

STORM

SEWER

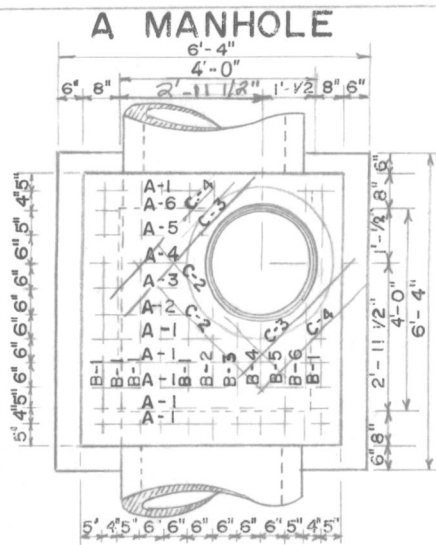
OPEN
PICKHOLE



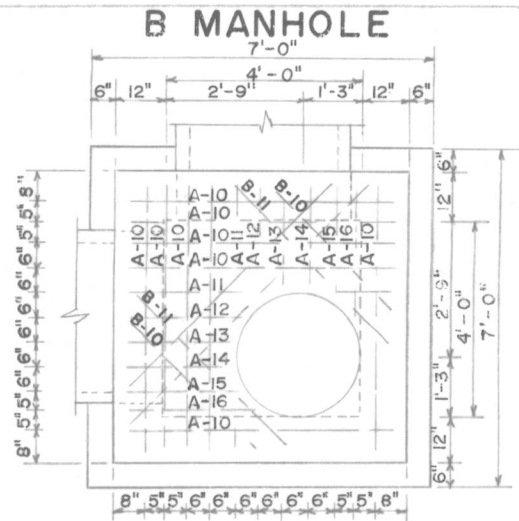
CITY OF NEWARK

STANDARD MANHOLE FRAME
AND COVER FOR STORM SEWER

23

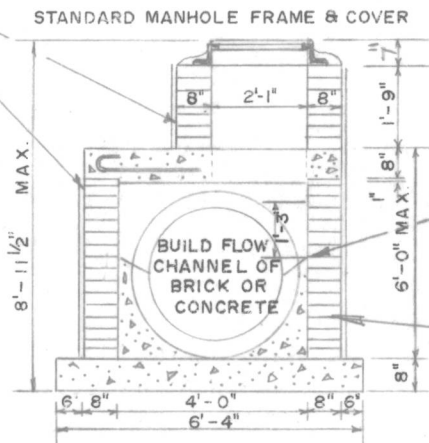


PLAN



PLAN

1/2" CEMENT PLASTER COAT



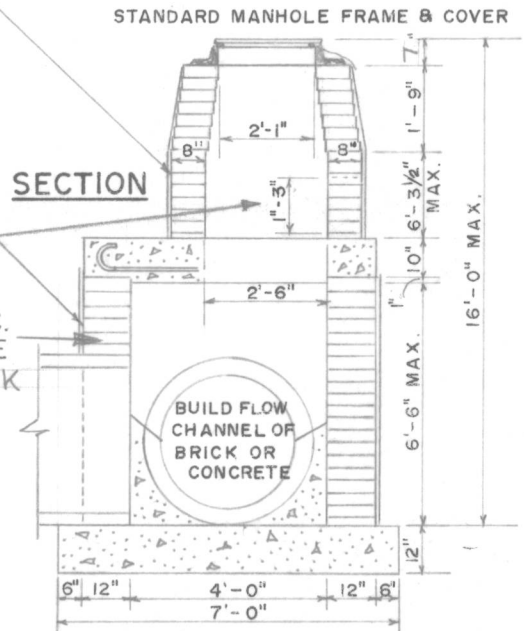
SECTION

SEE PLATE
22 FOR
STEP
DETAIL

BRICK, CONC.
OR CONCRETE
SOLID BLOCK

NOTE:
ALL CONCRETE
TO BE 3500# A/E

1/2" CEMENT PLASTER COAT



SECTION

BILL OF MATERIAL

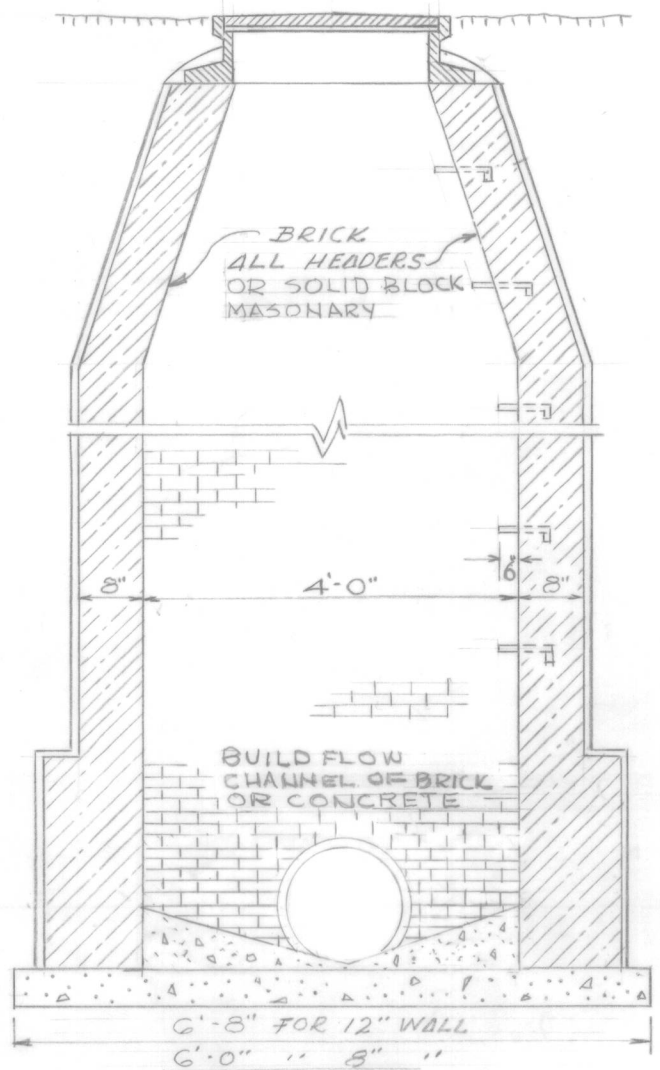
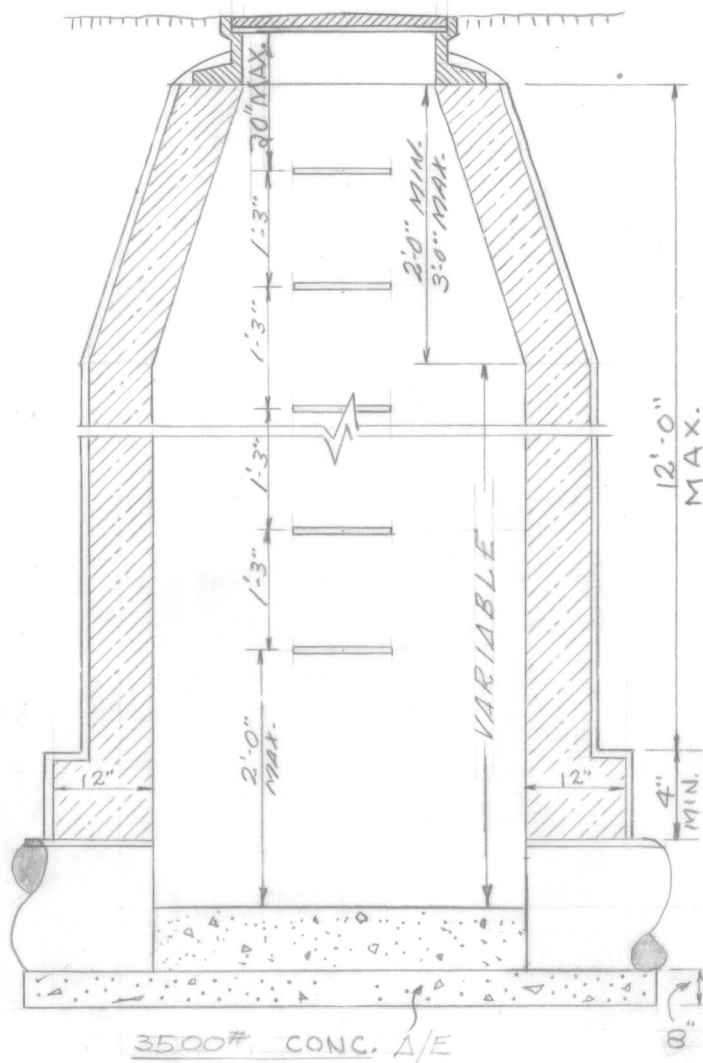
BENT BARS				BENDING DIAGRAM	
NO	SIZE	LEN'H.	MARK	(ALL DIMENSIONS ARE OUT-OUT)	
6	5/8" Ø	6'-2"	A-1		
"	"	"	B-1		
1	5/8" Ø	3'-5"	A-2		
"	"	3'-0"	A-3		
"	"	2'-11"	A-4		
"	"	3'-0"	A-5		
"	"	3'-5"	A-6		
"	"	3'-5"	B-2		
"	"	3'-0"	B-3		
"	"	2'-11"	B-4		
"	"	3'-0"	B-5		
"	"	3'-5"	B-6		
STRAIGHT BARS					
NO	SIZE	LEN'H.	MARK		
2	5/8" Ø	0'-10"	C-1		
"	"	3'-10"	C-2		
"	"	3'-0"	C-3		
"	"	2'-4"	C-4		

BILL OF MATERIAL

BENT BARS				BENDING DIAGRAM	
NO	SIZE	LEN'H.	MARK	(ALL DIMENSIONS ARE OUT-OUT)	
10	3/4" Ø	6'-10"	A-10		
2	"	3'-6"	A-11		
"	"	3'-0"	A-12		
"	"	2'-9"	A-13		
"	"	"	A-14		
"	"	3'-0"	A-15		
"	"	3'-6"	A-16		
STRAIGHT BARS					
NO	SIZE	LEN'H.	MARK		
2	3/4" Ø	1'-4"	A-18		
"	"	3'-6"	B-10		
"	"	4'-6"	B-11		
1	"	6'-9"	B-12		
"	"	5'-9"	B-13		

CITY OF NEWARK

MANHOLES "A" & "B" STANDARD
FOR STORM SEWERS



NO SCALE

NOTES:

1. COVER WITH 1/2" CEMENT PLASTER COAT

CITY OF NEWARK

STANDARD BRICK MANHOLE
APPLICABLE TO STORM SEWERS

26

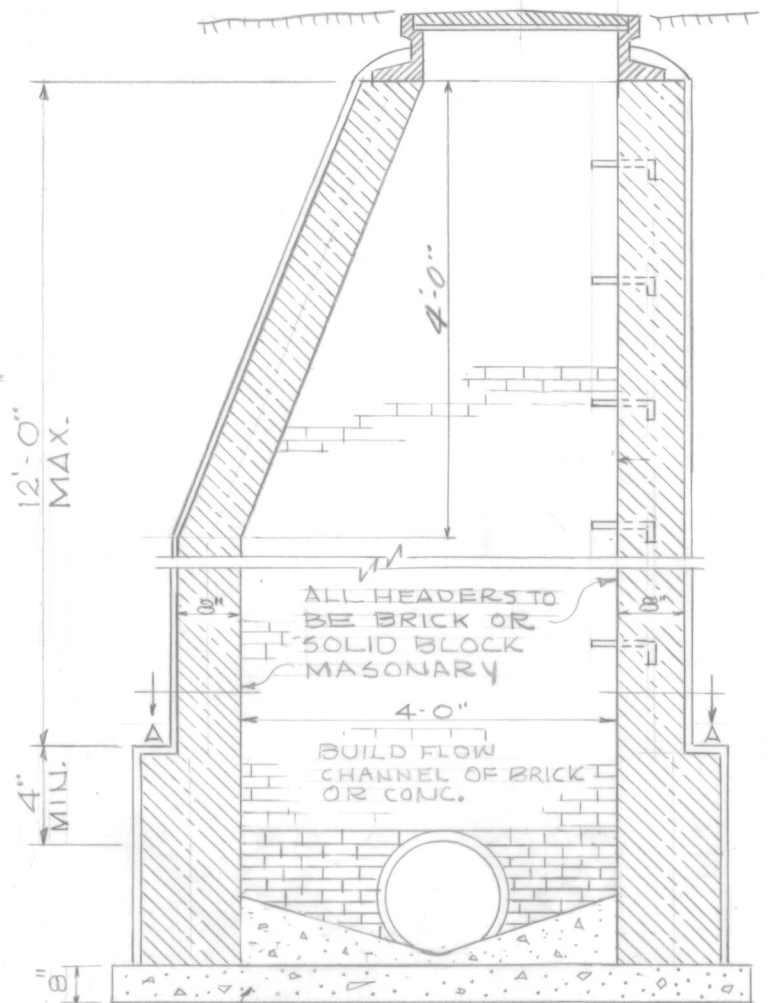
NOTES:

1. SEE PLATE 22 FOR
STEP DETAIL

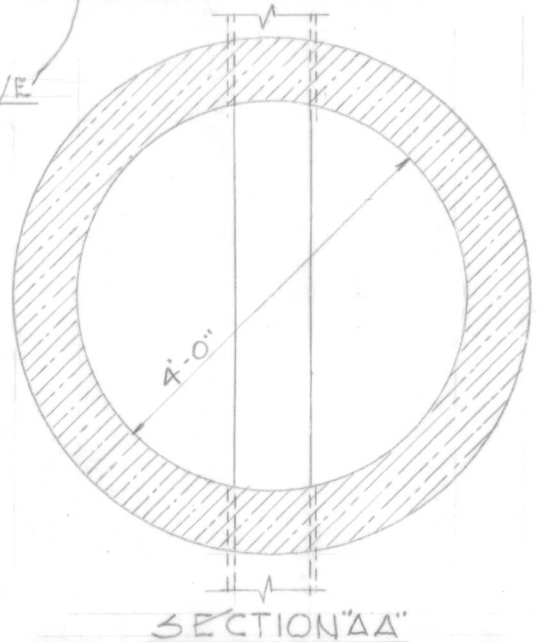
2. CONCRETE SLAB WILL BE
6'-0" FOR 8" WALL
6'-8" FOR 12" WALL

NOTE:

COVER OUTSIDE WITH 1/2"
CEMENT PLASTER COAT

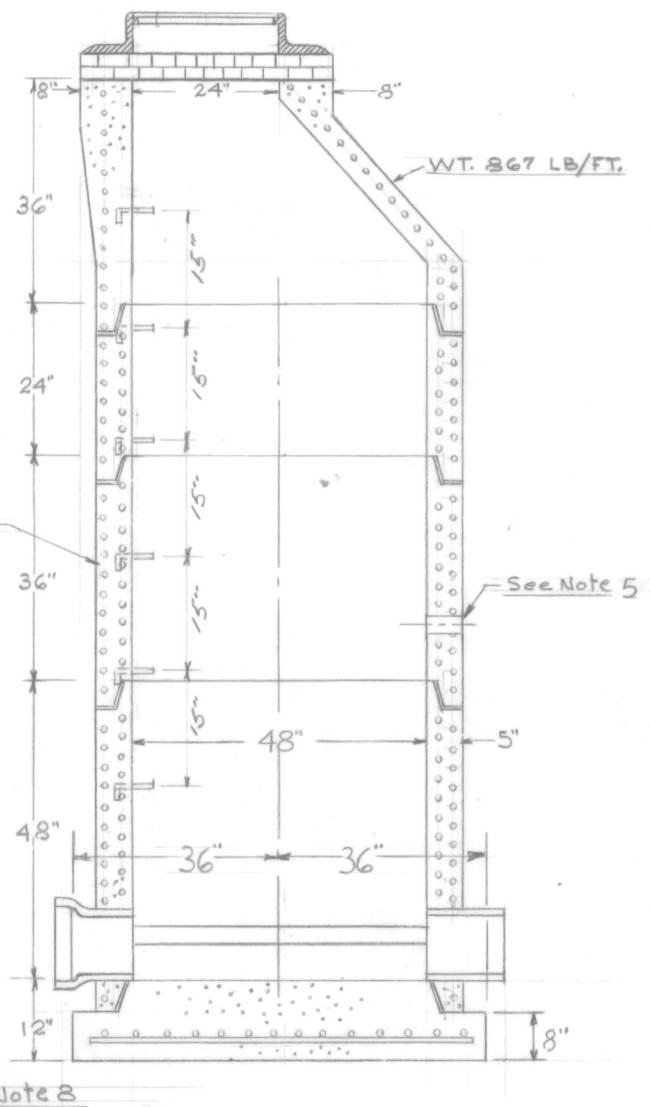
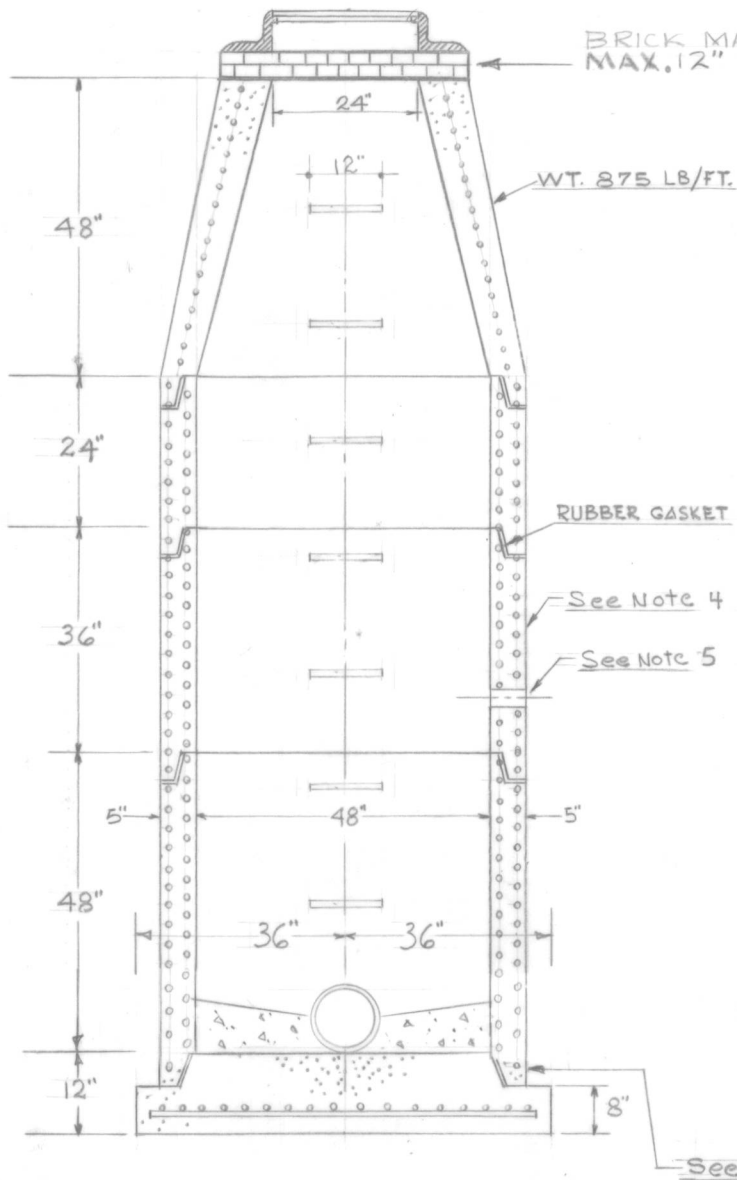
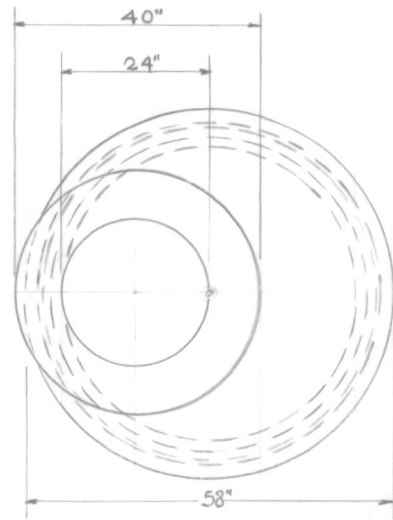


3500# CONC. A/E



CITY OF NEWARK

STANDARD BRICK MANHOLE OFF SET CONE
APPLICABLE TO STORM SEWERS



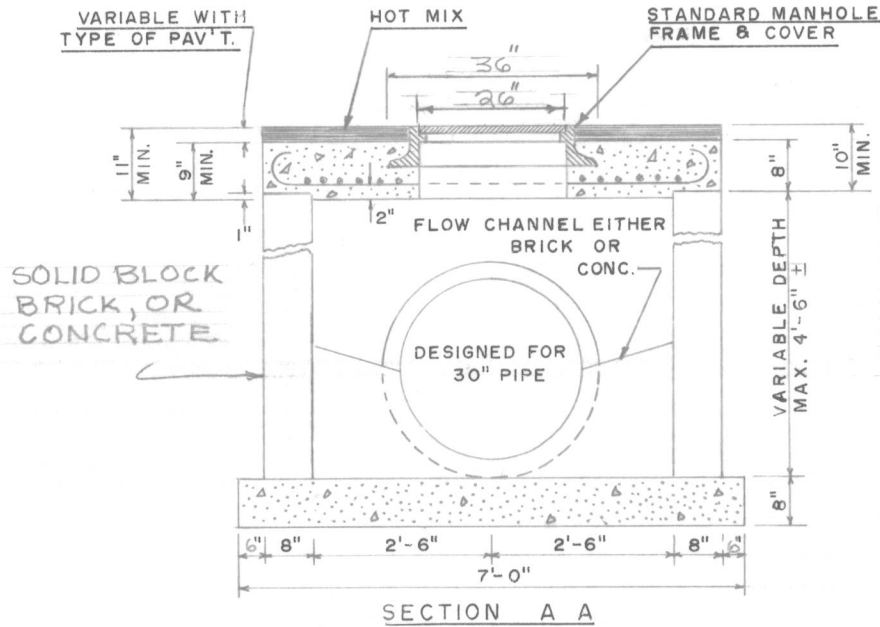
SEE SHEET 77A FOR INFORMATION
PERTINENT TO THOSE SPECIFICATIONS
ABOVE.

CITY OF NEWARK

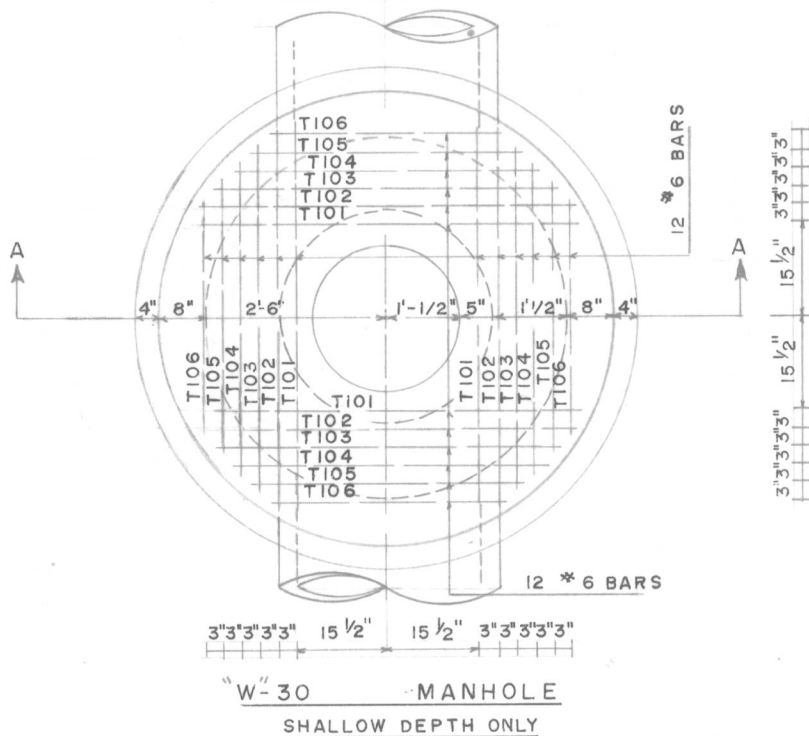
STANDARD PRECAST OFFSET
DOME TYPE MANHOLES FOR
STORM SEWERS.

28

BILL OF MATERIALS						
REIN. STEEL	BENT BARS				BENDING DIAGRAM	
	NO	SIZE	LENGTH	MARK	ALL DIMENSIONS ARE OUT-OUT	
205 LB.	4	3/4"	6'-9"	T101	8"	8"
	4	"	6'-5"	T102	5'-5"	6'-9" T101
	4	"	6'-1"	T103	5'-1"	6'-5" T102
	4	"	5'-4"	T104	4'-9"	6'-1" T103
	4	"	5'-1"	T105	4'-0"	5'-4" T104
	4	"	4'-4"	T106	3'-9"	5'-1" T105
					3'-0"	4'-4" T106

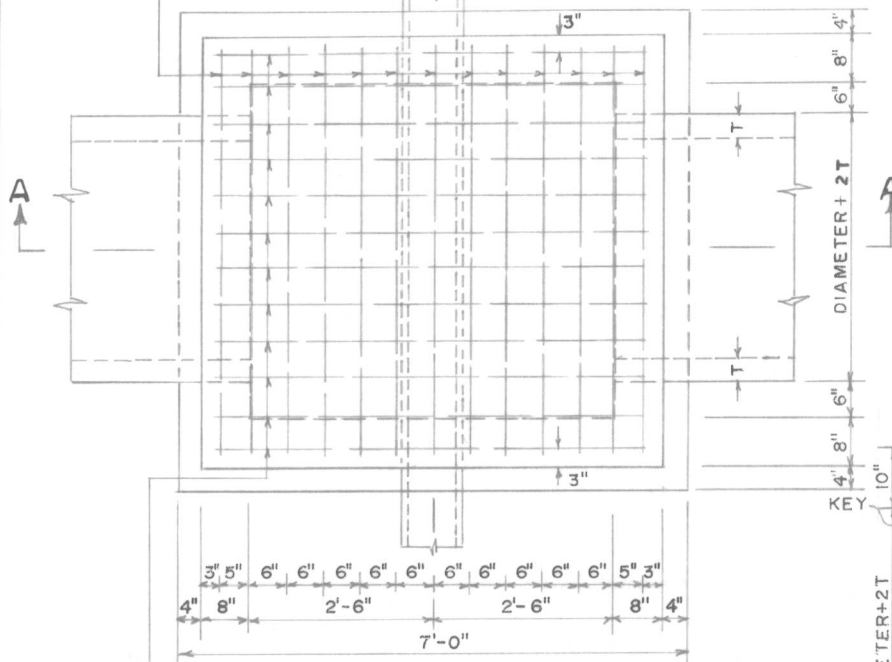


- NOTE:
- 1) COVER OUTSIDE WITH 1/2" PLASTER COAT.
 - 2) CONCRETE TO BE 3500 # A/E.
 - 3) MANHOLE MAY BE PRECAST IF APPROVED BY THE CITY ENGINEER.



13 #4 A-BARS
LENGTHS ARE VARIABLE

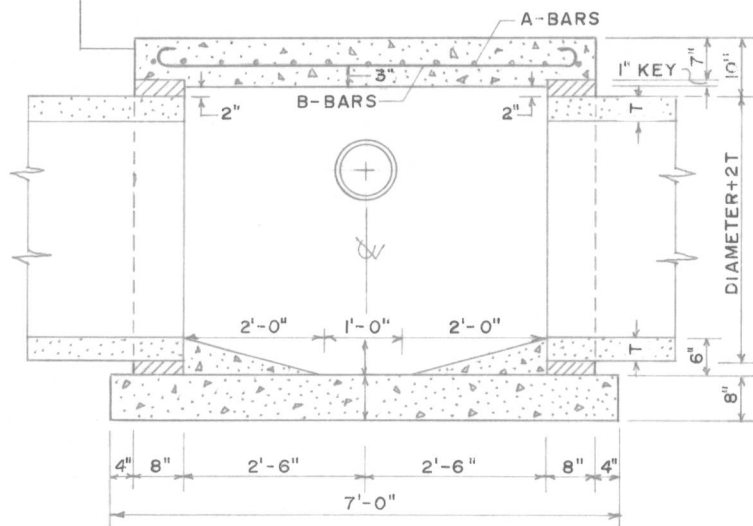
THROUGH PIPE SHALL BE
CAST IRON (MAX. SIZE 10")
NO JOINTS INSIDE JUNCTION BOX



#4 BARS - 6" O.C.
NUMBER OF BARS VARIES

TOP SHALL BE PRECAST
AND KEYED AS SHOWN

PLAN

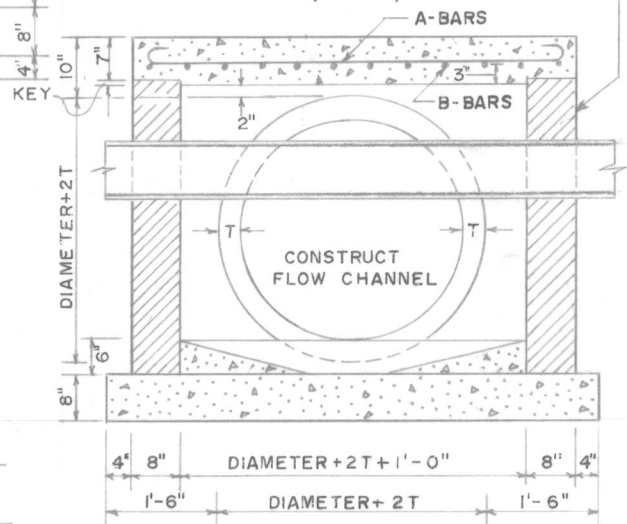


SECTION A-A

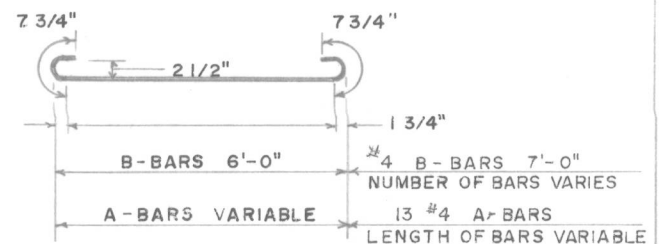
NOTE

1. THIS STRUCTURE IS TO BE USED WHERE UTILITY CONFLICT CANNOT BE AVOIDED AND UTILITY LINE (10" Ø OR LESS) EXISTS.
2. COVER OUTSIDE OF STRUCTURE WITH 1/2" CEMENT PLASTER COAT
3. ALL CONCRETE TO BE 3500 #/E

WALLS SHALL BE CONSTRUCTED OF
BRICK, BLOCK, OR P.C.C. MASONRY



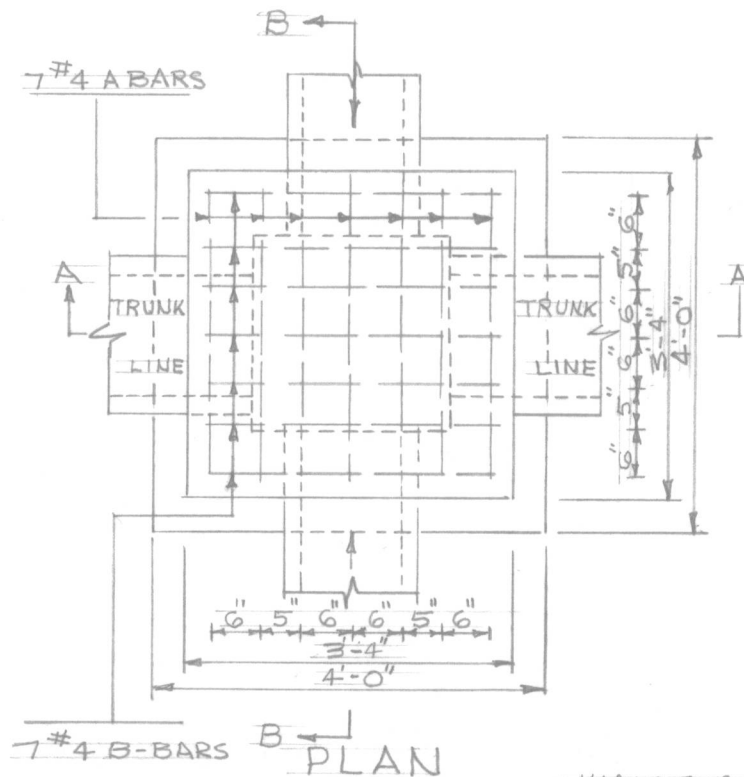
SECTION B-B



BAR BENDING DIAGRAM

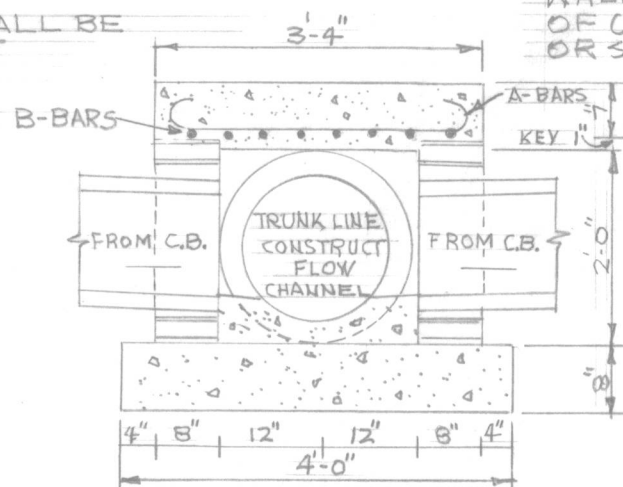
CITY OF NEWARK

JUNCTION BOX "A" & DETAILS



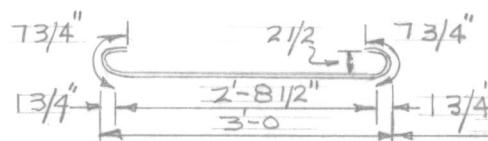
TOP SHALL BE PRECAST

WALLS CONSTRUCTED OF CONCRETE, BRICK OR SOLID BLOCK.



NOTE:

- 1) COVER OUTSIDE OF STRUCTURE WITH 1/2" PLASTER COAT.
- 2) ALL CONCRETE TO BE 3500 # AE.
- 3) JUNCTION BOX MAY BE PRECAST-CONTRACTOR MUST SUBMIT DETAILED PLANS TO THE CITY ENGINEER FOR APPROVAL.



BAR BENDING DIAGRAM

TOTAL LENGTH BAR 4'-0"

14 #4 BARS 4'-0" = 56'-0" WT 38 LBS

JUNCTION BOX 1

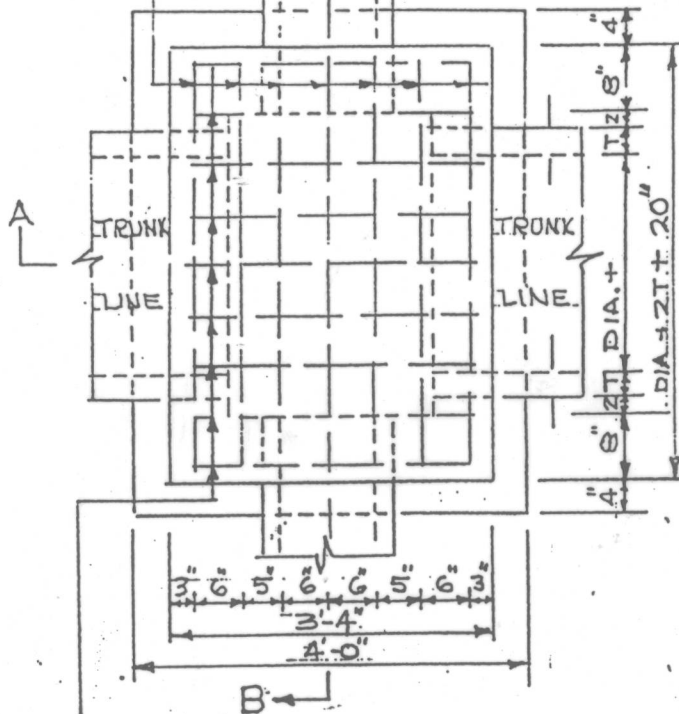
MAX. PIPE SIZE 18"

CITY OF NEWARK

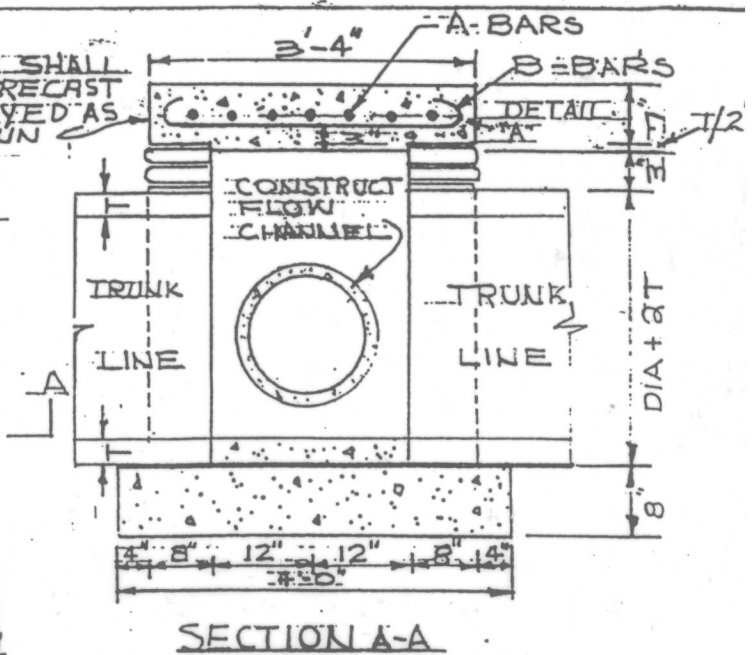
JUNCTION BOX NO.1 DETAILS

(32)

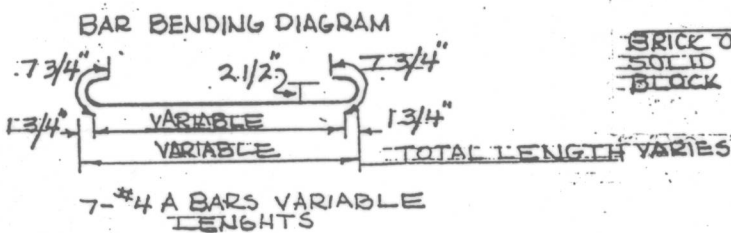
#7-4 A-BARS
LENGTHS ARE
VARIABLE



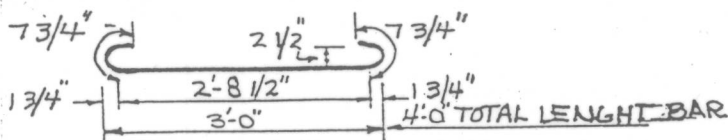
TOP SHALL
BE PRECAST
& KEYED AS
SHOWN



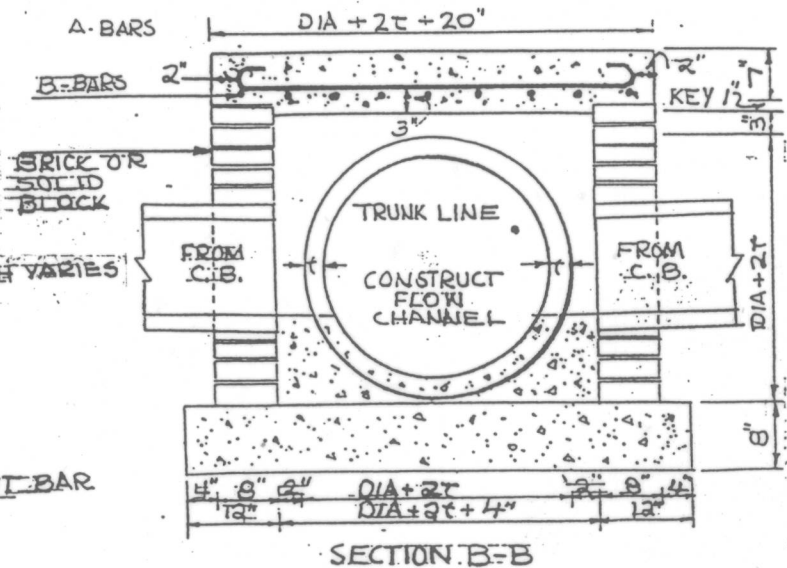
#4 B-BARS
(NUMBER OF
BARS VARY)



7-#4 A-BARS VARIABLE
LENGTHS



#4-B-BARS
NUMBER OF BARS VARIES



SECTION B-B

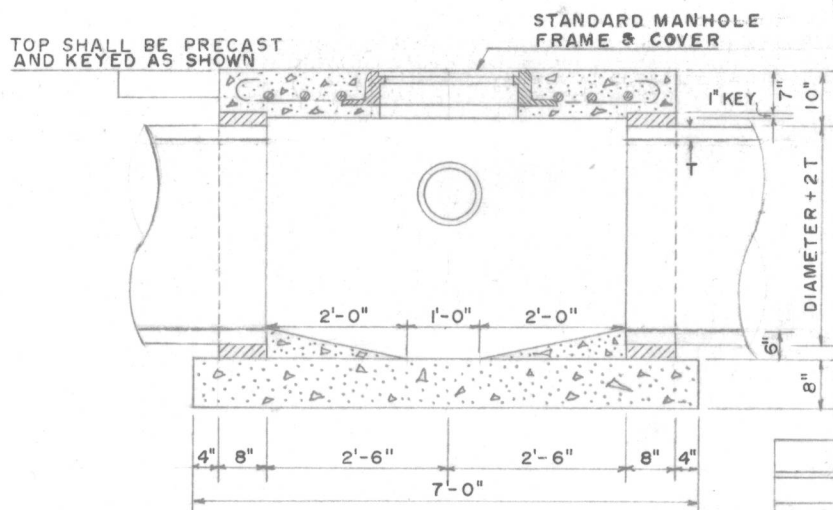
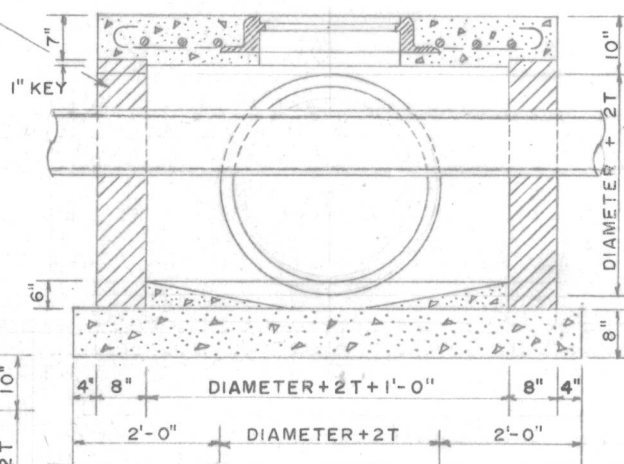
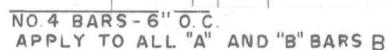
NOTE:

- 1) COVER OUTSIDE OF STRUCTURE WITH 1/2" PLASTER COAT.
- 2) ALL CONCRETE SHALL BE 3500 A/E
- 3) JUNCTION BOX MAY BE PRECAST. CONTRACTOR SHALL SUBMIT DETAILED PLANS TO THE CITY ENGINEER FOR APPROVAL.
- 4) CONSTRUCT WALLS OF CONCRETE, BRICK, OR SOLID BLOCK.

CITY OF NEWARK

JUNCTION BOX NO. 2 DETAILS

33



② TO REBUILD AS JUNCTION BOX
REMOVE EXIST. C.B. FRAME &
GRATE & REMOVE EXIST. C.B.
WALLS 8" BELOW PROPOSED
SUB BASE.
CONSTRUCT SLAB AS SHOWN

① TO REBUILD AS MANHOLE
REMOVE EXIST. C.B. FRAME
& GRATE & REMOVE EXIST. C.B.
WALLS AND REBUILD
AS SHOWN.

BOTTOM SUB BASE ②

STD. MANHOLE FRAME & COVER ①

FINISH GRADE ①

BRICK MANHOLE STACK ①

8" CONCRETE SLAB
(OPENING NOT SHOWN)

2" CLEAR

1/2" ϕ BARS @ 6" ϕ C EW

SEE PLATE 22
FOR STEP DETAILS

EXIST. CATCH BASIN

NEW OR EXIST. PIPE
SEE PLANS

VARIABLES

DETAIL - REBUILDING EXISTING CATCH BASIN

① AS MANHOLE

② AS JUNCTION BOX

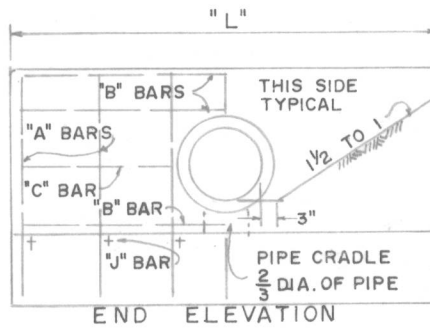
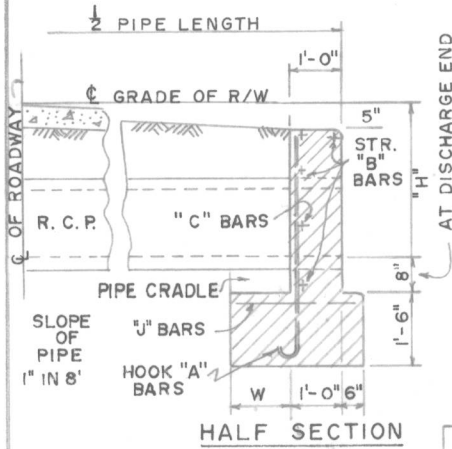
NO SCALE

NOTE:
ALL CONCRETE TO BE 3500 # A/E

35

CITY OF NEWARK
REBUILDING EXISTING CATCH BASIN
TO JUNCTION BOX OR MANHOLE

STRAIGHT TYPE HEADWALLS



UNLESS OTHERWISE SPECIFIED ALL CORNERS ARE TO BE FINISHED AS SHOWN ABOVE

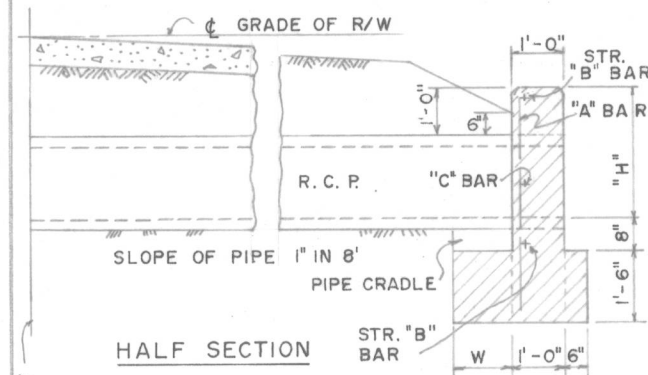
HALF SECTION

BILL OF MATERIAL

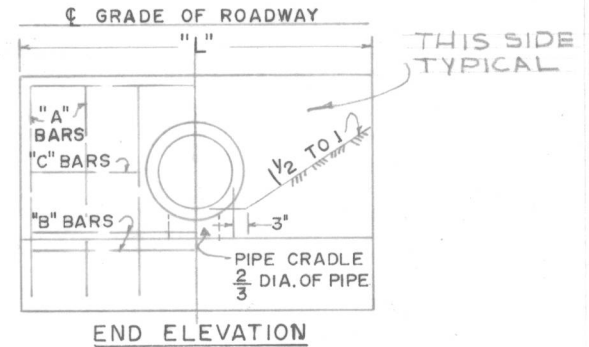
H	L	W	SPACING OF BARS "A" AND "J"	QUANTITIES FOR TWO HEADWALLS																CONCRETE CU. YARDS			
				1/2" REINFORCING BARS												TOTAL WEIGHT				WALLS PIPE SIZES			
				"A" BARS			"B" BARS			"C" BARS			"J" BARS										
				NO.	LENGTH	TOTAL LENGTH	NO.	LENGTH	TOTAL LENGTH	NO.	LENGTH	TOTAL LENGTH	NO.	LENGTH	TOTAL LENGTH	TOTAL WEIGHT							
18"	24"	30"	36"																				
3.25	8'-9"	1'-3"	16"	16	5'-0"	80	8	8'-6"	68	4	3'-0"	12				107	220					2.67	
3.50	9'-6"	1'-5"	14"	16	5'-6"	88	8	9'-0"	72	4	3'-6"	14				116	2.58					3.08	
3.75	10'-3"	1'-6"	14"	16	5'-9"	92	8	10'-0"	80	4	3'-6"	14				124	2.98	2.90				3.42	
4.00	11'-0"	1'-8"	16"	16	6'-0"	96	8	10'-6"	84	4	4'-0"	16	16	3'-0"	48	163	3.42	3.34				3.87	
4.25	11'-9"	1'-9"	16"	16	6'-3"	100	8	11'-6"	92	4	4'-0"	16	16	3'-0"	48	171	3.87	3.80	3.70			4.24	
4.50	12'-6"	1'-11"	14"	20	6'-6"	130	8	12'-0"	96	4	4'-6"	18	20	3'-0"	60	203	4.36	4.29	4.19			4.75	
4.75	13'-3"	2'-0"	14"	20	6'-9"	135	8	13'-0"	104	4	4'-6"	18	20	3'-0"	60	212	4.88	4.81	4.71	4.58		5.15	
5.00	14'-0"	2'-2"	16"	20	7'-0"	140	8	13'-6"	108	4	5'-0"	20	20	3'-6"	70	226	5.42	5.35	5.26	5.14	5.70		
5.25	14'-9"	2'-3"	16"	20	7'-3"	145	10	14'-6"	145	4	5'-6"	22	20	3'-6"	70	255	5.99	5.93	5.83	5.71		6.15	
5.50	15'-6"	2'-5"	14"	24	7'-6"	180	10	15'-0"	150	4	6'-0"	24	24	3'-6"	84	293	6.59	6.53	6.44	6.32		6.75	
5.75	16'-3"	2'-6"	14"	24	7'-9"	186	10	16'-0"	160	4	6'-6"	26	24	3'-6"	84	305	7.22	7.15	7.07	6.95		7.22	
6.00	17'-0"	2'-8"	16"	24	8'-0"	192	10	16'-6"	165	4	6'-6"	26	24	4'-0"	96	320	7.87	7.81	7.73	7.61		7.87	

NOTE: ALL BARS STRAIGHT EXCEPT HOOKBAR "A"

ALL CONCRETE TO BE 3500 #A/E



HALF SECTION



END ELEVATION

R. R. TYPE HEADWALLS

DIAMETER OF PIPE	H	L	W	SPACING OF VERTICAL BARS	QUANTITIES FOR TWO HEADWALLS												
					1/2" REINFORCING BARS						CONCRETE						
					"A" BARS			"B" BARS			"C" BARS			TOTAL WEIGHT	CU. YDS.		
					NO.	LENGTH	TOTAL LENGTH	NO.	LENGTH	TOTAL LENGTH	NO.	LENGTH	TOTAL LENGTH		WALLS	FOOTING	TOTAL
18"	2.75	7'-3"	1'-3"	13"	12	5'-0"	60	8	7'-0"	56	4	2'-6"	10	86	1.77	2.22	3.99
24"	3.25	9'-3"	1'-6"	12"	16	5'-6"	88	8	9'-0"	72	4	3'-0"	12	117	2.55	3.09	5.64
30"	3.83	11'-6"	1'-9"	12"	20	6'-0"	120	8	11'-0"	88	4	4'-0"	16	152	3.62	4.16	7.78
36"	4.33	13'-6"	2'-0"	11"	24	6'-6"	156	8	13'-0"	104	4	4'-6"	8	189	4.68	5.25	9.93

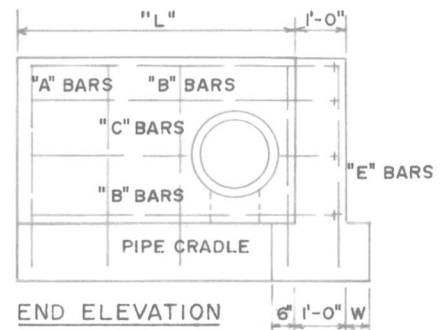
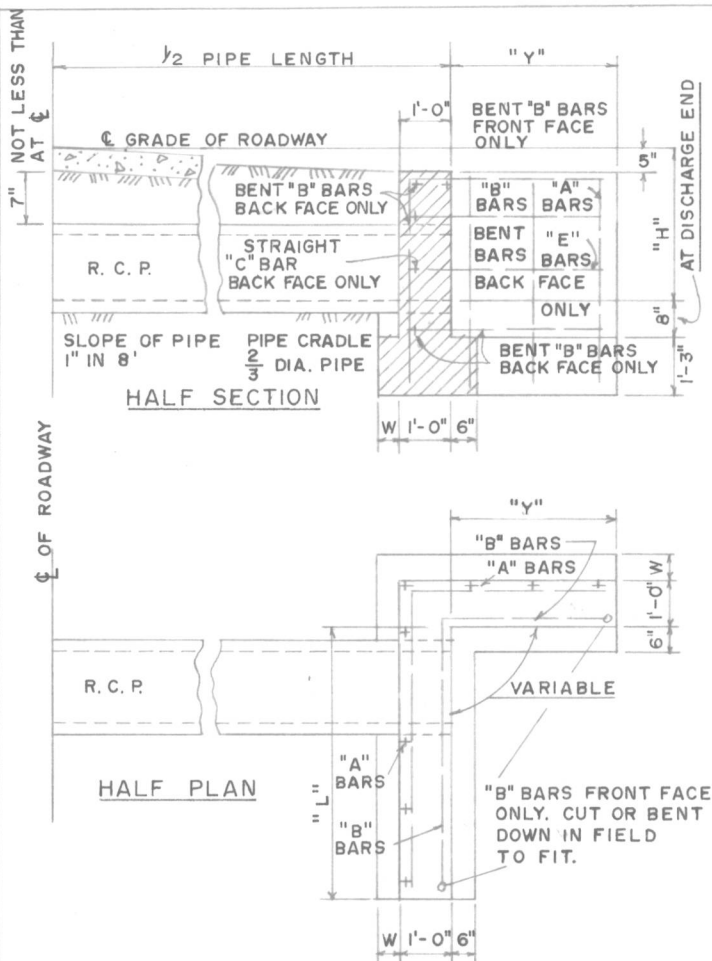
NOTE: ALL STRAIGHT BARS

HALF PLAN

CITY OF NEWARK

STRAIGHT TYPE HEADWALLS

36



NOTE:

MINIMUM "H" CROWN GRADE TO DISCHARGE END

18" PIPE = 3.25'

24" PIPE = 3.75'

30" PIPE = 4.25'

36" PIPE = 4.75'

SLOPE OF EARTH 1/2" TO 1', KEEP FREE OF PIPE

1. A SUITABLE FOUNDATION FOR HEADWALLS WILL BE REQUIRED. CARRY FOOTINGS TO SUFFICIENT DEPTH FOR FIRM MATERIAL AND FROST ACTION.

2. QUANTITIES IN BILL OF MATERIALS ARE FOR DIMENSIONS SHOWN ON THE SHEET.

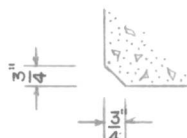
3. ALL BARS TO HAVE 1 1/2" COVER

4. ALL CONCRETE TO BE 3500 P.S.I./E

"L" TYPE HEADWALLS

H	L	Y	W	SPACING OF VERTICAL BARS	QUANTITIES FOR TWO HEADWALLS										CONCRETE CU. YDS.				
					1/2" REINFORCING BARS														
					"A" BARS		"B" BARS		"C" BARS		"E" BARS								
					NO.	LENGTH	TOTAL LENGTH	NO.	LENGTH	TOTAL LENGTH	NO.	LENGTH	TOTAL LENGTH	TOTAL WEIGHT	WALLS PIPE SIZES				FOOTING
															15"-18"	24"	30"	36"	
3.25	5'-8"	3'-5"	6"	16"	16	4'-6"	72	8	10'-6"	84	2	3'-6"	7	2	5'-0"	10	116	2.51	1.87
3.50	6'-0"	3'-9"	7"	15"	20	4'-9"	95	8	11'-0"	88	2	4'-0"	8	2	5'-6"	11	135	2.88	2.09
3.75	6'-5"	4'-2"	8"	15"	20	5'-0"	100	8	12'-0"	96	2	4'-0"	8	2	6'-0"	12	144	3.33 3.24	2.36
4.00	6'-9"	4'-6"	8"	16"	20	5'-3"	105	8	12'-6"	100	2	4'-0"	8	2	6'-0"	12	150	3.76 3.67	2.50
4.25	7'-2"	4'-11"	9"	16"	20	5'-6"	110	8	13'-6"	108	2	4'-6"	9	2	6'-6"	13	160	4.27 4.18 4.06	2.78
4.50	7'-6"	5'-3"	10"	16"	20	5'-9"	115	8	14'-0"	112	2	4'-6"	9	2	7'-0"	14	167	4.75 4.66 4.54	3.04
4.75	7'-11"	5'-8"	10"	14"	24	6'-0"	144	8	15'-0"	120	2	5'-0"	10	2	7'-6"	15	193	5.31 5.22 5.11 4.96	3.22
5.00	8'-3"	6'-0"	11"	14"	26	6'-3"	163	10	15'-6"	155	2	5'-6"	11	2	7'-6"	15	230	5.85 5.76 5.64 5.50	3.51
5.25	8'-8"	6'-5"	11"	14"	26	6'-6"	169	10	16'-6"	165	2	6'-0"	12	2	8'-0"	16	242	6.47 6.38 6.26 6.12	3.70
5.50	9'-0"	6'-9"	12"	14"	28	6'-9"	189	10	17'-0"	170	2	6'-6"	13	2	8'-6"	17	260	7.05 6.97 6.85 6.71	3.99
5.75	9'-5"	7'-2"	12"	14"	28	7'-0"	196	10	18'-0"	180	2	6'-6"	13	2	9'-0"	18	272	7.73 7.65 7.53 7.39	4.19
6.00	9'-9"	7'-6"	13"	14"	30	7'-3"	218	10	18'-6"	185	2	7'-0"	14	2	9'-0"	18	291	8.37 8.29 8.18 8.03	4.50

NOTE: BARS ARE BENT OR STRAIGHT AS SHOWN ON SECTION

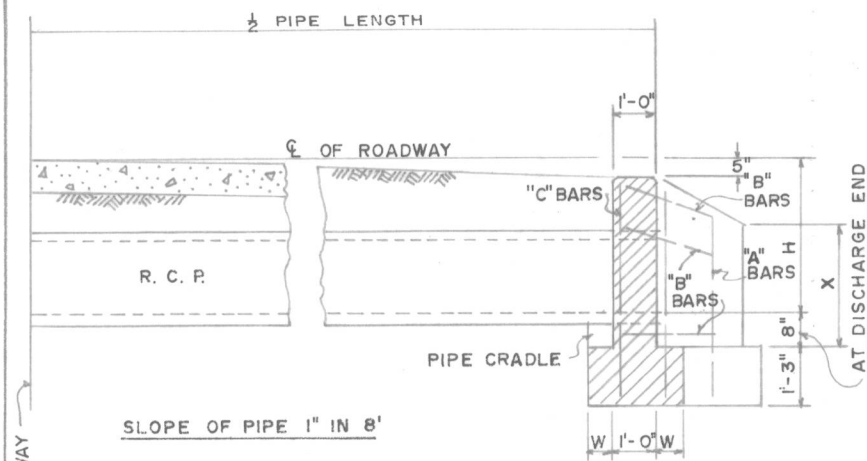


UNLESS OTHERWISE SPECIFIED ALL CORNERS ARE TO BE FINISHED AS SHOWN IN SKETCH ABOVE

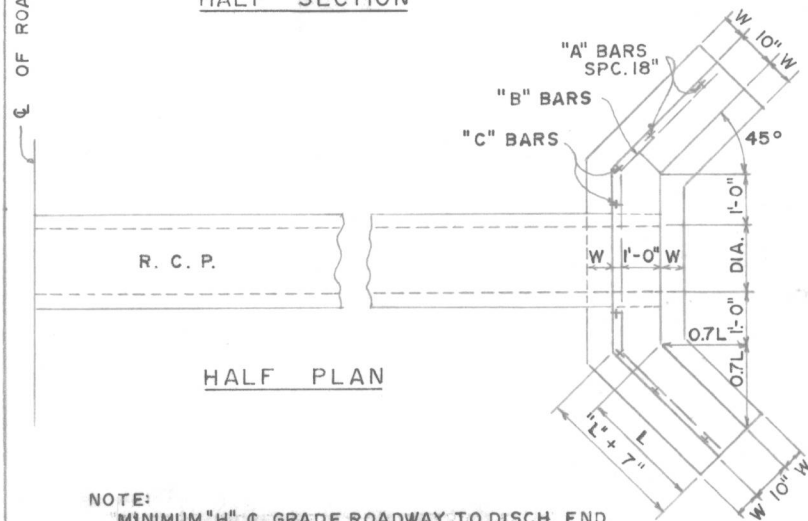
CITY OF NEWARK

"L" TYPE HEADWALLS

37



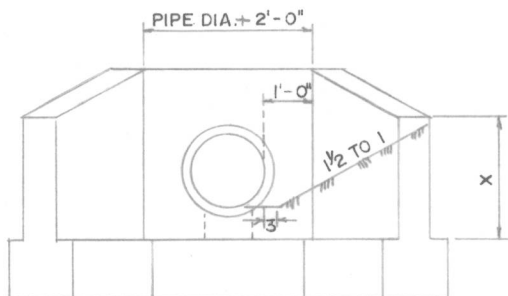
HALF SECTION



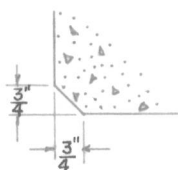
HALF PLAN

NOTE:
 MINIMUM "H" ϕ GRADE ROADWAY TO DISCH. END.
 18" PIPE = 3.25'
 24" " = 3.75'
 30" " = 4.25'
 36" " = 4.75'

ALL CONCRETE TO BE 3500 #/E



PIPE CRADLE
 $\frac{2}{3}$ DIA. OF PIPE
 END ELEVATION



UNLESS OTHERWISE SPECIFIED ALL
 CORNERS ARE TO BE FINISHED AS
 SHOWN IN SKETCH ABOVE.

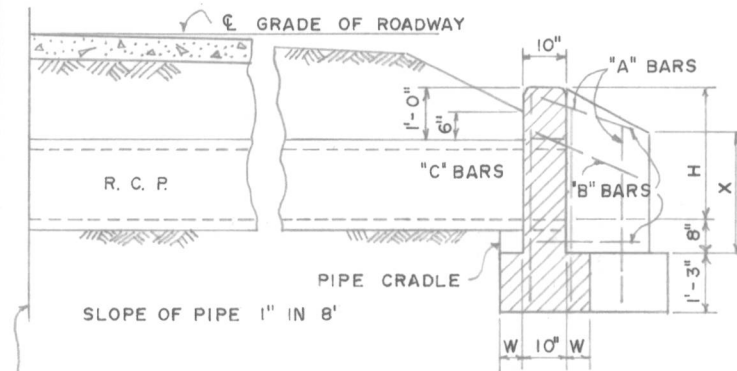
NOTE:
 BARS "A" INCREASE BY 6" INTERVALS.
 4 BARS OF EACH LENGTH REQUIRED

QUANTITIES FOR TWO HEADWALLS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
1/2" REINFORCING RODS										CONCRETE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
H	L	X	W	"A" BARS			"B" BARS						"C" BARS			TOTAL WGT, POUNDS						CUBIC YARDS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
				NO.	LENGTH	TOTAL LENGTH	18"		24"		30"		36"		NO.			LENGTH	TOTAL LENGTH	18" 24" 30" 36"			WING WALLS			FOOTINGS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
3.25	2'-6"	2'-6"	6"	8	3'-9"	4'-3"	32	6	9'-6"	57																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									

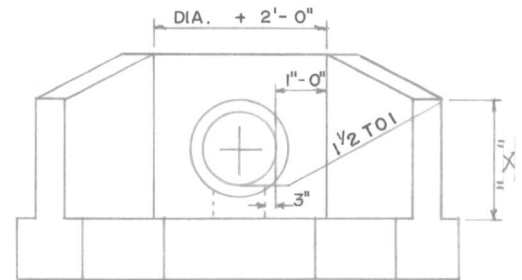
CITY OF NEWARK

45° STANDARD CULVERT
 HEADWALL

38

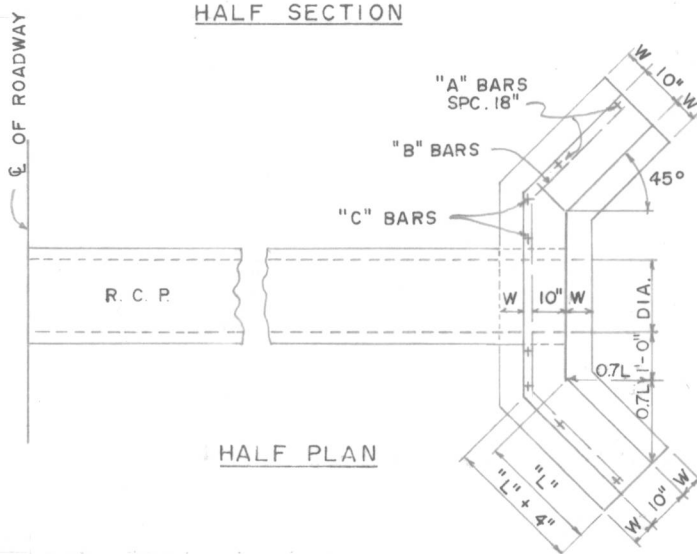


HALF SECTION



PIPE CRADLE
2/3 DIA. OF PIPE

END ELEVATION



HALF PLAN

UNLESS OTHERWISE SPECIFIED ALL CORNERS ARE TO BE FINISHED AS SHOWN IN SKETCH ABOVE

DIAMETER OF PIPE	H	L	X	W	QUANTITIES FOR TWO HEADWALLS										CONCRETE		
					1/2" REINFORCING RODS										CU. YDS.		
					"A" BARS		"B" BARS		"C" BARS		TOTAL LENGTH	TOTAL WEIGHT	WALLS	FOOTING	TOTAL		
					NO.	LENGTH	NO.	LENGTH	NO.	LENGTH							
18"	2.75	2'-6"	2'-6"	6"	8	3'-6" 4'-0"	30	6	9'-6"	57	8	4'-6"	36	84	1.70	1.55	3.25
24"	3.25	2'-11"	2'-11"	8"	8	4'-0" 4'-6"	34	6	11'-0"	66	8	5'-0"	40	95	2.19	2.10	4.29
30"	3.83	3'-4"	3'-4"	9"	12	4'-0" 5'-0"	54	6	12'-0"	72	8	5'-6"	44	116	2.78	2.54	5.32
36"	4.33	3'-9"	3'-9"	10"	12	4'-6" 5'-6"	60	6	13'-6"	81	8	6'-0"	48	129	3.38	3.04	6.42

NOTE:

"A" BARS INCREASE BY 6" INTERVALS
4 OF EACH LENGTH REQUIRED.

1. A SUITABLE FOUNDATION FOR HEADWALLS WILL BE REQUIRED.

CARRY FOOTINGS TO SUFFICIENT DEPTH FOR FIRM MATERIA AND FROST ACTION.

2. QUANTITIES IN BILL OF MATERIALS ARE FOR DIMENSIONS SHOWN ON THE SHEET.

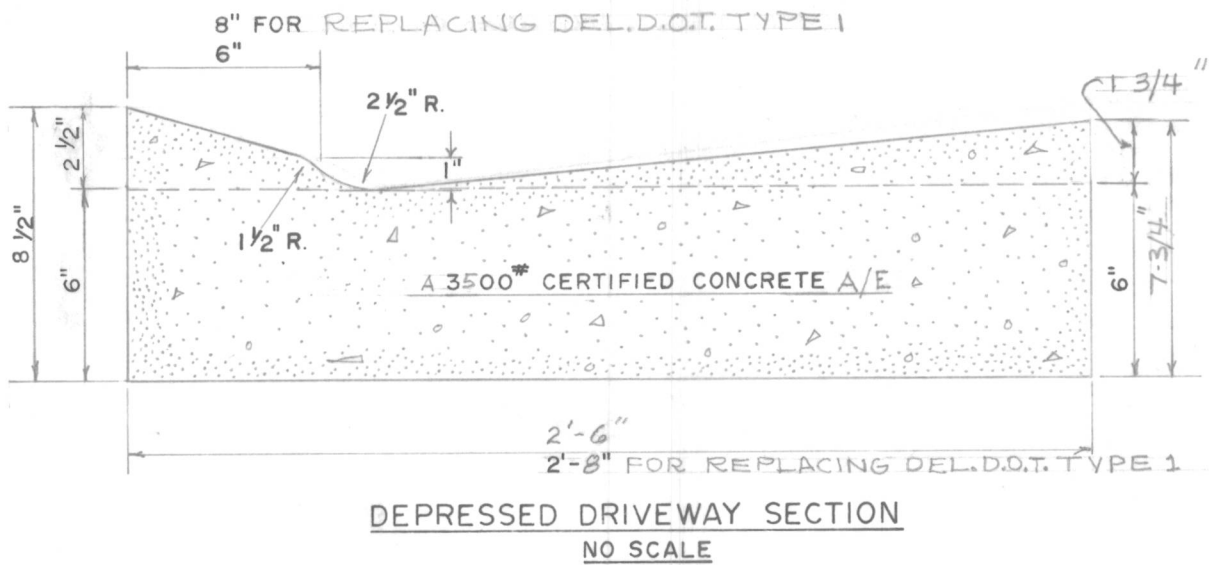
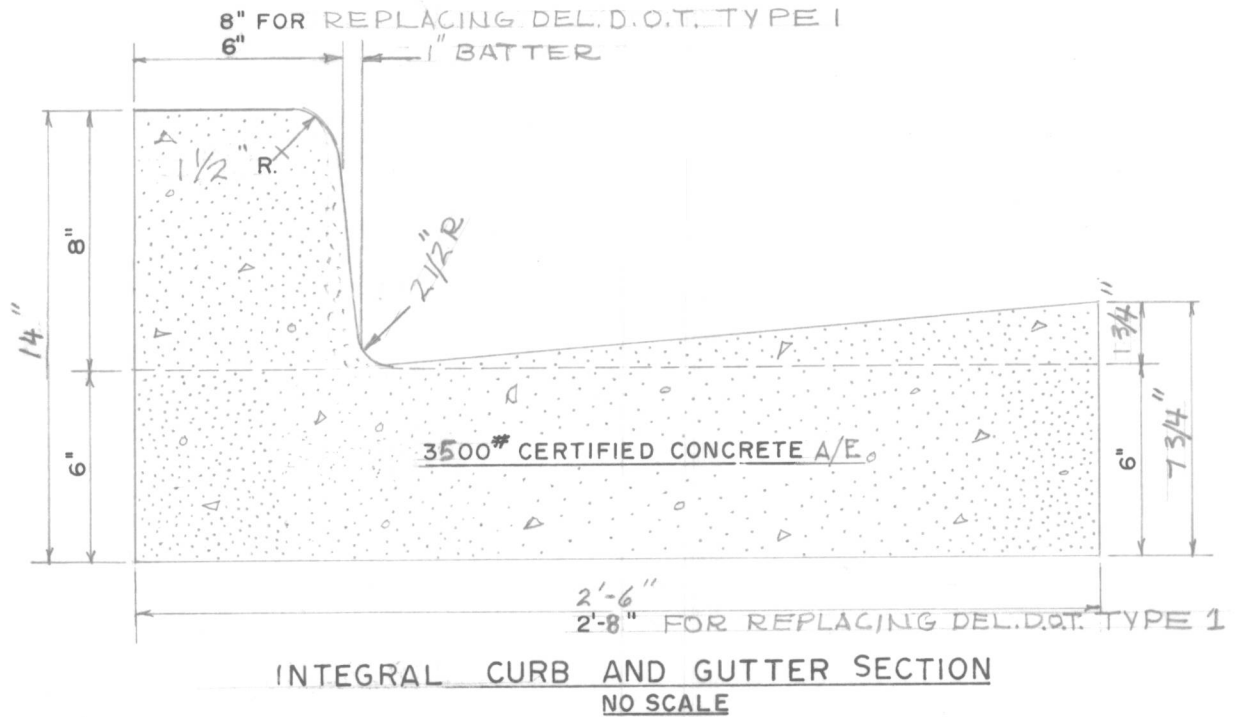
3. ALL CONCRETE TO BE 3500 #A/E

4. ALL BARS TO HAVE 1 1/2" COVER.

CITY OF NEWARK

HEADWALLS - 45° R.R. TYPE CULVERT 39

CITY OF NEWARK
STANDARD INTEGRAL CURB
AND GUTTER (40)



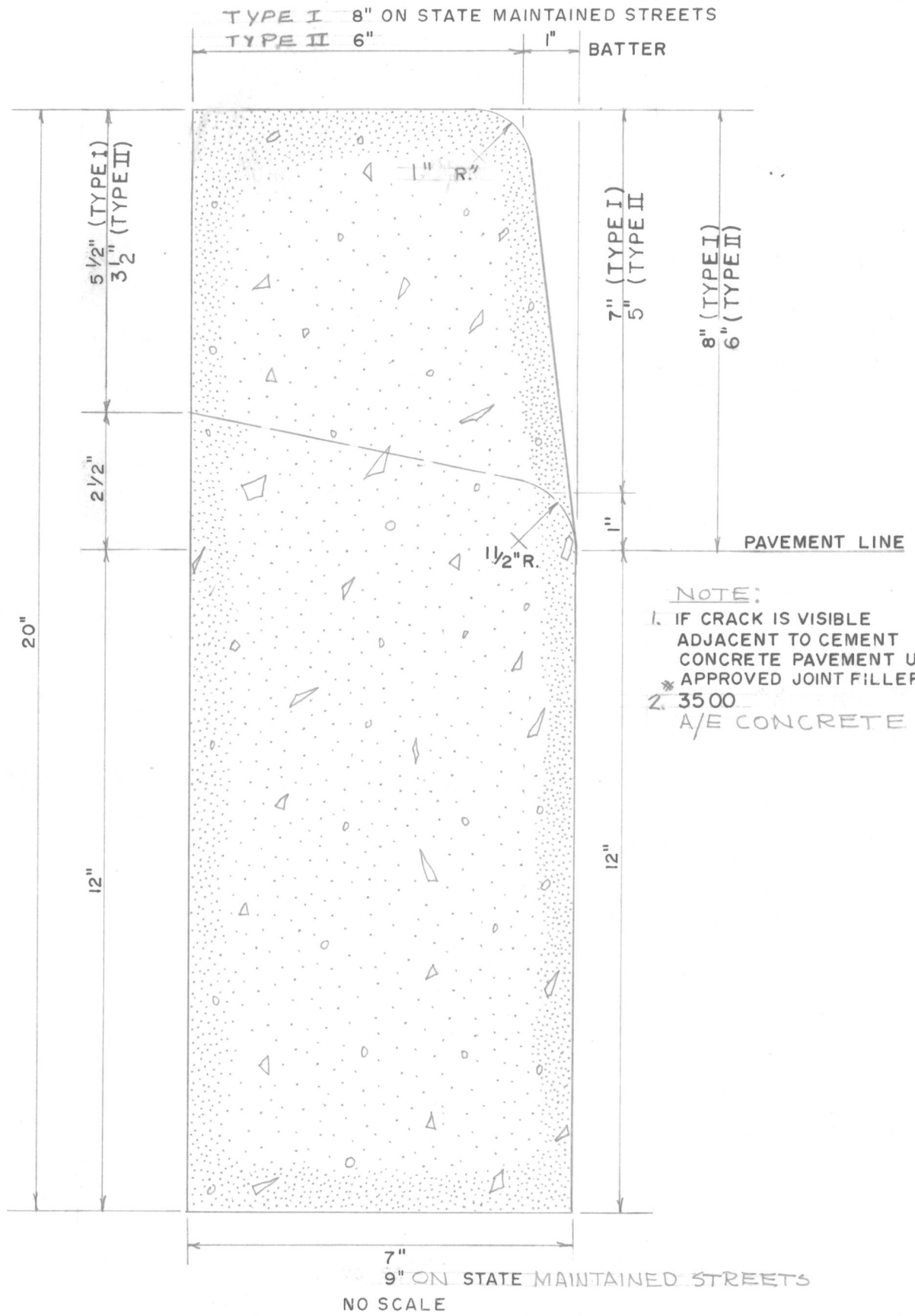
NOTE:

FOR USE AS DIRECTED BY THE ENGINEER
OR FOR REPLACEMENT

CITY OF NEWARK

INTEGRAL CURB & GUTTER

41



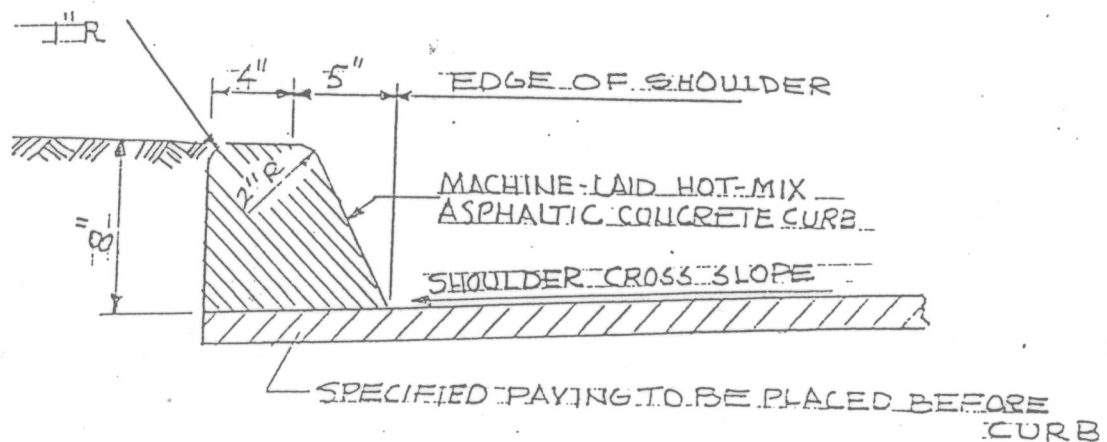
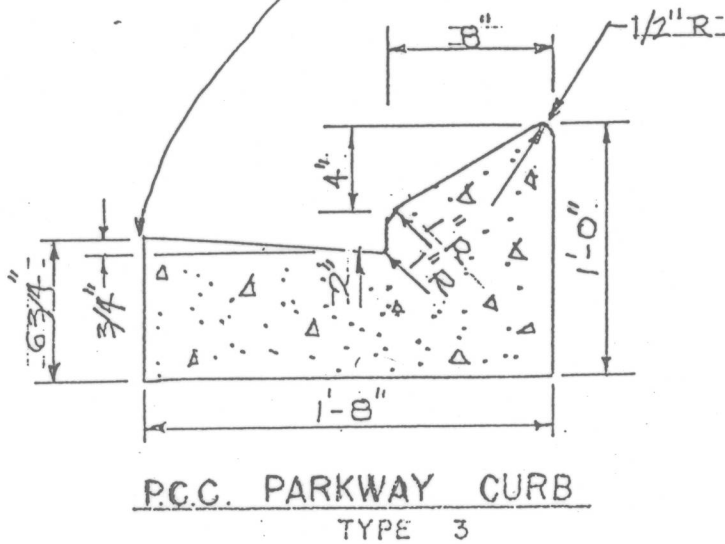
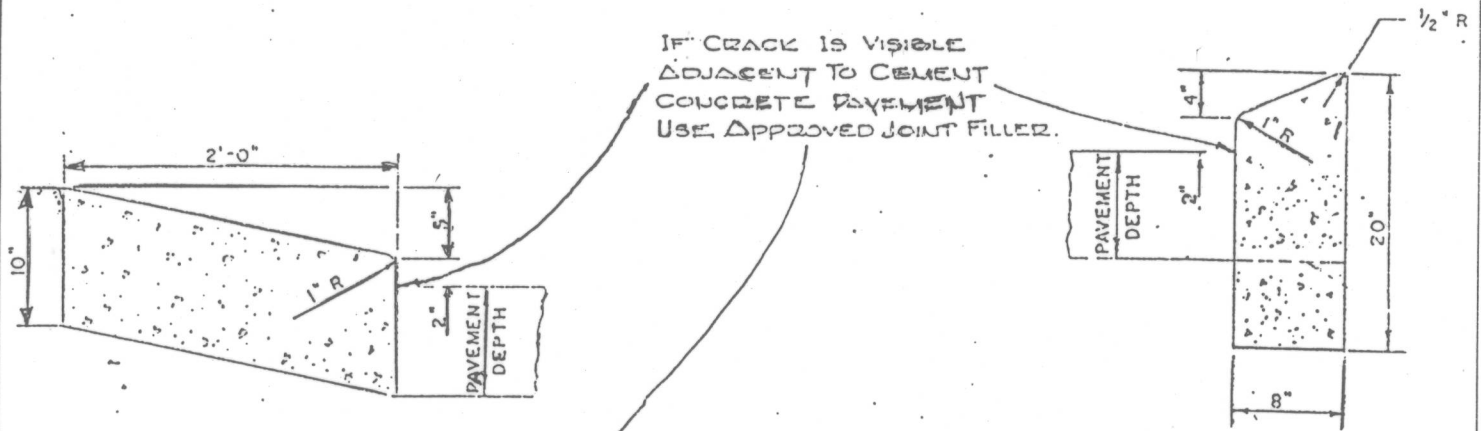
CITY OF NEWARK

TYPICAL VERTICAL CURB

42



DELETED BY RESOLUTION OF COUNCIL
10/5/70 ROLLED CURB FOR REPLACEMENT ONLY

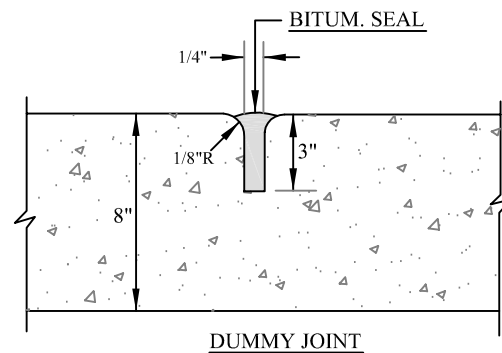
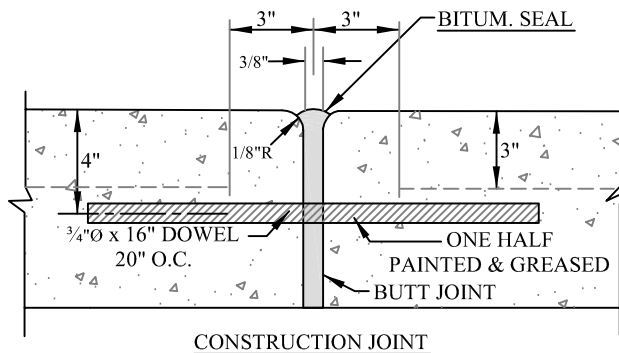
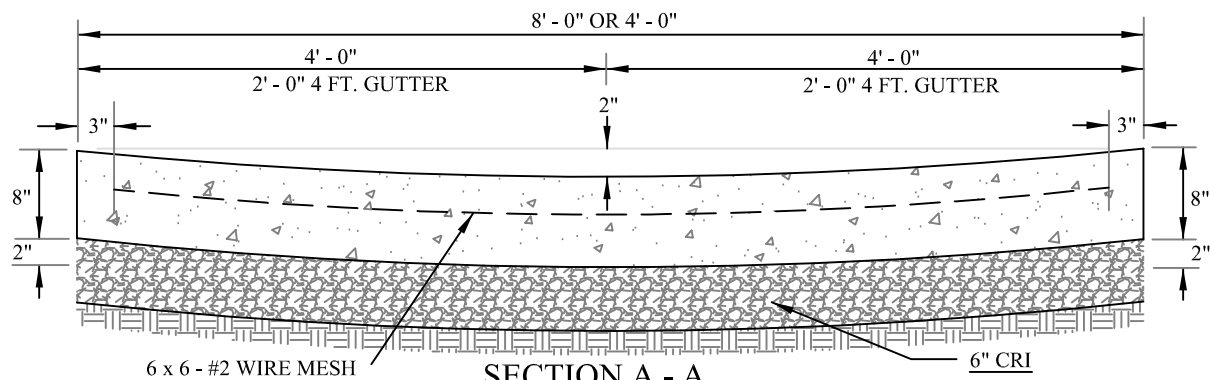
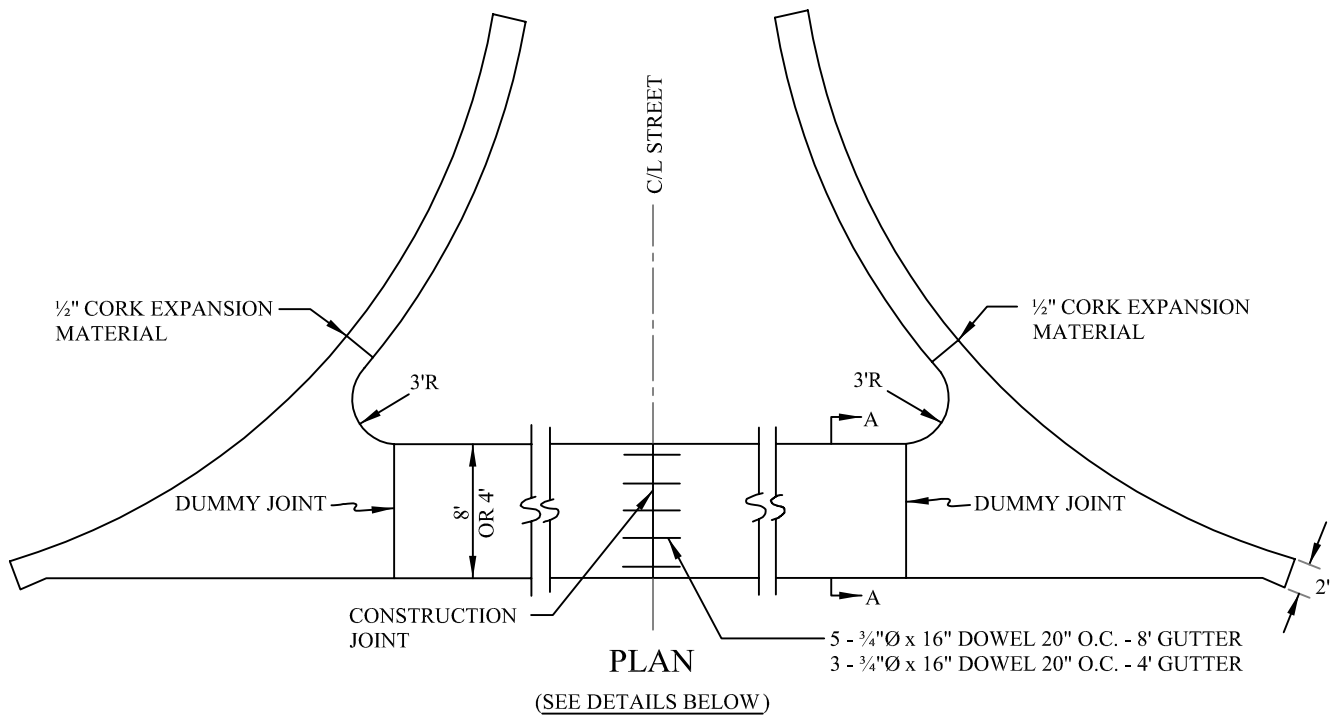


ASPHALTIC CONCRETE CURB

CITY OF NEWARK

P.C.C. PARKWAY CURB AND
ASPHALTIC CONCRETE CURB

44



NOTE:

1. INVERT OF VALLEY GUTTER WILL CONTINUE GRADE OF CURB INVERT OF STREET IN DIRECTION OF DRAINAGE. INVERT OF VALLEY GUTTER IS TO BE HAND PUDDLED TO PRESENT SMOOTH CHANGES IN SLOPE.
2. CONCRETE TO BE 3500# A-E.

DETAILS

NO SCALE

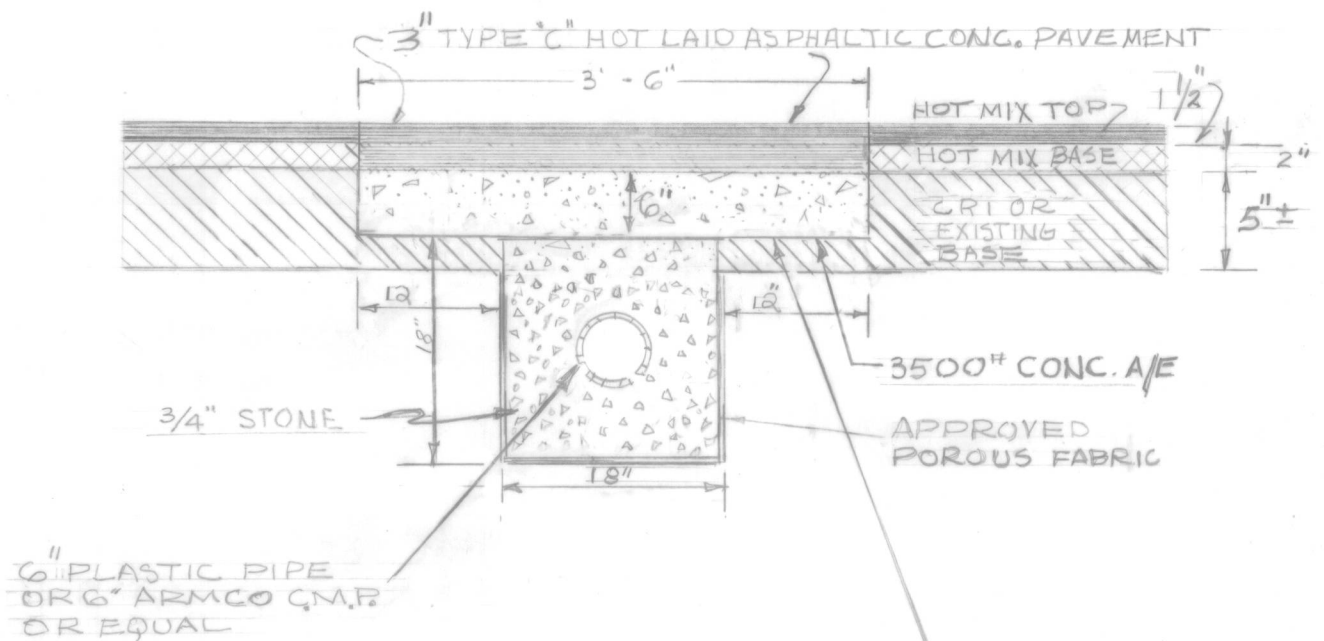
Valley Gutter - Details



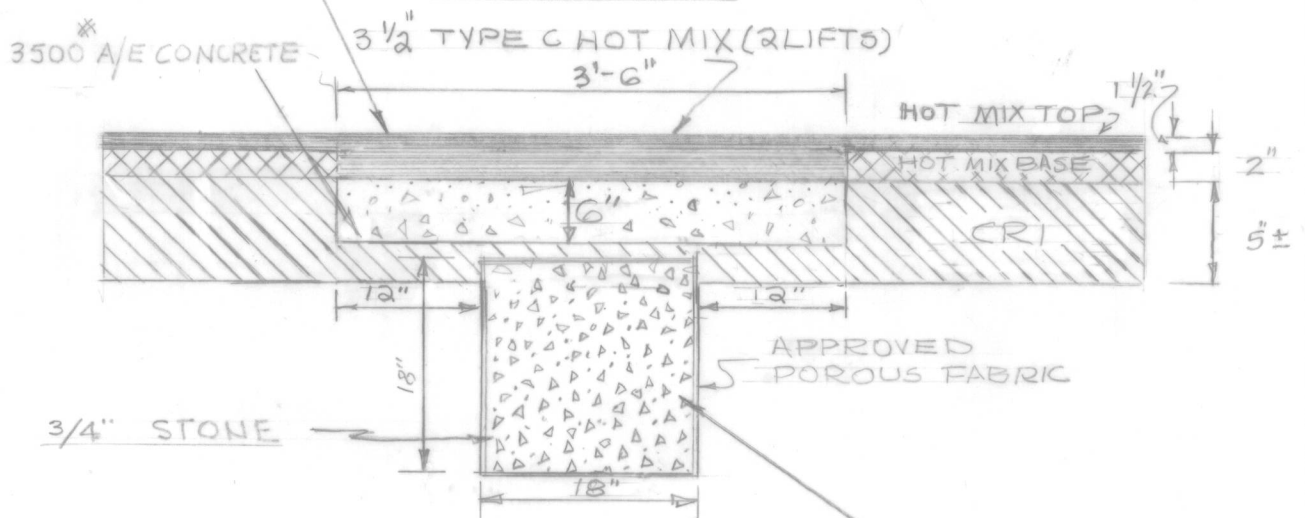
"Committed to Service Excellence"

Scale: N.T.S.	Date: 02/18/2010
Drawn: BJL	Page: 45

TYPE I



TYPE II



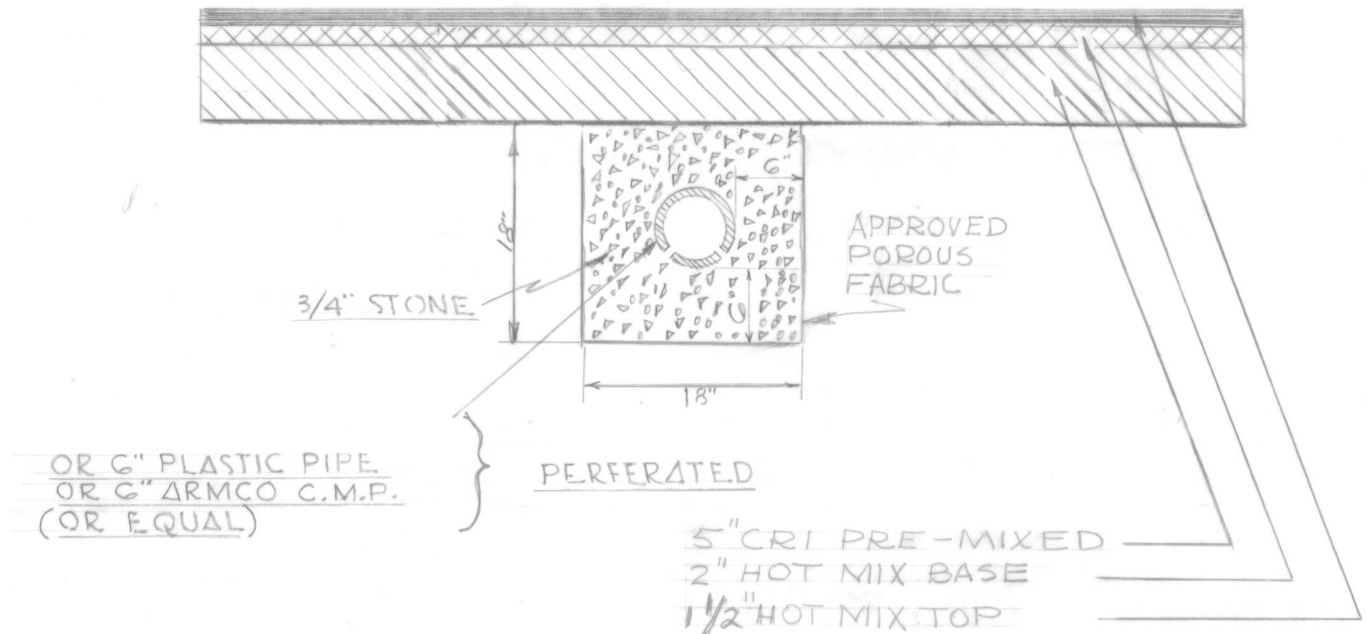
SAME AS ABOVE WITHOUT PIPE

NO SCALE

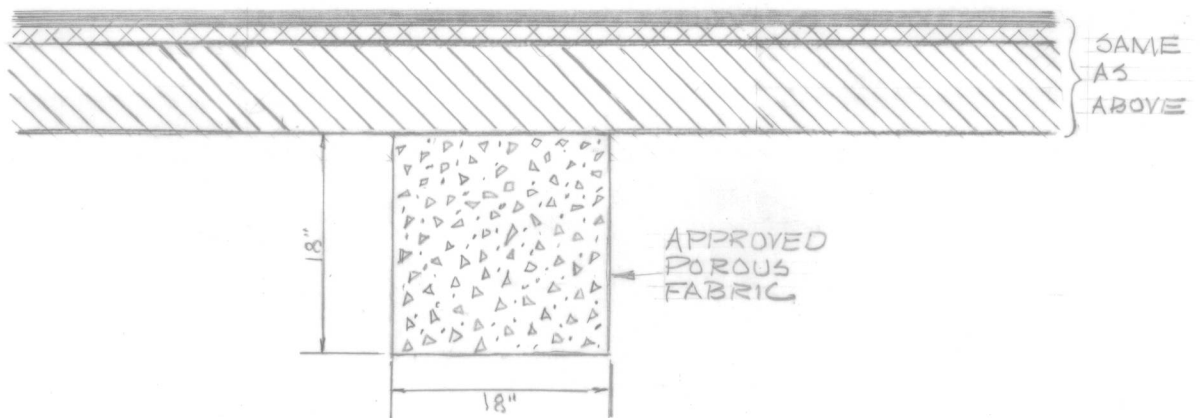
(46)

CITY OF NEWARK
 SUB-SURFACE DRAINAGE FOR EXISTING
 STREET

T TYPE I



TYPE II



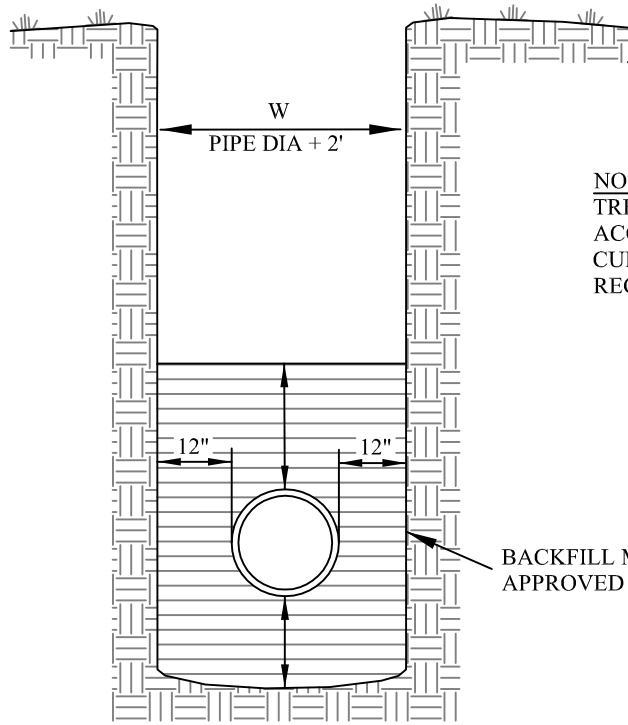
SAME AS ABOVE WITHOUT PIPE

NO SCALE

47

CITY OF NEWARK

SUB-SURFACE DRAINAGE FOR
NEW STREET CONSTRUCTION

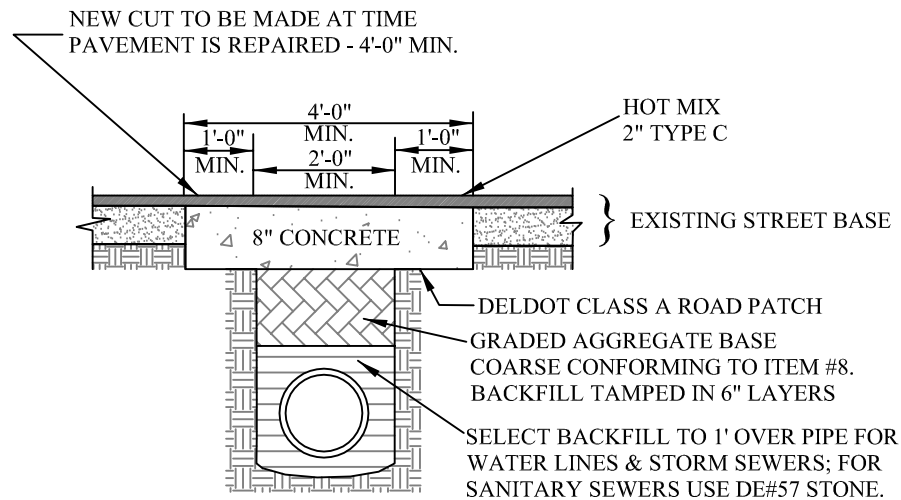


NOTE:
TRENCHING SHALL BE IN
ACCORDANCE WITH
CURRENT SAFETY
REGULATIONS

BACKFILL MATERIAL TO BE
APPROVED BY THE ENGINEER

**TYPICAL TRENCH
(NO SCALE)**

CUTTING & REPLACING ROADWAY PAVING



TRENCHING OTHER THAN STATE MAINTAINED ROADS

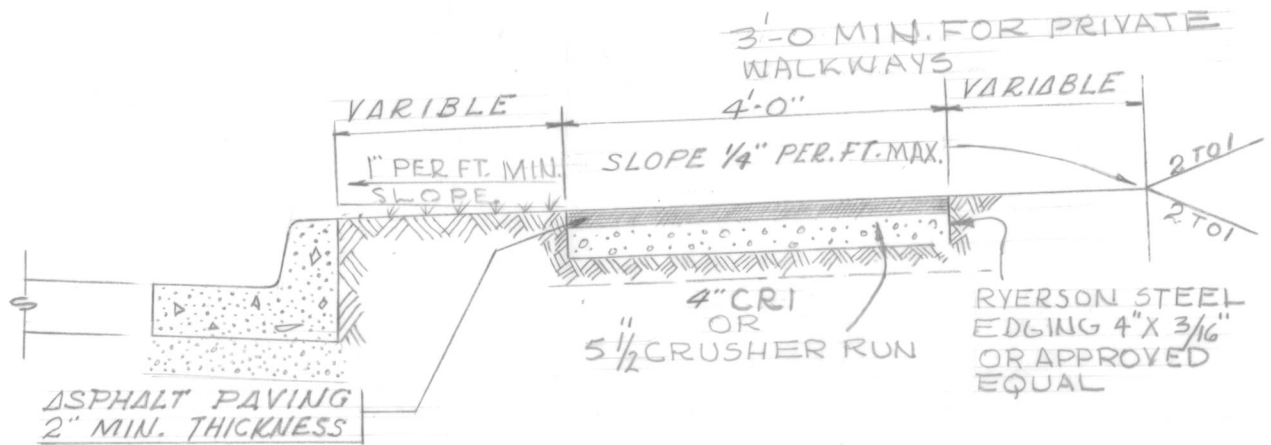
NOTE:
STATE MAINTAINED ROADS
SHALL BE SUBJECT TO DEL.
D.O.T. STANDARDS &
INSPECTION.

Pipe Trenching & Replacing Paving Crossing Trench



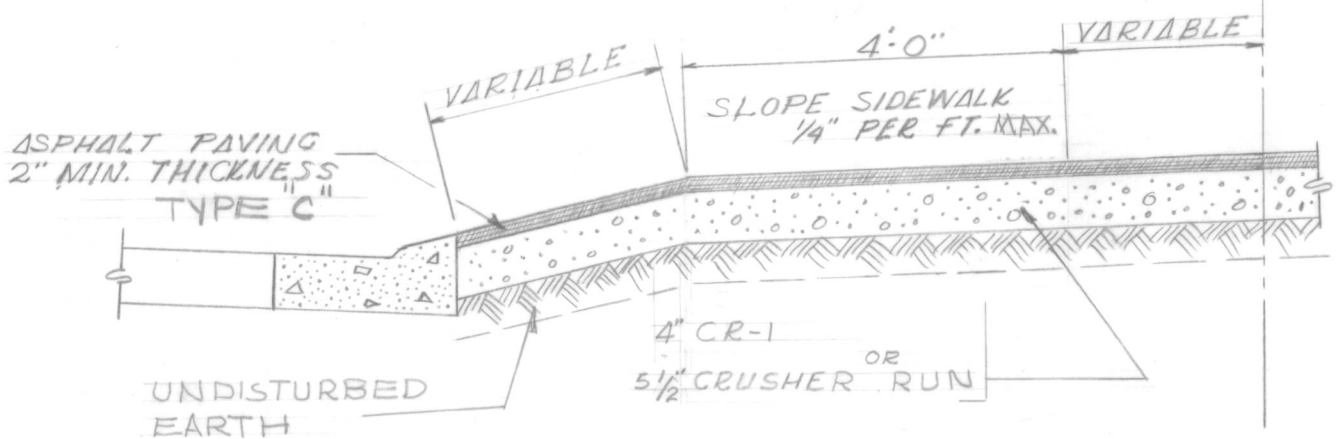
"Committed to Service Excellence"

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ASPHALT SIDEWALK CROSS-SECTION

NO SCALE

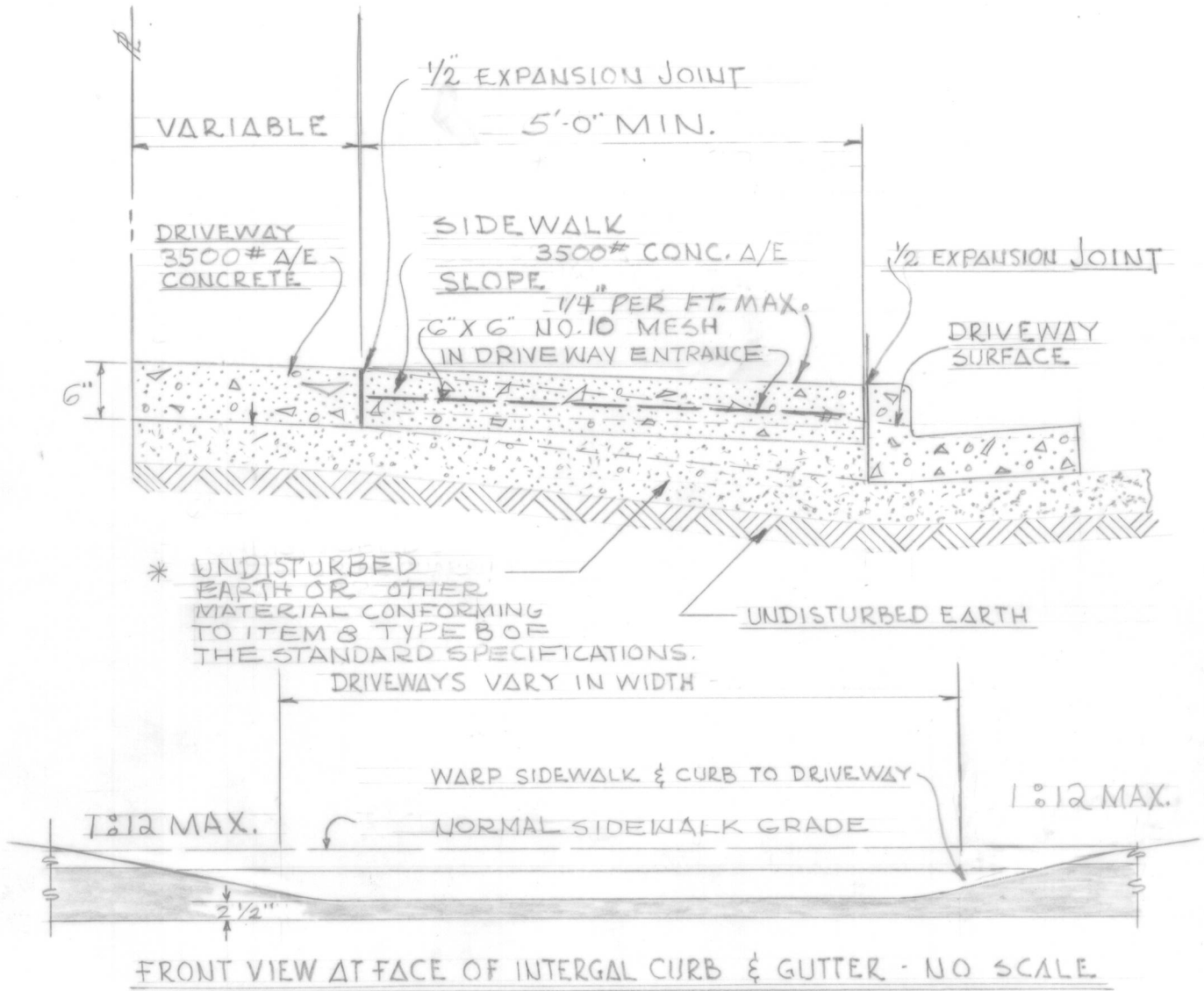


ASPHALT DRIVEWAY CROSS SECTION

NOTE:
MIN. DRIVEWAY WIDTH
SINGLE 10 FT.
DOUBLE 18 FT.

CITY OF NEWARK

STANDARD 4' ASPHALT WALKWAYS, SIDEWALK & DRIVEWAYS 50



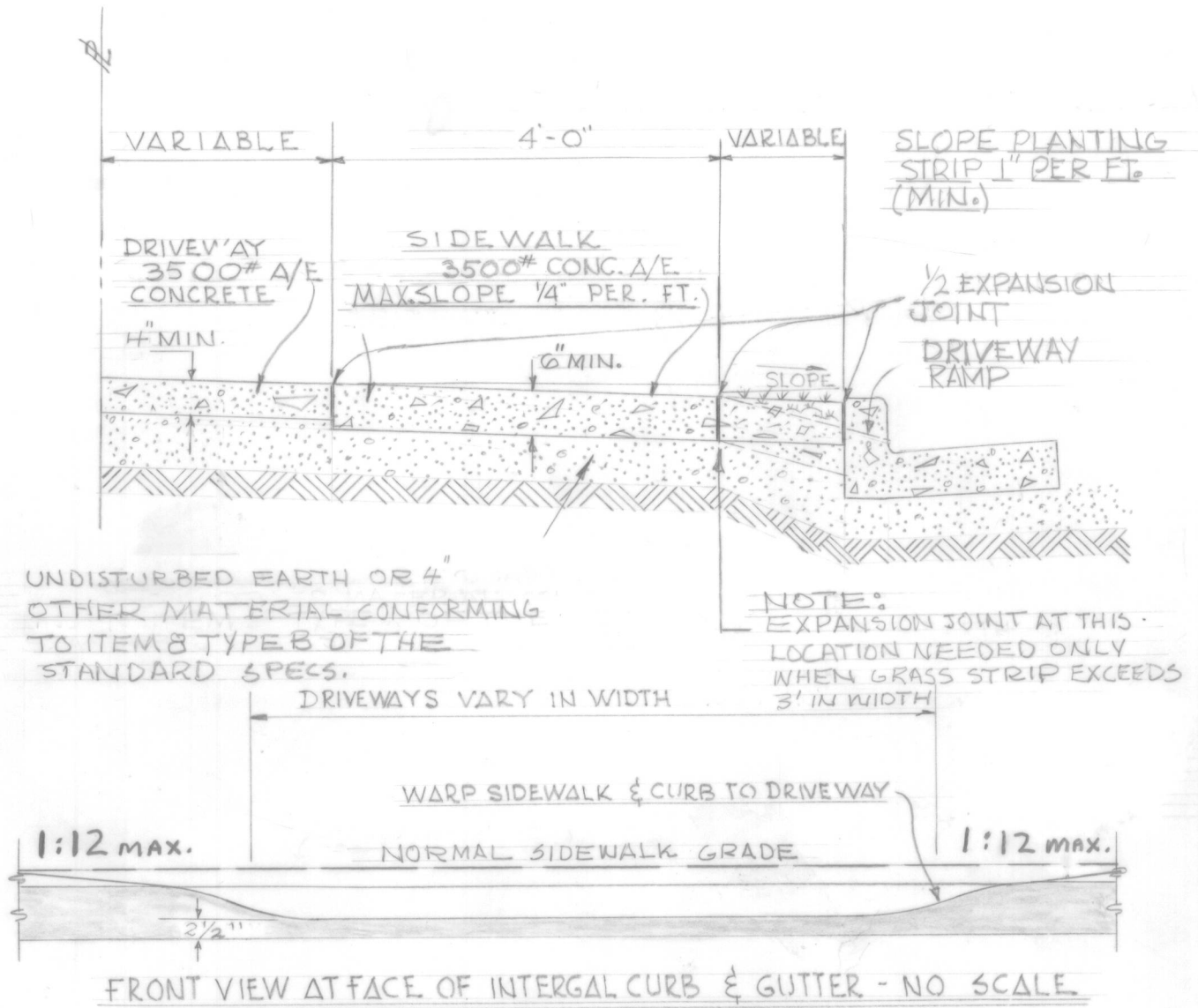
BUSINESS AREA SIDEWALK (5' MIN. WIDTH)

NOTES:

- WALKWAYS:
1. EXPANSION JOINT, PROVIDED EVERY 20' FOR CONCRETE PAVEMENT. MAX. SLOPE 8% UNLESS CHANGE APPROVED BY P.W.D.
 2. MIN. THICKNESS 4"

CITY OF NEWARK

TYPICAL SIDEWALK AND DRIVEWAY
WALKWAY - DETAIL (BUSINESS AREA) 51



RESIDENTIAL AREA SIDEWALK (4') WIDE

NOTES:

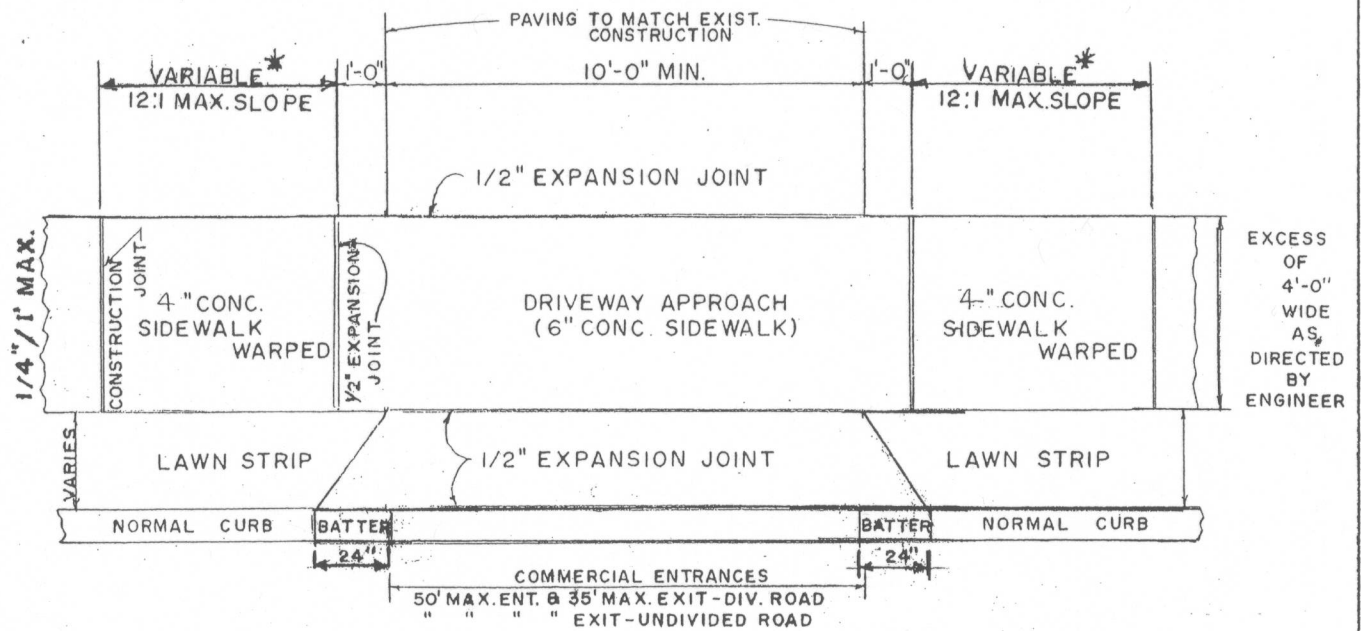
1. EXPANSION JOINT, PROVIDED EVERY 20' FOR CONCRETE PAVEMENT.
2. MIN. THICKNESS 4"

3. DRIVEWAYS:

- WIDTH - SINGLE 10 FT. DOUBLE 18 FT.
- EXPANSION JOINTS EVERY 20' MIN.

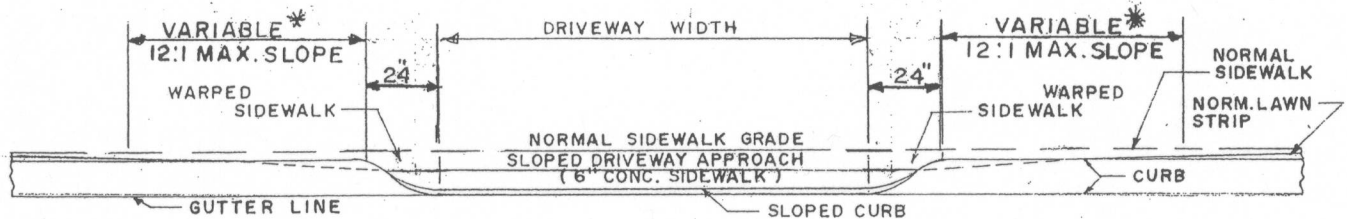
CITY OF NEWARK

TYPICAL SIDEWALK DRIVEWAY AND WALKWAY DETAIL



NOTE:

WHEN SIDEWALK ABUTS CURB, THE BATTER IN THE CURB MUST BE OF SUFFICIENT LENGTH TO PROVIDE $\leq 8\%$ SLOPE IN THE TRANSITION



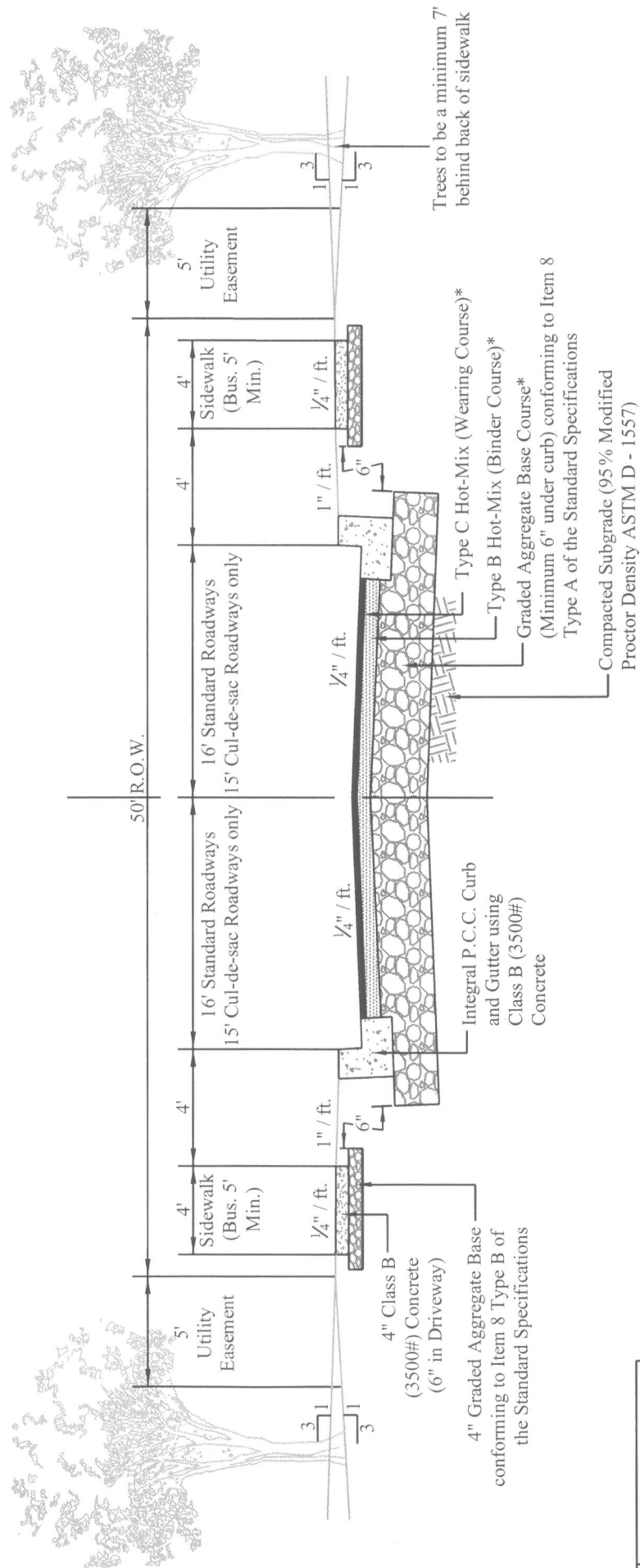
* NOTE:

- 1). WHERE A 12:1 MAXIMUM SLOPE WILL NOT MEET THE SIDEWALK GRADE WITHIN A LENGTH OF 15', THE TRANSITION LENGTH MAY BE LIMITED TO 15', AND THE SLOPE ALLOWED TO EXCEED 12:1.

CITY OF NEWARK

DRIVEWAYS CONSTRUCTION
LAYOUT

53



* See Page 54A for material thickness

TYPICAL STREET PAVEMENT SECTION

N.T.S.



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CITY OF NEWARK MINIMUM STRUCTURAL REQUIREMENTS

FOR DIFFERENT ROAD TYPES

<u>ROAD TYPE</u>	<u>COURSE</u>	<u>MATERIAL</u>	<u>STRUC.#</u> <u>PER INCH</u>	<u>THICKNESS*</u> <u>IN INCHES</u>	<u>TOTAL SN</u>
LOCAL	WEARING	TYPE "C" HOT MIX	0.40	1.50	0.60
	BINDER	TYPE "B" HOT MIX	0.40	2.50	1.00
	SUBBASE	CR-1 STONE	0.14	8.00	<u>1.12</u> 2.72
COLLECTOR	WEARING	TYPE "C" HOT MIX	0.40	1.50	0.60
	BINDER	TYPE "B" HOT MIX	0.40	3.00	1.20
	SUBBASE	CR-1 STONE	0.14	10.00	<u>1.40</u> 3.20
INDUSTRIAL	WEARING	TYPE "C" HOT MIX	0.40	1.75	0.70
	BINDER	TYPE "B" HOT MIX	0.40	4.00	1.60
	SUBBASE	CR-1 STONE	0.14	12.00	<u>1.68</u> 3.98

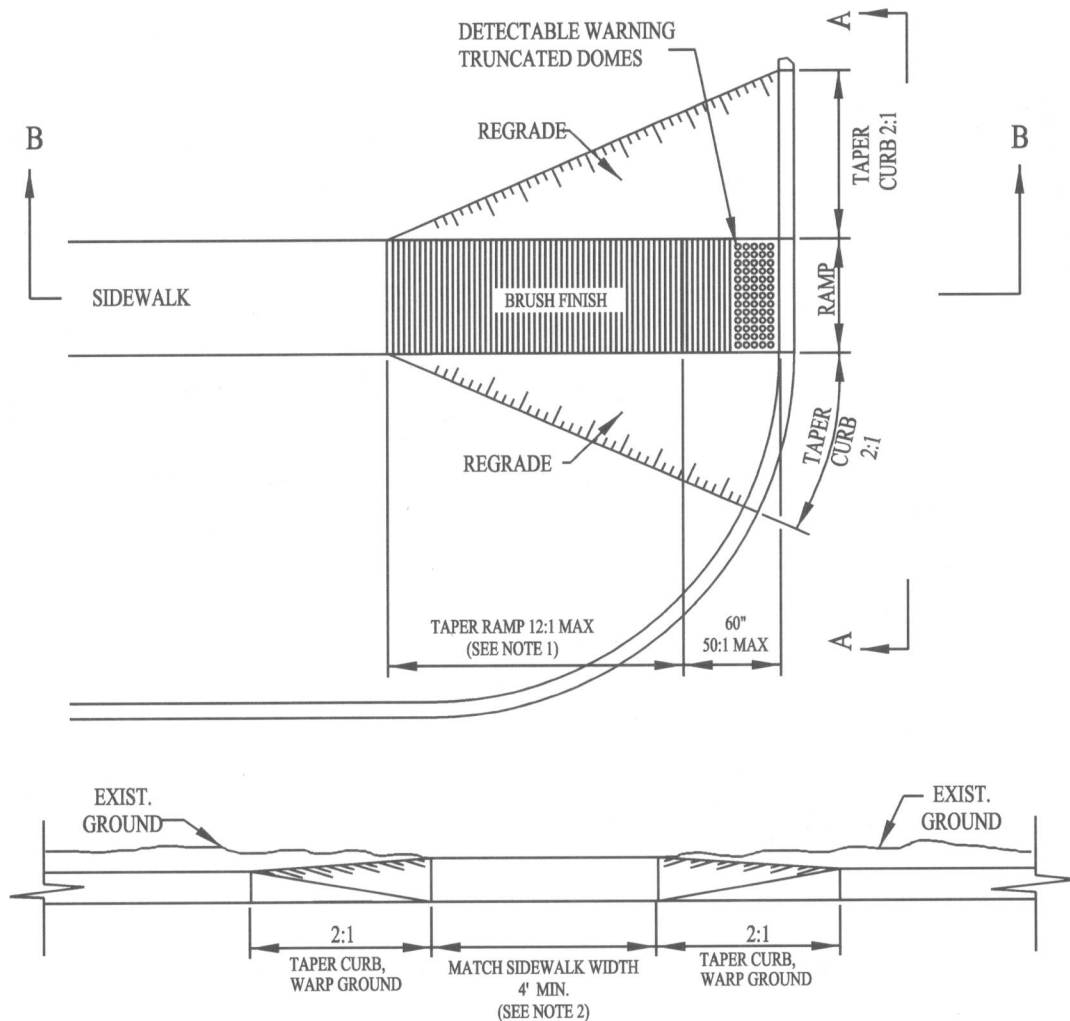
NOTES:

* FOR AREAS WITH GOOD SOILS (A-1 TO A-3, AASHTO SYSTEM)—A DESIGN SUBMITTAL WILL BE REQUIRED FOR AREAS WITH POOR SOILS

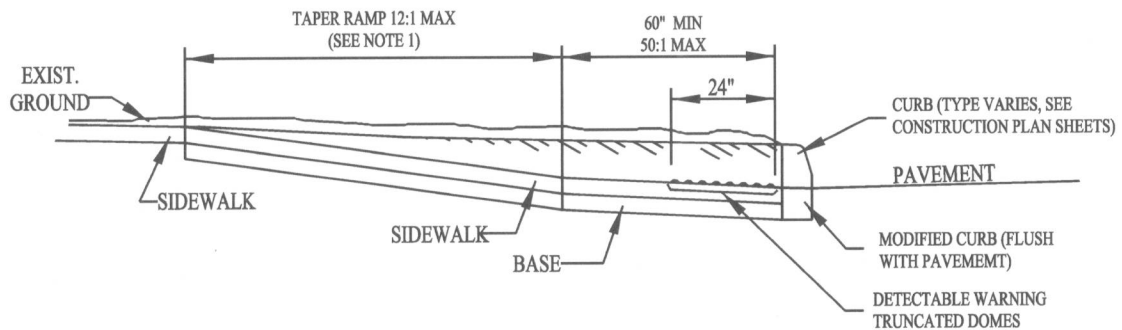
CITY OF NEWARK

MINIMUM STRUCTURAL REQUIREMENTS FOR DIFFERENT ROAD TYPES

54A



ELEVATION A-A



SECTION B-B

NOTES:

1). WHERE A 12:1 MAXIMUM SLOPE RAMP WILL NOT MEET THE SIDEWALK GRADE WITHIN A LENGTH OF 15' DUE TO STEEP ADJACENT ROADWAY, THE RAMP LENGTH MAY BE LIMITED TO 15', AND THE RAMP SLOPE ALLOWED TO EXCEED 12:1.

2). RAMP WIDTH SHALL BE 4' MINIMUM, HOWEVER, 5' IS PREFERRED.

CURB RAMP, TYPE 1

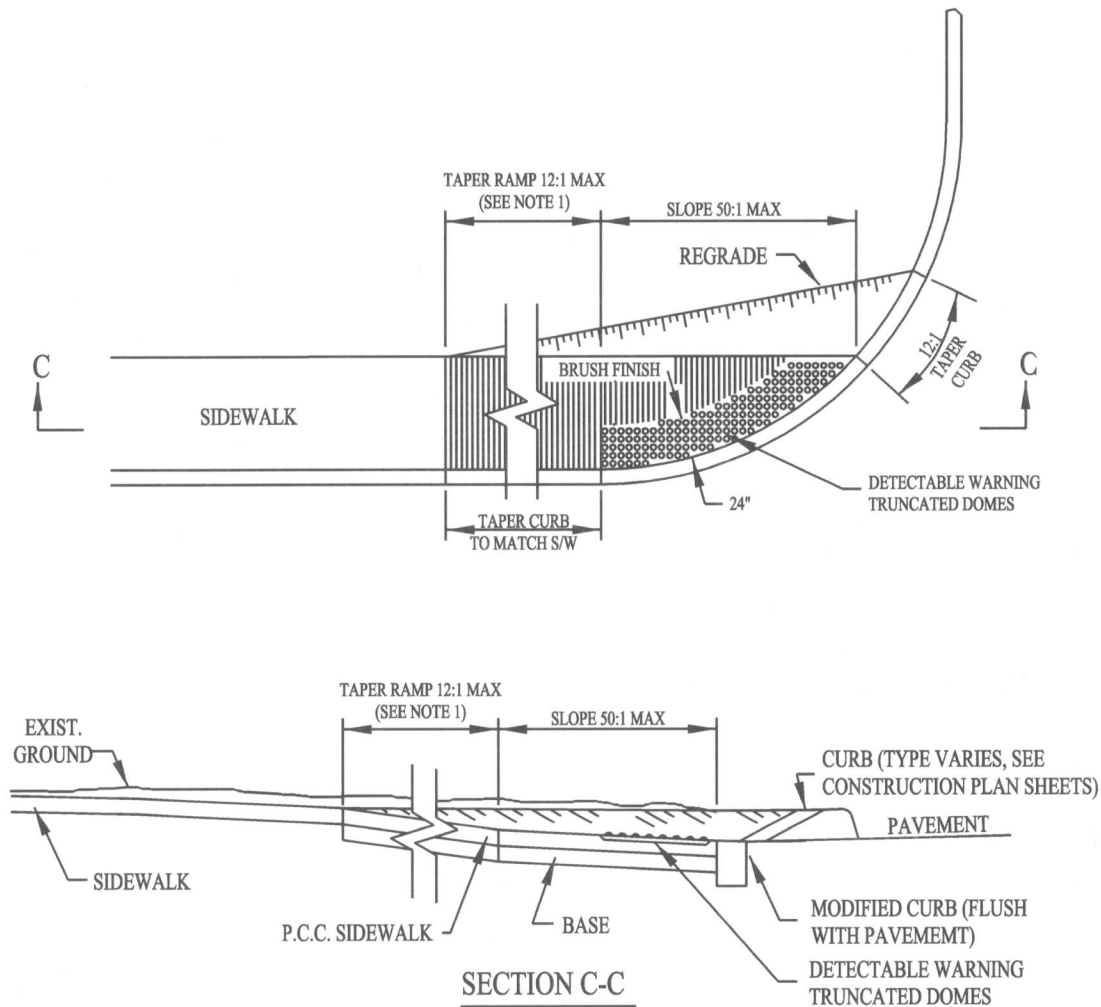
PERPENDICULAR CURB RAMP



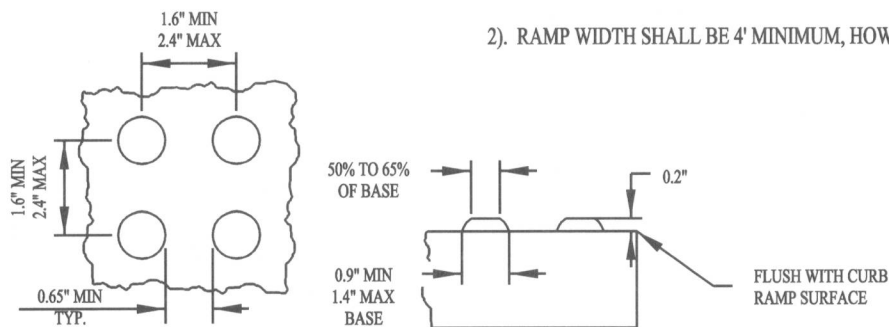
"Committed to Service Excellence"

Scale: N.T.S. Date: 06/09/05

Drawn: MEC Page: 55



- NOTES: 1). WHERE A 12:1 MAXIMUM SLOPE RAMP WILL NOT MEET THE SIDEWALK GRADE WITHIN A LENGTH OF 15' DUE TO STEEP ADJACENT ROADWAY, THE RAMP LENGTH MAY BE LIMITED TO 15', AND THE RAMP SLOPE ALLOWED TO EXCEED 12:1.
- 2). RAMP WIDTH SHALL BE 4' MINIMUM, HOWEVER, 5' IS PREFERRED.



DETECTABLE WARNING TRUNCATED DOME DETAILS

- NOTES: 1) THE AREA OF DETECTABLE WARNING TRUNCATED DOMES SHALL BE 24" LONG AND THE FULL WIDTH OF THE RAMP.
- 2) SEE SPECIFICATION FOR ADDITIONAL INFORMATION.

CURB RAMP, TYPE 1
PERPENDICULAR CURB RAMP



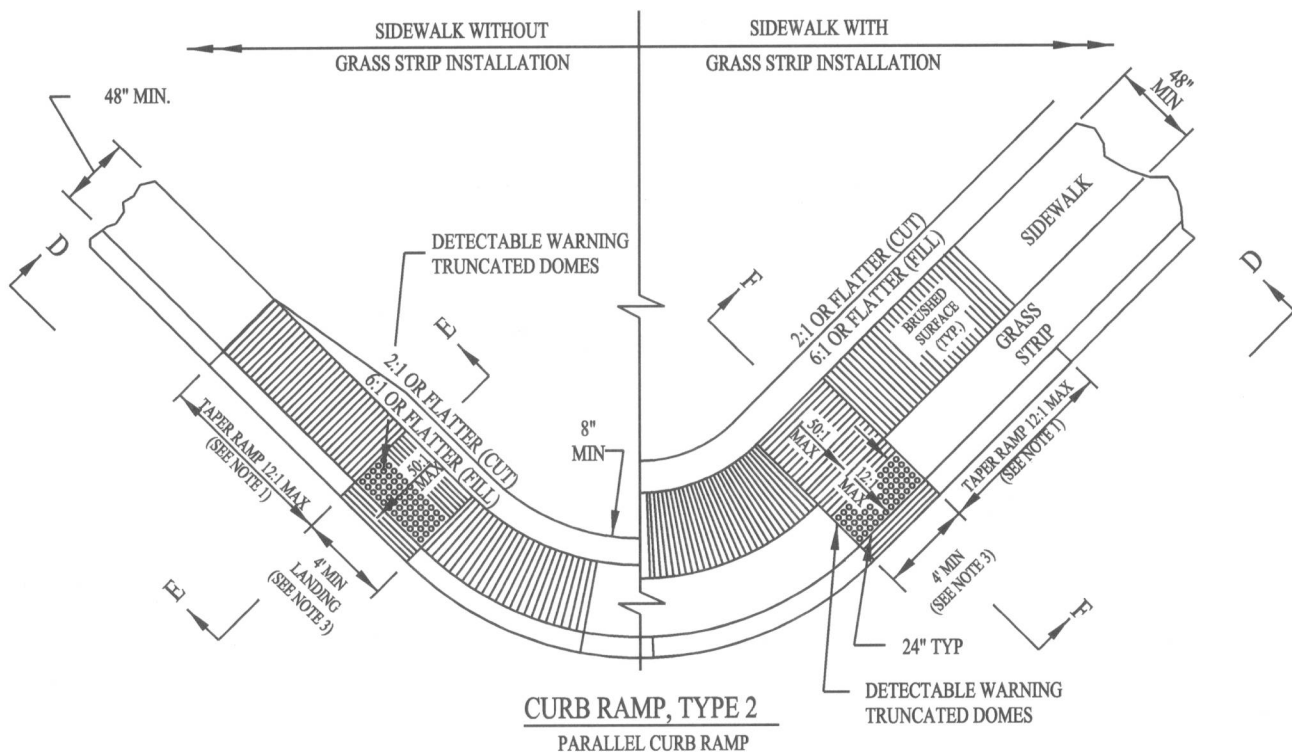
"Committed to Service Excellence"

Scale: N.T.S.

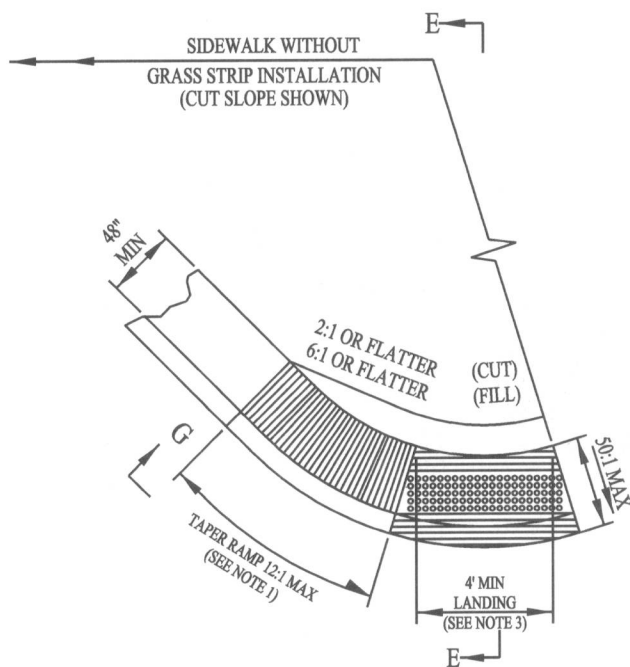
Date: 06/09/05

Drawn: MEC

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CURB RAMP, TYPE 2
PARALLEL CURB RAMP



CURB RAMP, TYPE 3
DIAGONAL CURB RAMP

NOTE: THE DIAGONAL CURB RAMP IS NOT THE PREFERRED TREATMENT.

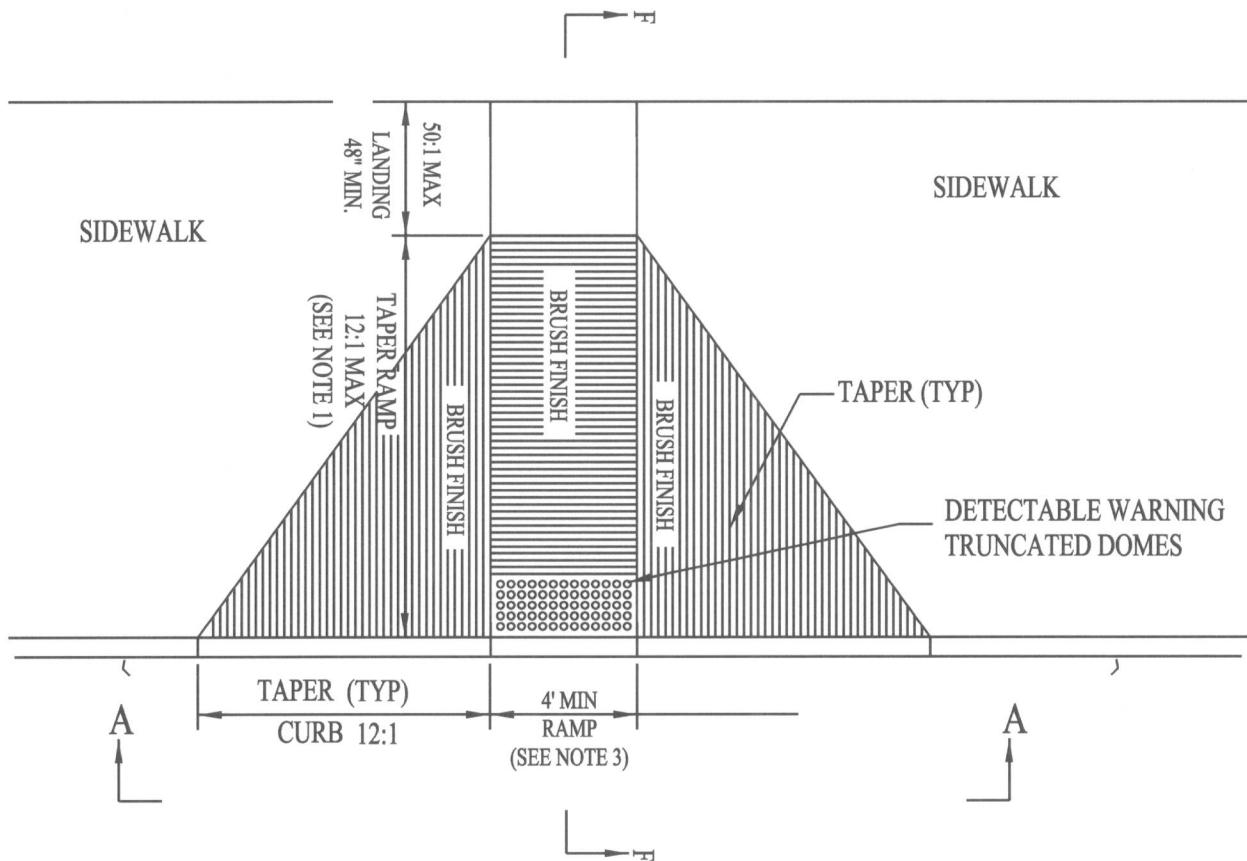
NOTES:

- 1). WHERE A 12:1 MAXIMUM SLOPE RAMP WILL NOT MEET THE SIDEWALK GRADE WITHIN A LENGTH OF 15' DUE TO STEEP ADJACENT ROADWAY, THE RAMP LENGTH MAY BE LIMITED TO 15', AND THE RAMP SLOPE ALLOWED TO EXCEED 12:1.
- 2). TRANSITION TO EXISTING SIDEWALK WIDTH OVER THE LENGTH OF THE RAMP.
- 3). RAMP WIDTH SHALL BE 4' MINIMUM, HOWEVER, 5' IS PREFERRED.
- 4). IN BUSINESS AREA, SIDEWALK WIDTH SHALL BE 60\"/>



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Scale: N.T.S.	Date: 06/03/05
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CURB RAMP, TYPE 4 PERPENDICULAR CURB RAMP

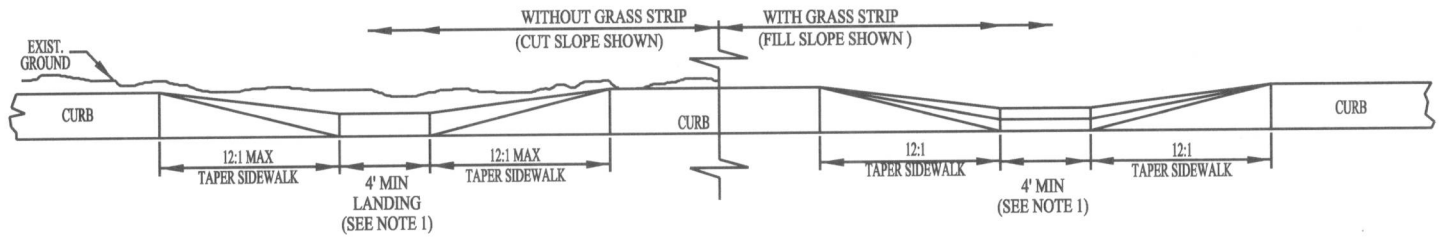
NOTES:

- 1). WHERE A 12:1 MAXIMUM SLOPE RAMP WILL NOT MEET THE SIDEWALK GRADE WITHIN A LENGTH OF 15' DUE TO STEEP ADJACENT ROADWAY, THE RAMP LENGTH MAY BE LIMITED TO 15', AND THE RAMP SLOPE ALLOWED TO EXCEED 12:1.
- 2). TRANSITION TO EXISTING SIDEWALK WIDTH OVER THE LENGTH OF THE RAMP.
- 3). RAMP WIDTH SHALL BE 4' MINIMUM, HOWEVER, 5' IS PREFERRED.
- 4). IN BUSINESS AREA, SIDEWALK WIDTH SHALL BE 60" MINIMUM.

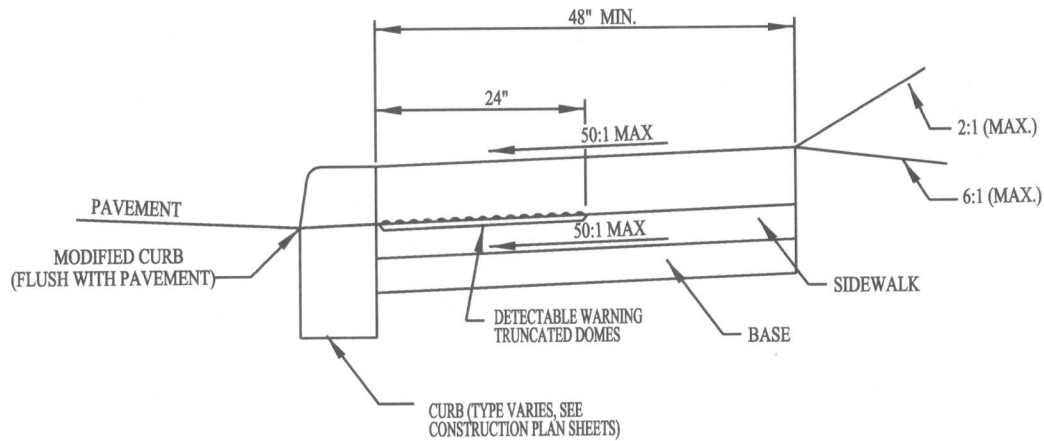


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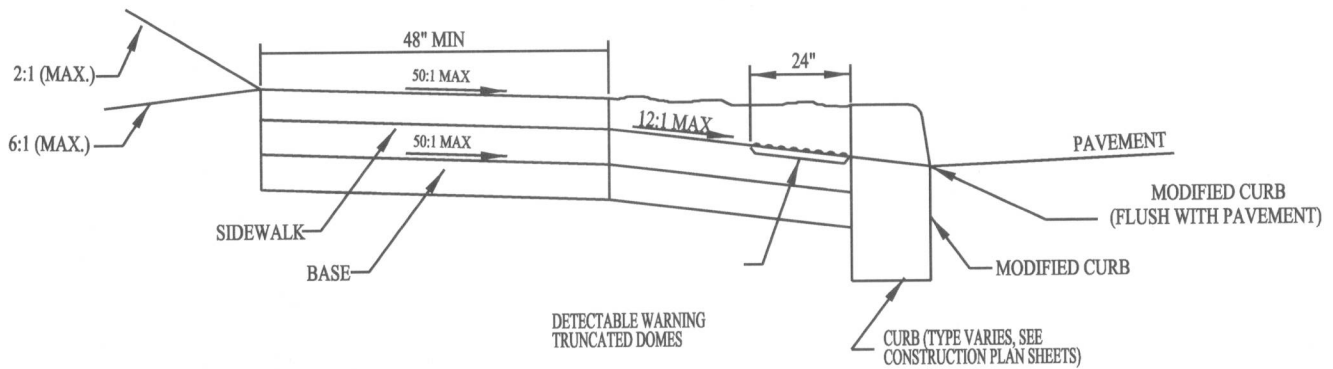
Scale: N.T.S.	Date: 06/03/05
Drawn: MEC	Page: 57



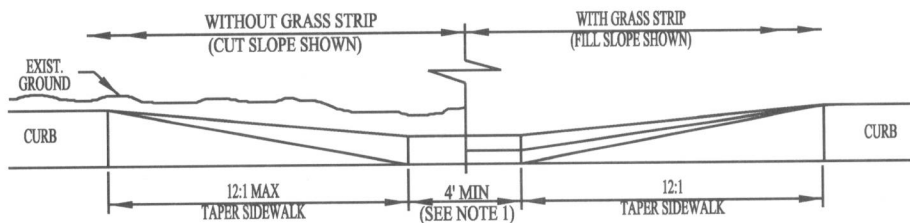
ELEVATION D-D



SECTION E-E



SECTION F-F



ELEVATION G-G

NOTE:

- 1) CURB RAMP WIDTH SHALL BE 4' MINIMUM, HOWEVER, 5' IS PREFERRED.
- 2) SIDEWALK WIDTH SHALL BE 60" MINIMUM IN BUSINESS AREAS.



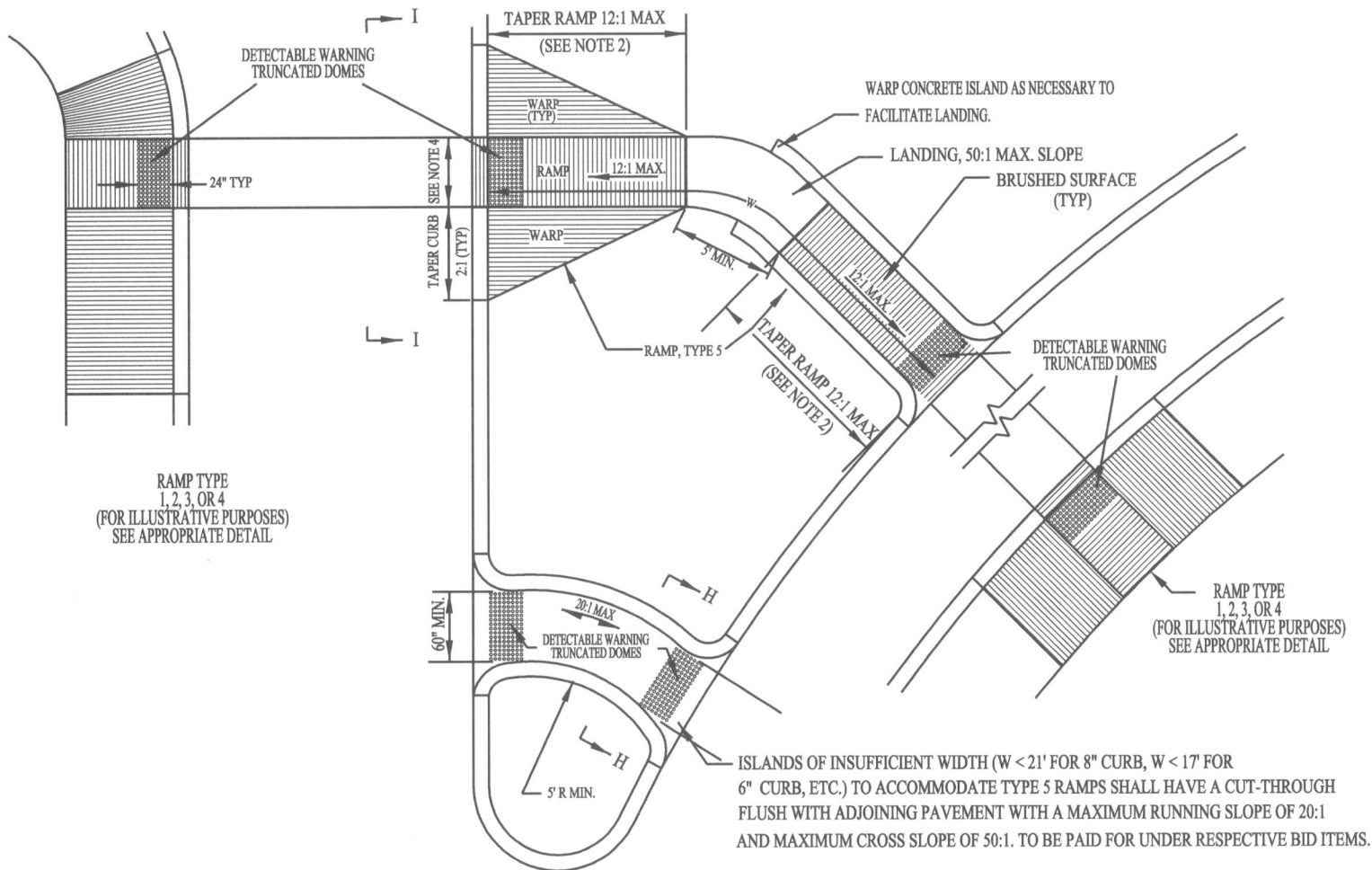
"Committed to Service Excellence"

Scale: N.T.S.

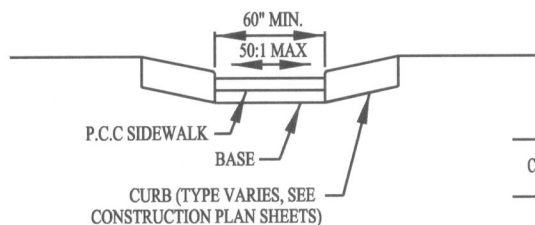
Date: 06/03/05

Drawn: MEC

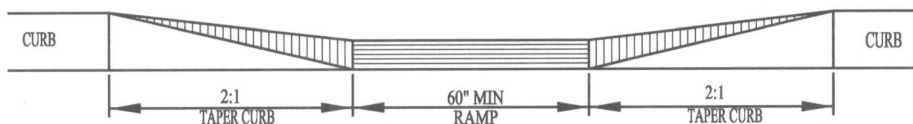
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CURB RAMP TYPE 5



SECTION H-H



ELEVATION I-I

NOTES:

- 1). A CUT-THROUGH LEVEL WITH THE STREET IS THE PREFERRED TREATMENT FOR ISLANDS, ALTHOUGH, RAMPS CAN BE USED WHERE THE ISLAND WIDTH IS SUFFICIENT TO ACCOMMODATE THEM. POSITIVE SURFACE DRAINAGE MUST BE PROVIDED FOR EITHER TREATMENT. EITHER TREATMENT IS ACCEPTABLE.
- 2). WHERE A 12:1 MAXIMUM SLOPE RAMP WILL NOT MEET THE SIDEWALK GRADE WITHIN A LENGTH OF 15' DUE TO STEEP ADJACENT ROADWAY, THE RAMP LENGTH MAY BE LIMITED TO 15', AND THE RAMP SLOPE ALLOWED TO EXCEED 12:1.
- 3). A CONTINUOUS PATH MUST BE PROVIDED BETWEEN ADJACENT CURB RAMPS IN ISLANDS AND MEDIANS, WITH A MAXIMUM RUNNING SLOPE OF 20:1.
- 4). RAMP WIDTH SHALL BE A MINIMUM OF 4', HOWEVER 5' IS PREFERRED. WHEN USING CUT-THROUGH STYLE RAMP, WITH CURBING ON BOTH SIDES OF THE RAMP, THE WIDTH SHALL BE A MINIMUM OF 5'.



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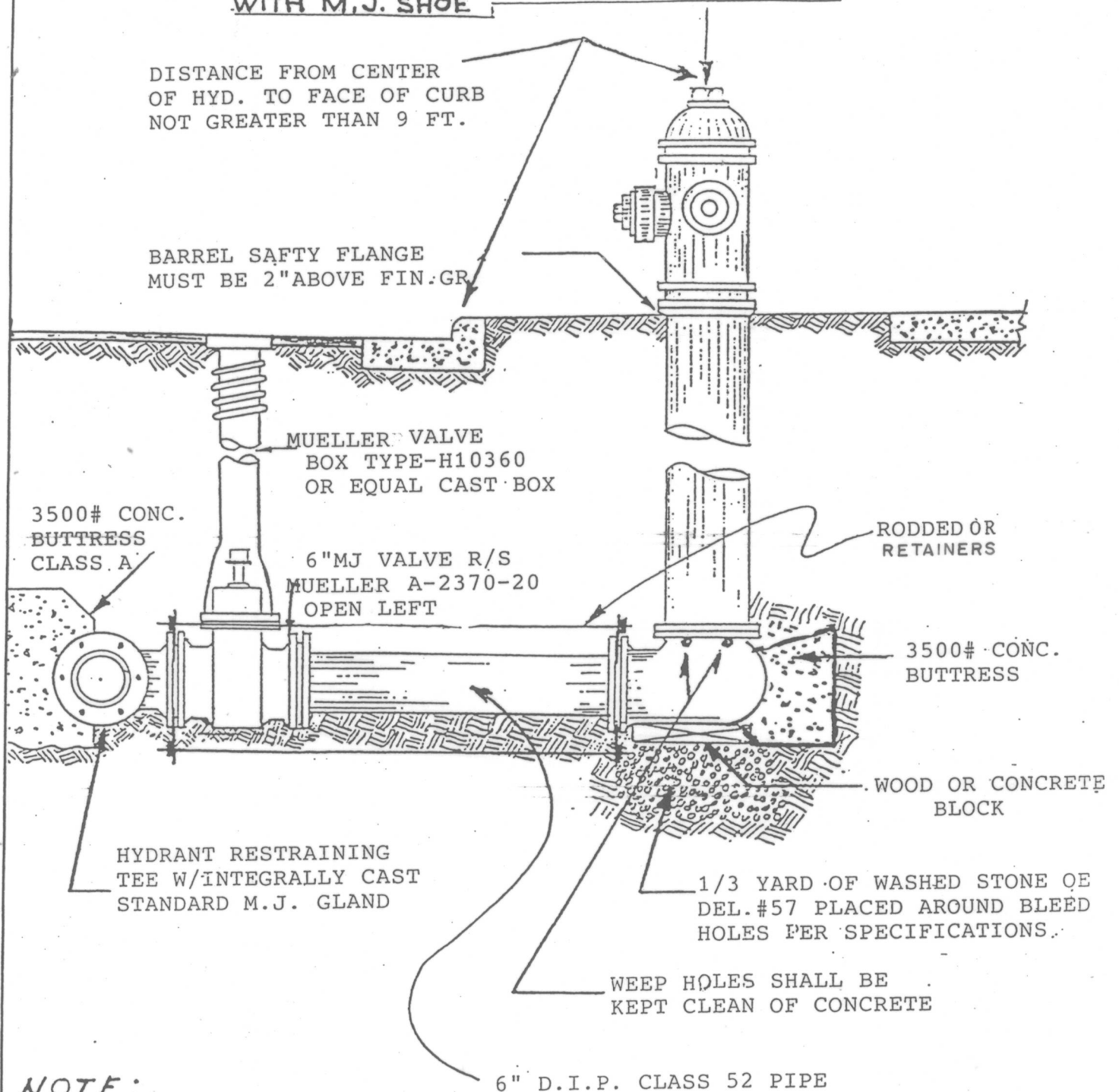
Scale: N.T.S.

Date: 06/03/05

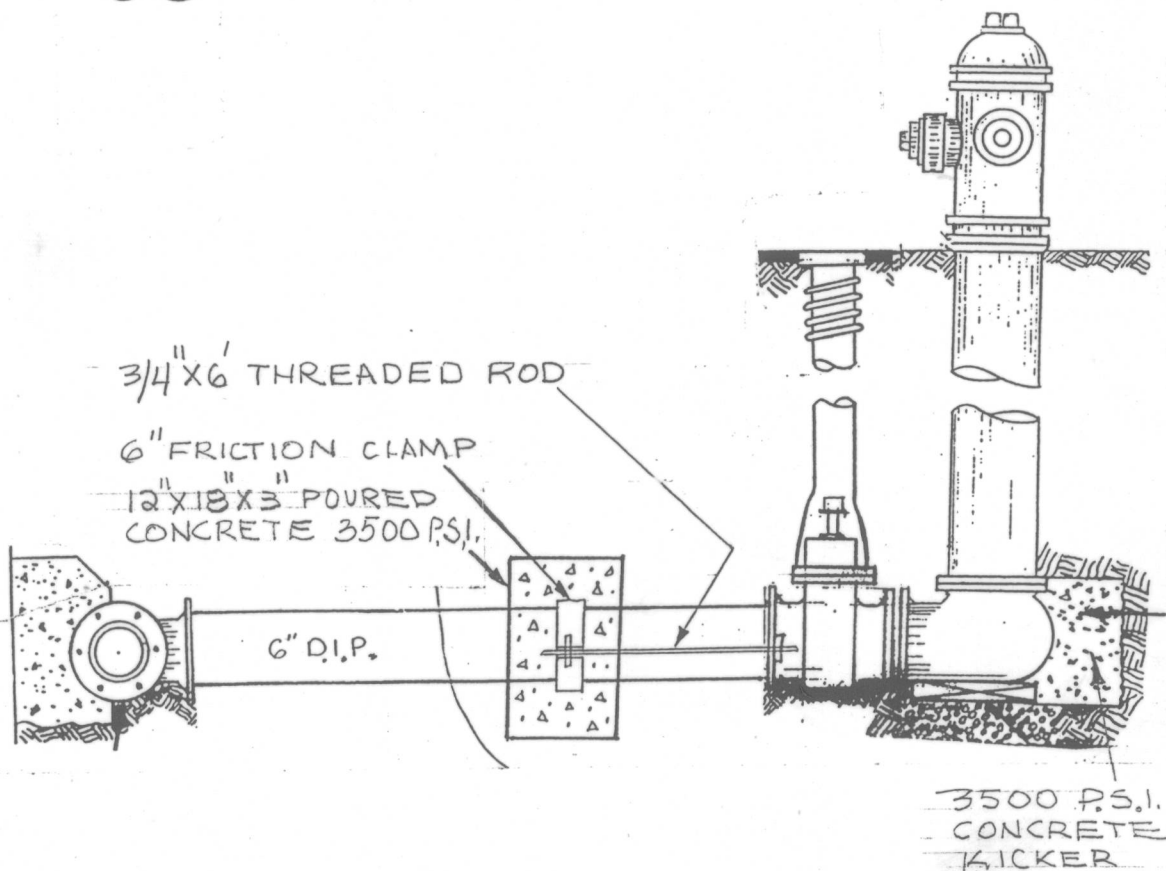
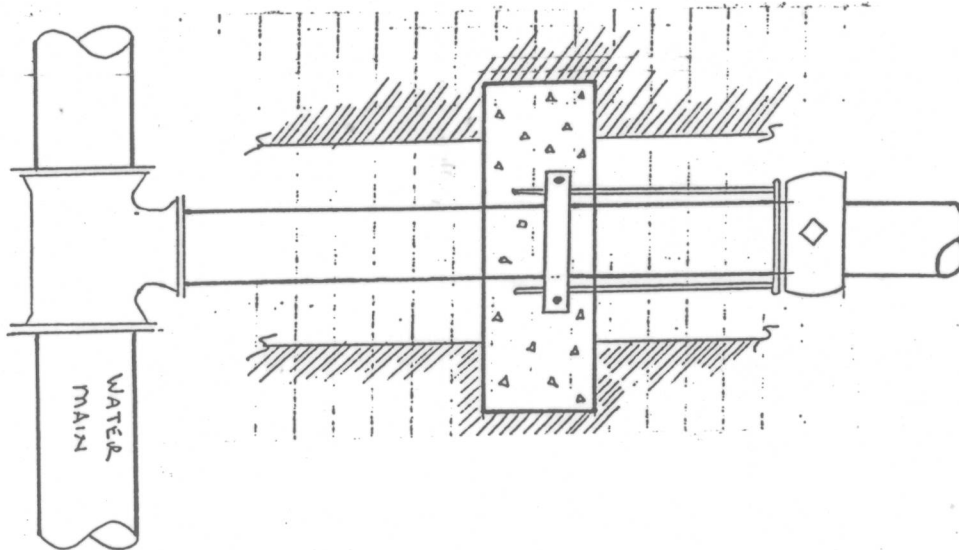
Drawn: MEC

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MUELLER HYDRANT A-423 CENTURIAN 5 1/4" N/S
WITH M.J. SHOE



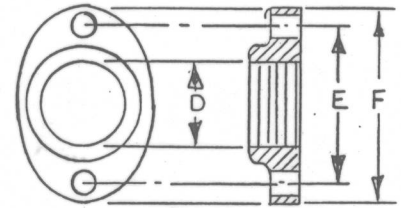
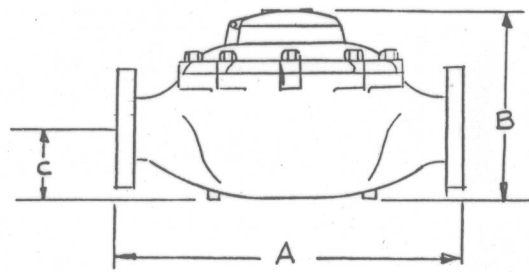
NOTE:
 ALL ITEMS TO BE AS
 SHOWN OR APPROVED EQUAL



CITY OF NEWARK

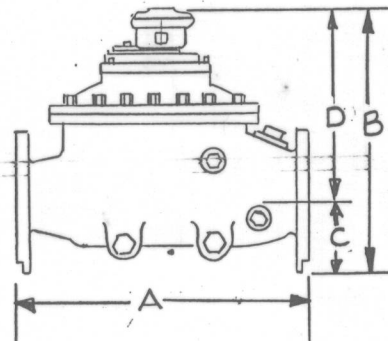
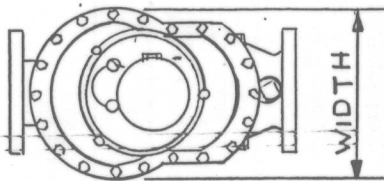
TIE BACK ON EXISTING
HYDRANT VALVE

60A



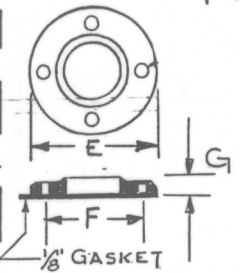
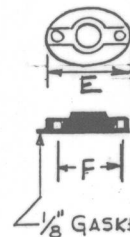
SIZE	A	B	C	D	E	F	WIDTH	WEIGHT	G. P. M.
1 1/2"	13"	6 7/8"	2 21/32"	1 1/2"	4"	5 3/8"	8 3/4"	34 LB	1 1/2 - 100
2"	17"	7 17/32"	2 5/8"	2"	4 1/2"	5 7/8"	9 1/16"	53 LB	2 - 160

STANDARD METER (REQUIRES BY-PASS)



2" METER ONLY

4", 6" METER ONLY



SIZE	A	B	C	D	E	F	G	WIDTH	WEIGHT	GPM
2"	15 1/4"	14 1/4"	3 3/16"	11 1/16"	5 7/8"	4 1/2"	1 1/4"	7"	76 LB	1/4 - 160
3"	17"	14 7/8"	4"	10 7/8"	7 1/2"	6"		7 1/2"	105 LB	1/2 - 320
4"	20"	17 3/4"	4 3/4"	13"	9"	7 1/2"	1 3/16"	10 5/8"	215 LB	3/4 - 500
6"	24"	18 3/4"	5 3/4"	13"	11"	9 1/2"	1 7/16"	11"	280 LB	1 1/2 - 1000

NOTE:

1. WEIGHT INCLUDES FLANGES.
2. DIAMETER OF FLANGE BOLT HOLES
2 13/16", 3 11/16", 4 3/4", 6 7/8".

3. DIAMETER OF BOLT
= 2 3/4", 3 5/8", 4 5/8", 6 3/4".

4. NUMBER OF BOLTS
2"-2, 3"-4, 4"-4, 6"-8.

COMPOUND SINGLE REGISTER METER

CITY OF NEWARK

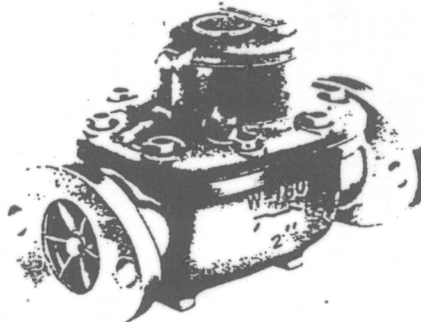
METER DETAILS

(61)

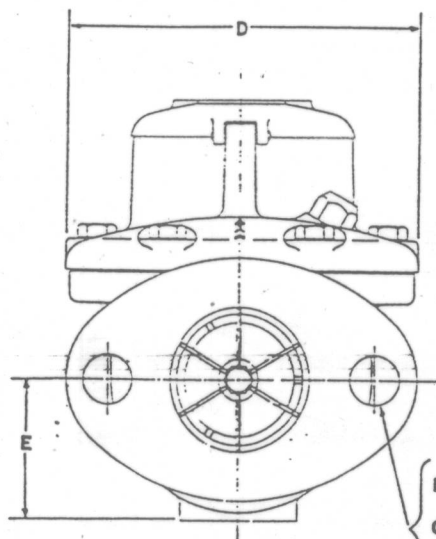
ROCKWELL

SERIES "W" TURBO-METERS

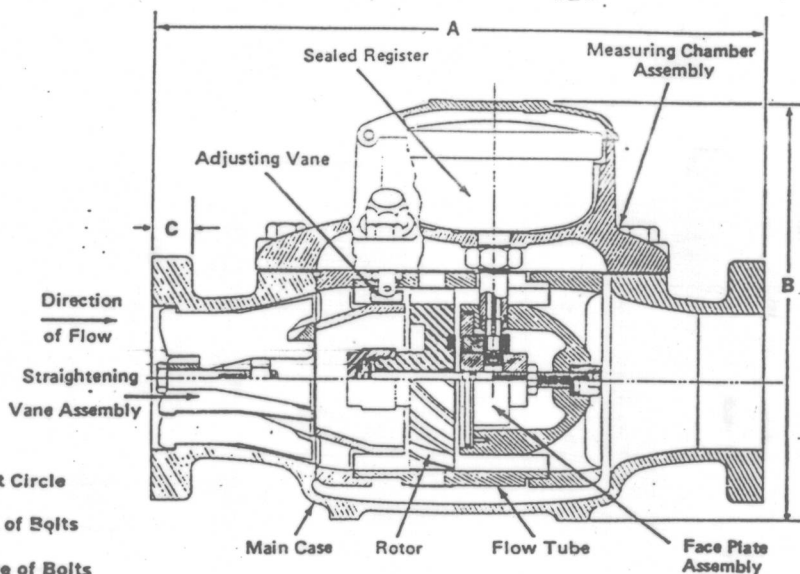
MODEL W-160 DR
BRONZE
MAGNETIC DRIVE
FLANGED END CONNECTIONS
SIZE 2"



W-160 DR TURBO-METER



F-Bolt Circle
G-No. of Bolts
H-Size of Bolts



METER AND PIPE SIZE	NORMAL OPERATING RANGE GPM		DIMENSIONS									NET WEIGHT POUNDS	SHIPPING WEIGHT POUNDS
	MINIMUM	MAXIMUM	CONNECTIONS	A	B	C	D	E	F	G	H		
2"	4	160†	FLANGED	10	7	⅝	6	2⅞	4½	2	¾	27	32

SERVICE: where fluid flow is in one direction only

FLANGE SIZE: 3" size, ANSI 125
pound class

OPERATING RANGE: continuous flows: 5 to 350 gpm
intermittent flow: 450 gpm max

**PIPE LENGTH
OPENING REQUIRED:** 12"

ACCURACY: 100 = 1.5% of actual thruput

METER REGISTRATION: hermetically sealed direct
reading register.

LOW FLOW: 95% @ 4 gallons per minute

REGISTER: 100,000,000 gallons
100 gallon, sweep hand revolution
10,000,000 cubic feet
10 cubic feet, sweep hand revolution

PRESSURE LOSS: 5.9 psi @ 350 gpm

MAXIMUM OPERATING PRESSURE: 150 psi

CITY OF NEWARK

2" TURBO-METER

61A

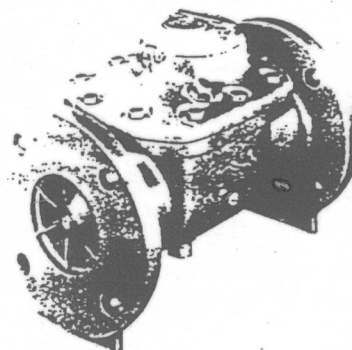
ROCKWELL

SERIES "W" TURBO-METERS

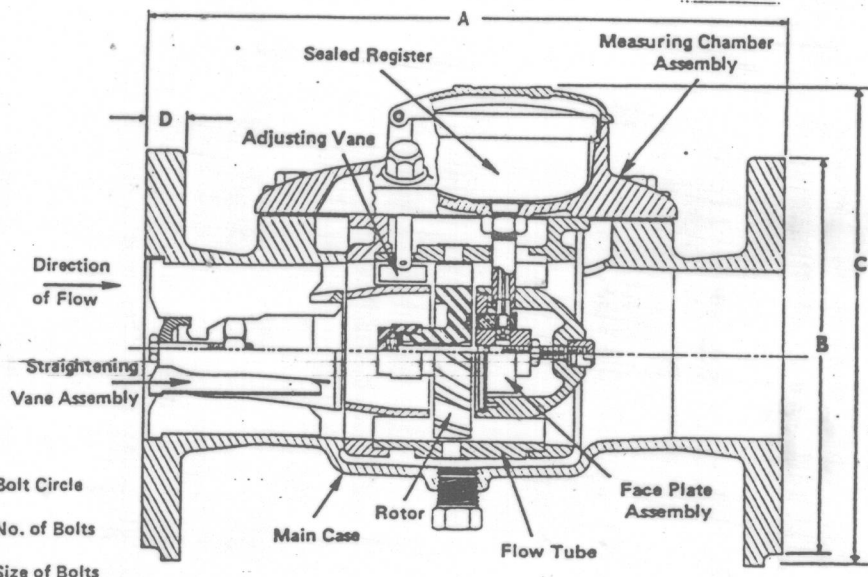
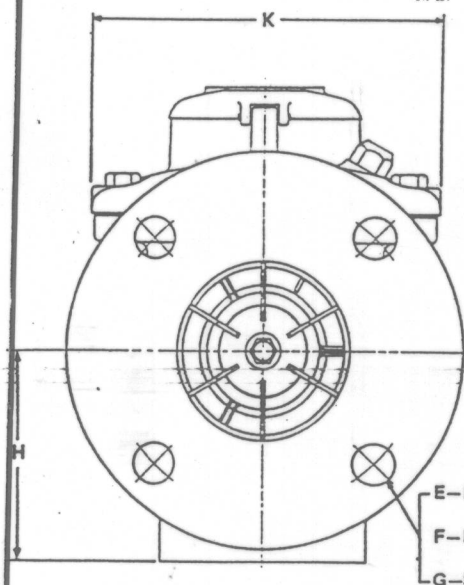


DIRECT READING REGISTERS

MODEL W-350 DR
BRONZE
MAGNETIC DRIVE
FLANGED END CONNECTIONS
SIZE



W-350 DR TURBO-METER



METER AND PIPE SIZE	OPERATING RANGE GPM		DIMENSIONS									NET WEIGHT POUNDS	SHIPPING WEIGHT POUNDS
	MINIMUM	MAXIMUM	A	B	C	D	E	F	G	H	K		
3"	5	350*	12	7½	9	¾	6	4	⅝	4	6½	46	53

SERVICE: where fluid flow is in one direction only

FLANGE SIZE: 3" size, ANSI 125
pound class

OPERATING RANGE: continuous flows: 5 to 350 gpm
intermittent flow: 450 gpm max

PIPE LENGTH
OPENING REQUIRED: 12"

ACCURACY: 100 = 1.5% of actual thruput

METER REGISTRATION: hermetically sealed direct
reading register

LOW FLOW: 95% @ 4 gallons per minute

REGISTER: 100,000,000 gallons
100 gallon, sweep hand revolution
10,000,000 cubic feet
10 cubic feet, sweep hand revolution

PRESSURE LOSS: 5.9 psi @ 350 gpm

MAXIMUM OPERATING PRESSURE: 150 psi

CITY OF NEWARK

3" TURBO-METER

61B

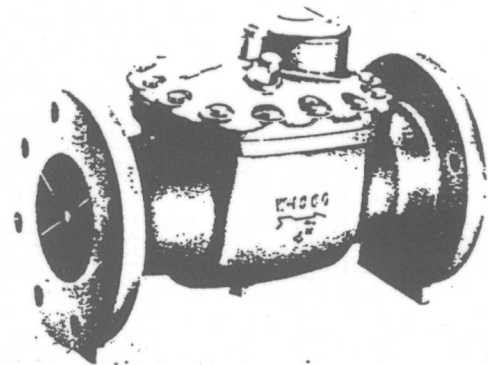
ROCKWELL

SERIES "W" TURBO-METERS

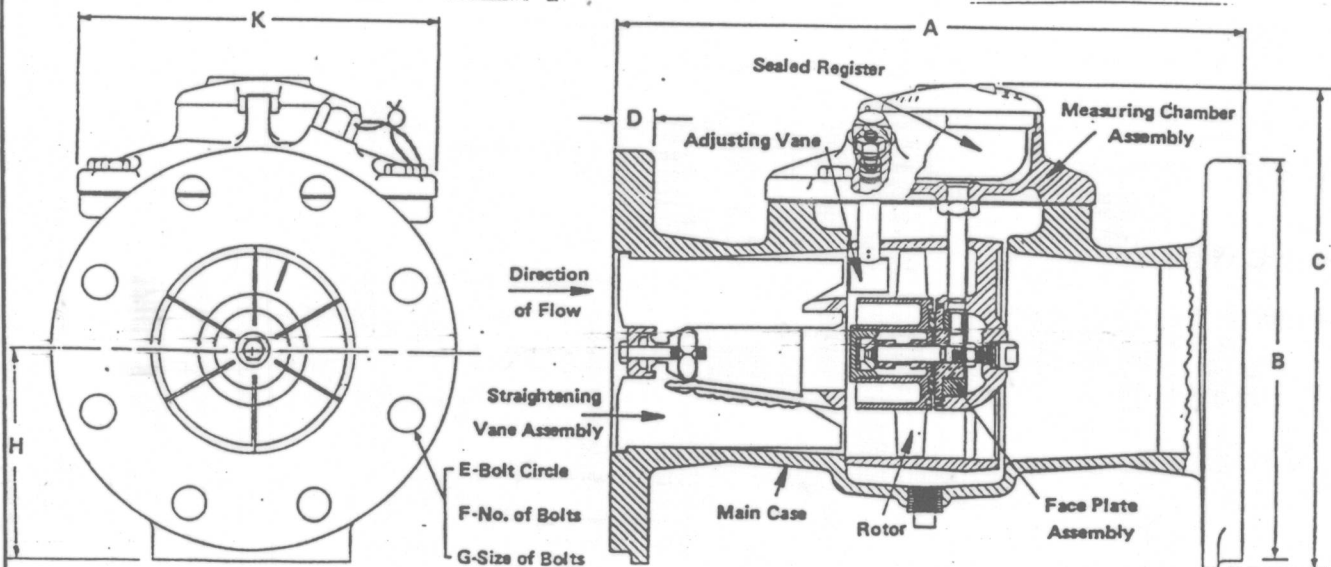
MODEL W-1000 DR
BRONZE
MAGNETIC DRIVE
FLANGED END CONNECTIONS
SIZE



DIRECT READING REGISTERS



W-1000 DR TURBO-METER



METER AND PIPE SIZE	NORMAL OPERATING RANGE GPM		DIMENSIONS									NET WEIGHT POUNDS	SHIPPING WEIGHT POUNDS
	MINIMUM	MAXIMUM	A	B	C	D	E	F	G	H	K		
4"	15	1000*	14	9	10-7/8	7/8	7-1/2	8	5/8	4-3/4	8	68	75

SERVICE: where fluid flow is in one direction only

FLANGE SIZE: 3" size, ANSI 125 pound class

OPERATING RANGE: continuous flows: 5 to 350 gpm
intermittent flow: 450 gpm max

**PIPE LENGTH
OPENING REQUIRED:** 12"

ACCURACY: 100 = 1.5% of actual thruput

METER REGISTRATION: hermetically sealed direct reading register

LOW FLOW: 95% @ 4 gallons per minute

REGISTER: 100,000,000 gallons
100 gallon, sweep hand revolution
10,000,000 cubic feet
10 cubic feet, sweep hand revolution

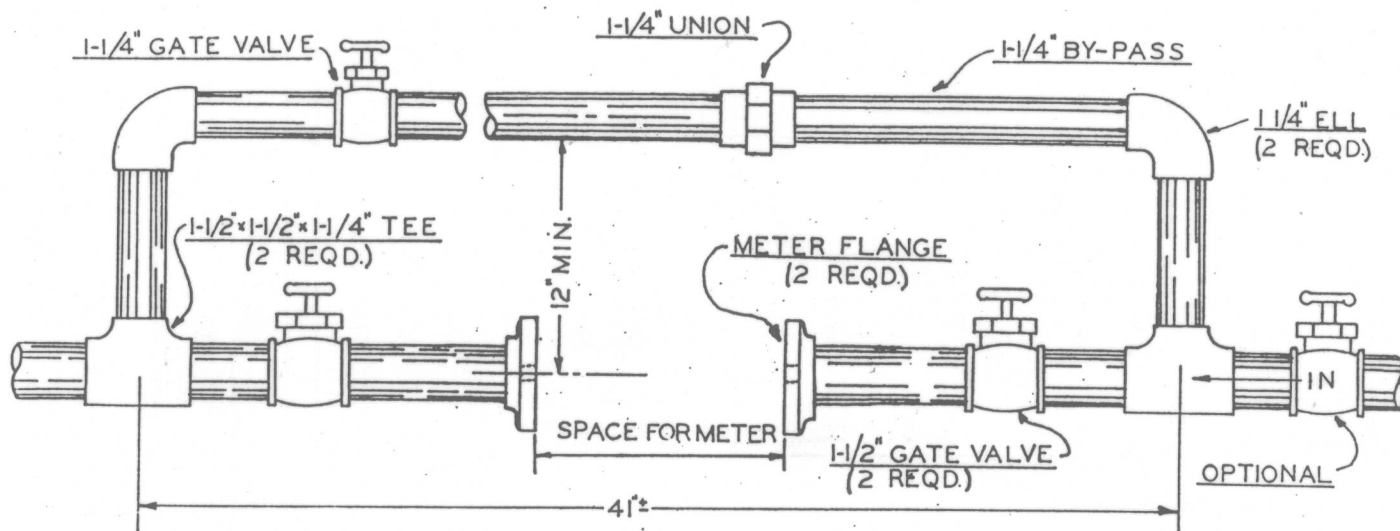
PRESSURE LOSS: 5.9 psi @ 350 gpm

MAXIMUM OPERATING PRESSURE: 150 psi

CITY OF NEWARK

4" TURBO-METER

61C



METER FLANGE SPACE

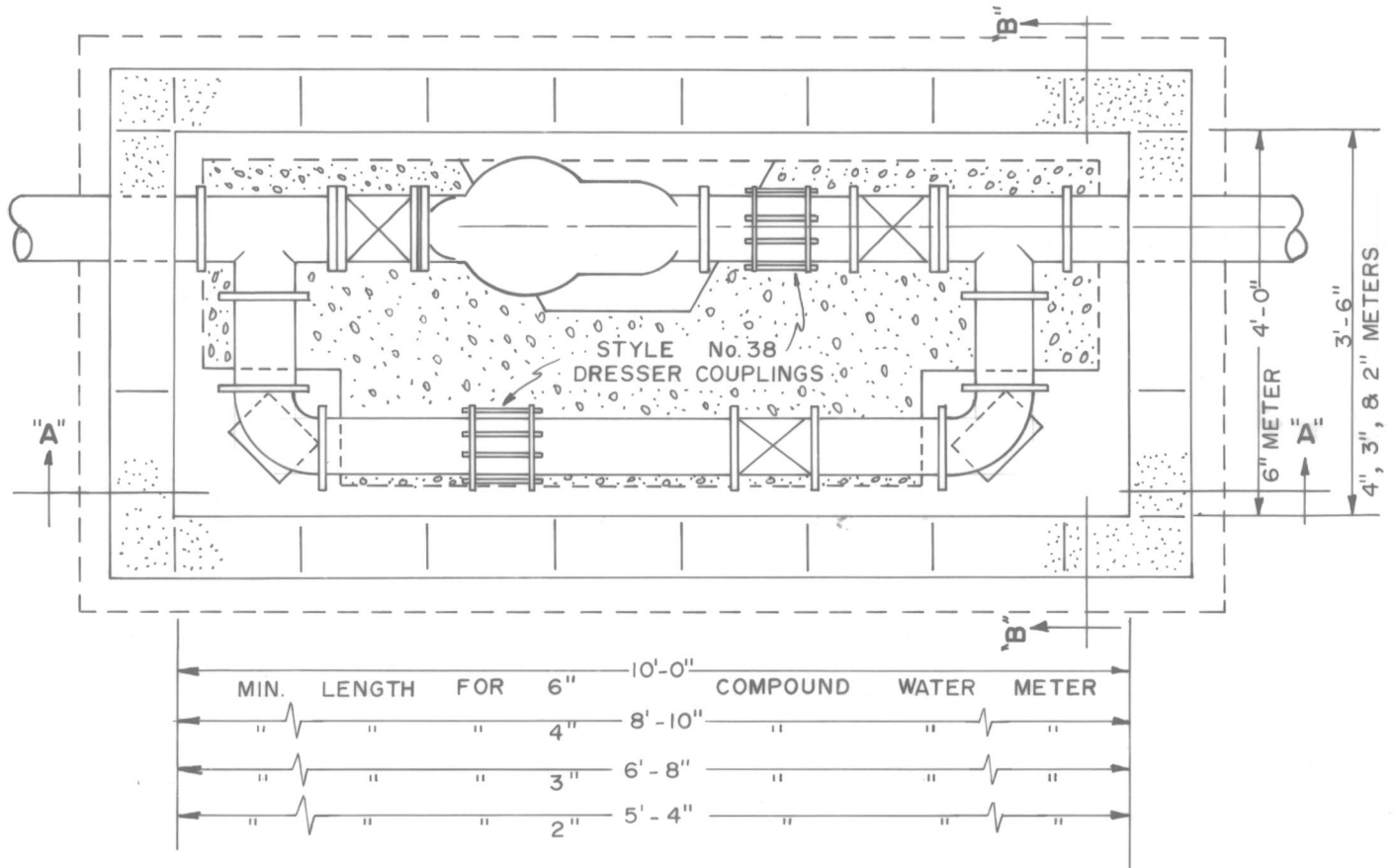
1-1/2" METER - 13"
2" METER - 17"

TYPICAL INSIDE INSTALLATION
1-1/2" AND 2" METERS

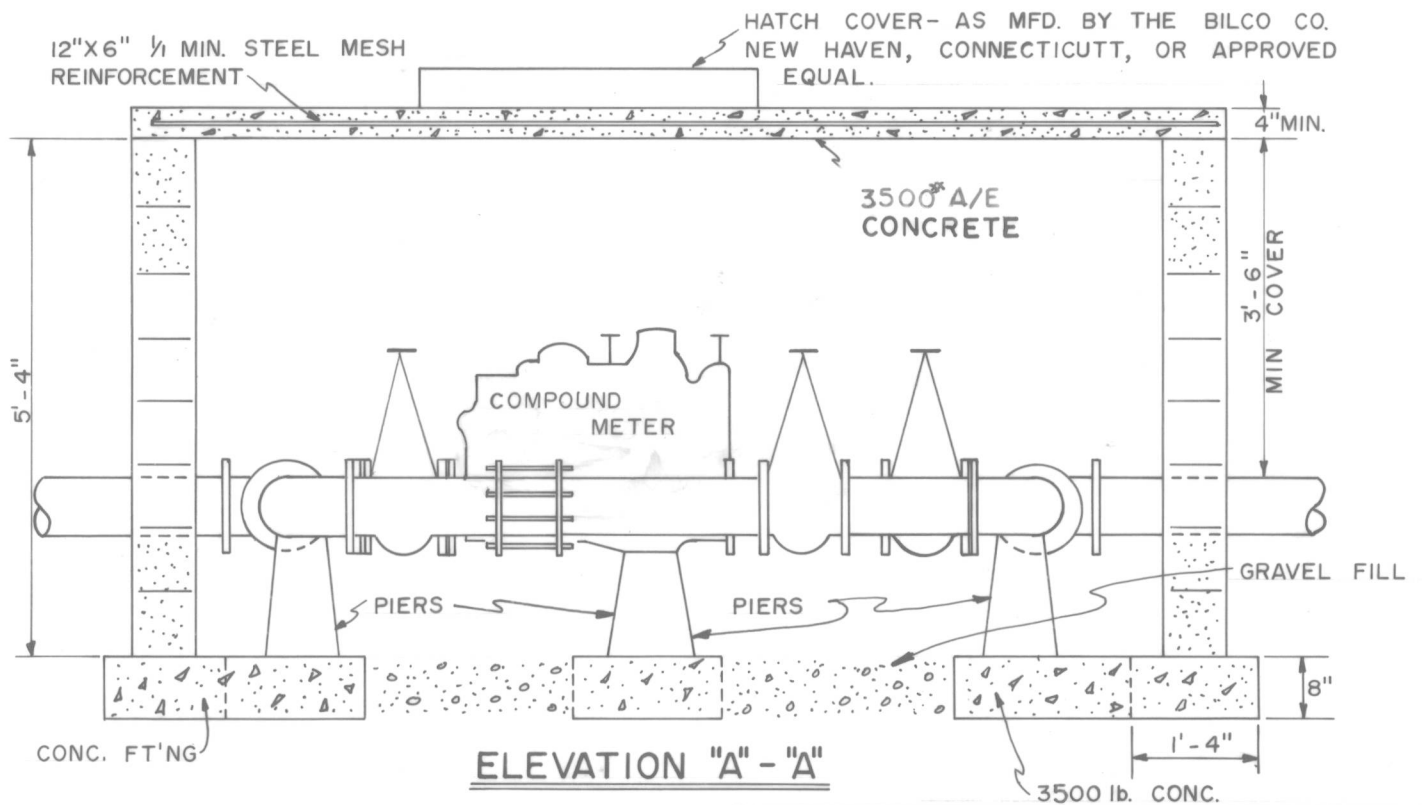
CITY OF NEWARK

TYPICAL INSIDE INSTALLATION
FOR 1 1/2" AND 2" METERS

62



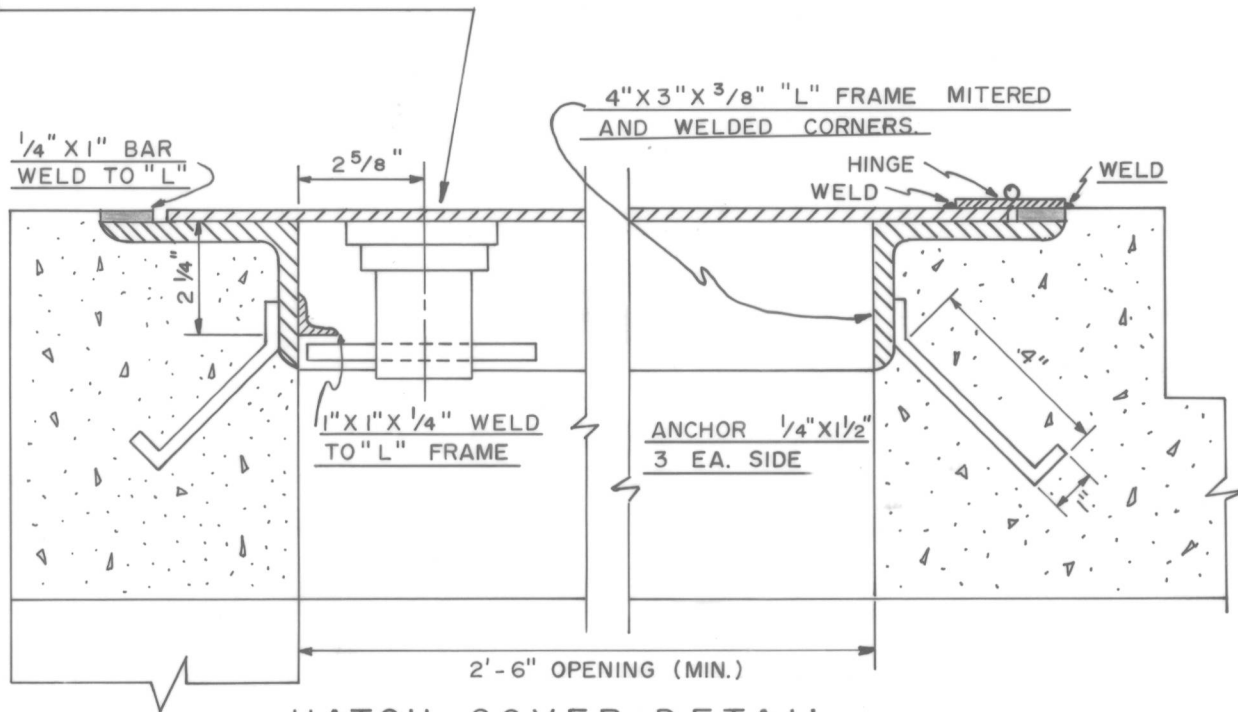
PLAN
Scale: $\frac{1}{2}" = 1' - 0"$



CITY OF NEWARK

STANDARD COMPOUND WATER METER PIT

LEV-L-LOK AS MANUFACTURED BY LAVAT &
RADCLIFFE - PATERSON, NEW JERSEY OR APPROVED
EQUAL.

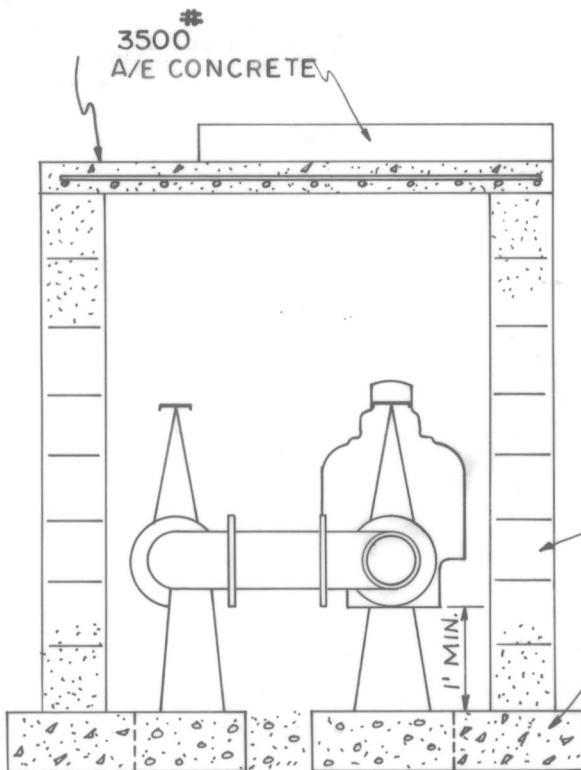


HATCH COVER DETAIL
SCALE 3" = 1'-0"

NOTE:

FOR PIT HATCH SIZE - SEE
- METER DETAIL

INSTALL PIPING TO PROVIDE
MAXIMUM ROOM FOR SERVICING
METER & ADEQUATE CLEARANCE
FOR PIPE FLANGES.

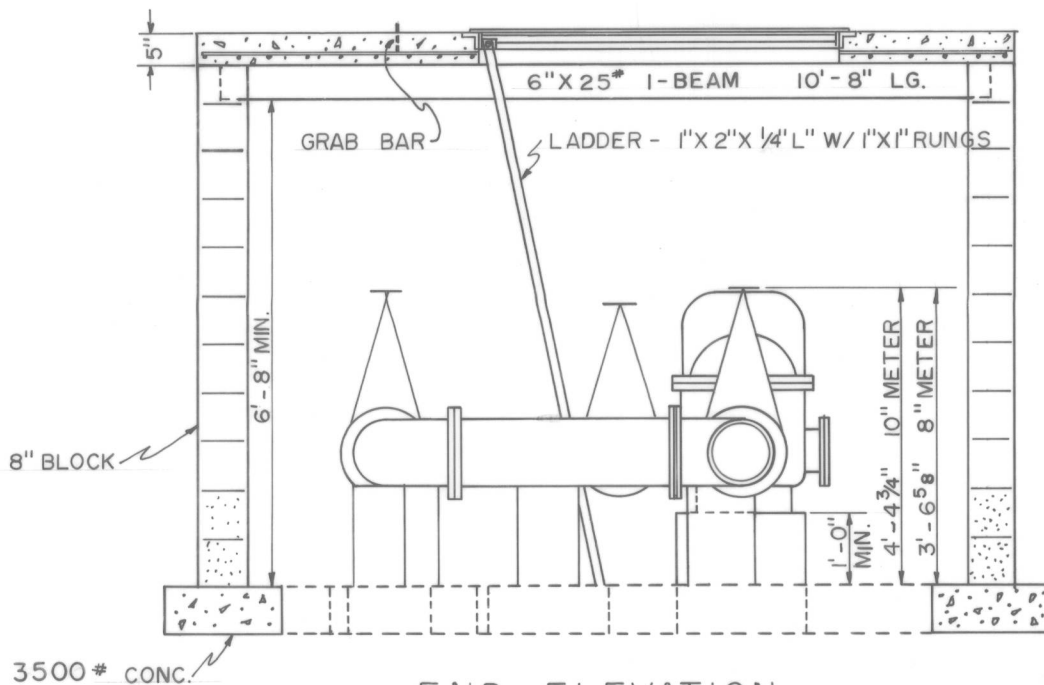


ELEVATION "B - B"

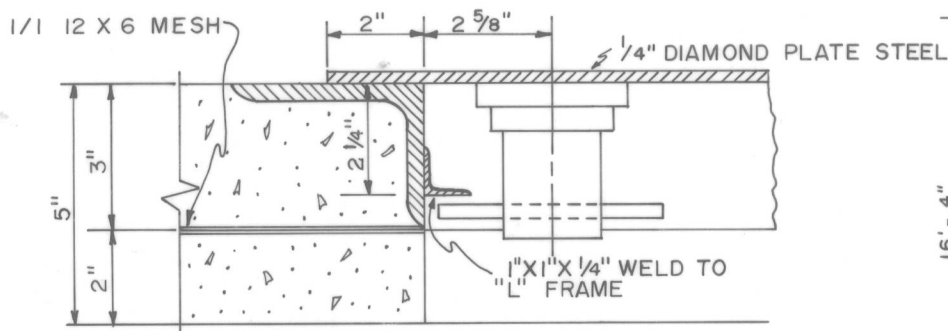
CITY OF NEWARK

STANDARD COMPOUND WATER METER PIT

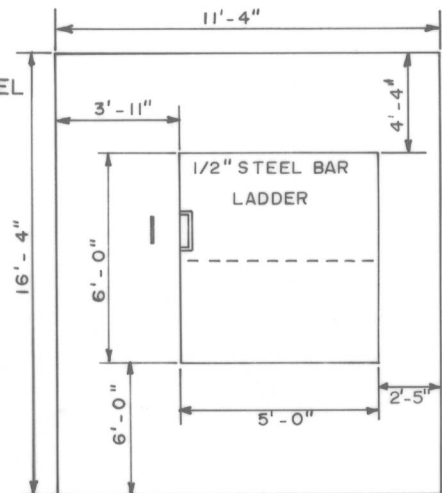
63A



END ELEVATION
SCALE $\frac{3}{8}" = 1'-0"$



LEV-L-LOK AS MFG BY LAVAT & RADCLIFF
PATERSON, NEW JERSEY - OR APPROVED EQUAL
SCALE 3" = 1'-0"

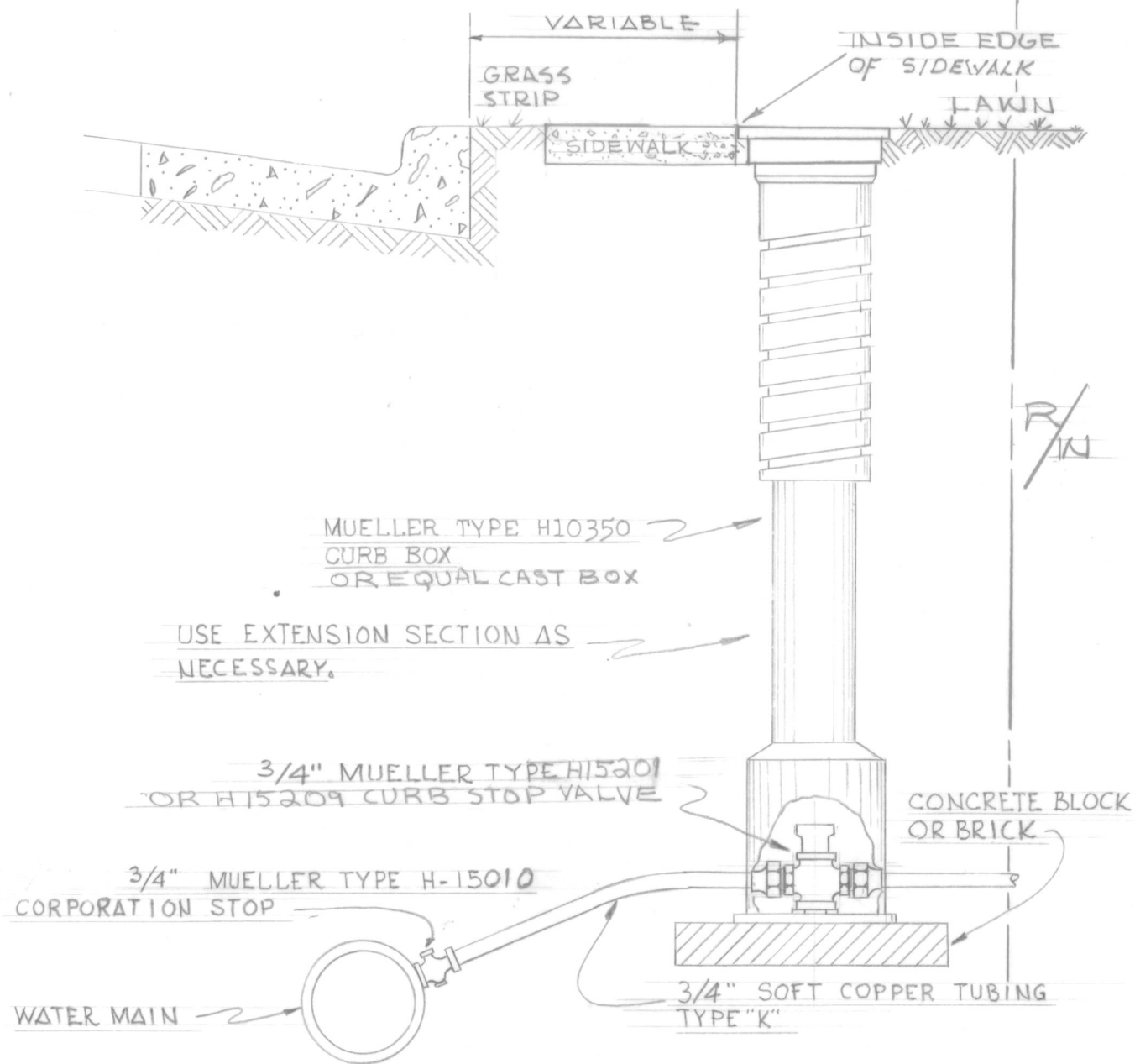


NO SCALE

NOTES:

1. In setting of meter, at least 8 diameters of straight pipe, same size as meter should be on inlet side of meter.
2. Fill gaps between footings with stone to top of footings. All footings, piers, and roof will be constructed of 3,500 lb. concrete.
3. Ladder will be of 1" x 2" x 1/4" "L" with 1" square rungs weld suitable. Brackets to door frame with holes to receive 1/2" bolts, so ladder can be moved when necessary, also provide grab bar not more than 1' from edge of opening opposite ladder.
4. Locate and install LEV-L-LOK in one (1) door, on same door weld 1-2" x 1/4" flat steel bar - securing both doors when locked.

OPENING DIRECTLY ABOVE METER
FOR EASY ACCESS.

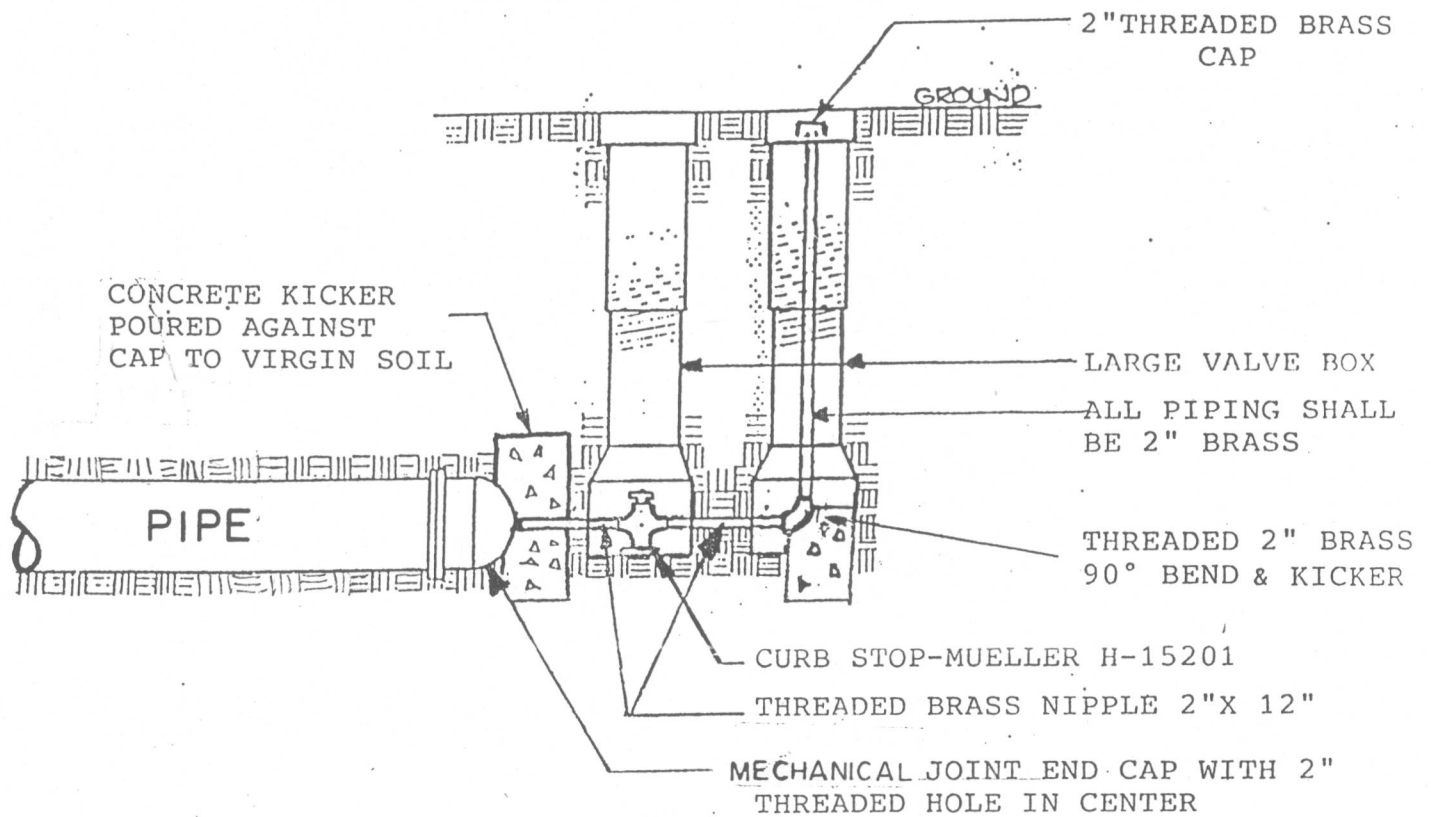


NO SCALE

NOTE: ALL ITEMS AS SHOWN, OR APPROVED EQUAL TO THOSE INDICATED.

65

CITY OF NEWARK
STANDARD INSTALLATION WATER
SERVICE

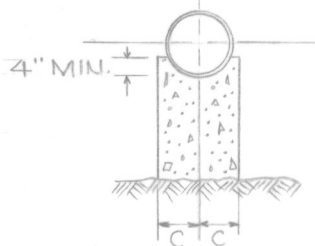


BLOW OFF DETAIL (NO SCALE)

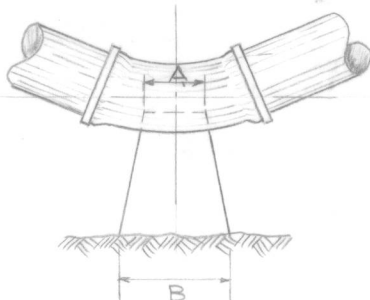
CITY OF NEWARK

STANDARD BLOW OFF DETAIL

66



SECTION ELEVATION
BUTTRUESSES FOR VERTICAL BENDS

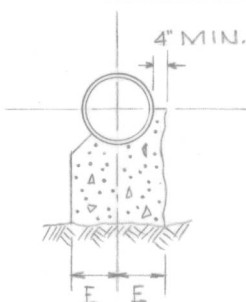


BEND				
SIZE		45°	22½°	11¼°
6"	A	6"	6"	※
	B	1'-5"	11"	※
	C	6"	4"	※
8"	A	6"	6"	※
	B	1'-10"	1'-2"	※
	C	8"	6"	※
12"	A	6"	6"	6"
	B	2'-10"	1'-10"	1'-2"
	C	11"	8"	7"

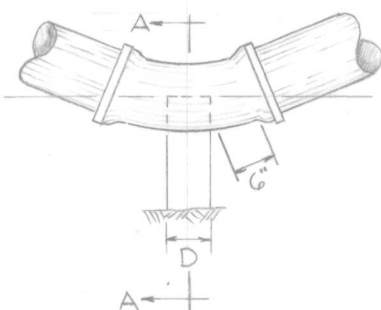
USE OAK BLOCKING ※

NOTE:

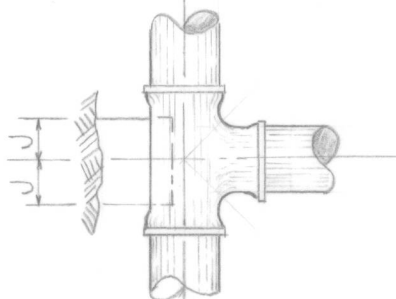
ALL BUTTRUESSES - USE 3500# CONC.



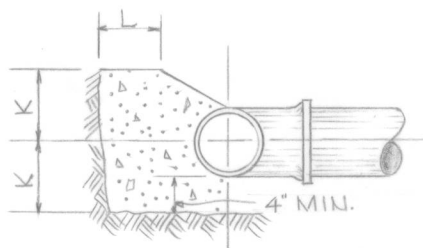
SECTION A-A PLAN
BUTTRUESSES FOR HORIZONTAL BENDS



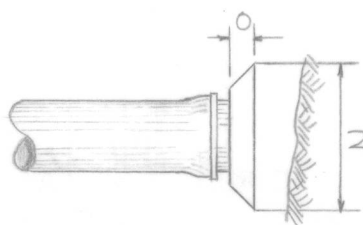
SIZE				
BEND		6"	8"	12"
45°	D	1'-5"	1'-10"	3'-10"
	E	6"	8"	12"
22½°	D	11"	1'-2"	1'-10"
	E	4"	6"	9"
11¼°	D	※	※	1'-2"
	E	※	※	7"



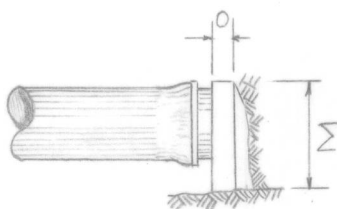
PLAN SECTION
BUTTRUESSES FOR TEES



SIZE				
		6"	8"	12"
J		6"	8"	1'-1"
K		10"	1'-1"	1'-7"
L		8"	8"	1'-0"



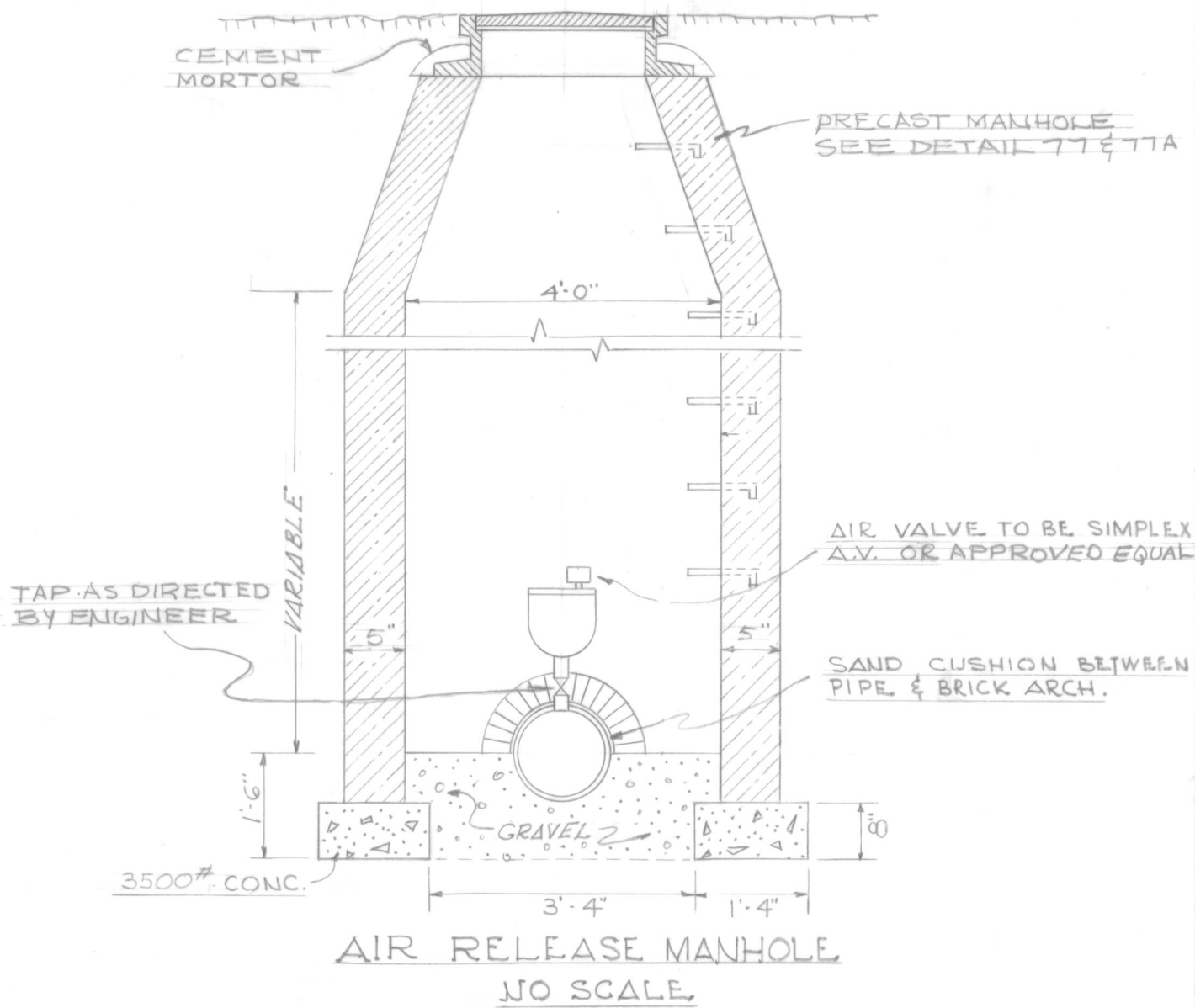
PLAN ELEVATION
BUTTRUESSES FOR PLUGS



SIZE				
		6"	8"	12"
M		1'-1"	1'-5"	2'-1"
N		1'-7"	2'-2"	3'-2"
O		7"	9"	1'-1"

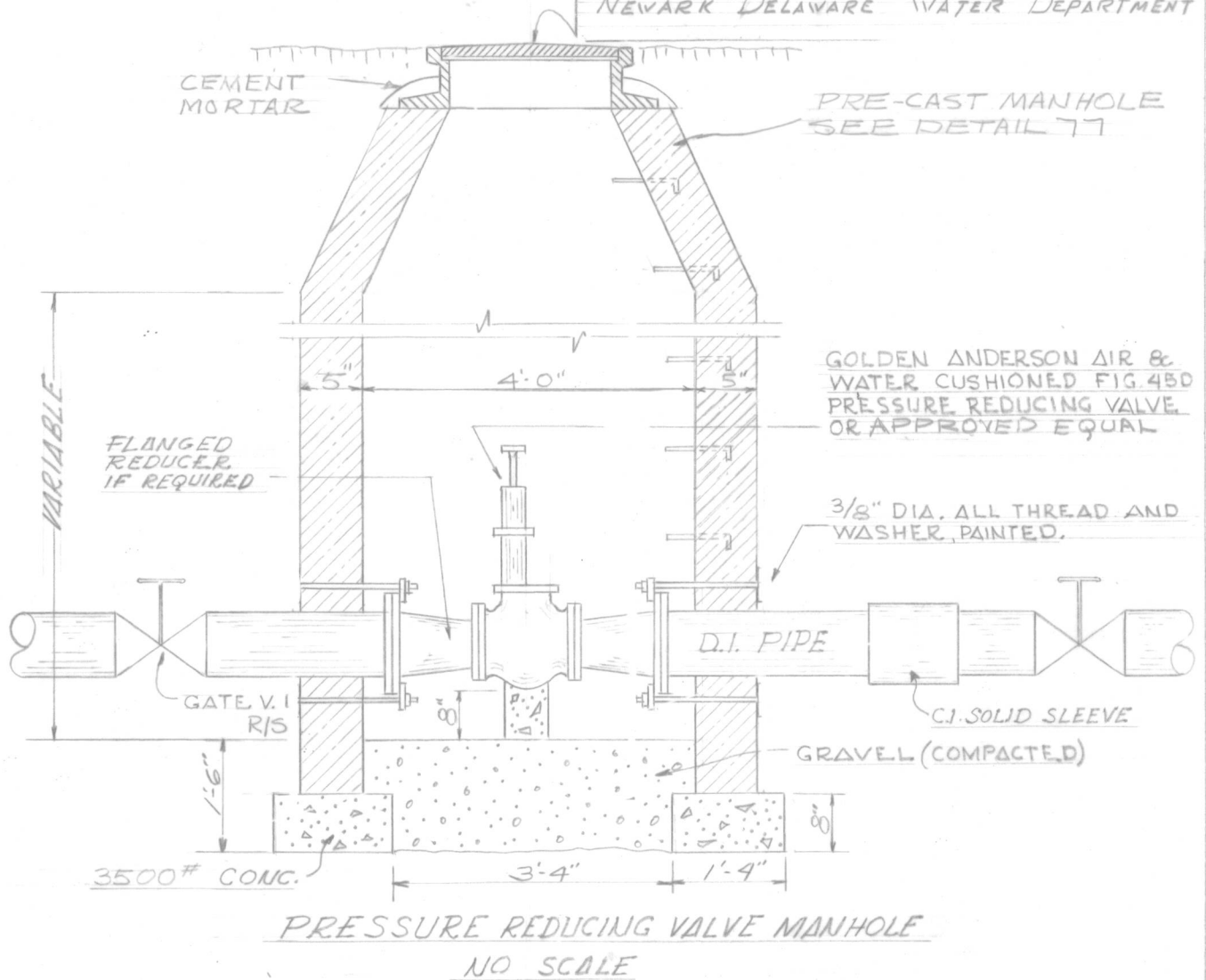
NOTE:
ALL FITTINGS MUST BE WRAPPED
WITH PLASTIC BEFORE CONCRETE
BUTTRUSS IS POURED.

CITY OF NEWARK
STANDARD BUTTRUESSES - FOR
PIPE FITTINGS



STANDARD MANHOLE FRAME AND COVERS SHALL BE
AS SHOWN ON DETAIL SHEET NO. 10 EXCEPT STAMPED
"NEWARK, DELAWARE WATER DEPARTMENT"

STANDARD MANHOLE FRAME & COVERS
SHALL BE AS SHOWN ON DETAIL
NUMBER 74 EXCEPT STAMPED
"NEWARK DELAWARE WATER DEPARTMENT"



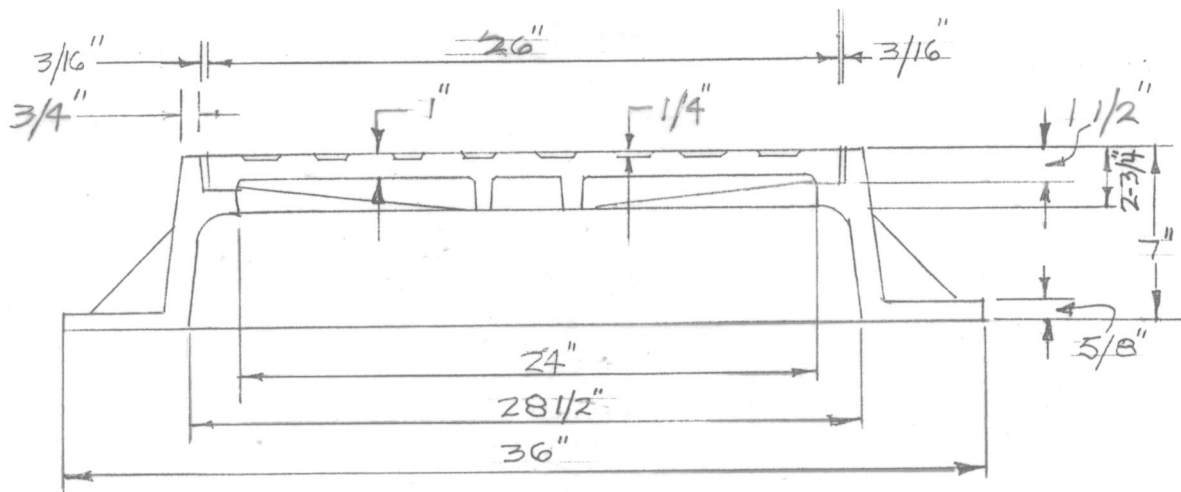
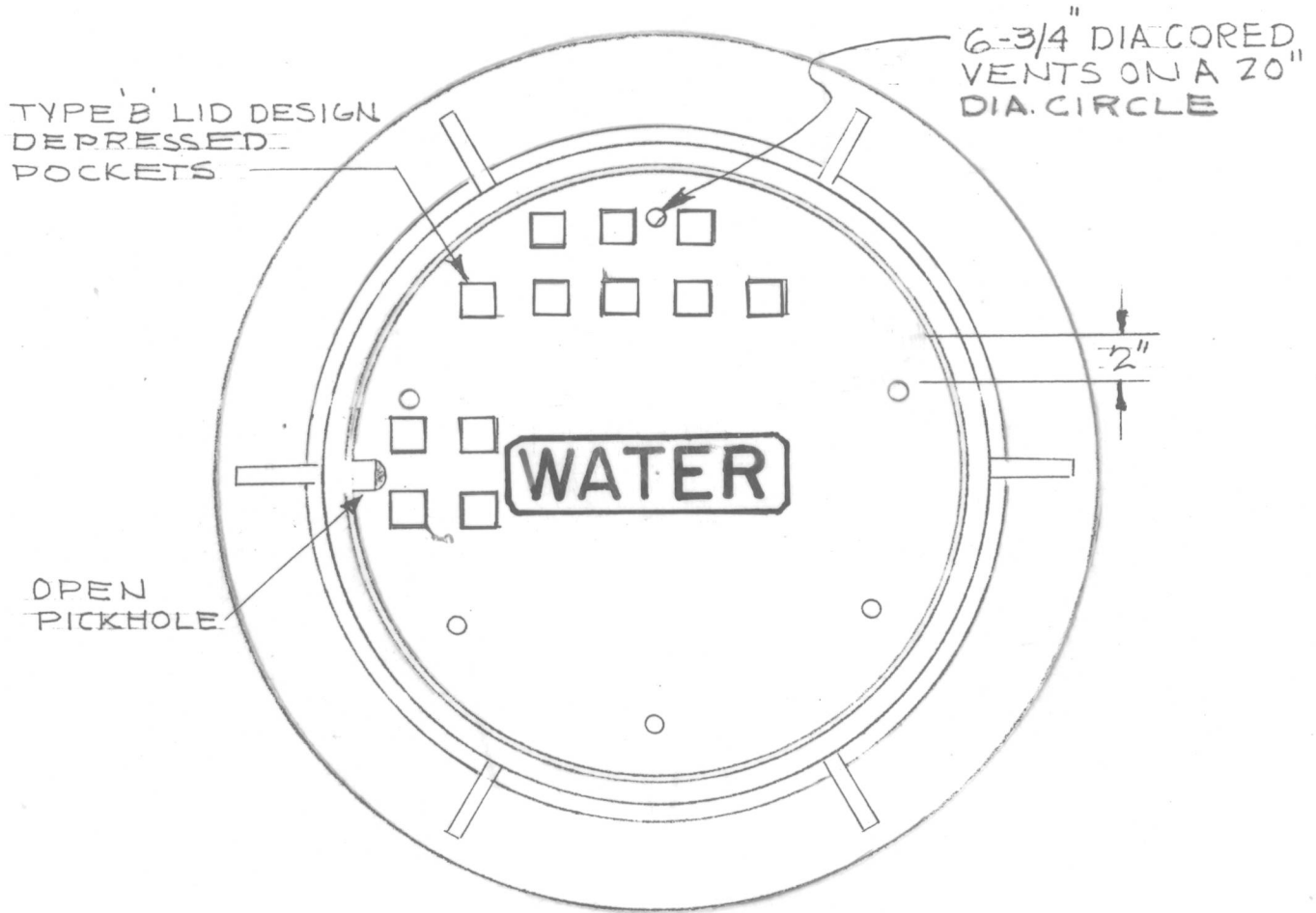
NOTE:

THE CONTRACTOR WILL BEAR IN MIND, ALTHOUGH TWO (2) VALVES (ONE EA. SIDE) ARE SHOWN, ONE (1) OR BOTH COULD BE EXISTING IN MAIN. ALSO - VALVES SHOWN COULD BE OBTAINED USING REGULAR GATE VALVES, INSERTING VALVES, OR TAPPING SLEEVE & VALVE. IF BY PASS IS REQUIRED, REFER TO OTHER DRAWINGS FOR DETAILS. ALL VALVES OPEN LEFT

NEENAH FOUNDRY
R-1642 FRAME & TYPE B LID

(OR APPROVED
EQUAL)

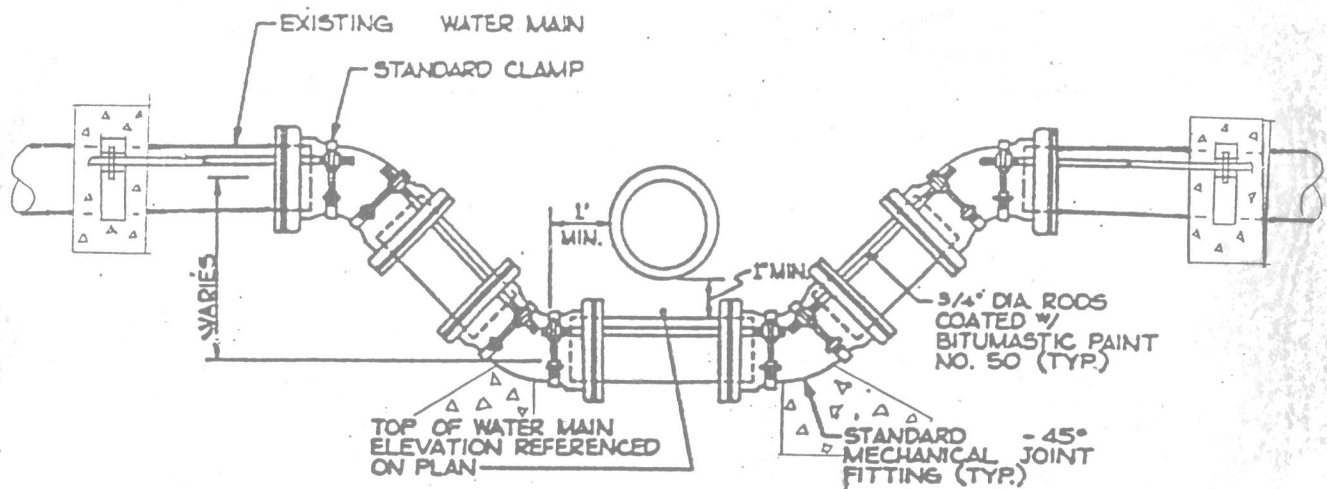
NEENAH FOUNDRY SKETCH NF 42795



CITY OF NEWARK

STANDARD MANHOLE FRAME
AND COVER FOR WATER

70



TYPICAL WATER MAIN VERTICAL BEND ASSEMBLY

MATERIAL LIST

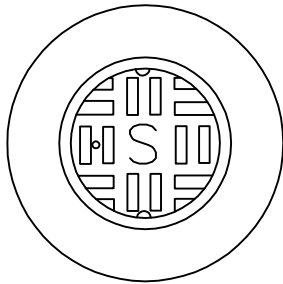
- 4 - 45° BENDS
- 10 - 3/4" DIA. THREADED RODS
- 2 - FRICTION CLAMPS
- 16 - DUCKLUK WASHERS
- 2 - CONCRETE KICKERS
- 8 - M/J GLAND PACK FITTINGS
- 2 - CONCRETE DEAD MEN

CITY OF NEWARK

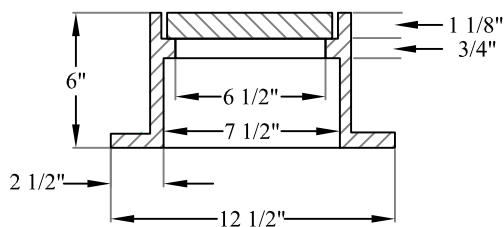
TYPICAL WATER MAIN RELOCATION

70A

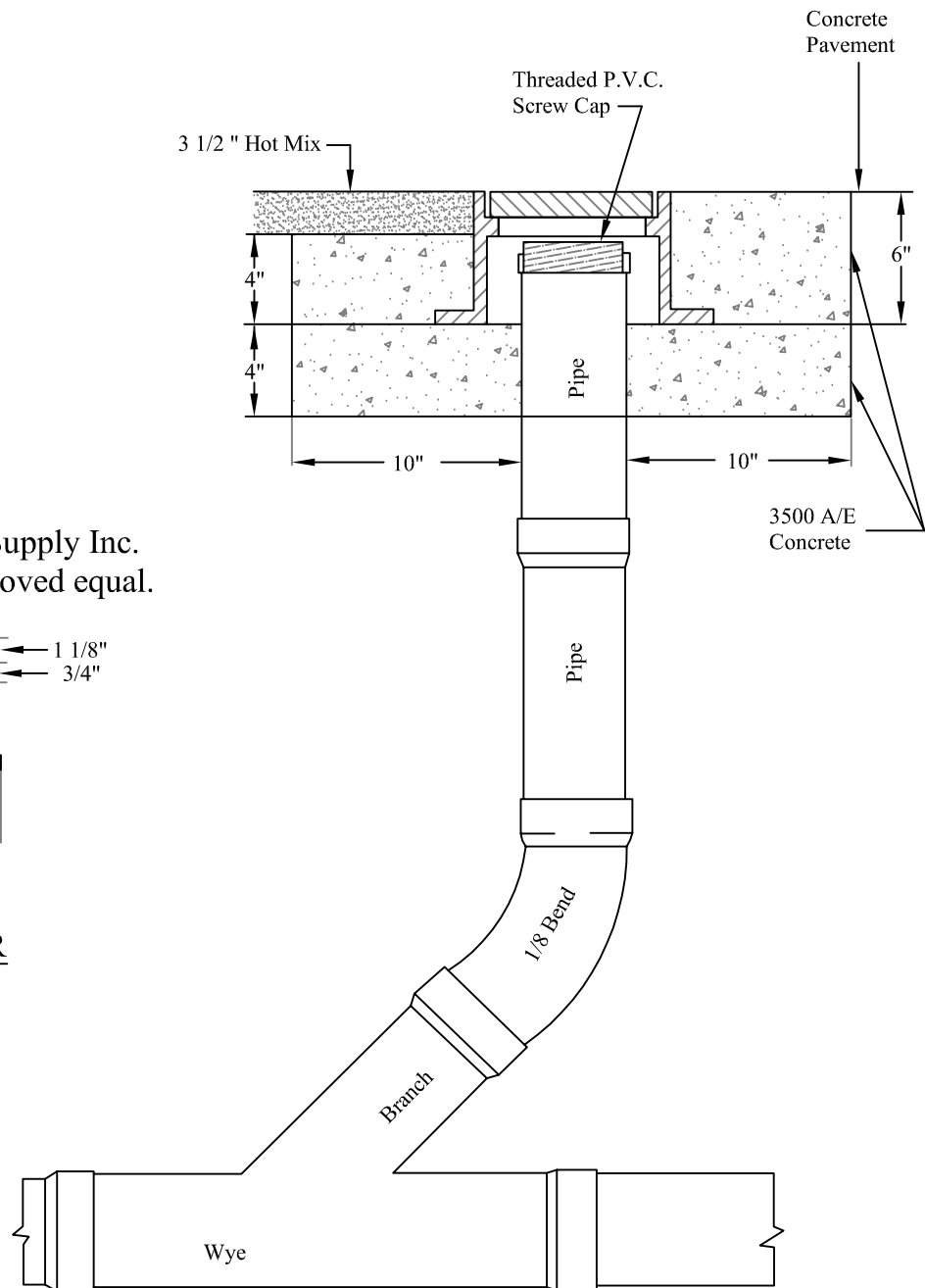
These details apply to Cleanouts placed in Paved Areas.



Casting: B & C Utility Supply Inc.
Type A-1100 or approved equal.



DETAIL
FRAME & COVER



Typical Lateral Clean Out in Paved Areas (Streets)



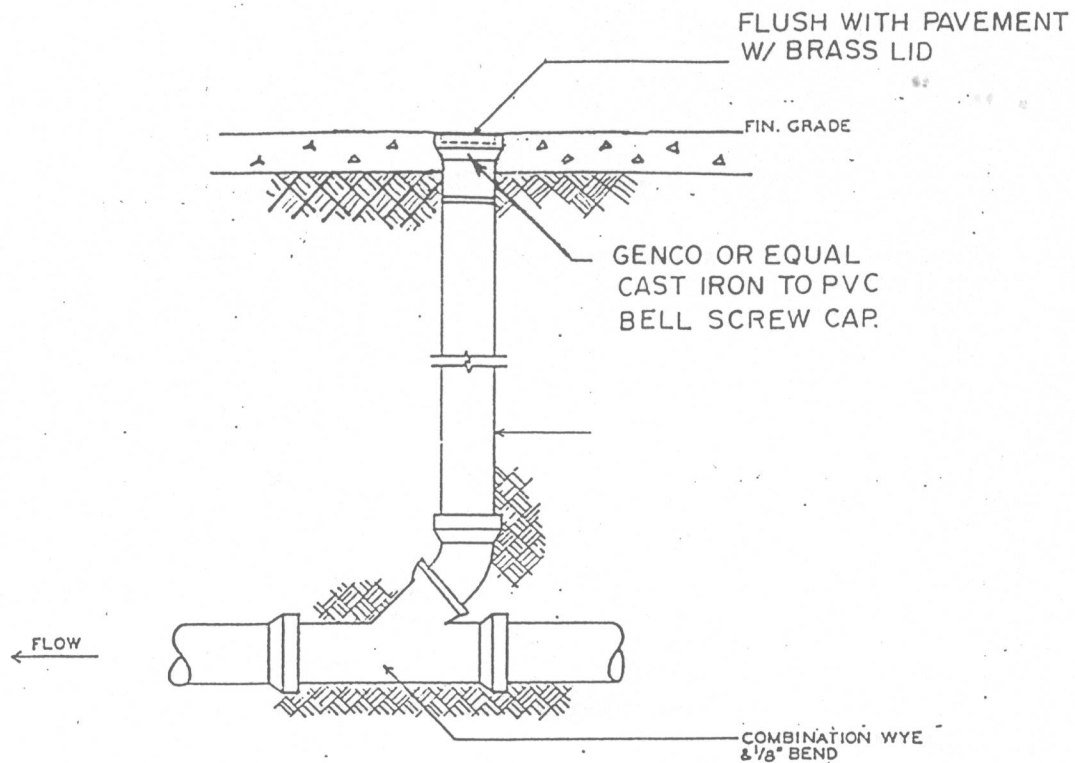
"Committed to Service Excellence"

Scale: N.T.S.

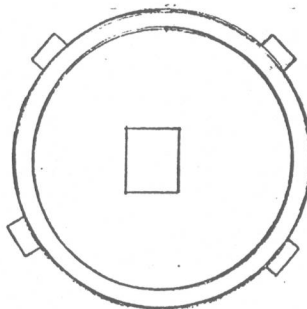
Date: 02/23/2010

Drawn: BJL

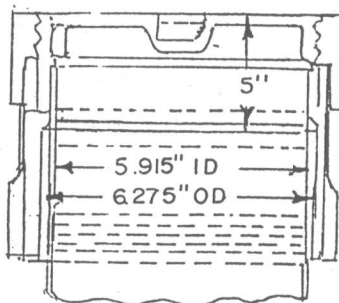
Page: 71



TYPICAL CLEAN-OUT IN CONCRETE SIDEWALK OR DRIVEWAY
NO SCALE



BRASS SCREW
CAP



COUNTER SUNK
BRASS SCREW CAP
ON FRAME

RUBBER
O-RING

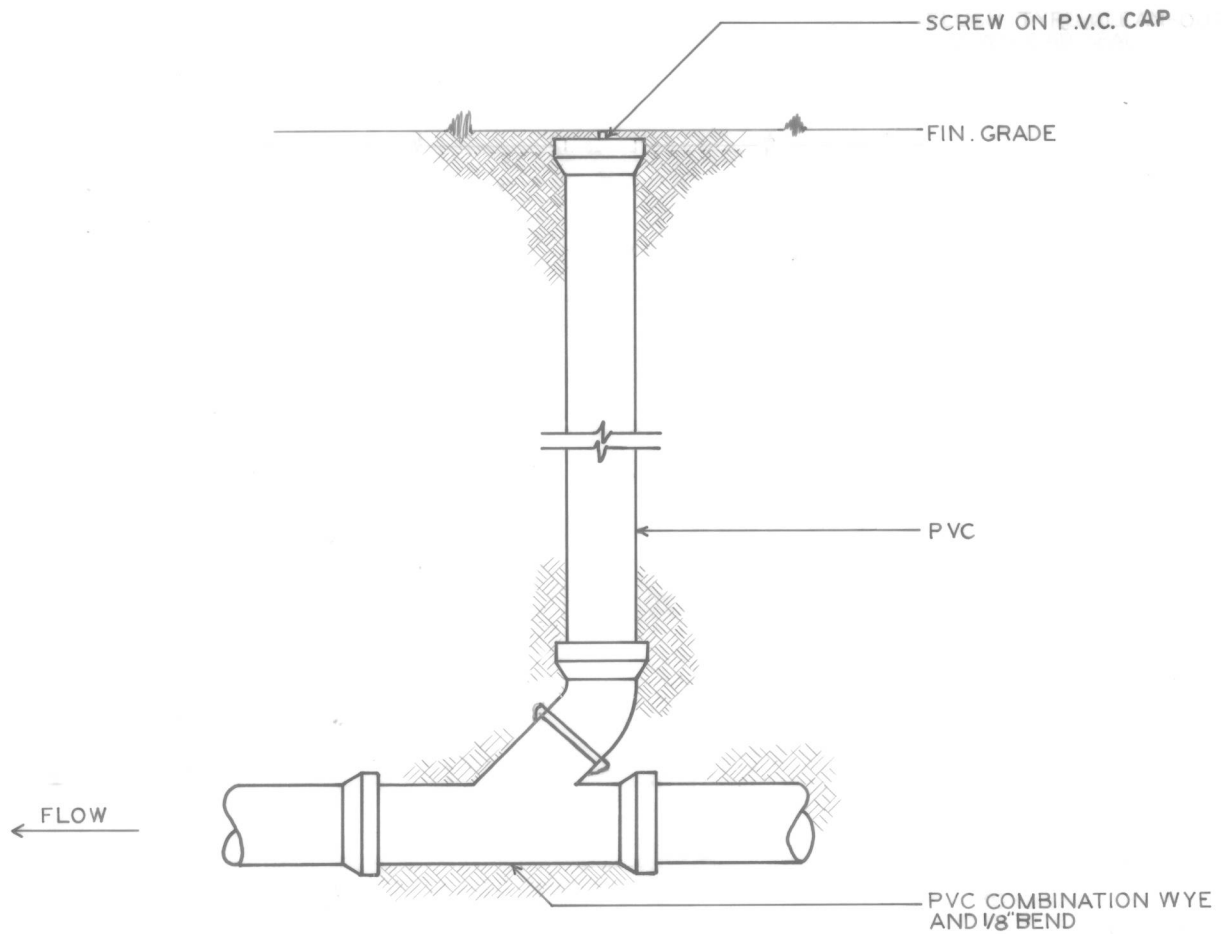
PVC BELL
JOINT

4" OR 6"
BRASS SCREW
PLUG

CITY OF NEWARK

TYPICAL CLEAN OUT IN CONCRETE

72



TYPICAL CLEAN-OUT (NOT IN DRIVEWAY)
NO SCALE

CITY OF NEWARK

CLEAN-OUT AT PROPERTY LINE
IN GRASS AREA ONLY

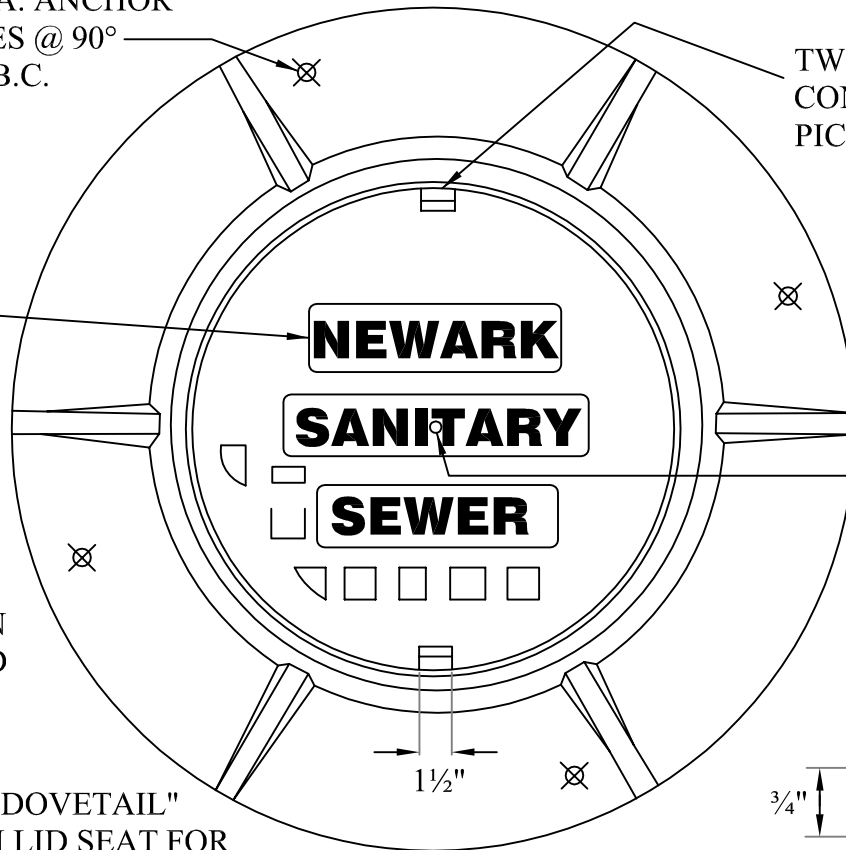
73

NEENAH FOUNDRY R1642
OR APPROVED EQUAL
NEENAH SKETCH
#NF40184

FOUR 1" DIA. ANCHOR
BOLT HOLES @ 90°
ON A 33³/₄" B.C.

TWO NF-22642
CONCEALED
PICK HOLES (SEE SECT.)

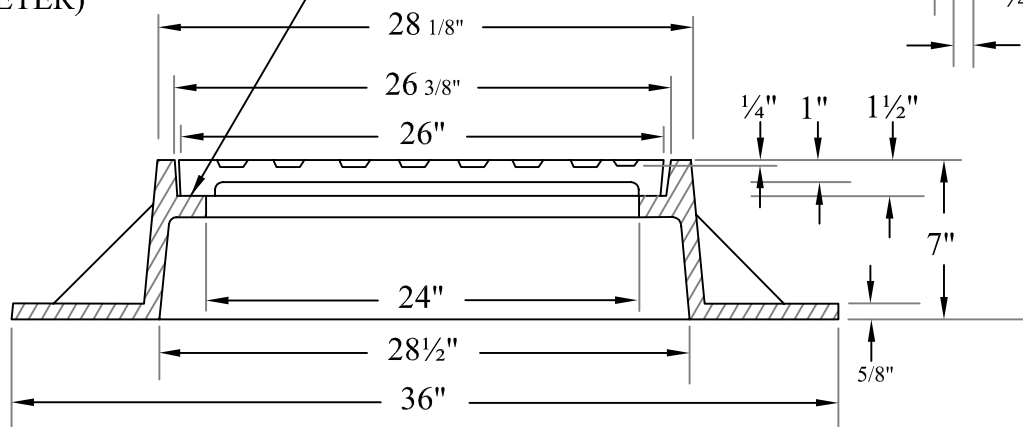
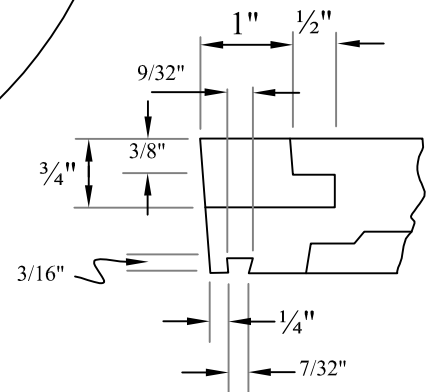
2"
LETTERS
FLUSH



1/2" DIA. VENT HOLE
@ CTR. OF LID

TYPE "B"
LID DESIGN
DEPRESSED
POCKETS

MACHINE "DOVETAIL"
GROOVE IN LID SEAT FOR
1/4" DIA. CONTINUOUS
POLYISOPRENE GASKET
(40 DUROMETER)



Standard Sanitary Sewer Manhole Frame & Cover



"Committed to Service Excellence"

Scale: N.T.S.

Date: 03/01/2010

Drawn: BJL

Page: 74

R-1916-F
NF-40183

FOUR 1" DIA. ANCHOR
BOLT HOLES @ 90°
ON A 33³/₄" B.C.

4 NF-22642
CONCEALED
PICK HOLES

TYPE "C"
LID
DESIGN

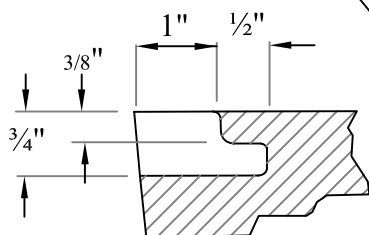
2" LETTERS
RAISED

**NEWARK
SANITARY
SEWER**

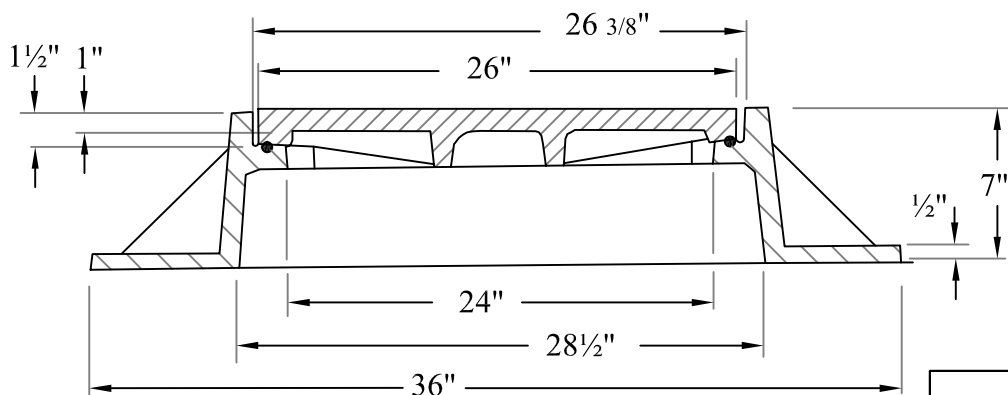
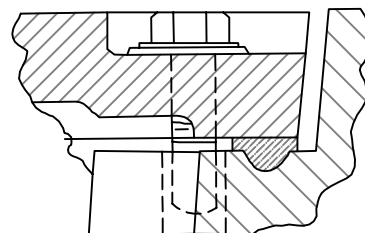
MACH. GROOVE
IN FRAME SEAT
FOR 1/2" DIA.
CONTINUOUS
NEOPRENE
GASKET

4 1/2" - 13 x 1 3/4"
STAINLESS
STEEL HEX
HEAD CAP-
SCREWS W/
STAINLESS
STEEL &
NEOPRENE
WASHERS
(SEE SECT.)

BOLT PAD



NOTE:
TO BE USED AT ALL
OFF SITE LOCATIONS

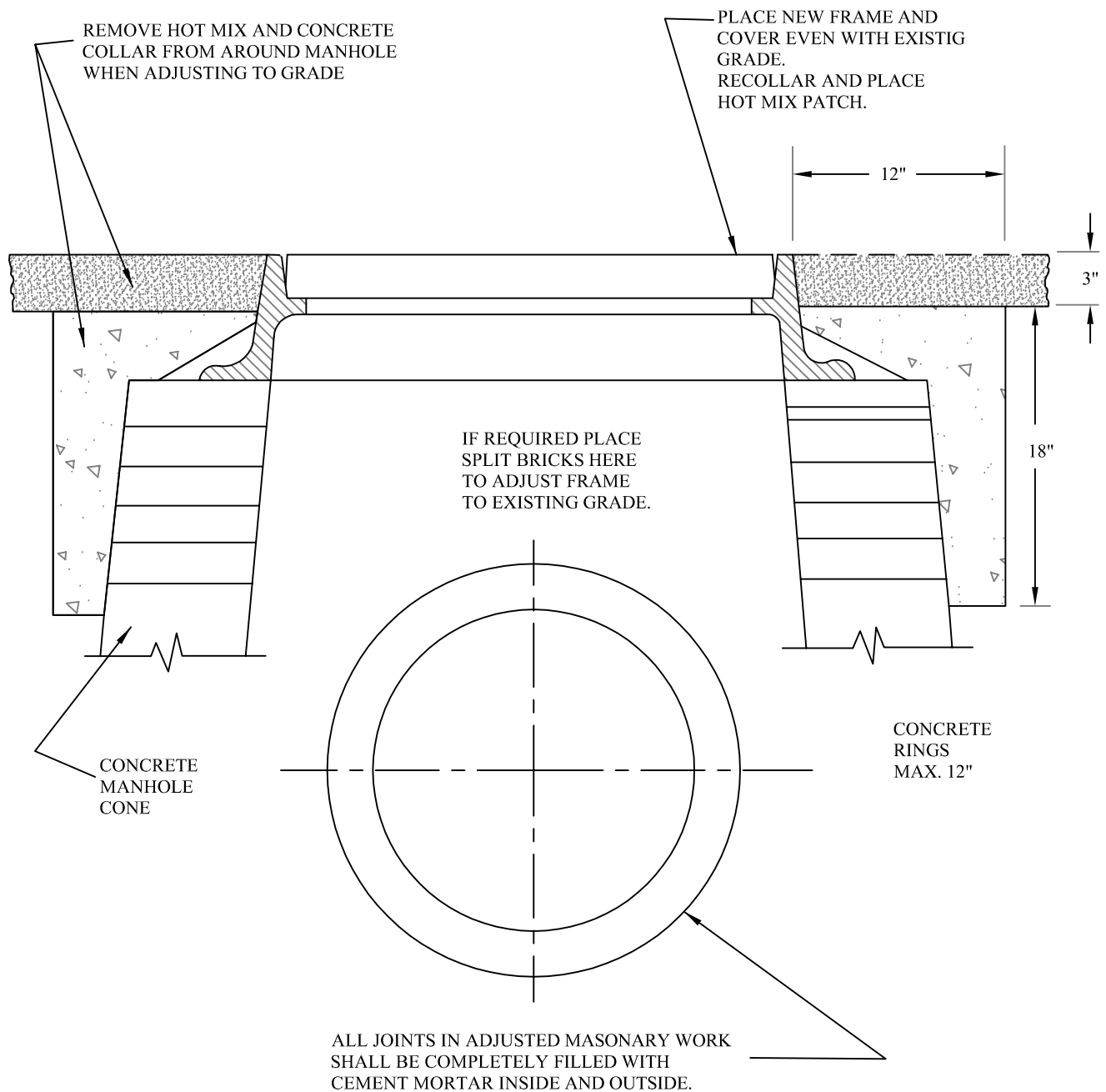


Boltdown Manhole Frame & Cover



"Committed to Service Excellence"

Scale: N.T.S.	Date: 02/25/2010
Drawn: BJL	Page: 75

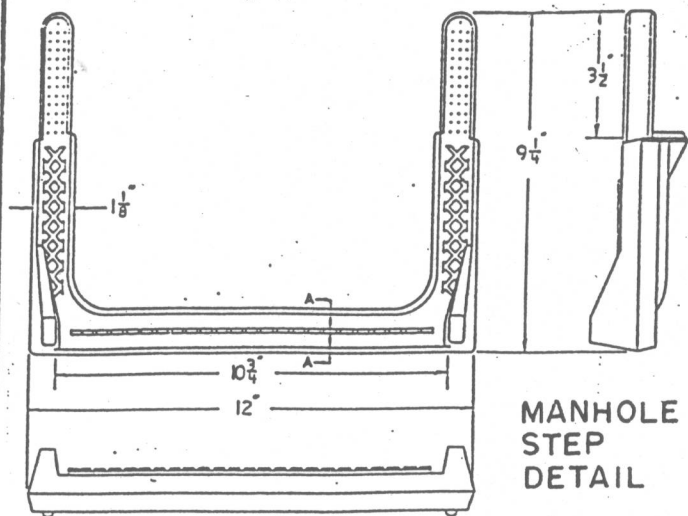


Sanitary Sewer Manhole Adjustment and Concrete Collar

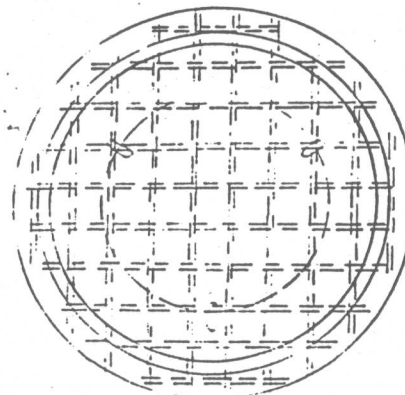


"Committed to Service Excellence"

Scale: N.T.S.	Date: 02/25/2010
Drawn: BJL	Page: 76

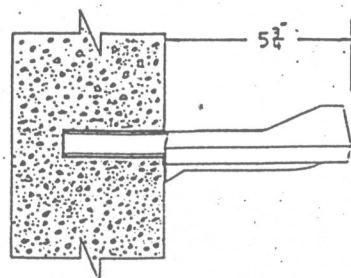


MANHOLE
STEP
DETAIL

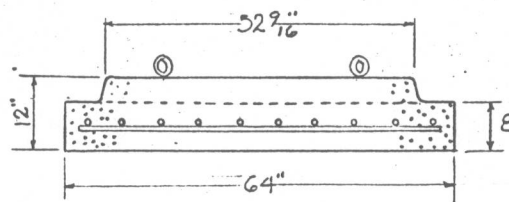


SEE NOTE 4

SEE NOTE 3

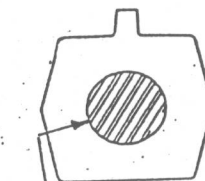


MANHOLE STEP DETAIL



BASE (OPTIONAL)

BASE LOAD BEARING AREA
22,340 SQ. FT. WEIGHT 3000 LB.



Copolymer Polypropylene Plastic
1/2" GRADE 60 STEEL REINFORCEMENT

NOTES:

1. ALL MATERIALS SHALL BE FURNISHED BY CONTRACTOR.
2. 60,000 LB. MAX. SAFE CONCENTRATED LOAD AT CENTER OF COVER.
3. 1/2" REINFORCING BARS ON 6" CENTERS, ONE MAT. PER BASE GIVES STEEL CONTENT OF .3928 SQ. IN. PER LINEAL FT. EACH WAY.
4. 3-LIFTING EYES SPACED 120° ON 40" PC WITH 1/2" X 2 X 8 BAR UNDER REINFORCING FOR ATTACHING LIFTING PIN, NUT.
5. STUBS AND BELLS CAN BE FURNISHED IN STOCK SIZES 6" TO 24" WITH RUBBER JOINT AND OTHER SIZES AS SPECIALS. LOCATION AND SIZE OF FITTING TO BE SPECIFIED BY DIRECTOR OF PUBLIC WORKS.
6. 48" Ø - 5" WALL T. & G. CONCRETE PIPE RUBBER JOINT CAN BE FURNISHED IN 2, 3, OR 4 FT. LENGTH, WT. 850 LB./FT.
7. 2" DIA. LIFTING PIN HOLES MAY BE FURNISHED IF SPECIFIED.
8. SQUARE EDGE BEARING CAN BE FURNISHED ON RISER SECTION WITH INLET TO SET ON THE BASE.

RECOMMENDED PIPE CLASSIFICATIONS TO BE USED FOR MANHOLE BARREL PER ASTM SPECS. FOR CONCRETE SEWER & CULVERT PIPE.

CLASS II FOR 0 - 20 FT. DEPTH.

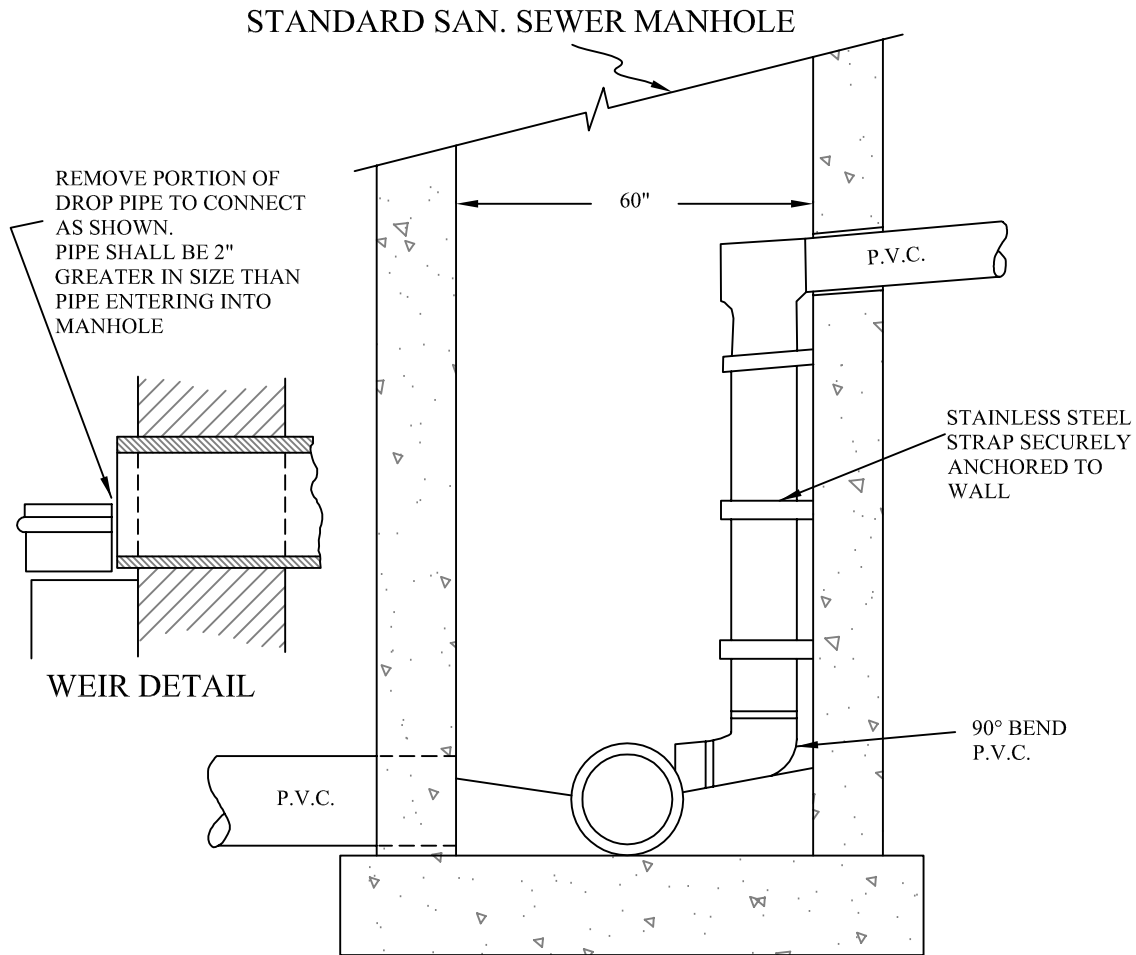
CLASS III FOR 20 - 40 FT. DEPTH.

CLASS IV FOR OVER 40 FT. DEPTH.

CITY OF NEWARK

STANDARD PRECAST OFFSET DOME TYPE
MANHOLE FOR SANITARY SEWER

77A



INSIDE DROP MANHOLE

NO SCALE

NOTE:

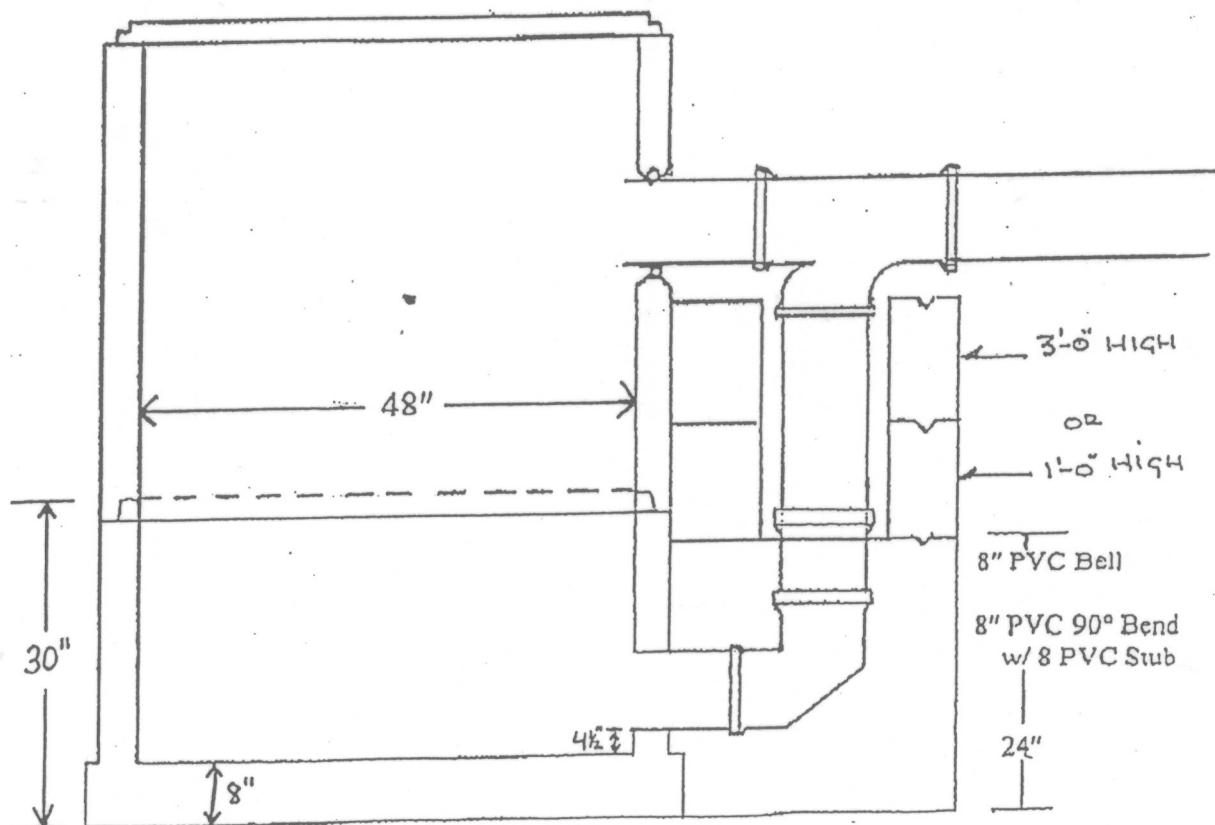
1. MANHOLE TO BE PRECAST CONCRETE, SEE SHEET NO. 77 & 77A.
2. SEE SHEET NO. 74 FOR FRAME AND COVER.
3. ALL NEW DROP MANHOLE TO BE 60" INSIDE INSTEAD OF THE STANDARD 48"

Standard Sanitary Sewer Inside Drop Manhole



"Committed to Service Excellence"

Scale: N.T.S.	Date: 02/26/2010
Drawn: BJL	Page: 78



Notes:

- A. Steel reinforcement to meet or exceed ASTM 478-94.
- B. Bend to be 8" PVC SDR 35 with SDR 35 bell end stub.

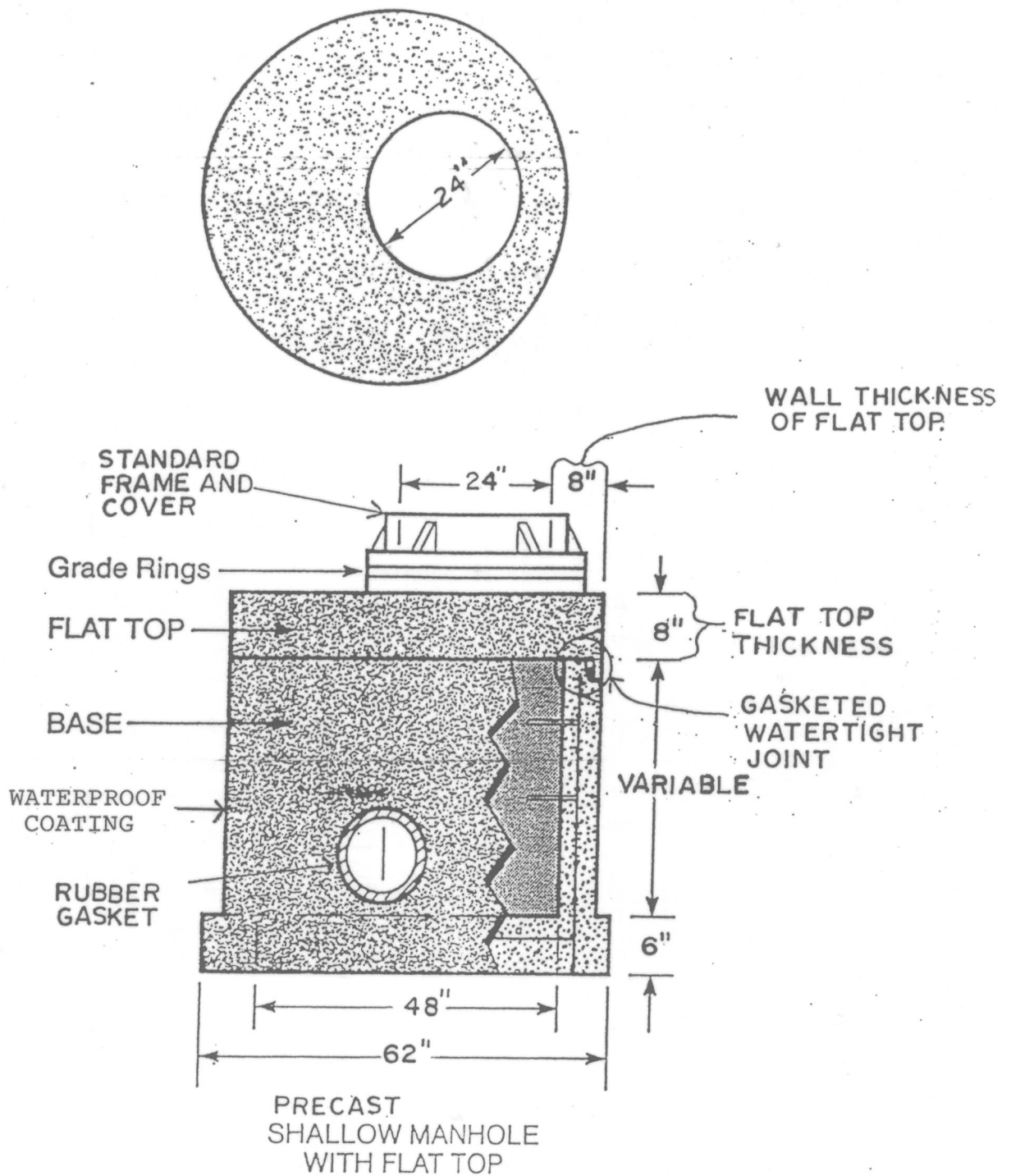
Notes:

- A. Steel reinforcement to meet or exceed ASTM 478-94.
- B. Bend to be 8" PVC SDR 35 with SDR 35 bell end stub.

B. Bend to be 8" PVC SDR 35 with SDR 35 bell end stub.

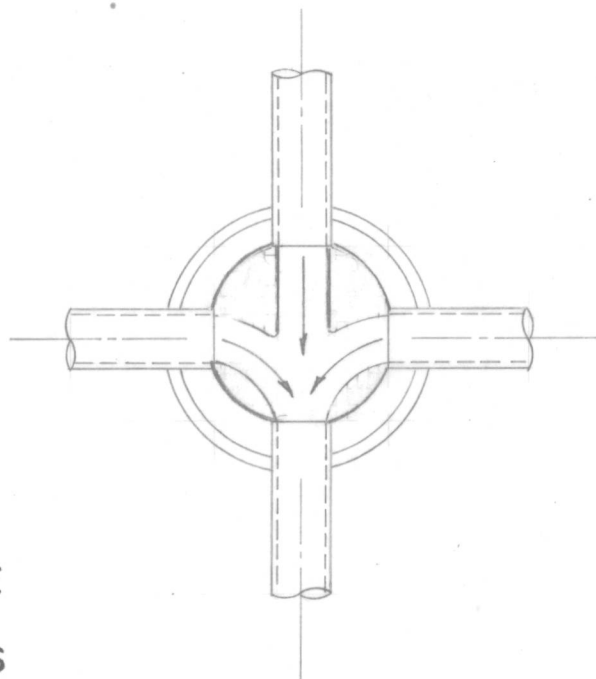
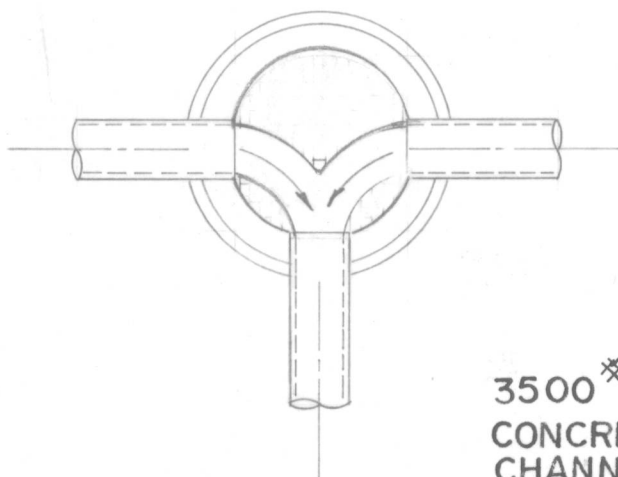
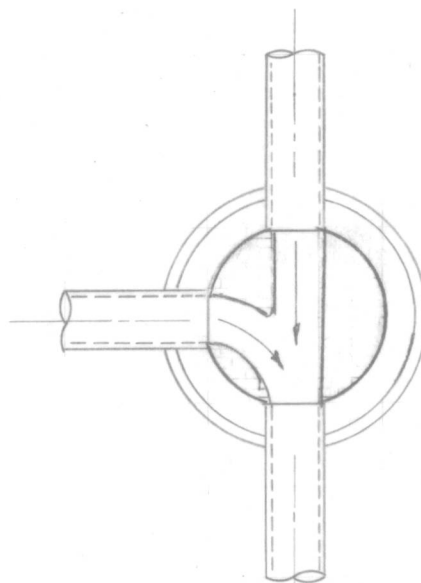
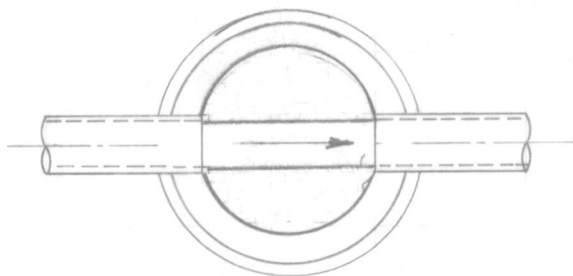
78
A

STANDARD SANITARY SEWER OUTSIDE DROP MANHOLE



CITY OF NEWARK

SANITARY SEWER SHALLOW MANHOLE
WITH FLAT TOP (ALL PRECAST) (79)

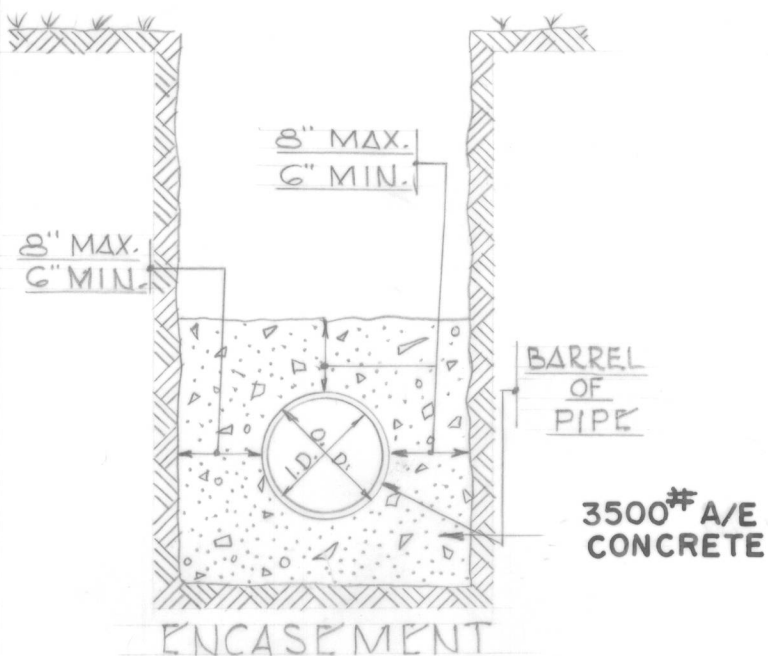


3500* A/E
CONCRETE
CHANNELS

PLANS OF TYPICAL CONNECTIONS AT MANHOLE INVERTS
NO SCALE

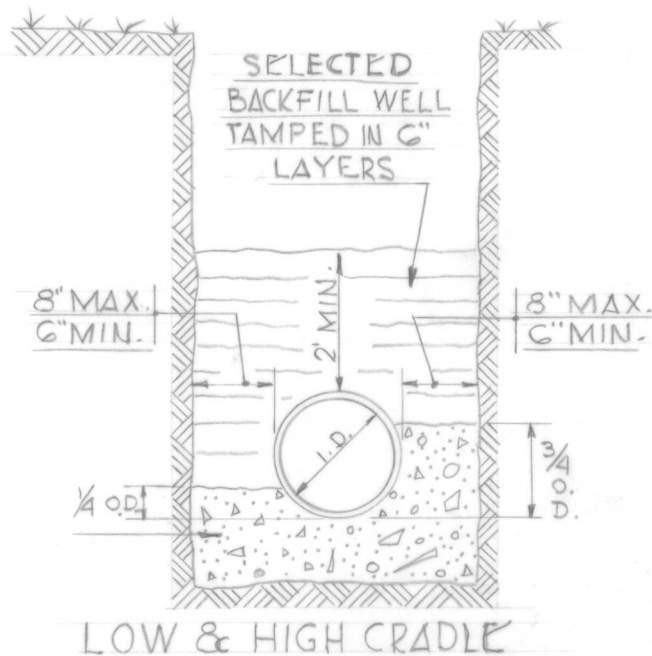
CITY OF NEWARK

STANDARD CONNECTIONS FOR
MANHOLES FLOW CHANNELS



NORML PIPE DIA.	MAX. PAYMNT. CU. FT. PER. LIN. FT.	
	CONCRETE PIPE CONC. ENCASE	TRANSITE PIPE CONC. ENCASE
6"	1.53	
8"	2.55	
10"	2.95	
12"	4.37	3.78
14"		4.25
15"	5.19	
16"		4.77
18"	6.05	5.26
20"		5.78
21"	6.95	6.56
24"	7.88	7.46
27"	8.85	
30"	9.83	8.55
33"	10.97	
36"	11.92	10.68
42"	14.18	

SCHEDULE



NORML PIPE DIA.	MAX. PAYMNT. CU. FT. PER. LIN. FT.			
	CONCRETE PIPE		TRANSITE PIPE	
	HIGH CRADLE	LOW CRADLE	HIGH CRADLE	LOW CRADLE
6"	1.28	0.90		
8"	1.58	1.03		
10"	1.86	1.22	1.78	1.14
12"	2.43	1.51	2.06	1.30
14"			2.36	1.45
15"	2.92	1.78	2.51	1.55
16"			2.66	1.63
18"	3.43	2.08	2.96	1.80
20"			3.66	1.98
21"	3.97	2.39	3.71	2.25
24"	4.32	2.72	3.97	2.34
27"	5.08	3.06		
30"	5.67	3.42	4.92	2.95
33"	6.28	3.81		
36"	6.92	4.18	5.99	3.60
42"	8.23	5.03		

SCHEDULE

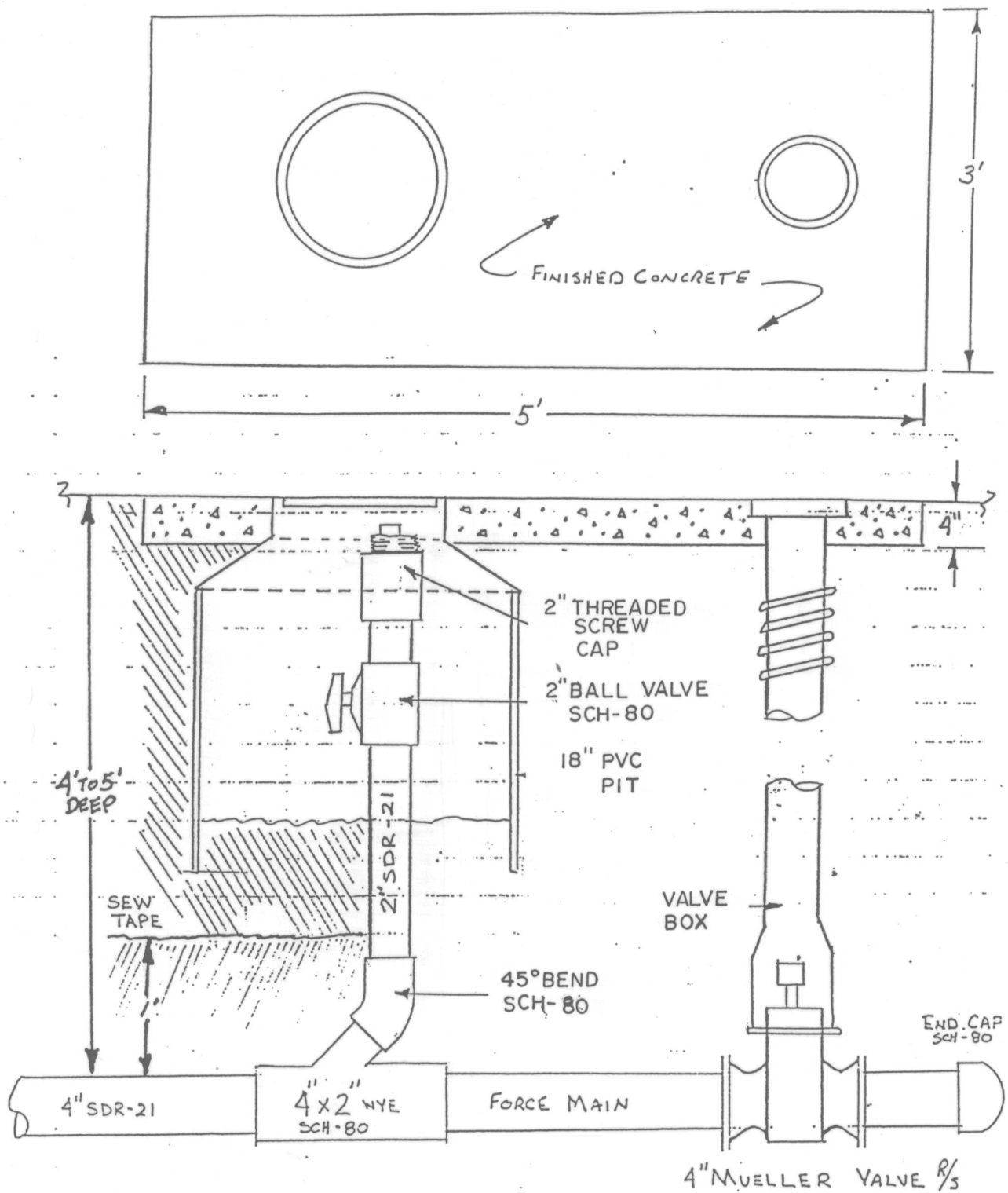
NO SCALE

NOTE:

1. FOR V.C.P.X. PIPE SCHEDULE USE CONC. PIPE SCHEDULE FOR 6", 8", & 10" PIPE. USE TRANSITE PIPE SCHEDULE FOR ALL OTHER SIZES.
2. POUR CONC. AGAINST UNDISTURBED EARTH, REMOVE SHEETING BEFORE POURING CONC. OR LEAVE LOWER PORTION OF SHEETING IN PLACE.
3. CONTRACTOR IS RESPONSIBLE FOR PROPERLY SECURING PIPE BEFORE CONCRETE IS POURED.

CITY OF NEWARK

STANDARD CONCRETE
CRADLE & ENCASEMENT (81)



CITY OF NEWARK

SANITARY SEWER
FORCE MAIN CLEANOUT

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