

TOWNSHIP OF FRANKLIN

ENGINEERING DEPARTMENT

DETAILS & SPECIFICATIONS

Revised: ~~January 9, 2004~~
~~May 25, 2005~~
~~January 12, 201~~
October 28, 2014

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**SANITARY SEWER DETAILS MAY BE OBTAINED FROM
THE FRANKLIN TOWNSHIP SEWERAGE AUTHORITY
(732-873-2121).**

FRANKLIN TOWNSHIP ENGINEERING DEPARTMENT

STANDARD NOTES APPLICABLE TO ALL PROJECTS

ALL MATERIALS, WORKMANSHIP AND CONSTRUCTION FOR SITE IMPROVEMENTS SHOWN HEREON SHALL BE IN ACCORDANCE WITH THE FOLLOWING, AS APPLICABLE:

- A. New Jersey Department of Transportation “STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION”.
- B. Current prevailing Municipal and/or County Specifications, Standards and Requirements.
- C. Current prevailing Utility Company/Authority Specifications, Standards and Requirements.
- D. State of New Jersey B.O.C.A. Code and Barrier-Free Design Regulations as Currently Amended.
- E. Current ANSI/AWWA Standards, Specifications and Requirements for the Water Supply System material.
- F. Water line testing to be performed to Utility Company standard of 200 p.s.i. for two hours without any leakage or pressure drop.

As-Built plans of the entire site prepared by a New Jersey Licensed Land Surveyor, in accordance with Township requirements, are to be provided to the Township prior to the release of the performance bond.

No soil may be imported to or removed from the site until a soil importation or exportation permit is obtained from the Engineering Department.

The subgrade of all streets and parking areas must be proof-rolled using a tri-axle tandem dump truck with a minimum certified weight of 70,000 lbs. fully loaded. The proof-roll is to be conducted under the direct supervision of the Township Engineer or his representative.

Construction Castings:

Note that all castings shall be of United States manufacture and NJDOT approved. If other than Campbell, Neenah, Bridgestate, Emporia, Quirin or East Jordan Ironworks castings are planned to be used, complete data must be submitted including, but not necessarily limited to, an affidavit certifying that the castings were made in the U.S.; load capacity based on the standard highway loading; weights and configurations of the castings and metallurgical analysis. All grates are to be “bicycle safe”. Curb pieces for Type “B” inlets are to be Type “N-Eco” for all new and replacement structures.

210-45. TRENCHES

All trenches or ditches which cross an existing street or which are dug for sewers, water mains, gas mains or other utilities, including the house connections for these utilities, shall be filled with Quarry Process Stone. The stone shall be placed in layers not exceeding twelve (12) inches in depth and shall be sprinkled with water and mechanically compacted. All soft spots and depressions in a surface, which has been graded, will be removed and filled with stone of a size to be determined by the Township Engineer. All trenches which are dug in a future street or existing R.O.W., on which no subbase or pavement has been constructed shall be backfilled as indicated above or maybe backfilled with suitable on-site excavated materials or imported fill.

Prior to using any on-site and/or imported soil materials the contractor or any individual or firm shall employ a recognized soils laboratory to secure soil samples; perform the necessary laboratory analysis and establish the compaction and other criteria necessary for the proper placement of the backfill. A report of the laboratory findings, including the compaction specifications, shall be submitted to the Township Engineer for review and approval prior to commencing any backfill operations using on-site and/or imported soil materials.

During the backfilling operations, the contractor or any individual or firm engaged in backfilling operations shall employ a Professional Engineer, Licensed in the State of New Jersey, or his representative, who is regularly engaged in the practice of geotechnical engineering and who is trained in soil mechanics, to observe the placement of the backfill. The soils engineer shall file daily reports, with the Township Engineer indicating the results of the compaction and upon the conclusion of the project file a final certification indicating that the backfill material has been placed and compacted in accordance with the recommendations contained in the approved laboratory report.

Backfill in trenches in field or lawn areas shall comply with the requirements for on-site or imported soil materials, as indicated above.

PIPING

All storm sewer, sanitary sewer, and water main piping shall maintain a minimum of ten (10) feet from building foundations or other structures

DRIVEWAYS

Driveway connections to street right-of-ways shall maintain a perpendicular alignment and comply with Article XI - Off Street Parking and Loading

COLD WEATHER PAVING RESTRICTIONS

DURING THE COLD WEATHER MONTHS FRANKLIN TOWNSHIP ENGINEERING WILL ENFORCE THE FOLLOWING REGULATIONS TAKEN FROM N.J. STATE STANDARDS.

- 1.) The surface upon which the bituminous concrete is to be placed shall be clean of all foreign and loose material, dry and free from ice when the paving operations are about to start and shall be maintained in that condition.
- 2.) Bituminous concrete mixtures shall be placed when the combinations of laydown and base surface temperatures are within the limits shown in the table below, when the weather is not rainy, and when the roadbed is in satisfactory condition.
- 3.) Temperature testing equipment shall be supplied by the contractor. Laydown temperature will be measured in the receiving hopper of the paver.

**Minimum Laydown Temperature (Degrees F)
Pavement Thickness (Inches)**

Base Temp	Pavement Thickness (Inches)					
	1/2	3/4	1	1 1/2	2	3 and Greater
20-30	(1)	(1)	(1)	310	300	285
31-40	(1)	(1)	(1)	305	295	280
41-50	(1)	(1)	310	300	285	275
51-60	(1)	310	300	295	280	270
61-70	310	300	290	285	275	265
71-80	300	290	285	280	270	265
81-90	290	280	275	270	265	260
91 and over	280	275	270	265	260	255

Note 1—No paving permitted.

COLD WEATHER CONCRETE RESTRICTIONS

DURING THE COLD WEATHER MONTHS FRANKLIN TOWNSHIP ENGINEERING WILL ENFORCE THE FOLLOWING REGULATIONS TAKEN FROM ACI, PCA, AND N.J. STATE STANDARDS:

- 1.) No concrete shall be placed unless the ambient temperature is 40 degrees F, on a rising thermometer or if the interior of the forms and any surface adjacent to the new concrete are preheated to that temperature or higher.
- 2.) Heating of forms shall be by forced air or radiation, no open flame heating will be allowed.
- 3.) The minimum temperature of fresh concrete as placed and maintained shall be 55°F.
- 4.) The duration of recommended concrete temperature shall be six (6) days for conventional concrete and three (3) days for high-early-strength concrete.
- 5.) Calcium Chloride is not allowed as a concrete accelerator. Accel-Guard 80 is acceptable.
- 6.) Adequate acceptable insulating materials shall be provided to maintain the recommended temperature. Blankets, or dry salt hay covered with tarpaulins or polyethylene film are acceptable.

Franklin Township

In Somerset County



Karen L. Buckley, Office Coordinator
Engineering Department

karen.buckley@twp.franklin.nj.us

Municipal Building

475 DeMott Lane, Somerset, NJ 08873
Phone: 732-873-2500 ext. 6230 Fax: 732-873-5391

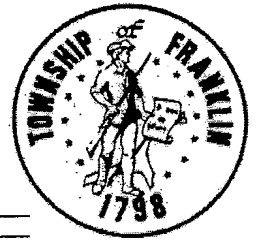
FRANKLIN TOWNSHIP ENGINEERING DEPARTMENT COMMERCIAL AS-BUILT (RECORD) PLAN REQUIREMENTS

1. As-Built plan to be based upon approved site plan. Two original signed and sealed paper copies shall be submitted.
2. Show both proposed locations and elevations (cross out) and actual locations and elevations.
3. Top and bottom of curb grades.
4. Top and bottom of wall grades
5. Storm sewer grate, rim and invert elevations. Show as-built pipe size, material, length and slope in both plan view and profile (if included in original site plan).
6. Sanitary sewer rim and invert elevations. Show as-built pipe size, material, length and slope in both plan view and profile (if included in original site plan).
7. Show centerline of pavement grades along roadway at 50' stations, centerline intersections and at all high and low points.
8. Show spot elevations to demonstrate drainage in parking areas.
9. Show spot elevations to delineate drainage swales.
10. Provide sufficient grade information to determine detention basin capacity and provide information on outlet control structure.
11. Show location of hydrants, fire department connections and water valves in plan view (station & offsets ties not necessary).
12. Show sanitary sewer clean-outs in plan view (station & offsets ties not necessary).
13. Building footprint locations with offsets to nearest property lines. As-built elevations at building corners.
14. Show parking lot striping and specify handicap spaces.
15. Locate and identify all new signage.
16. Location of all improvements proposed on site plan (sidewalk, curb, edge of pavement, walls fences, guide rails, watercourses, dumpster areas, light poles, trees, etc.).
17. CAD-generated data files, prepared by a New Jersey licensed land surveyor, directly translatable into an identical image of the as-built plan (Requirements per Section 112-329). Electronic files (dwg or dxf) may be sent to the following e-mail address: engineering.requests@twp.franklin.nj.us

Rev 3/26/14

Franklin Township

In Somerset County



Karen L. Buckley, Office Coordinator
Engineering Department

karen.buckley@twp.franklin.nj.us

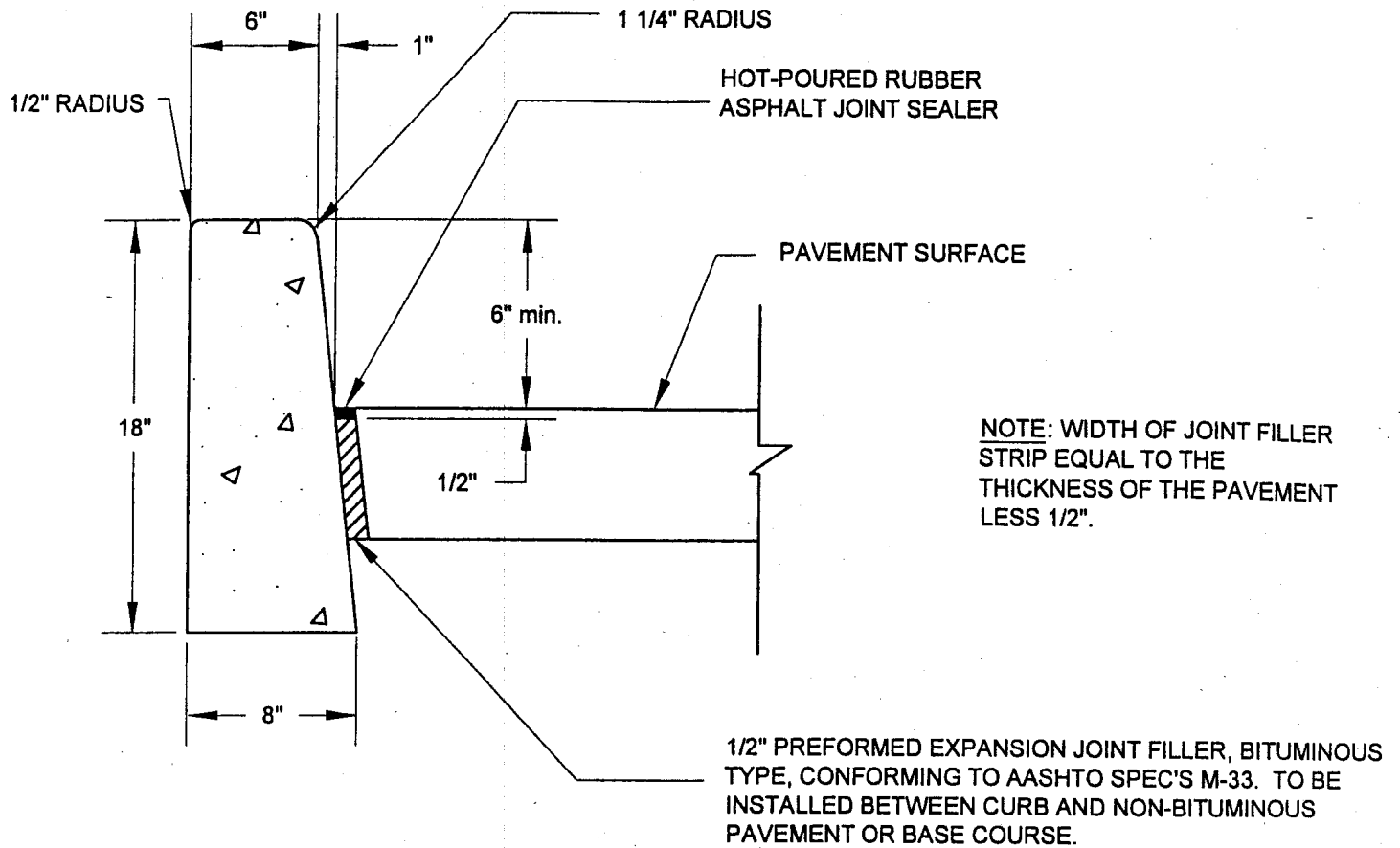
Municipal Building

475 DeMott Lane, Somerset, NJ 08873
Phone: 732-873-2500 ext. 6230 Fax: 732-873-5391

FRANKLIN TOWNSHIP ENGINEERING DEPARTMENT RESIDENTIAL – SINGLE LOT AS-BUILT (RECORD) PLAN REQUIREMENTS

1. As-Built plan to be based upon approved plot plan. Two original signed and sealed paper copies shall be submitted.
2. Show proposed elevations (cross out) and actual elevations.
3. Storm sewer grate, rim and invert elevations. Show as-built pipe size, material, length and slope in plan view.
4. Show as-built contour elevations to demonstrate surface drainage.
5. Show spot elevations to delineate swales.
6. Show sanitary sewer clean-outs in plan view.
7. Building footprint location with offsets to nearest property lines. As-built elevations at building corners and 10' away from corners.
8. First floor, garage floor and basement floor elevations.
9. Show a cross section of the roadway where the driveway intersects the edge of pavement showing any gutters or cross pipes constructed to maintain the pre-existing drainage flow.
10. Location and dimensions of all improvements proposed on plot plan (building additions, pools, sheds, drives, walks, curb, trees, etc).
11. CAD-generated data files, prepared by a New Jersey licensed land surveyor, directly translatable into an identical image of the as-built plan (Requirements per Section 112-329). Electronic files (dwg or dxf) may be sent to the following e-mail address: engineering.requests@twp.franklin.nj.us

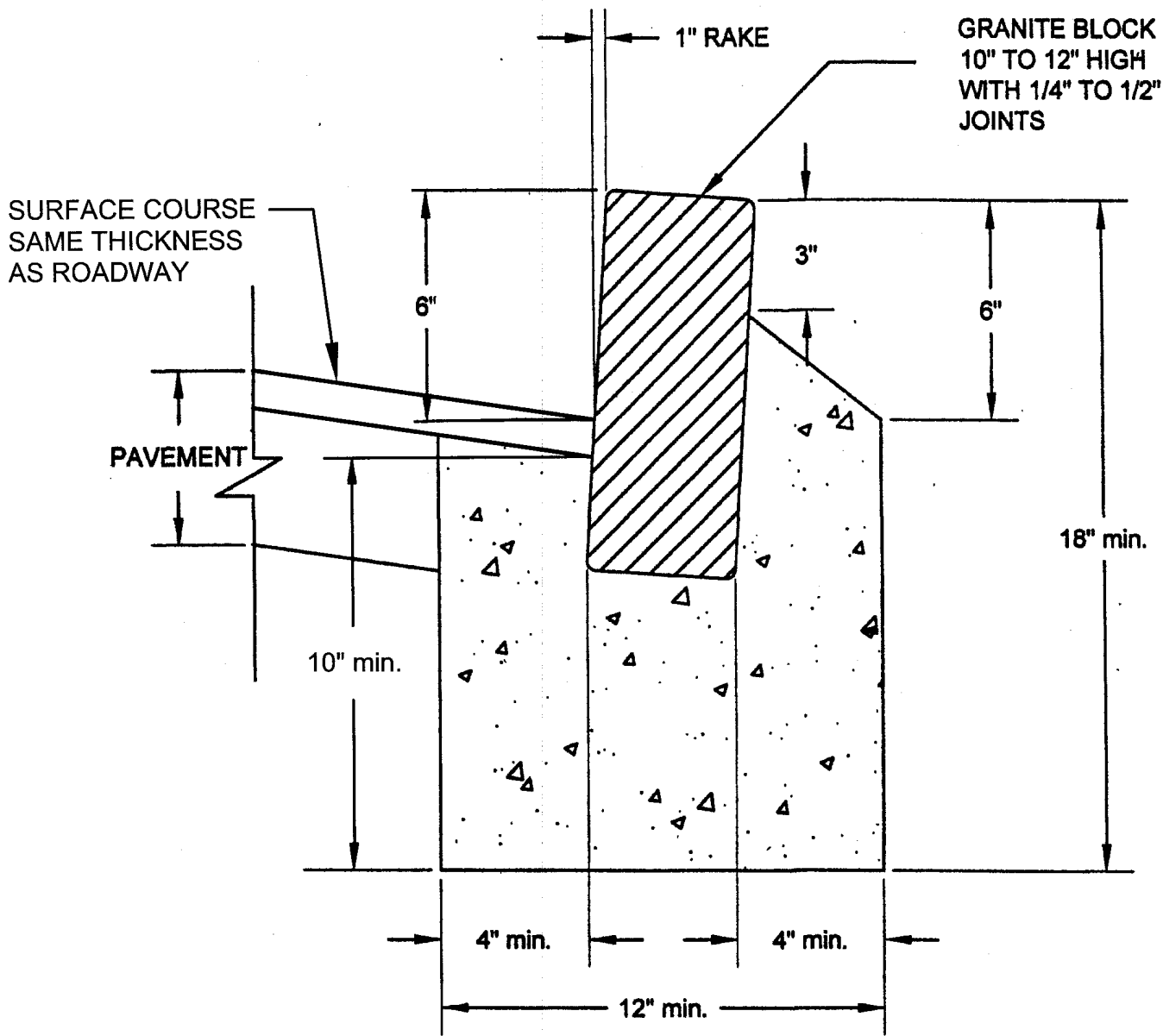
NOTE: As-built information necessary only in areas disturbed by construction and only on newly constructed improvements. As-built plan to be submitted prior to Certificate of Occupancy inspection.



N.T.S.

- NOTES: 1. CONCRETE TO BE NJDOT CLASS "B" (AIR ENTRAINED).
2. TRANSVERSE JOINTS 1/2" WIDE SHALL BE INSTALLED IN THE CURB 20' - 0" APART AND SHALL BE FILLED WITH PREFORMED, BITUMINOUS-IMPREGNATED FIBER JOINT FILLER, COMPLYING WITH THE REQUIREMENTS OF AASHTO M-213, RECESSED 1/4" FROM THE FRONT FACE AND TOP OF THE CURB.
3. DUMMY JOINTS (FORMED) SHALL BE INSTALLED MIDWAY BETWEEN EXPANSION JOINTS.

CONCRETE VERTICAL CURB



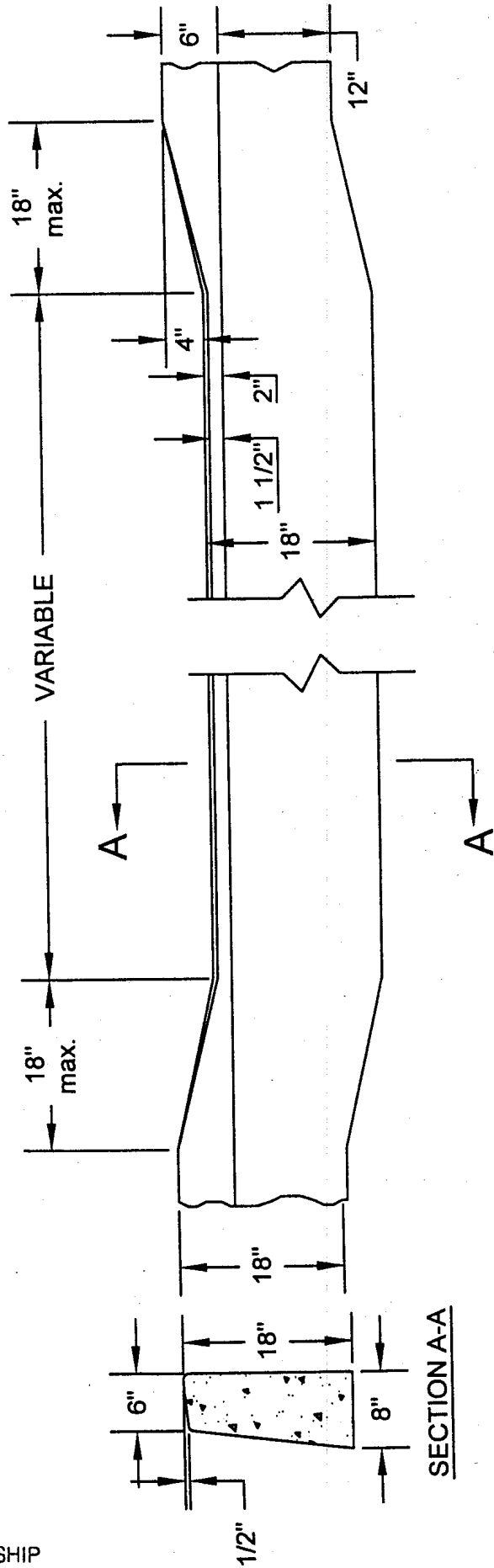
NOTES: 1. CONCRETE TO BE NJDOT CLASS "B" (AIR ENTRAINED).

VERTICAL GRANITE BLOCK CURB

N.T.S.

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Somerset County, NJ



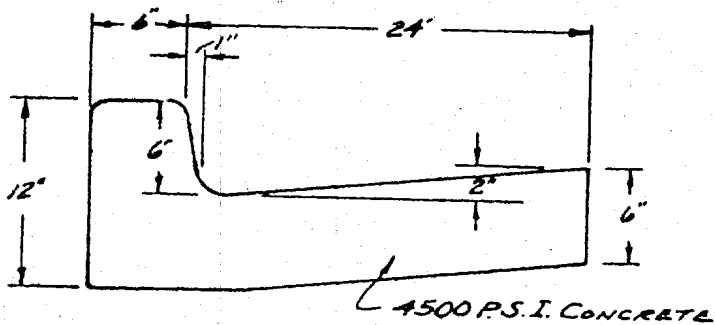


SECTION A-A

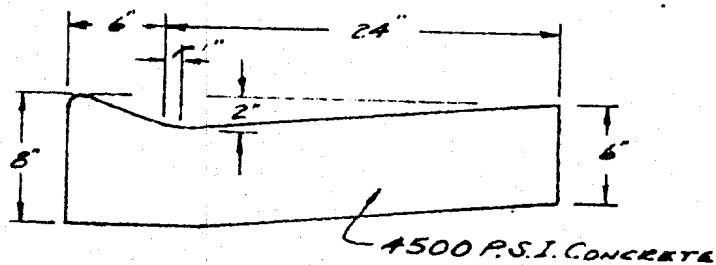
(SEE 1 OF 5 FOR DIMENSIONS)

DROP CURB AT DRIVEWAYS

DETAIL SHOWN IS FOR CONCRETE CURB. DETAIL FOR GRANITE BLOCK CURB SHALL FOLLOW SAME DIMENSIONS IN THE DRIVEWAY AREA.



TYPICAL SECTION
 CONCRETE CURB & GUTTER
 SCALE: 1"=1'-0"



TYPICAL SECTION
 SPECIAL DEPRESSED CONCRETE
 CURB & GUTTER
 SCALE: 1"=1'-0"

CONCRETE CURB & GUTTER

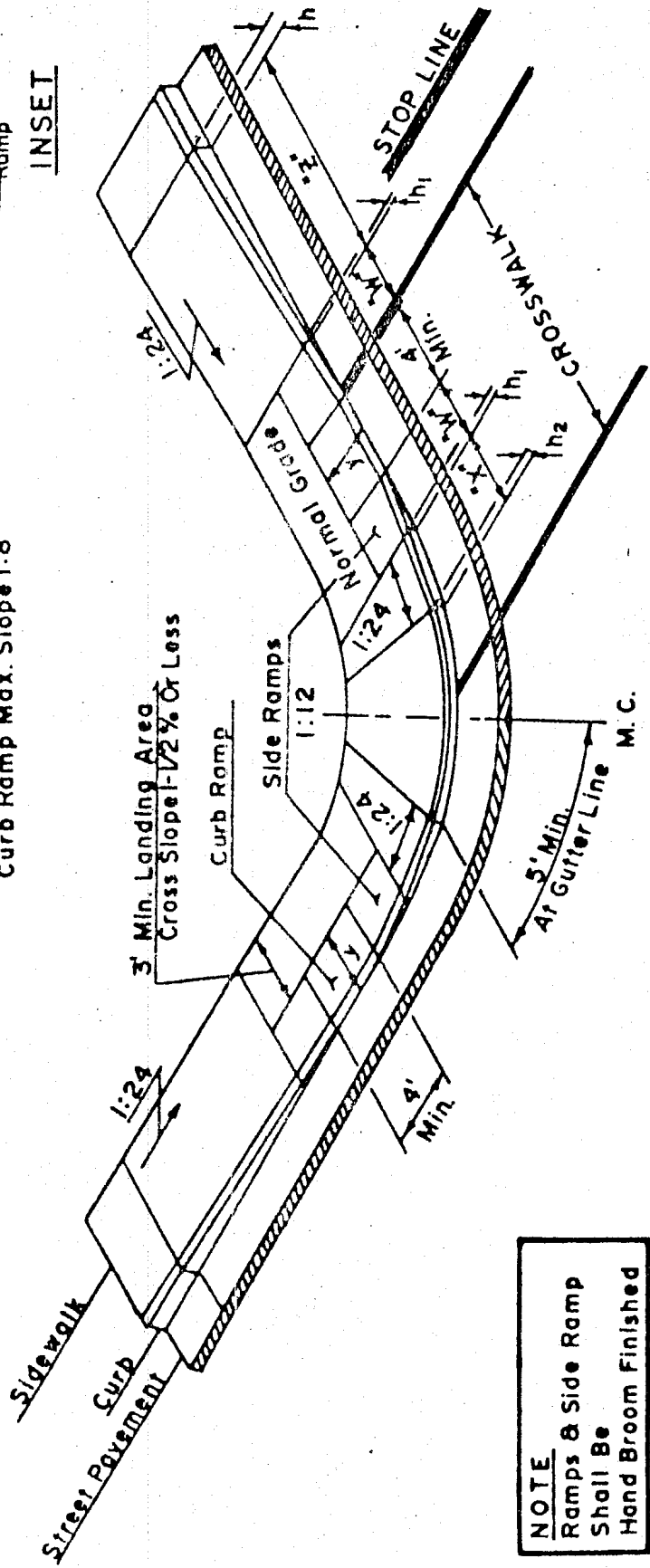
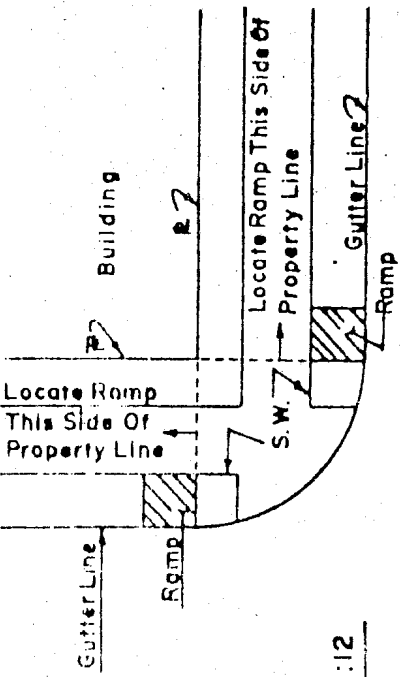
$$y = w$$

$$y = h_1 \times 12$$

$$h_1 = h - \frac{z}{24}$$

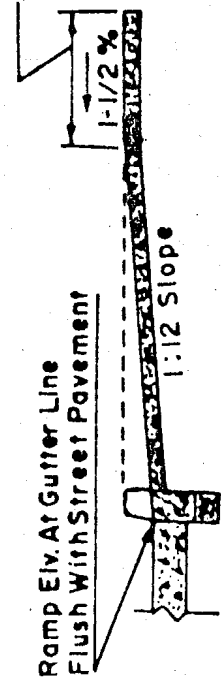
$$h_2 = h_1 + \frac{x}{24}$$

NOTE Curb Ramp Desirable Slope 1:12
Curb Ramp Max. Slope 1:8



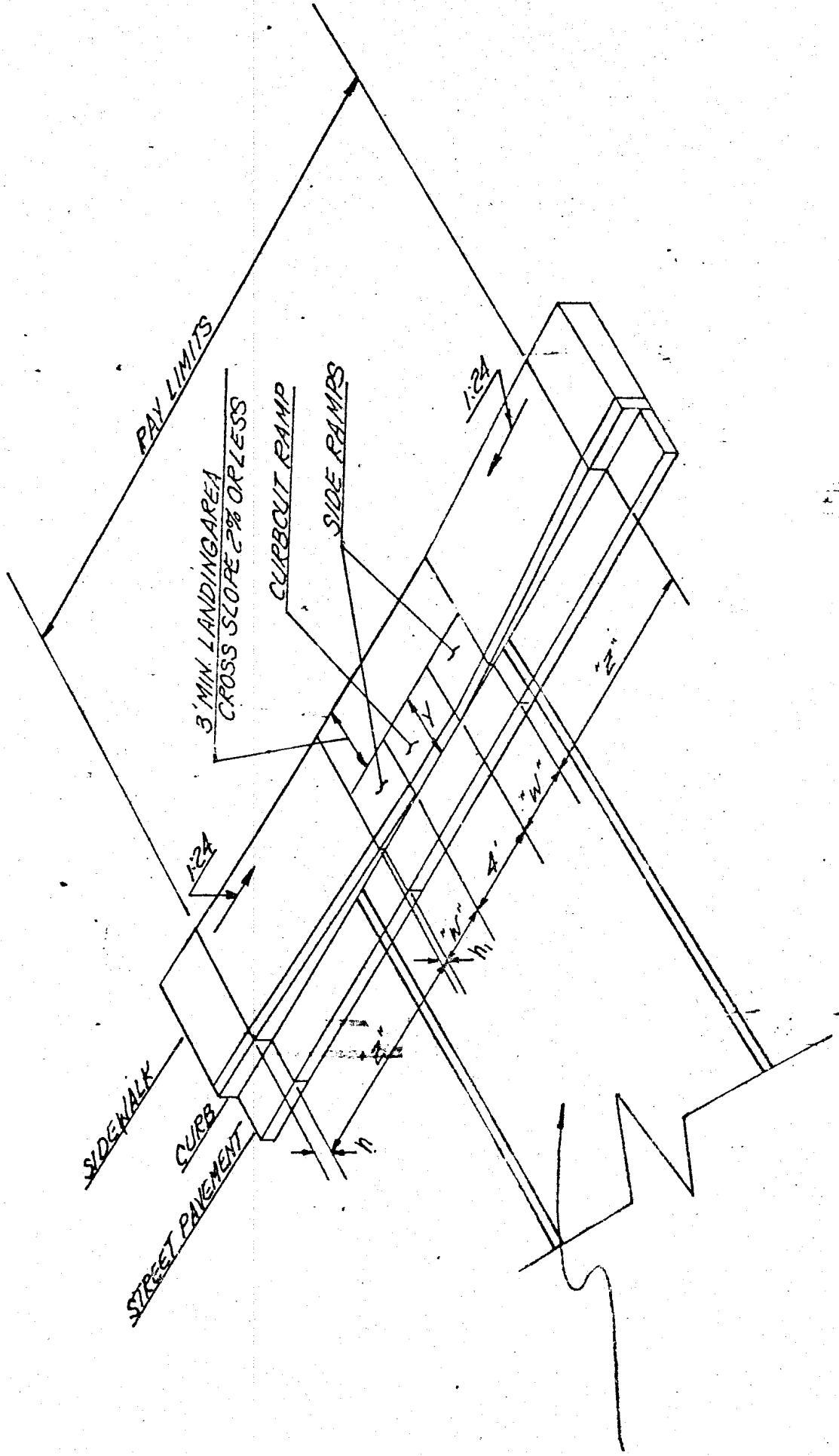
NOTE
Ramps & Side Ramp
Shall Be
Hand Broom Finished

3' Min. Sidewalk
Landing Area



NEW JERSEY DEPARTMENT OF TRANSPORTATION
DESIGN STANDARDS
FOR
CURB RAMPS FOR THE PHYSICALLY HANDICAPPED
7/19/76

$H = 6'$
 $h_i = 1'$
 $Y = 2'$
 $W = 2'$
 $Z = 10'$

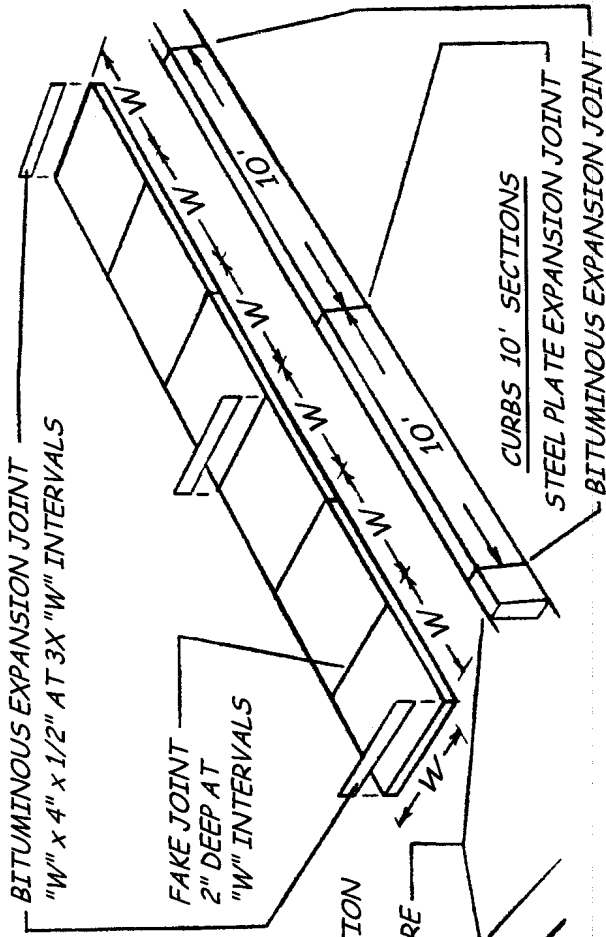


$Y = W$
 $Y = h_1 (12)$
 $h_1 = h - \frac{Z}{24}$

"W" = WIDTH (TYPICALLY 4', 5' OR 6')

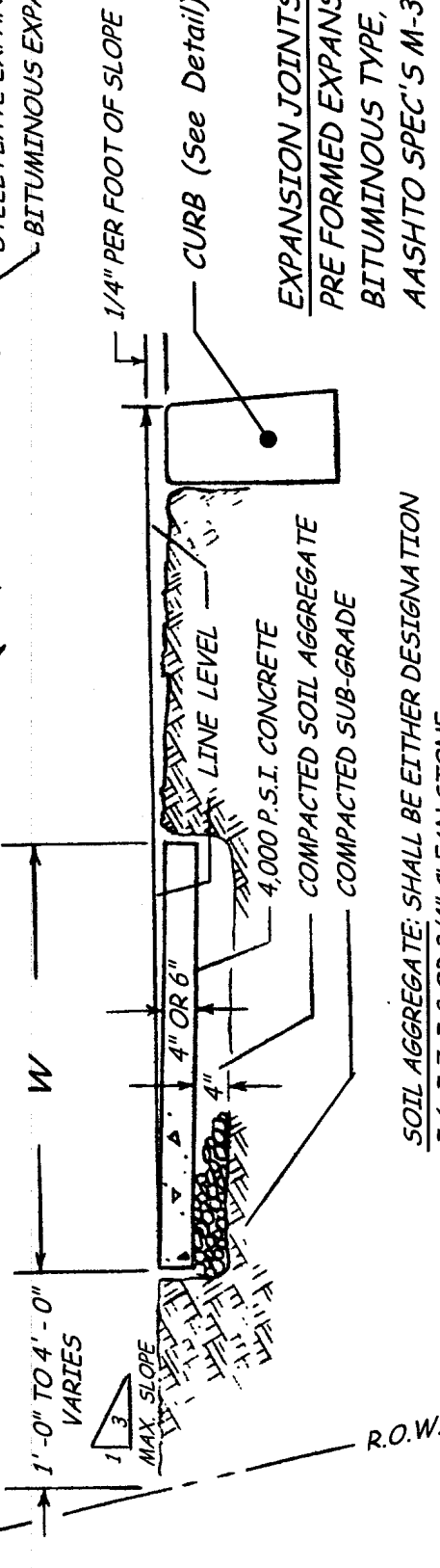
DRIVEWAY CROSSINGS: SIDEWALK SHALL BE 6" THICK WITH 6" x 6" #4 x #4 WELDED STEEL FABRIC TO BE PLACED 2" FROM BOTTOM OF THE CONCRETE FOR THE ENTIRE LENGTH AND WIDTH OF THE DRIVEWAY AND SIDEWALK.

SIDEWALK "W" x "W" SECTIONS



TOOL ALL EDGES TO A NEATLY ROUNDED CONDITION

TO BE BACK FILLED BEFORE PAVING



EXPANSION JOINTS: SHALL BE 1/2" PRE FORMED EXPANSION JOINT FILLER, BITUMINOUS TYPE, CONFORMING TO AASHTO SPEC'S M-33.

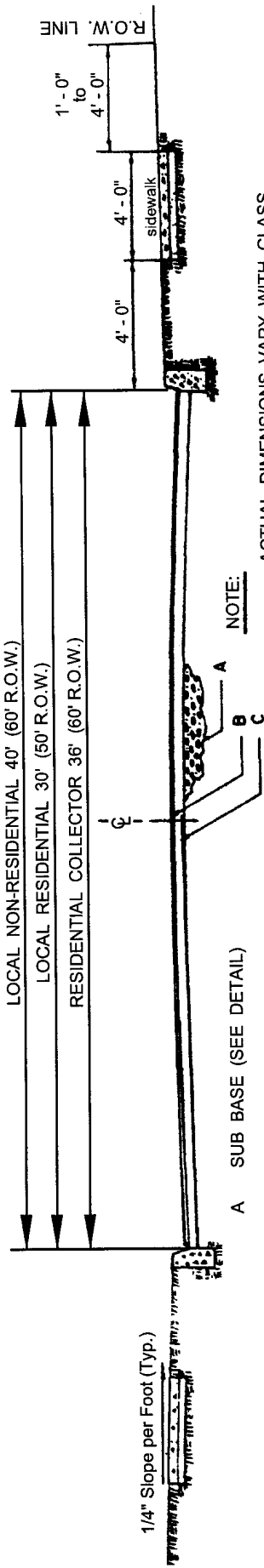
SOIL AGGREGATE: SHALL BE EITHER DESIGNATION I-6, I-7, I-8 OR 3/4" CLEAN STONE.

CONCRETE SIDEWALK DETAIL

N.T.S.

Franklin Township Somerset County, NJ





A SUB BASE (SEE DETAIL)

B SURFACE COURSE (SEE SCHEDULE)

C STABILIZED BASE (SEE SCHEDULE)

ROADWAY TYPICAL SECTION

N.T.S.

ROAD SPECIFICATION & THICKNESS SCHEDULE		
ROAD CLASS	SUB - BASE (D.G.A.B.C.)	SURFACE COURSE Mix No. 1-5 (NJDOT spec.)
Arterial	6"	7" or more 2"
Major Collector	6"	7" or more 2"
Collector, Non-Residential	6"	7" or more 2"
Collector, Residential	6"	6" or more 2"
Local, Non-Residential	6"	6" or more 1 1/2"
Local, Residential	4"	4" or more 1 1/2"

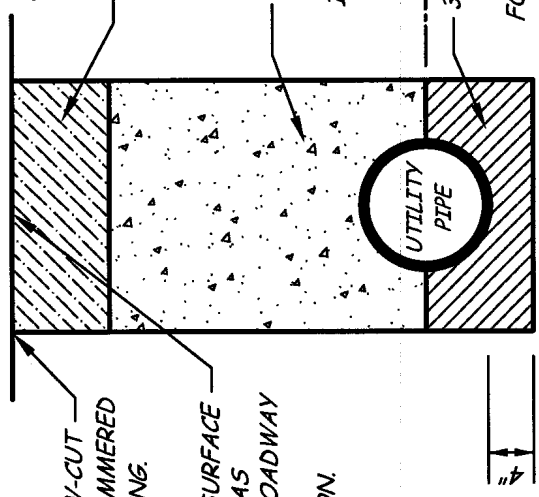


Franklin Township
Somerset County, NJ

THE FRANKLIN TOWNSHIP DEPARTMENT OF PUBLIC WORKS MUST BE NOTIFIED 24 HOURS BEFORE THE START OF ANY WORK IN THE PUBLIC RIGHT-OF-WAY.

A TOWNSHIP ROAD OPENING PERMIT IS TO BE OBTAINED FROM THE FRANKLIN TOWNSHIP PUBLIC WORKS DEPARTMENT PRIOR TO THE INSTALLATION OF ANY UTILITY SERVICES. THE ROADWAY IS TO BE RESTORED IN ACCORDANCE WITH THE CONDITIONS OUTLINED IN THE PERMIT.

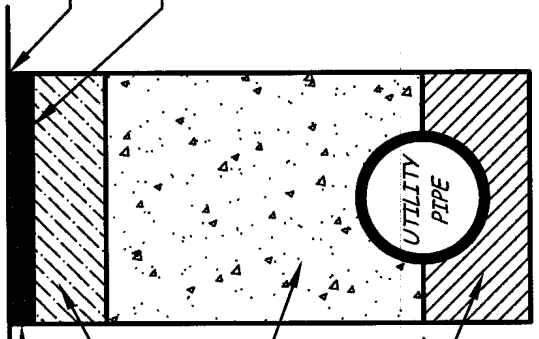
TEMPORARY REPAIR DETAIL



EDGES MUST BE SAW-CUT OR NEATLY JACK-HAMMERED PRIOR TO EXCAVATING.

WHEN NECESSARY, SURFACE IS TO BE REPAIRED AS DIRECTED TO KEEP ROADWAY IN A SMOOTH AND RIDEABLE CONDITION.

PERMANENT REPAIR DETAIL



SURFACE COURSE MIX No. I-5 (SEE SCHEDULE)

STABILIZED BASE MIX No. I-2 (SEE SCHEDULE)

DENSE GRADED AGGREGATE BASE COURSE, COMPACTED IN A MAXIMUM OF 12" LAYERS

SPRING LINE

3/4 CLEAN CRUSHED STONE TO THE SPRING LINE OF THE PIPE FOR DUCTILE IRON WATER PIPES AND STORM SEWERS.

TACK COAT EXPOSED EDGES PRIOR TO PLACING THE SURFACE COURSE.

INSTALL TOP COURSE AFTER THE TEMPORARY REPAIR HAS SETTLED OR HYDRO-HAMMER.

NOTE
REFER TO TRENCH NOTES FOR ADDITIONAL INFORMATION ON BACK FILL.

SCHEDULE:

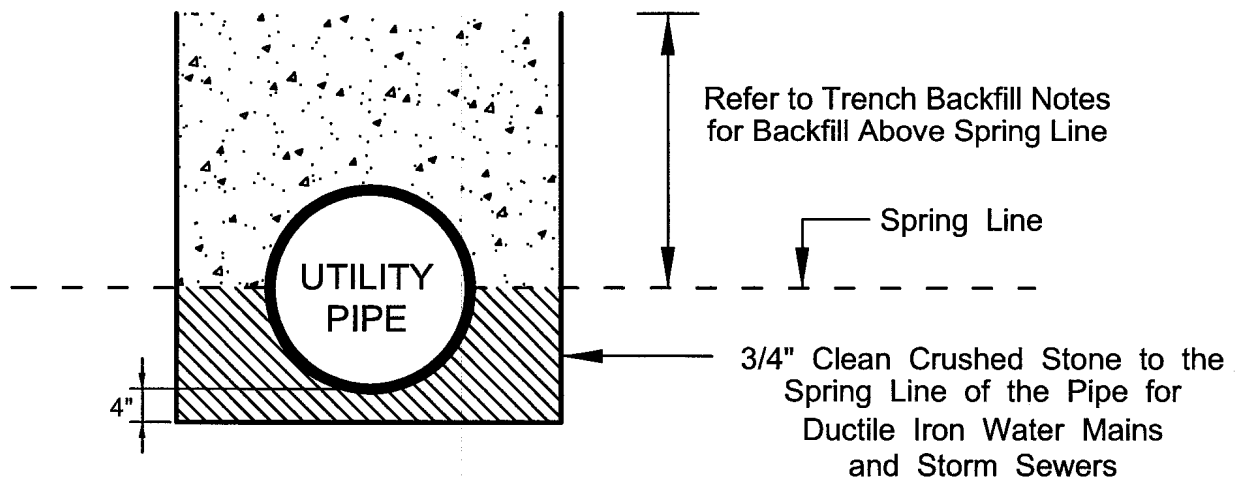
ROAD CLASS	USUAL PAV'T WIDTH	R.O.W. WIDTH	STABILIZED BASE	SURFACE COURSE	USE
LOCAL RESIDENTIAL	30 FEET	50 FEET	4"	1 1/2"	
LOCAL NONRESIDENTIAL	40 FEET	60 FEET	6"	1 1/2"	
COLLECTOR RESIDENTIAL	36 FEET	60 FEET	6"	2"	
COLLECTOR NONRESIDENTIAL	42 FEET	66 FEET	7"	2"	
MAJOR COLLECTOR	48 FEET	72 FEET	7"	2"	
ARTERIAL	50 FEET	80 - 100 FEET	7"	2"	

RESTORATION OF STREET OPENINGS

N.T.S.

Franklin Township
Somerset County, NJ



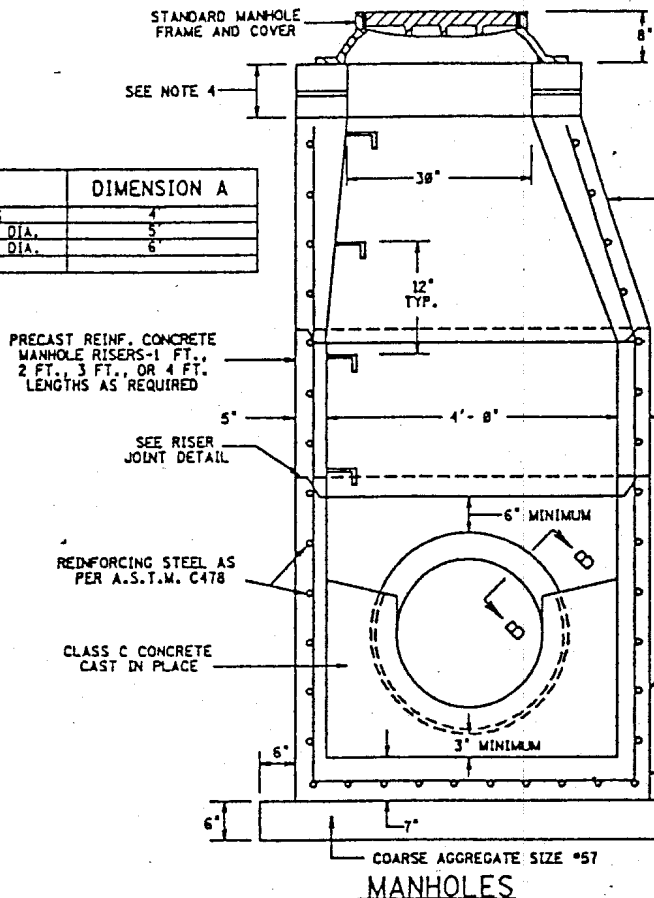


***UTILITY PIPE
BEDDING DETAIL***

N.T.S.

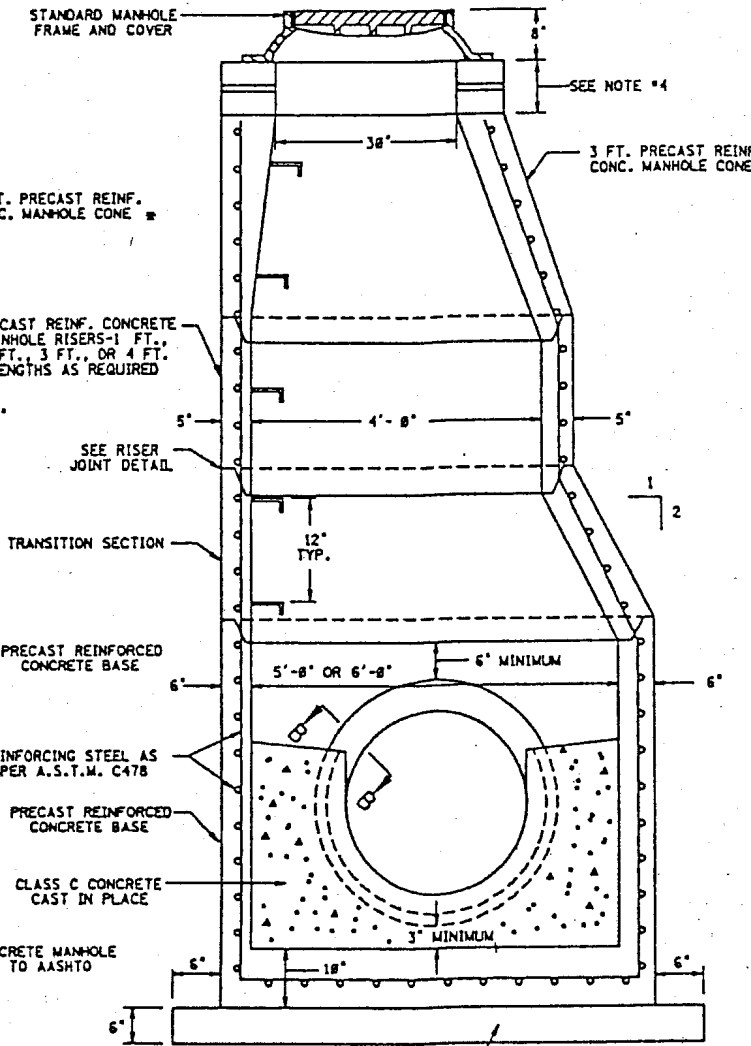


ITEM	DIMENSION A
MANHOLES	4
MANHOLES 5' DIA.	5
MANHOLES 6' DIA.	6



MANHOLES

N.T.S.

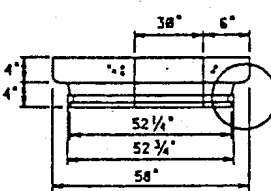


MANHOLES 5' DIAMETER, MANHOLES 6' DIAMETER

N.T.S.

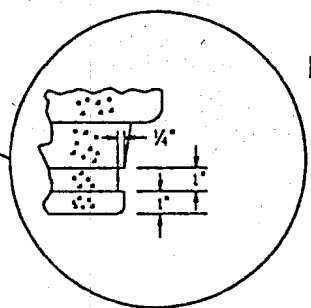
REINFORCING STEEL AS PER A.S.T.M. C478

PRECAST REINFORCED CONCRETE MANHOLE SECTIONS SHALL CONFORM TO AASHTO M199, ASTM C478.

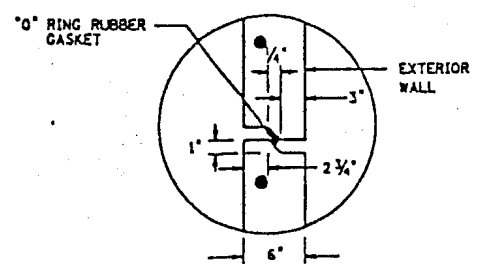


SECTION H-H

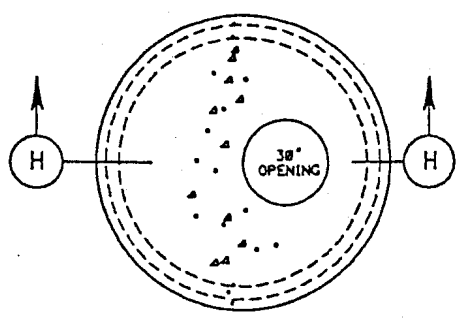
N.T.S.



DETAIL OF GROOVE FOR "O" RING RUBBER GASKET

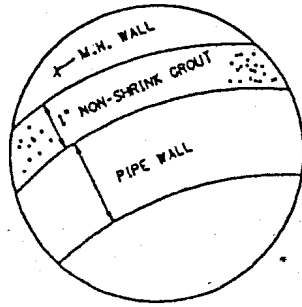


PRECAST MANHOLE RISER JOINT DETAIL



PLAN

N.T.S.



SECTION B-B

*** 48" PRECAST REINFORCED CONCRETE MANHOLE FLAT TOP**

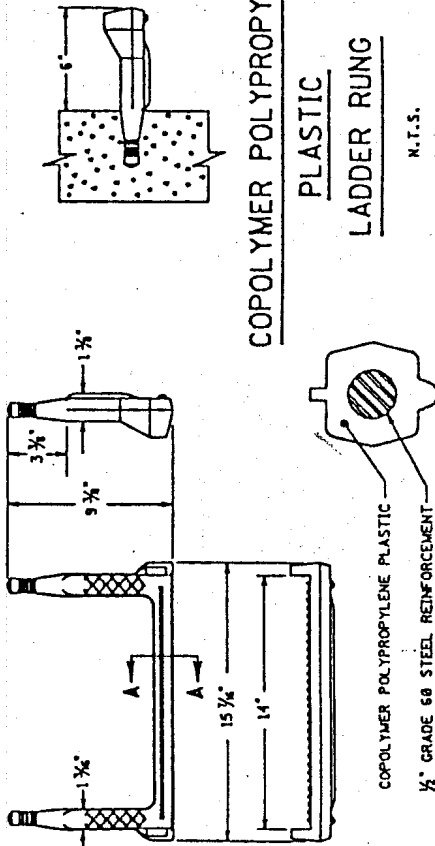
USE IN LIEU OF CONE SECTION WHEN HEIGHT OF MANHOLE IS LESS THAN 4 FT.

MANHOLE

SEE ATTACHED GENERAL NOTES

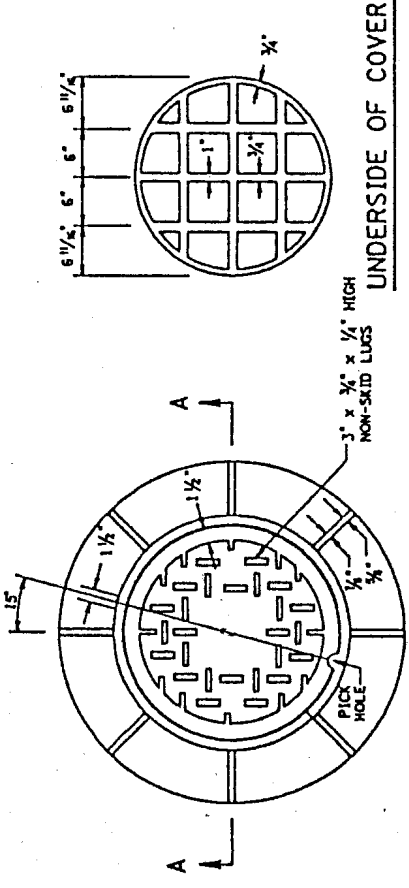
GENERAL NOTES

1. MANHOLES MAY BE CONSTRUCTED OF BRICK, CONCRETE, CONCRETE BLOCK OR PRECAST CONCRETE.
2. WHEN THE DEPTH OF A MANHOLE EXCEEDS 18 FT., AS MEASURED FROM TOP OF COVER TO INVERT, WALLS OF BRICK, CONCRETE OR CONCRETE BLOCK BELOW A DEPTH OF 8 FT., SHALL BE 12" THICK. THE OVERALL HORIZONTAL DIMENSIONS SHALL BE INCREASED 12" AND THE DEPTH OF THE FOUNDATION INCREASED TO 12". WHEN ROCK IS ENCOUNTERED THE HORIZONTAL DIMENSION AND DEPTH OF THE FOUNDATION SHALL NOT BE INCREASED. THE THICKNESS OF PRECAST CONCRETE MANHOLE WALLS DOES NOT HAVE TO BE INCREASED IF THE DEPTH OF THE MANHOLE EXCEEDS 18 FEET.
3. CASTINGS OF PRECAST MANHOLES SHALL BE ADJUSTED TO GRADE WITH COURSES OF BRICK OR CONCRETE BLOCK, AS REQUIRED, 12" MAXIMUM.
4. AS AN ALTERNATE TO THE STANDARD MANHOLE FRAME AND COVER A 36" DIAMETER FRAME WITH A FLANGE MAY BE FURNISHED WITH ALL OTHER DIMENSIONS AND WEIGHTS REMAINING THE SAME.
5. IN BRICK, CONCRETE OR CONCRETE BLOCK MANHOLES, INVERTS SHALL BE CONSTRUCTED IN TWO STAGES.
6. AS AN ALTERNATE, COPOLYMER POLYPROPYLENE PLASTIC LADDER RUNGS MAY BE FURNISHED IN PRECAST MANHOLES AND INLETS.



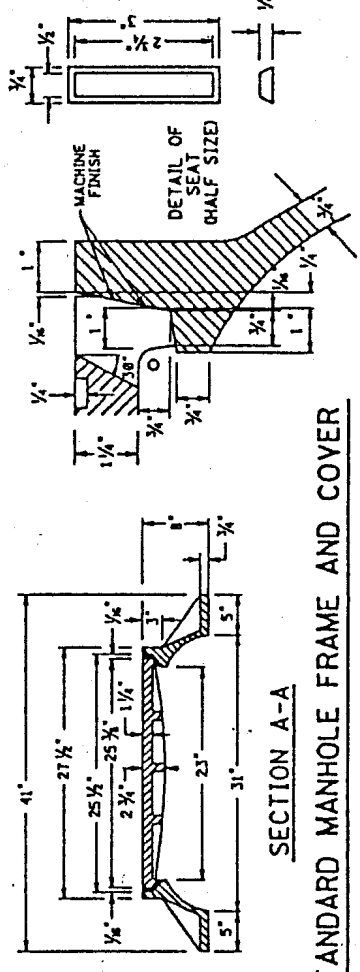
CD - 15.3

N.T.S.



MINIMUM WEIGHTS
WEIGHT OF FRAME = 265*
WEIGHT OF COVER = 175*

N.T.S.



SECTION A-A
STANDARD MANHOLE FRAME AND COVER

N.T.S.

CD - 15.1

MANHOLE CASTING, NOTES & LADDER RUNGS

GENERAL NOTES:

- INLETS MAY BE CONSTRUCTED OF BRICK, CONCRETE, CONCRETE BLOCK OR PRECAST CONCRETE. WALLS SHALL BE 8" THICK IF BRICK AND 6" THICK IF CONCRETE, CONCRETE BLOCK OR PRECAST CONCRETE. INLET FOUNDATIONS AND INVERTS SHALL BE CLASS C CONCRETE.
- CORRELLING OF INLET WALLS WILL BE PERMITTED AT THE RATE OF 1/2" PER 8" OF HEIGHT, MAXIMUM CORBEL 6" PER WALL.
- EXCEPT FOR INLETS TYPE A AND C, FOUNDATIONS AND INVERTS SHALL BE CONSTRUCTED IN TWO STAGES. AND THE BOTTOM OF THE FOOTINGS SHALL BE 8" BELOW THE OUTER WALL OF THE LOWEST PIPE IN THE INLET.
- WHEN THE DEPTH OF AN INLET THAT IS NOT PRECAST EXCEEDS 12', AS MEASURED FROM TOP OF GRADE TO INVERT, IT SHALL BE CONSTRUCTED IN TWO STAGES. THE DEPTH OF FOUNDATION INCREASED TO 12', WHEN ROCK IS ENCOUNTERED THE DEPTH OF THE FOUNDATION SHALL NOT BE INCREASED.
- INLET FOUNDATIONS WHICH ARE PRECAST SHALL BE 2" IN THICK. BED OF COMPACTED COARSE AGGREGATE, SIZE NO. 57, THE COARSE AGGREGATE SHALL EXTEND 5' BEYOND THE HORIZONTAL LIMITS OF THE INLET FOUNDATION.
- CASTINGS FOR PRECAST INLETS SHALL BE ADJUSTED TO GRADE WITH COURSES OF BRICK, AS REQUIRED, 12" MAXIMUM.
- WHEN THE DEPTH OF A PRECAST INLET EXCEEDS 18' AS MEASURED FROM TOP OF GRADE TO INVERT, THE FOUNDATION SHALL BE INCREASED TO 12'. WHEN ROCK IS ENCOUNTERED THE DEPTH OF THE FOUNDATION SHALL NOT BE INCREASED.
- MINIMUM WALL REINFORCEMENT FOR PRECAST INLETS TYPE A, B, C, E, D-1 AND B MODIFIED:

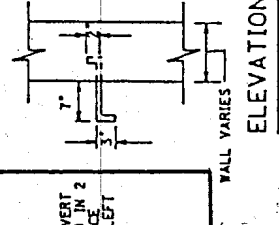
DEPTH BELOW TOP OF GRADE	HORIZONTAL REINF.	VERTICAL REINF.	WALL THK.
0' TO 18' - 0"	4 @ 18" C.C.	4 @ 18" C.C.	6"
18' - 1' TO 15' - 0"	4 @ 8" C.C.	4 @ 18" C.C.	6"
15' - 1' TO 20' - 0"	4 @ 6" C.C.	4 @ 18" C.C.	6"

REINFORCING SHOWN FOR PRECAST INLETS IS THE MINIMUM REQUIRED. ADDITIONAL REINFORCING FOR HANDLING IS THE RESPONSIBILITY OF THE CONTRACTOR.

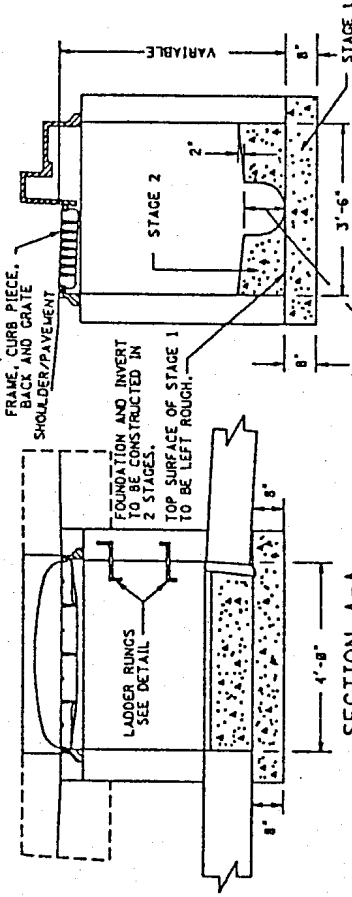
ALTERNATE REINFORCEMENT
W.W.F. REINFORCEMENT

- DEPTH BELOW TOP OF GRADE
- 0' TO 18' - 0" W.W.F. 3 x 6 #6 WIRES SPACED AT 3' TO RUN HORIZONTAL IN ALL CASES.
 - 18' - 1' TO 15' - 0" W.W.F. 3 x 6 #6 ADD #3 BAR @ 18" HORIZONTAL.
 - 15' - 1' TO 20' - 0" W.W.F. 3 x 6 #6 ADD #3 BAR @ 9" HORIZONTAL.
- ADD #4 BAR @ 15" HORIZONTAL.

9. C.O. IS MUST ACCOMPANY THIS DETAIL.

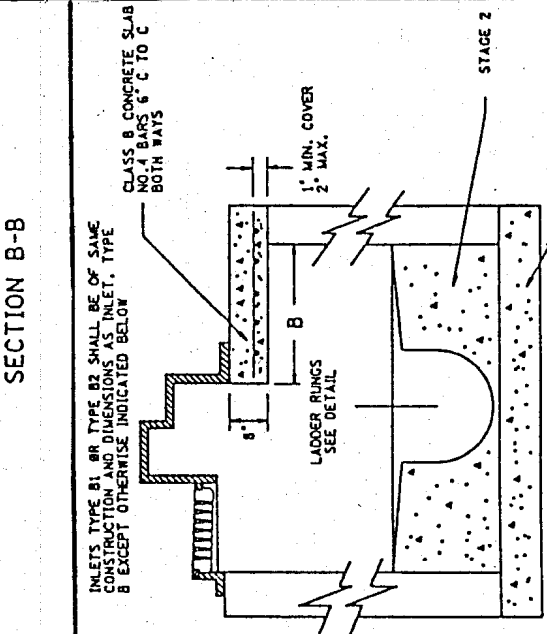


LADDER RUNG DETAIL



INLETS, TYPE B WITH C.I. CURB PIECE-BACK-FRAME AND GRATE

N.T.S.

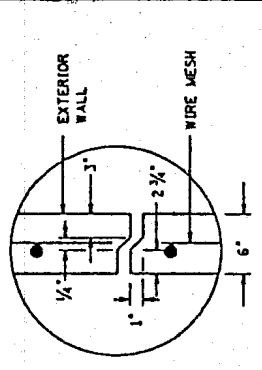


INLET TYPE	DIMENSION A	DIMENSION B
B1	4'-6"	1'-0"
B2	5'-6"	2'-0"

INLETS, TYPE B1 AND TYPE B2

N.T.S.

FOUNDATION AND INVERT TO BE CONSTRUCTED IN 2 STAGES. THE TOP SURFACE OF STAGE 1 TO BE LEFT ROUGH.



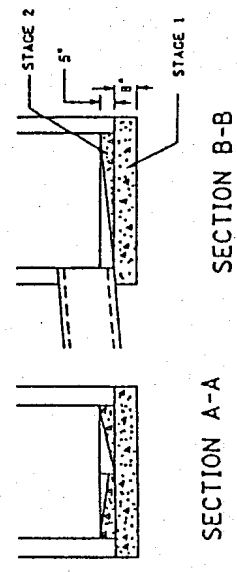
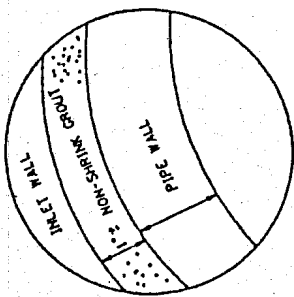
N.T.S.

NOTE: JOINT TO BE SECURELY MORTARED BY CONTRACTOR

CD - 11.19

CONNECTION OF PIPE AND INLET FOR PRECAST INLET

CD - 11.5



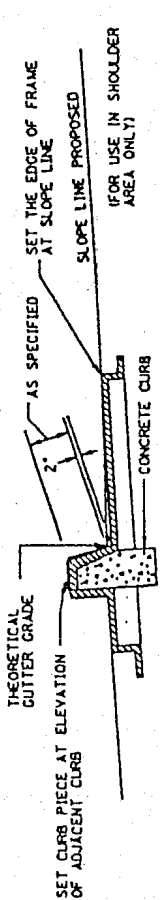
DETAIL OF INVERT FOR INLET WITHOUT CONTINUOUS PIPE

N.T.S.

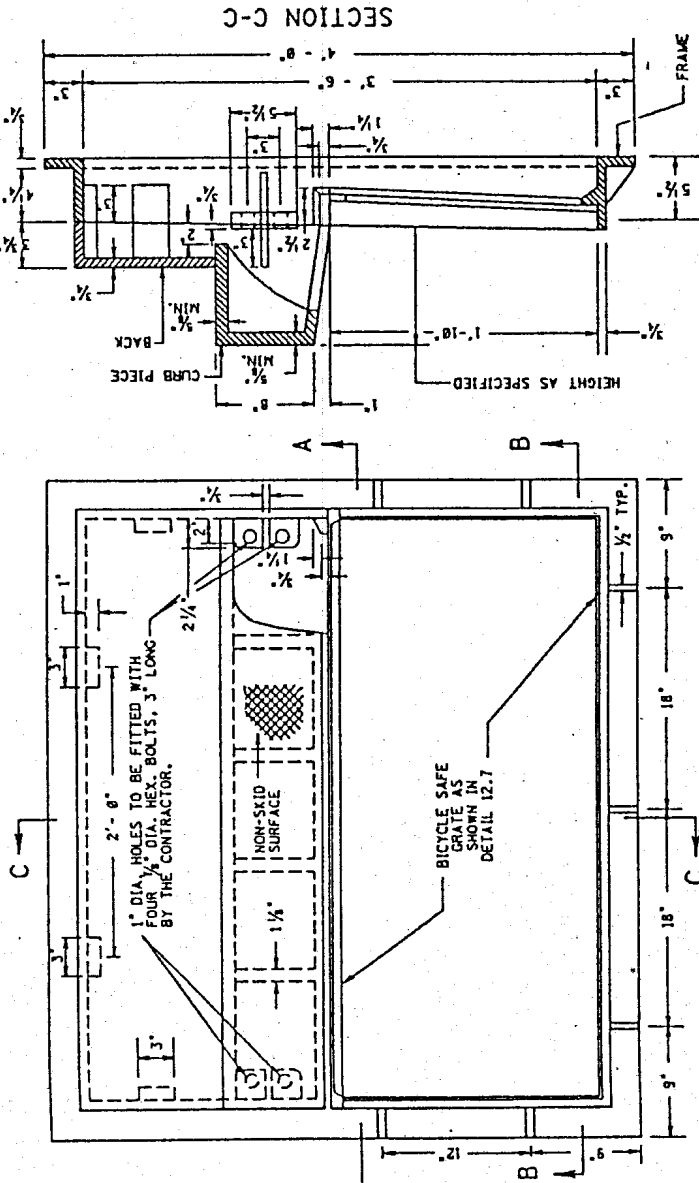
CD - 11.7

NOTE: FOUNDATION AND INVERT TO BE CONSTRUCTED IN TWO STAGES. THE TOP SURFACE OF STAGE 1 TO BE LEFT ROUGH.

INLET, TYPE B



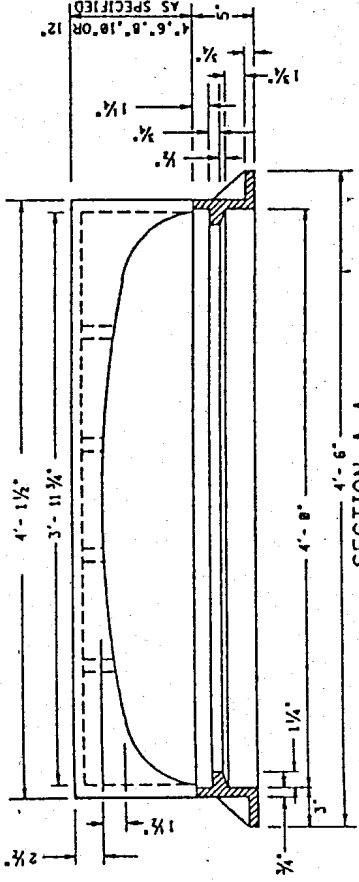
**METHOD OF SETTING CASTING FOR B TYPE INLETS
WHERE CURB PIECE HEIGHT IS 2" GREATER THAN CURB FACE**



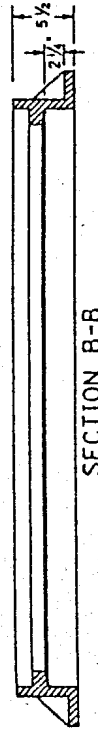
NOTE:
SEE ALTERNATE BACK PLATE
DETAIL 6D - 11.4

MINIMUM WEIGHTS	
WEIGHT OF GRATE	= 325*
WEIGHT OF FRAME	= 312*
WEIGHT OF BACK	= 128*
WEIGHT OF CURB	6" = 125*
	8" = 167*
	10" = 209*
	12" = 251*

* AS SPECIFIED

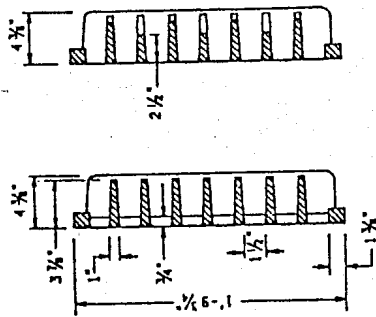


SECTION A-A



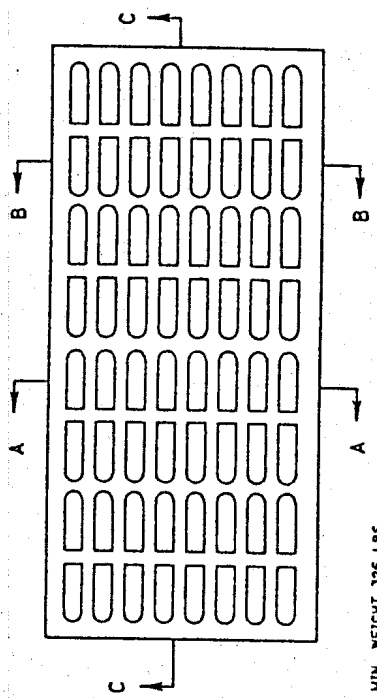
SECTION B-B

20 FRAME-BACK-CURB PIECE
FOR INLET TYPE B AND TYPE C

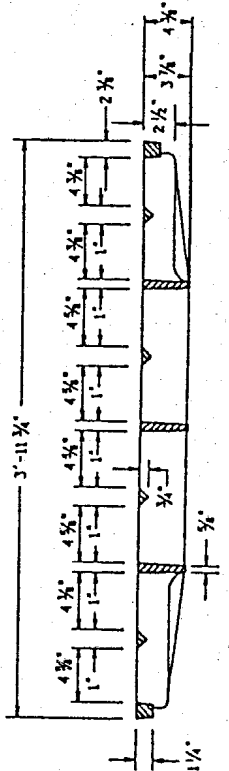


SECTION A-A

SECTION B-B



MIN. WEIGHT 325 LBS.



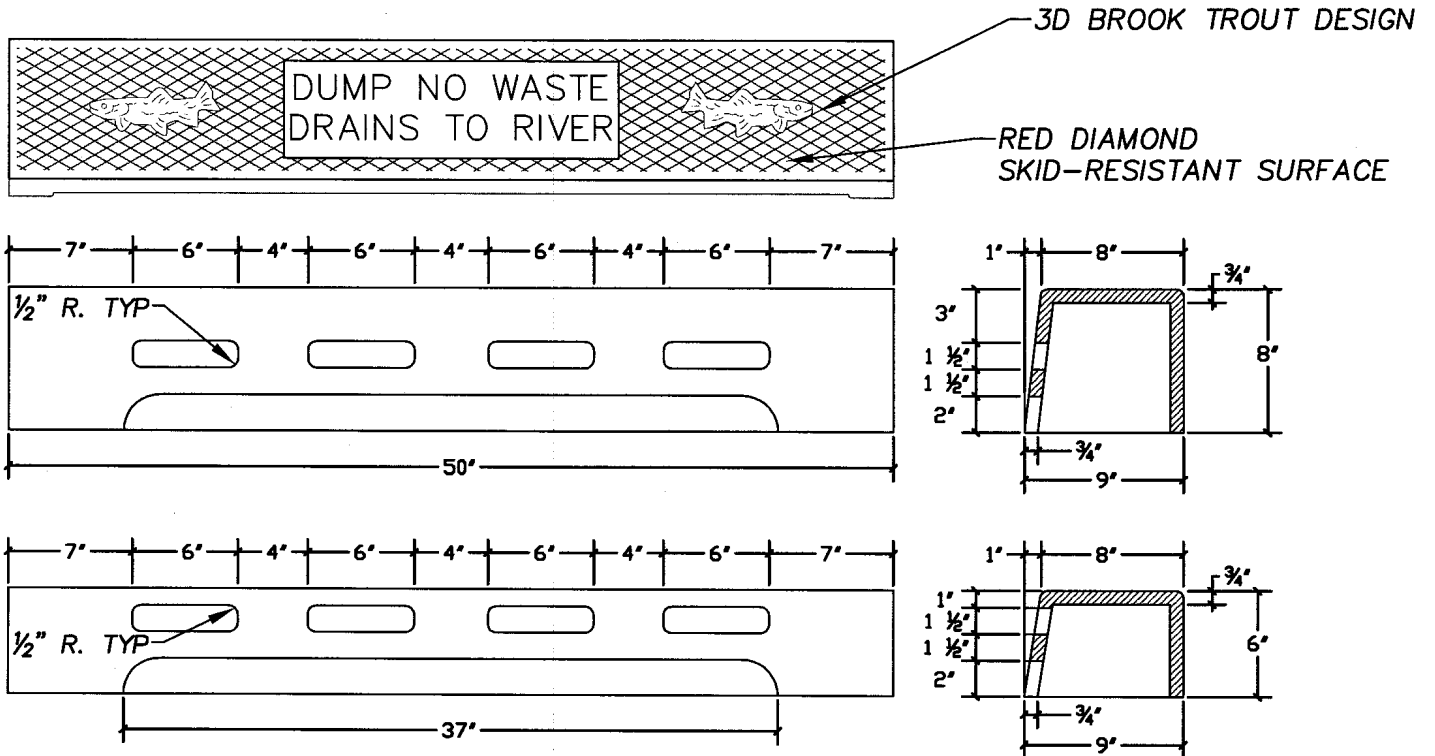
SECTION C-C

**BICYCLE SAFE GRATE
(CAST IRON)**

INLET CASTING, TYPE B

CURB PIECE - TYPE "N-ECO"

CURB PIECE SHOWN BELOW REPLACES THAT SHOWN IN THE FRANKLIN TOWNSHIP STANDARD DETAILS FOR INLET CASTING, TYPE "B" FOR ALL NEW AND REPLACEMENT STRUCTURES.



CURB PIECE - TYPE "N-ECO"

N.T.S.

Franklin Township
Somerset County, NJ



GENERAL NOTES:

1. INLETS MAY BE CONSTRUCTED OF BRICK, CONCRETE, CONCRETE BLOCK OR PRECAST CONCRETE. WALLS SHALL BE 8" THICK IF BRICK AND 6" THICK IF CONCRETE, CONCRETE BLOCK OR PRECAST CONCRETE. INLET FOUNDATIONS AND INVERTS SHALL BE CLASS C CONCRETE.
2. CORRELLING OF INLET WALLS WILL BE PERMITTED AT THE RATE OF 1/2" PER 8' OF HEIGHT; MAXIMUM CORBEL 6" PER WALL.
3. EXCEPT FOR INLETS TYPE A AND C, FOUNDATIONS AND INVERTS SHALL BE CONSTRUCTED IN TWO STAGES, AND THE BOTTOM OF THE FOOTINGS SHALL BE 8" BELOW THE OUTER WALL OF THE LOWEST PIPE IN THE INLET.
4. WHEN THE DEPTH OF AN INLET THAT IS NOT PRECAST EXCEEDS 18" AS MEASURED FROM TOP OF GRATE TO INVERT, WALLS BELOW A DEPTH OF 8" SHALL BE 12" THICK AND THE DEPTH OF FOUNDATION INCREASED TO 12". WHEN ROCK IS ENCOUNTERED THE DEPTH OF THE FOUNDATION SHALL NOT BE INCREASED.
5. INLET FOUNDATIONS WHICH ARE PRECAST SHALL BE PLACED ON A 4" THICK BED OF COMPACTED AGGREGATE SIZE #4 WITH THE COARSE AGGREGATE SHALL EXTEND 6" BEYOND THE HORIZONTAL LIMITS OF THE INLET FOUNDATION.
6. CASTINGS FOR PRECAST INLETS SHALL BE ADJUSTED TO GRADE WITH COURSES OF BRICK, AS REQUIRED, 12" MAXIMUM.
7. WHEN THE DEPTH OF A PRECAST INLET EXCEEDS 18" AS MEASURED FROM TOP OF GRATE TO INVERT, THE FOUNDATION SHALL BE INCREASED TO 12". WHEN ROCK IS ENCOUNTERED THE DEPTH OF THE FOUNDATION SHALL NOT BE INCREASED.
8. MINIMUM WALL REINFORCEMENT FOR PRECAST INLETS TYPE A, B, C, E, D-1 AND B MODIFIED:

BAR REINFORCEMENT

DEPTH BELOW TOP OF GRATE	HORIZONTAL REINF.	VERTICAL REINF.	WALL THK.
8' TO 18' - 0"	4 @ 18" C.C.	4 @ 18" C.C.	6"
18' - 1" TO 15' - 0"	4 @ 8" C.C.	4 @ 18" C.C.	6"
15' - 1" TO 28' - 0"	4 @ 8" C.C.	4 @ 18" C.C.	6"

REINFORCING SHOWN FOR PRECAST INLETS IS THE MINIMUM REQUIRED. ADDITIONAL REINFORCING FOR HANDLING IS THE RESPONSIBILITY OF THE CONTRACTOR.

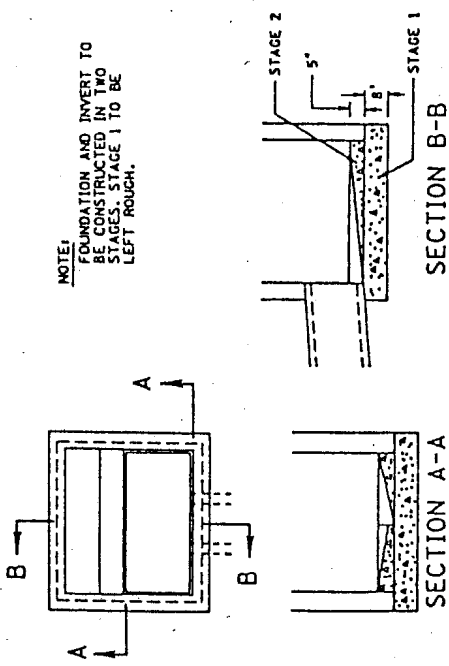
ALTERNATE REINFORCEMENT

WRF REINFORCEMENT

- DEPTH BELOW TOP OF GRATE
- 8' TO 18' - 0" WRF 3 x 6 W6 WIRES SPACED AT 3' TO RUN HORIZONTAL IN ALL CASES.
 - 18' - 1" TO 15' - 0" WRF 3 x 6 W6 ADD #3 BAR @ 18" HORIZONTAL.
 - 15' - 1" TO 28' - 0" WRF 3 x 6 W6 ADD #3 BAR @ 9" HORIZONTAL. OR ADD #4 BAR @ 15" HORIZONTAL.

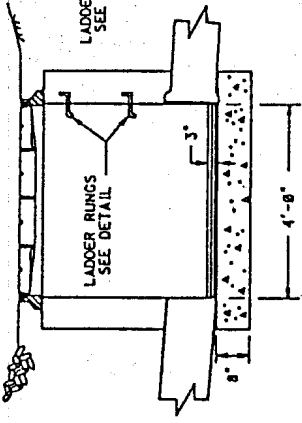
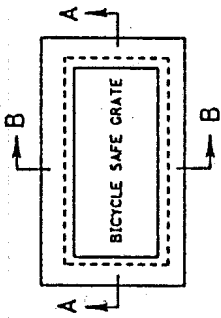
3. C.O. IS MUST ACCOMPANY THIS DETAIL.

NOTE: FOUNDATION AND INVERT TO BE CONSTRUCTED IN TWO STAGES. STAGE 1 TO BE LEFT ROUGH.

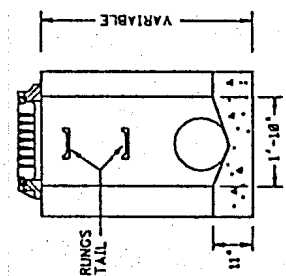


SECTION A-A
DETAIL OF INVERT FOR INLET
WITHOUT CONTINUOUS PIPE

FRAME AND GRATE

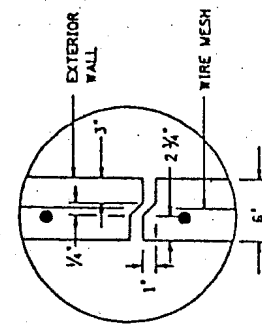


SECTION A-A
INLETS, TYPE A



SECTION B-B

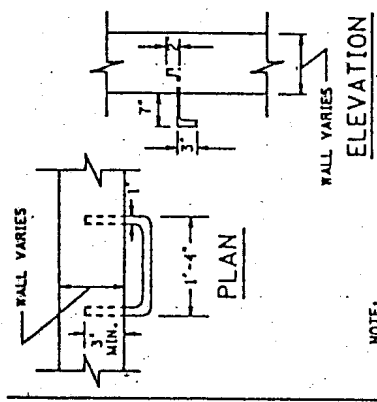
N.T.S.



RISER JOINT DETAIL
FOR PRECAST INLETS

N.T.S.

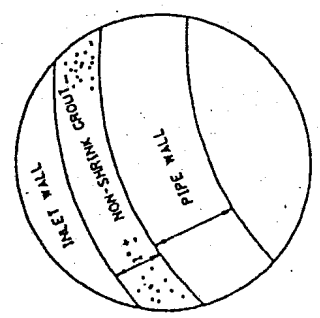
NOTE: JOINT TO BE SECURELY MORTARED BY CONTRACTOR

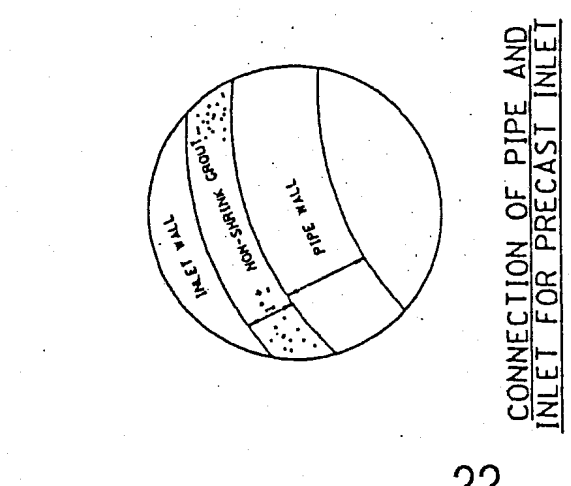
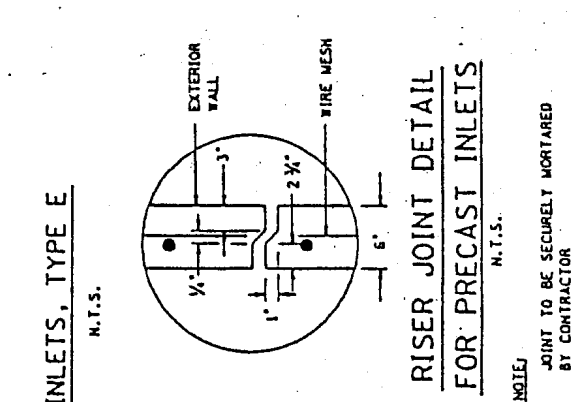
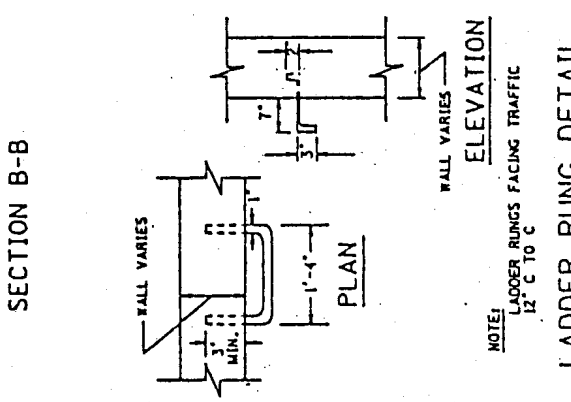
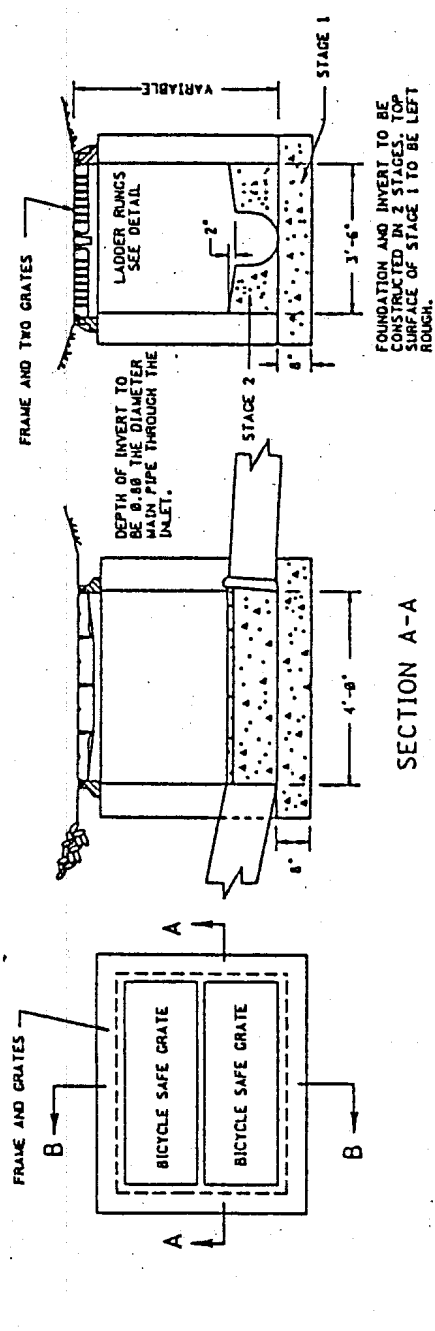
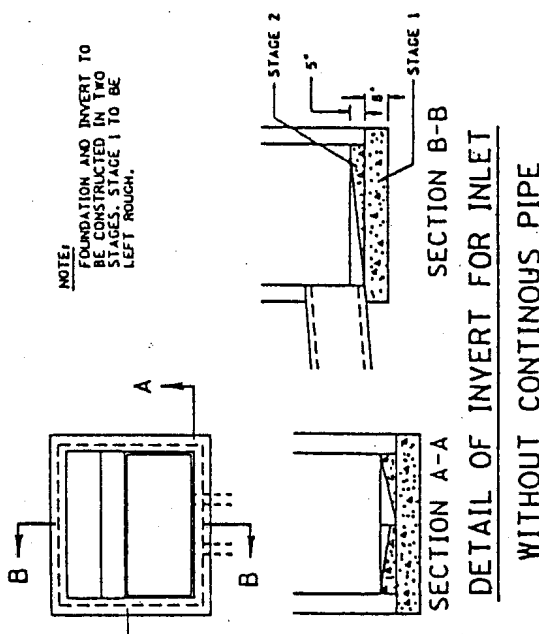
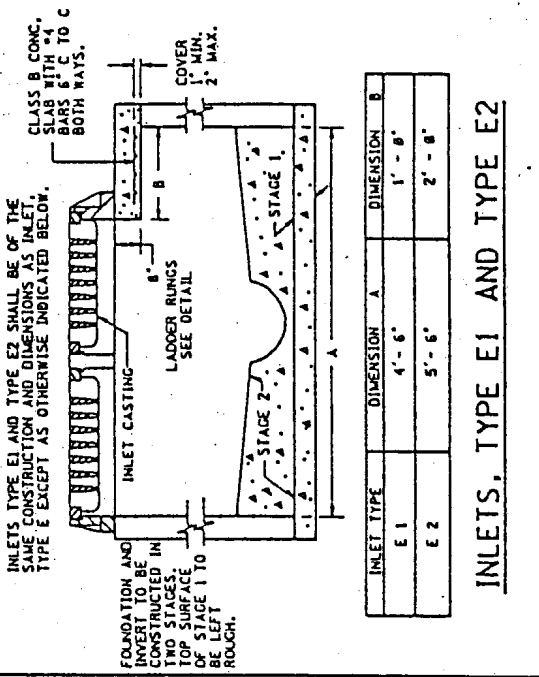


NOTE:

LADDER RUNG DETAIL

CONNECTION OF PIPE AND INLET FOR PRECAST INLET





GENERAL NOTES:

- INLETS MAY BE CONSTRUCTED OF BRICK, CONCRETE BLOCK OR PRECAST CONCRETE. WALLS SHALL BE 6" THICK IF BRICK AND 6" THICK IF CONCRETE BLOCK OR PRECAST CONCRETE. INLET FOUNDATIONS AND INVERTS SHALL BE CLASS C CONCRETE.
- CORRELLING OF INLET WALLS WILL BE PERMITTED AT THE RATE OF 1/4" PER 8" OF HEIGHT, MAXIMUM CORBEL 6" PER WALL.
- EXCEPT FOR INLETS TYPE A AND C, FOUNDATIONS AND INVERTS SHALL BE CONSTRUCTED IN TWO STAGES, AND THE BOTTOM OF THE FOOTINGS SHALL BE 8" BELOW THE OUTER WALL OF THE LOWEST PIPE IN THE INLET.
- WHEN THE DEPTH OF AN INLET THAT IS NOT PRECAST EXCEEDS 10' AS MEASURED FROM TOP OF GRATE TO INVERT, WALLS BELOW A DEPTH OF 8' SHALL BE 12" THICK AND THE DEPTH OF FOUNDATION INCREASED TO 12". WHEN ROCK IS ENCOUNTERED THE DEPTH OF THE FOUNDATION SHALL NOT BE INCREASED.
- INLET FOUNDATIONS WHICH ARE PRECAST SHALL BE PLACED ON A 6" THICK BED OF COMPACTED COARSE AGGREGATE SIZE NO. 57. THE COARSE AGGREGATE SHALL EXTEND 6" BEYOND THE HORIZONTAL LIMITS OF THE INLET FOUNDATION.
- CASTINGS FOR PRECAST INLETS SHALL BE ADJUSTED TO GRADE WITH COURSES OF BRICK, AS REQUIRED, 12" MAXIMUM.
- WHEN THE DEPTH OF A PRECAST INLET EXCEEDS 10' AS MEASURED FROM TOP OF GRATE TO INVERT, THE FOUNDATION SHALL BE INCREASED TO 12". WHEN ROCK IS ENCOUNTERED THE DEPTH OF THE FOUNDATION SHALL NOT BE INCREASED.
- MINIMUM WALL REINFORCEMENT FOR PRECAST INLETS TYPE A, B, C, E, D-1 AND B MODIFIED:

BAR REINFORCEMENT

DEPTH BELOW TOP OF GRATE	HORIZONTAL REINF.	VERTICAL REINF.	WALL THK.
8' TO 10' - 0"	#4 @ 18" C.C.	#4 @ 18" C.C.	6"
10' - 1' TO 15' - 0"	#4 @ 9" C.C.	#4 @ 18" C.C.	6"
15' - 1' TO 20' - 0"	#4 @ 9" C.C.	#4 @ 18" C.C.	6"

REINFORCING SHOWN FOR PRECAST INLETS IS THE MINIMUM REQUIRED. ADDITIONAL REINFORCING FOR HANDLING IS THE RESPONSIBILITY OF THE CONTRACTOR.

ALTERNATE REINFORCEMENT

W/F REINFORCEMENT

DEPTH BELOW TOP OF GRATE

8' TO 10' - 0"

10' - 1' TO 15' - 0"

15' - 1' TO 20' - 0"

18' - 1' TO 15' - 0"

15' - 1' TO 20' - 0"

WF 3 x 6 W6 WIDESPACED AT 3' TO RUN HORIZONTAL IN ALL CASES.

WF 3 x 6 W6 ADD #3 BAR @ 18" HORIZONTAL.

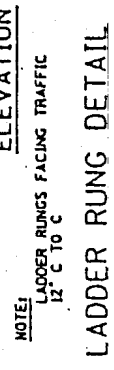
WF 3 x 6 W6 ADD #3 BAR @ 9" HORIZONTAL.

OR

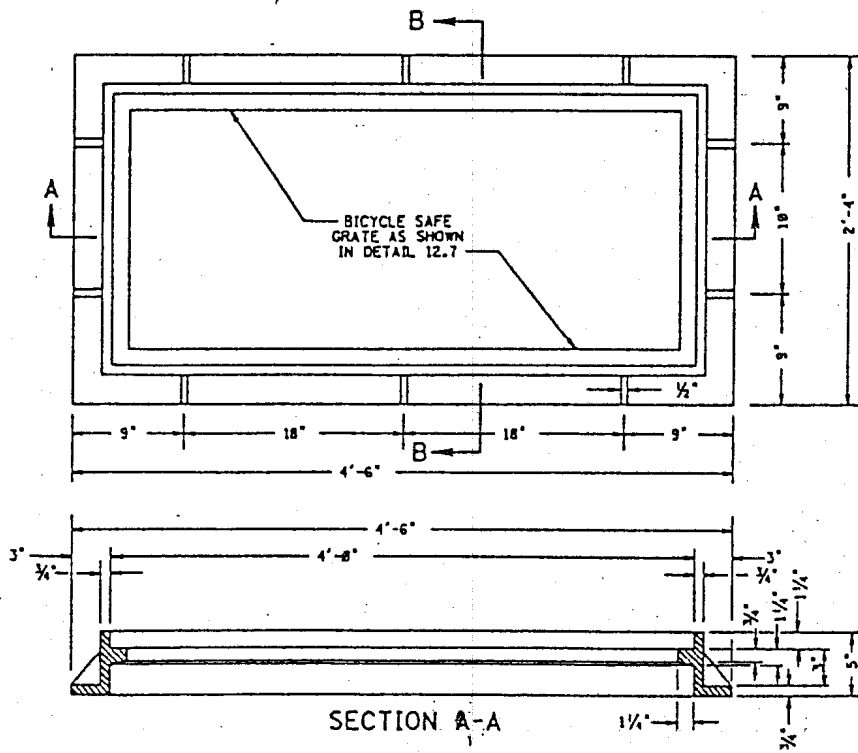
ADD #4 BAR @ 15" HORIZONTAL.

3. C.D. 15 MUST ACCOMPANY THIS DETAIL.

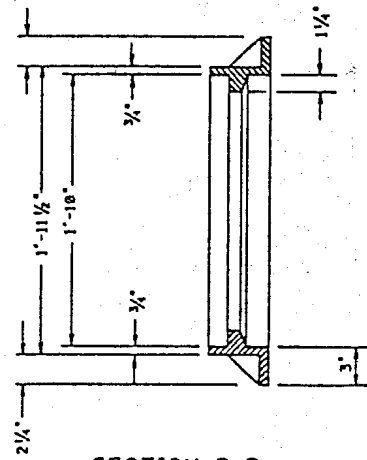
INLET, TYPE E



CONNECTION OF PIPE AND INLET FOR PRECAST INLET

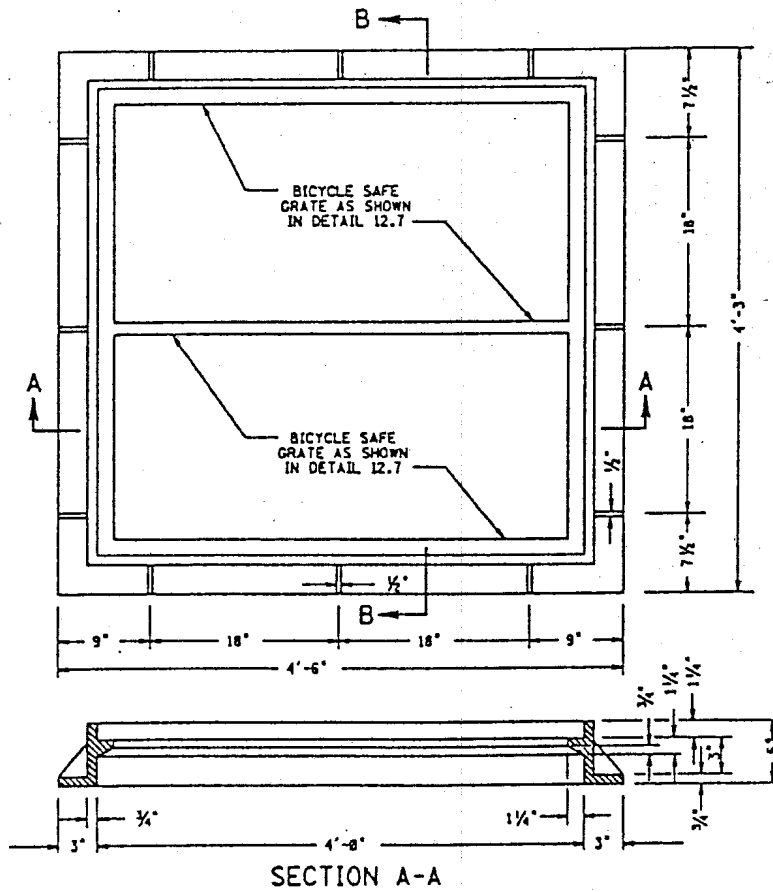


FRAME TO BE USED FOR INLETS, TYPE A

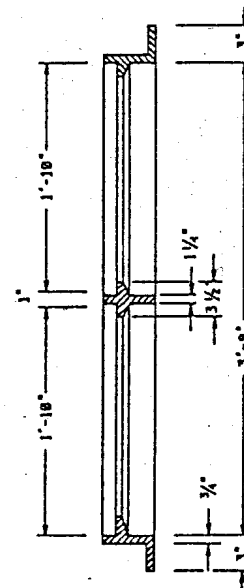


SECTION B-B

MAXIMUM WEIGHTS
 WEIGHT OF FRAME = 240°
 WEIGHT OF GRATE = 325°



FRAME TO BE USED FOR INLETS, TYPE E

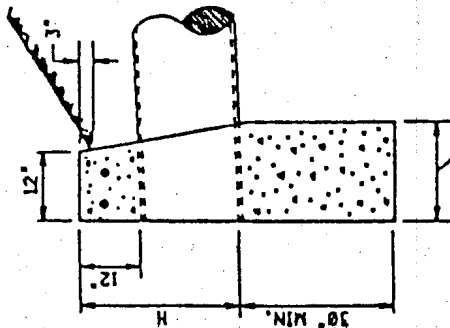


SECTION B-B

WEIGHT OF FRAME = 435°
 WEIGHT OF EACH GRATE = 325°

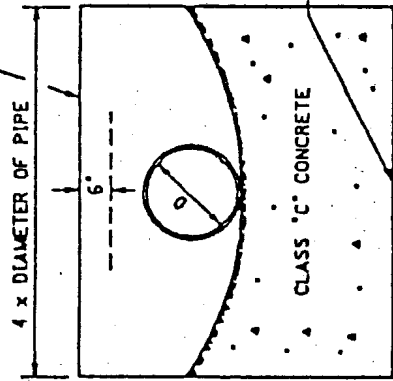
INLET CASTING, TYPES E & A

2 - #6 REINFORCED STEEL BARS
LENGTH = 1 1/2 x DIA. OF PIPE



18" FOR DIA. UP TO 48"
1/3 H FOR DIA. OVER 48"

OUTLET



TO BE CARRIED
TO FIRM BEARING
BEARING FROST LINE

18" FOR DIA. UP TO 48"
1/3 H FOR DIA. OVER 48"

INLET

PIPE SIZE	CORR. STEEL PIPE	REINFC. CONC.
12"	9.9 C.Y.	9.9 C.Y.
15"	1.2	1.2
18"	1.4	1.4
21"	1.7	1.7
24"	2.1	2.1
27"	2.4	2.4
30"	2.8	2.8
36"	3.6	3.6
42"	4.4	4.7
48"	5.8	6.2
54"	7.4	7.9
60"	9.2	9.9
66"	11.3	12.1
72"	13.7	14.7

HEADWALL QUANTITY IN CUBIC YARDS

GENERAL NOTES

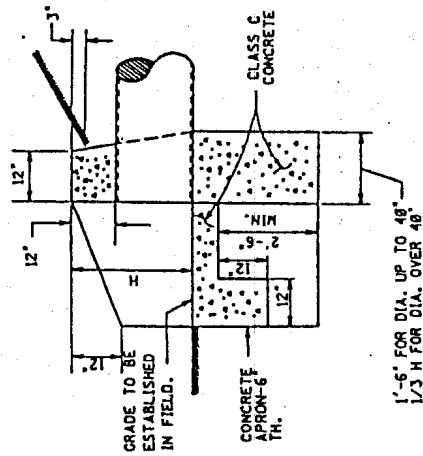
1. THE RUBBING OF HEADWALLS TO REMOVE FORM MARKS AS REQUIRED IN SUBSECTION 501.14 FOR CONCRETE STRUCTURE WILL NOT BE REQUIRED FOR HEADWALLS AT THE BOTTOM OF EMBANKMENT IN RURAL AREAS.
2. ALL EDGES TO BE CHAMFERED 1".
3. FOR ARCH PIPE USE LENGTH OF HEADWALL AS 3H + SPAN.
4. FOR MORE THAN ONE PIPE, SET THE PIPE A MINIMUM OF ONE FOOT APART (OUTSIDE BARREL TO OUTSIDE BARREL) THE ENDS OF THE HEADWALL SHALL BE SET 20 OFF THE ξ OF THE CONTROLLING PIPE.

CONCRETE HEADWALL

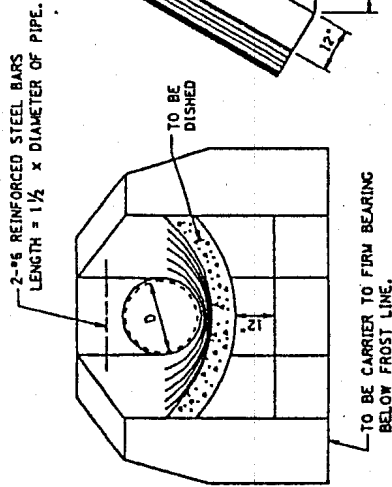
M.T.S.

CONCRETE HEADWALL

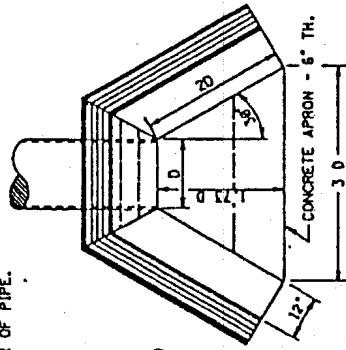
OUTLET END



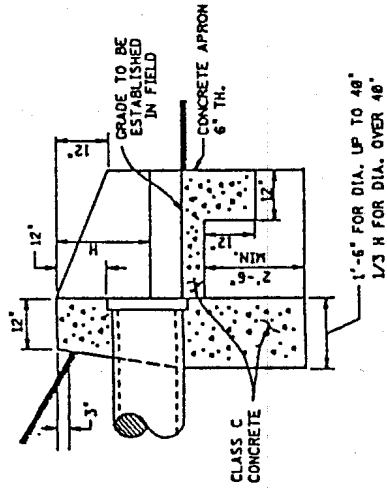
END VIEW OF INLET END ONLY



PLAN



INLET END

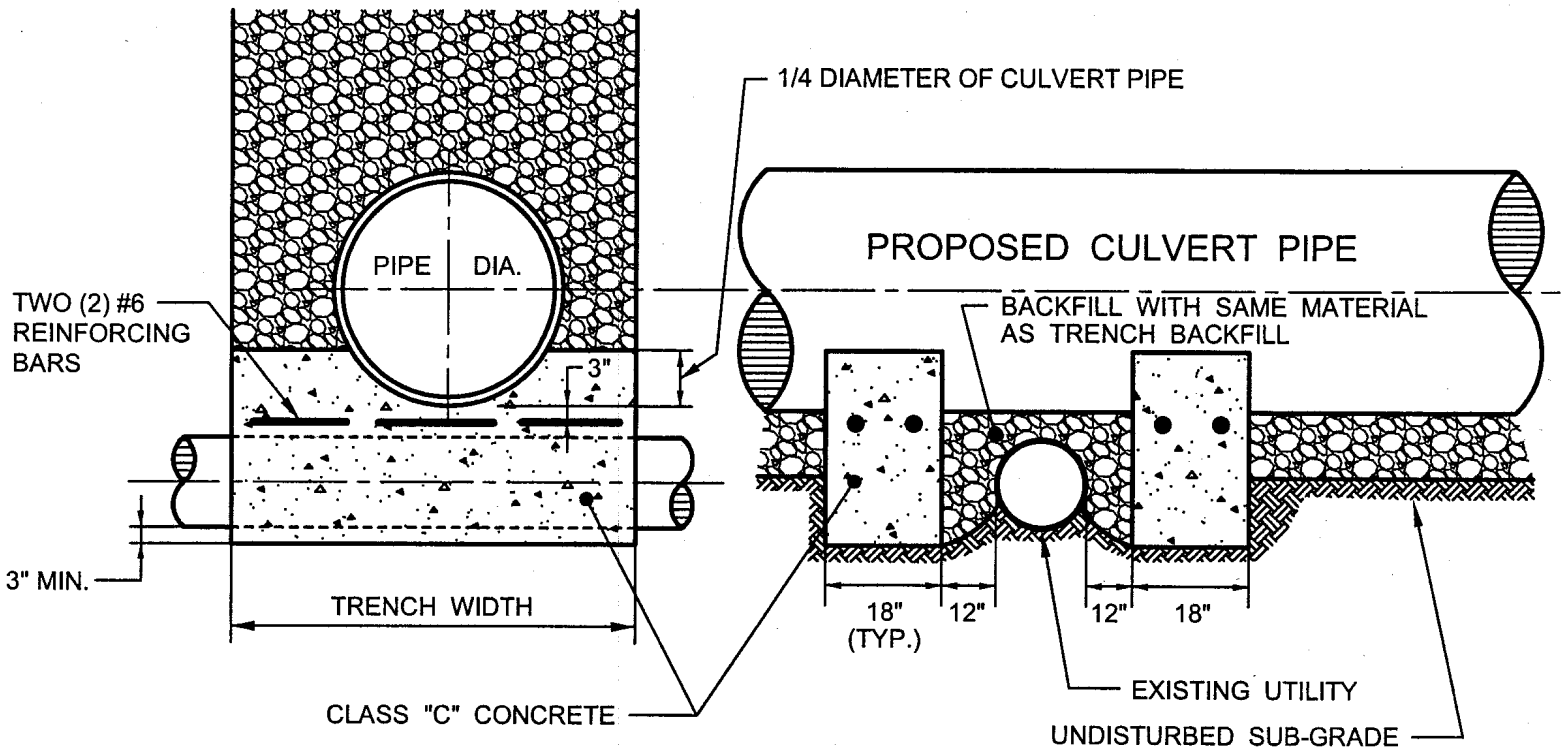


PIPE SIZE	HEADWALLS IN CUBIC YARDS		APRONS IN CUBIC YARDS	
	CORR. STEEL PIPE	REIN. CONC. PIPE	CORR. STEEL PIPE	REIN. CONC. PIPE
12"	1.4 C.Y.	1.4 C.Y.	0.2	0.2
15"	1.7	1.7	0.2	0.2
18"	2.1	2.1	0.3	0.3
21"	2.5	2.5	0.4	0.4
24"	2.9	2.9	0.5	0.5
27"	3.3	3.3	0.6	0.6
30"	3.7	3.7	0.7	0.7
36"	4.7	4.8	0.9	0.9
42"	5.8	6.3	1.2	1.2
48"	7.6	8.4	1.5	1.5
54"	9.7	10.7	1.8	1.8
60"	12.2	13.4	2.1	2.1
66"	15.0	16.4	2.5	2.5
72"	18.1	19.3	3.0	3.0

GENERAL NOTES

1. ALL EDGES TO BE CHAMFERED 1"
2. THE RUBBING OF HEADWALLS TO REMOVE FORM MARKS AS REQUIRED IN SUBSECTION 501.14 FOR CONCRETE STRUCTURES, WILL NOT BE REQUIRED FOR HEADWALLS AT THE BOTTOM OF EMBANKMENTS IN RURAL AREAS.
3. FOR SLOPE DRAIN HEADWALLS, DIMENSIONS AND APRON GRADES SHALL BE SET BY ENGINEER.
4. FOR MORE THAN ONE PIPE, SET THE PIPES A MINIMUM OF ONE FOOT APART (OUTSIDE BARREL TO OUTSIDE BARREL). THERE SHALL BE 12" ABOVE THE TOP OF A PIPE IN A WINGWALL; THE TERMINUS OF THE WINGWALL SHALL BE 2D FROM THE C OF THE PIPE IN A WINGWALL.
5. THE TERMINUS FOR OUTLET AND INLET APRONS SHALL BE SET BY EXTENDING THE PIPE GRADE AHEAD AND BACK, RESPECTIVELY.
6. FOR ARCH PIPE, THE SPAN SHALL BE SUBSTITUTED FOR D.

CONCRETE HEADWALL AND APRON

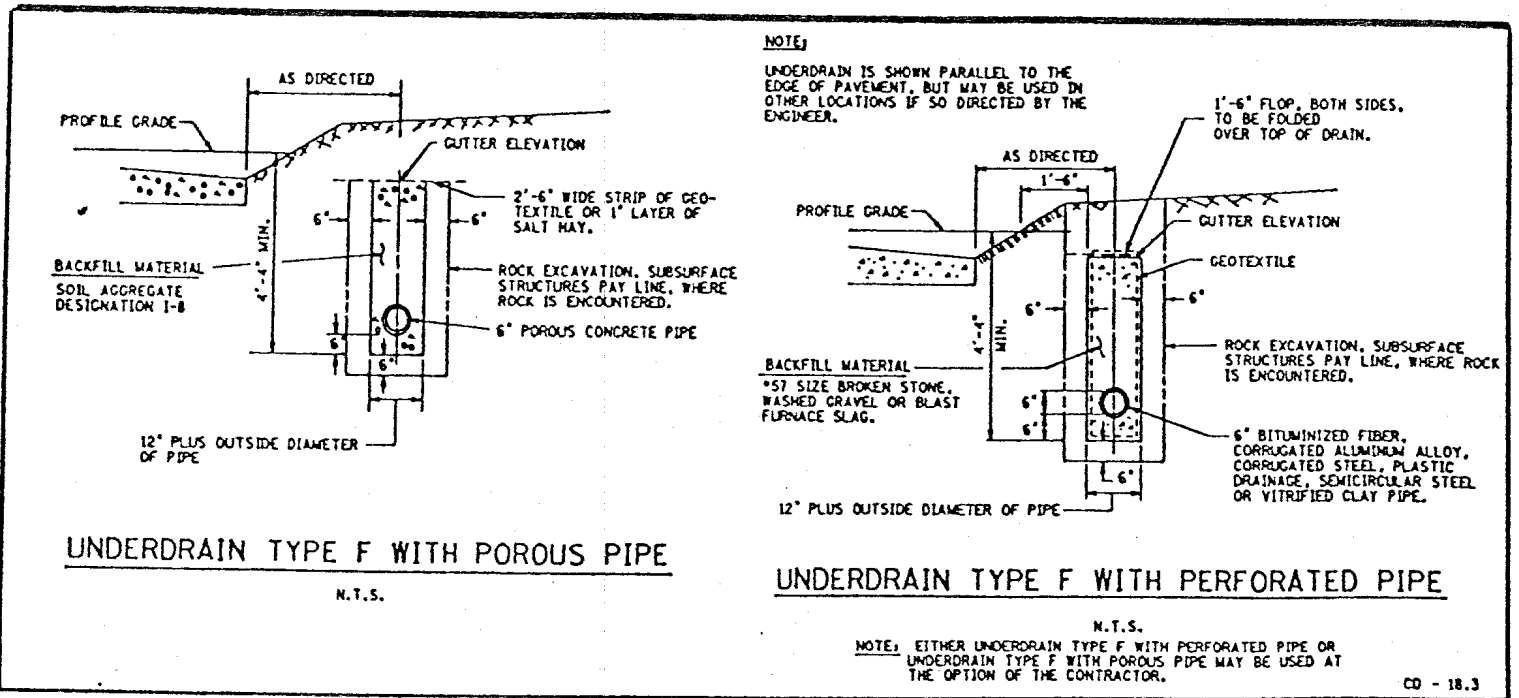
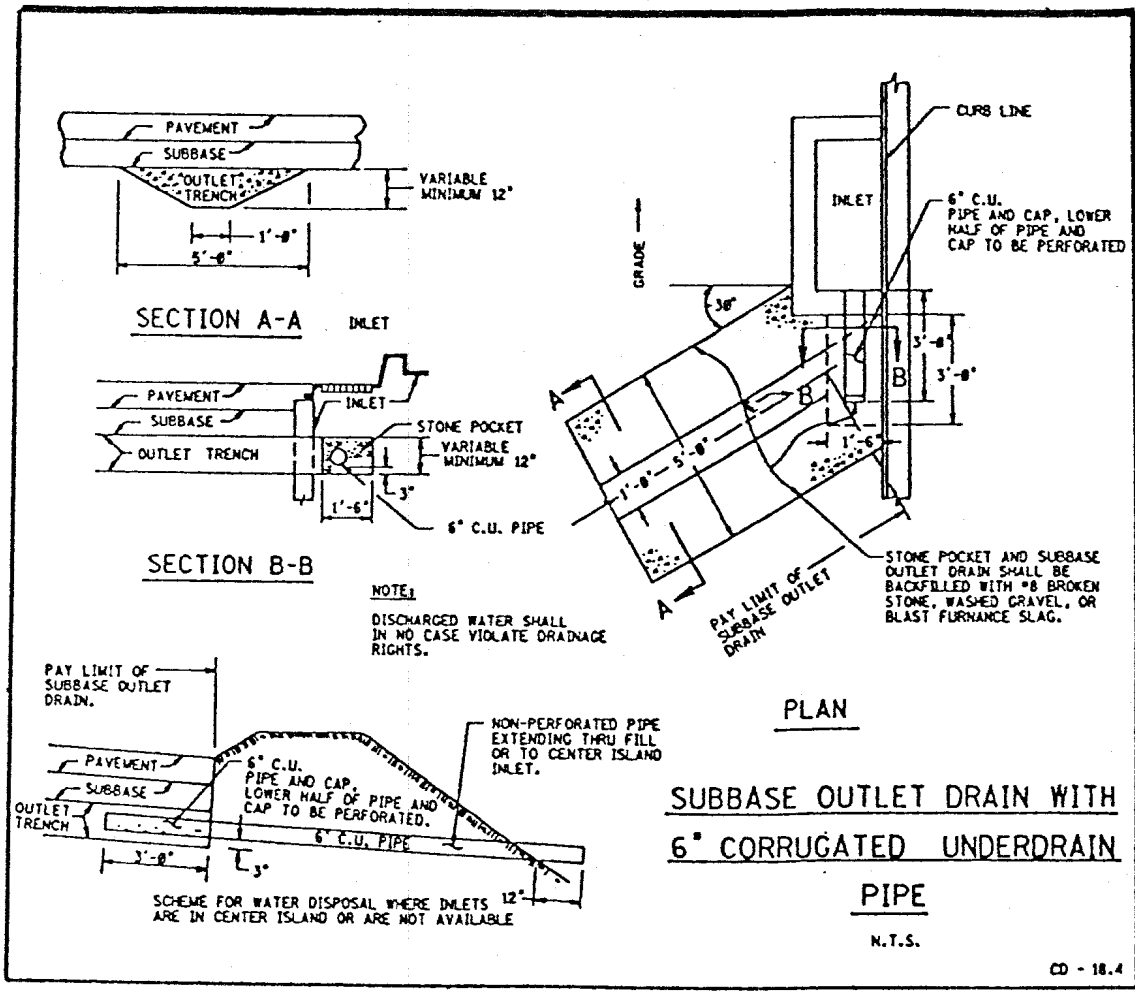


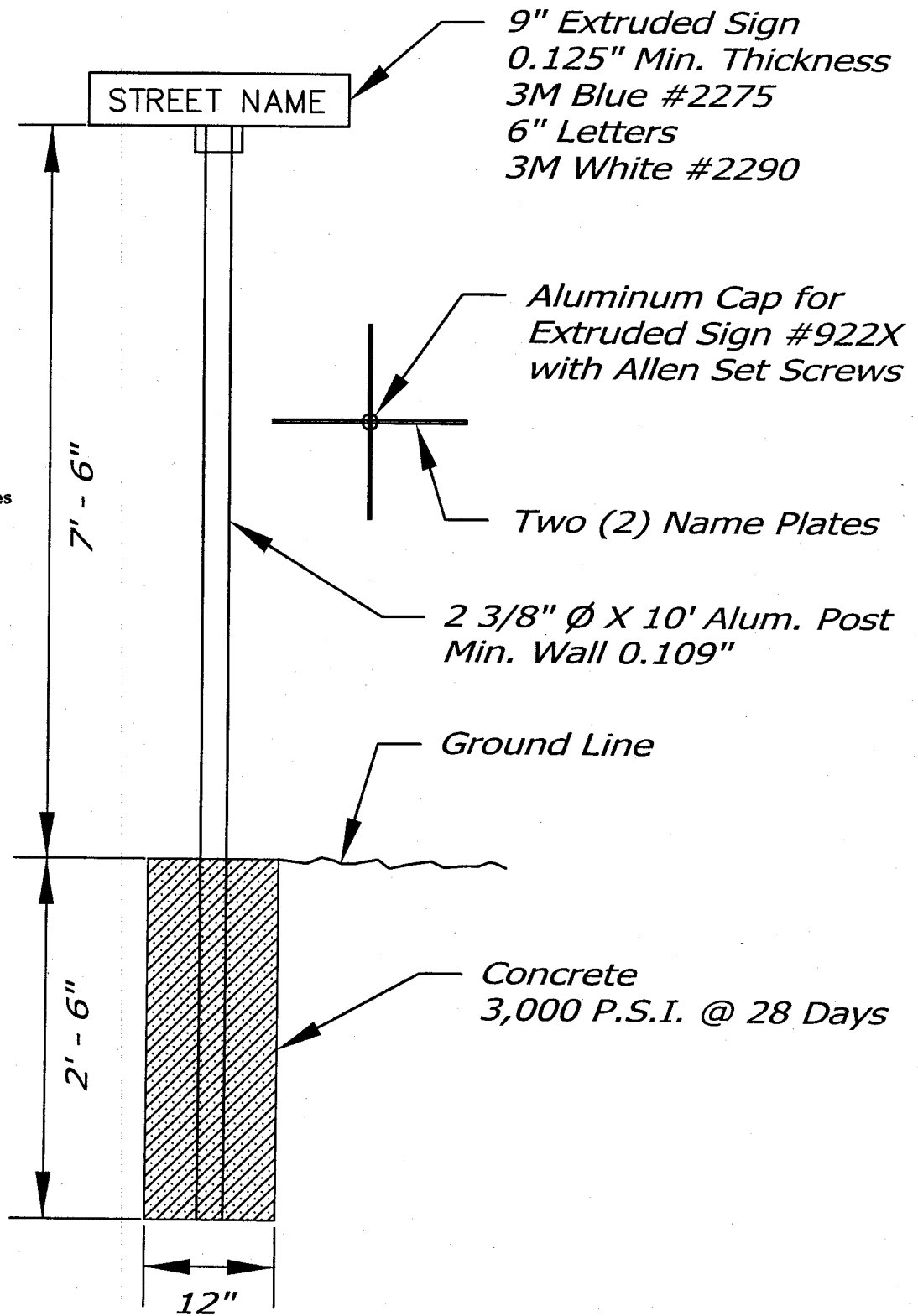
CONCRETE PIPE CRADLES

N.T.S.

Franklin Township
Somerset County, NJ





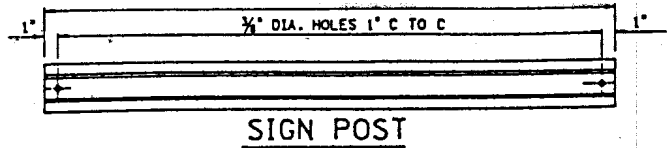


STREET NAME SIGN DETAIL

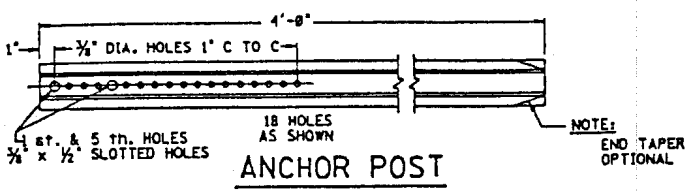
N.T.S.

Franklin Township
Somerset County, NJ



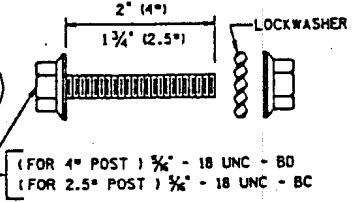
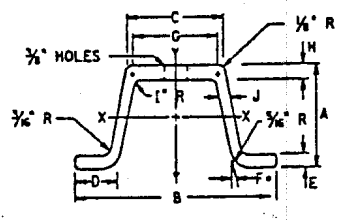


SIGN POST



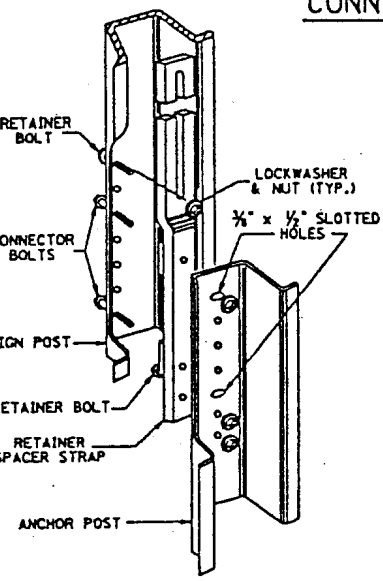
ANCHOR POST

FLANGED CHANNEL					
WEIGHT LBS./FT.	DIMENSIONS				
	A	B	C	D	E
2.50	1.562	3.125	1.250	0.625	0.164
4.00	1.750	3.500	1.671	0.718	0.250
	F	G	H	I	J
	12 1/2	1.063	0.149	1/4	R0.132
	11 1/2	1.406	0.230	3/8	R0.175

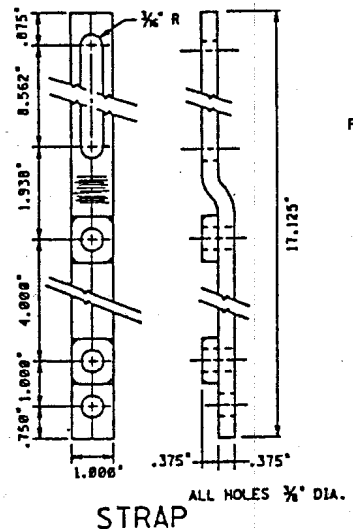


CONNECTOR-RETAINER BOLT

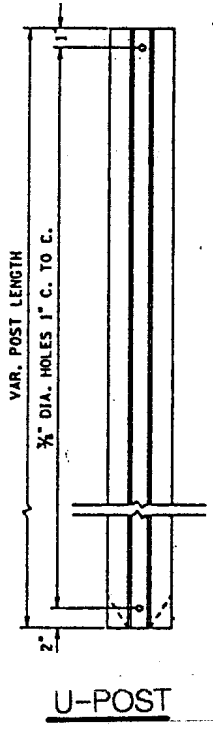
	4.00 LB. POST	2.5 LB. POST
S.M. (In. 3)	X-X .560	X-X .31
	Y-Y .69	Y-Y .35
I (In. 4)	X-X .50	X-X .24
	Y-Y 1.22	Y-Y .55
AREA (In. 2)	1.24	.74



TWO PIECE STEEL U-POSTS



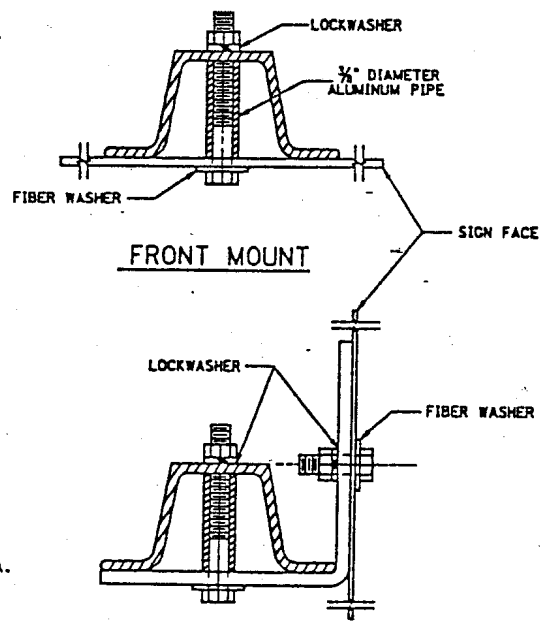
STRAP



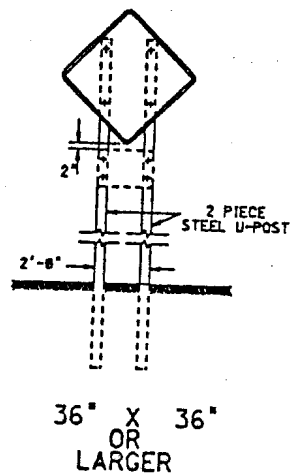
U-POST

- GENERAL NOTES:**
1. ALL POSTS SHALL BE OF ADEQUATE LENGTH TO MEET THE REQUIREMENTS FOR ERECTION AS STATED IN THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREET AND HIGHWAYS".
 2. TWO PIECE STEEL POST SHALL BE EMBEDDED 3'-8" MIN. ONE PIECE STEEL POST SHALL BE EMBEDDED 3'-6" MAX.
 3. ALL STEEL POSTS AND BRACKETS SHALL BE CUT, BENT AND HOLES PUNCHED AND DRILLED BEFORE GALVANIZING. GALVANIZING SHALL BE IN CONFORMANCE WITH CURRENT A.S.T.M. SPECIFICATIONS A 123.
 4. POSTS MAY BE STEEL OR 2 PIECE STEEL U-POST IN CONFORMANCE WITH THE NOTES BELOW.
 5. SIGN PANEL SIZES SHALL DETERMINE POST TYPE AND NUMBER AS SHOWN ON THIS DETAIL.
 6. BOLTS SHALL NOT PROTRUDE MORE THAN 3/4" BEYOND THE NUT WHEN TIGHT BUT SHALL ENGAGE ALL THREADS IN THE NUT.
 7. THE MINIMUM VERTICAL CLEARANCE REQUIREMENTS FOR SIGNS ARE:
EDGE OF PAVEMENT TO BOTTOM OF SIGN AS PER SECTION 2A-23 OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS."
GROUNDLINE TO BOTTOM OF SIGN SHALL BE 7 FEET MINIMUM.
FOR SINGLE POST INSTALLATIONS, THE MINIMUM DISTANCE FROM GROUNDLINE TO THE TOP OF SIGN MUST BE 9 FEET.

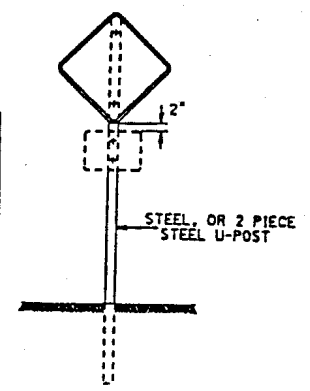
8. PERMANENT SIGN SUPPORTS SHALL NOT BE INSTALLED ON SLOPES GREATER THAN 10:1, UNLESS BEHIND A TRAFFIC BARRIER, AND THE SLOPE SHALL EXTEND A MINIMUM OF 3'-8" BEYOND THE OUTSIDE EDGE OF SIGN (SEE GRADING DETAIL FOR SLOPE TREATMENT).
9. EXTRUDED ALUMINUM SIGN PANELS ARE NOT PERMITTED FOR USE WITH U-POST SIGN SUPPORTS.
10. U-POST SIGN SUPPORTS SHALL NOT BE PLACED IN FRONT OF GUIDE RAIL AND THE POSTS MUST NOT STRADDLE GUIDE RAIL.



SIDE MOUNTING BRACKET



36" X 36"
OR
LARGER



30" X 30"
OR
SMALLER

- GENERAL NOTES:**
1. DRIVE THE ANCHOR POST INTO THE GROUND (UTILIZING A DRIVE CAP) UNTIL 10-12" OF ANCHOR POST IS REMAINING ABOVE GROUND LEVEL.
 2. ALIGN THE CONN. HOLE CLOSEST TO THE LONG SLOT IN THE RETAINER SPACER STRAP WITH THE TOP HOLE IN THE ANCHOR POST. THE STRAP IS THEN ATTACHED BY MAKING A BOLTED CONNECTION THROUGH THE BOTTOM HOLE IN THE STRAP AND THE HOLE IT ALIGNS WITH IN THE ANCHOR POST.
 3. ROTATE THE STRAP 90 DEGREES TO THE LEFT AND DRIVE THE ANCHOR POST INTO THE GROUND UNTIL ONLY 4" REMAIN ABOVE GROUND LEVEL. THIS 4" MUST BE ADHERED TO FOR SAFETY REASONS TO ENHANCE THE BREAKAWAY FEATURES OF THE SIGN IN ACCORDANCE WITH CURRENT FEDERAL AND STATE SAFETY STANDARDS. EXCAVATE AS REQUIRED TO TIGHTEN BOLTS.
 4. ROTATE THE STRAP BACK TO VERTICAL POSITION.
 5. PLACE THE SIGN POST AGAINST THE ANCHOR POST AND THE STRAP. ALIGN THE BOTTOM HOLE IN THE SIGN POST WITH THE CONN. HOLE IN THE LOWER END OF THE STRAP. INSERT TWO (2) CONNECTOR BOLTS THROUGH THE COMMON HOLES IN THE SIGN POST, STRAP AND ANCHOR POST.
 6. COMPLETE THE CONSTRUCTION BY ATTACHING THE STRAP TO THE SIGN POST WITH A BOLT AND NUT. THIS CONNECTION SHALL BE MADE AT THE BOTTOM OF THE LONG SLOT IN THE STRAP.
 7. TWO PIECE STEEL U-POST IS A PATENTED DEVICE. THE PATENT NO. IS 4126483.

SIGN PANEL SIZE	LEGEND CODE	SIGN PANEL SIZE	LEGEND CODE
18 x 18	----- A	36 x 36	----- B
18 x 24	----- A	36 x 36	----- C
24 x 24	----- A	36 x 36	----- C
24 x 36	----- A	48 x 36	----- C
24 x 36	----- A	48 x 24	----- C
36 x 24	----- A	48 x 36	----- C
36 x 36	----- A	48 x 48	----- D
36 x 12	----- C	48 x 64 x 64	----- D
36 x 36	x 36 ----- C	60 x 36	----- D
		48 x 60	----- D
		60 x 30	----- D

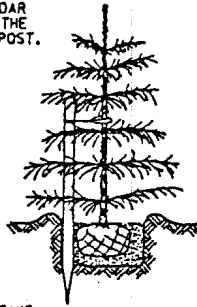
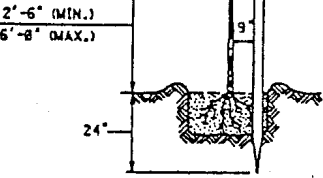
LEGEND CODE	NO. POSTS	WEIGHT LBS./FT.	MATERIAL
A	1	2.5	1 PIECE OR 2 PIECE STEEL
B	1	4.0	2 PIECE STEEL
C	2	2.5	2 PIECE STEEL
D	2	4.0	2 PIECE STEEL

SIGN POSTS

STAKING DETAILS

N.T.S.

POSTS - 2" x 2" x 8' LUMBER, STAINED DARK BROWN, OR 8' WHITE CEDAR POST 2" TO 3" DIAMETER AT THE THINNER (LOWER) END OF THE POST.

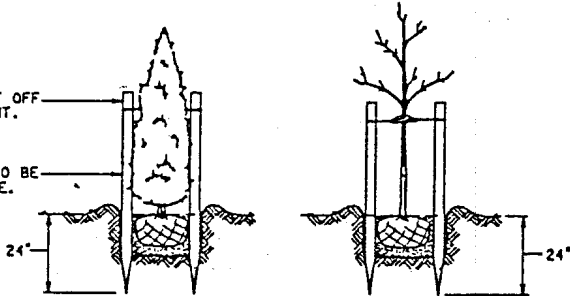


TREES REQUIRING ONE STAKE

DECIDUOUS TREES (EXCEPT SALIX) 1" TO 1 1/2" CALIPER, INCLUSIVE. CONE TYPE (PYRAMIDAL) TREES 3' TO 5' HIGH, AND COLUMNAR EVERGREEN TREES 4' TO 7' HIGH, INCLUSIVE.

POSTS WILL BE CUT OFF AT THE SAME HEIGHT.

HEIGHT OF POST TO BE 2/3 HEIGHT OF TREE.



TREES REQUIRING TWO STAKES

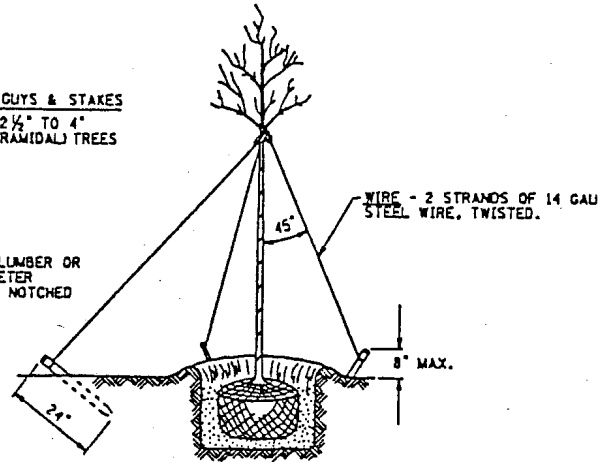
DECIDUOUS TREES OVER 1 1/2" TO 2 1/2" CALIPER, INCLUSIVE. ALL SALIX, REGARDLESS OF HEIGHT, CALIPER, BARE ROOT OR BALLED AND BURLAPPED. CONE TYPE (PYRAMIDAL) TREES 5' TO 7' HIGH AND COLUMNAR EVERGREEN TREES 7' TO 9' HIGH, INCLUSIVE.

GUYING DETAILS

N.T.S.

TREES REQUIRING THREE GUYS & STAKES
DECIDUOUS TREES OVER 2 1/2" TO 4" CALIPER, CONE TYPE (PYRAMIDAL) TREES OVER 7' HIGH.

STAKES - 2" x 4" x 24" LUMBER OR WHITE CEDAR, 2 1/2" DIAMETER AT THINNER (LOWER) END, NOTCHED 4" FROM THE TOP.

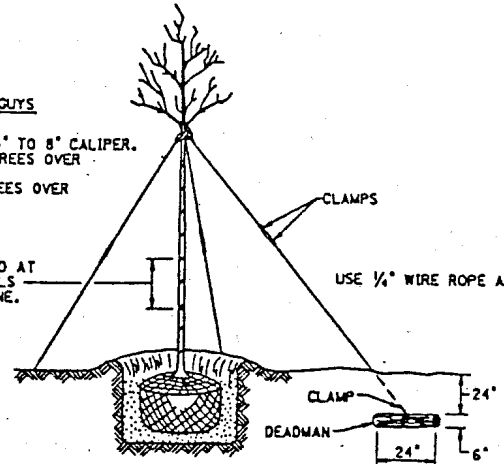


TREES REQUIRING THREE GUYS & DEADMEN

DECIDUOUS TREES OVER 4" TO 8" CALIPER. CONE TYPE (PYRAMIDAL) TREES OVER 4" TO 8" CALIPER. COLUMNAR EVERGREEN TREES OVER 9' HIGH.

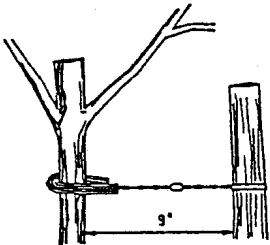
BURLAP WRAPPING TIED AT MAXIMUM 24" INTERVALS WITH 2 PLY JUTE TWINE.

USE 1/4" WIRE ROPE AND TURNBUCKLE



FASTENING DETAIL

N.T.S.

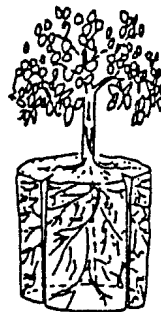
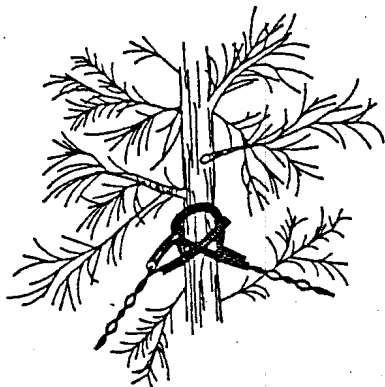


DETAIL OF POST AND GUY WIRE
ANCHOR TREE TO POST(S) USING 14 GAUGE STEEL WIRE AND 1/4" CORDED RUBBER OR PLASTIC HOSE.

DETAIL OF GUY WIRES

AROUND TRUNK

GUY WIRES SHOULD BE PLACED AT LEAST HALF WAY UP THE TRUNK.



CONTAINERIZED PLANTS

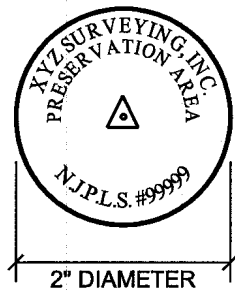
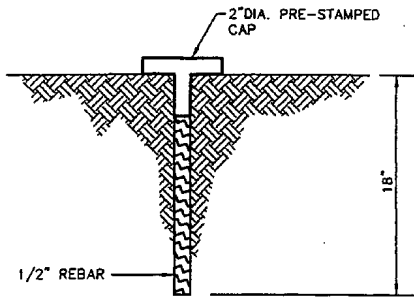
IMMEDIATELY PRIOR TO PLANTING, MAKE 3 VERTICAL CUTS EQUIDISTANT AND 1/2" DEEP INTO ROOT MASS.



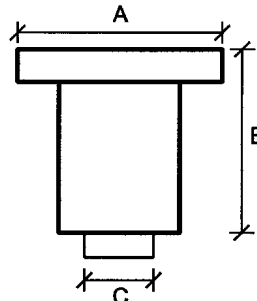
WHEN GUYING, LEAVE ROOM FOR GROWTH OF TREE

LANDSCAPE PLANTING

FRANKLIN TOWNSHIP
SOMERSET COUNTY

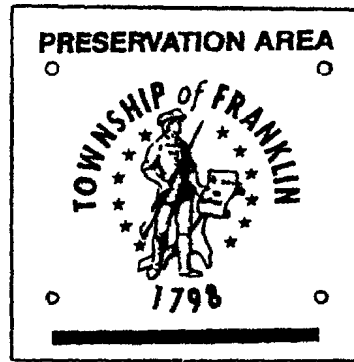
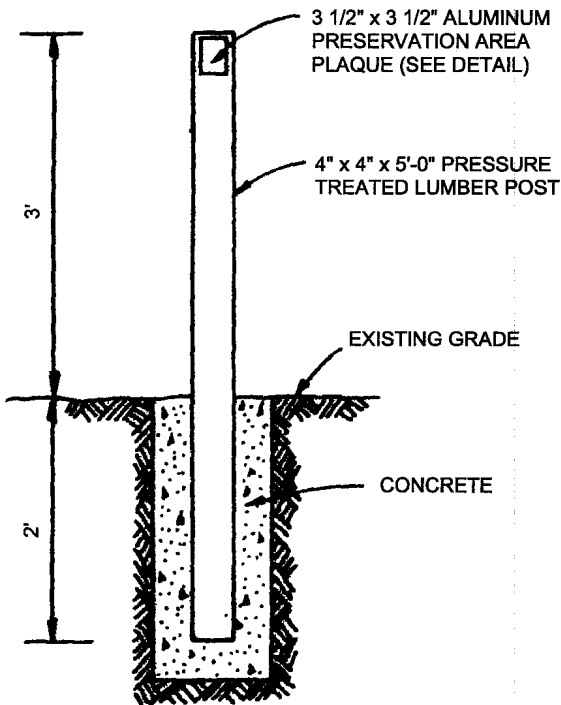


PRE-STAMPED ALUMINUM CAP SURVEY MARKER



A = 2" (51 mm)
 B = 1-3/4" (45 mm)
 C = 1/2" (13 mm)

SURVEY MARKERS SHALL BE BERNTSEN MODEL No. FTH4200 2" FLAT SURVEY MARKER FOR 1/2" REBAR (ALUMINUM) OR APPROVED EQUIVALENT. EXISTING BOUNDARY MARKERS SHALL NOT BE REMOVED TO BE REPLACED BY PRESERVATION AREA MARKERS. IN THAT CASE, POSTS WITH PLAQUES WILL STILL NEED TO BE SET. WHERE PRESERVATION MARKERS COINCIDE WITH PROPOSED CONCRETE MONUMENTS, THE MONUMENTS SHALL BE SET ALONG WITH THE WOODEN POST WITH PLAQUE.

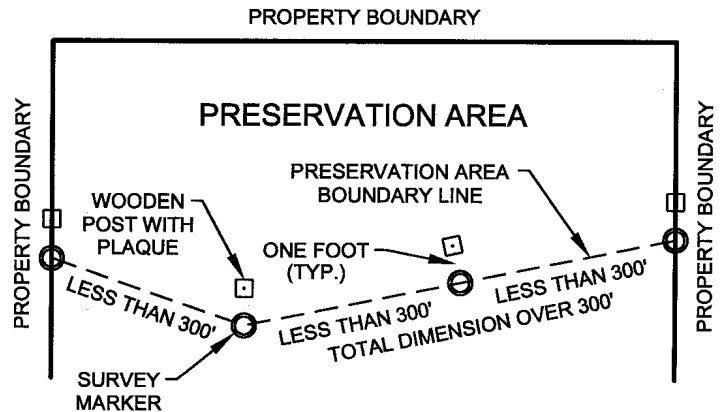


3 1/2" x 3 1/2" ALUMINUM PRESERVATION AREA PLAQUE
 GREEN LETTERING ON WHITE BACKGROUND

SURVEY MARKERS AND WOODEN POSTS WITH 3-1/2" X 3-1/2" ALUMINUM PRESERVATION AREA PLAQUES ATTACHED SHALL BE SET AT ALL BOUNDARY CORNERS OF PRESERVATION AREAS AND INTERSECTING PROPERTY LINES AND SUCH OTHER LOCATIONS AS SHALL BE DETERMINED BY THE PLANNING BOARD OR BOARD OF ADJUSTMENT IN ACCORDANCE WITH SECTION 112-147 OF THE FRANKLIN TOWNSHIP LAND DEVELOPMENT REGULATIONS.

NOTES:

1. POSTS SHALL BE LOCATED ONE (1) FOOT INSIDE THE PRESERVATION AREA WITH THE PLAQUE FACING THE PRESERVATION AREA BOUNDARY LINE.
2. PLAQUES SHALL CONFORM IN DESIGN AND COLOR TO SAMPLE PLAQUES AVAILABLE AT THE OFFICE OF THE FRANKLIN TOWNSHIP CLERK.



TYPICAL MARKER LOCATIONS
 N.T.S.

PRESERVATION AREA MARKERS

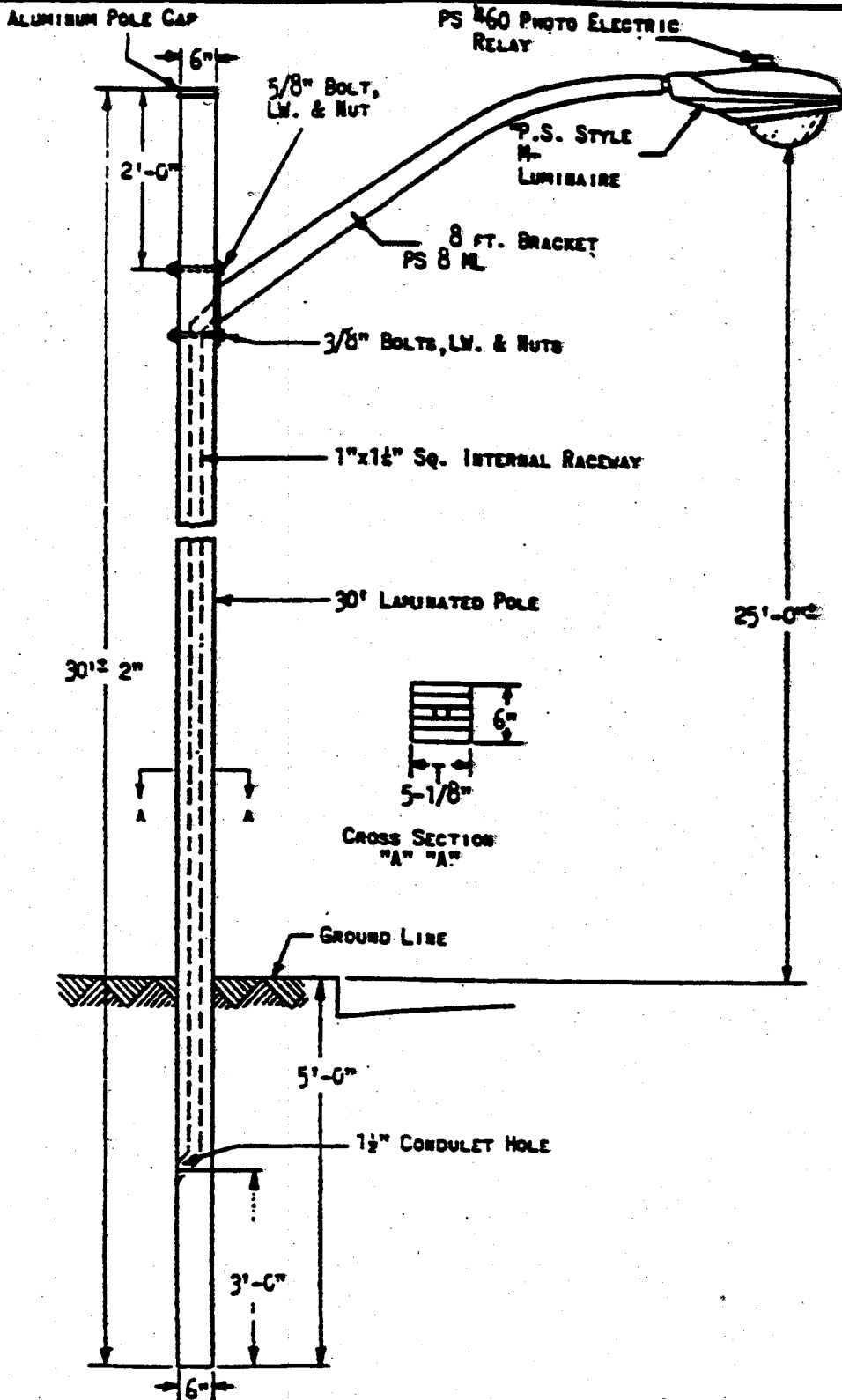
N.T.S.

Rev. 01/12



TOWNSHIP STANDARD

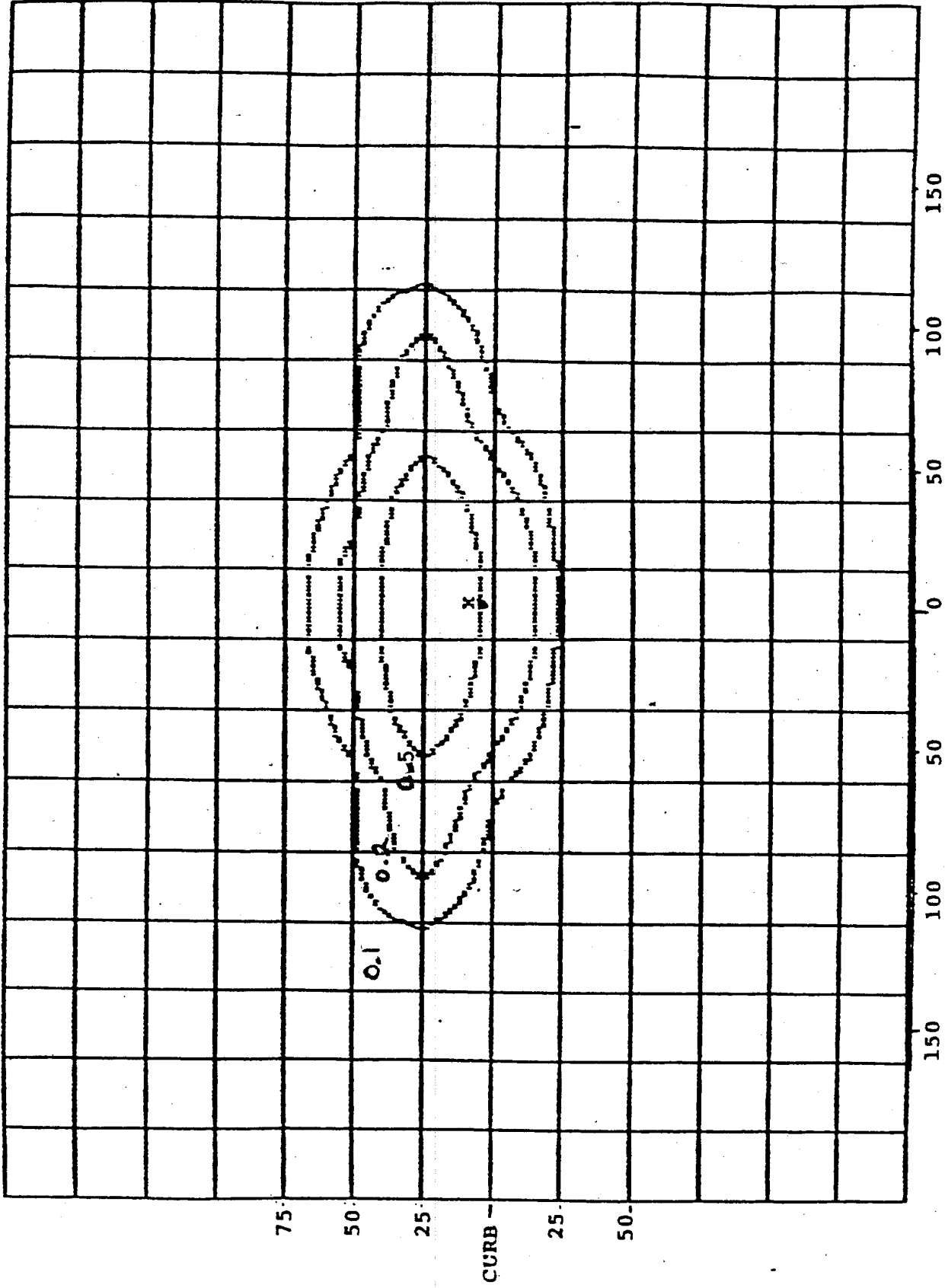
30 FOOT LAMINATED WOOD LIGHTING POLE
NATURAL WOOD FINISH



Residential Streets:

Spacing of lighting poles shall be set to provide a minimum of 0.05 foot-candles and an average of 0.3 foot-candles.

100 WATT HIGH PRESSURE SODIUM CLEAR LAMP
ROADWAY



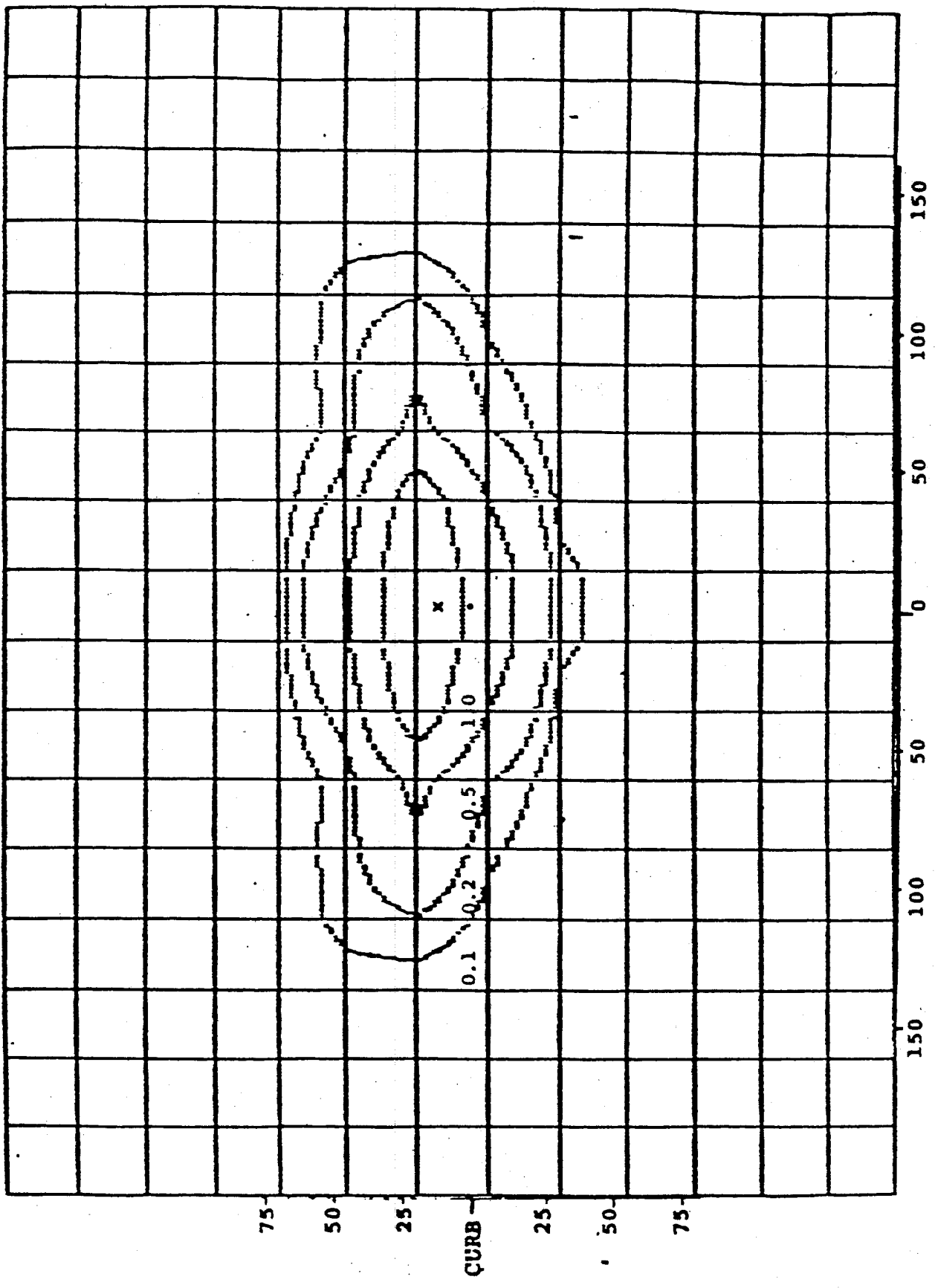
AVERAGE MAINTAINED FOOTCANDLES
COBRA HEAD LUMINAIRE
(DROPPED GLOBE)

25 FOOT LIGHT CENTER
8 FOOT BRACKET

LIGHTING COVERAGE DIAGRAM

INTERSECTIONS

150 WATT HIGH PRESSURE SODIUM CLEAR LAMP



AVERAGE MAINTAINED FOOTCANDLES
COBRA HEAD LUMINAIRE
(DROPPED GLOBE)

25 FOOT LIGHT CENTER
8 FOOT BRACKET

LIGHTING COVERAGE DIAGRAM

NOTE

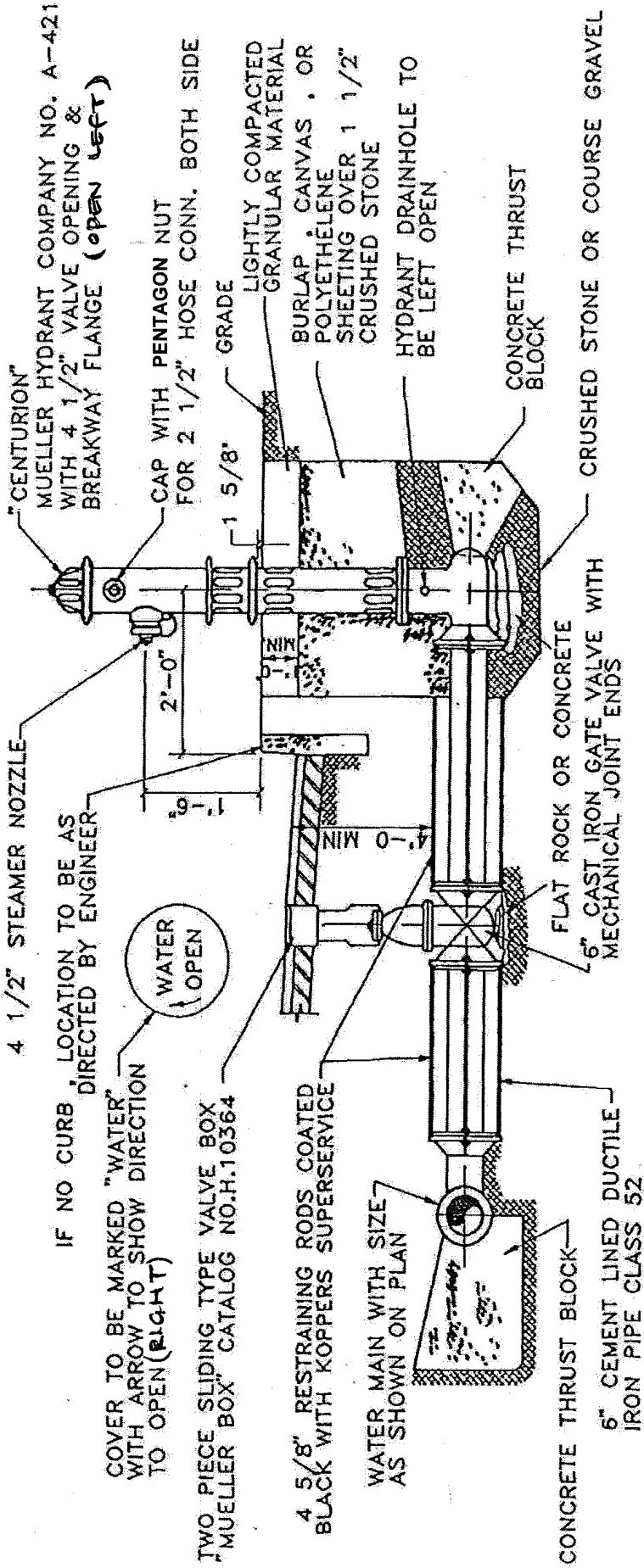
AS PER ORD.1284 24 HRS. NOTICE SHALL BE GIVEN TO THE FRANKLIN TOWNSHIP WATER DIVISION PRIOR TO ANY EXTENSION OR INSTALLATION OF ANY WATER APPARATUS. NO PERSON EXCEPT A TOWNSHIP EMPLOYEE SHALL OPEN OR CLOSE ANY VALVES. FAILURE TO NOTIFY THE WATER DIVISION COULD RESULT IN A FINE UP TO \$1,000.00.

NOTE

HYDRANTS—
BLACK CAPS OR RINGS
BEHIND CAPS = OUT OF SERVICE

FIRE HYDRANT
COLOR CODING

RED BARRELS AND
WHITE OR SILVER TOPS
RED CAPS —6" MAIN
YELLOW CAPS —8" MAIN
GREEN CAPS —10" MAIN
BLUE CAPS —12" MAIN



TYPICAL HYDRANT & VALVE INSTALLATION

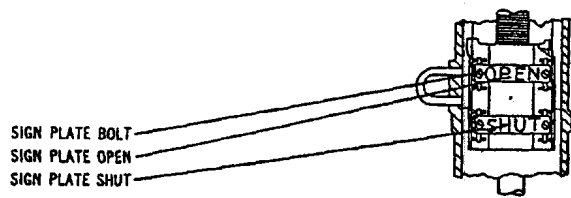
Fire hydrants must be flow tested by the Fire Prevention Department. Written request and appropriate fees must be submitted.

Fire hydrants must comply with detail, all threads must be lubricated, and all valves must be fully open prior to testing.

FIRE HYDRANT MARKERS

Each fire hydrant shall be marked with a standard U-channel post, 1 1/2" wide. The post shall be six (6) feet tall and be driven into the ground 18-24 inches. The post shall have two (2) blue colored reflectors, three (3) inches in diameter. One reflector on each side of the post, facing traffic. The post shall be installed 24-30 inches before the fire hydrant, and slightly behind the hydrant.

FRANKLIN TOWNSHIP
SOMERSET COUNTY

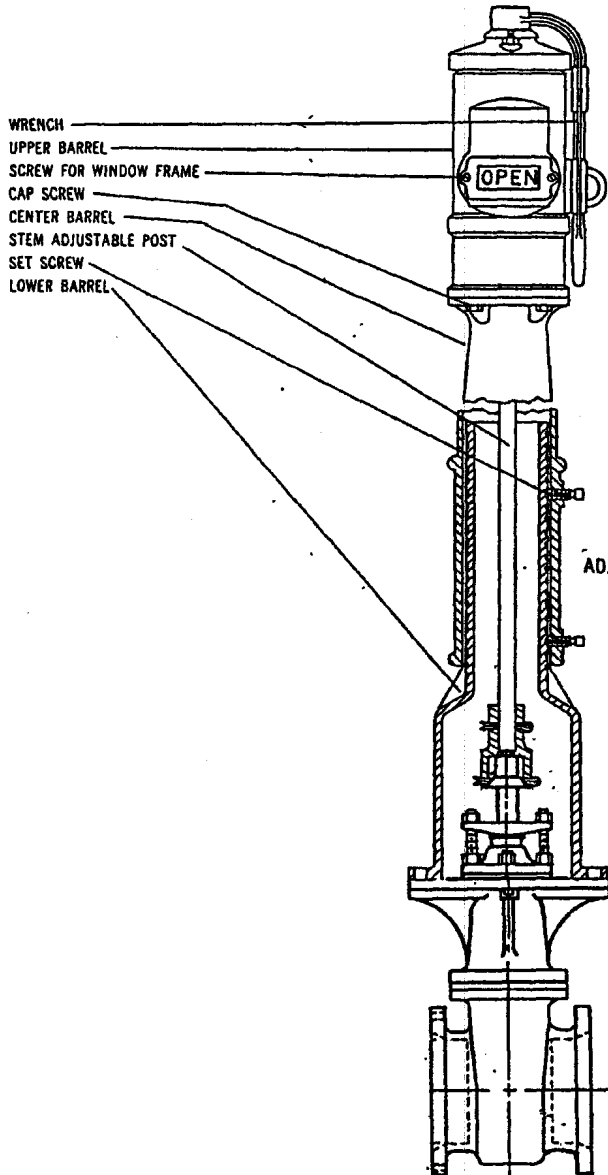


OPEN

TO BE PAINTED HIGH VISIBILITY GREEN

SHUT

TO BE PAINTED HIGH VISIBILITY RED



PROVIDE A KNOX PADLOCK. FOR ORDERING INFORMATION, CONTACT THE DEPARTMENT OF FIRE PREVENTION.

P.I.V. TO BE MUELLER A-20801.

P.I.V. TO BE PAINTED RED.

SIGN TO BE INSTALLED INDICATING USE.

ADJUSTABLE TYPE

P.I.V. AND GATE VALVE TO OPEN RIGHT

ROD BOTH SIDES OF GATE VALVE TO RETAINER GLANDS.

GATE VALVE TO BE MUELLER P-2360-20.

MECHANICAL
JOINT ENDS
Indicator Post

POST INDICATOR VALVE SCHEMATIC

N.T.S.

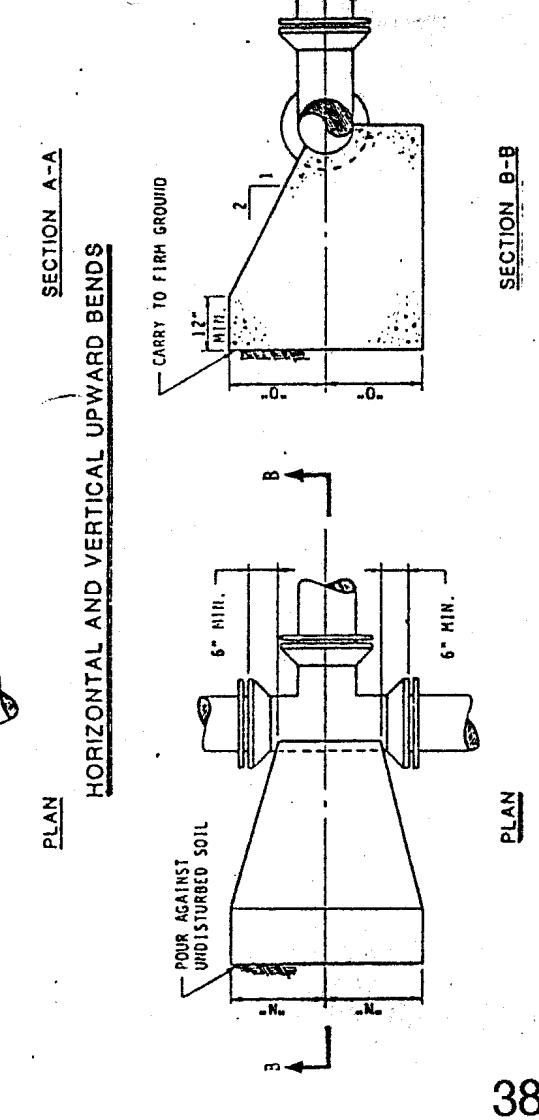
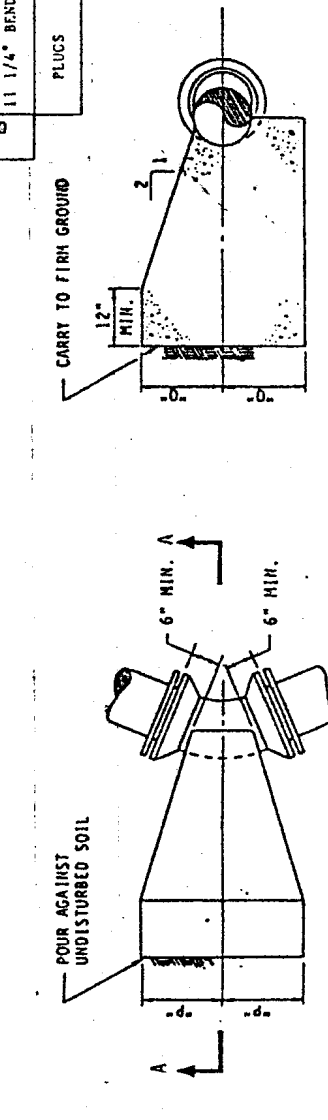
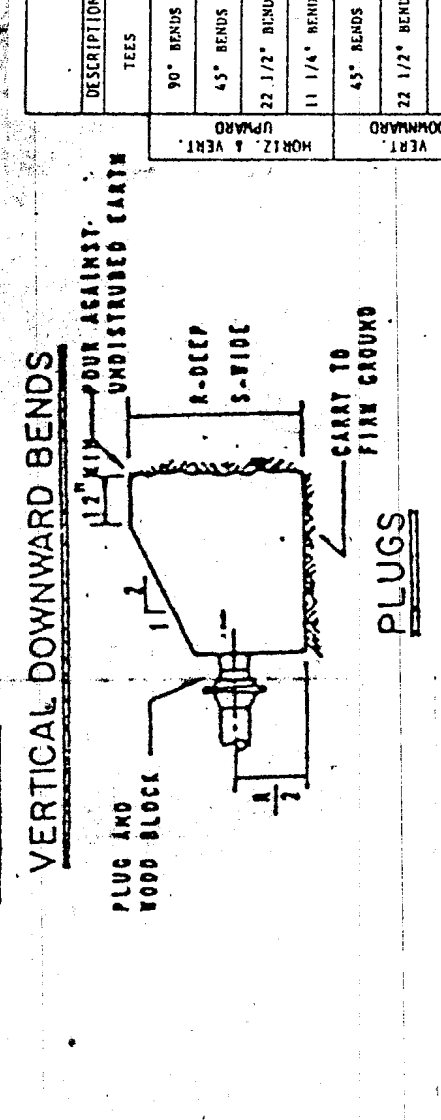
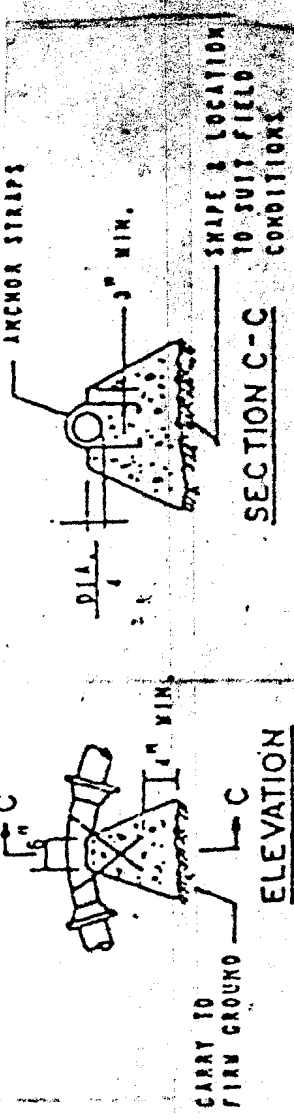
*Franklin Township
Somerset County, NJ*



RESTRAINING LENGTH SCHEDULE							
MINIMUM LENGTH OF RESTRAINED JOINTS ON EACH SIDE OF FITTING							
FITTING	DUCTILE IRON PIPE (FT.)						CONCRETE LCP (FT.)
90° BEND, VALVES, CAPS AND PLUGS	NA	90	120	145	190	270	230
45° BENDS	NA	30	35	45	60	80	70
22 1/2° BENDS	NA	10	10	15	15	25	20
11 1/4° BENDS	NA	5	5	5	5	5	5
5 5/8° BENDS	NA	NA	NA	NA	5	5	5
TEES							
	6" Ø	8" Ø	12"Ø	16"Ø	24"Ø	42"Ø	42" Ø

NOTE: CONTRACTOR SHALL USE THE ABOVE SCHEDULE AND THE CONTRACT PLAN AND PROFILE SHEETS TO DETERMINE ACTUAL RESTRAINED LENGTHS REQUIRED. FITTINGS IN CLOSE PROXIMITY TO ONE ANOTHER MAY REQUIRE ADDITIONAL RESTRAINT. FOR EXAMPLE TWO 22 1/2° BENDS LOCATED WITHIN SEVERAL FEET OF EACH OTHER WILL HAVE THE SAME REACTION AS A 45° BEND AND AS SUCH WILL REQUIRE THE LENGTHS OF RESTRAINT SHOWN FOR 45° BENDS.

RESTRAINING LENGTH SCHEDULE



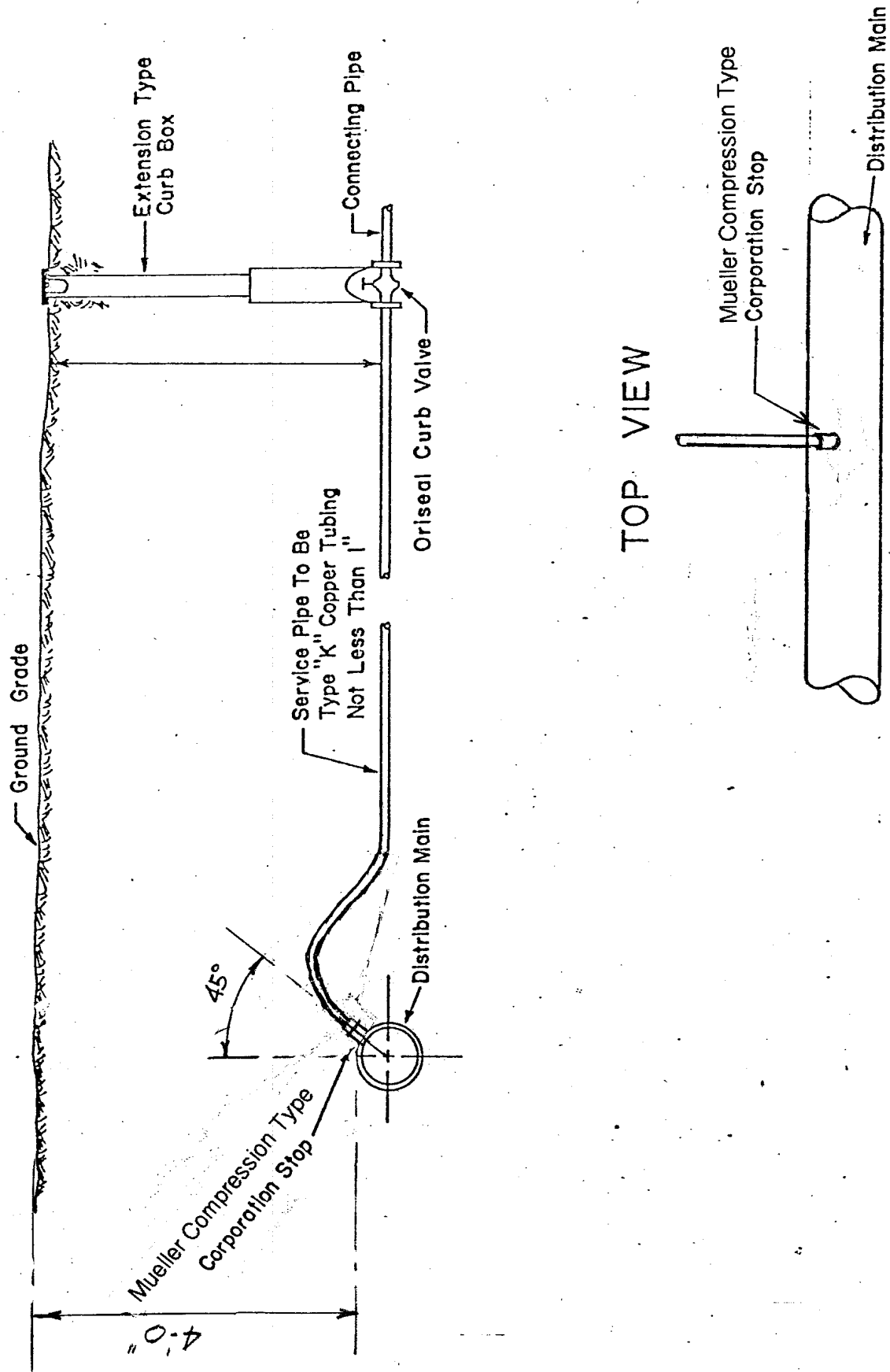
THRUST BLOCKS FOR TEES, HORIZONTAL & VERTICAL BENDS & PLUGS

DESCRIPTION	DIMENSION	4" B	6" B	8" B	10" B	12" B	14" B	16" B	20" B	24" B
TEES	N	0'-7"	0'-10"	1'-2"	1'-5"	1'-8"	1'-11"	2'-4"	2'-8"	3'-2"
	O	0'-7"	0'-10"	1'-2"	1'-5"	1'-8"	1'-11"	2'-4"	2'-8"	3'-2"
90° BENDS	P	0'-9"	1'-0"	1'-4"	1'-8"	1'-11"	2'-3"	2'-7"	3'-2"	3'-9"
	Q	0'-9"	1'-0"	1'-4"	1'-8"	1'-11"	2'-3"	2'-7"	3'-2"	3'-9"
45° BENDS	P	0'-7"	0'-9"	1'-0"	1'-3"	1'-5"	1'-8"	1'-11"	2'-4"	2'-9"
	Q	0'-7"	0'-9"	1'-0"	1'-3"	1'-5"	1'-8"	1'-11"	2'-4"	2'-9"
22 1/2° BENDS	P	0'-5"	0'-7"	0'-9"	0'-11"	1'-0"	1'-2"	1'-4"	1'-8"	2'-0"
	Q	0'-5"	0'-7"	0'-9"	0'-11"	1'-0"	1'-2"	1'-4"	1'-8"	2'-0"
11 1/4° BENDS	P	0'-4"	0'-5"	0'-6"	0'-8"	0'-9"	0'-10"	1'-0"	1'-2"	1'-5"
	Q	0'-4"	0'-5"	0'-6"	0'-8"	0'-9"	0'-10"	1'-0"	1'-2"	1'-5"
45° BENDS	MIN. CONC. ANCHORAGE	.6 C.Y.	.6 C.Y.	1.9 C.Y.	2.8 C.Y.	3.9 C.Y.	5.2 C.Y.	6.8 C.Y.	10.4 C.Y.	16.9 C.Y.
22 1/2° BENDS	MIN. CONC. ANCHORAGE	.3 C.Y.	.3 C.Y.	1.0 C.Y.	1.4 C.Y.	2.0 C.Y.	2.7 C.Y.	3.5 C.Y.	5.3 C.Y.	7.6 C.Y.
11 1/4° BENDS	MIN. CONC. ANCHORAGE	.2 C.Y.	.2 C.Y.	.5 C.Y.	.7 C.Y.	1.0 C.Y.	1.4 C.Y.	1.8 C.Y.	2.7 C.Y.	3.8 C.Y.
PLUGS	R	1'-2"	1'-8"	2'-4"	2'-10"	3'-4"	3'-10"	4'-8"	5'-4"	6'-4"
	S	1'-2"	1'-8"	2'-4"	2'-10"	3'-4"	3'-10"	4'-8"	5'-4"	6'-4"

THRUST BLOCKS DESIGNED FOR 150 LB. PER SQ. IN. TEST PRESSURE & 2,000 LB. PER SQ. FT. SOIL PRESSURE.
 * MIN. CONC. ANCHORAGE WITHOUT BACKFILL AND NO GROUND WATER CONDITION.

THRUST BLOCK DETAIL
 NOT TO SCALE

HOUSE SERVICE CONNECTION



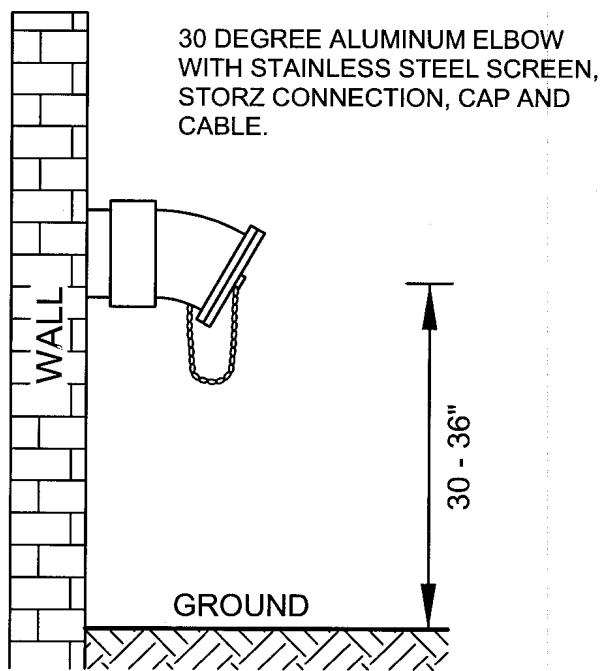
5" STORZ HOSE CONNECTION

FIRE DEPARTMENT CONNECTIONS SHALL BE LOCATED ON THE STREET ADDRESS SIDE OF THE BUILDING IN A VISIBLE, EASILY ACCESSIBLE LOCATION APPROVED BY THE TOWNSHIP FIRE OFFICIAL. THIS LOCATION MUST BE WITHIN 50 FEET OF A FIRE HYDRANT AND LOCATED ON THE SAME SIDE OF THE STREET.

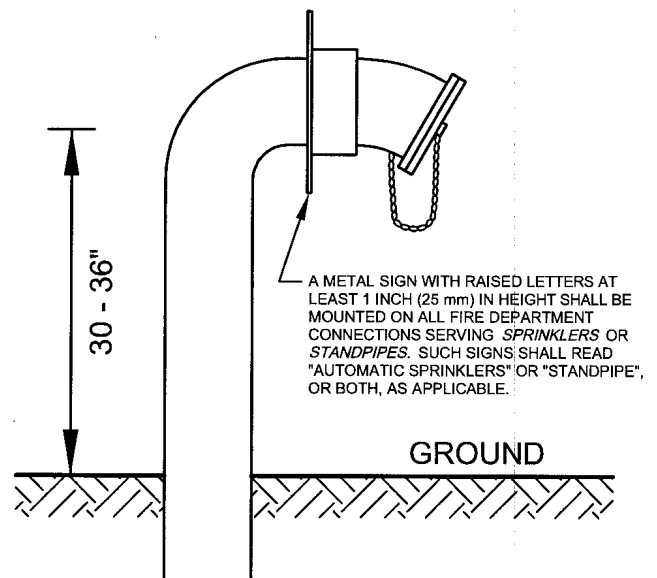
SIGNS

FIRE DEPARTMENT CONNECTIONS SHALL HAVE A SIGN INSTALLED ABOVE THEM. THIS SIGN SHALL BE VISIBLE FROM THE DRIVEWAY OR ROADWAY WHERE THE FIRE DEPARTMENT WOULD ACCESS THE FDC.

THE SIGN SHALL BE RECTANGULAR SHAPED WITH RED LETTERS AND RED BORDER ON A WHITE BACKGROUND AND SHALL BE A MINIMUM OF TWELVE (12) INCHES BY EIGHTEEN (18) INCHES WITH THE LONGER DIMENSION HORIZONTAL. SIGNS SHALL BE MADE OF METAL OR OTHER COMPARABLE DURABLE MATERIAL AND ALL CORNERS SHALL BE ROUNDED. SIGNS SHALL BE REFLECTORIZED. THE MESSAGE ON THE SIGNS SHALL READ "FDC" AND THE LETTERS SHALL BE EIGHT (8) INCHES HIGH AND ONE AND ONE (1 1/4) INCH WIDE.



BUILDING MOUNTED



FREESTANDING

PIPE MUST BE PAINTED RED
STEEL BOLLARDS MAY BE REQUIRED (YELLOW)

FIRE DEPARTMENT CONNECTIONS

N.T.S.

Franklin Township
Somerset County, NJ



FIRE LANES

(For additional information see Code of Franklin Township, Chapter 132, Article V)

FIRE LANE MARKINGS

Fire Lanes shall be identified by a four (4) inch wide yellow line painted on the pavement, parallel to curbs or the pavement edges, and between three (3) and four (4) feet from the curb or pavement edges.

The words "NO PARKING FIRE LANE" maybe required where the Fire Official determines that additional marking is needed to clearly identify any fire lane. The words shall be between the yellow line and the curb or pavement edge. These words shall be yellow block letters not less than twelve (12) inches high with four (4) inch wide strokes.

Fire lane pavement markings shall be painted as frequently as needed to maintain clear identification.

FIRE LANE SIGNS

Signs shall be rectangular shape with red letters and border on a white background, and shall be a minimum of twelve (12) inches by eighteen (18) inches with the longer dimension vertical. Signs shall be made of metal or comparable durable material, and all corners shall be rounded. Signs shall be reflectorized. The message on signs shall read "NO PARKING FIRE LANE".

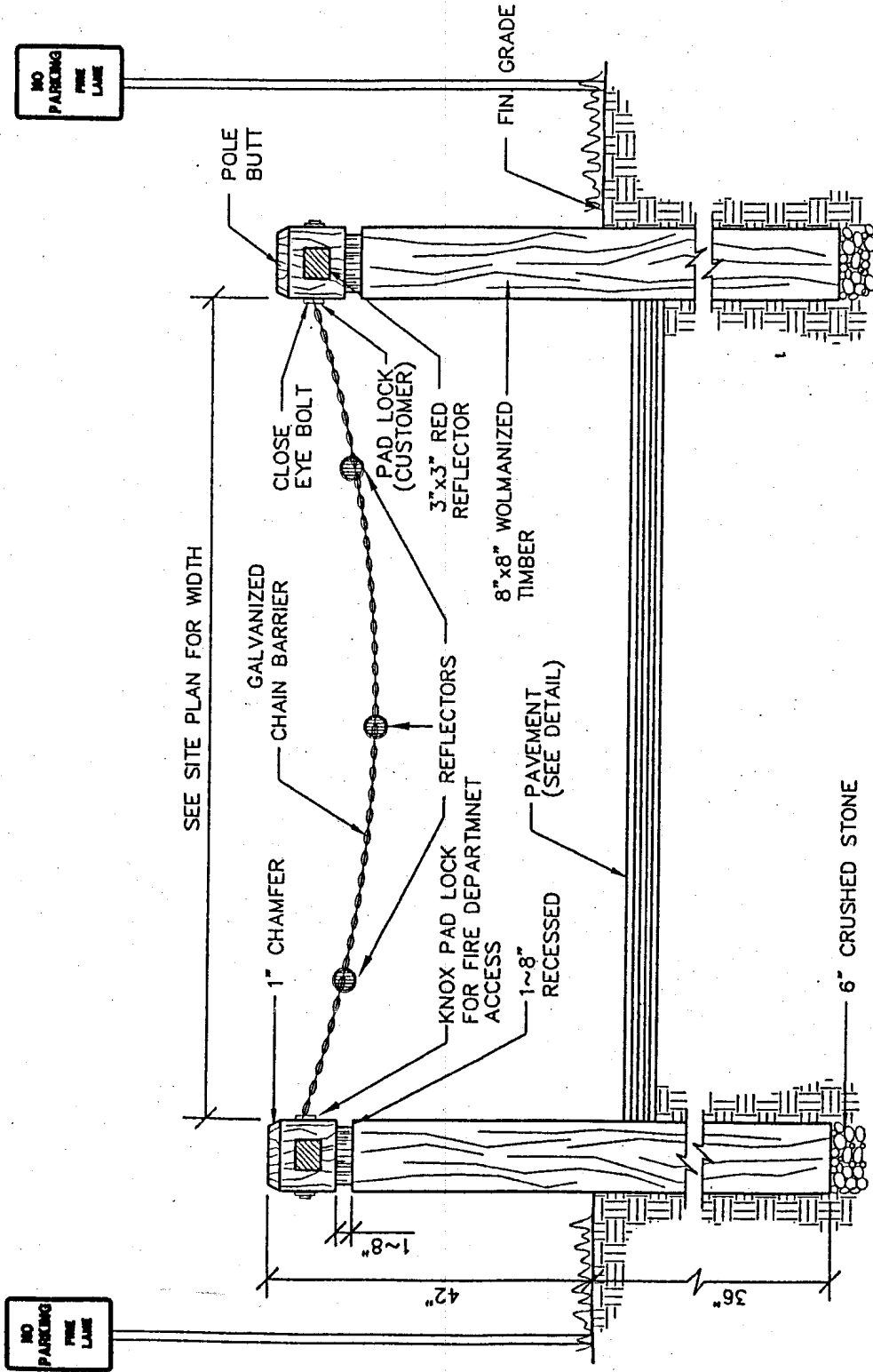
There shall be a sufficient number of signs for each fire lane to face all directions of traffic flow into and within said areas, and so as not to exceed a maximum distance of one-hundred (100) feet between signs facing the same direction of traffic flow. Signs shall be mounted at right angles to the direction of and facing the traffic flow. Signs shall be installed so that the bottom of each sign is five (5) feet above the pavement. The bottom of the sign may be seven (7) feet above the pavement where subject to pedestrian traffic at that location.

Signs shall be kept in good condition and clearly legible at all times. Damaged, destroyed or missing signs shall be promptly replaced.



NO PARKING FIRE LANE
SIGN DETAIL

N.T.S.

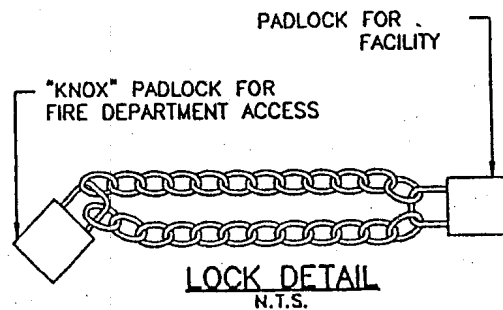


FIRE LANE BOLLARDS + CHAIN

Steel bollards may be substituted for wolmanized timber. Bollards must be painted safety yellow.

FIRE DEPARTMENT ACCESS GATES

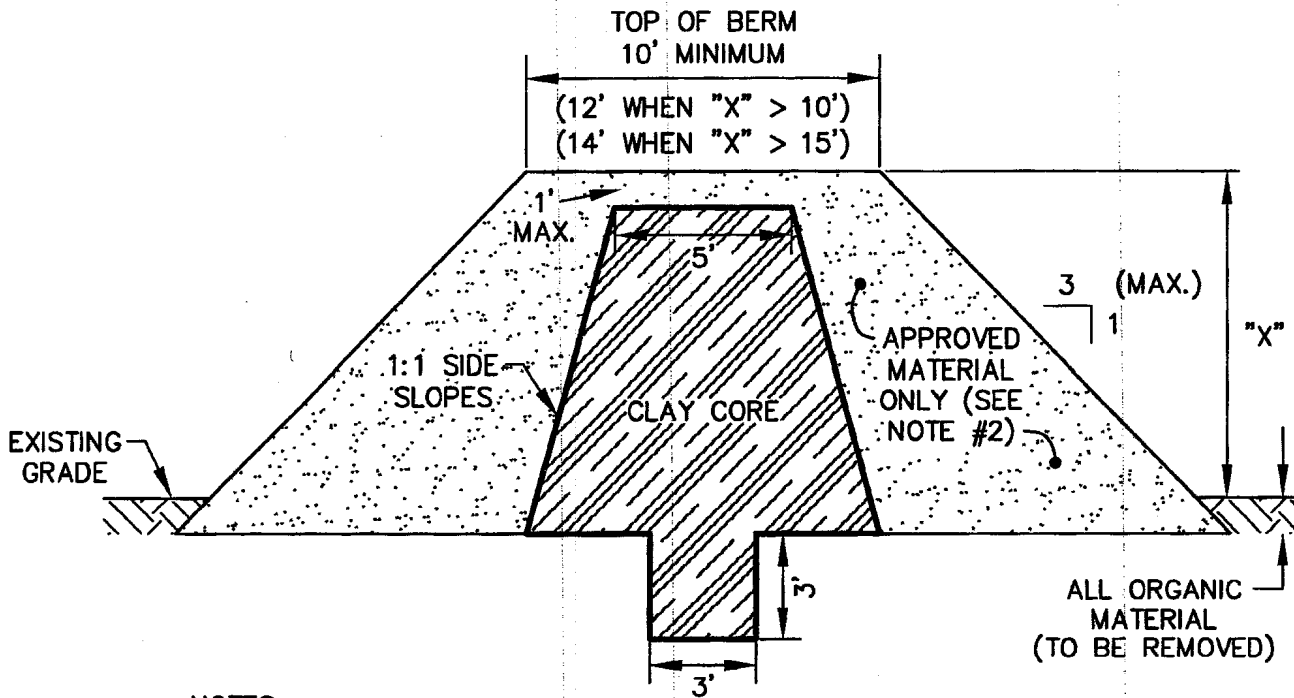
Manual gates for fire department access must be equipped with KNOX padlock and comply with detail.



Electric powered gates for fire department access must be equipped with siren activated opening device. The device shall be manufactured by S.O.S. or equivalent.

**WATER PIPING, FITTINGS
AND APPURTENANCES**

<u>Service</u>	<u>Material</u>	<u>Jointing</u>	<u>Lining</u>	<u>Manufacturer</u>	<u>Standard</u>
<u>Water Main Under Ground</u>	Ductile Iron Class 52	Push-on Joint	Cement Lined	U.S. Pipe Co. or approved equal	AWWA C151 ANSI A21.51
<u>Gate Valves</u>	Ductile Iron resilient seated gate valves open clockwise	Mechanical joints with retaining glands	Epoxy coating	U.S. Pipe Co. or approved equal	AWWA C509
<u>Valve Boxes</u>	Cast Iron two-piece 5 1/4" shaft	-----	-----	U.S. Pipe Co. or approved equal	-----
<u>Mechanical Joint</u>	Ductile Iron Class 52	Mechanical Joint with retaining glands	Cement Lined	U.S. Pipe Co. or approved equal	AWWA C111 ANSI A21.11
<u>Retaining Glands</u>	Ductile Iron	Mechanical Joint	-----	U.S. Pipe Co. or approved equal	AWWA C111
<u>Couplings Sleeve</u>	Ductile Iron	-----	-----	U.S. Pipe Co. Or approved equal	ASTM A536
<u>Follower</u>	Ductile Iron	-----	-----	U.S. Pipe Co. or approved equal	ASTM A536
<u>Gasket</u>	Compounded Rubber	-----	-----	U.S Pipe Co. or approved equal	ASTM D2000
<u>Bolts&Nuts</u>	High strength Low alloy Steel	-----	-----	U.S. Pipe Co. or approved equal	AWWA C111
<u>Service Line</u>	Copper Type K	Compression	N/A	-----	-----
<u>Corporation Cock</u>	Brass	Threaded or soldered	N/A	Mueller No. H-15000	-----
<u>Interior Service 2-1/2" And smaller</u>	Brass or copper type L	Threaded or soldered	N/A	Mueller or approved equal	-----



NOTES:

1. The Clay Core shall consist of compacted clay material (unified soil classification "CL"). The material shall be certified by a licensed New Jersey professional Engineer. The material shall be approved by the Township prior to installation. A Soil Importation Permit will be required, if the material is not from a certified source.
2. The fill material in all earth dams and embankments shall be compacted to at least 95% of the maximum density obtained from compaction tests performed by the appropriate method in ASTM D698.
3. Trees and other vegetation with large extensive root structure shall not be permitted on any dam or embankment.
4. The basin is to be topsoiled with a minimum of 4" of topsoil and seeded, including the bottom, side slopes and all earthen dams and embankments. "Topsoil" is defined as the natural, undisturbed surface layer of soil having more organic matter than subsequent layers suitable for satisfactory growth and maintenance of permanent, locally adapted vegetation. The material must be friable, loamy soil reasonably free of debris, objectionable weeds, lumps, roots, stones, or similar objects larger than 1-inch in any dimension; have a natural pH of 5.0 to 7.5; have an organic matter content greater than 2.00 percent; and contain no toxic substances which may be harmful to plant growth the seeding shall, as a minimum, conform to type "A" grass seed mixture as defined in the NJDOT standard specifications for road and bridge construction.
5. Slope to be maximum of 3:1 or as directed by the Township Engineer.

EMBANKMENT AND DETENTION BASIN CLAY CORE
N.T.S.

(TO BE USED ON ALL EMBANKMENT AREAS WITH FILL GREATER THAN TWO FEET)

Franklin Township
Somerset County, NJ

