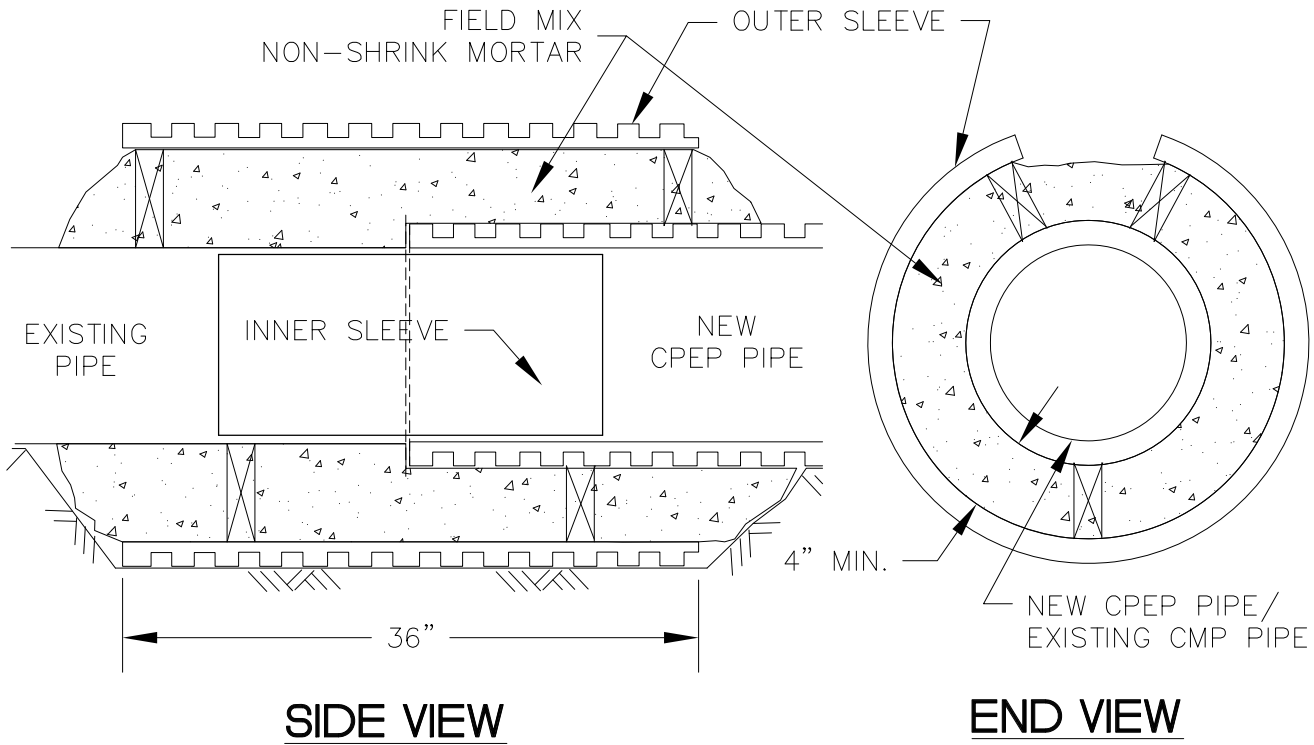


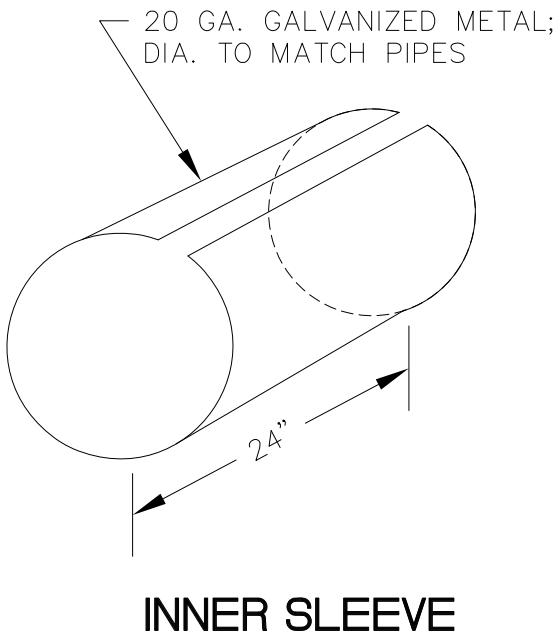
**STANDARD CONSTRUCTION SPECIFICATIONS
MISCELLANEOUS
DIVISION 55
INDEX OF STANDARD DETAILS**

55-1	CPEP Storm Pipe Connection
55-2	Corrugated Metal Pipe Band Detail
55-3	Subdrain
55-4	Storm Drain Manhole Type I - Pipe \leq 24"
55-5	Storm Drain Manhole Type II - 24" to 36"
55-6	Storm Drain Manhole Type III
55-7	Storm Drain Manhole Cover
55-8	Storm Drain Top Intake Cover
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55-10	Manhole Heights
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55-17	Manhole Cone Adjustment
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55-22	Precast Catch Basin
55-23	Storm Drain Cleanout
55-24	Storm Drain Drop Connection (2' Min Drop)
55-25	Storm Drain Drop Connection (4' Min Drop)
55-26	Footing Drain Service Detail
55-27	Driveway Culvert Details



SIDE VIEW

END VIEW



INNER SLEEVE

NOTES:

1. MATCH INVERTS OF EXISTING PIPE AND NEW CPEP PIPE. INNER SLEEVE SHALL FORM A SMOOTH TRANSITION, WITHOUT AN ABRUPT EDGE WITH NEW CPEP PIPE AND EXISTING CMP PIPE.
2. INSTALL 24" LONG INNER SLEEVE.
3. INSTALL A 36" LONG OUTER SLEEVE, CENTER ON JOINT, AS A CONCRETE FORM.
4. FILL OUTER SLEEVE WITH NON-SHRINK MORTAR.
5. USE POTABLE WATER IN MINIMUM AMOUNTS TO PROVIDE PLASTICITY IN PLACING THE MORTAR.
6. BACKFILL AND COMPACT TRENCH.

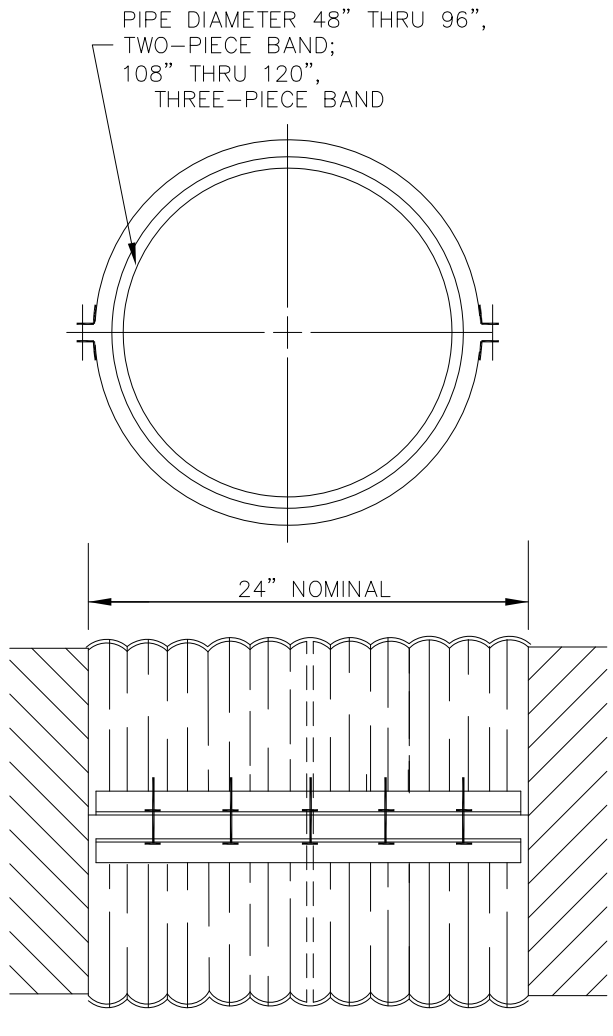
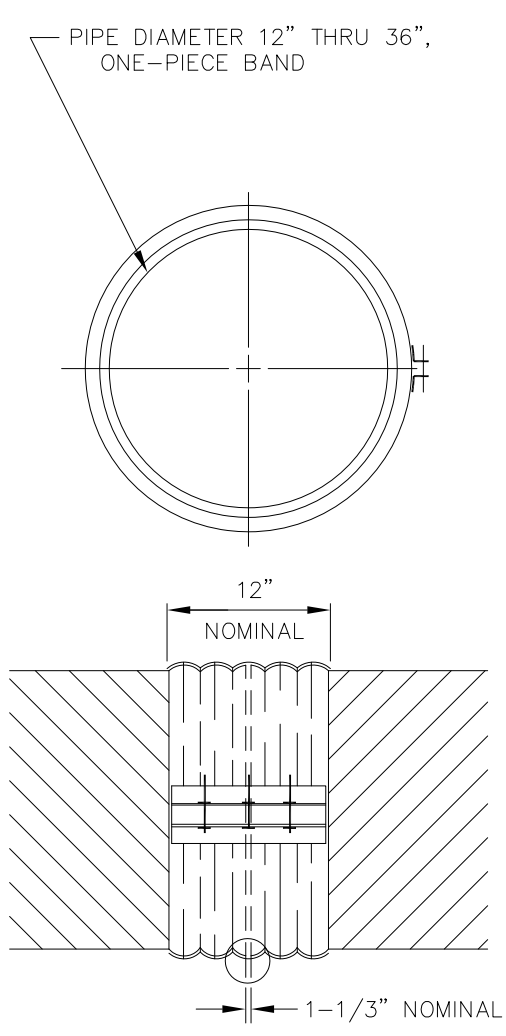
FILE.DWG



SCALE:
NTS
APPROVED:
REVISED:
4/12

**CPEP STORM
PIPE CONNECTION**

SECTION #
55.02
DETAIL #
55-1



NOTES:

1. 12" THRU 36" PIPE ENDS RE-CORRUGATED TO ANNULAR 2 VALLEYS MIN. PER END.
2. 48" THRU 120" PIPE ENDS RE-CORRUGATED TO ANNULAR 4 VALLEYS MIN. PER END.
3. BAND ANGLES TO BE 2"x2"x12" GA. MIN.
4. BAND MATERIAL AND FABRICATION SHALL CONFORM TO AASHTO M-36 AND AASHTO M-218; PROVIDE 16 GAUGE BANDS FOR 12" THRU 120" DIAMETER PIPES.
5. DIMPLED TYPE CONNECTING BANDS ARE ALLOWABLE ONLY WHERE FITTINGS ARE USED IN NEW OR EXISTING CONSTRUCTION, FOR REPAIRS TO DAMAGED CMP, AND FOR EXTENSIONS TO CMP WITHOUT ANNULAR ENDS. SIZE BANDS IN ACCORDANCE WITH ABOVE SCHEDULE (MIN. 12").
6. BOLT SIZE SHOULD BE 1/2" DIAMETER BY 8" LONG. NUTS SHALL BE PROVIDED WITH A WASHER.

FILE.DWG



SCALE:
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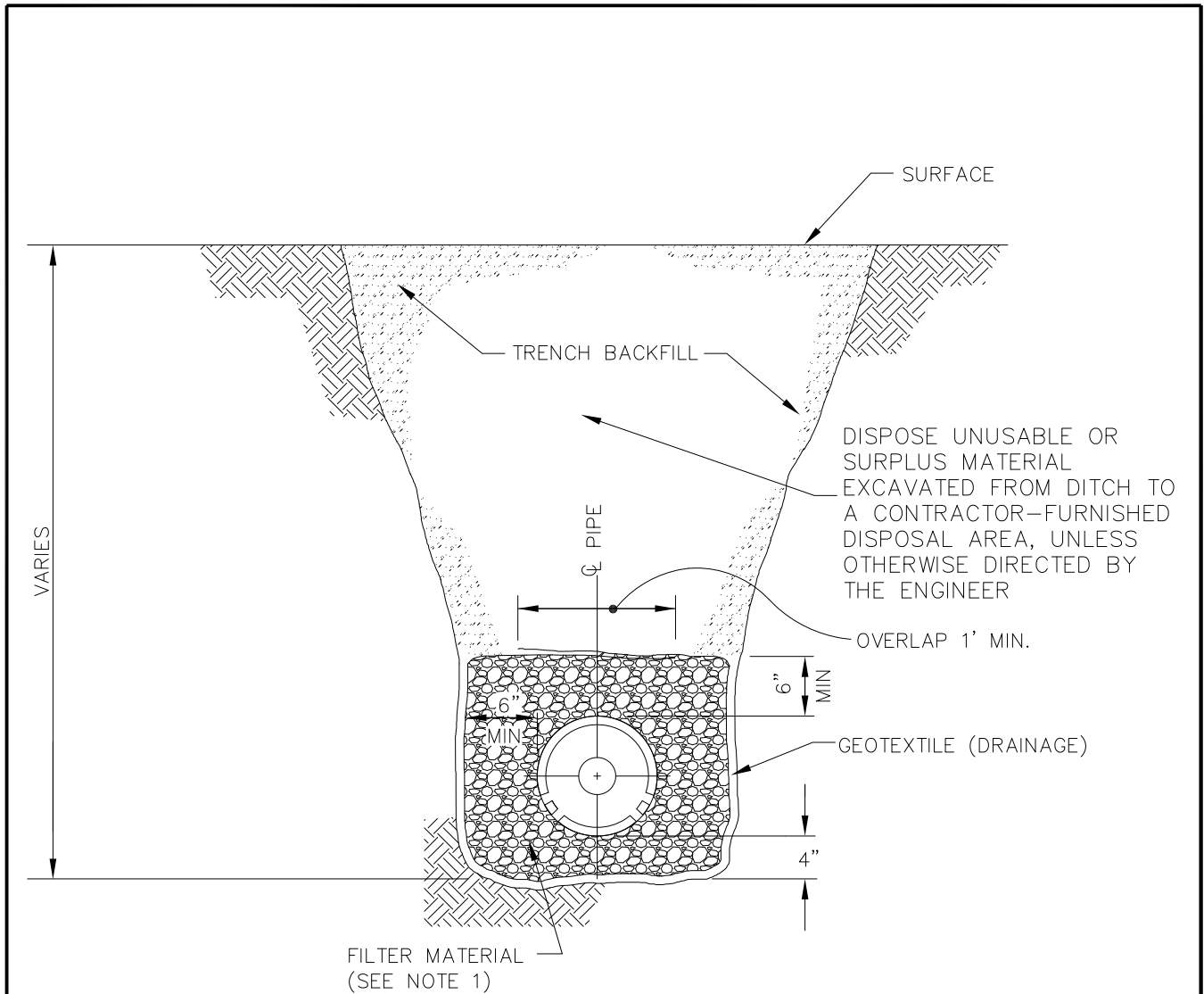
APPROVED:

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4/12

CORRUGATED METAL PIPE BAND DETAIL

SECTION #
55.02

DETAIL #
55-2



NOTES:

1. PROVIDE FILTER MATERIAL TYPE AS SPECIFIED IN THE CONTRACT DOCUMENTS.
2. COMPACT BACKFILL UNDER THE EXISTING OR PROPOSED ROAD PRISM TO A MINIMUM OF 95% OF MAXIMUM DENSITY.
3. TRENCH BACKFILL SHALL BE CLASSIFIED BACKFILL AS SPECIFIED IN THE DRAWINGS.

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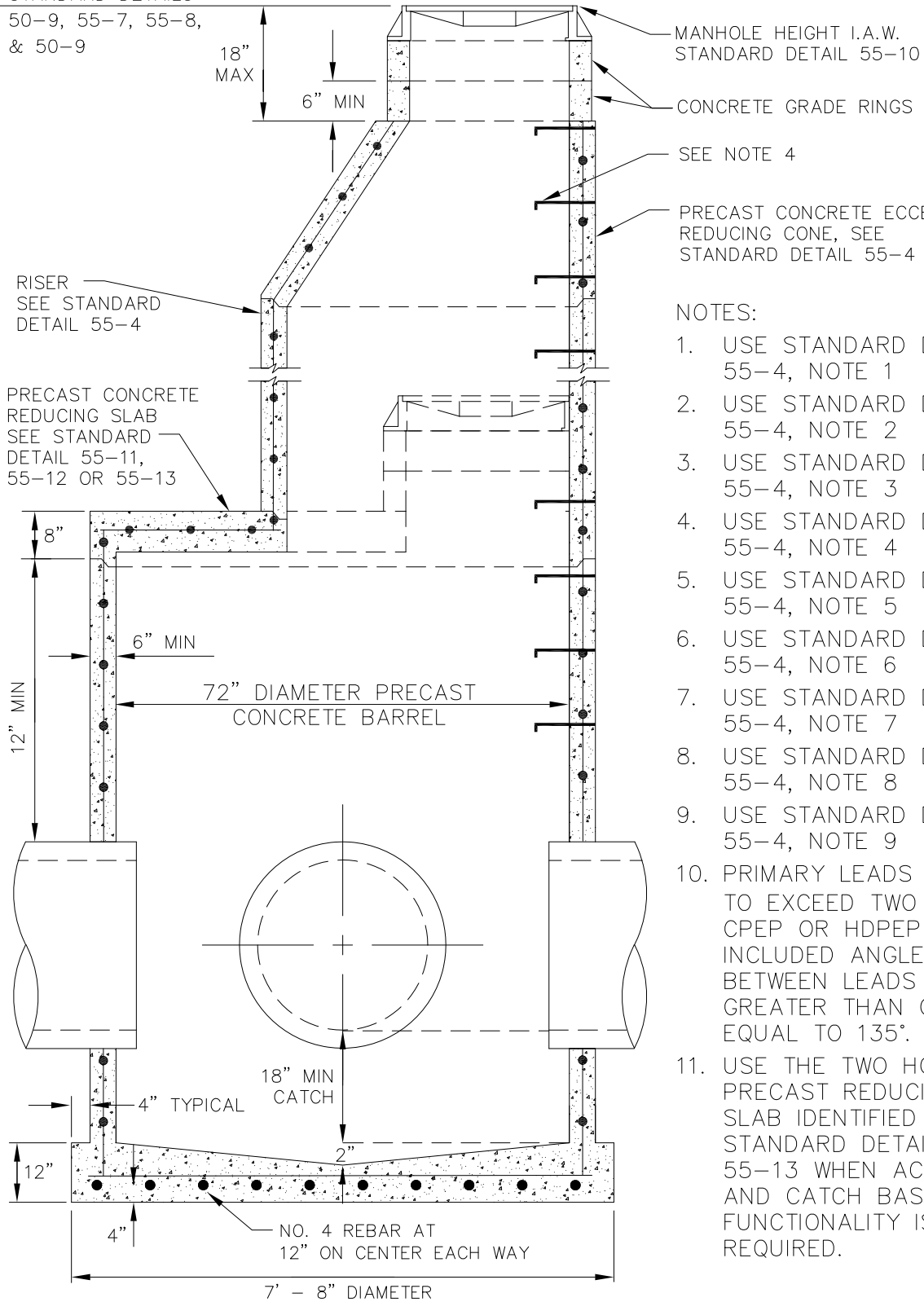
SUBDRAIN

SECTION #
55.03

DETAIL #
55-3

COVER & FRAME I.A.W.
STANDARD DETAILS

50-9, 55-7, 55-8,
& 50-9



MANHOLE HEIGHT I.A.W.
STANDARD DETAIL 55-10

CONCRETE GRADE RINGS

SEE NOTE 4

PRECAST CONCRETE ECCENTRIC
REDUCING CONE, SEE
STANDARD DETAIL 55-4

RISER
SEE STANDARD
DETAIL 55-4

PRECAST CONCRETE
REDUCING SLAB
SEE STANDARD
DETAIL 55-11,
55-12 OR 55-13

NOTES:

1. USE STANDARD DETAIL 55-4, NOTE 1
2. USE STANDARD DETAIL 55-4, NOTE 2
3. USE STANDARD DETAIL 55-4, NOTE 3
4. USE STANDARD DETAIL 55-4, NOTE 4
5. USE STANDARD DETAIL 55-4, NOTE 5
6. USE STANDARD DETAIL 55-4, NOTE 6
7. USE STANDARD DETAIL 55-4, NOTE 7
8. USE STANDARD DETAIL 55-4, NOTE 8
9. USE STANDARD DETAIL 55-4, NOTE 9
10. PRIMARY LEADS NOT TO EXCEED TWO 36" CPEP OR HDPEP WITH INCLUDED ANGLE BETWEEN LEADS GREATER THAN OR EQUAL TO 135°.
11. USE THE TWO HOLE PRECAST REDUCING SLAB IDENTIFIED IN STANDARD DETAIL 55-13 WHEN ACCESS AND CATCH BASIN FUNCTIONALITY IS REQUIRED.



SCALE:
NTS

APPROVED:

REVISED:
4/12

STORM DRAIN MANHOLE TYPE II PIPE 24" TO 36"

SECTION #
55.05

DETAIL #
55-5

COVER & FRAME I.A.W.
STANDARD DETAILS

50-9, 55-7, 55-8,
& 55-9

18" MAX

6" MIN

MANHOLE HEIGHT I.A.W.
STANDARD DETAIL 55-10

CONCRETE GRADE RINGS,

SEE NOTE 4

PRECAST CONCRETE ECCENTRIC
REDUCING CONE, SEE NOTE 9

RISER
SEE STANDARD
DETAIL 55-4

PRECAST CONCRETE
REDUCING SLAB SEE
STANDARD DETAILS
55-11, 55-12, 55-13,
55-14, 55-15 OR
55-16

NOTES:

1. USE STANDARD DETAIL 55-4, NOTE 1
2. USE STANDARD DETAIL 55-4, NOTE 2
3. USE STANDARD DETAIL 55-4, NOTE 3
4. USE STANDARD DETAIL 55-4, NOTE 4
5. USE STANDARD DETAIL 55-4, NOTE 5
6. USE STANDARD DETAIL 55-4, NOTE 6
7. USE STANDARD DETAIL 55-4, NOTE 7
8. STEEL REQ'D FOR BARREL SHALL CONFORM TO A.S.T.M. C-478.
9. USE STANDARD DETAIL 55-4, NOTE 9
10. CONE CANNOT REDUCE TO LESS THAN 72" WHEN BOTH CATCH BASIN AND ACCESS FUNCTIONS ARE REQUIRED. SEE STANDARD DETAILS 55-4 AND 55-5.

VARIABLES

"C"

12" MIN

"D"

"A" DIAMETER PRECAST
CONCRETE BARREL

"E"

18" MIN
CATCH

"B"

NO. 6 AT 6" CENTERS
EACH WAY

KEY AS SHOWN

LEGEND

MH I.D.	96"	120"	144"
"A"	96"	120"	144"
"B"	12"	16"	16"
"C"	12"	14"	14"
"D"	8"	10"	12"
"E"	76" MAX	72" MAX	56" MAX



SCALE:
NTS

APPROVED:

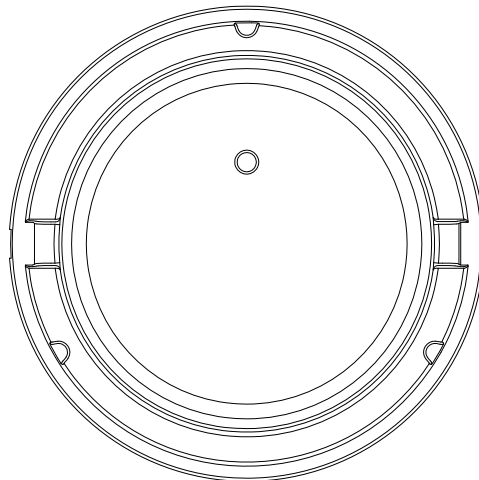
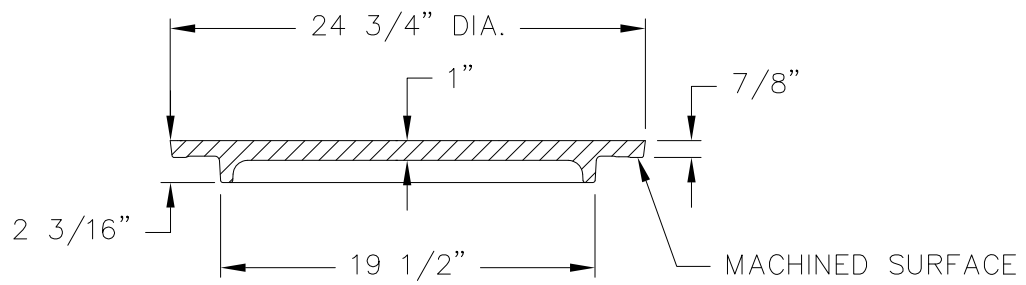
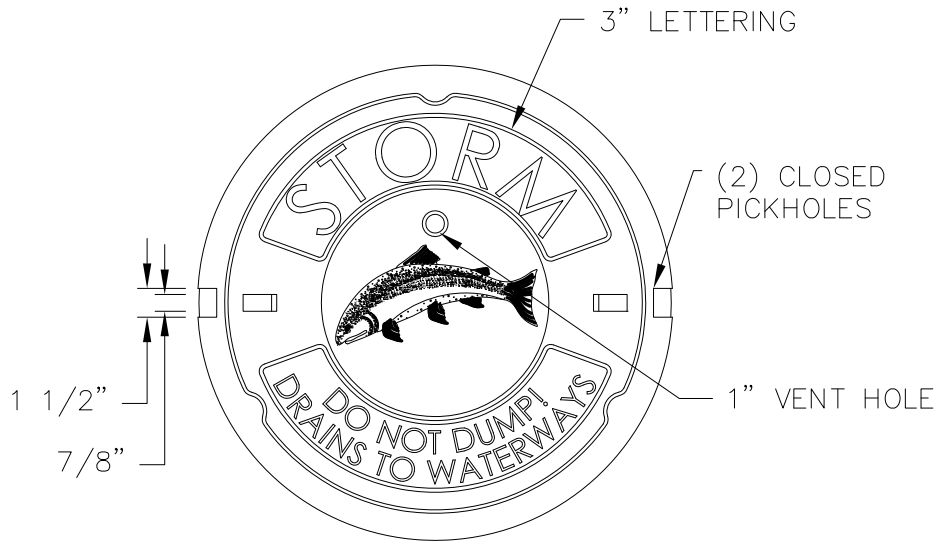
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4/12

**STORM DRAIN MANHOLE
TYPE III**

SECTION #
55.05

DETAIL #
55-6

FILE.DWG



FILE.DWG



SCALE:
NTS

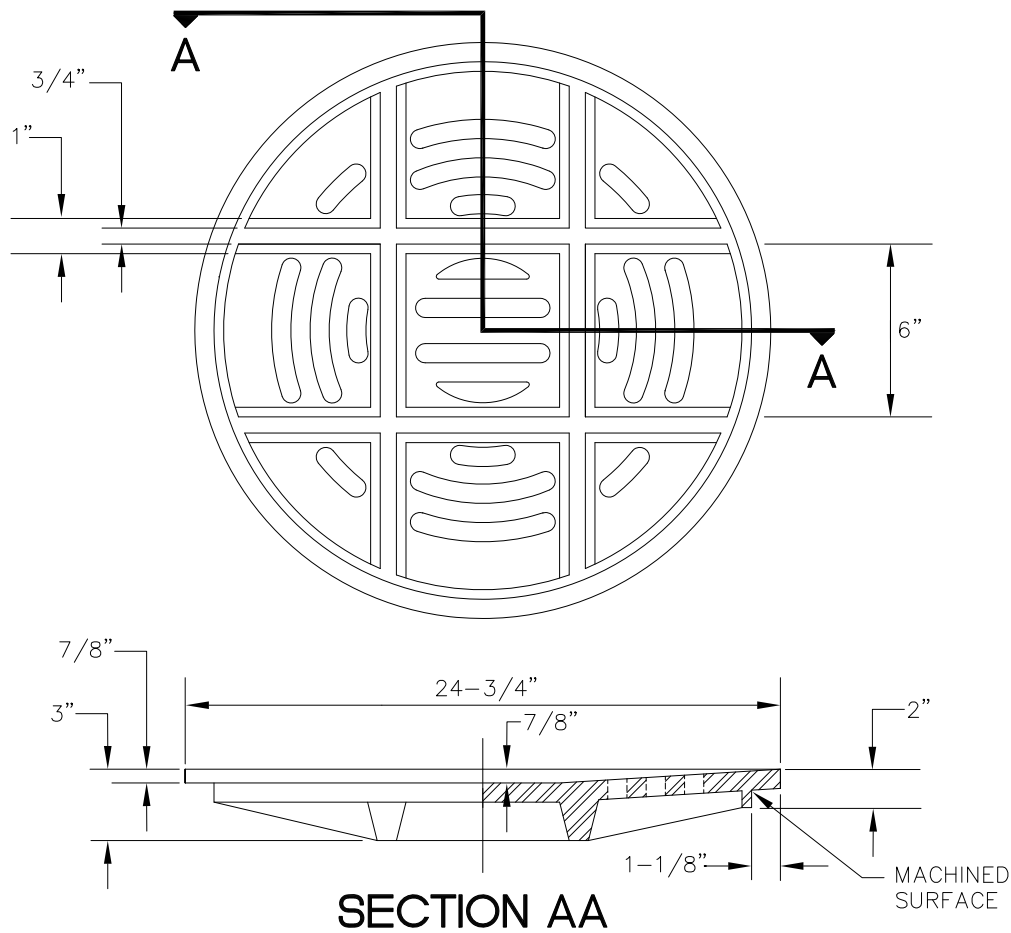
APPROVED:

REVISED:
4/12

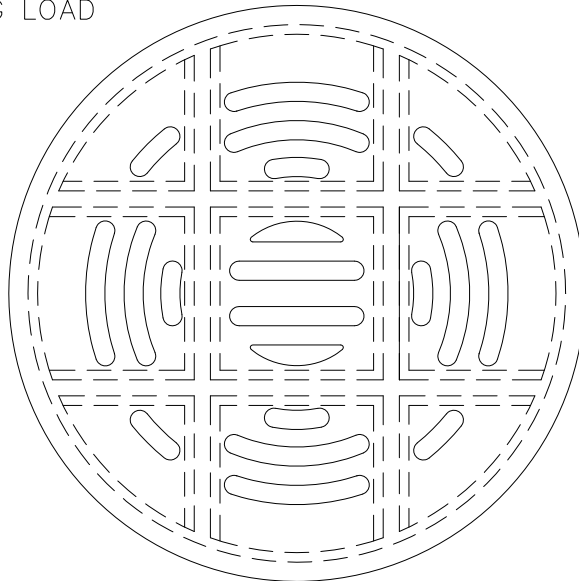
STORM DRAIN MANHOLE COVER

SECTION #
55.05

DETAIL #
55-7



2000 P.S.I. STRENGTH REQUIREMENT
 FOR TRANSVERSE BREAKING LOAD
 PER A.S.T.M. A-438



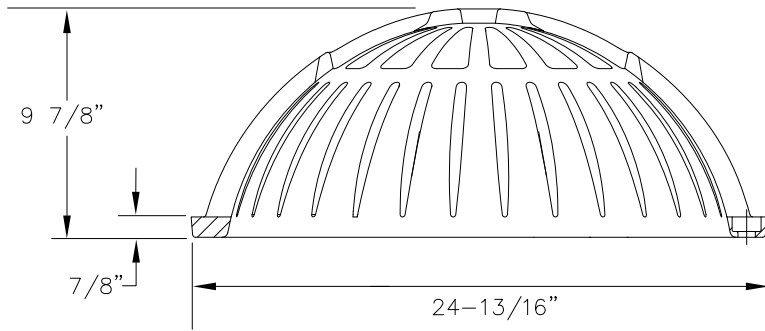
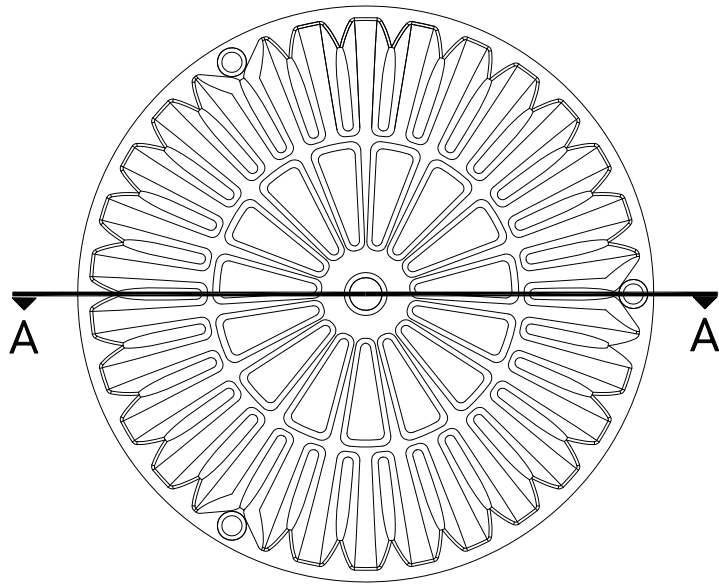
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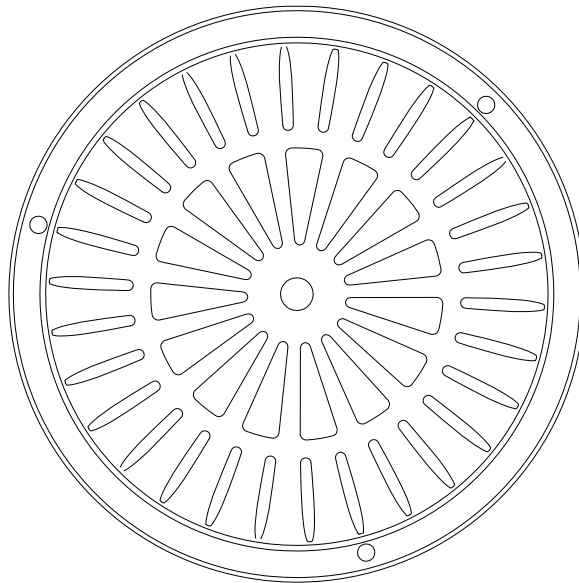
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 APPROVED:
 REVISED:
 4/12

STORM DRAIN TOP INTAKE COVER

SECTION #
 55.05
 DETAIL #
 55-8



SECTION AA



FILE.DWG



SCALE:
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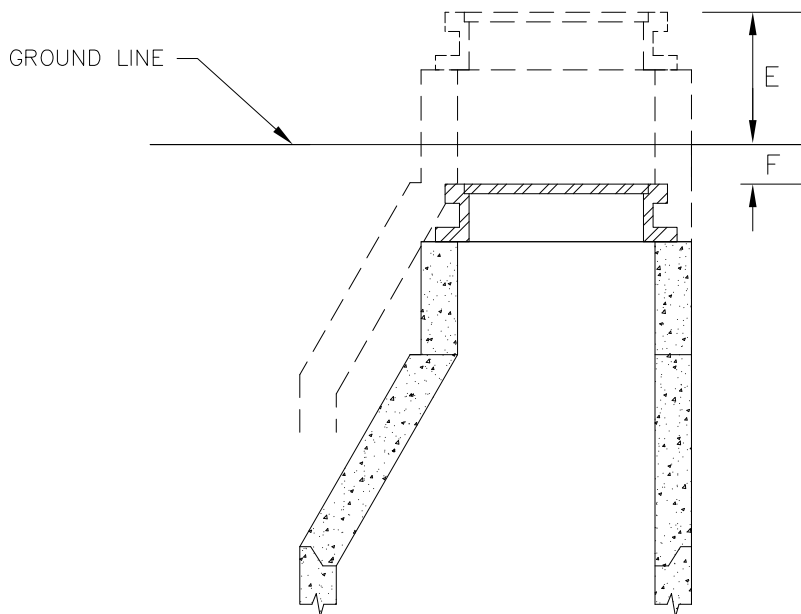
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4/12

**STORM DRAIN
BEEHIVE INTAKE COVER**

SECTION #
55.05

DETAIL #
55-9



LOCATION	E	F
BACKYARDS, GRAVEL STREETS, AND ALLEY AREAS WHERE TRAVELED.		6" TO 12"
UNDEVELOPED AND SWAMPY AREAS	24" MIN	
HIGHWAY R.O.W.'S OUTSIDE TRAFFIC AREAS	6"	
PAVED STREETS (FEATHER PAVEMENT AT EDGE TO SMOOTH TRANSITION)		1/2" ± 1/4"

FILE.DWG



SCALE:
NTS

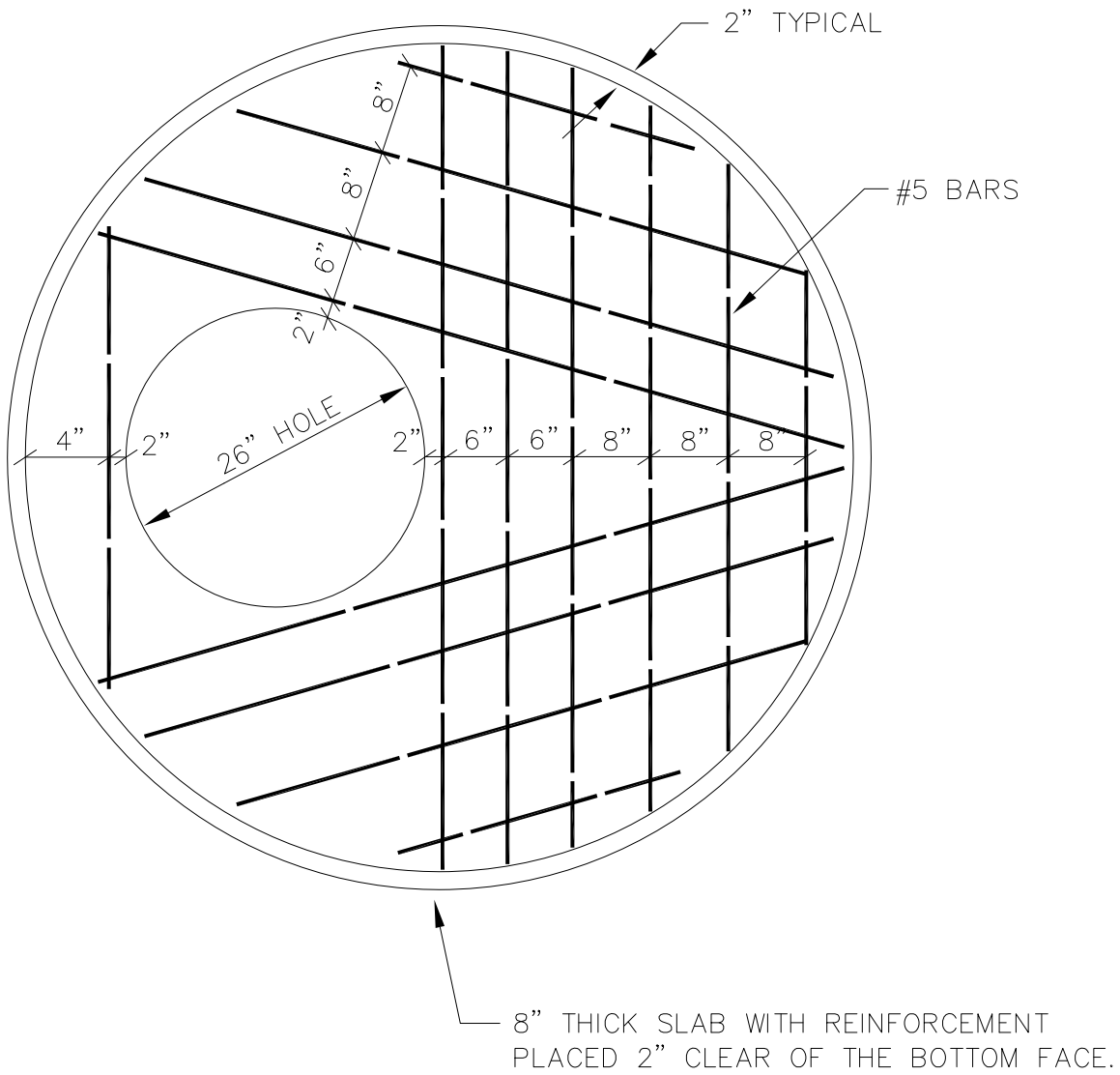
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4/12

MANHOLE HEIGHTS

SECTION #
55.05

DETAIL #
55-10



FILE.DWG



SCALE:
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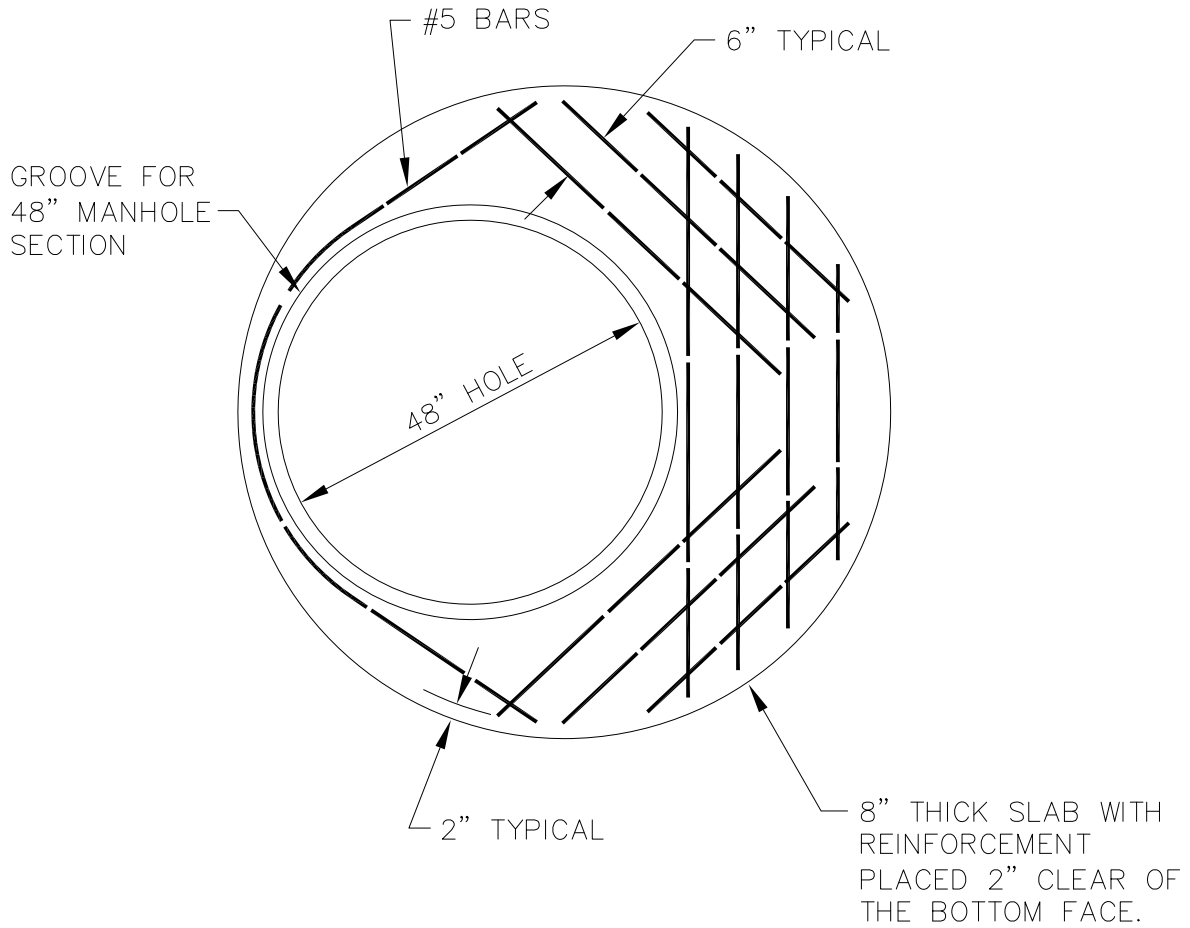
APPROVED:

REVISED:
4/12

**PRECAST CONCRETE
REDUCING SLAB
(72" OR 48" OR 26")**

SECTION #
55.05

DETAIL #
55-11



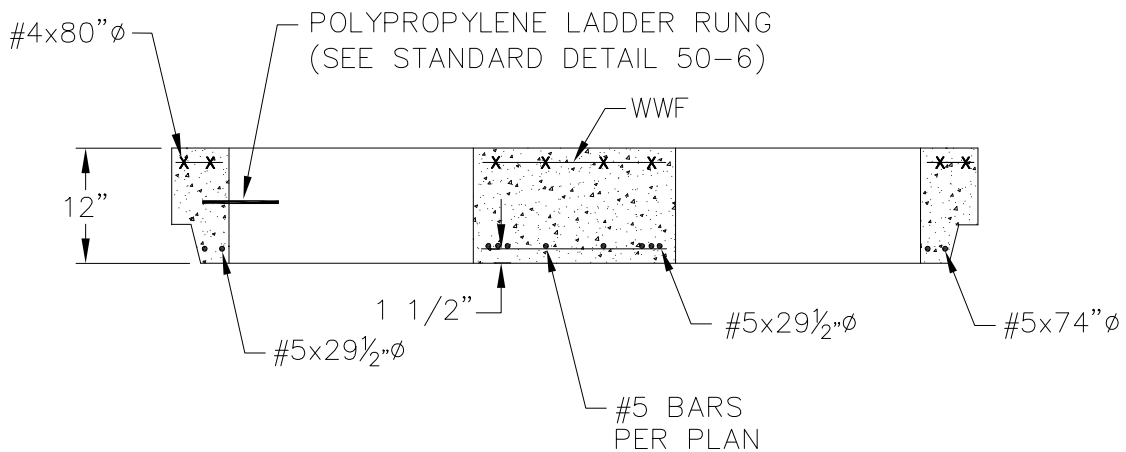
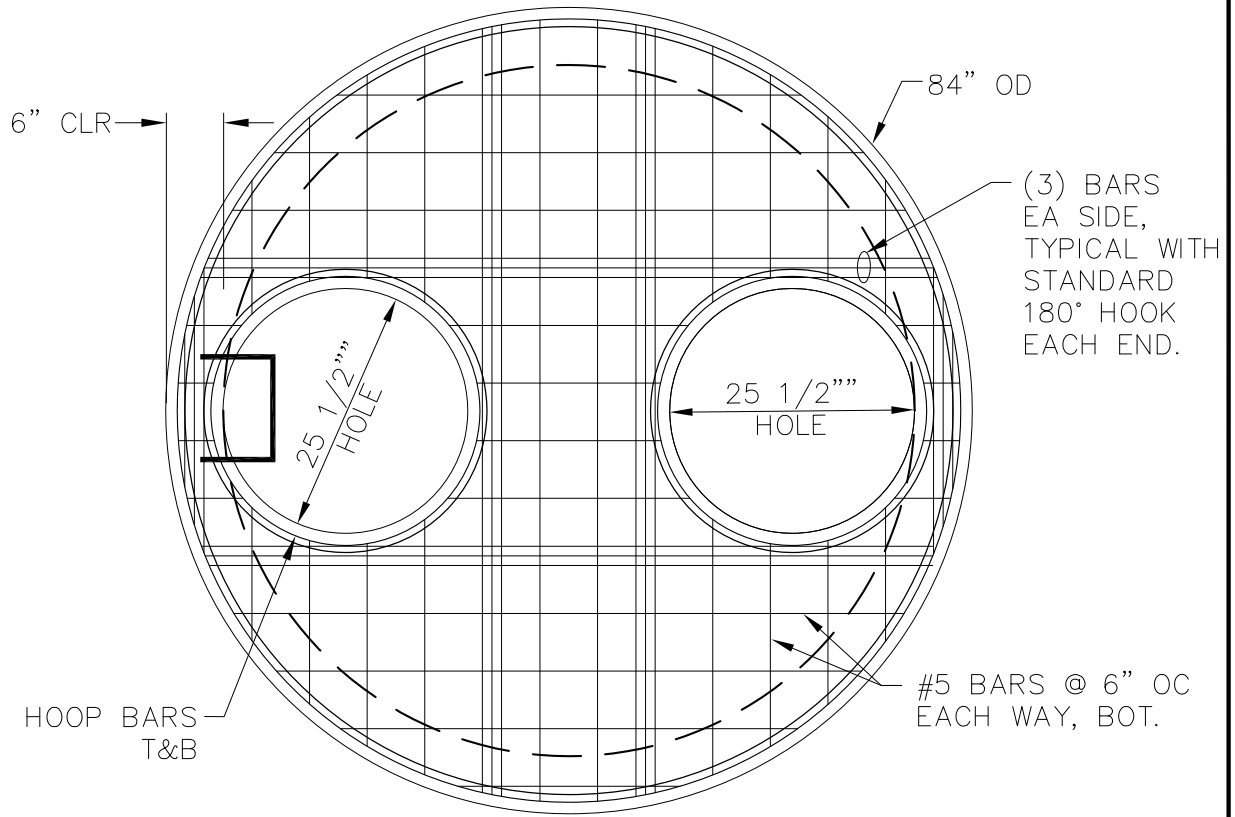
FILE.DWG



SCALE:
NTS
APPROVED:
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**PRECAST CONCRETE
REDUCING SLAB
(72" TO 48")**

SECTION #
55.05
DETAIL #
55-12



SCALE:
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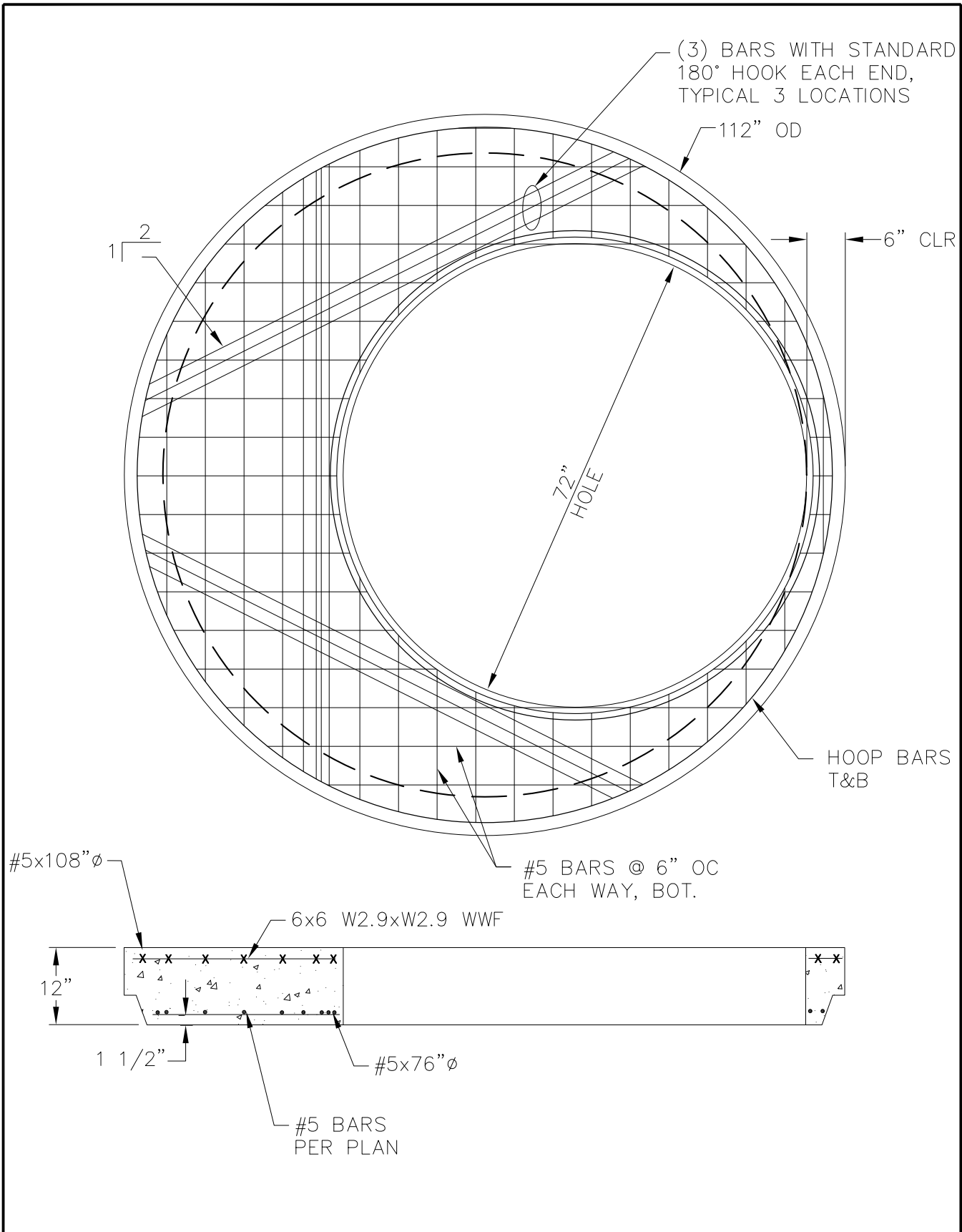
APPROVED:

REVISED:
4/12

PRECAST CONCRETE TWO HOLE REDUCING SLAB (72" TO TWO 25 1/2")

SECTION #
55.05

DETAIL #
55-13



FILE.DWG



SCALE:
NTS

APPROVED:

REVISED:
4/12

**PRECAST CONCRETE
REDUCING SLAB
(112" TO 72")**

SECTION #
55.05

DETAIL #
55-14

140" OD

(3) BARS WITH STANDARD 180° HOOK EACH END, TYPICAL 3 LOCATIONS

1 2

72" HOLE

HOOP BARS T&B

#5 BARS @ 6" OC EACH WAY, BOT.

#5x136" ϕ

6x6 W2.9xW2.9 WWF

14"

1 1/2"

#5 BARS PER PLAN

#5x76" ϕ



SCALE: NTS

APPROVED:

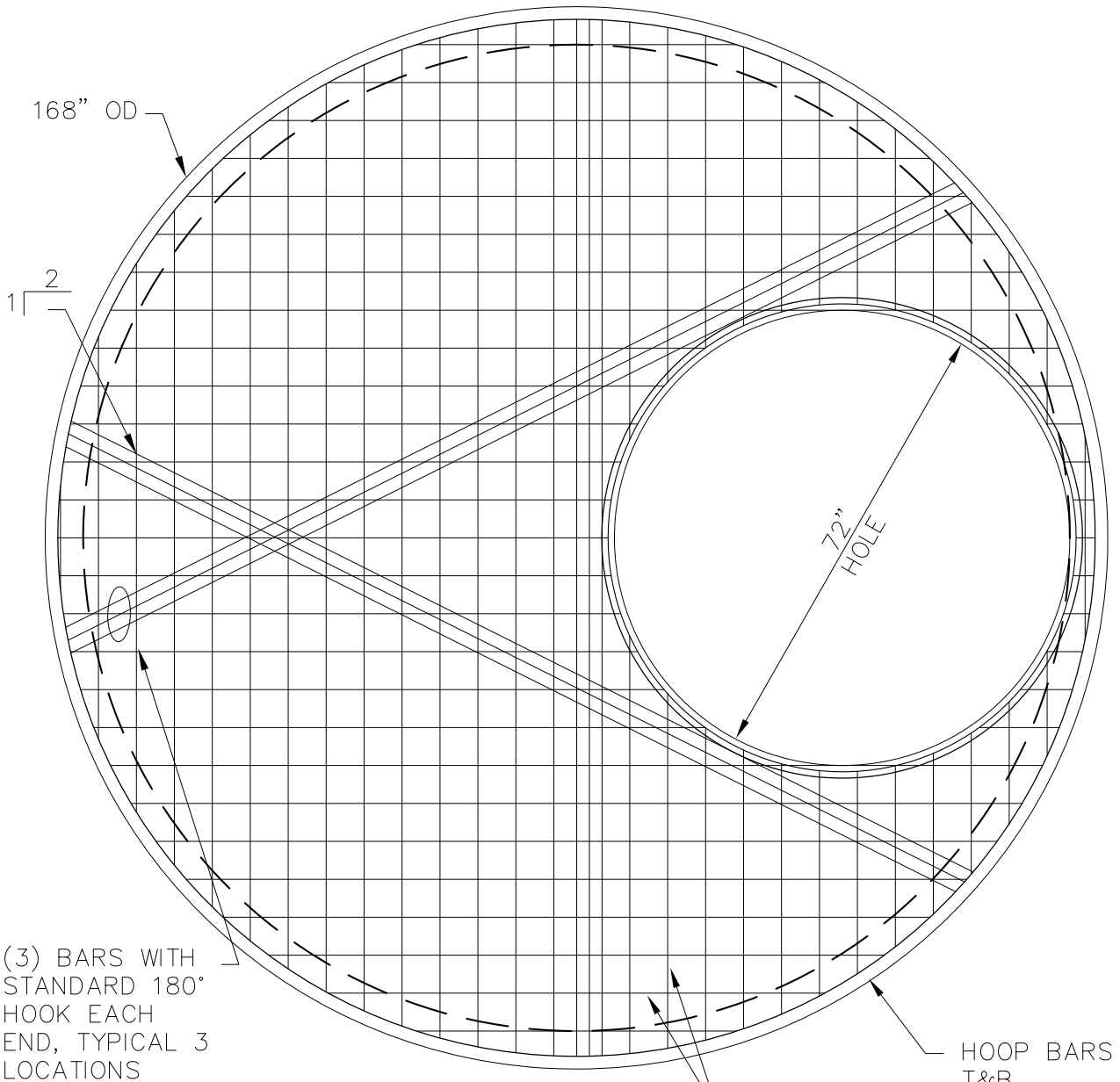
REVISED: 4/12

PRECAST CONCRETE REDUCING SLAB (140" TO 72")

SECTION # 55.05

DETAIL # 55-15

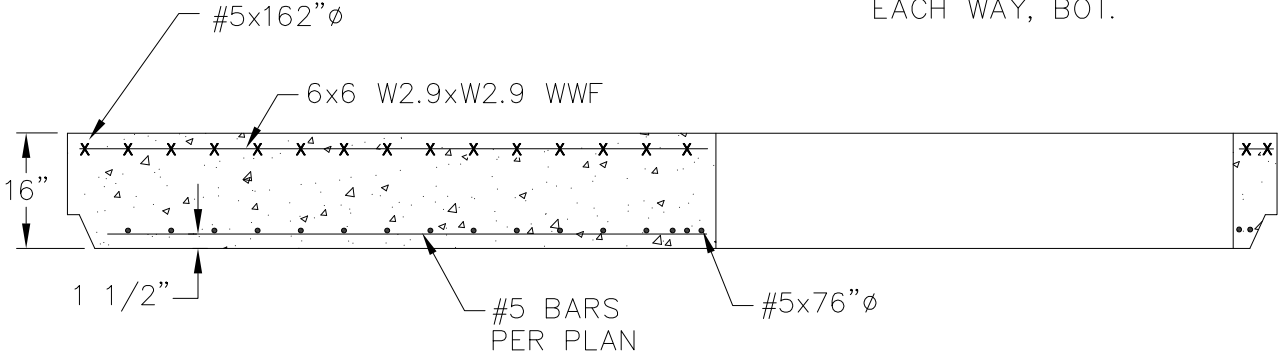
FILE.DWG



(3) BARS WITH STANDARD 180° HOOK EACH END, TYPICAL 3 LOCATIONS

HOOP BARS T&B

#5 BARS @ 6" OC EACH WAY, BOT.



#5x162" ϕ

6x6 W2.9xW2.9 WWF

16"

1 1/2"

#5 BARS PER PLAN

#5x76" ϕ

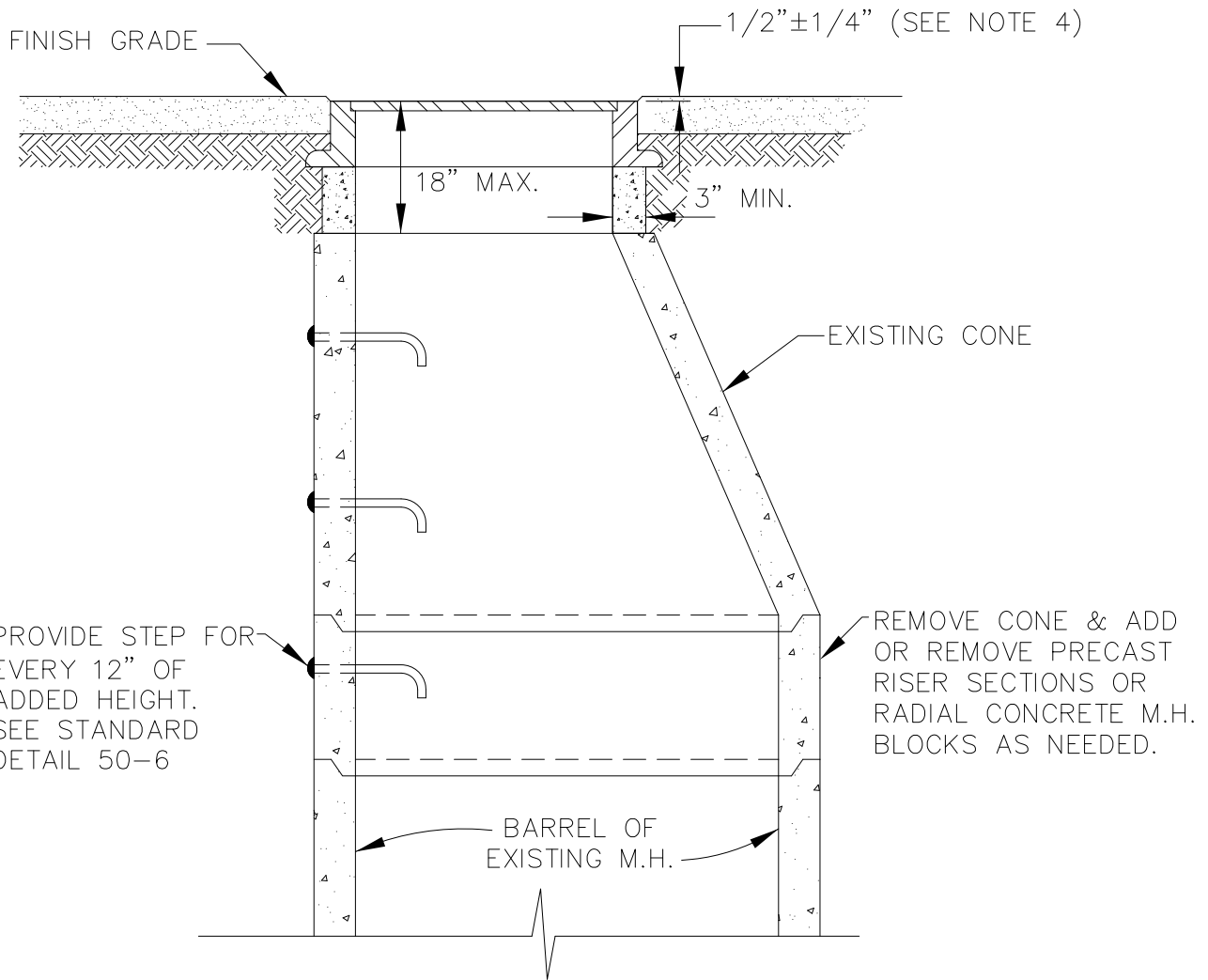
FILE.DWG



SCALE:
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APPROVED:
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4/12

**PRECAST CONCRETE
REDUCING SLAB
(168" TO 72")**

SECTION #
55.05
DETAIL #
55-16



NOTES:

1. RESET CONCRETE GRADE RING IN BEDDING MATERIAL AS SPECIFIED IN SECTION 55.05, ARTICLE 5.2.B – REINFORCED CONCRETE MANHOLES.
2. REFER TO ASTM DESIGNATION C-478 FOR DESIGN AND STRENGTH REQUIREMENTS.
3. RESET CONE IN RAM-NEK OR EQUAL.
4. ADJUST FRAME TO A DEPTH OF $1/2" \pm 1/4"$ BELOW SURFACE OF PAVEMENT. FEATHER EDGE OF PAVEMENT TO SMOOTH TRANSITION.

FILE.DWG

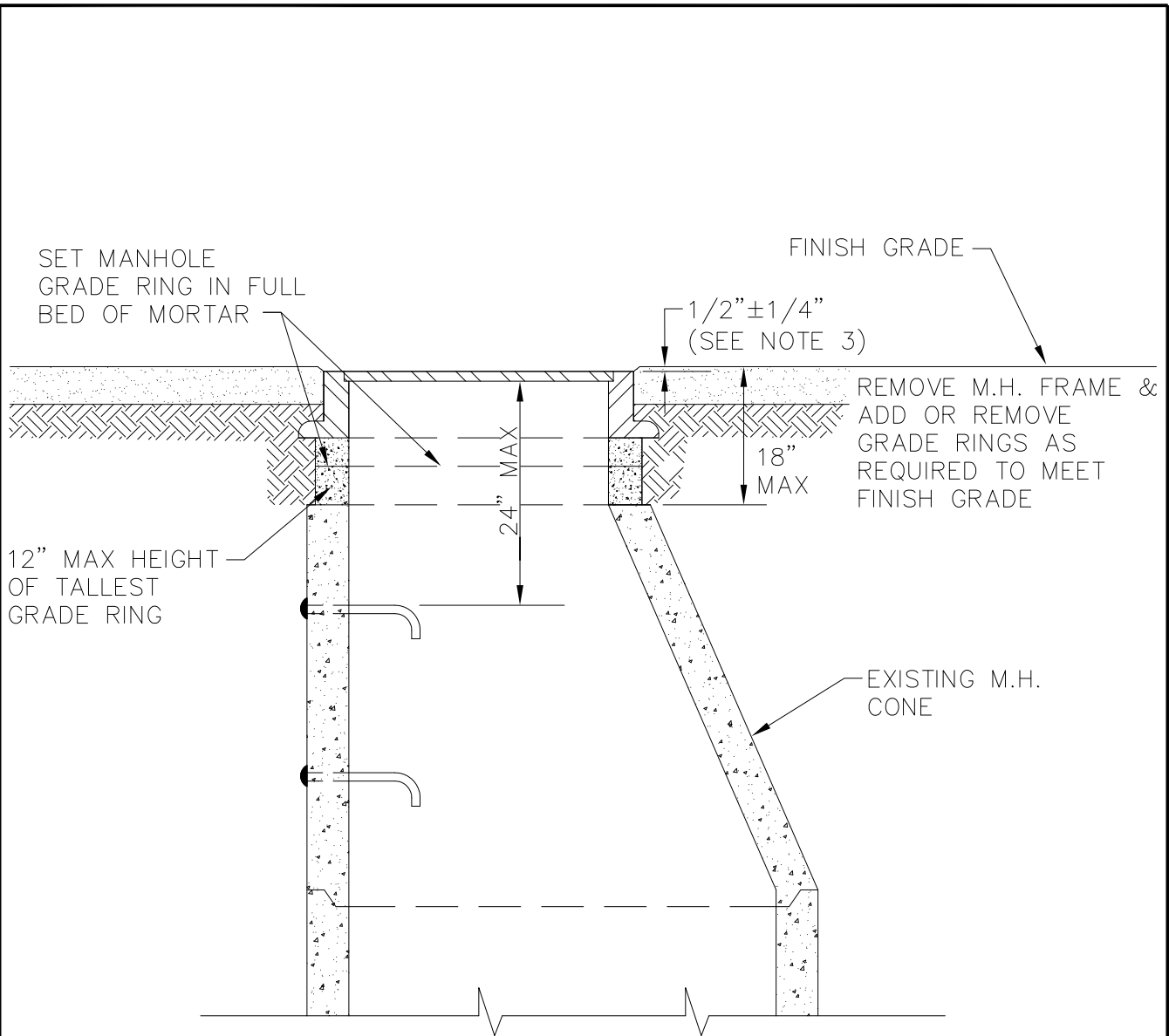


SCALE:
NTS
APPROVED:
REVISED:
4/12

MANHOLE CONE ADJUSTMENT

SECTION #
55.07

DETAIL #
55-17



NOTES:

1. REFER TO ASTM DESIGNATION C-478 FOR DESIGN AND STRENGTH REQUIREMENTS.
2. WHEN AN ADJUSTMENT OF GREATER THAN 12" IN GRADE RINGS IS REQUIRED, ADJUST CONE I.A.W. STANDARD DETAIL 55-17 RATHER THAN GRADE RINGS.
3. IF NECESSARY, SHIM MANHOLE FRAME WITH STUD WASHERS, TO ADJUST FRAME TO A DEPTH OF $1/2" \pm 1/4"$ BELOW SURFACE OF PAVEMENT. FEATHER EDGE OF PAVEMENT TO SMOOTH TRANSITION. WHEN SHIMS ARE USED, SET MANHOLE FRAME IN A FULL BED OF MORTAR WITH SHIMS.



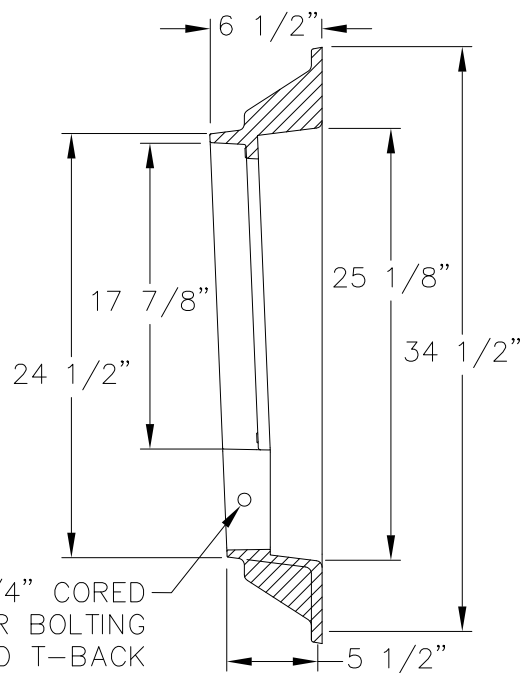
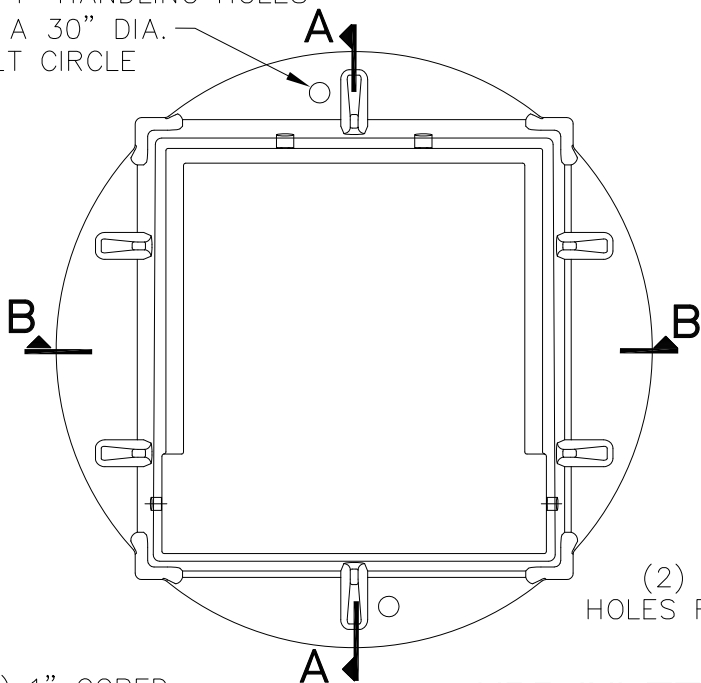
SCALE:
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4/12

MANHOLE RING ADJUSTMENT

SECTION #
55.08

DETAIL #
55-18

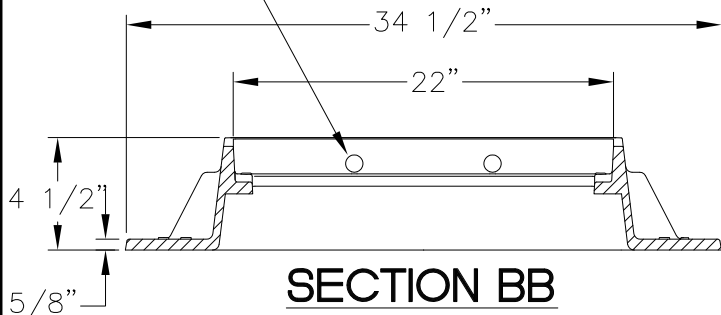
(2) 1" HANDLING HOLES
ON A 30" DIA.
BOLT CIRCLE



(2) 3/4" CORED
HOLES FOR BOLTING
TO T-BACK

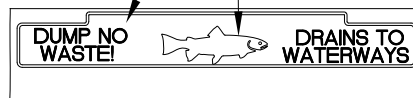
CURB INLET FRAME SECTION AA

(2) 1" CORED
WEEP HOLES

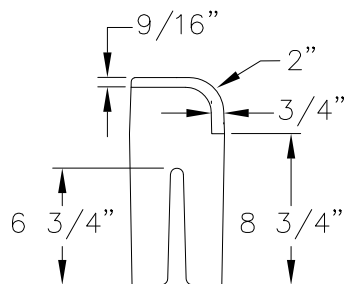


SECTION BB

3/4" RAISED LETTERS
(RECESSED FLUSH) RAISED FISH
(RECESSED FLUSH)

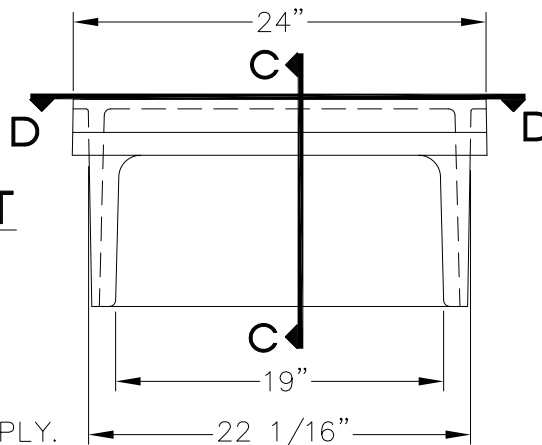


SECTION DD



SECTION CC

**CURB INLET
HOOD**



NOTES

THE NOTES FROM STANDARD DETAIL 55-20 APPLY.



SCALE:
NTS

APPROVED:

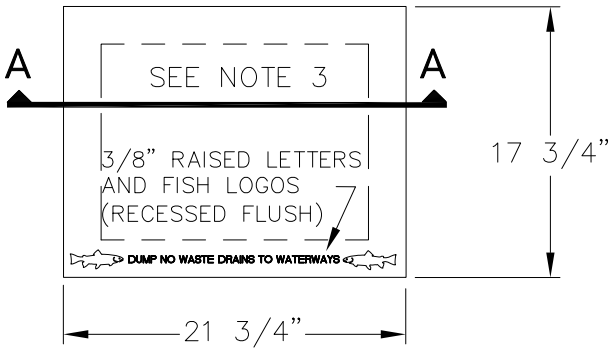
REVISED:
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**CATCH BASIN INLET
FRAME AND HOOD FOR
TYPE 1 CURB AND GUTTER**

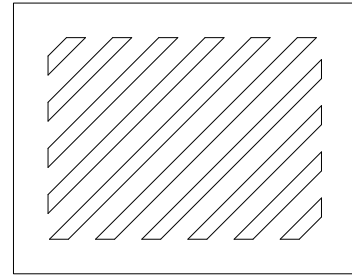
SECTION #
55.05,09

DETAIL #
55-19

FILE.DWG

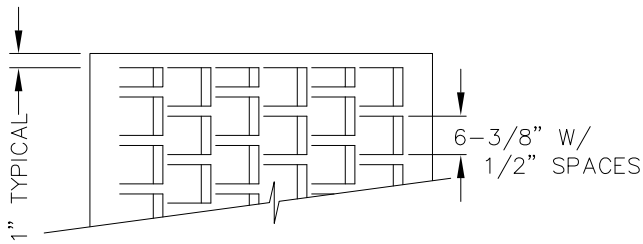


CURB INLET GRATE

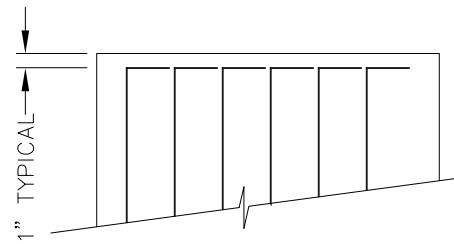


1" DIAGONAL BARS
WITH 1-1/2" OPENINGS

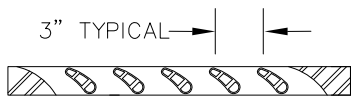
DIAGONAL GRATE



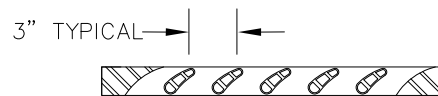
**OFFSET VANE
GRATE**



VANE GRATE



SECTION AA



SECTION AA

NOTES:

1. MINIMUM CASTING WEIGHT SHALL BE 400 LBS. FOR CURB INLET FRAME, HOOD & GRATE.
2. CURB INLET HOOD & GRATE SHALL CONFORM TO ASTM A536.
3. GRATE SHALL BE AS SHOWN ON THE DRAWINGS OR SPECIFIED BY THE ENGINEER.

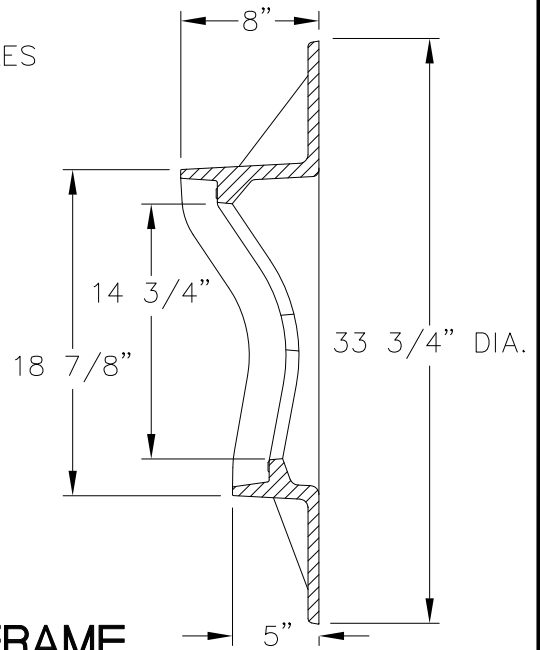
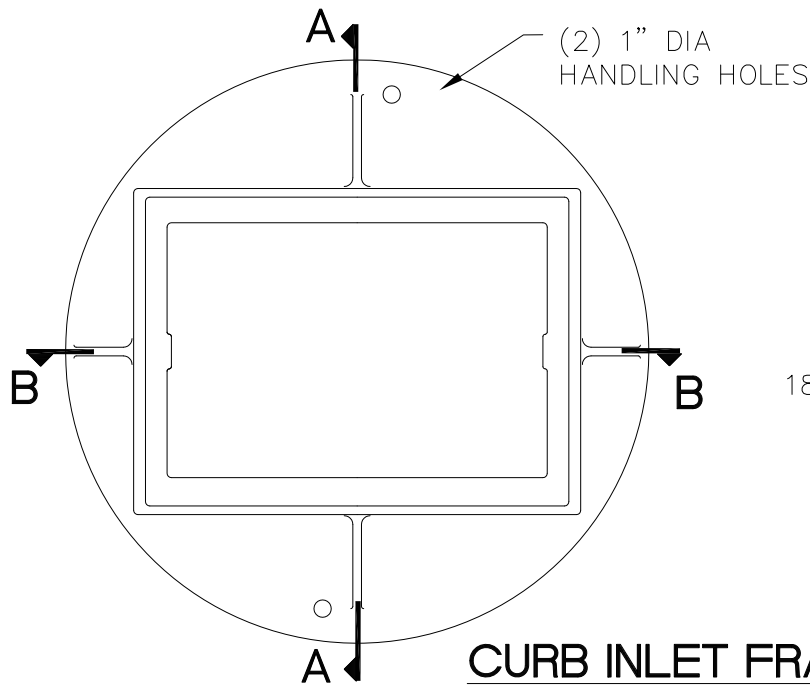
FILE.DWG



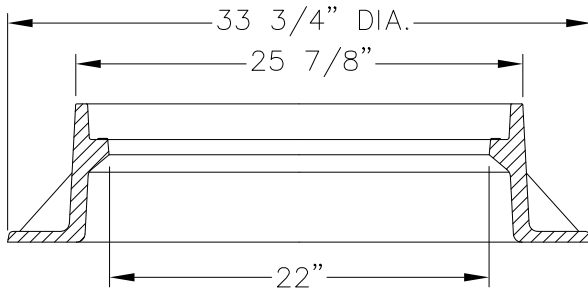
SCALE:
NTS
APPROVED:
REVISED:
4/12

**CATCH BASIN INLET
GRATES
TYPE 1 CURB AND GUTTER**

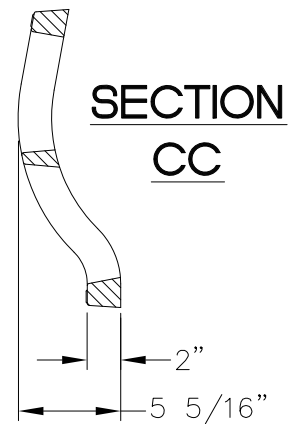
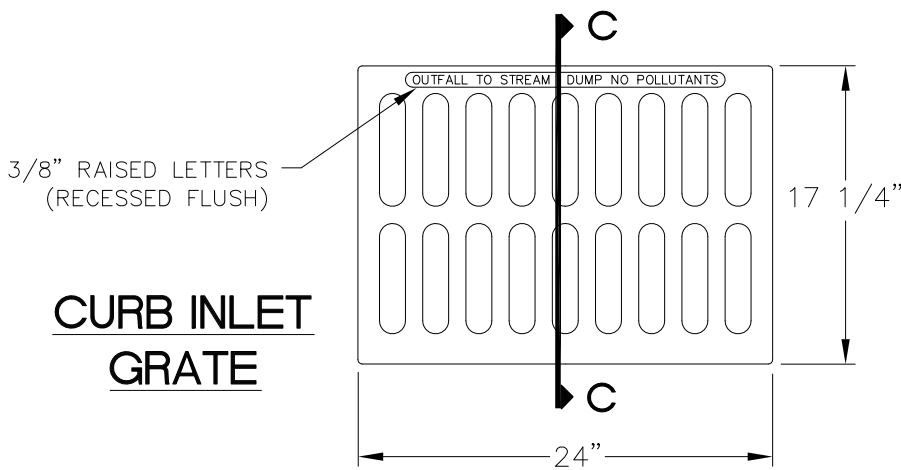
SECTION #
55.05,09
DETAIL #
55-20



SECTION AA



SECTION BB



FILE.DWG



SCALE:
NTS

APPROVED:

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4/12

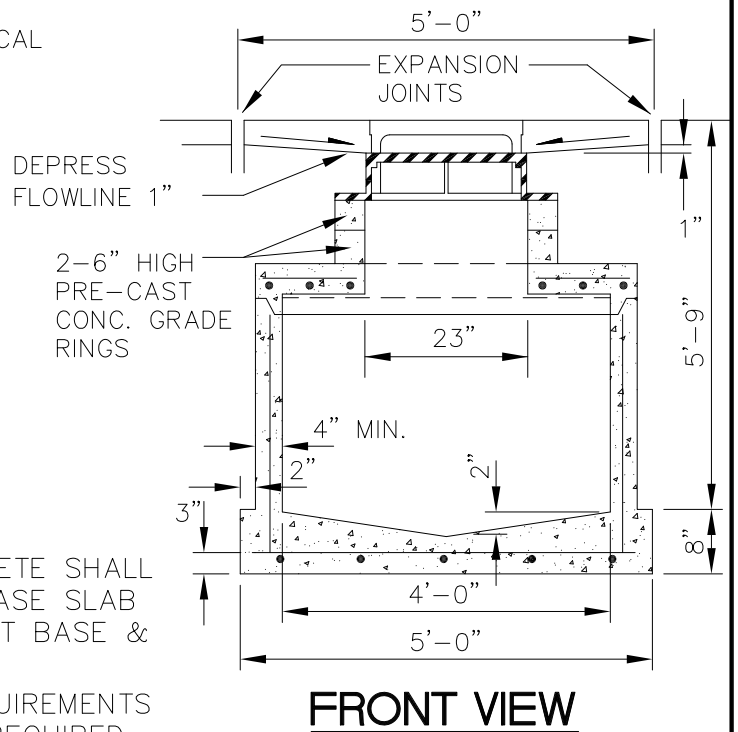
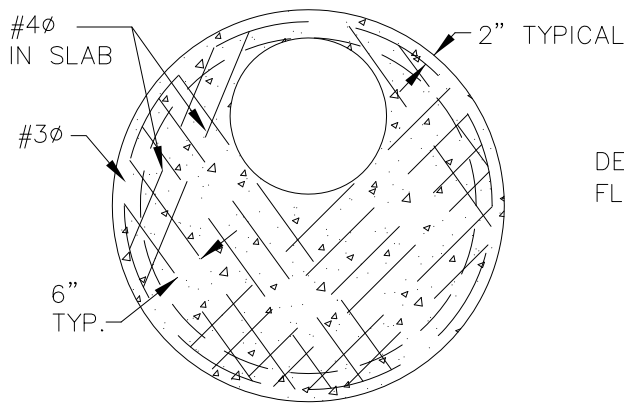
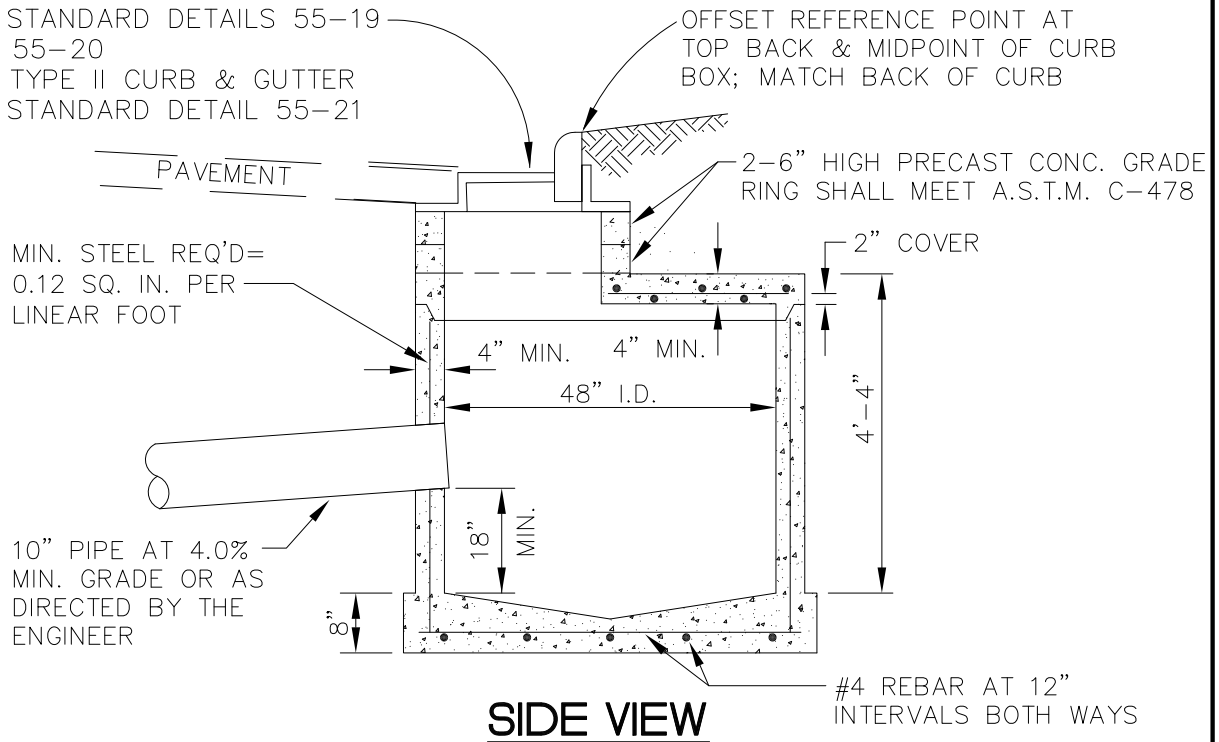
**CATCH BASIN INLET
FOR TYPE 2
CURB AND GUTTER**

SECTION #
55.09

DETAIL #
55-21

CATCH BASIN INLET

- FOR TYPE I CURB & GUTTER
SEE STANDARD DETAILS 55-19
AND 55-20
- FOR TYPE II CURB & GUTTER
SEE STANDARD DETAIL 55-21



NOTES:

1. COMPRESSIVE STRENGTH OF CONCRETE SHALL BE MINIMUM 4000 P.S.I., EXCEPT BASE SLAB WHICH MAY BE 3000 P.S.I. CONNECT BASE & BARREL WITH CONTINUOUS STEEL.
2. SEE ASTM C-478 FOR DESIGN REQUIREMENTS AND MINIMUM REINFORCING STEEL REQUIRED.
3. AT CATCH BASIN, DELETE CONCRETE GUTTER PAN, PAVE TO FACE OF CATCH BASIN INLET.

FILE.DWG



SCALE:
NTS

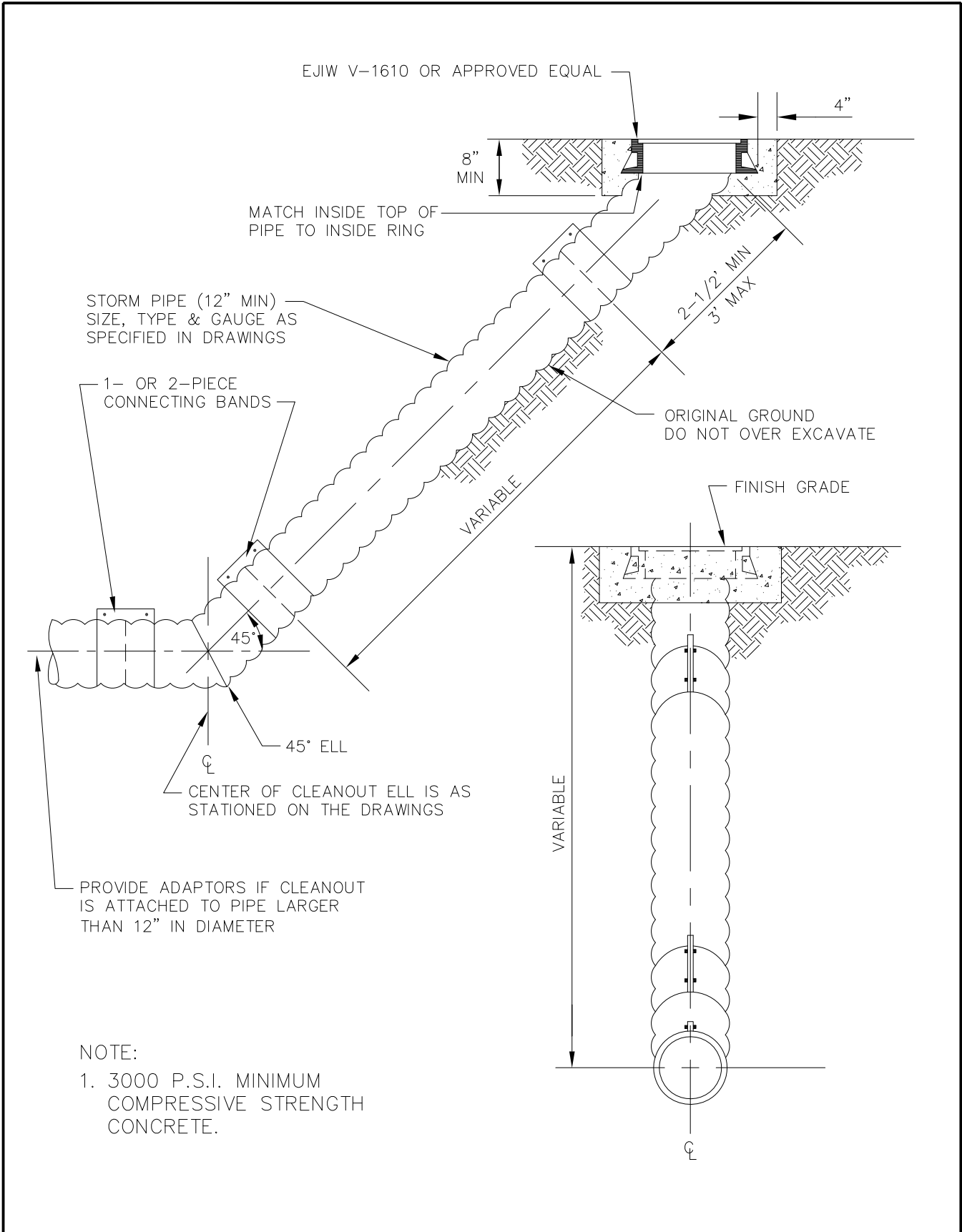
APPROVED:

REVISED:
4/12

PRECAST CATCH BASIN

SECTION #
55.09

DETAIL #
55-22



FILE.DWG



SCALE:
NTS

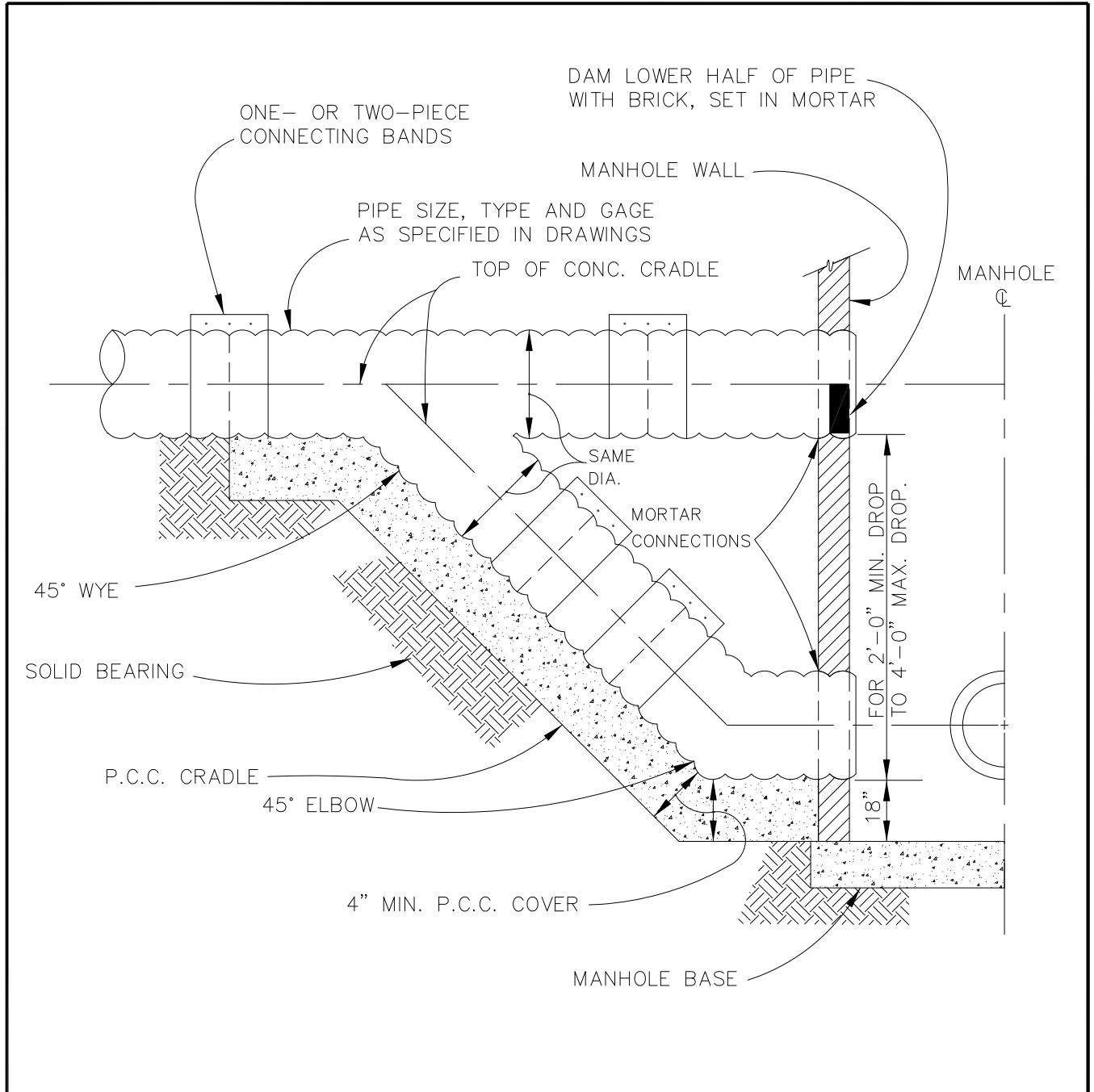
APPROVED:

REVISED:
4/12

STORM DRAIN CLEANOUT

SECTION #
55.14

DETAIL #
55-23



- NOTES:
1. 3000 P.S.I. MIN. COMPRESSIVE STRENGTH CONCRETE FOR CRADLE.
 2. PIPE SHALL PROTRUDE 2" INTO MANHOLE.



SCALE:
NTS

APPROVED:

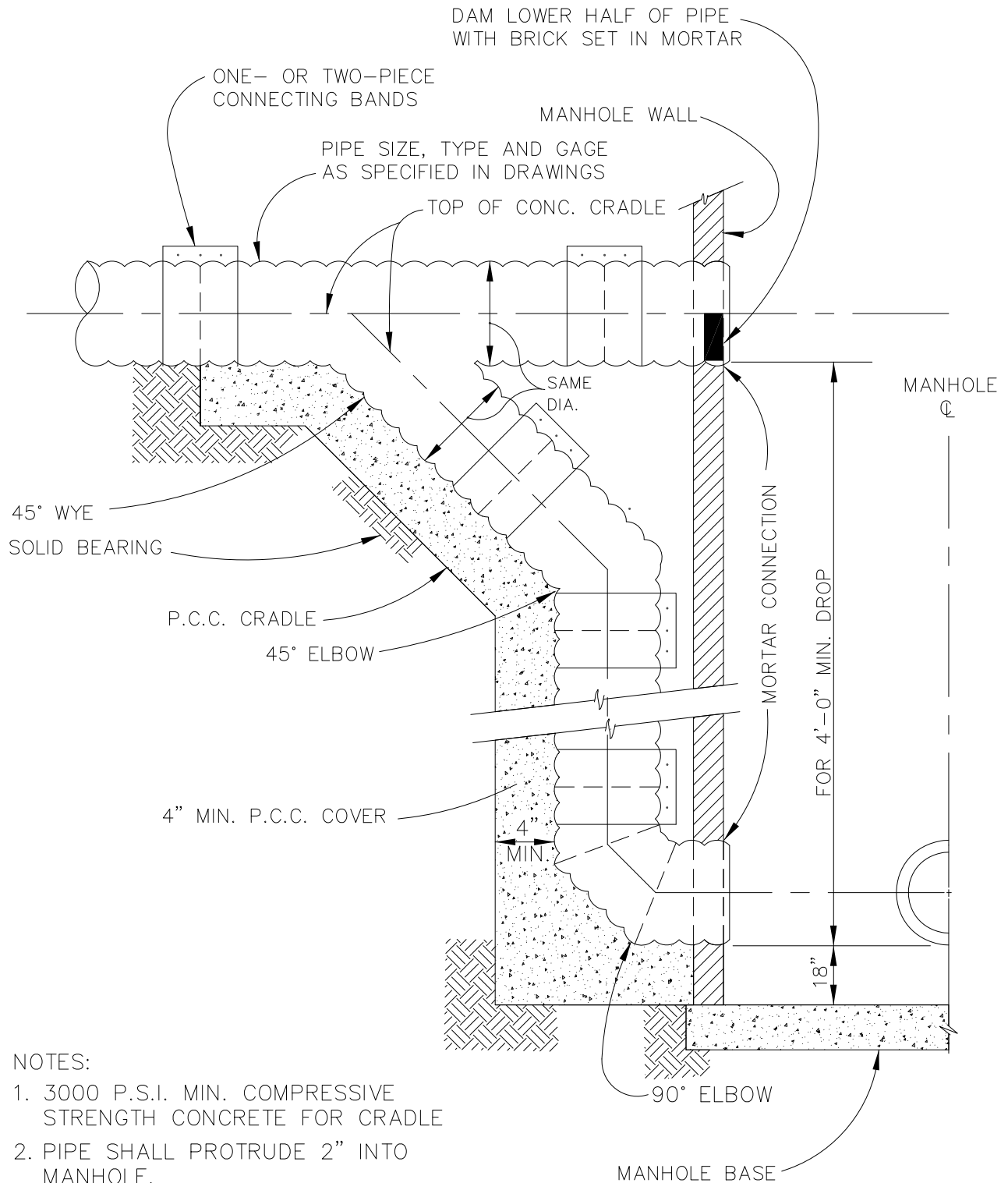
REVISED:
4/12

STORM DRAIN DROP CONNECTION (2' MIN. DROP)

SECTION #
55.16

DETAIL #
55-24

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NOTES:

1. 3000 P.S.I. MIN. COMPRESSIVE STRENGTH CONCRETE FOR CRADLE
2. PIPE SHALL PROTRUDE 2" INTO MANHOLE.



SCALE:
NTS

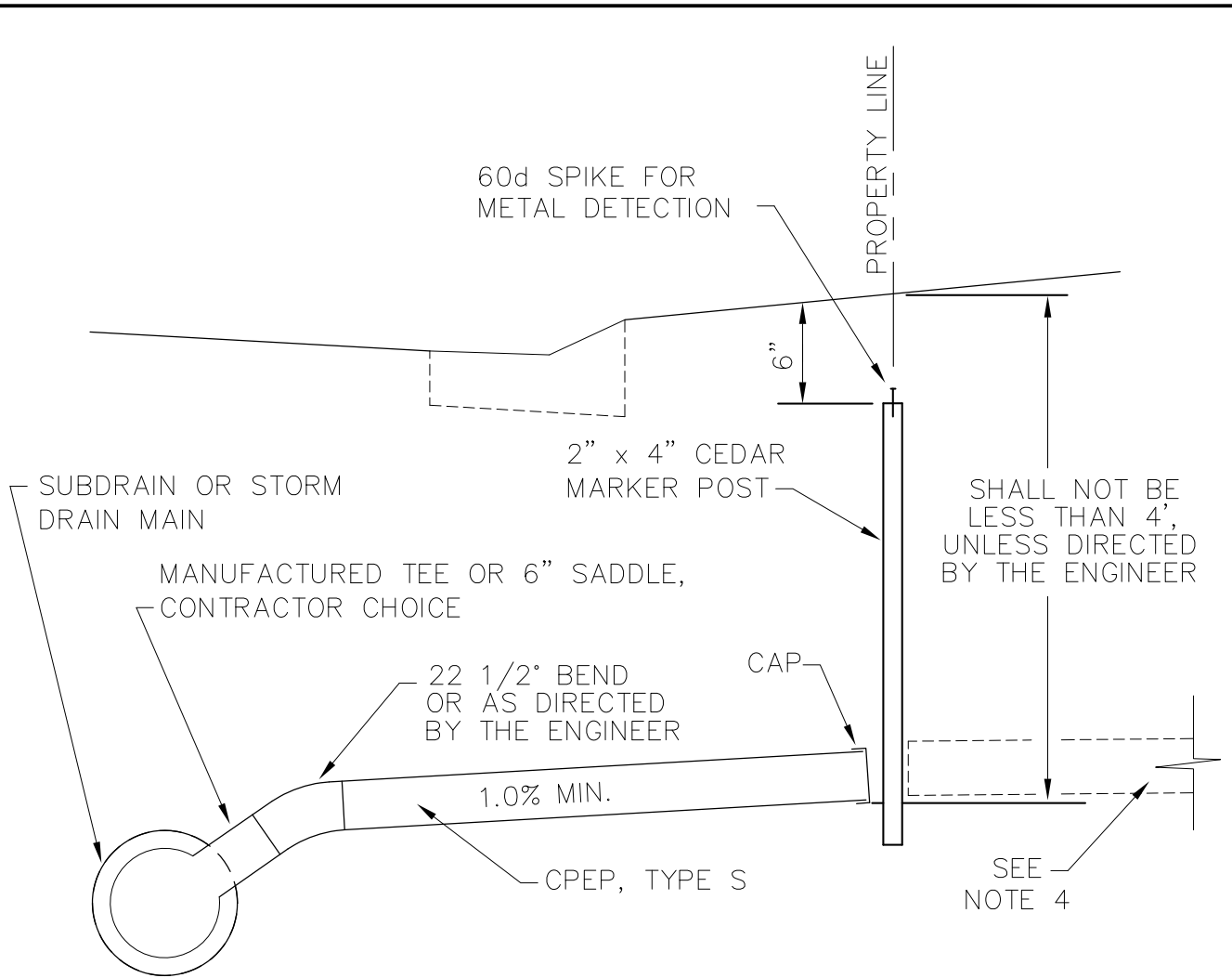
APPROVED:

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4/12

STORM DRAIN DROP CONNECTION (4' MIN. DROP)

SECTION #
55.16

DETAIL #
55-25



NOTES:

1. FINAL LOCATION OF THE FOOTING DRAIN SERVICE MAY BE ADJUSTED BY THE ENGINEER.
2. BACKFILL WITH TYPE II CLASSIFIED FILL AND BACKFILL WITHIN ROAD PRISM. BACKFILL WITH NATIVE MATERIAL BEHIND CURB.
3. WHEN FOOTING DRAIN CONNECTS DIRECTLY TO A MANHOLE, OMIT THE 22 1/2° BEND AND CONSTRUCT THE INVERT A MINIMUM OF 1' ABOVE THE DOWNSTREAM INVERT.
4. CONNECT TO ON-PROPERTY FOOTING DRAIN, WHEN PRESENT, AT PROPERTY LINE, AND OMIT MARKER POST. CONTRACTOR SHALL ADAPT AND PROVIDE BELL-REDUCER OR COUPLING CONNECTION TO EXISTING FOOTING DRAIN OF WHATEVER PIPE SIZE AND TYPE AND RESOLVE CONNECTION DETAILS WITH PROPERTY OWNER AND THE ENGINEER. CONNECTION TO EXISTING FOOTING DRAIN SHALL BE INCIDENTAL TO THIS PAY ITEM, AND NO ADDITIONAL PAYMENT SHALL BE MADE.

FILE.DWG



SCALE:
NTS

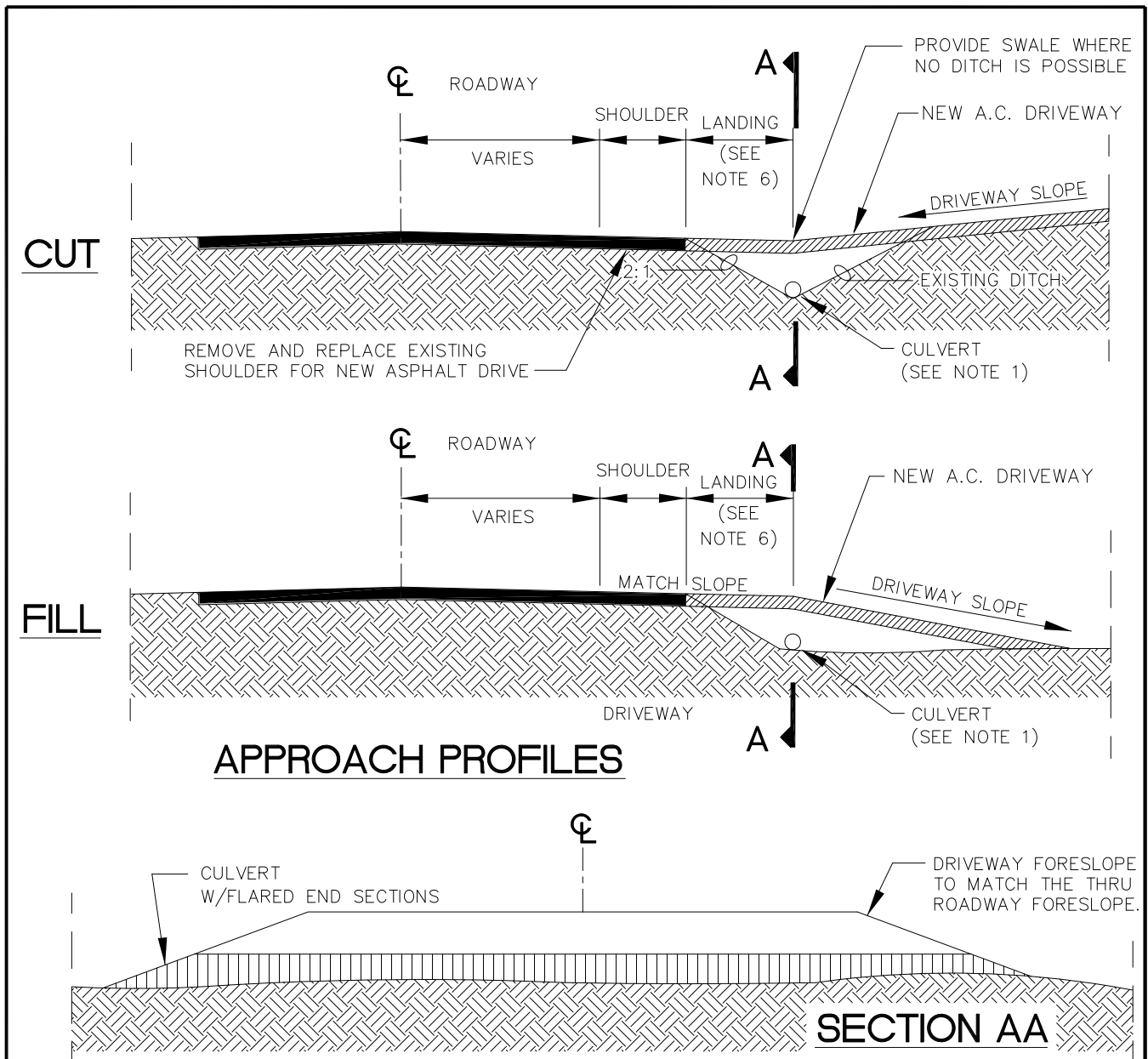
APPROVED:

REVISED:
4/12

FOOTING DRAIN SERVICE DETAIL

SECTION #
55.18

DETAIL #
55-26



APPROACH PROFILES

SECTION AA

NOTES:

1. CULVERT DIAMETER IS MINIMUM 18" OR AS SPECIFIED IN THE DRAWINGS.
2. CULVERT INVERTS SHALL MATCH BOTTOM OF DITCH PROFILE. CONTRACTOR SHALL GRADE DITCH ON BOTH ENDS OF CULVERT PRIOR TO INSTALLATION TO ENSURE POSITIVE DRAINAGE.
3. DRIVEWAY CULVERTS SHALL HAVE A MINIMUM 12" COVER FROM BOTTOM OF A.C. PAVEMENT TO TOP OF PIPE.
4. CULVERT SHALL BE BEDDED IN MINIMUM 6" CLASS "C" BEDDING MATERIAL. BACKFILL SHALL BE TYPE II-A CLASSIFIED FILL & BACKFILL COMPACTED TO 95% OF MAXIMUM DENSITY. BACKFILL AND BEDDING ARE INCIDENTAL TO COST OF CULVERT INSTALLATION.
5. CULVERT END SECTIONS SHALL BE FLARED AND ARE INCIDENTAL TO CULVERT INSTALLATION.
6. LANDING AREA MAXIMUM SLOPE ±2%. RESIDENTIAL DRIVEWAY, 10' MINIMUM. COMMERCIAL/INDUSTRIAL DRIVEWAY, 20' MINIMUM.

FILE.DWG



SCALE:
NTS
APPROVED:
REVISED:
4/12

**DRIVEWAY
CULVERT DETAILS**

SECTION #
55.21
DETAIL #
55-27