

ARTICLE IV  
STANDARD SPECIFICATIONS  
for  
PAVING CONSTRUCTION

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## ARTICLE IV

### STANDARD SPECIFICATIONS

for

### PAVING CONSTRUCTION

#### IV.1 GENERAL

- A. The work covered by this Article IV of the specifications consists in furnishing all labor, equipment, supplies and materials, and in performing all operations in connection with the preparation of subgrade as required and in performing all operations in the connection with the construction of air-entrained Portland cement concrete pavement. The following recognized standards [State of Nebraska, Department of Roads 2007 Standard Specifications for Highway Construction (NDOR), the American Water Works Association Standards (AWWA), American Standards for Testing and Materials (ASTM), American Association of State Highway and Transportation Officials (AASHTO), etc. or the latest revisions thereof] shall apply except as hereinafter provided. All specifications included in this Article IV will pertain except that special notations on the plans, in the Special Provisions or in the General Provisions shall have precedence.

#### IV.2 EARTH WORK

- A. All borrow material shall be approved by the Engineer before being placed.
- B. Excavation of every description and of whatever substances encountered within the limits of the project shall be performed to the lines and grades indicated on the drawings. Except as otherwise permitted by the Engineer, all excavated areas shall be excavated in such a manner as will afford adequate drainage. All suitable material removed from the excavations shall be used, insofar as practicable, in the formation of embankments, backfilling, and for such other purposes as directed by the Engineer. Where material encountered within the limits of the work is considered unsuitable by the Engineer, such materials shall be excavated below the grade shown on the drawings or as directed by the Engineer, and replaced with suitable material. All excavated materials which are considered unsuitable and any surplus of excavated material which is not required for embankments shall be disposed of by the Contractor as directed by the Engineer. In no case shall the Contractor be required to haul excess excavation further than one half mile unless a supplementary agreement covering the extra haul has been made. However, the Contractor may be required to load such excess material into trucks furnished by the Owner, and to supply such trucks as is mutually agreed would have been required to haul this material within the one half mile limit, and this loading and hauling shall be considered as part of the pavement bid price as outlined above.

- C. Fill work shall consist of the construction of embankments by depositing, placing and compacting materials of acceptable quality above the natural ground or other surface in accordance with the lines, grades and cross sections shown on the plans, and as required by the Engineer.
- D. Before any fill is placed all clearing, tree removal, sod and top soil removal over the entire area shall be performed as directed by the Engineer, and the entire area shall then be rolled at least twice with a sheepsfoot roller.
- E. Clearing shall consist of the removal and disposal of all obstructions such as foundations, walls, fences, buildings, rubbish, etc., to a depth of at least 12 inches below subgrade elevation. Sod within the area shall be removed to a depth of 6 inches.
- F. Trees, except those designated to be saved and all stumps, shall be removed to a depth of at least 18 inches below the subgrade elevation. All trees designated to be saved shall be protected carefully during clearing and subsequent construction operations.
- G. Topsoil shall be excavated and stockpiled as directed by the Engineer.
- H. Each layer of the fill material not to exceed 8 inches in loose depth shall be disced sufficiently to break down oversized clods, to form a homogeneous mixture of the different materials, to secure a uniform moisture content, and to insure uniform density and proper compaction. Each layer shall be thoroughly compacted by roller or vibratory equipment suitable for the type of embankment material.
- I. In the event sufficient suitable fill material is not obtained within the limits of this contract to provide all the embankment required, the Contractor shall furnish such additional fill material borrow to complete the designated embankment. The cost of furnishing this material shall be borne by the Contractor unless otherwise noted on the plans or proposal form.
- J. The bottom of the excavation for the pavement or the top of the fill shall be known as the pavement subgrade, and shall conform to the lines, grade and cross sections shown on the plans.
- K. All soft and yielding material and other portions of the subgrade which will not compact readily when rolled or tamped, shall be removed as directed and replaced with suitable material placed and compacted as specified herein.
- L. All fill shall be compacted to a minimum of 90 percent of the maximum dry density as determined by (AASHTO T99, ASTM D698) Standard Proctor. The top 6 inches of fill in locations that coincide with the proposed or future proposed pavement and the top 6" of the subgrade (in areas that do not require any fill) shall be compacted to

a minimum of 96 percent of the maximum density as determined by (AASHTO T99, ASTM D698) Standard Proctor.

- M. The Contractor shall bring all the fill material and the subgrade's moisture content to not more than 4% above or 2% below the optimum content as determined by (AASHTO T99, ASTM D698) Standard Proctor. If needed moisture shall be added, the cost of which shall be subsidiary to other work performed.
- N. The Owner may hire a recognized testing laboratory to perform in-place density tests on the subgrade.
- O. When in-place density tests are performed, the tests shall be performed in accordance with the procedures set forth in:
  - ASTM D 2167 (Rubber Balloon Method)
  - ASTM D 1556 (Sand Cone Method)
  - ASTM D 2922 (Nuclear Method)
- P. If the tests show non-compliance with the plans and specifications, the backfill shall be removed, replaced, and retested by the Contractor without extra compensation and at no extra cost to the Owner.
- Q. The finished subgrade shall be maintained in a smooth and compacted condition until the concrete has been placed. The mixer, ready-mix trucks, or other equipment shall not operate between the forms unless permitted by the Engineer. If the Contractor is permitted to operate trucks between the forms and the trucks cause rutting or displacement of the subgrade material, either lighter loads shall be used or suitable runways shall be provided. The Contractor shall re-roll or hand tamp the subgrade to correct any ruts or other objectionable irregularities which may have been caused by the trucking of materials.
- R. The subgrade shall be finished in an acceptable condition for at least one half days (1/2) progress in advance of the pavement construction at all times.
- S. All excess concrete and debris shall be removed from the excavation behind the curb line before backfilling. The backfill will be placed as indicated on the plans or graded to form a uniform slope. The Contractor shall remove all dirt and debris from the paving following backfill operations.

### IV.3 MIX DESIGN

A. Preliminary Review. Reports covering the source and quality of concrete materials and the concrete proportions proposed for the work shall be submitted to the Engineer for review before any concrete is placed.

Testing and reports for alkali-silica reactivity required for preliminary review shall be made by an independent testing laboratory at the expense of the Contractor.

Alkali-Silica Reactivity Testing. Concrete shall be tested for alkali-silica reactivity for each concrete mix utilized for the project. Alkali-silica reactivity for concrete mixes shall be determined in accordance with ASTM C1567.

B. Portland Cement: All concrete for the project shall use Type IP cement in accordance with the NDOR standard specifications. This includes concrete used for retaining walls, storm sewer structures, sanitary sewer structures, and all concrete surfacing.

C. Concrete shall be proportioned according to the following table:

Concrete Mixes (Cubic Yard Batch)

Class of Concrete	Base Cement Type *	Portland Cement (Min. lb/cy)	Pre-Blended Class Fly Ash* (Min. lb/cy)	Total Cementitious Materials (Min. lb/cy)	Total Agg. (Min. lb/cy)	Total Agg. (Max. lb/cy)	Course Agg. (%) (2)	Type of Coarse Agg.	Air Content (% Min. – Max.) (1)	Water/Cement Ratio Max. (3)	Required Strength 28 days (Min. psi)
47B (SLIP)	1PF	423	141	564	2850	3150	30+/- 3	Limestone	7.5 – 10.0	0.48	3500
47B (HAND)	1PF	423	141	564	2850	3150	30+/- 3	Limestone	6.0 – 8.5	0.48	3500

(1) As determined by ASTM C 138 or ASTM C 231.

(2) Coarse aggregate shall be limestone unless otherwise specified.

(3) The Contractor is responsible to adjust the water/cement ratio so that the concrete supplied achieves the required compressive strength without exceeding the maximum water/cement ratio. The minimum water/cement ratio for any slip form concrete pavement is 0.38.

(\*) Mixes with Type 1PF and Class F fly ash designation are pre-blended or interground with Class F fly ash by the cement mill producer at a rate of 25% +/- 2%, no additional Class F fly ash is added at the batch plant.

High Early Strength Concrete Pavement: The Contractor shall provide High Early Strength Portland Cement Concrete for use at roadways and drives as indicated in the plans or as directed by the Engineer. The Contractor shall submit to the Engineer for approval, a proposed High Early Strength Concrete mix design, which will provide a minimum concrete strength of 3,000 psi at 72 hours. Mix designs, which utilize accelerators or admixtures containing calcium chloride, will not be considered. The approved mix design shall be used at locations as directed and approved by the Engineer to facilitate local traffic movement and access to businesses.

The Contractor, at his option, may elect to use the High Early Strength Concrete mix at other locations to facilitate his operations, subject to approval of the Engineer. Additional payment will not be made over and above the unit price bid for Concrete Pavement for use of High Early Strength Concrete under these circumstances. Payment for High Early Strength Portland Cement Concrete Pavement which is authorized by the Engineer will be made in accordance with the unit price bid for the appropriate pay items shown on the plans and bid proposal.

- D. The minimum cement content shall not be less than 6.5 sacks per cubic yard of concrete, and the maximum water content shall not exceed 6.0 gallons per sack of cement, including the surface water on the aggregate. All water must be added to the batch at the batch plant. No water shall be added from the transit mixer tank unless permission is obtained from the Engineer.
- E. A water reducing agent shall be used for all concrete furnished on this project. A set retarding mixture shall be used only upon approval of the Engineer if weather conditions warrant. All admixtures used shall be in liquid form, introduced into the mix with an approved dispenser, and these admixture shall meet the appropriate ASTM Spec. for Type A and D Admixtures.
- F. The maximum allowable slump shall be 3 inches. Concrete that is rejected because of excessive slump shall be removed completely from the project. Unloaded concrete that is rejected shall not be retempered.
- G. Compression test specimens shall be made in the field as required by the Engineer, and in accordance with ASTM Designation C-31-49 when tested in accordance with ASTM C-39 assumed minimum compressive strength shall be 7 day, 2,400 psi; 28 day, 3,500 psi. Tests may be required for each days run or one set of test cylinders for each 150 cubic yards of concrete placed. The Contractor is responsible for supplying the molds for the concrete test cylinders.

#### IV.4 FORMS, PLACING, AND FINISHING OF CONCRETE

- A. All forms used on this project shall meet the NDOR Specifications, and the placing of concrete shall be done according to the NDOR Specifications, except as hereinafter provided.
- B. The Engineer shall be given a minimum of 2 hours notice prior to the placement of any concrete.
- C. Concrete shall not be placed upon a soft, spongy or frozen subgrade or other subgrade, the stability of which is, in the opinion of the Engineer, unsuitable for the placement of concrete. The subgrade shall be in a moist condition at the time the concrete is placed. It shall be thoroughly wetted a sufficient time in advance of the placing of the concrete to insure that there will be no puddles or pockets of mud when the concrete is placed, but shall not be allowed to dry out before the concrete is placed.
- D. All consolidating and finishing of concrete (including the method of curing it) on this project shall be done according to the NDOR Specifications, except as hereinafter provided.
- E. The surface of the concrete pavement shall receive a wet burlap drag in order to give it a finished texture. If approved by the Engineer, the driving lanes (only) may be finished with a carpet drag, but the gutter line (2 feet in width) and curb face will still require a wet burlap finish.
- F. Integral curbs shall be required along the edges of all street pavement as indicated on the plans, except at such locations as the Engineer may direct. Depressed curbs shall be provided at all driveway entrances, and at such other locations as designated by the Engineer.
- G. The finished surface of the curb and gutter shall be checked by the use of the 10 foot straight edge, and corrected if necessary. While the concrete is still plastic the drainage at the gutter should be checked by pouring water at the gutter summit, and observing its flow to the inlet. In order to prevent damage to the concrete surface, the water should be poured onto a piece of burlap or curing paper.
- H. All manholes, catch basins, or structures of a permanent nature encountered in the areas to be paved shall be raised or lowered as the case may be, to the surface of the new pavement.
- I. A separate load ticket shall be made for each load of concrete showing truck number and amounts of each of the separate materials. These tickets shall be furnished to the inspector or Engineer on the job.

#### IV.5 JOINTS

- A. When transverse contraction joints are to be formed by sawing, care must be taken to saw the grooves soon after placing to prevent the formation of random cracks due to contraction of any slab. All transverse joints shall be sawed at least 1/3 of the slab depth. Any procedure for sawing joints that results in premature and uncontrolled cracking shall be revised immediately by adjusting the time interval between the placing of the concrete and the cutting of the joints.
- B. Transverse dummy groove joints shall be formed by a groove or cleft in the top of the slab of the dimensions shown on the plans. The groove made in the plastic concrete by a suitable tooling device, shall extend vertically downward 1/3 of the slab depth from the surface and shall be true to line.
- C. Longitudinal construction joints (i.e., joints between construction lanes) shall be of the dimensions shown on the plans. The keyway shall be constructed by placing a deformed metal plate against the form when the first lane adjacent to the joint is placed.
- D. This metal plate shall be removed with the form. When placing the second slab, care must be taken that no concrete is left to overhand the lip formed in the first slab by the edging tool.
- E. Tiebars or a thickened edge may be called for at the longitudinal construction joints. Such construction shall conform to details shown on the plans.
- F. All required joints shall be sealed with a joint sealer conforming to Sections 1022.02 of the NDOR Specifications. Immediately prior to sealing of any joint, the joint shall be sand blasted and blown to give the sealer a clean dry surface to bond to. The sealing may be performed without the need for sand blasting if approved by the Engineer, the joints are sealed the same day they are sawn, and the sawing is done without the use of water.
- G. Tiebars or tiebolts when shown on the plans shall be of deformed steel and of the dimensions and at the spacing specified. Tiebars shall be firmly supported by subgrade chairs.

#### IV.6 PROTECTION AND OPENING TO TRAFFIC

- A. Concrete shall be protected according to the NDOR Specifications, except as hereinafter provided.
- B. The Contractor shall protect the pavement against all damage prior to final acceptance of the work by the Owner. Traffic shall be excluded from the pavement by erecting and maintaining barricades and signs until the concrete is at least 7 days old, or for a

longer period if so directed by the Engineer. The pavement shall not be used at any time within this period for transporting or operating equipment.

- C. As a construction expedient, the subgrade planer, concrete finishing machine, ready-mix trucks, and similar equipment may be permitted to ride upon the previously constructed slabs provided a compressive strength of 2400 psi has been attained, and the equipment has rubber tired wheels to run on the finished slab. A rubber tired trailer, pulled by hand, may be used to transport the forms as they are being removed, providing the paving is more than 48 hours old.
- D. When work is in progress on or adjacent to streets and highways the Contractor shall erect warning signs as required by NDOR and according to the Manual on Uniform Traffic Control Devices 1988 Edition.
- E. The contractor shall provide the City of Norfolk a detailed traffic control plan prior to the start of construction.

#### IV.7 TESTS

- A. Compliance with the Specifications as to pavement thickness and compressive strength shall be determined on a block basis. A block means the distance between two intersecting streets provided that distance is not over 600 feet. Where the distance is over 600 feet, the length shall be divided into parts not less than 250 feet, nor more than 600 feet.
- B. Compliance with the Specifications for thickness shall be based upon 4" diameter concrete cores. Core specimens shall be removed by the Contractor in accordance with the procedures set forth in ASTM C-42 at no cost to the Owner.
- C. Longitudinally they shall be located at distances equal to 1/5, 1/2, and 4/5 of the distance from the end of the block. Transversely they shall be located not more than four feet from the center of a driving lane. (A driving lane is considered to be 11 feet wide and the edge shall coincide with the center line of the pavement). For lengths of pavement less than 40 feet, only one core is required for analysis. Lengths between 40 and 100 feet shall be accepted on the basis of two cores. Other locations may be selected by the Engineer at his discretion.
- D. Cores taken within a block shall be averaged to determine the thickness for that block. Cores that exceed specified thickness, (T) plus 1/2 inch, shall be counted only as specified thickness plus 1/2 inch. Cores that are less than specified thickness, (T) minus 1/2 inch, shall indicate pavement that is unacceptable. If the core is deficient by more than 1/2 inch, additional cores shall be taken to determine the extent of the deficiency. These cores shall be used to determine the extent of the deficiency. These cores shall be taken at 10 foot intervals longitudinally on either side of the deficient core. When cores indicate an acceptable thickness (T" to T"-1/2"), the thickness of

the pavement in the block shall be determined, omitting those cores which define unacceptable pavement. If the average of the cores taken in a block are not less than specified thickness minus 1/4 inch, the pavement shall be considered to be of the specified thickness. Pavement which is between 1/4 to 1/2 inch deficient in thickness as determined by the average method, shall be accepted only by the reduction in pay according to the following table:

#### Payment for Pavement

T - .25"	= 100% of Bid Price
T - .30"	= 93.0% of Bid Price
T - .35"	= 86.5% of Bid Price
T - .40"	= 80.5% of Bid Price
T - .45"	= 75.0% of Bid Price
T - .50"	= 70.0% of Bid Price
Less than T - .50"	= 0%

- E. Pavement which does not meet the minimum specifications for thickness or strength shall be removed and replaced. Such replaced concrete shall be subject to acceptance under the same plan as the entire block.

#### IV.8 STORM SEWER AND DRAINAGE STRUCTURES

- A. This section of the specification covers the installation of storm sewer pipe, drainage structures, necessary excavation and backfilling and all other incidentals necessary for proper construction of a drainage system. Recognized Standards (NDOR, ASTM, AASHTO, etc.) as referred to herein, shall be construed to mean the latest adopted standard, and shall form an integral part of this specification.
- B. All materials used unless otherwise indicated on the plans, in the Special Provisions, or on the Proposal shall conform to the applicable portion(s) of the following requirements:
  - a. All reinforced concrete pipe (RCP) shall conform to the Specifications for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe, ASTM Designation, C-76, Class III tongue and groove pipe.
  - b. Corrugated metal pipe, culverts and flared end sections shall be of 16 gauge thickness, unless otherwise specified, and shall conform to the requirements of AASTHO Standard Specification M 36. End sections shall include suitable connections for fastening to pipes.
  - c. Grey Iron Casting shall conform to ASTM A-48, Class No. 35, and shall be of the type and quality or an approved equal as follows:

- i. Manhole Ring and Cover not under traffic (Type A Inlets or Junction Boxes) Deeter 2000.
  - ii. Manhole Ring and Cover under traffic (Junction Box) Deeter 1165.
  - iii. Manhole Ring and Cover Under traffic (Manhole) Deeter 1025.
  - iv. Frame and Grate under traffic (Type A or Type B Inlets) Deeter 2106.
- C. All lifting holes in RCP shall be filled with concrete grout. Wire mesh shall be used to prevent the grout from falling through the holes.
- D. The Contractor shall perform all excavation of every description and of whatever substances encountered, to the depths indicated on the drawings, and in accordance with the lines and grades for the work to be given by the Engineer on such locations, at such times, and only so far in advance of the work as may be required. All grading in the vicinity of the trench shall be controlled to prevent surface ground water from flowing into the trenches. Any water accumulated in the trenches shall be removed by pumping or by other approved methods.
- E. The Contractor shall proceed with caution in the excavation and preparation of the trench so that the exact location of underground structures, both known and unknown, may be determined, and he shall be held responsible for the repair of such structures when broken or otherwise damaged because of carelessness on his part.
- F. Whenever, in the opinion of the Engineer, it is necessary to explore and excavate to determine the location of existing underground structures, the Contractor shall make explorations and excavations for such purposes.
- G. The bottom of the trench shall be accurately graded and shaped to provide uniform bearing and support on undisturbed soil along its entire length. Bell holes, where required, shall be excavated so that only the barrel of the pipe receives bearing pressure from the trench bottom. This operation shall be done by hand by men skilled in this type of work.
- H. The materials excavated shall be laid compactly on the sides of the trench and kept trimmed up so as to be of as little inconvenience as possible to public travel or the adjoining tenants.
- I. Pipe bedding consisting of washed river sand, or other material approved by the Engineer, shall be provided for all storm sewer pipe, the price to be included in the bid price for the pipe. Sand bedding shall extend the full width of the trench, and shall extend upward from the bottom of the pipe to the centerline of the pipe barrel. Backfill above centerline of pipe barrel shall be compacted earth.

- J. Each pipe shall be inspected immediately before it is laid, and all defective or damaged pipe shall be rejected. The Contractor shall assume full responsibility for installing defective pipe, and will remove such pipe at his own expense when directed to do so, and replace same with suitable material.
- K. Pipe laying shall proceed up grade with the tongue ends of tongue-and-groove pipe pointing in the direction of flow. The tongue ends of pipe shall be fully entered into adjacent sections of pipe. Corrugated metal pipe shall be laid with the separate sections joined firmly together, with the outside laps of circumferential joints pointing upstream, and with longitudinal laps on the sides.
- L. RCP joints shall be made with cold applied asphalt joint compound in accordance with manufacturer's recommendation. Prior to placing joint sealing material, the pipe ends shall be thoroughly cleaned to provide direct contact between pipe and sealer. The joint shall be completely filled and then pointed and smoothed from the inside. This joint material shall be "Kalkite 340", "Plastice" or approved equal.
- M. All backfill must be compacted to a minimum of 90 percent of the maximum dry density as determined by (AASHTO T99, ASTM D698) Standard Proctor. The Contractor shall backfill from the bottom of the trench to the center of the barrel of the top of the pipe with sand, and the balance of the trench shall be backfilled using suitable material from the excavation of the trench. The top 12 inches of backfill in locations under existing or future pavement shall be compacted to a minimum of 96 percent of the maximum density as determined by (AASHTO T99, ASTM D698) Standard Proctor.
- N. Under existing or future pavements the Engineer may require that the backfill shall be placed and compacted in lifts of eight (8") inches maximum loose thickness.
- O. The Contractor shall bring all backfill material to not more than 4% above or 2% below the optimum moisture content before backfilling as determined by (AASHTO T99, ASTM D698) Standard Proctor.
- P. The Contractor shall construct new sewer inlets, and manholes of the types, and in the locations shown on the plans or where directed by the Engineer. Inlets and junction boxes shall be constructed of 8" poured in place concrete. The floor of a manhole or inlet shall be smooth and slope towards the channel at 1 1/2 inches per foot plus or minus 1/2 inch per foot. The invert of the channels shall be smooth and semi-circular in shape and changes in direction of flow shall be made in a smooth long radius curve.
- Q. All concrete shall be worked into place and consolidated by internal or external vibrators, or types acceptable to the Engineer. External vibrators of approved type may also be used in addition to internal vibrators. Before placing any concrete, all surfaces upon which or against which the concrete is to be placed shall be cleaned of

all mud and debris. Concrete shall be NDOR Specification ABX unless stated otherwise on plan or special provision.

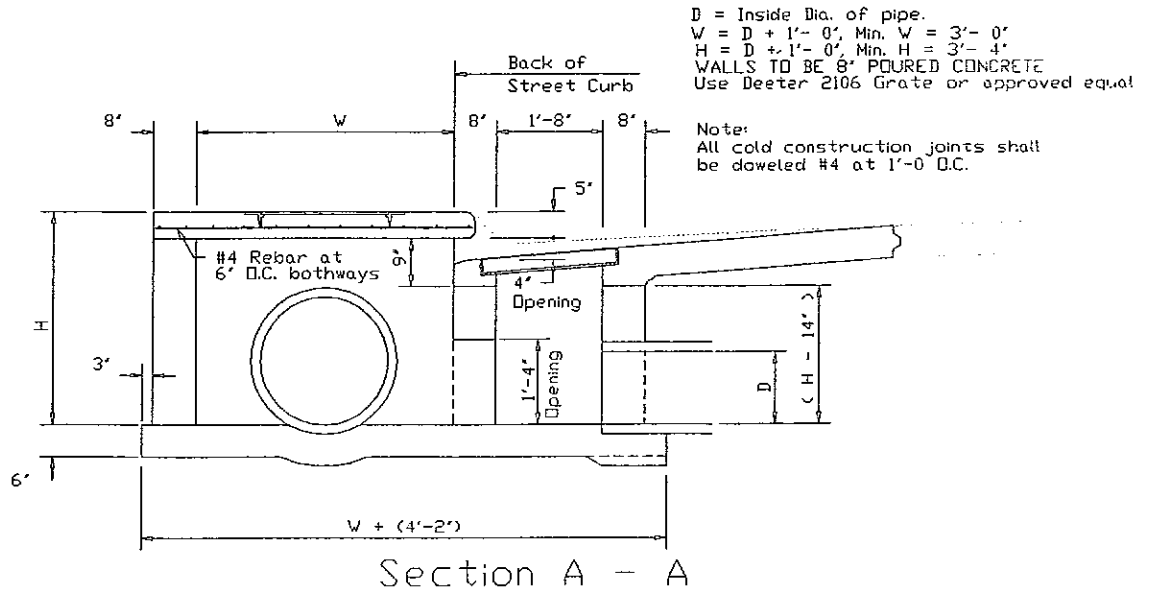
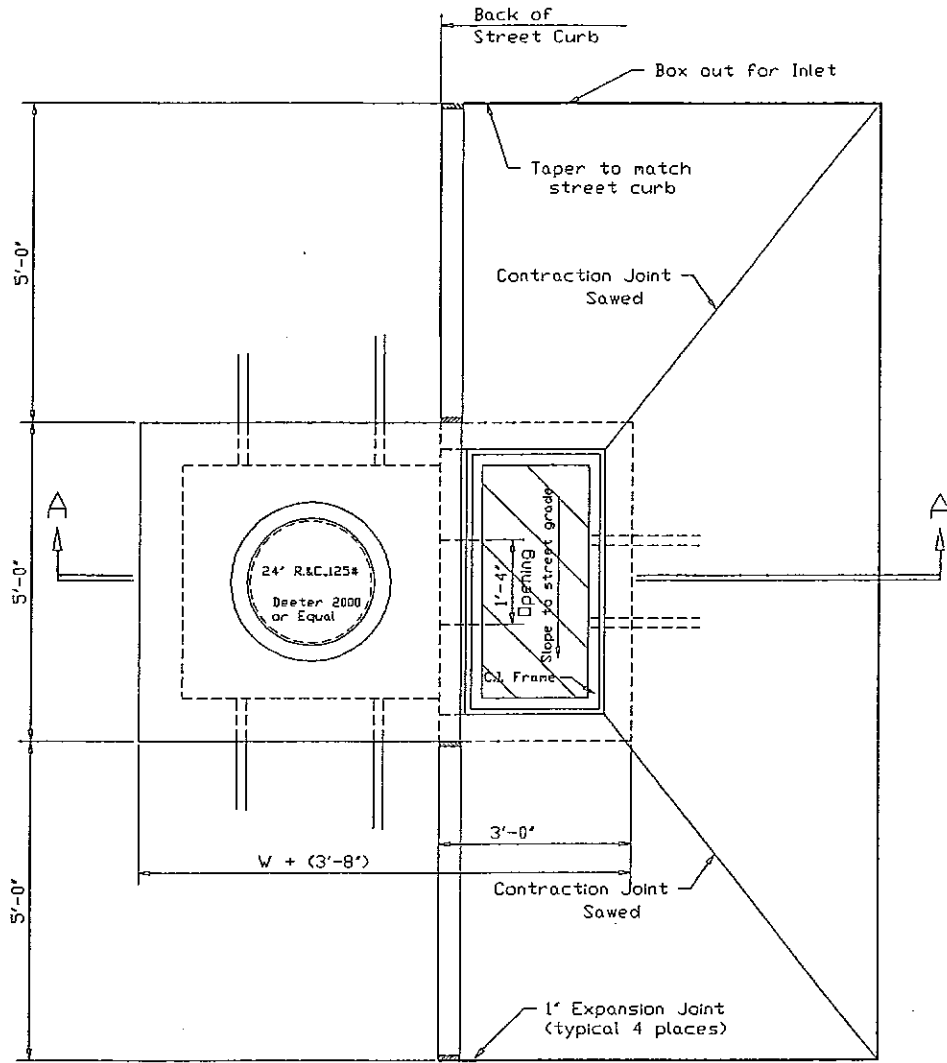
- R. An approved plastic bituminous compound may be used in making the joints in precast manhole rings in locations where ground water is not a problem. This material shall be "Tufflex", "Plastice", or other approved equal.
- S. Connection to existing storm sewer will be made as shown on the drawings. All concrete work, cutting, and shaping will be done in a workmanlike manner to the satisfaction of the Engineer.
- T. Concrete for headwall construction shall consist of form construction and the handling, placing, curing, and finishing of concrete for headwalls in accordance with these specifications and in conformity with the lines, grades, dimensions, and designs shown in the plans, and/or as directed by the Engineer.

#### IV.9 MISCELLANEOUS

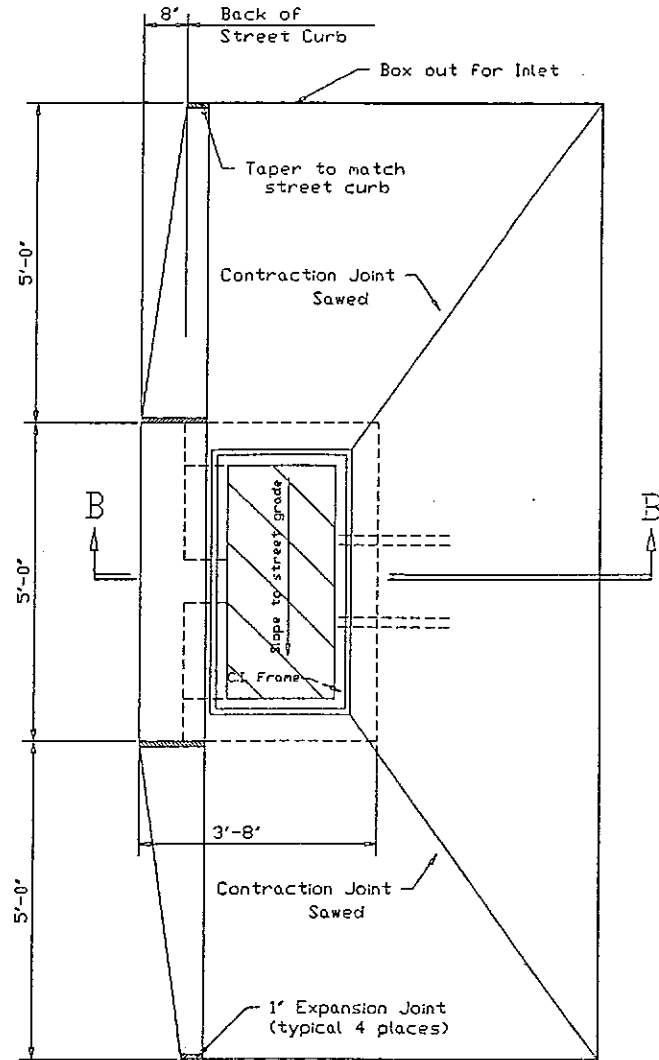
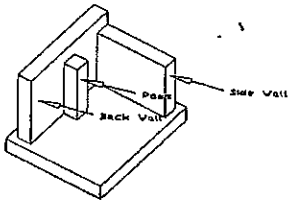
- A. The Engineer's office shall be given 48 hours notice before any construction begins, and 3 working days notice for any work requiring staking by the Owner.
- B. All sites to be used for proportioning plants, mixing plants, or storage of materials or equipment, shall be only those having the approval of the Building Inspector if the site is within the City's two-mile zoning jurisdiction.

## IV.10 STANDARD DRAWINGS

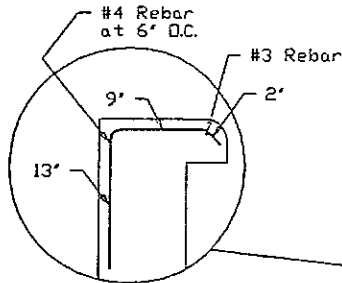
Type A Inlet.....	Page IV.14
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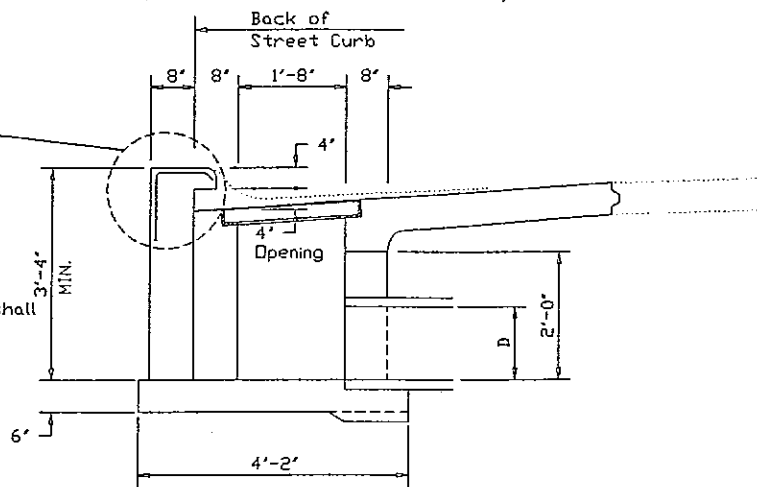
# TYPE A INLET



WALLS TO BE 8" POURED CONCRETE  
Use Deeter type 2106 or approved equal

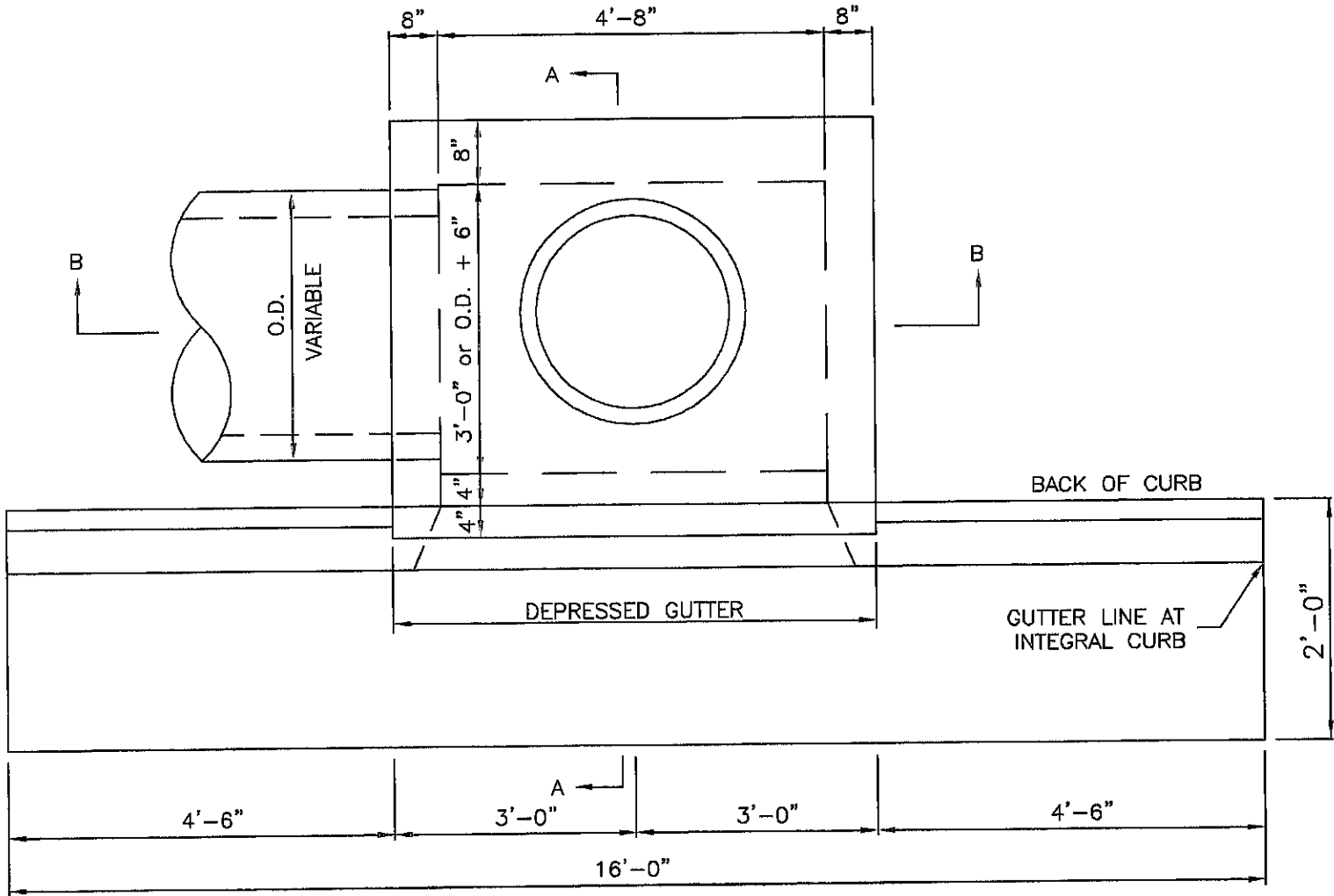


Note:  
All cold construction joints shall  
be doweled #4 at 1'-0" O.C.

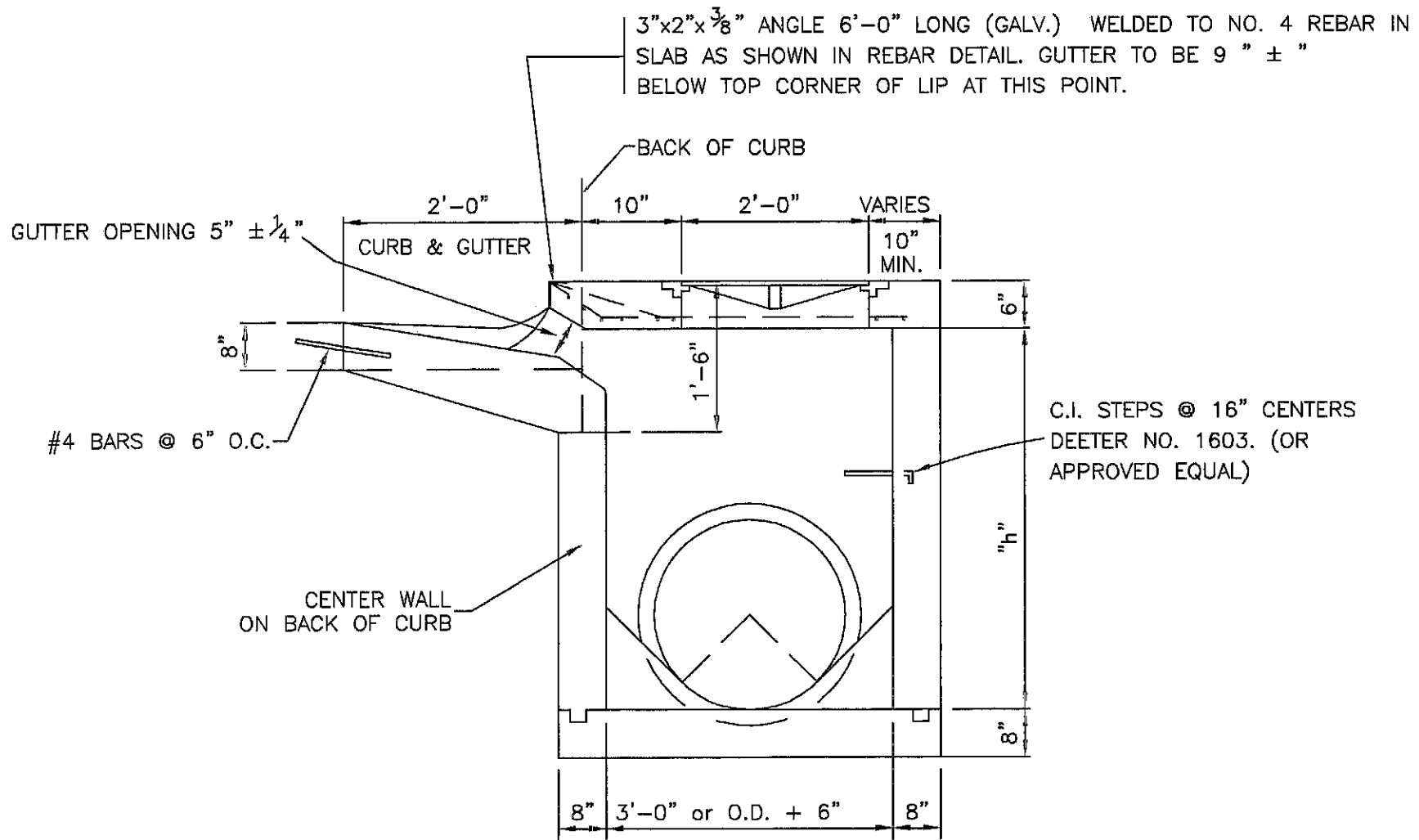


Section B - B

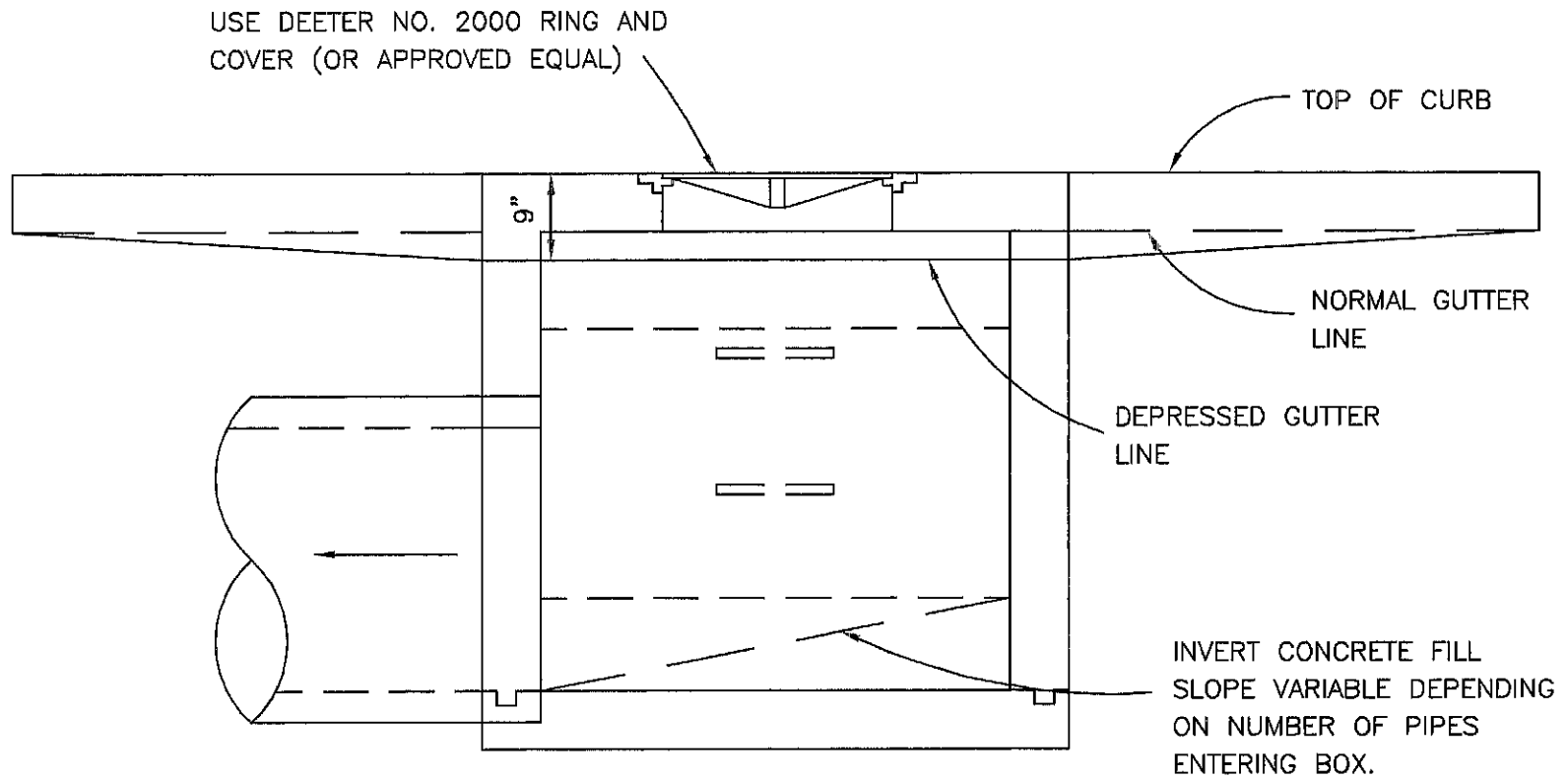
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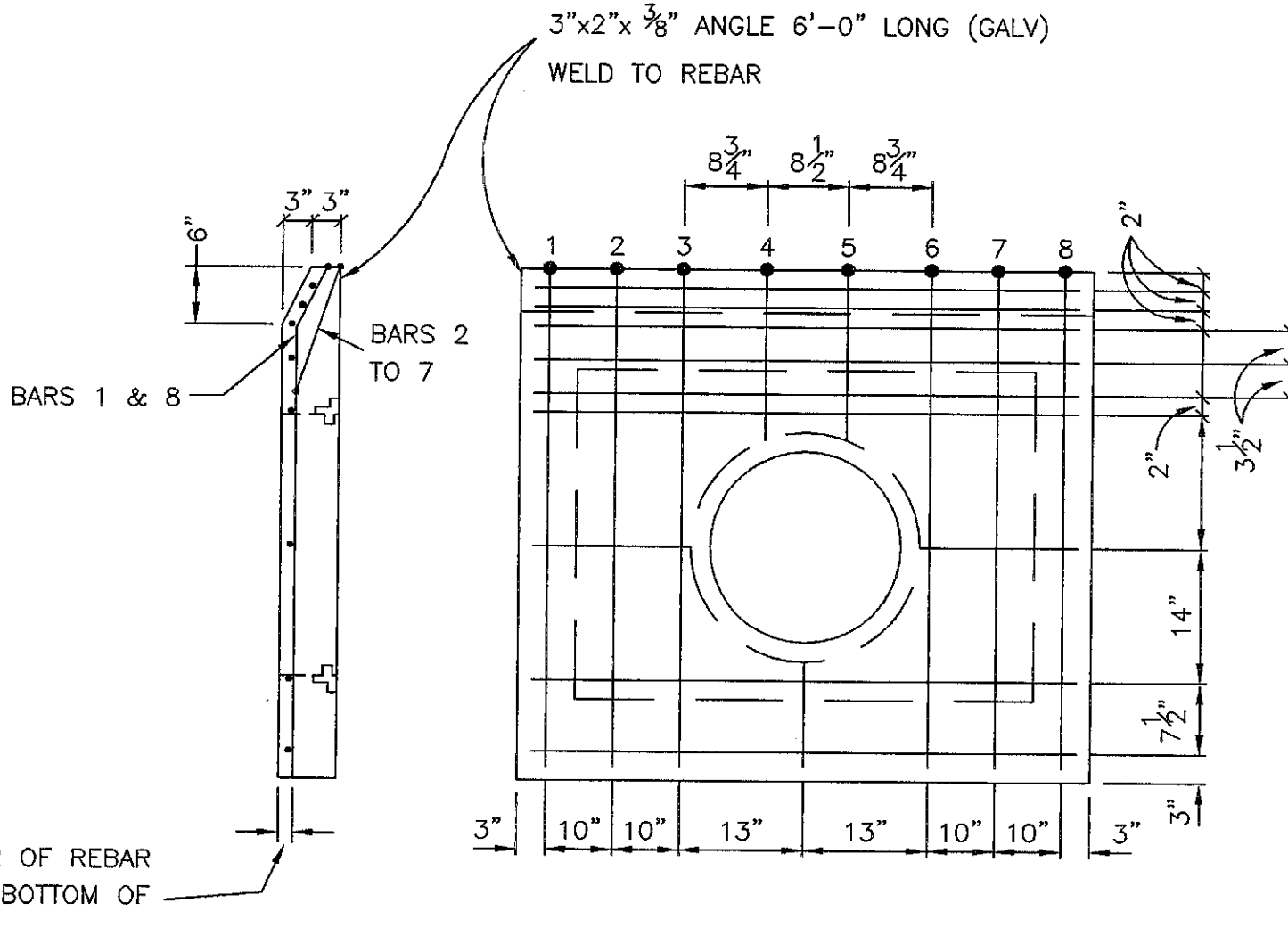
STANDARD TYPE "D" INLET



SECTION A-A  
Type D Inlet



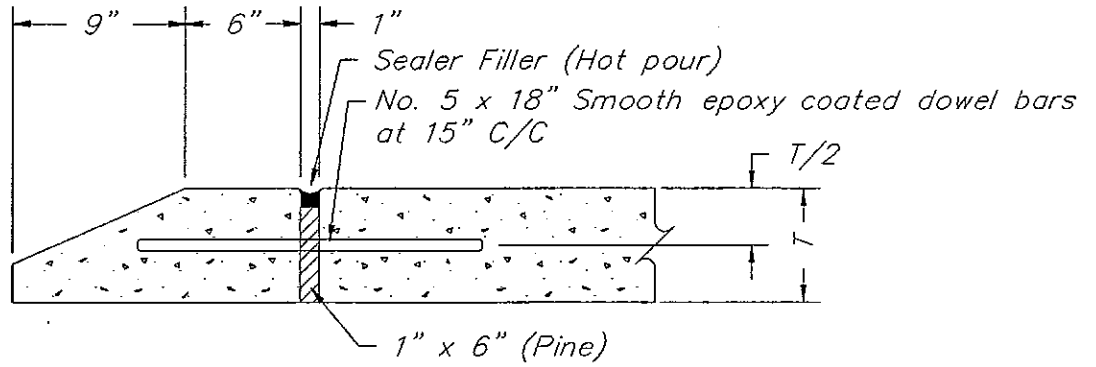
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Type 'D' Inlet



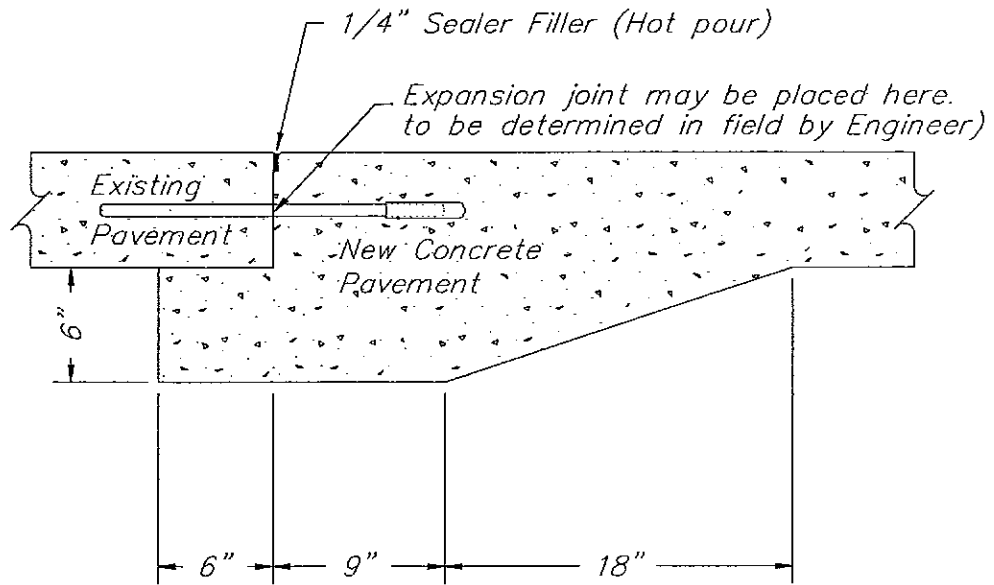
REBAR DETAIL





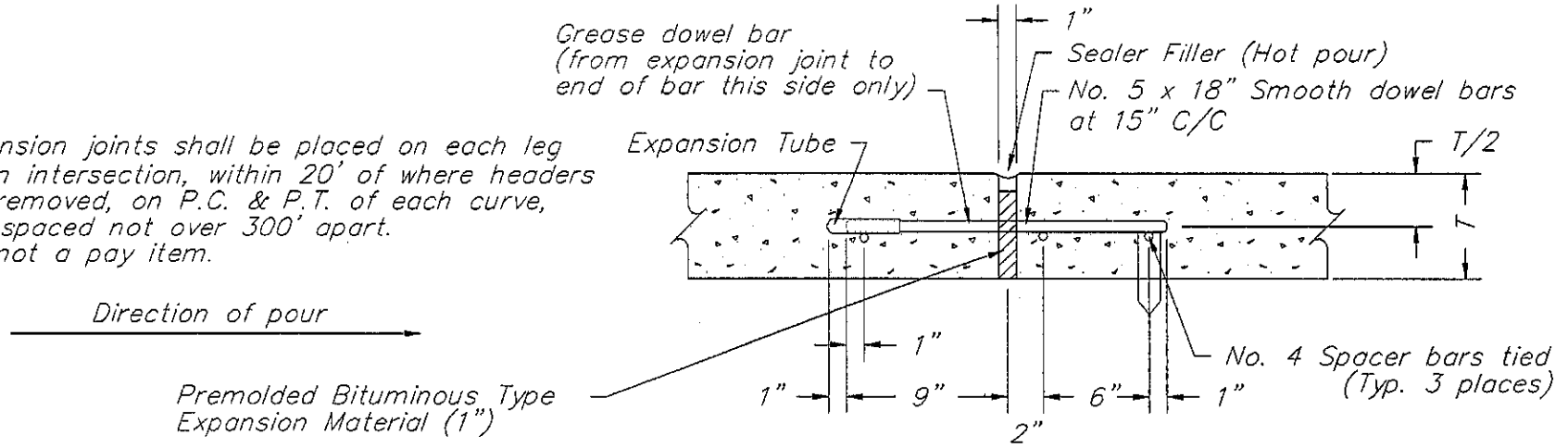


# TYPE "A" CONCRETE HEADER

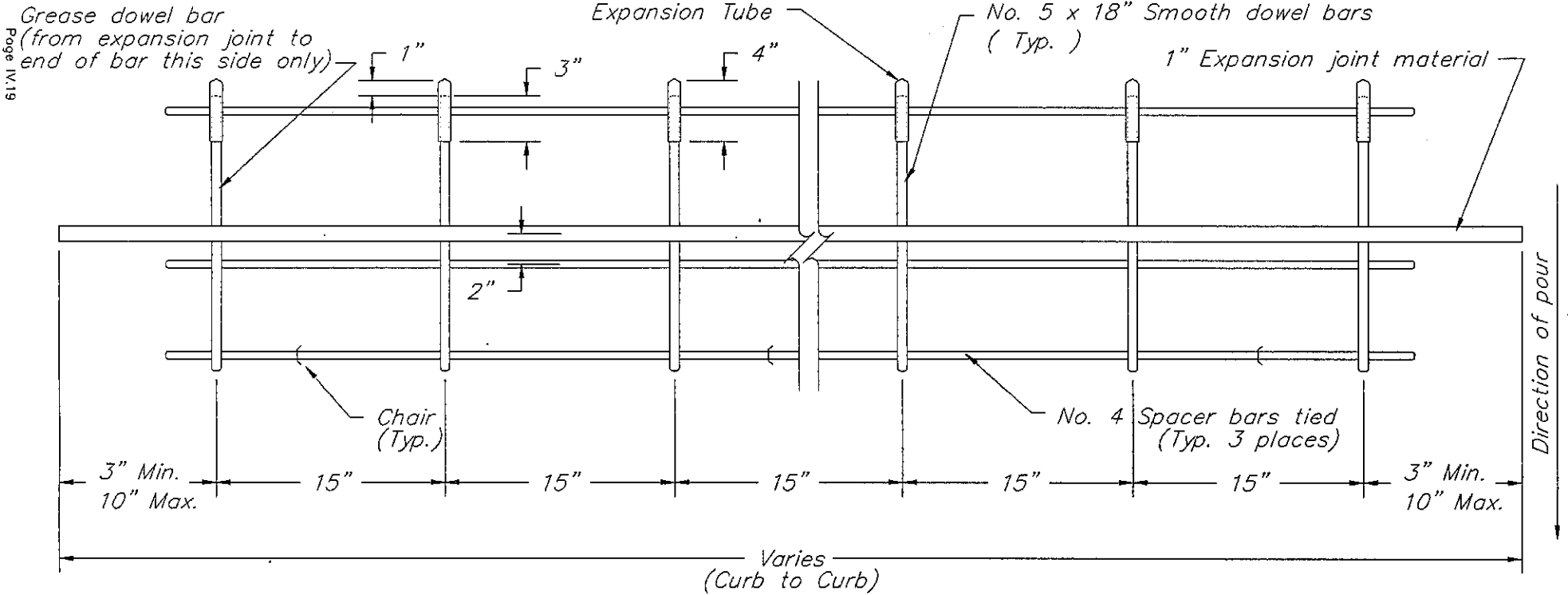


# SPECIAL CONSTRUCTION JOINT

Expansion joints shall be placed on each leg of an intersection, within 20' of where headers are removed, on P.C. & P.T. of each curve, and spaced not over 300' apart. are not a pay item.

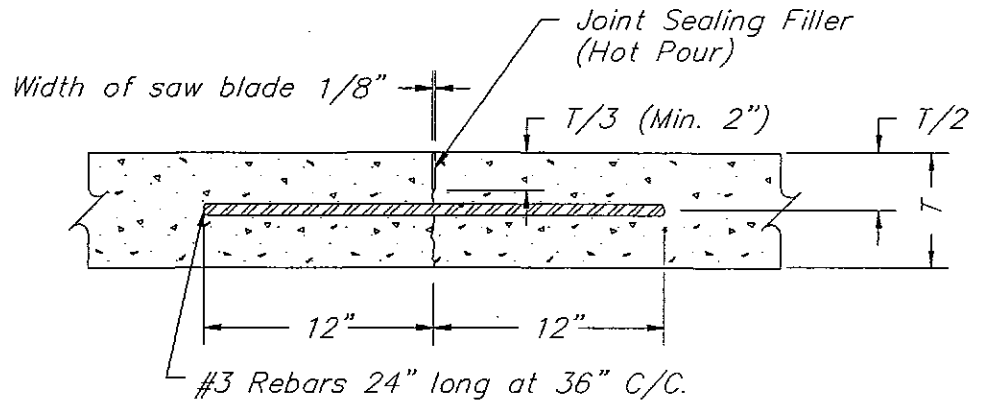


# EXPANSION JOINT



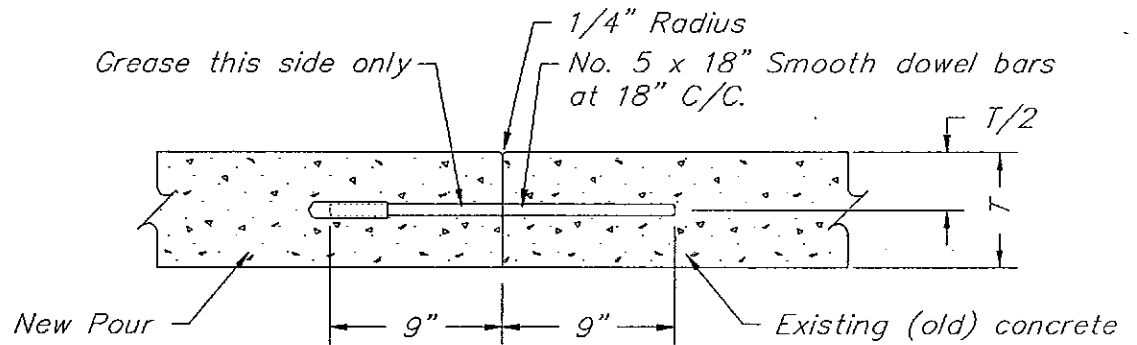
# ASSEMBLY PLAN

Note! Factory made assemblies may be substituted if approved by the Engineer

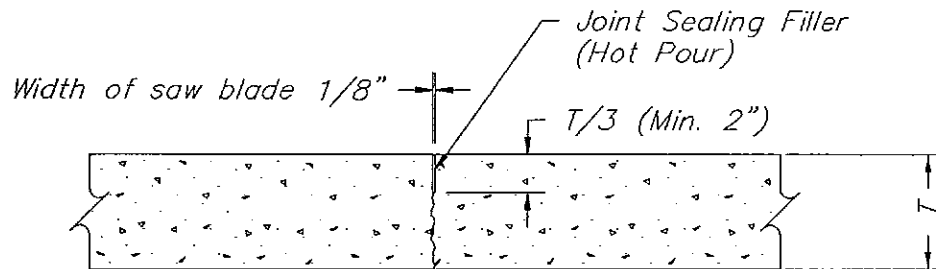


## LONGITUDINAL JOINTS

*This joint shall be used when width of pour exceeds 12'-6".*



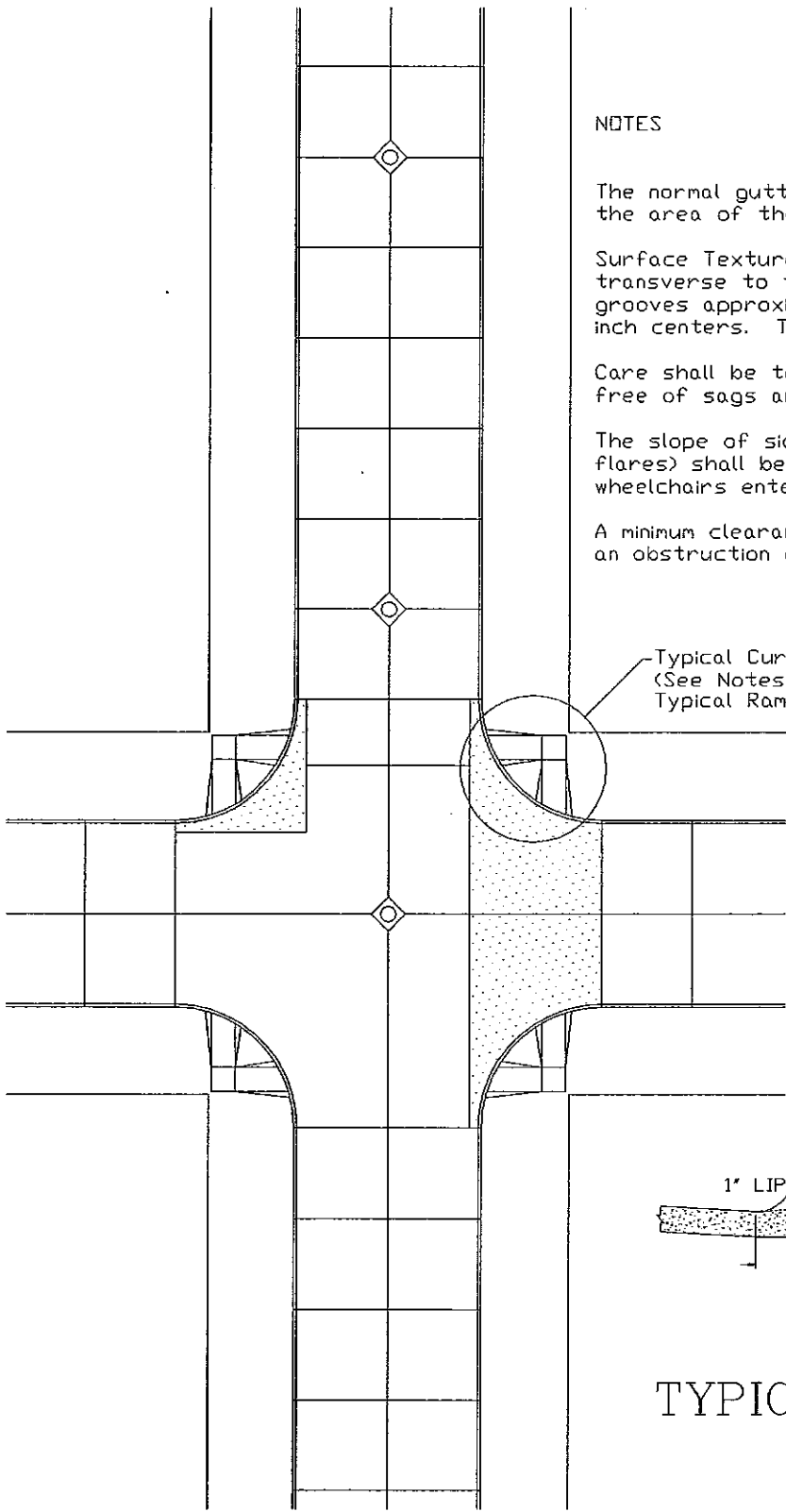
## CONSTRUCTION JOINT



*All contraction joints shall be sawed unless so designed in special provisions*

*Maximum contraction joint spacing 16'-4" (15'-0" Standard) but uniform spacing is required in each block*

## CONTRACTION JOINT SAWED



NOTES

The normal gutter line profile shall be maintained through the area of the ramp.

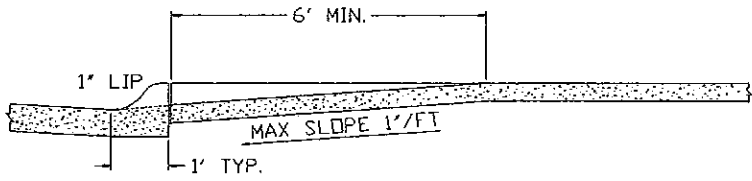
Surface Texture of the ramp shall be that obtained by tining, transverse to the slope of the ramp. The tines shall produce grooves approximately 1/8 inch wide and 3/16 inch deep on 1/2 inch centers. The flares and wings shall be broomed.

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

The slope of sidewalks approaching curb ramps (or their flares) shall be flat enough to provide recovery areas for wheelchairs entering or exiting the ramps.

A minimum clearance of 5 1/2 feet shall be provided between an obstruction and the top end of the curb ramp.

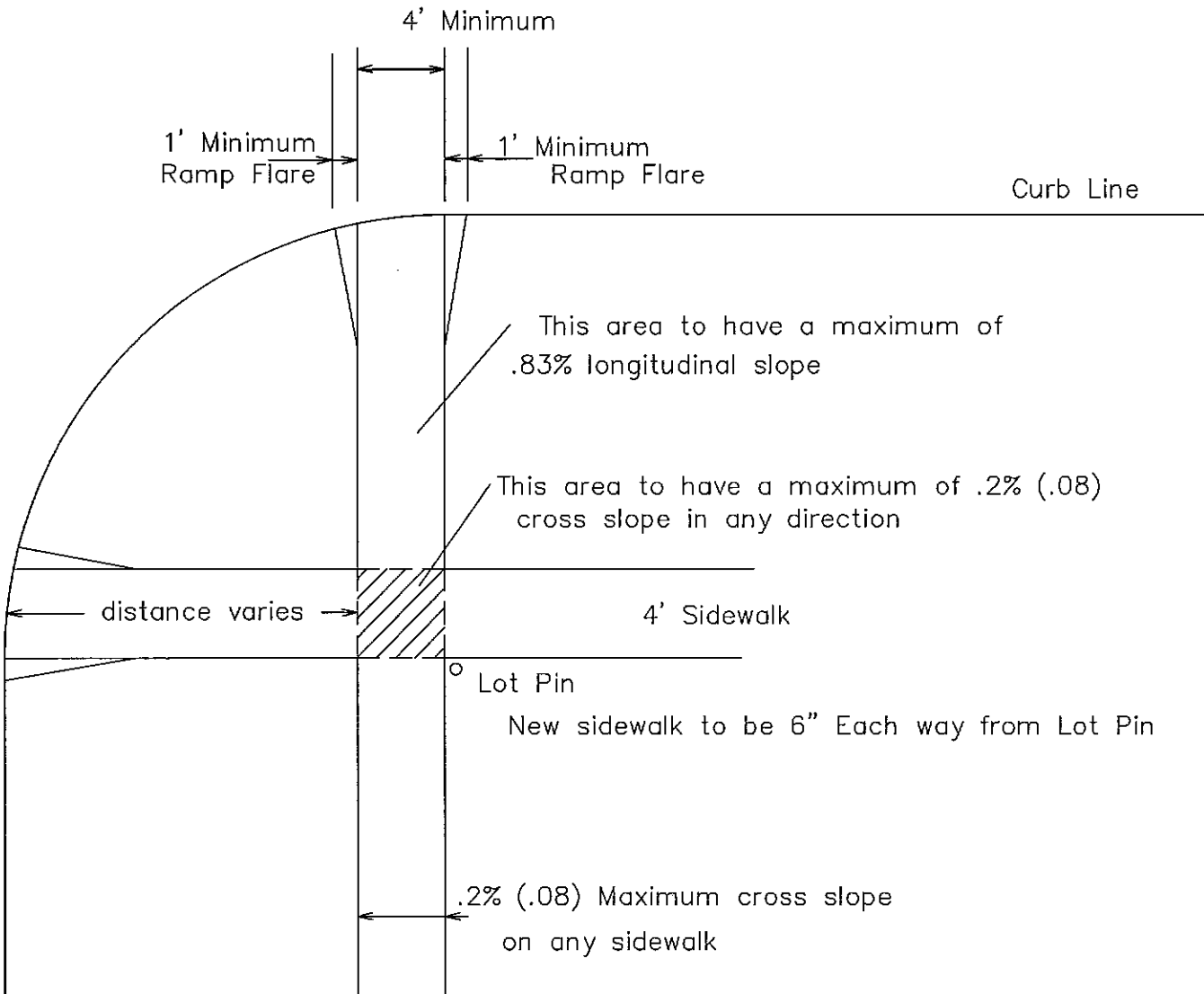
Typical Curb Ramp  
(See Notes Above and  
Typical Ramp Profile Below)



TYPICAL RAMP PROFILE

TYPICAL INTERSECTION & PORTION OF ANY BLOCK

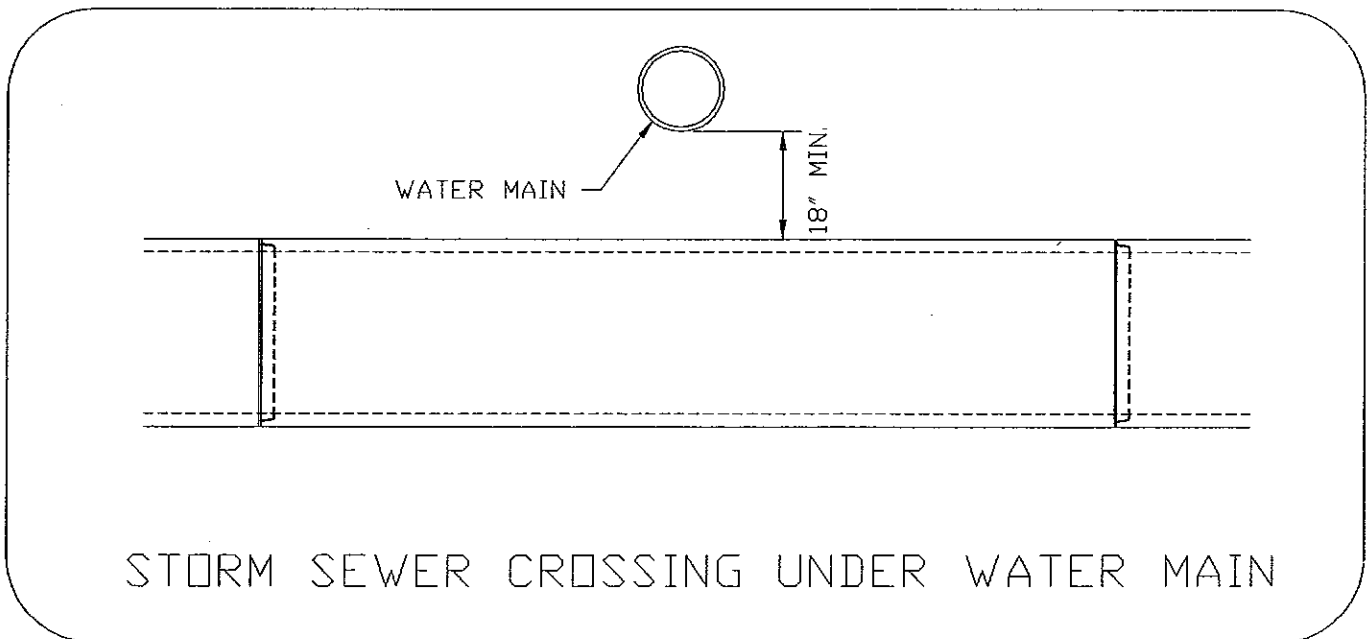
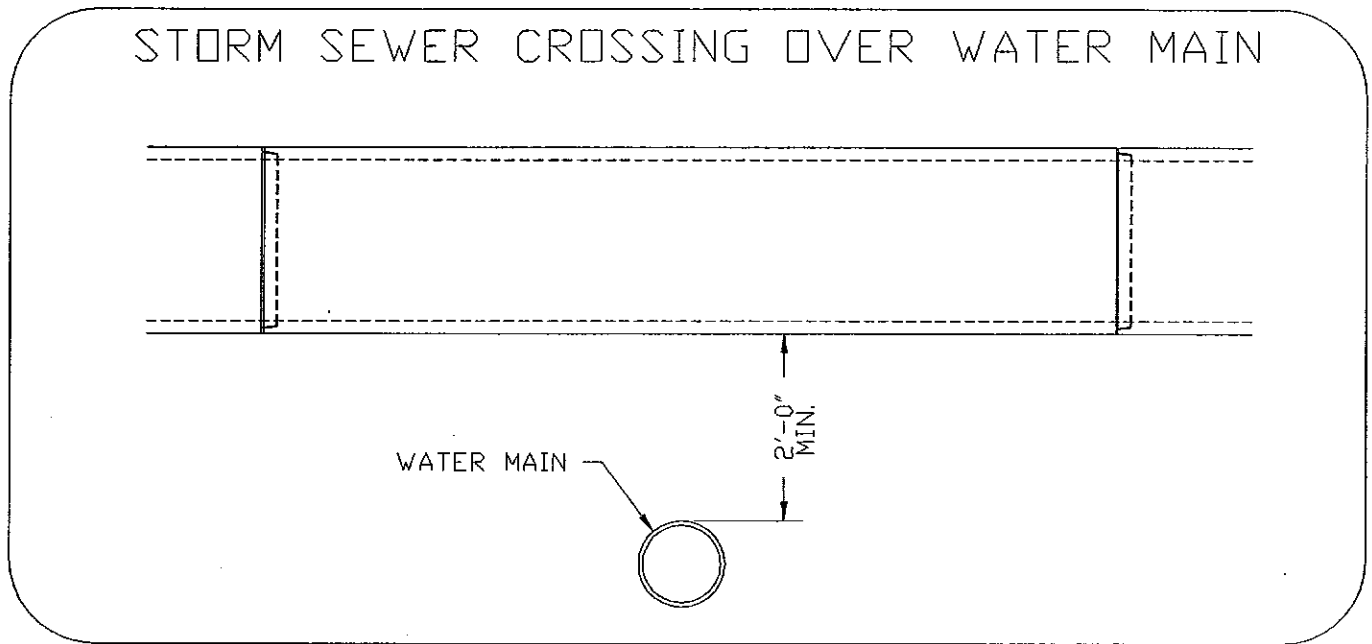
# Typical Ramp Detail



## NOTE:

All sidewalks and ramps to meet ADA Standards  
All Ramps to be stamped

# STORM SEWER - WATER MAIN CROSSINGS



NOTE: IN ALL CASES WHERE THE WATER MAIN IS CROSSING WITHIN 2 FEET OF A SANITARY SEWER LINE (less than 2 feet above or below) THE CONTRACTOR WILL BE REQUIRED TO CENTER A 20 FOOT SECTION OF WATER MAIN OVER THE CROSSING.