

REQUIREMENTS AND SPECIFICATIONS
FOR
SUBDIVISION DEVELOPMENT

Effective
April 15, 1991

Issued by
The Board of County Road Commissioners
of the County of Allegan, Michigan

COMMISSIONERS:
BRUCE D. CULVER
JAMES S. ROLFE
PHILLIP QUADE

FRED O. NEILS, Engineer Manager
DELWIN L. REDDER, Ass't Engineer
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Board of County Road Commissioners of Allegan County

ALLEGAN, MICHIGAN 49010

1308 LINCOLN ROAD

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EXTRACT COPY

The following is an extract Copy of the minutes of the meeting of the Board of County Road Commissioners of Allegan County, held in the office in Allegan on April 10, 1991.

"It was moved by Commissioner Rolfe, and seconded by Commissioner Quade that the following resolution be adopted:

RESOLUTION

WHEREAS, The Board of County Road Commissioners of the County of Allegan, Michigan in accordance with Act 288 of 1967, as amended, deem it necessary to adopt standards and specifications relative to the construction of roads, and streets in its jurisdiction or to come under its jurisdiction within recorded plats located in the unincorporated areas of the County of Allegan, and

WHEREAS, such standards and specifications function to provide rules, regulations and assistance to land developers and others to assure that roads or streets as dedicated for public use in recorded plats are constructed with approved materials, by appropriate methods and are safe and adequate for the use of the public.

NOW, THEREFORE, BE IT RESOLVED that these REQUIREMENTS AND SPECIFICATIONS FOR SUBDIVISION DEVELOPMENT as filed with us on this date, be and the same are hereby adopted as administrative rules and regulations governing platted streets and the same shall be known and cited as our REQUIREMENTS AND SPECIFICATIONS FOR SUBDIVISION DEVELOPMENT.

BE IT FURTHER RESOLVED that in the event other previous Resolutions or parts of previous Resolutions conflict with this Resolution adopting the aforesaid REQUIREMENTS AND SPECIFICATIONS FOR SUBDIVISION DEVELOPMENT be declared invalid by the Courts, the balance of same shall remain valid and in effect, except for the part declared invalid.

BE IT FURTHER RESOLVED that the effective date of the aforesaid REQUIREMENTS AND SPECIFICATIONS FOR SUBDIVISION DEVELOPMENT shall be April 15, 1991.

ROLL CALL VOTE AYES: Commissioners Culver, Rolfe and Quade
 NAYS: None

Motion Carried

I hereby certify that the above is a true extract copy of the Resolution taken from the minutes of the Board of County Road Commissioners regular meeting of April 10, 1991 in their office in Allegan County, Michigan.


Claire R. Patrick, Secretary

REQUIREMENTS AND SPECIFICATIONS

FOR

SUBDIVISION DEVELOPMENT

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REQUIREMENTS AND SPECIFICATIONS

FOR

SUBDIVISION DEVELOPMENT

I. DEFINITION OF TERMS

1. Subdivision Control Act of 1967 - shall mean Act No. 288, Public Acts of 1967 as amended.
2. The Board - shall mean the Board of County Road Commissioners of the County of Allegan, Michigan.
3. County Engineer - shall mean the County Highway Engineer, or any such person designated by the Board of County Road Commissioners to carry out the duties ascribed to the County Highway Engineer.
4. Proprietor - shall be as described in Section 102(h) of Act No. 288, Public Acts of 1967, as amended.
5. Land Surveyor or Professional Engineer - shall be as described in Section 102(o) of Act No. 288, Public Acts of 1967, as amended.
6. Plat - shall be the drawing of the subdivision.
7. M.D.O.T. - shall be the abbreviation for "Michigan Department of Transportation."
8. A.S.T.M. - shall be the abbreviation for "American Society for Testing Materials."
9. A.A.S.H.T.O. - shall be the abbreviation for "American Association of State Highway and Transportation Officials."
10. Standard Plans & Specifications - shall be a reference to the "Standard Plans and Specifications for Highway Construction" of the Michigan Department of Transportation.
11. Road Commission Standard Plans & Specification - shall be a reference to the Allegan County Road Commission's "Standard Plans & Specifications for Local & Primary Road Construction."

II. PROCEDURE

A. PRELIMINARY APPROVAL

Three (3) 24" x 36" blue-line copies of both the Preliminary Plat Layout and the Road and Drainage Plans shall be submitted to the Engineering Department of the Allegan County Road Commission for review and approval by the Board.

1. Preliminary Plat Layout

The Preliminary Plat Layout shall meet the requirements shown as follows:

- (1) Name of the proposed plat and legal description of the area to be platted
- (2) Name, address and telephone number of the proprietor
- (3) Name, address and telephone number and seal of the Registered Land Surveyor under whose supervision the plat was prepared.
- (4) Scale of not less than 1" = 100'
- (5) Topographic contour lines shown at U.S.G.S. datum with not more than 2' intervals.
- (6) Street layout showing street names and right-of-way dimensions.
Minimum right-of-way requirements:
Plat Street - 66'
Secondary (Local) Road - 86'
Primary Road - 100'
- (7) Street layout to be compatible with existing adjoining street system and to provide a continuous circuit.
- (8) Adjoining land use to be indicated. Note adjoining recorded plats, streets, streams, railroads, utility easements, cemeteries, parks, county drains, etc.
- (9) Indicate direction of drainage flow.
- (10) No driveway access from platted lots onto primary roads
- (11) Intersection legs to have a minimum of 100' straight-away and meet at 90°.
- (12) Cul-de-sacs for Residential Plats - Minimum right-of-way diameter - 120'. Minimum diameter back-to-back of curb - 80'
- (13) Cul-de-sacs for Industrial-Commercial Plats. Minimum right-of-way diameter - 150' Minimum diameter back-to-back of curb - 100'

A. PRELIMINARY APPROVAL (continued)

2. Road & Drainage Plans

The Road & Drainage Plans shall meet the requirements shown as follows:

- (1) Name of the proposed plat
- (2) Name, address, telephone number, signature, and seal of the Registered Professional Civil Engineer under whose supervision the plans were prepared.

- (3) Plan: Scale of not more than 1" - 50'

Profile: Scale of not more than 1" - 50' horizontal & 1" - 5' vertical

Cross Section: Refer to Standard Sections as shown in Section V - "Standard Cross Sections & Standard Plans"

Contour Lines: Refer to U.S.G.S. Datum. Intervals not greater than 2'

- (4) Show soil boring log and include note regarding removal of unsuitable material.
- (5) Indicate M.D.O.T. and/or A.C.R.C. number designations on structures and appurtenances.
- (6) Design of streets and roads to be in accordance with Section III, "STREET STANDARDS," of these Requirements and Specifications.

3. Board Approval

If all of the requirements have been met, and/or necessary changes are agreed upon, the Engineering Department will recommend to the Board that the proposed plat be given "Preliminary Approval", subject to the satisfactory construction of all streets.

4. Expiration Of Preliminary Plat Layout Approval

If, after two (2) years of the date of approval of the Preliminary Plat Layout, the proposed plat has not proceeded to Final Approval, a new Preliminary Plat Layout and Road & Drainage Plan must be submitted for approval by the Board.

B. FINAL APPROVAL

When all streets and drainage structures have been constructed or an Escrow Deposit is provided to insure completion of said construction, all necessary easements provided, and all other platting requirements have been met, the Engineering Department shall recommend to the Board that the "Final Plat" be approved and signed.

C. FEE

A non-refundable fee of \$50.00 shall be submitted with the Preliminary Plat Layout. This fee will cover the review for compliance of the Preliminary Plat Layout, The Road and Drainage Plans and the Final Plat.

D. ESCROW DEPOSIT FOR STREET/ROAD CONSTRUCTION

The Board may agree to approve and sign the FINAL PLAT before construction of the streets within the subdivision or boundary roads is completed, provided that an Escrow Deposit is made with the Board to insure that the construction of said streets/roads will be completed within one year of the date of signing the FINAL PLAT.

The Escrow Deposit shall be in the amount of 125% of the approved estimated or contract cost of the remaining improvements.

E. TRAFFIC CONTROL SIGNS & STREET NAME SIGNS

The Road Commission shall furnish and install, at the Proprietor's expense, all necessary traffic control signs and street name signs.

F. DAMAGE REPAIR

The Proprietor shall be responsible for the repair of damage to plat streets during the course of their construction and for a period of 90 days after the Board has approved the FINAL PLAT. This responsibility shall include damage caused by erosion. Part of the escrow deposit shall be retained to insure that the necessary repair work is properly completed.

G. AS BUILT PLANS

A set of reproducible "As Built" plans showing all of the plat street construction details including utility locations must be submitted. These plans shall be signed and sealed by a Civil Engineer registered in the State of Michigan.

III. STREET STANDARDS

A. INTRODUCTION

All platted streets whether public or private shall be built to Allegan County Road Commission standards.

The Road and Drainage Plans submitted for approval shall be prepared under the supervision of, and be signed and sealed by a Civil Engineer, registered in the State of Michigan.

B. STREET/ROAD LAYOUT

The Street Layout & Design shall meet the requirements shown as follows:

1. General

The street layout shall fit the pattern established by adjacent roads and streets. All existing public roads and streets that terminate at the boundaries of the proposed plat must be connected with the street system of the proposed plat. The layout of streets in the proposed plat shall provide a continuous circuit for travel except, when in the opinion of the Board of County Road Commissioners, the lands to be subdivided are limited in area or are subject to a natural barrier. In such cases cul-de-sacs conforming to the Allegan County Road Commission Standards may be used. Cul-de-sac streets more than 800 feet long are undesirable. Intersections shall not be permitted less than 250 feet apart. Adequate traffic safety shall be provided as approved by the County Engineer in laying out drives and streets in the plat which enter existing county roads. Intersections of platted streets entering primary roads shall not be permitted less than 660 feet apart. Lots bordering on a primary road shall have access to a platted street and the plat shall contain a restriction requiring driveways to connect to the platted street only.

2. Names

All streets which are extensions of existing streets or roads must carry the names of those in existence. A street name shall not be adopted which may be confused with a similarly named street within the County. Other streets shall be given such names as the owner may choose, subject to the approval of the Board of County Road Commissioners.

3. Plat Boundary

Plats that do not connect to an existing public road will not be approved. Plats fronting on roads whose rights-of-way have been dedicated to the public shall be platted to the existing right-of-way line. The description of the plat shall be to the centerline of all roads that bound the plat.

4. Improvements

The developer must improve all streets within the plat and also boundary street as required under the "Local Road Construction" section of these requirements. The exclusion from the plat of streets that provide access to future plats will not be permitted. Outlots intended for future streets will not be approved.

C. RIGHT-OF-WAY

1. Streets

New platted streets shall have a minimum right of way of 66 feet in Residential Plats and 86 feet in Commercial-Industrial Plats. Minimum right-of-way for existing roads and streets shall be as follows: Primary roads are 100 feet, Local roads on Section Line and 1/4 Section Lines 100 feet. Cul-de-sac right of way shall be 60 feet minimum radius in Residential Plats and 75 feet minimum radius in Commercial-Industrial Plats.

2. Easements

Right-of-way shall be provided for all drainage courses in and across the property to be platted. The location and width shall be shown on the plat and marked "Drainage Easement" or "Drainage and Underground Utilities Easement". In general "Drainage Easements" shall be a minimum of 20 feet in width and "Drainage and Underground Utilities Easements" shall be a minimum of 10 feet in width. Rights-of-way or "Easements-to-cross" shall be provided where newly platted streets cross railroad tracks. Approval must be obtained from the Michigan Department of Transportation for the new crossings. Full width surfacing between the rails and to the ends of the ties, satisfactory to the railroad concerned and to the Allegan County Road Commission shall be provided. Advance warning and cross-buck signs will be placed by the Allegan County Road Commission at the expense of the Proprietor. Grading Easement, when necessary, may be requested by the Board along existing roads & streets.

D. DESIGN DETAILS

Materials and construction shall comply with the Michigan Department of Transportation's current "Standard Plans & Specifications for Highway Construction" as modified by the Allegan County Road Commission, and/or by the Road Commission's "Standard Cross Sections & Standard Plans".

1. Standard Sections & Material Requirements

Street and cul-de-sac design in Residential Plats shall conform to the minimum requirements shown on the Allegan County Road Commission Standard Section 1A - "30' Bituminous Aggregate Valley Gutter" or Standard Section 2A - "27' Bituminous Aggregate with 24" Concrete Valley Gutter", and Standard Plan 5A- "Residential Cul-de-sac". Street and cul-de-sac design in Commercial-Industrial Plats shall conform to the minimum requirements shown on the Allegan County Road Commission Standard Section 3A - "Industrial and Commercial Streets" For Use in Natural Granular Soils and Standard Section 6A - "Industrial & Commercial Cul-de-sac".

2. Street Grades

- a. Minimum street grade shall be 0.6%. Maximum grade shall be 5.0%.
- b. Permanent cul-de-sacs shall be constructed on a sufficient grade to insure a minimum 0.6% grade along the flowline of the 24" gutter while maintaining approximately 0.02' per ft. crown. The grade on the permanent or temporary cul-de-sac should not exceed +3% in the direction away from the cul-de-sac, for a distance of 100' from its center.
- c. For "T" intersections, the percent grade on the terminated street (immediately adjacent to the through street) should be between -0.6% and -2.0% in the direction away from the through street, unless the through street is superelevated.

3. Alignment

a. Horizontal

Horizontal curves in platted streets which appear to be continuous, or which appear to be main outlets for future development, shall not have less than 350' centerline radius. On noncontinuous residential streets, 90 degree corners are permissible. In such cases, 35' radius curb and gutter shall be utilized on the inside of the corner while the 15' valley gutter section shall be continued around the outside.

b. Vertical

Vertical street alignment shall be designated to provide minimum stopping sight distance for speeds as follows:

Residential Streets	- 35 mph (250')
Local Roads	- 50 mph (475')
Primary Roads	- 55 mph (550')

Stopping sight distance in sag vertical curves on platted streets ending in a "T" intersection may be reduced to 30 mph (200') immediately adjacent to the intersection.

4. Drainage

- a. Storm sewers and drainage structures shall be installed. Manhole spacing on storm sewers should not exceed 350'. Catch basins shall be spaced so that the run-off does not exceed the intake capacity of the cover. The length of road run-off should not exceed 350'. Designs incorporating storage ponds to reduce the size of storm sewers may be utilized if approved by the Allegan County Drain Commissioner.

4. Drainage (continued)

- b. Storm run-off calculations using standard industry formulas shall utilize imperviousness factors as follows:

Sand	20%
Sand with some clay	30%
Sandy clay	40%
Predominantly clay	50%

The road/street plans shall include sufficient soil borings to determine soil characteristics. Subbase correction shall be provided where directed by the County Engineer.

- c. When computing energy gradients for storm sewer systems, a head loss of 0.5' shall be used at each manhole. Ponding within the system shall be limited to a maximum height of 0.5' below the top of grate of catch basins and 0.5' below the top of manhole covers.
- d. Catch basin grates shall be used according to the following:
- | | |
|--------------------------|-----------|
| 24" Cul-de-sac Gutter | Type MM |
| Valley Gutter on grade | Type C4 |
| Valley Gutter in Sag | Type BB-3 |
| Curb and Gutter on Grade | Type K |
| Curb and Gutter in Sag | Type BB |
- e. Strength classifications for sewer pipe with cover from 1 foot to 5 feet shall be in accordance with Standard Design 9A, except that the lateral connections shall be minimum C-76-III.
- f. A separate underdrain, if required, shall be placed parallel to the storm sewer and carried to the nearest manhole. Underdrain shall be 6" diameter minimum when used as a parallel facility and 8" minimum diameter when used alone.
- g. The storm sewer system shall have a positive outlet into a natural body of water, stream, county drain or other approved drainage facility. Culvert end-sections and grouted rock should be used at all outlets, except where a sewer outlets into a flowing stream. Where a sewer outlets into a flowing stream, either a 20' length of corrugated steel pipe with grouted rock or concrete pipe with a grouted rockfill headwall should be used, depending on the stream size and the shape of the stream bank. The corrugated steel pipe shall be lapped over the concrete pipe approximately 1/2 the length of the last section of concrete pipe. In addition, a manhole may be required near the stream bank with the outlet angling in the direction of the stream flow, depending on the stream characteristics and erosion possibilities.

4. Drainage (continued)

- h. Where culverts are required to carry a drainage course under a street, the length of culvert shall be from right-of-way line to right-of-way line plus side slope length beyond the right-of-way.
- i. Where surface water runoff from plat streets is intended to cross private property, the Proprietor shall provide a drainage easement from the owner(s) of said property to the Allegan County Drain Commissioner.
- j. Stormwater retention ponds within the road right-of-way or leaching basins will not be allowed.

5. Intersections

- a. Intersection curbs placed on existing streets shall be 23.5' from the centerline on Local Roads and 25.5' from the centerline on Primary Roads. If intersection curb openings are greater in width than the existing street pavement, the work between the curb and existing pavement shall be done to the applicable standard. A minimum deceleration taper of 135' and a minimum acceleration taper of 95' shall be used, or a deceleration design of 10:1 and an acceleration design of 7:1.
- b. Minimum curb opening of 36' shall be used on the platted street at intersections with county primary, section line, and 1/4 section line roads.

6. Right-Of-Way Treatment

- a. Streets shall be graded and cleared to the full right-of-way width providing for future sidewalk construction, except that a 5' berm and slopes no steeper than 1 on 3 may be permitted within plats where each lot has a minimum frontage of 200' and an area of at least one and one half acres; and also includes a provision prohibiting lot splits to lesser frontage or area herein set forth. Clearing in the above exception, is necessary only within the 5' berms and graded areas.
- b. All graded areas within the right-of-way shall be seeded, fertilized and mulched.
- c. No structures shall be allowed on the right-of-way. Everburning gas lights, plat ornamental monuments, and other advertising signs are not allowed on the right-of-way.
- d. Utilities in the right-of-way shall be shown on the plans.

7. Compaction Requirements

The following densities shall be obtained on street construction by standard methods of compaction:

Embankment 95% of Maximum Unit Weight - M.D.O.T. Spec 2.08.11
Subbase 95% of Maximum Unit Weight - M.D.O.T. Spec. 2.11
Aggregate Base 98% of Maximum Unit Weight - M.D.O.T. Spec. 3.01.07

Compaction test results are to be submitted with the Engineers' Certificate.

8. Clearing, Removal Of Trees, Brush, Roots And Topsoil

All brush, shrubs, trees and the roots thereof shall be entirely removed from within the road right-of-way of all streets in the proposed plat.

Trees which do not interfere with the construction and maintenance of the street and are classified as valuable by the County Engineer may remain with his approval.

All topsoil within the roadway shall be removed before grading. This topsoil, free from roots and debris, if classified as fertile may be used to cover disturbed areas.

9. Topsoil, Seeding And Mulching

The methods and time of seeding and mulching shall meet the requirements of the M.D.O.T. Spec. 6.53. All disturbed areas shall be covered with three (3) inches of fertile topsoil.

E. LOCAL ROAD CONSTRUCTION

When a proposed plat is bordered by an existing county local road which is not constructed to current standards, the portion of road which fronts on the plat shall be reconstructed as necessary to improve the road to conform to the Allegan County Road Commission's Standard Section 7A - "LOCAL ROAD". The amount of work required will vary in accordance with the condition of the existing road.

1. Responsibility

- a. Responsibility for the work when improvement of only one side of the road is required shall be as follows:

All costs shall be borne by the developer including preparation of plans and specifications.

- b. Responsibility for the work when improvement of the entire road is required shall be as follows:

All costs shall be borne by the developer except that if, in cooperation with the developer the township requests

1. Responsibility (continued)

b. construction of the local road by the Allegan County Road Commission, the township may participate in the cost of construction in accordance with current policy. New platted street intersections involved in the improvement shall be considered as part of the plat and shall not be included in the cost participation. Financial arrangements shall be between the Proprietor and the Township and between the Township and the Allegan County Road Commission. The developer shall prepare separate plans, specifications, and a detailed cost estimate for the proposed road improvement and shall bear the costs involved in accomplishing this work. Upon review and approval of the plans, specifications and cost estimate, if the Township requests construction, the Allegan County Road Commission will construct the local road improvement with its own forces or by contract with a private construction company.

2. Utilities And Grading Permits

Utilities to be relocated shall be shown on plans. Coordination of utility relocation in the field shall be the responsibility of the Proprietor. In the event a utility exists within a private easement outside the road right-of-way and the local road construction necessitates the relocation of this utility, the Proprietor shall pay the cost of this work. Additional relocation costs due to newly platted street intersections connecting to the county road shall be considered as part of the plat, and shall not be included in the cost preparation. Grading permits required outside the limits of the developers property to accommodate road construction may be requested by the Road Commission.

3. Other Than New Plat

Local Roads to be constructed privately for takeover by the Road Commission shall conform to Allegan County Road Commission's "Standard Plans & Specifications for Local and Primary Road Construction".

IV. GENERAL NOTES

(To be shown on Road & Drainage Plans or Road Constructions plans)

1. The performance of this work shall be governed by the Michigan Department of Transportation current "Standard Plans & Specifications for Highway Construction" as modified and/or by the requirements of the Allegan County Road Commission's Standard Cross Sections & Standard Plans.

2. Roadway construction shall conform to Allegan County Road Commission Standards as follows:

ITEM

STANDARD SECTION OR PLAN NO.

30' Bituminous Agg. Valley Gutter
Catch Basins and Manholes
Catch Basin and Manhole Covers
Driveway Approaches

1A
13A, 14A, 15A & 16A
17A, 18A, 19A, 20A & 21A
11A & 12A

3. The Allegan County Road Commission and any affected agency or utility shall be notified a minimum of 48 hours prior to the beginning of work.
4. Traffic signs, flares, barricades, or other devices necessary to insure safety to the public shall be placed prior to the beginning of work.
5. Sod and loam topsoil shall be removed the width of the subgrade and salvaged for replacement. Treatment of peat marshes shall be subject to the approval of the County Engineer.
6. Where unsuitable material is encountered, it shall be excavated the width of the subgrade to a depth of 4' below finished grade and wasted. Backfill shall be sandy material as approved by the County Engineer.
7. Where unforeseen subsoil conditions warrant it, sewer pipe underdrain shall be placed during construction.
8. Outlets of storm sewers, ditches, and area where concentrations of runoff occur shall be protected against erosion by sodding, placing rip-rap, or other means approved by the County Engineer.
9. The subgrade and each successive improved layer of material shall be checked and approved by the County Engineer prior to placing subsequent layers. The County Engineer shall be given reasonable notice of time the grade will be ready for checking.
10. Aggregate Base Course and Class AA Approach shall be placed and compacted in accordance with Allegan County Road Commission specifications.
11. All graded areas within the right of way shall be seeded, fertilized and mulched.

12. Catch Basin covers & grates shall be used according to the following:

24" Cul-de-sac Gutter	Type MM
Valley Gutter on Grade	Type C4
Valley Gutter in Sag	Type BB-3
Curb and Gutter on Grade	Type K
Curb and Gutter in Sag	Type BB

14. No Bituminous Surfacing to be placed after November 1st, without written approval of the County Engineer.

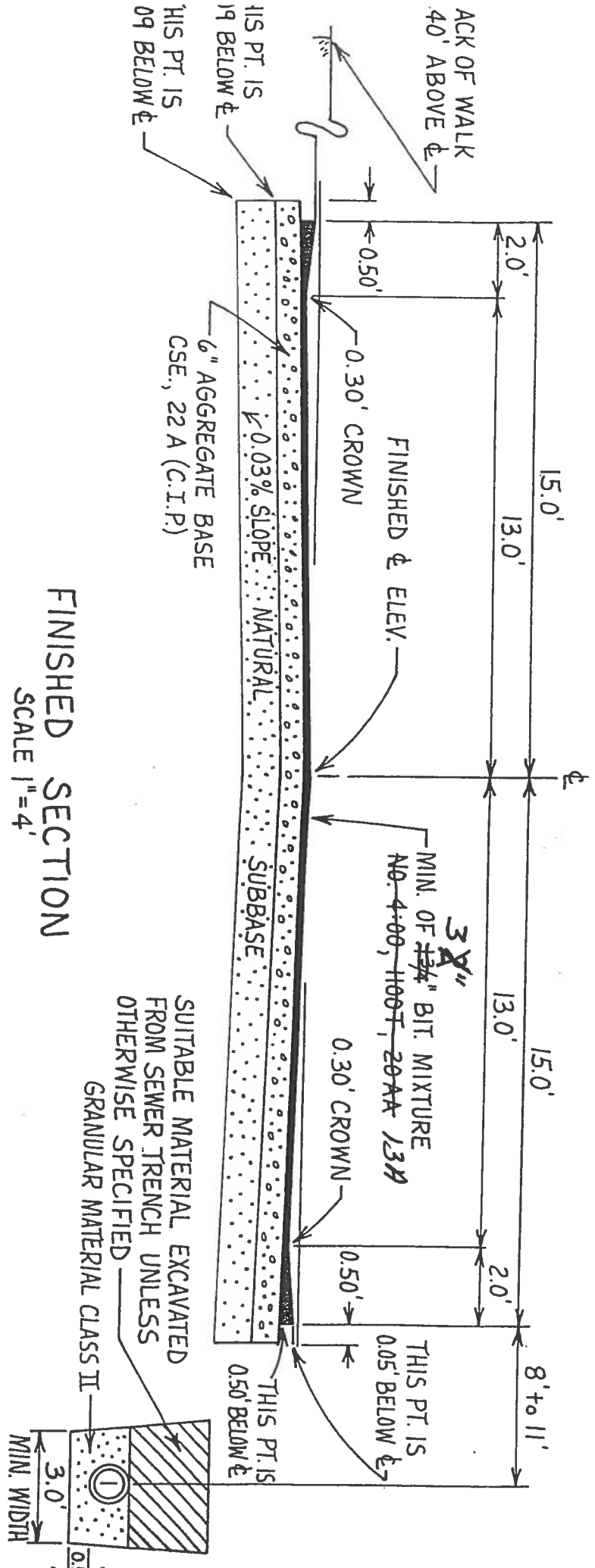
ALLEGAN COUNTY
ROAD COMMISSION

STANDARD CROSS SECTIONS

&

STANDARD PLANS

ALLEGAN COUNTY ROAD COMMISSION
 STANDARD 30' BIT. AGG. VALLEY GUTTER SECTION
 FOR USE IN NATURAL GRANULAR SOILS



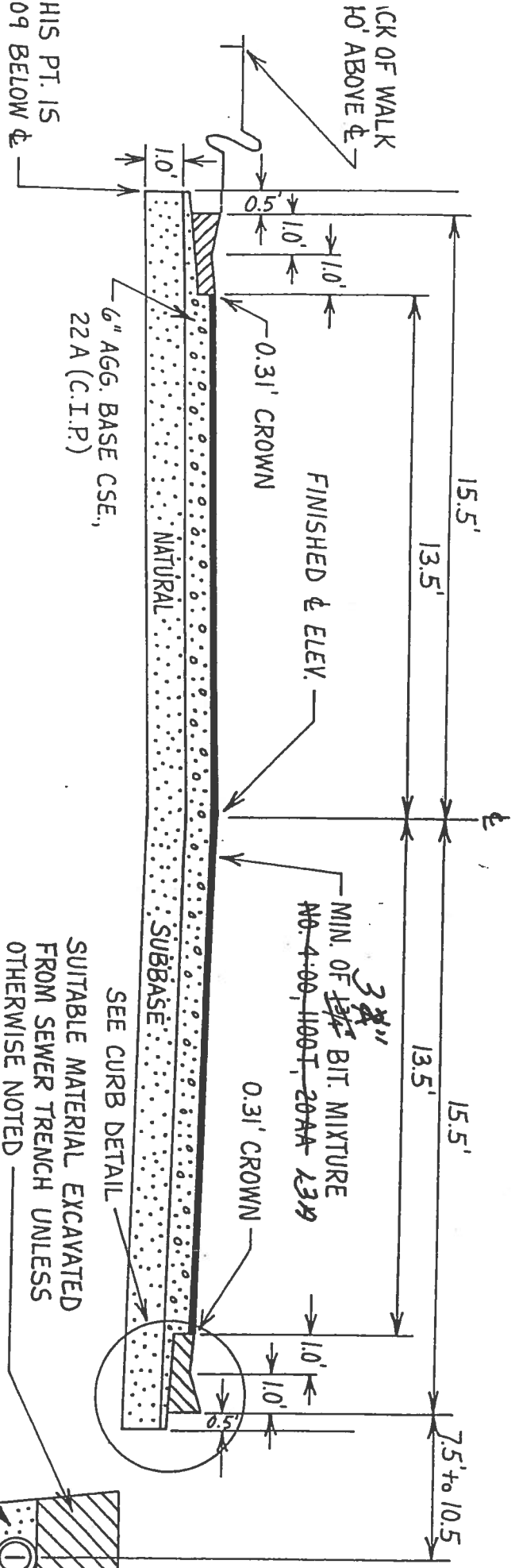
FINISHED SECTION
 SCALE 1"=4'

MATERIALS AND WORKMANSHIP SHALL COMPLY
 WITH CURRENT MICHIGAN DEPARTMENT OF
 TRANSPORTATION STANDARD SPECIFICATIONS

STANDARD SECTION 1A

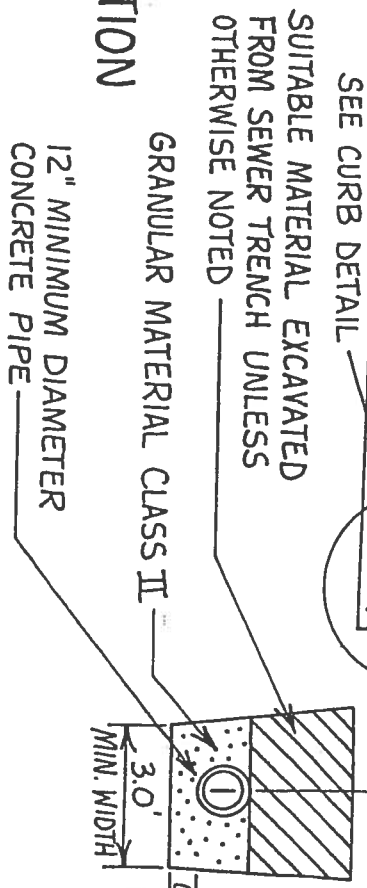
MARCH 1991

ALLEGAN COUNTY ROAD COMMISSION 27' BIT. AGG. WITH 24" CONC. VALLEY GUTTER SECTION



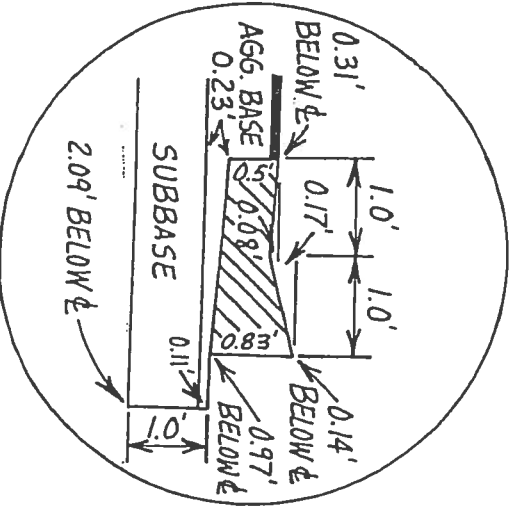
FINISHED SECTION

SCALE 1" = 4'



CURB DETAIL

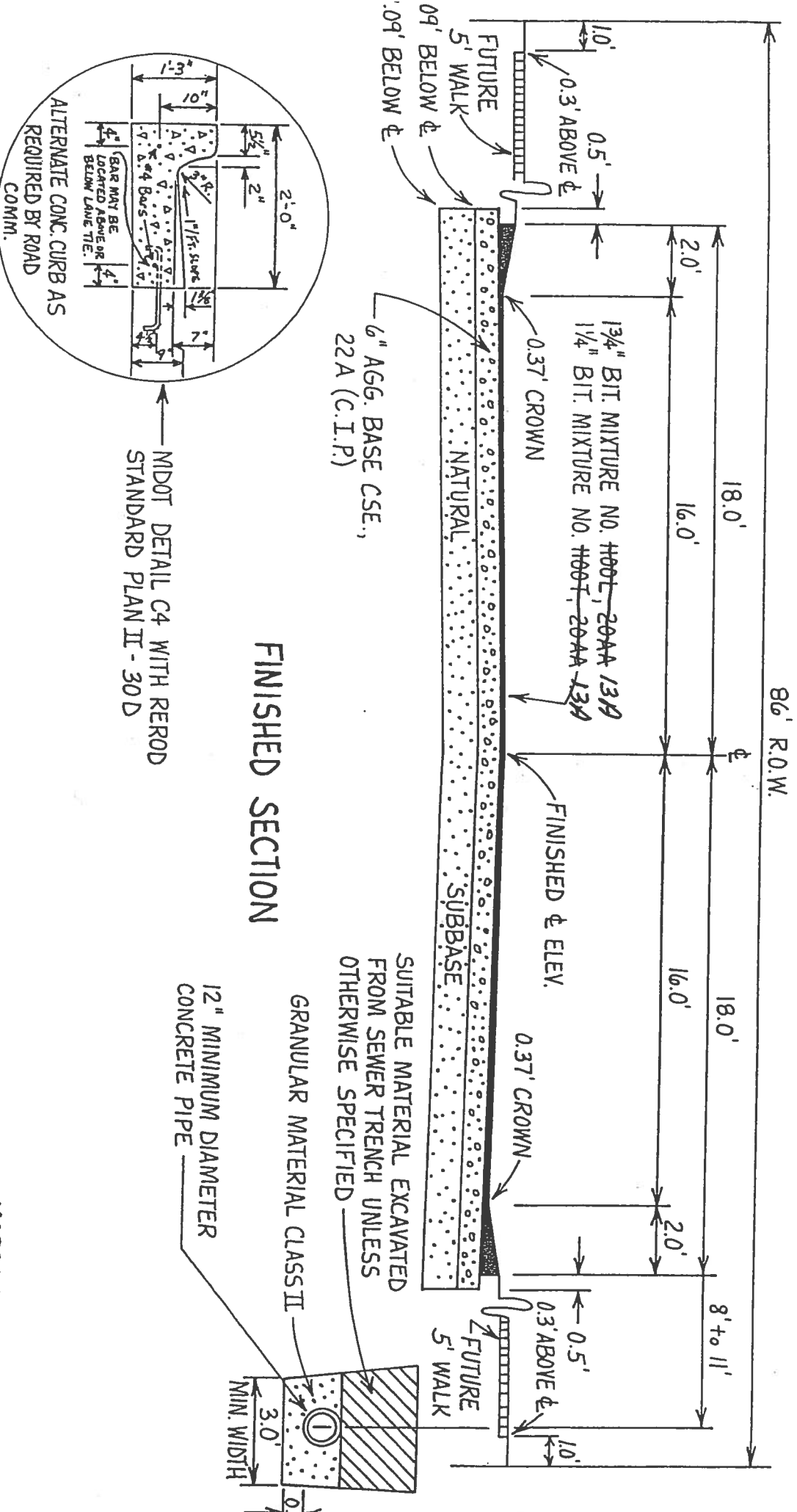
MDOT DETAIL D2
STANDARD PLAN II - 30D



MATERIALS AND WORKMANSHIP SHALL COMPLY WITH MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD PLAN II - 30D

MARCH 1991
STANDARD SECTION 2A

ALLEGAN COUNTY ROAD COMMISSION STANDARD SECTION FOR INDUSTRIAL & COMMERCIAL STREETS

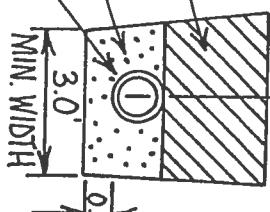


FINISHED SECTION

SUITABLE MATERIAL EXCAVATED FROM SEWER TRENCH UNLESS OTHERWISE SPECIFIED

GRANULAR MATERIAL CLASS II

12" MINIMUM DIAMETER CONCRETE PIPE

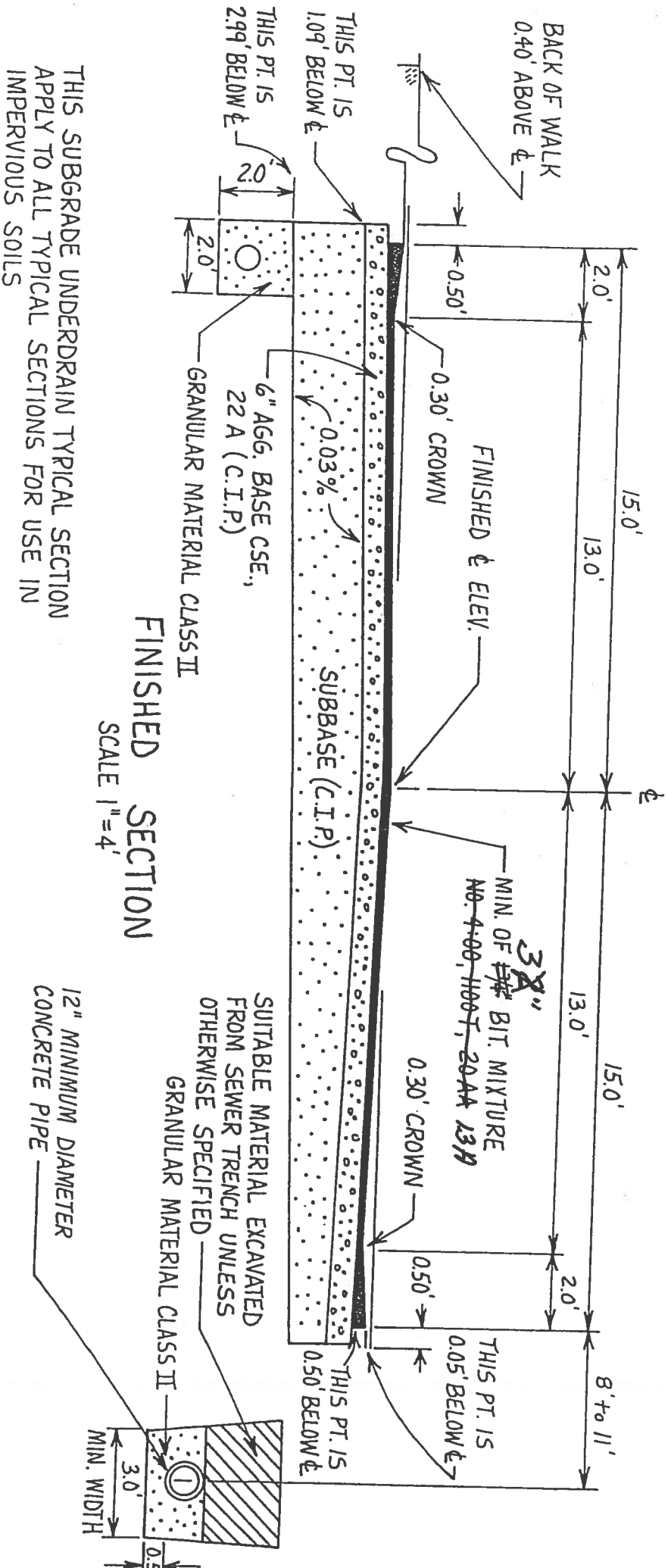


MATERIALS AND WORKMANSHIP SHALL COMPLY WITH CURRENT MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS

STANDARD SECTION 3A

MARCH 1991

ALLEGAN COUNTY ROAD COMMISSION STANDARD 30' BIT. AGG. VALLEY GUTTER SECTION FOR USE IN IMPERVIOUS SOILS



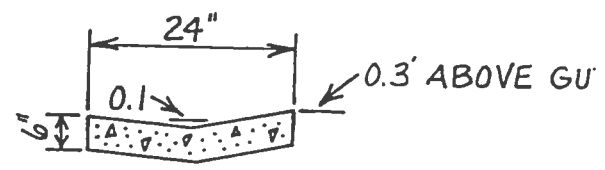
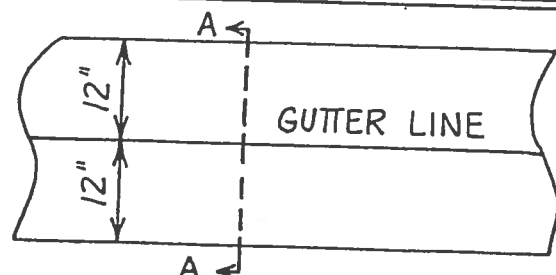
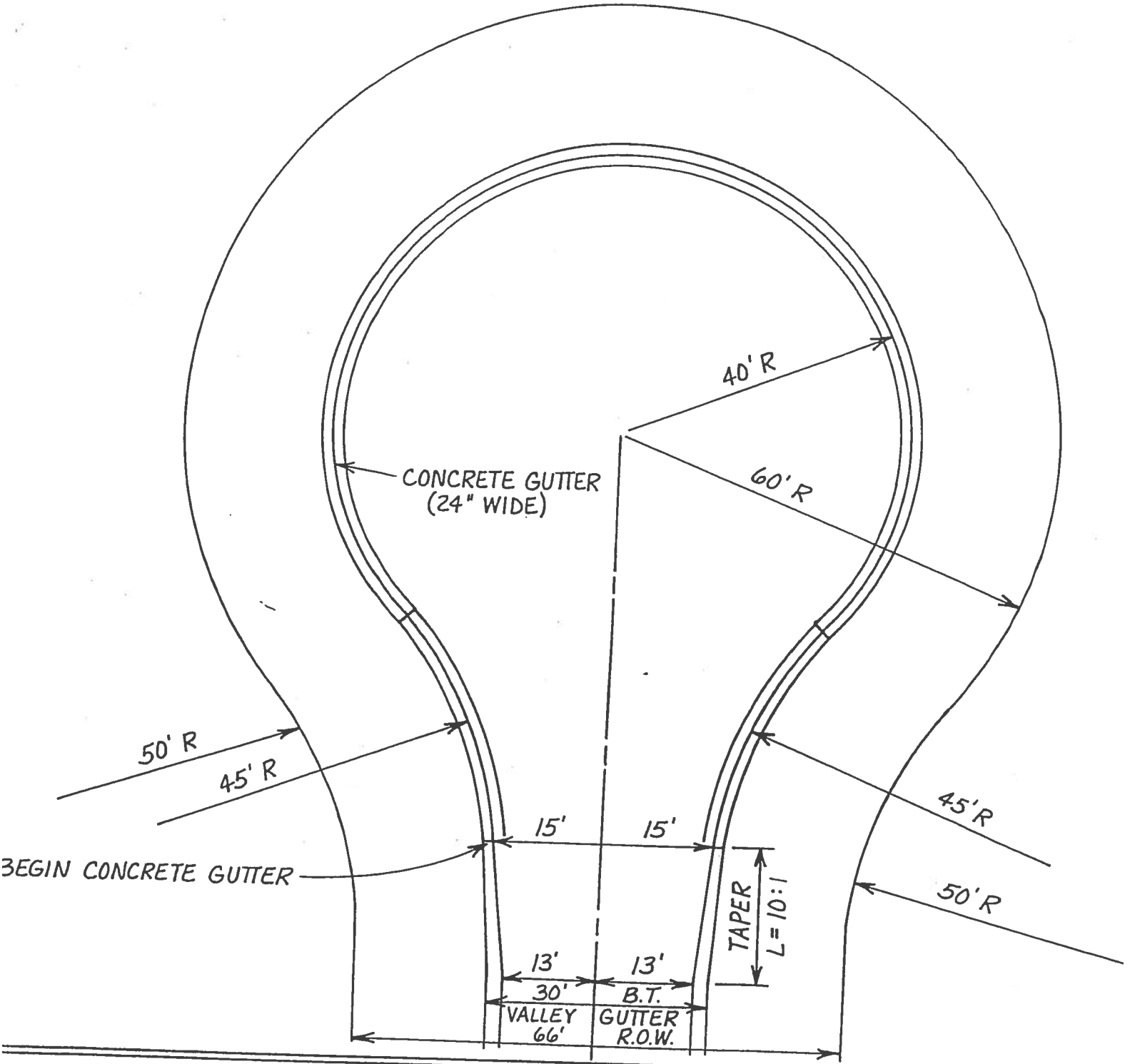
THIS SUBGRADE UNDERDRAIN TYPICAL SECTION APPLY TO ALL TYPICAL SECTIONS FOR USE IN IMPERVIOUS SOILS

MATERIALS AND WORKMANSHIP SHALL COMPLY WITH CURRENT MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS

FINISHED SECTION
SCALE 1" = 4'

STANDARD SECTION 4A
MARCH 1991

ALLEGAN COUNTY ROAD COMMISSION
 DETAIL OF RESIDENTIAL CUL-DE-SAC

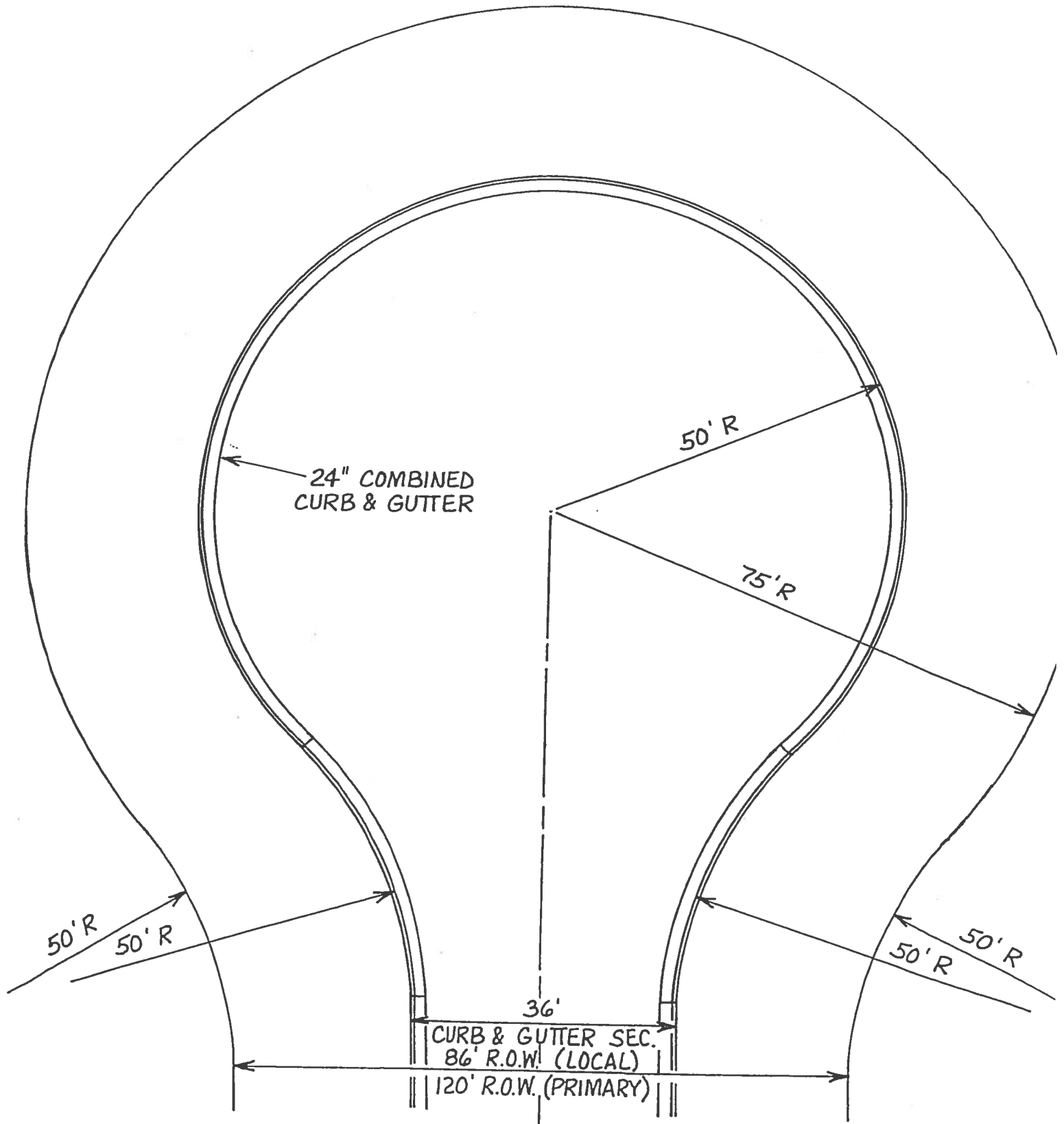


SECTION A-A

DETAIL OF CONCRETE GUTTER (24" WIDE)

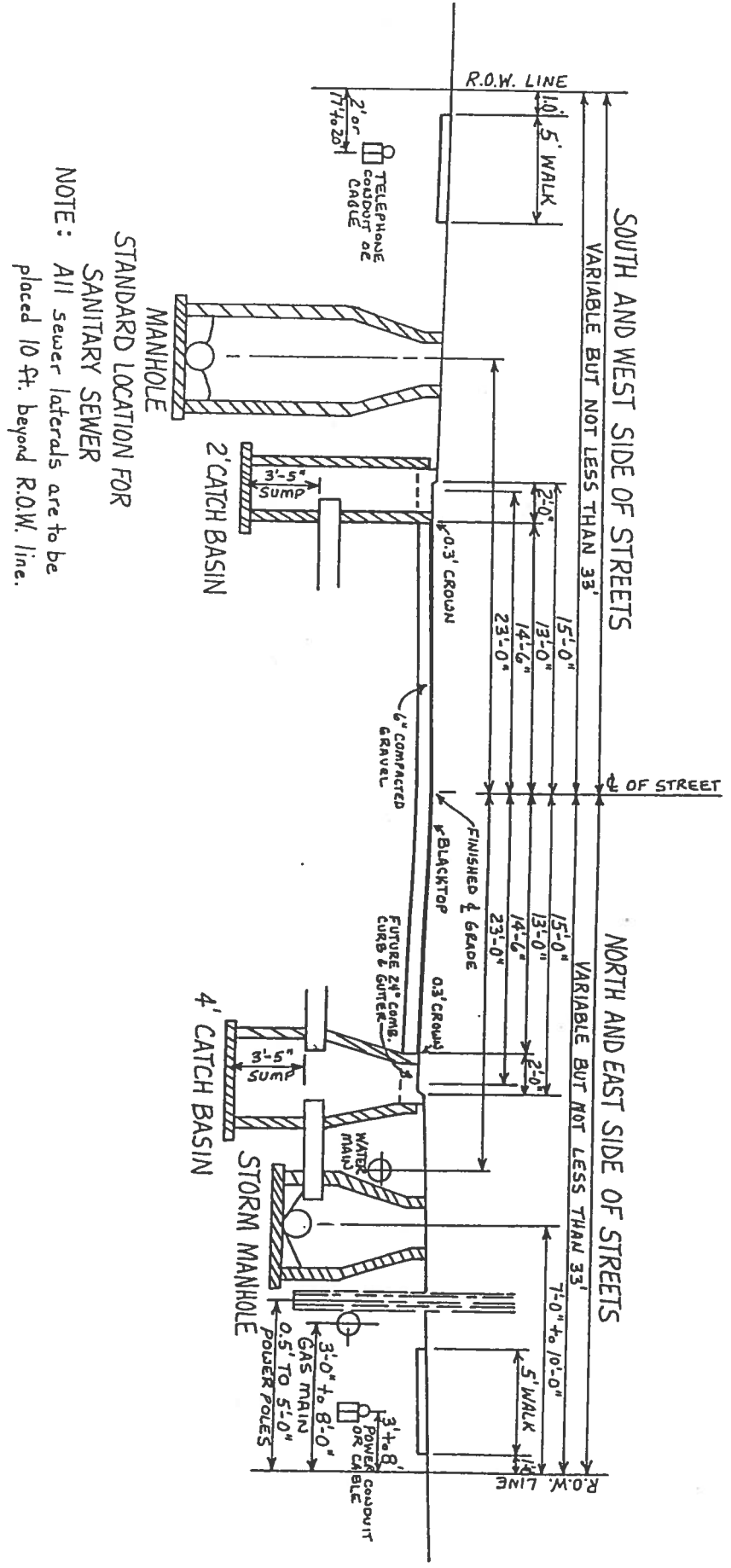
CONCRETE SHALL BE GRADE A. CONSTRUCTION JOINTS SHALL BE SPACED NOT LESS THAN 8 FEET, OR MORE THAN 12 FEET APART. EXPANSION JOINTS SHALL BE 1/2" THICK.

ALLEGAN COUNTY ROAD COMMISSION
DETAIL OF INDUSTRIAL AND COMMERCIAL
CUL-DE-SACS



SEE A.C.R.C. STANDARD FOR DETAIL 24" COMBINED CURB AND GUTTER.

LOCATION OF DRAINAGE STRUCTURES & UTILITIES IN PLATTED STREETS



NOTE: All sewer laterals are to be placed 10 ft. beyond R.O.W. line.

STANDARD LOCATION FOR
SANITARY SEWER

STANDARD SECTION 8A

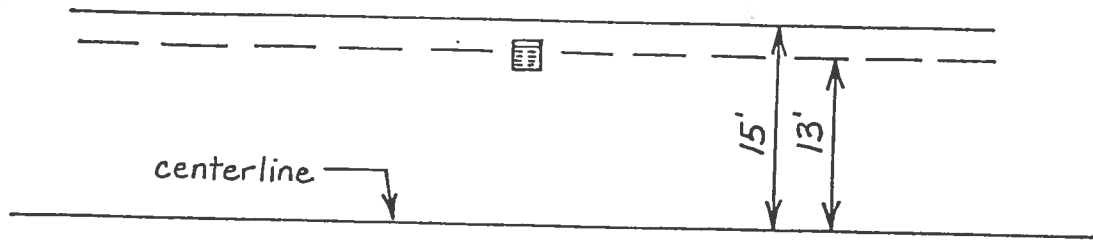
MARCH 1991

A.C.R.C. REQUIREMENTS FOR CONCRETE SEWER PIPE UNDER PAVEMENT & SHOULDERS

Pipe Dia. (Inches)	Depth of Cover (Finish grate to top of pipe)			
	0 ft. to 2 ft.	2.1 ft. to 3.0 ft.	3.1 ft. to 8 ft.	8.1 ft. to 14 ft.
8"	No	C-14-3	C-14-3	C-14-3
12"	C-76-IV	C-76-III	C-76-III	C-14-3, C-76-III
15"	C-76-IV	C-76-III	C-76-III	C-14-3, C-76-III
18"	C-76-IV	C-76-III	C-76-III	C-14-3, C-76-III
21"	C-76-IV	C-76-III	C-76-III	C-14-3, C-76-III
24"	C-76-IV	C-76-III	C-76-III	C-14-3, C-76-III
27"	C-76-IV	C-76-III	C-76-II	C-76-III
30"	C-76-IV	C-76-III	C-76-II	C-76-III
36"	C-76-IV	C-76-III	C-76-II	C-76-III
42"	C-76-IV	C-76-III	C-76-II	C-76-III
48"	C-76-IV	C-76-III	C-76-II	C-76-III
54"	C-76-IV	C-76-III	C-76-II	C-76-II
60"	C-76-IV	C-76-III	C-76-II	C-76-II

* All cross pipes and laterals to catch basins shall be C-76-III.

BLACKTOP VALLEY GUTTER C.B. DETAIL

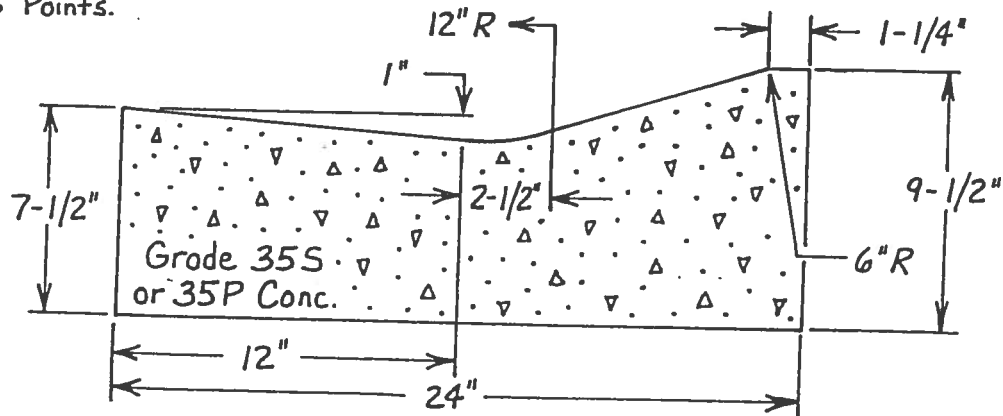


Set catch basins in valley gutter section 0.40' below centerline grade. Grate types are shown on the road plans. Centerline of catch basin to be 12.5' left or right of the road centerline.

Scale: 1" = 15'

24" CONCRETE CURB DETAIL

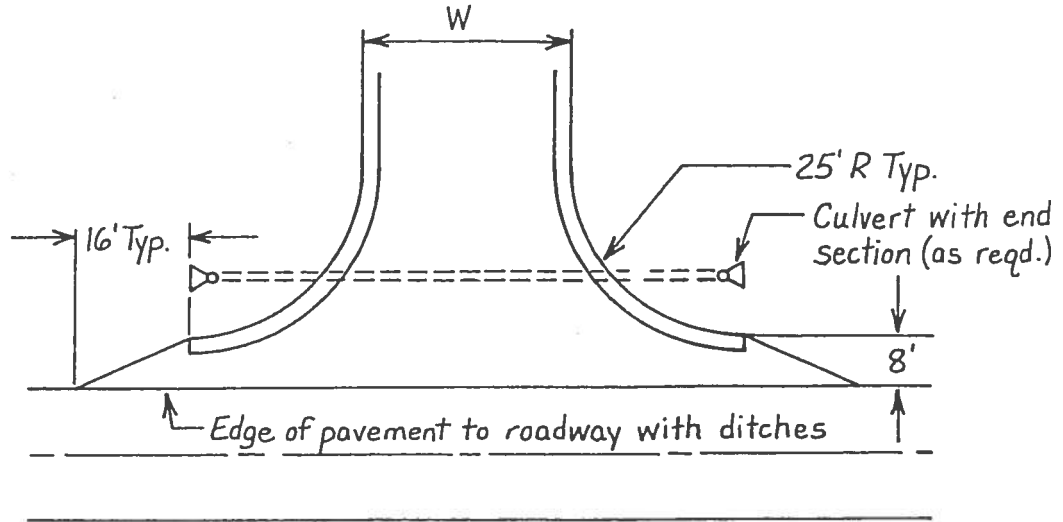
- Notes: (1) Contraction Joints shall be placed every 10 ft.
 (2) Expansion Joints shall be placed at 350 ft. min. and at all Radius Points.



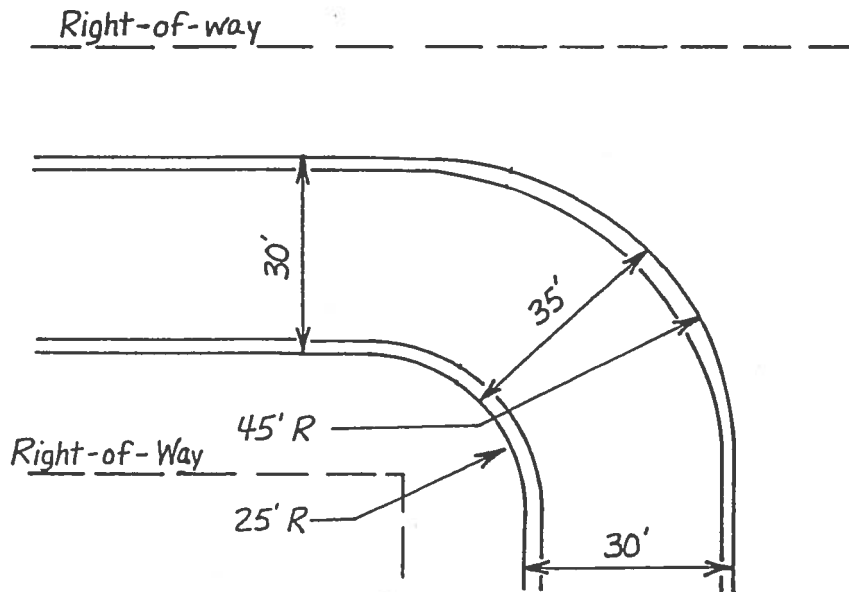
MARCH 1991

STANDARD SECTION 10 A

TYPICAL INTERSECTION OF LOCAL STREETS WITH UNLIKE SECTIONS



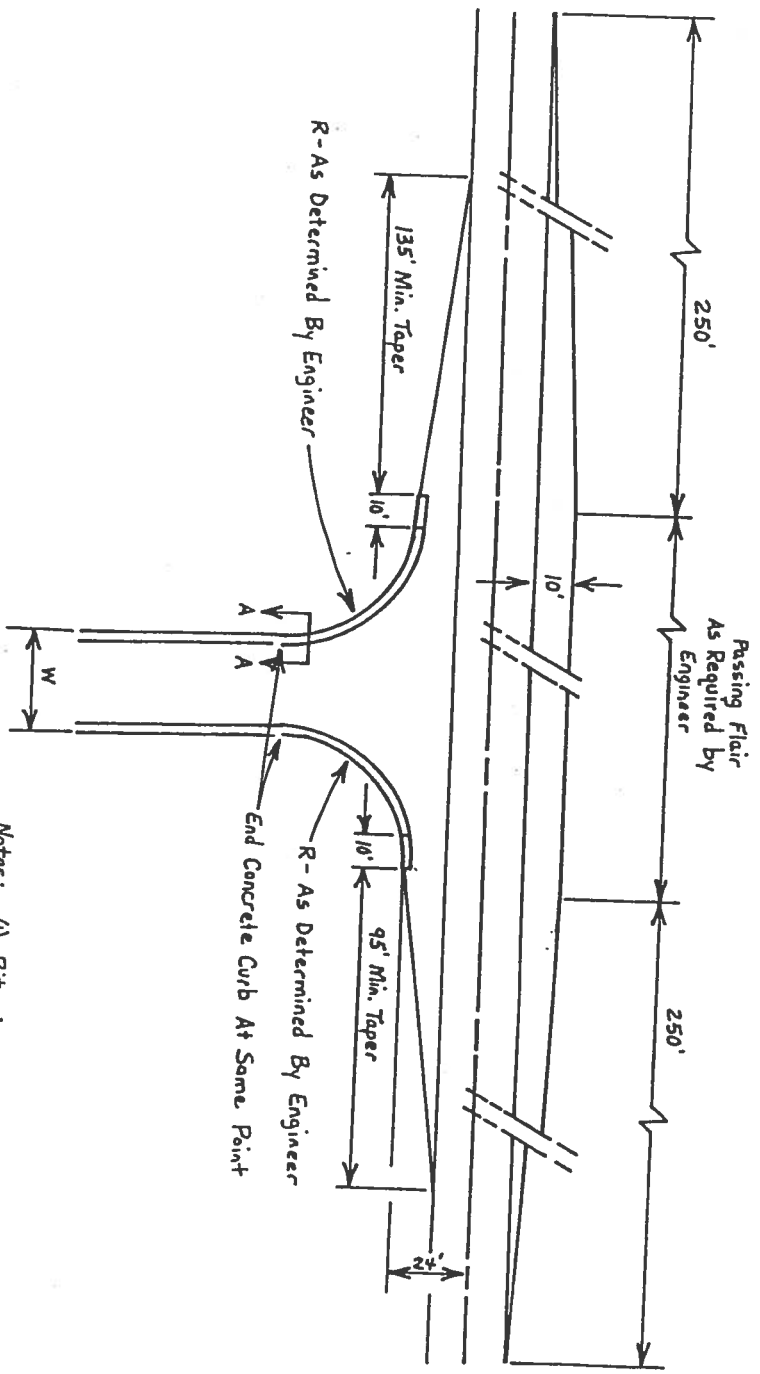
TYPICAL 90° CORNER



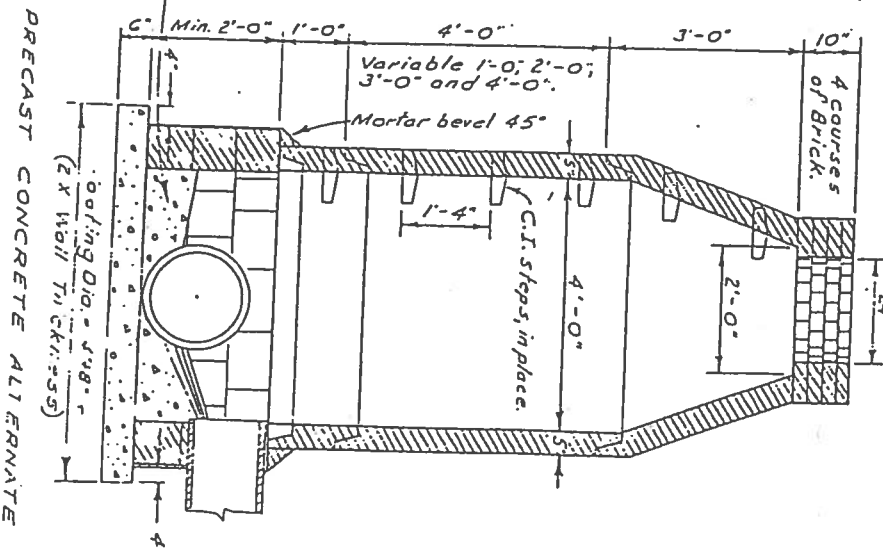
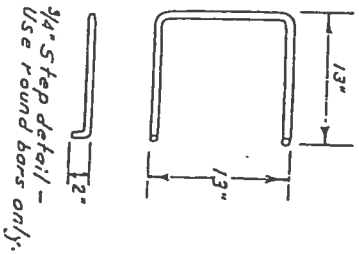
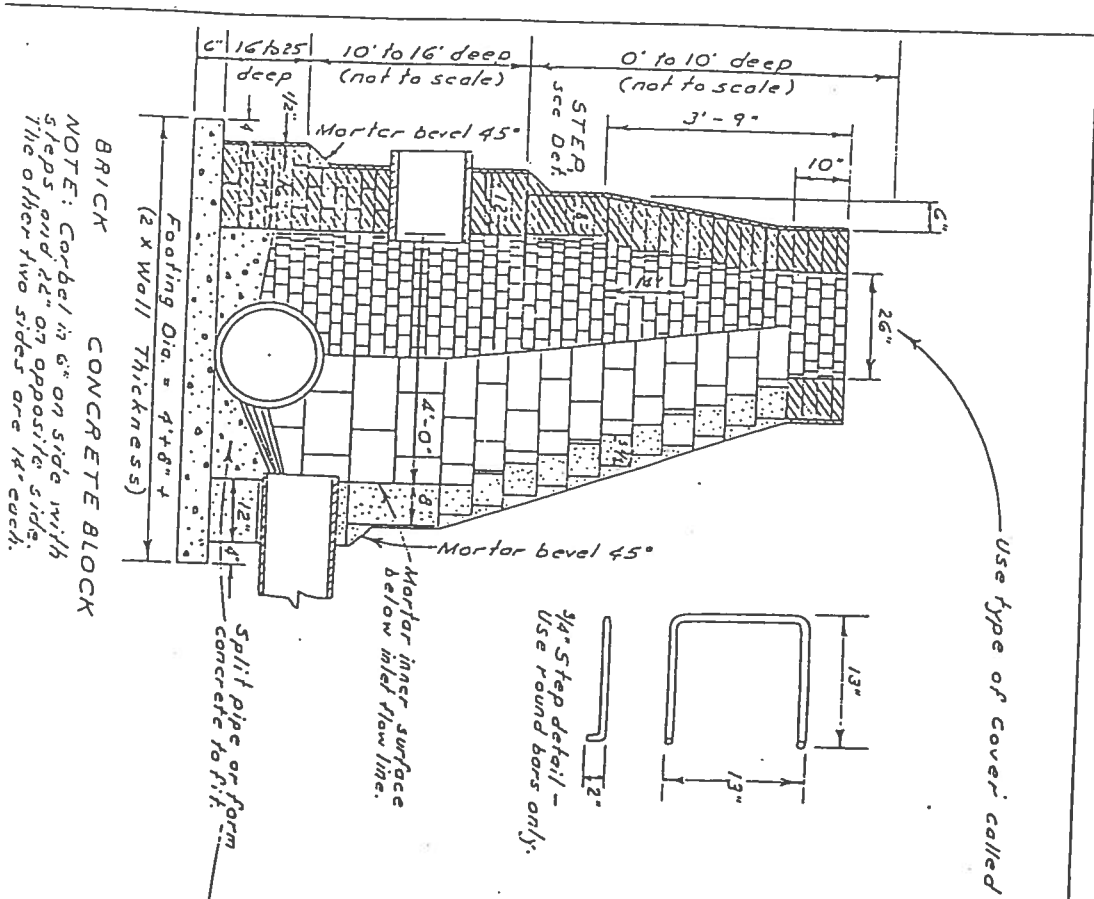
MARCH 1991

STANDARD PLAN 11 A

TYPICAL INTERSECTION - CURB AND GUTTER APPROACH
TO PRIMARY OR MAJOR LOCAL ROAD
WITHOUT CURB AND GUTTER



- Notes:
- (1) Bituminous Surface of the passing Flair shall be the same thickness as that of the roadway.
 - (2) Bituminous Surface of the acceleration lanes shall be the same thickness as that of the new street.



STANDARD PLAN 15
MANHOLE

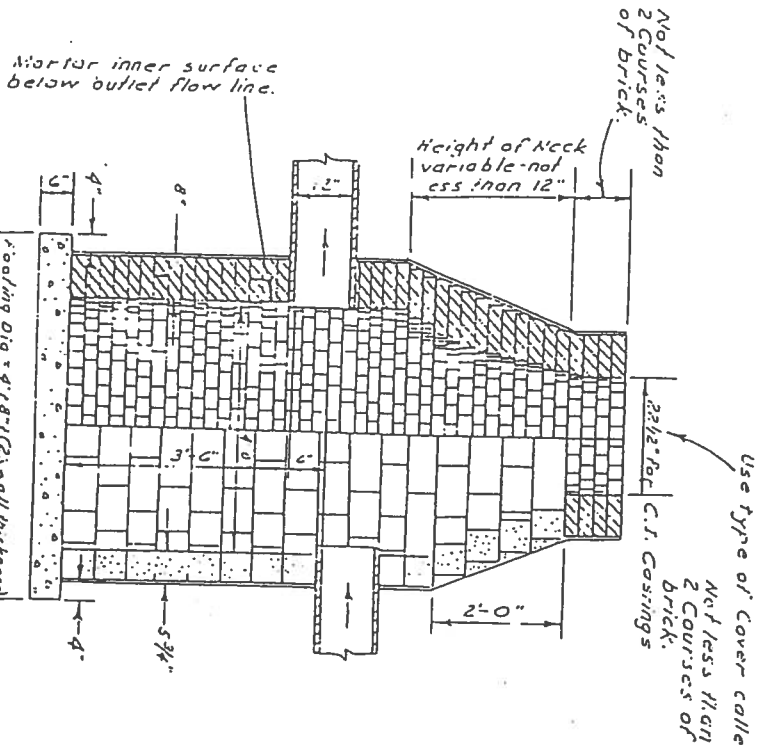
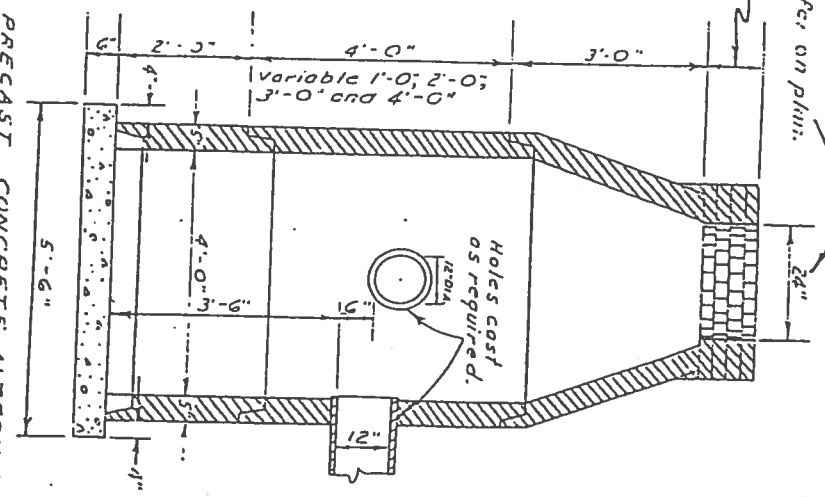


TABLE FOR DRAWING IN BASIN TOP

HEIGHT OF NECK	OFFSET FOR EACH BRICK FOR METAL COVER	COURSES OF BRICK
12"	3/16"	4
15"	3/16"	5
18"	2/16"	6
21"	1/16"	7

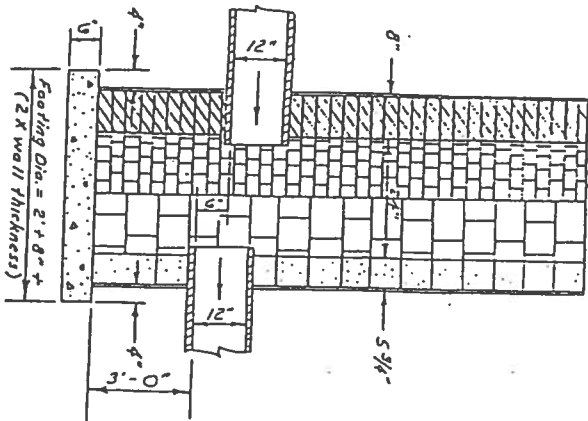
THIS TABLE FOR BRICK 8" X 2 1/4" X 3 3/4"



NOTE:
 All materials and workmanship shall be in accordance with all D.O. standard specifications except that a precast factory shall be required on all basins and manholes.

PRECAST CONCRETE ALTERNATE
 Use hood hup on catch basins only where called for on plans. For 12" outlet use G. R. City Standard cast iron hood, or Neenah Fry's Co. R-3706 for 15" outlet use Neenah Fry's Co. R-3706 cast iron hood or equivalent. Mortar is composed of 1 part cement 9 parts and lime 1 part and 3 parts of sand.

Use type of cover called for on plan.



BRICK
CONCRETE BLOCK

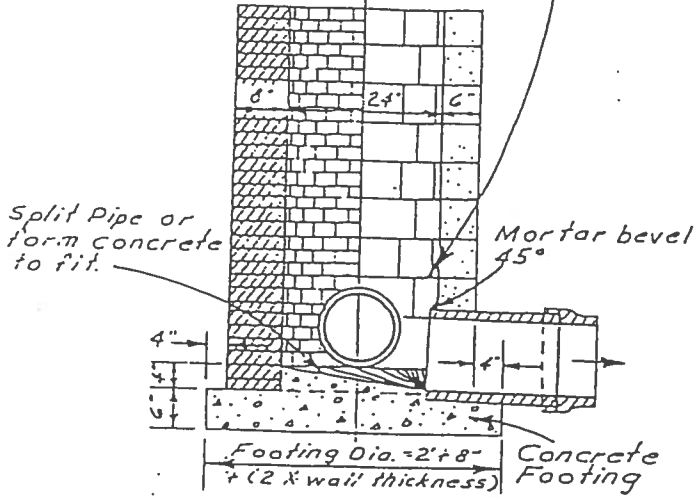
NOTE:
All materials and workmanship shall be in accordance with the current Michigan Dept. of State Hwy's. Standard Specifications except that precast footings shall be required on all basins and manholes.

CATCH BASIN

3

STANDARD PLAN

Mortar inner surface below inlet flow line.



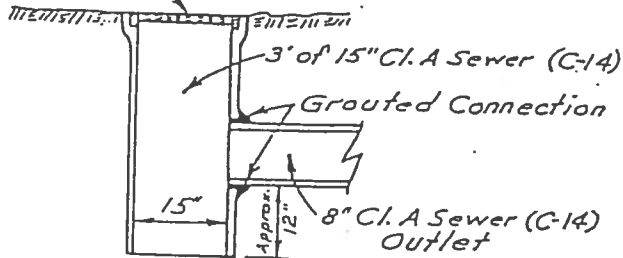
BRICK CONCRETE BLOCK

NOTE: Dimensions shown are for Standard covers. For BB cover, inside dimensions to be the same as the top of Detail #6.

INLET BASIN

5

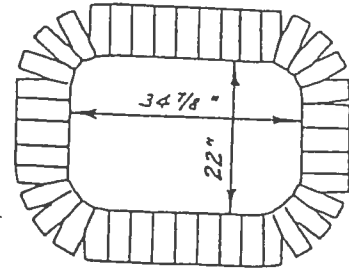
18" C.I. Grate
East Jordan Iron Works 6015 or equal.



Grate included in unit cost for Inlet.

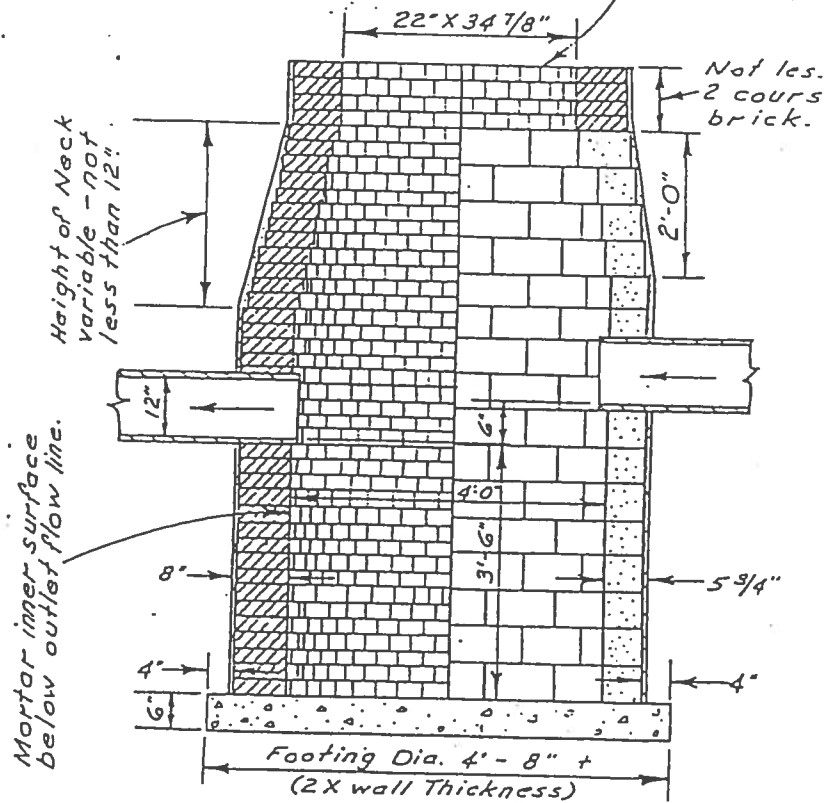
COVER WEIGHT-60 LBS. INLET

7



TOP VIEW

Use type of cove called for on p.



BRICK CONCRETE BLOCK

FRONT VIEW

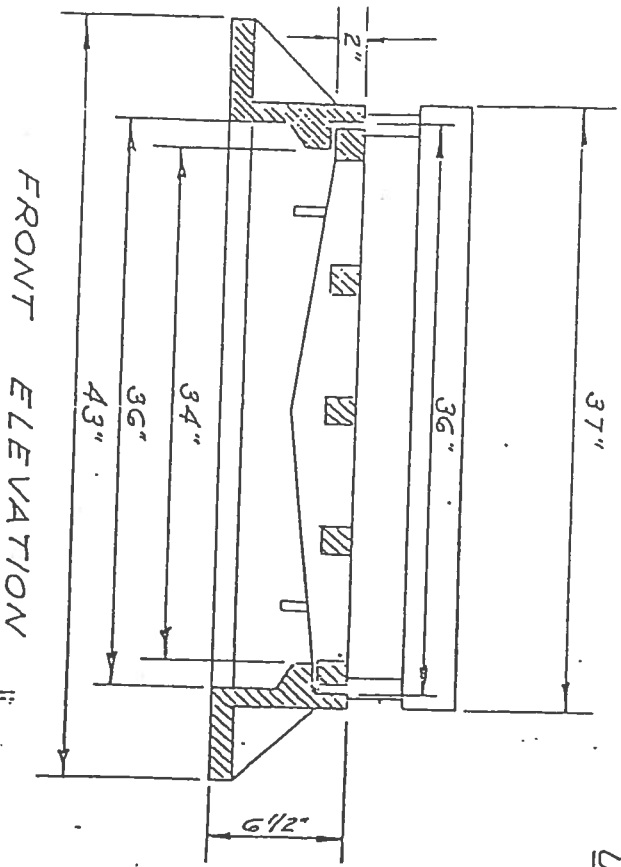
CATCH BASIN

STANDARD PLAN 16A

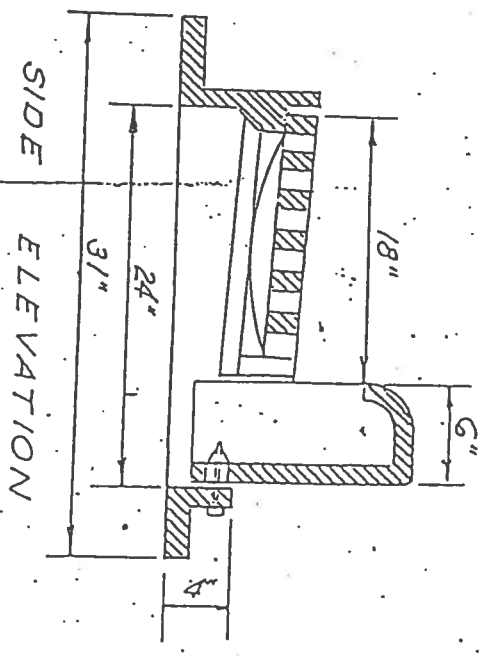
A-CB-1

DOUBLE GRATE WITH CURB BACK

EAST JORDAN IRON WORKS # 7030
 USE NENAH FNDY. CO. GRATE R-324G
 (or a similar grate.)

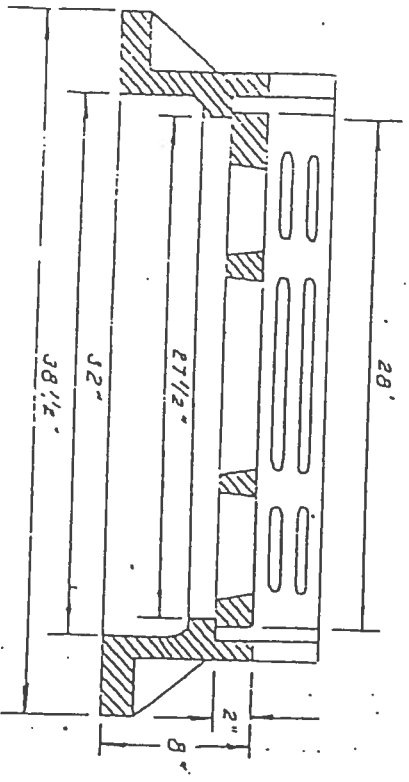


FRONT ELEVATION

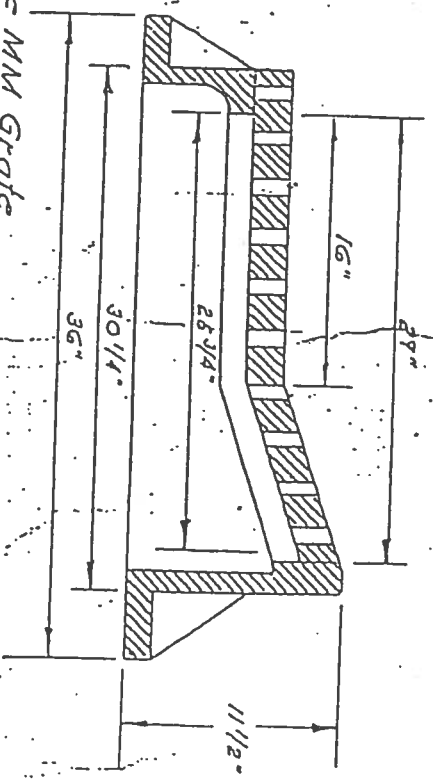


SIDE ELEVATION

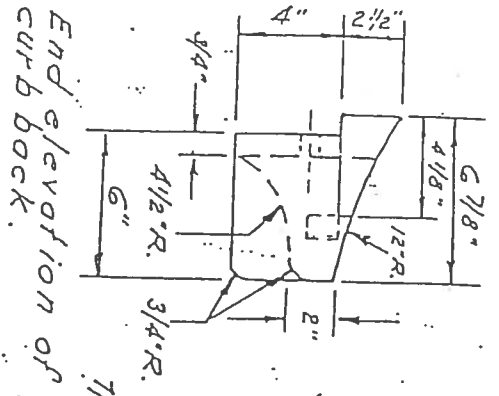
WEIGHT 500 LBS. COVER BB



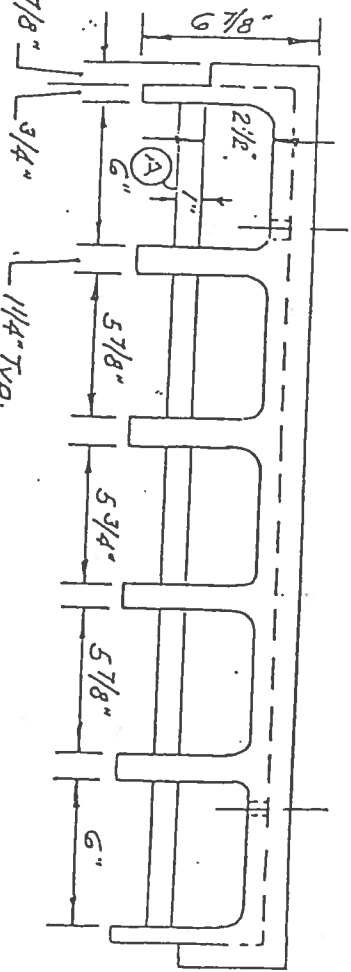
7390 with Type MM Grate
 Approx. 300 Sq. In. of Opening -
 East Jordan Iron Works Inc.



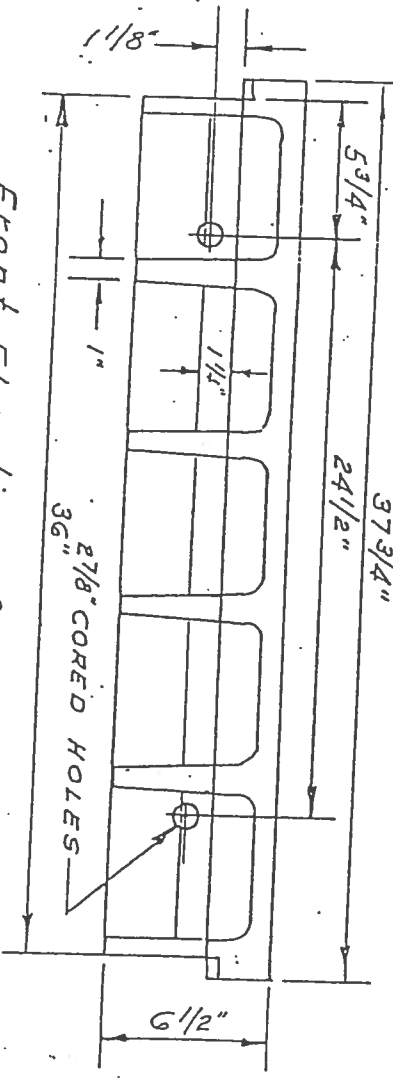
11 1/2"



End elevation of curb back.



Plan View of Curb Back

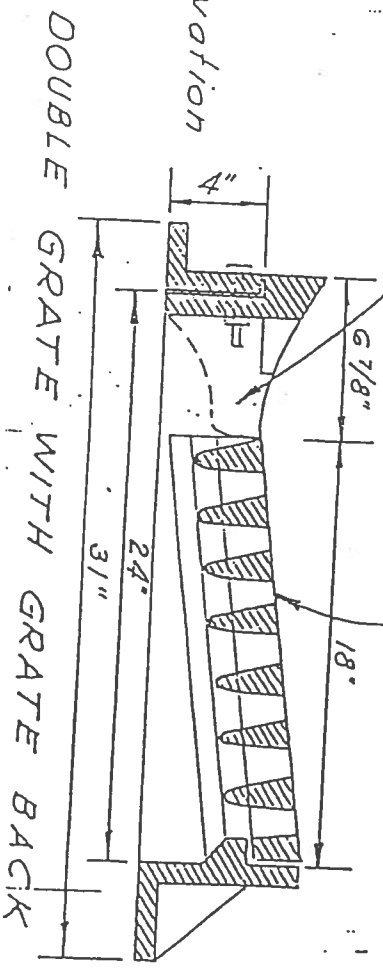


Front Elevation of Curb Back

EAST JORDAN IRON WORKS # 7030
 USE NENAH ENDY CO. GRATE-R-324G
 or other similar grate.
 EAST JORDAN IRON WORKS
 7030 T T or equal.

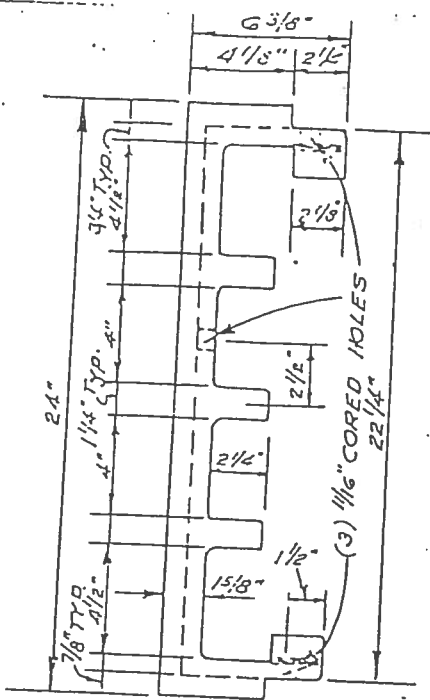
A = Added Bar
 Revised June 12, 1973

Side Elevation

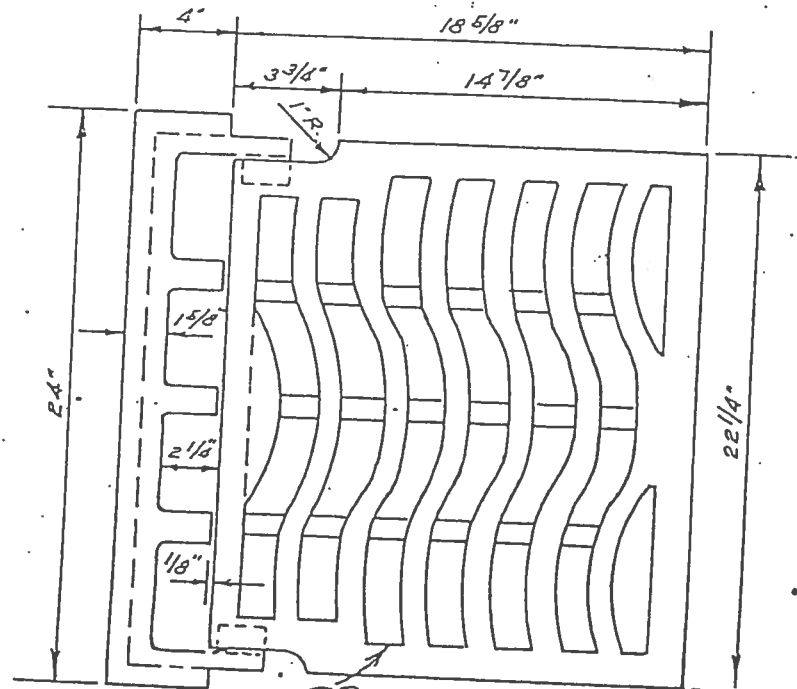


DOUBLE GRATE WITH GRATE BACK

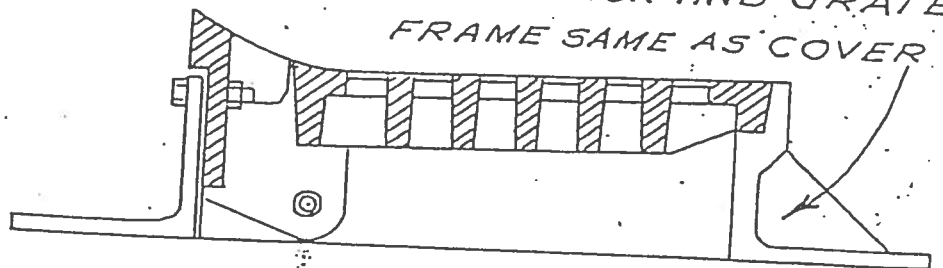
NAME		CHARGE		
YEAR SURVEYED	YEAR BUILT	TWP.	SHEET NO.	TOTAL SHEETS



PLAN VIEW OF CURB BACK



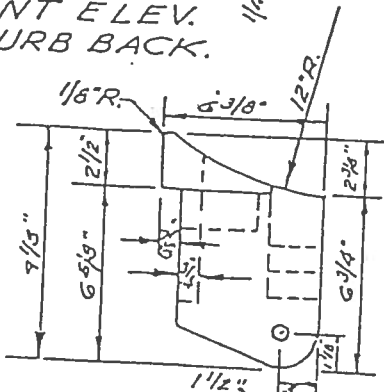
GRATE SAME AS COVER 'K'
PLAN VIEW OF CURB BACK AND GRATE.
FRAME SAME AS COVER 'K'



GRATE, CURB BACK AND FRAME ASSEMBLY
Bolt curb back to frame with (3) 5/8" x 2 1/2" galvanized Machine bolts with washers on nut-ends. Curb back is the same as Michigan Dept. of State Highways Standard (Current) I-88. Cover C.
East Jordan Iron Works, Inc. 7065 page 96, or equal.

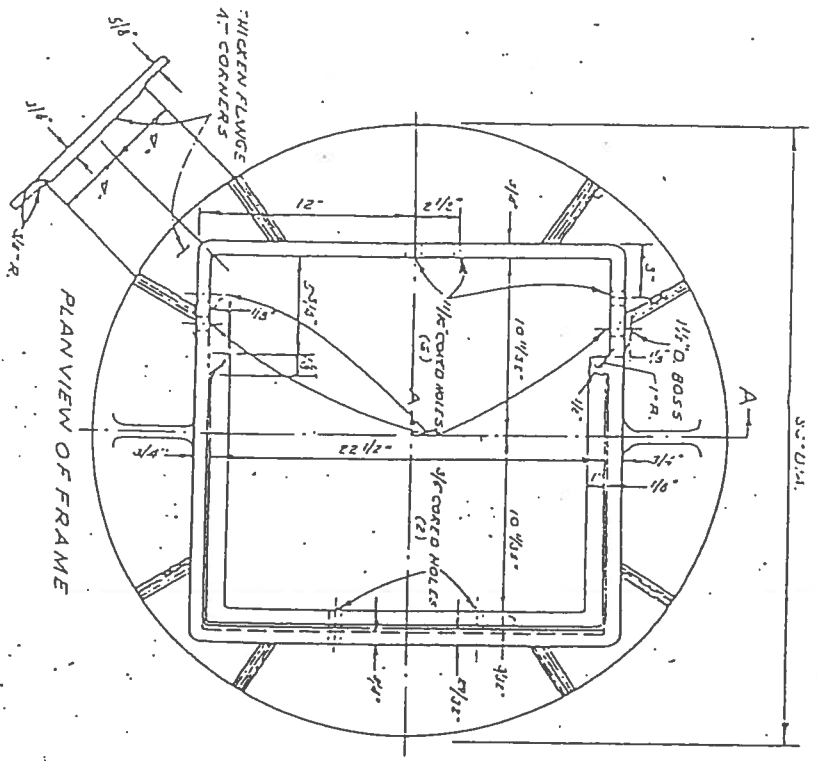


FRONT ELEV. OF CURB BACK

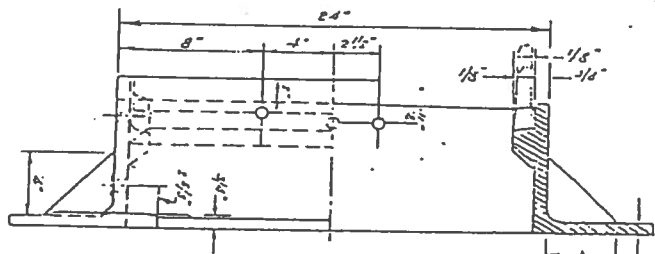


END ELEV. OF CURB BACK

WEIGHT 500 LBS. COVER C4

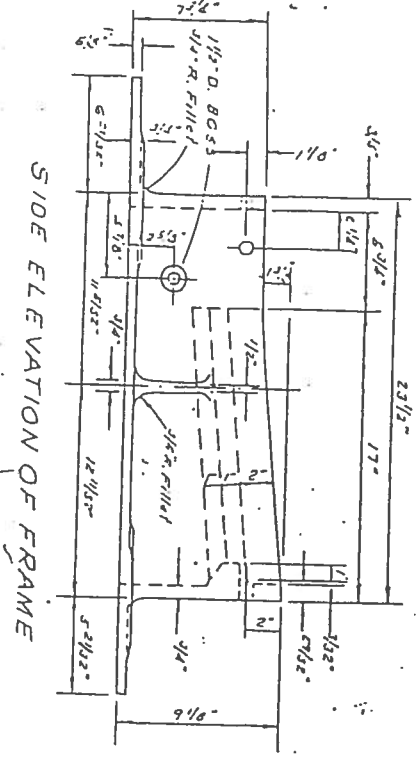


PLAN VIEW OF FRAME

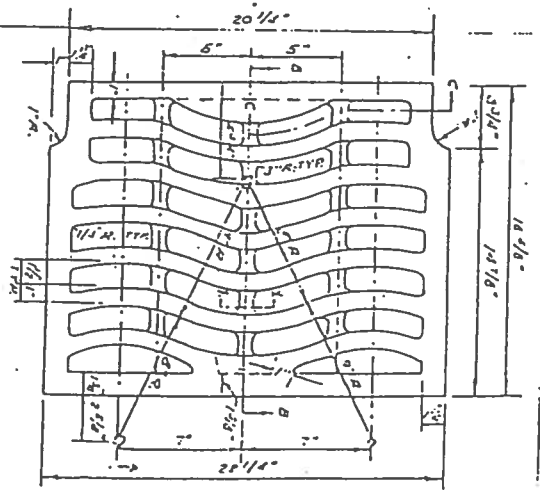


FRONT ELEV. OF FRAME SECT. A-A OF FRAME

NOTE:
Bolt curb box to frame with
3/8" X 2 1/2" galvanized machine bolts.
Adjust for height after forms for
curbs are in place.

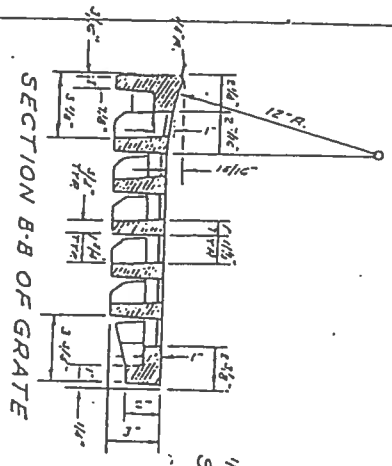


SIDE ELEVATION OF FRAME

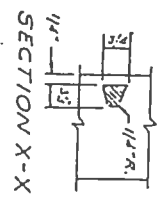


PLAN VIEW OF GRATE

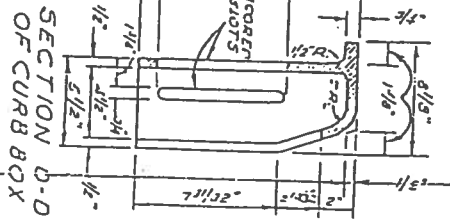
FRONT ELEV. OF GRATE SECT. CC



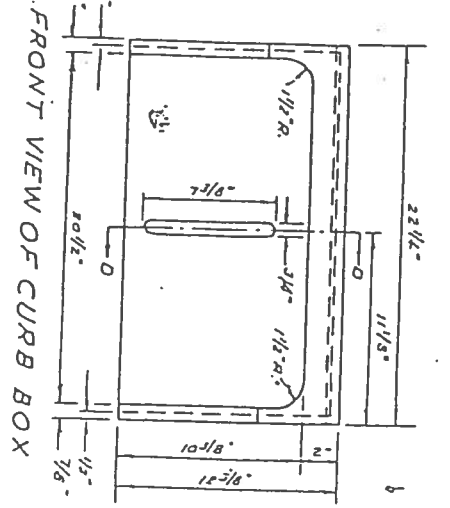
SECTION B-B OF GRATE



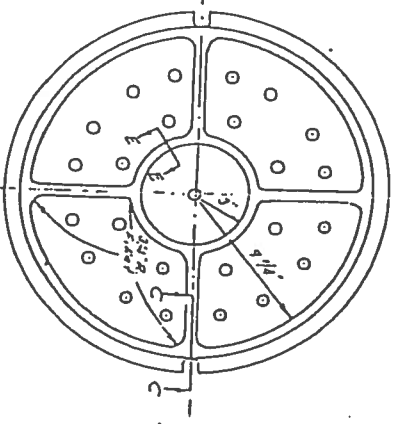
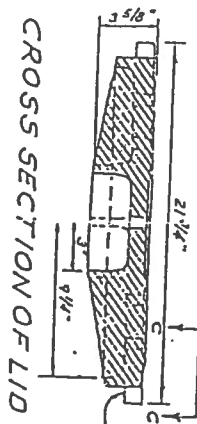
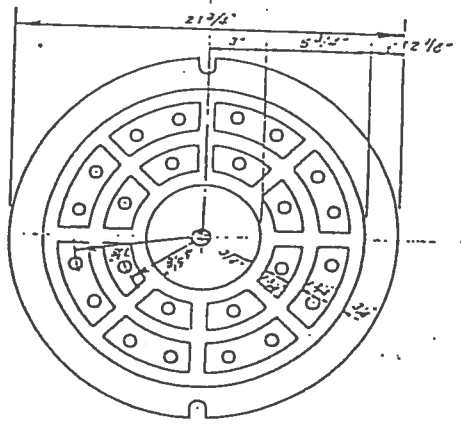
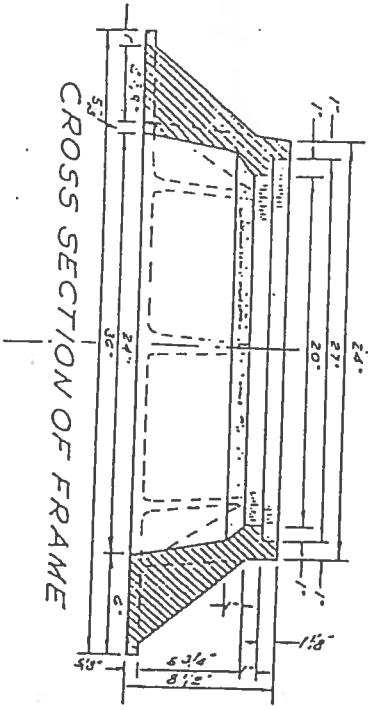
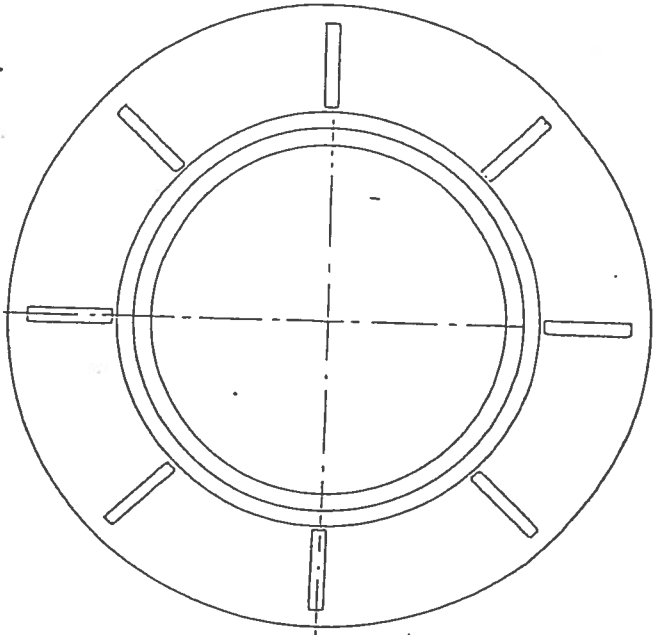
SECTION X-X



SECTION D-D OF CURB BOX



FRONT VIEW OF CURB BOX



147 Holes
equally spaced
in each circle.
Total 25

1/2" Rod Lift Hole

Bearing surface
of Lid shall be
Ground or Machined.

