Public Works
Standard Drawings
Subcommittee Meeting

Monday, January 13, 2019

Regional Forum Room

Welcome and Introductions

Meeting Summary

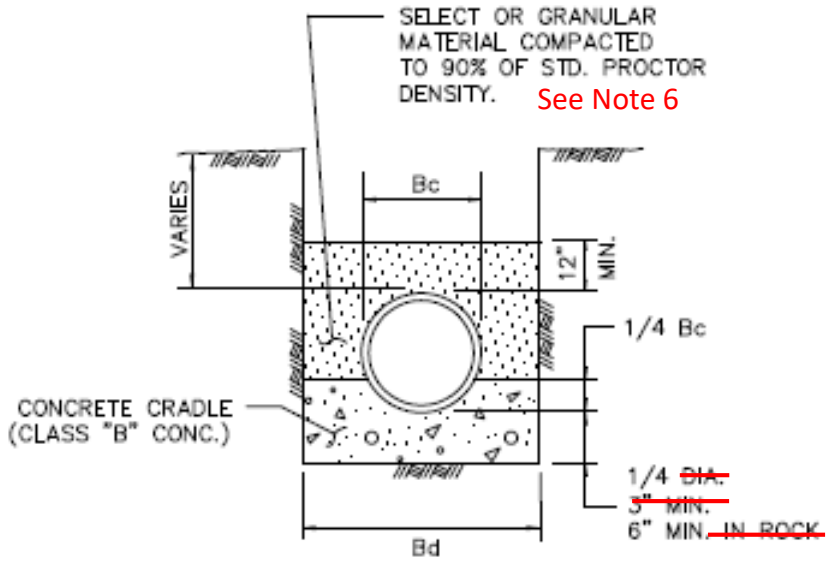
Division 3000: General Underground Conduit

- Removing 3070
- Removing callout to sidewalks
- Geotextile

DIVISION 3000 GENERAL UNDERGROUND CONDUIT

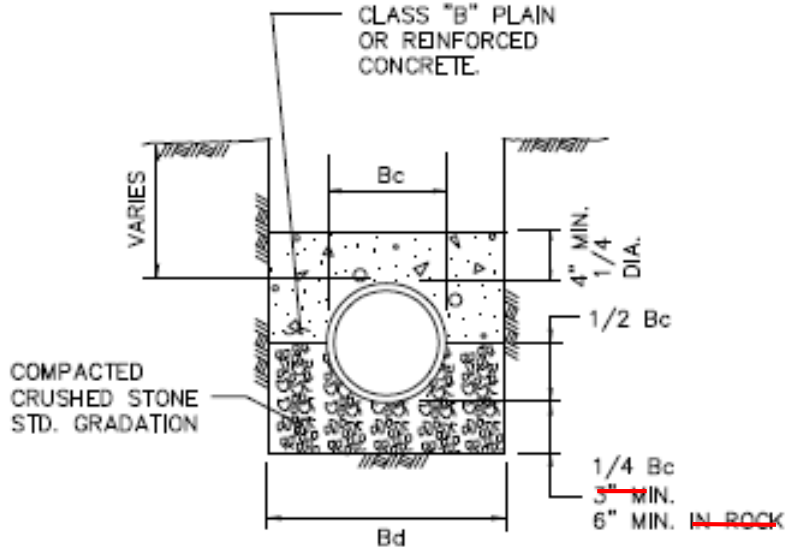
TABLE OF CONTENTS

Add geotextile wrap around stone trenches to avoid soil migration as directed by owner – Chris and Mathew will provide markup with where geotextile should be placed



CLASS "A"

CLASS "B" CONCRETE CRADLE N.T.S.
PLAIN CONC. LF 2.8
REINF. CONC. LF 3.4 P=0.4%



CLASS "A–1"

CLASS "B" CONCRETE CAP N.T.S.
PLAIN CONC. LF 2.8
REINF. CONC. LF 3.4 P=0.4%
REINF. CONC. LF 4.8 P=1.0%

NOTES:

1. LF. = LOAD FACTOR TO BE USED TO DETERMINE 3 EDGE BEARING BASED ON TYPE OF EMBEDMENT.
2. FREE–FALL OF CONCRETE NOT TO EXCEED 5 FT. MAXIMUM.
3. P = Rho FOR STEEL %
4. Bc = OUTSIDE DIAMETER OF PIPE
5. Bd = TRENCH WIDTH

6. Use 95% density under paved surface and 90% in unpaved areas

STANDARD DRAWING NO. 3010

EMBEDMENT

CLASS "A" & "A–1"

North Central Texas Council of Governments

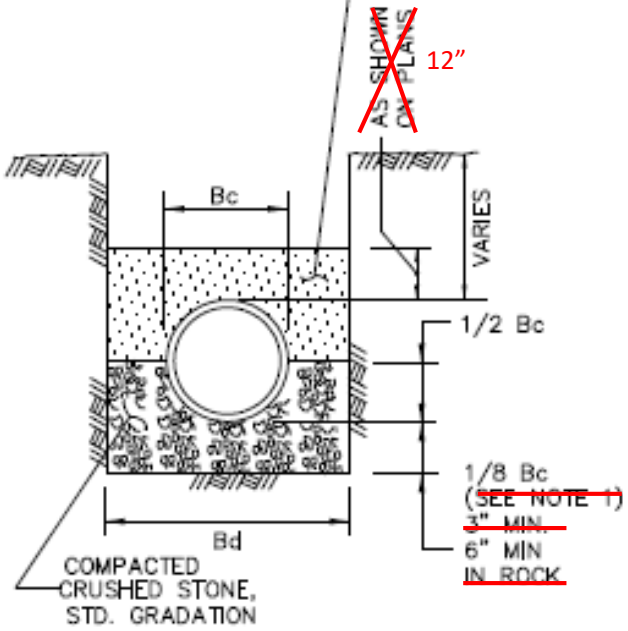
STANDARD SPECIFICATION REFERENCE 504.5

DATE OCT. '04

STANDARD DRAWING NO. 3010

SELECT OR GRANULAR MATERIAL COMPACTED TO 90% OF STD. PROCTOR DENSITY

See Note 4

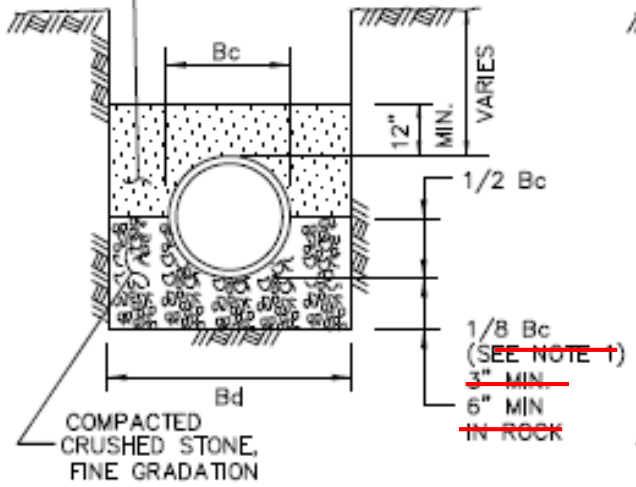


CLASS "B"

N.T.S.

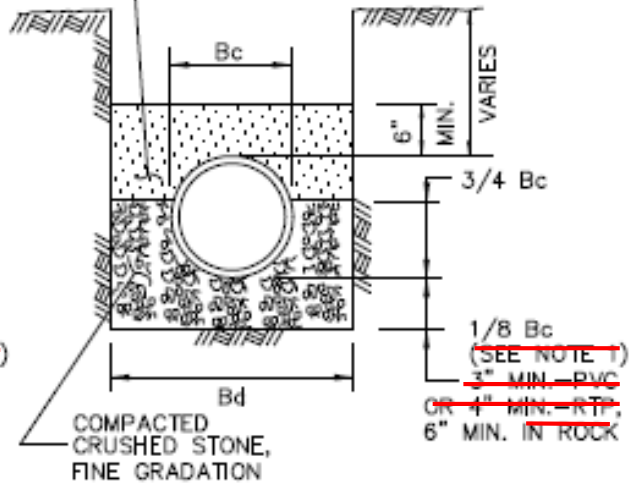
GRANULAR MATERIAL COMPACTED TO 90% OF STD. PROCTOR DENSITY

See Note 4



CLASS "B+"

N.T.S.



CLASS "B-1"

N.T.S.

NOTES:

1. ~~FOR MAINS 42" DIAMETER AND LARGER LARGER, 1/8 Bc SHALL BE TAKEN AS 6".~~
2. Bc = OUTSIDE DIAMETER OF PIPE
3. Bd = TRENCH WIDTH
4. Use 95% density under paved surface and 90% in unpaved areas

STANDARD DRAWING NO. 3020

EMBEDMENT

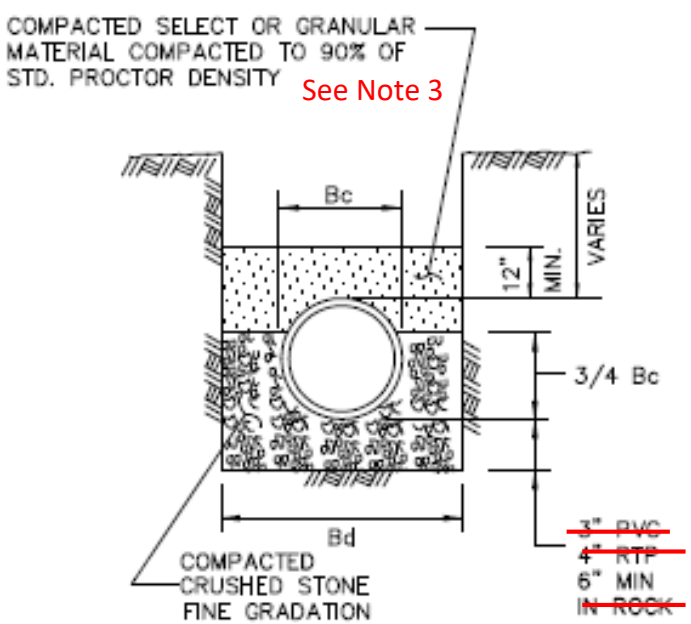
CLASS "B", "B+", & "B-1"

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 504.5

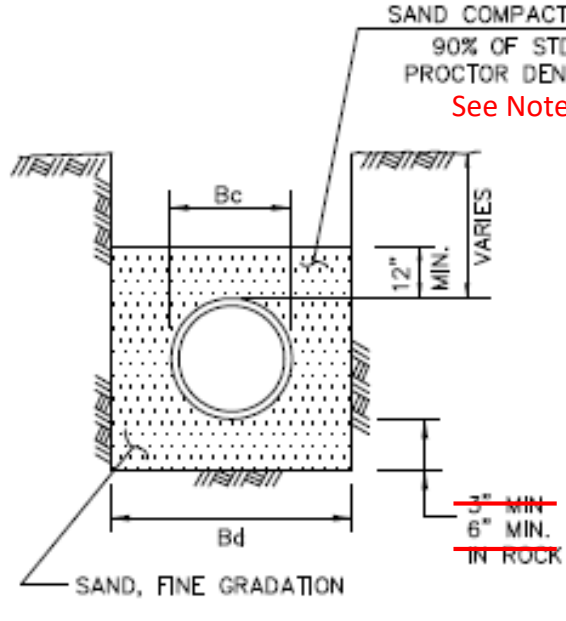
DATE OCT. '04

STANDARD DRAWING NO. 3020



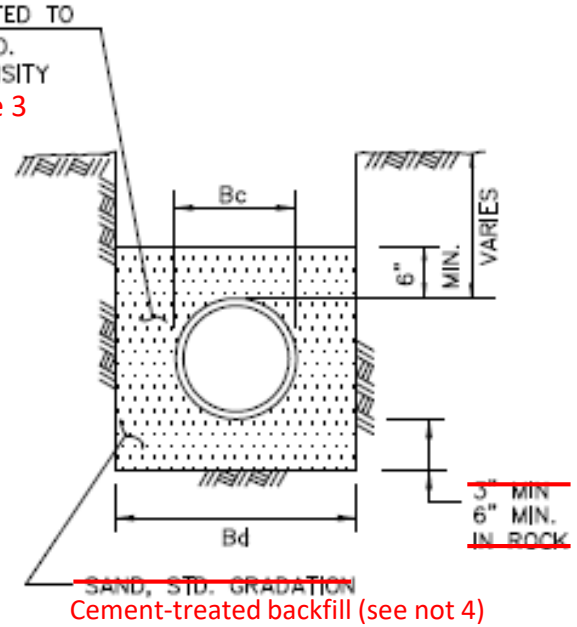
CLASS "B-2"

N.T.S.



CLASS "B-3"

N.T.S.



CLASS "B-4"

N.T.S.

NOTES:

1. Bc = OUTSIDE DIAMETER OF PIPE
2. Bd = TRENCH WIDTH
3. Use 95% density under paved surface and 90% in unpaved areas
4. Refer to 504.6.2

STANDARD DRAWING NO. 3030

EMBEDMENT

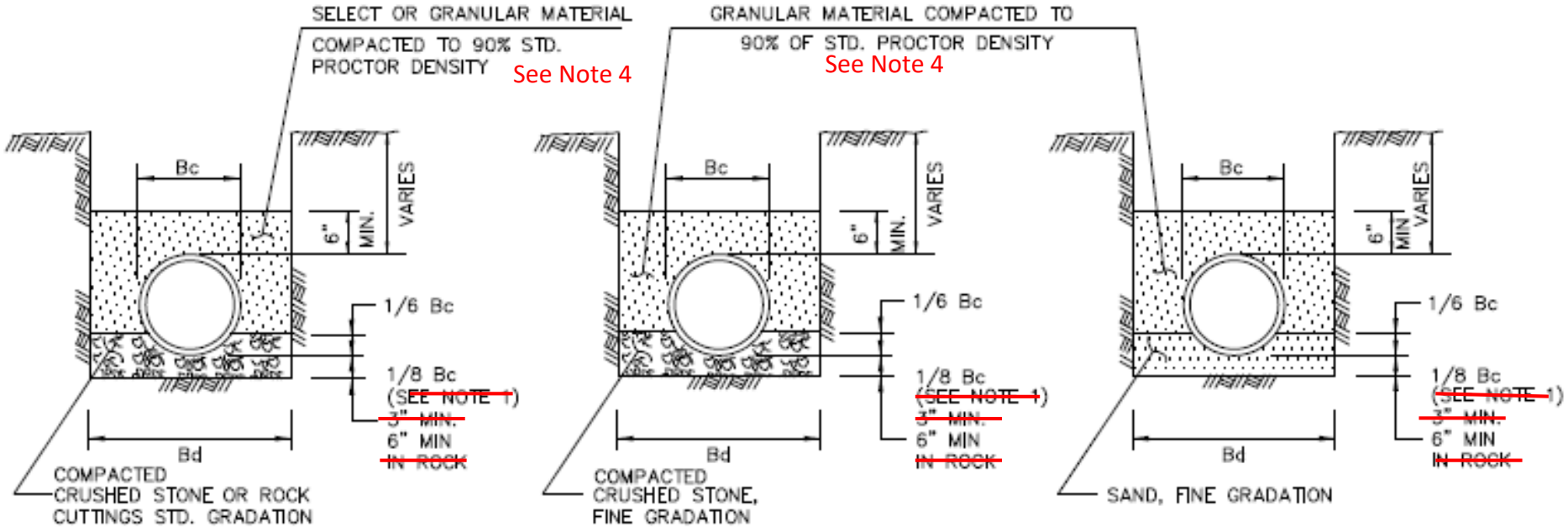
CLASS "B-2","B-3", & "B-4"

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 504.5

DATE OCT. '04

STANDARD DRAWING NO. 3030



NOTES:

1. ~~FOR MAINS 42" DIAMETER AND LARGER, 1/8 Bc SHALL BE TAKEN AS 6".~~
2. Bc = OUTSIDE DIAMETER OF PIPE
3. Bd = TRENCH WIDTH

4. Use 95% density under paved surface and 90% in unpaved areas

STANDARD DRAWING NO. 3040

EMBEDMENT

CLASS "C", "C+", & "C-1"

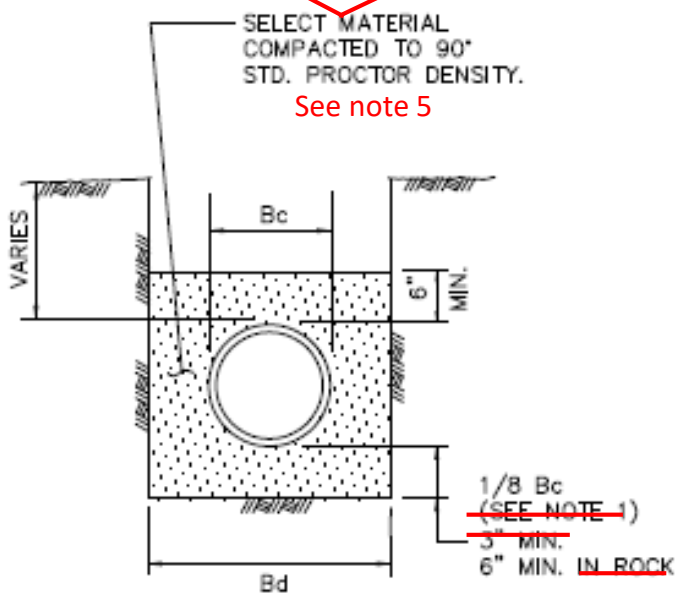
North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE
504.5

DATE
OCT. '04

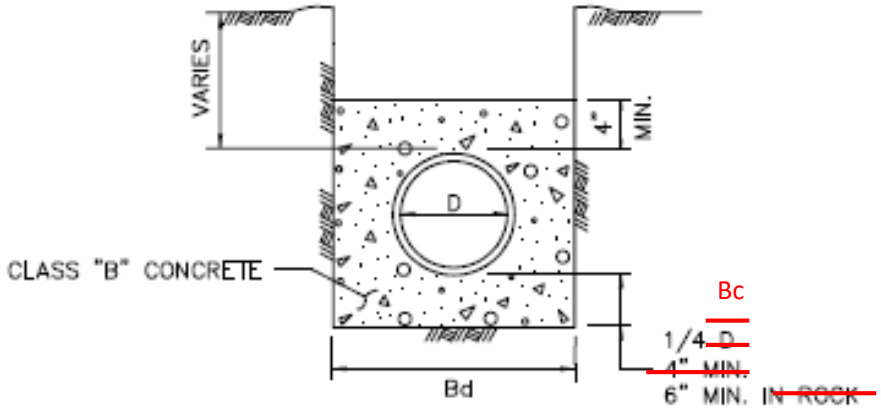
STANDARD DRAWING NO.
3040

Or granular



CLASS "D+"

N.T.S.



CLASS "G"

N.T.S.

NOTES:

1. FOR MAINS 42" DIAMETER AND LARGER, 1/8 Bc SHALL BE TAKEN AS 6".
2. Bc = OUTSIDE DIAMETER OF PIPE
3. Bd = TRENCH WIDTH
4. D = INSIDE DIAMETER OF PIPE
5. Use 95% density under paved surface and 90% in unpaved areas

STANDARD DRAWING NO. 3050

EMBEDMENT

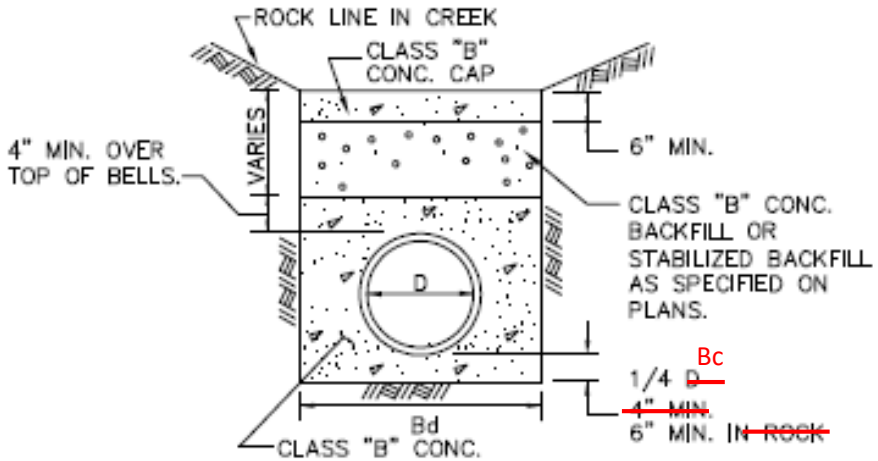
CLASS "D+" & "G"

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 504.5

DATE OCT. '04

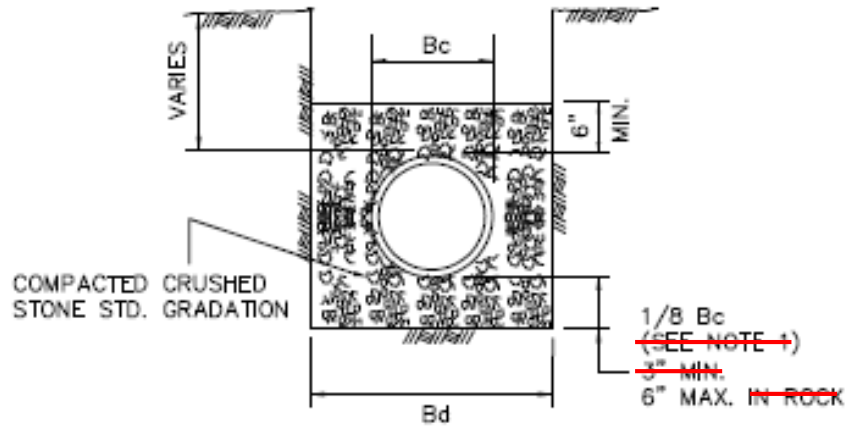
STANDARD DRAWING NO. 3050



CLASS "G-1"

~~(FOR ROCK DITCHES IN CREEKS)~~

N.T.S.



CLASS "H"

N.T.S.

NOTES:

1. ~~FOR MAINS 42" DIAMETER AND LARGER, 1/8 Bc SHALL BE TAKEN AS 6".~~
2. Bd = TRENCH WIDTH
3. Bc = OUTSIDE DIAMETER OF PIPE
4. D = INSIDE DIAMETER OF PIPE

STANDARD DRAWING NO. 3060

EMBEDMENT

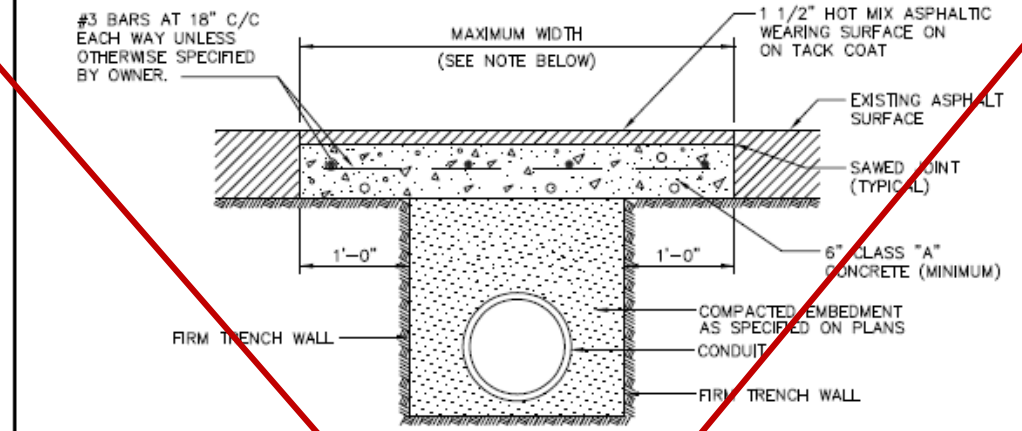
CLASS "G-1" & "H"

North Central Texas Council of Governments

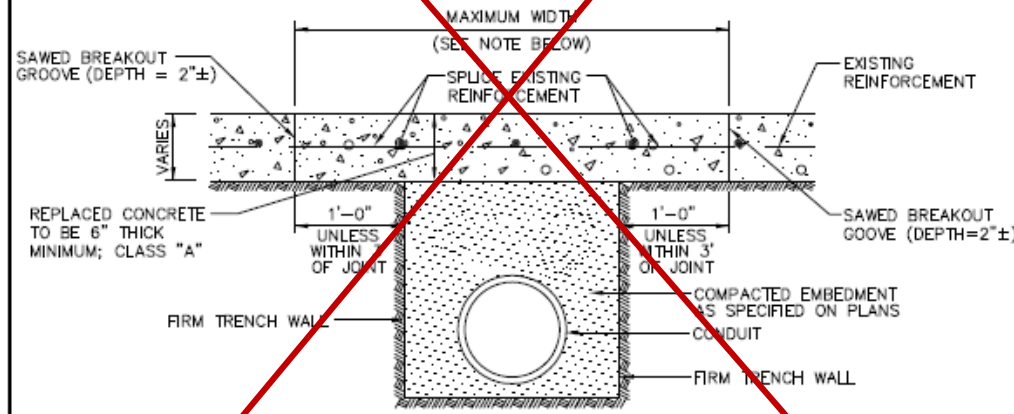
STANDARD SPECIFICATION REFERENCE 504.5

DATE OCT. '04

STANDARD DRAWING NO. 3060



ASPHALT PAVEMENT
N.T.S.



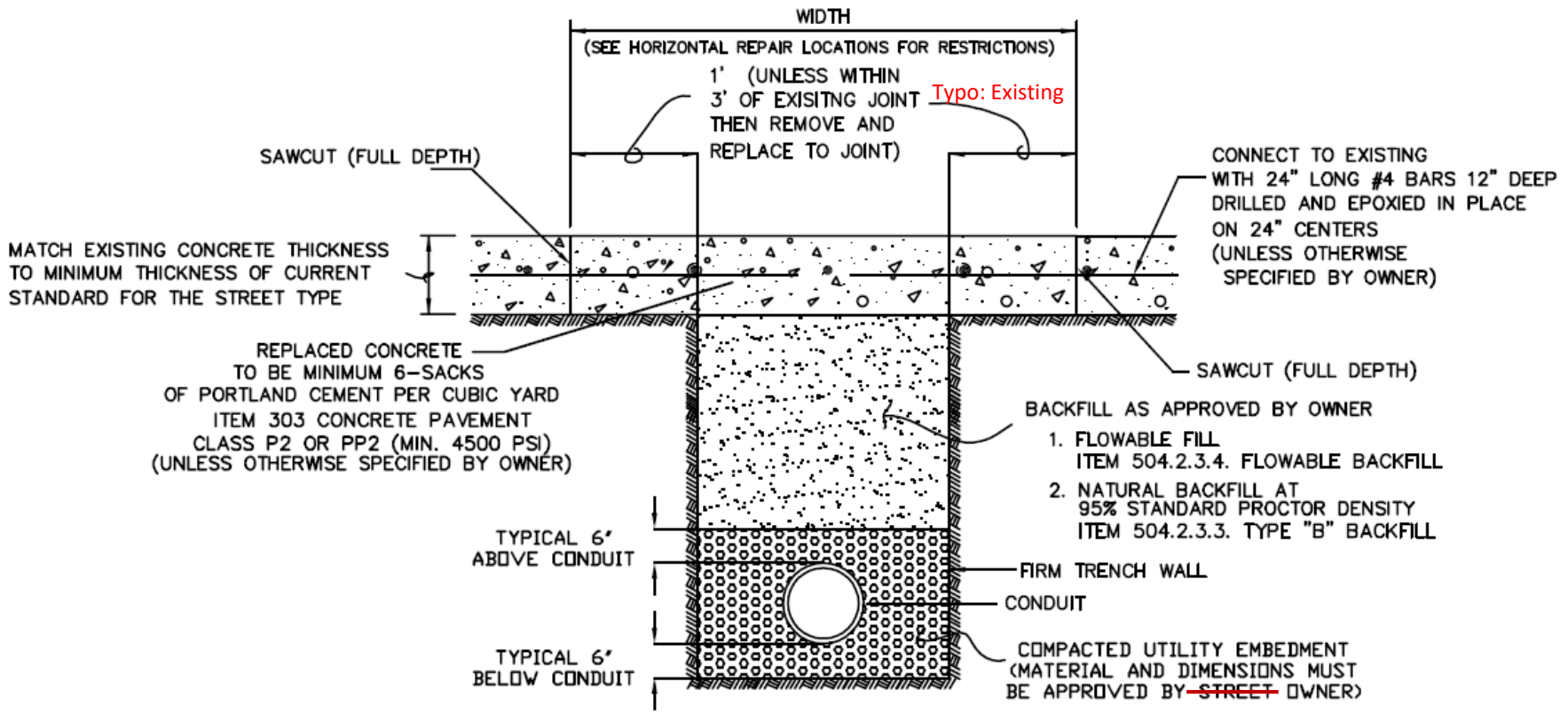
CONCRETE PAVEMENT
N.T.S.

NOTES:

1. PAYMENT TO THE CONTRACTOR FOR REPLACEMENT OF PAVEMENT AND/OR DRIVEWAYS WILL BE BASED ON ACTUAL MEASUREMENTS UP TO A MAXIMUM WIDTH EQUAL TO THE SPECIFIED MAXIMUM TRENCH WIDTH (PER STD. SPEC. ITEM 6.2.) PLUS 2 FEET. ANY EXISTING PAVEMENT DAMAGED OR REMOVED IN EXCESS OF THE MAXIMUM LIMITS SHALL BE AT THE EXPENSE OF THE CONTRACTOR.
2. WHEN REMOVING CONCRETE PAVEMENT THE CONTRACTOR SHALL ENDEAVOR TO LIMIT DAMAGE TO EXISTING REINFORCEMENT SO IT MAY BE EMPLOYED IN THE REPLACEMENT OPERATION. IF ORIGINAL REINFORCEMENT IS CUT OR BROKEN, REPLACEMENT BARS OF THE SAME SIZE SHALL BE INSTALLED BY DRILLING AND DOWELLING AS DIRECTED BY THE OWNER.

PAVEMENT CUTS	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 402.1	
REMOVAL AND REPLACEMENT		DATE OCT. '04	STANDARD DRAWING NO. 3070

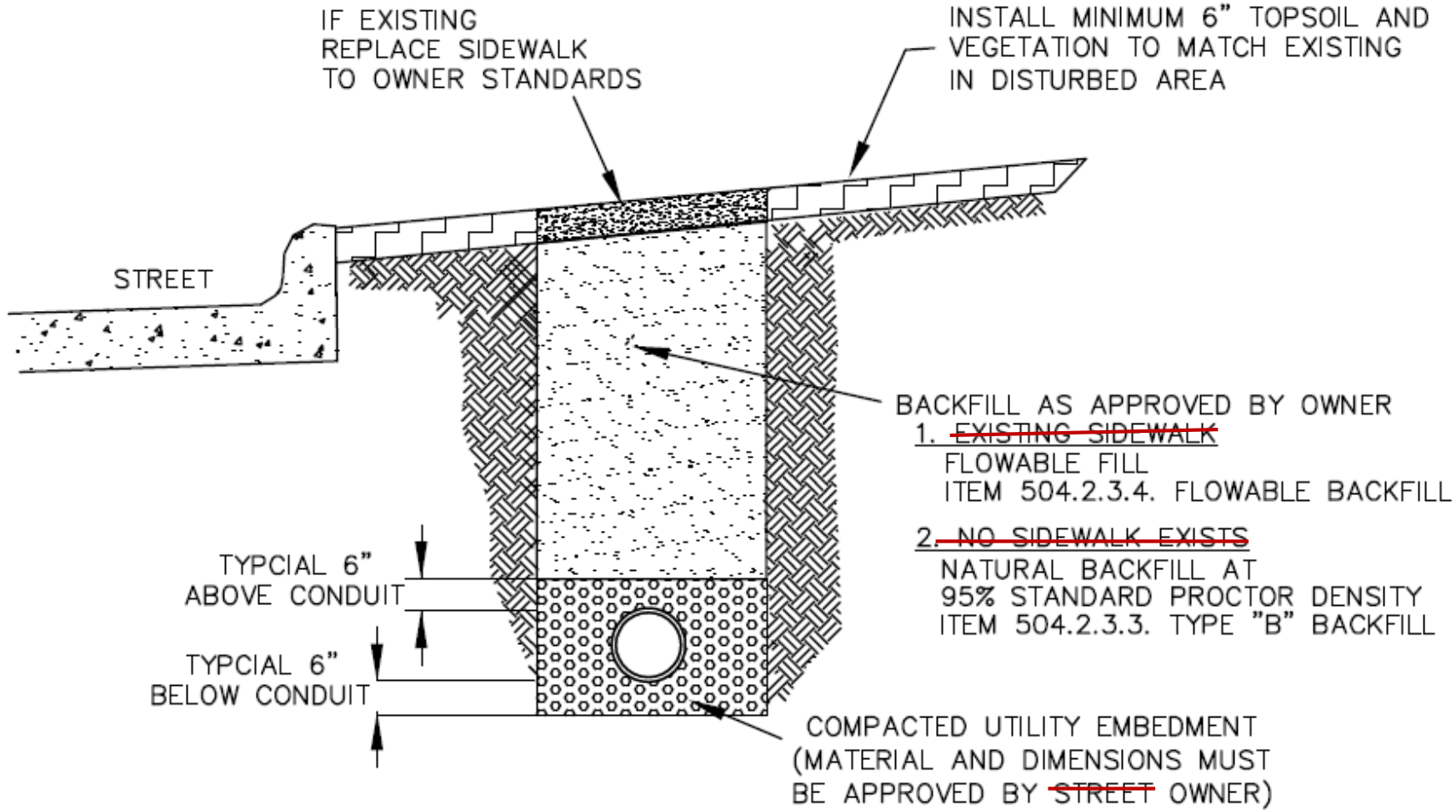
GENERAL NOTE: CHECK WITH STREET OWNER FOR SPECIFIC REQUIREMENTS NOT CONTAINED HEREIN



CONCRETE PAVEMENT
N.T.S.

Top Detail

PAVEMENT CUT AND REPAIR	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 402	
CONCRETE AND PARKWAY		DATE OCT. '04	STANDARD DRAWING NO. 3070A



STREET PARKWAY

N.T.S.

Bottom Detail

PAVEMENT CUT AND REPAIR

CONCRETE AND PARKWAY

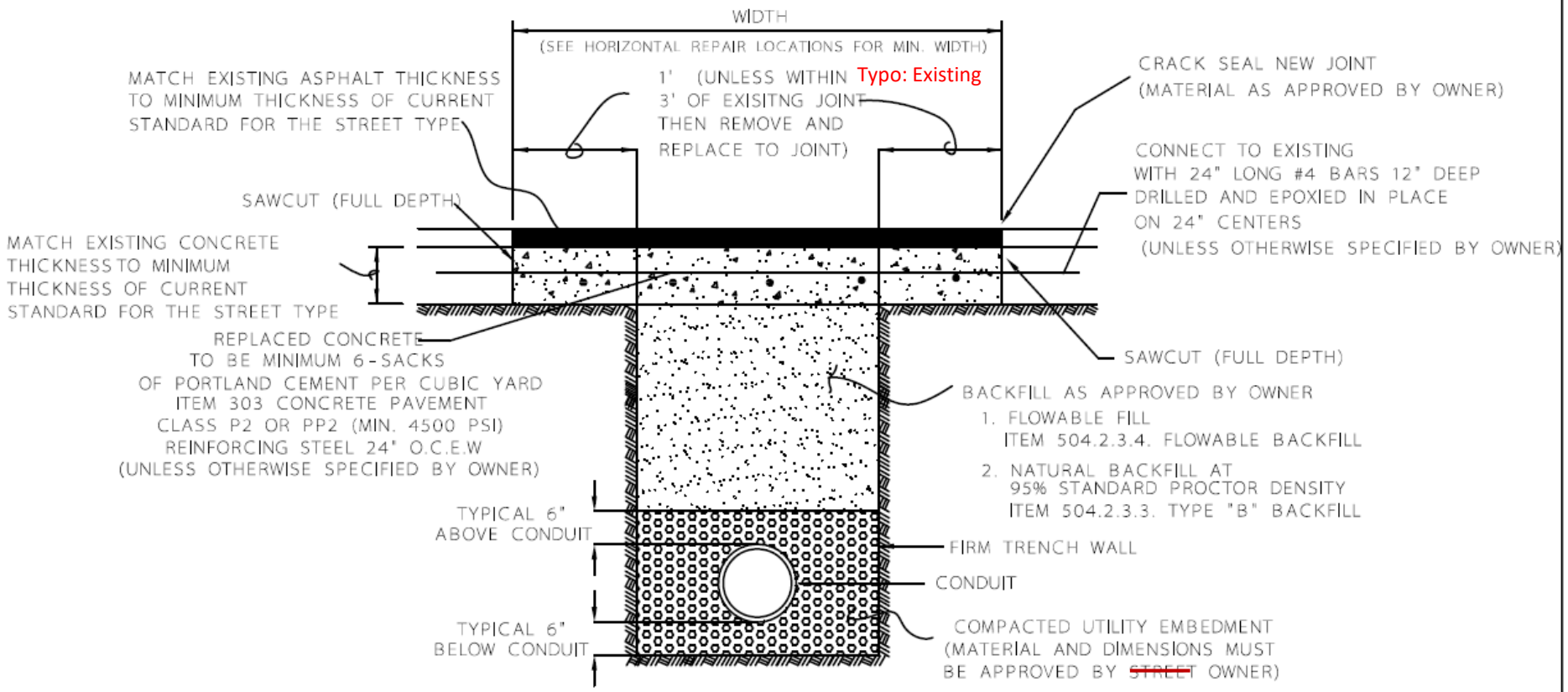
North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE
402

DATE
OCT. '04

STANDARD DRAWING NO.
3070A

GENERAL NOTE: CHECK WITH STREET OWNER FOR SPECIFIC REQUIREMENTS NOT CONTAINED HEREIN



CONCRETE PAVEMENT WITH ASPHALT OVERLAY

N.T.S.

Top Detail

PAVEMENT CUT AND REPAIR

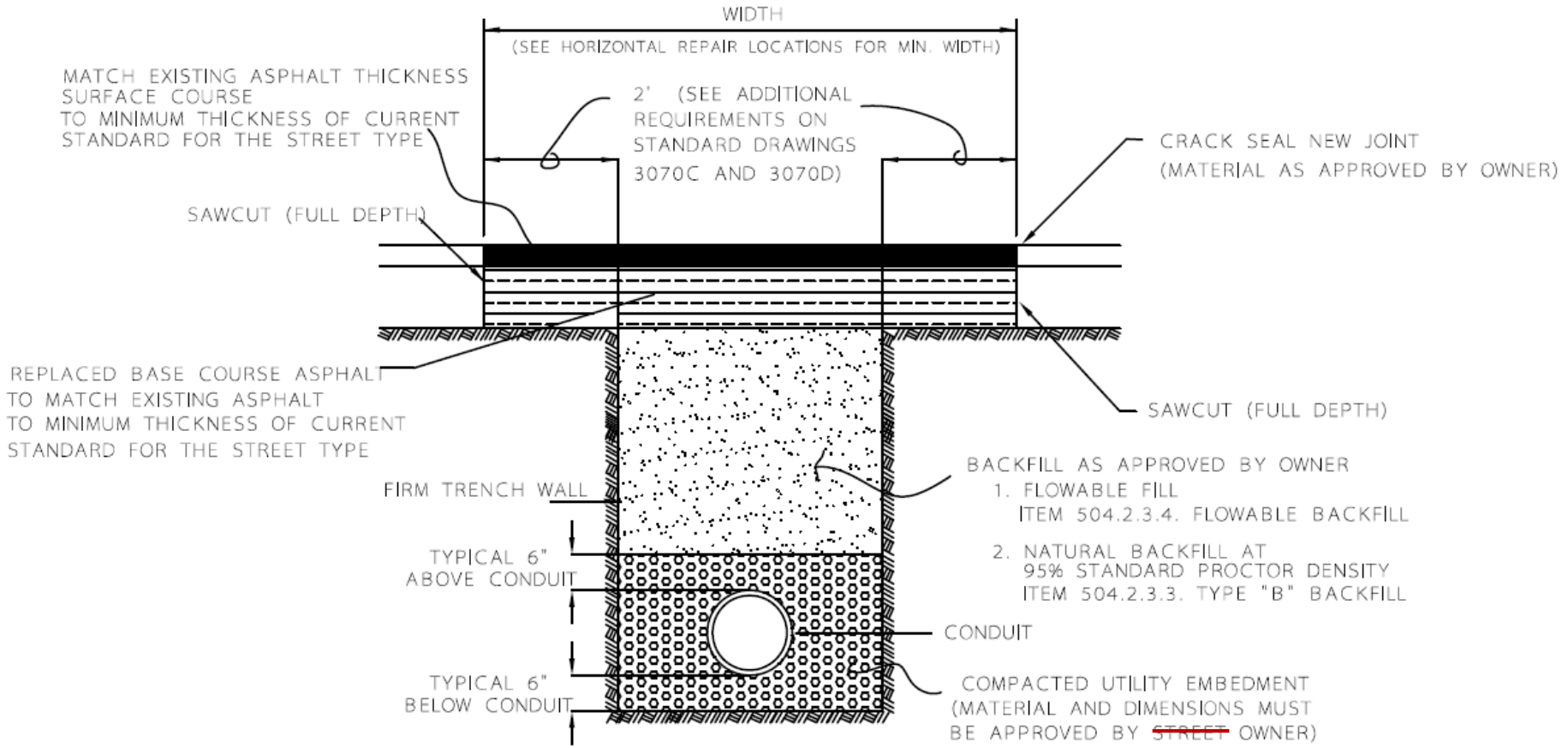
ASPHALT

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE
402

DATE
OCT. '04

STANDARD DRAWING NO.
3070B



FULL DEPTH ASPHALT PAVEMENT

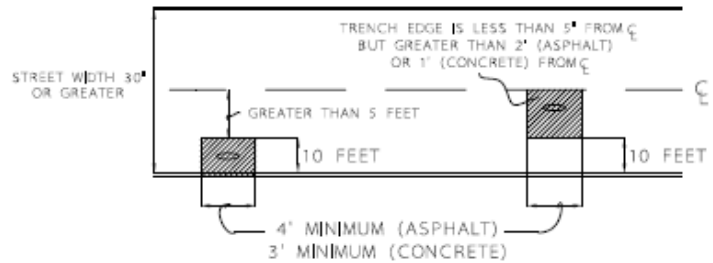
N.T.S.

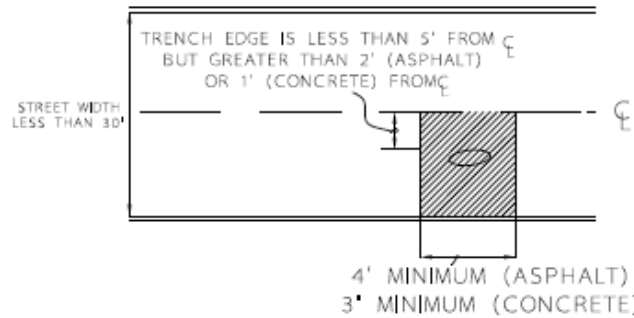
Bottom Detail

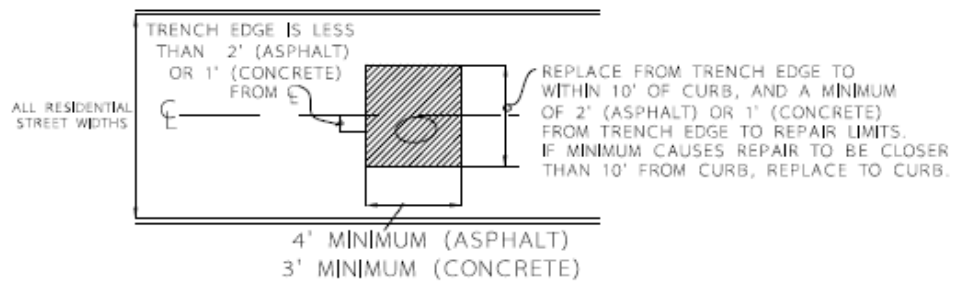
PAVEMENT CUT AND REPAIR	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 402	
ASPHALT		DATE OCT. '04	STANDARD DRAWING NO. 3070B

GENERAL NOTES

1. REMOVE AND REPLACE A MINIMUM OF 4' (ASPHALT) OR 3' (CONCRETE) LONGITUDINAL, OR 2' (ASPHALT) 1' (CONCRETE) FROM THE EDGE OF THE TRENCH, WHICHEVER IS GREATER
2. IF WITHIN 3' OF AN EXISTING JOINT, THEN REMOVE TO THE EXISTING JOINT
3. MULTIPLE LOCATIONS ARE TO BE A MINIMUM OF 10' APART FROM EDGE OF REPAIR TO EDGE OF REPAIR, IF LESS THAN 10' APART, A CONTINUOUS SECTION MUST BE REPLACED.
4. A GUTTER OF AT LEAST 12" MAY REMAIN, PROVIDED THAT THE CURB AND GUTTER IS NOT DAMAGED BY THE CONSTRUCTION ACTIVITY.
5. EXACT PAVEMENT REMOVAL LOCATIONS TO BE APPROVED BY OWNER PRIOR TO CONSTRUCTION.





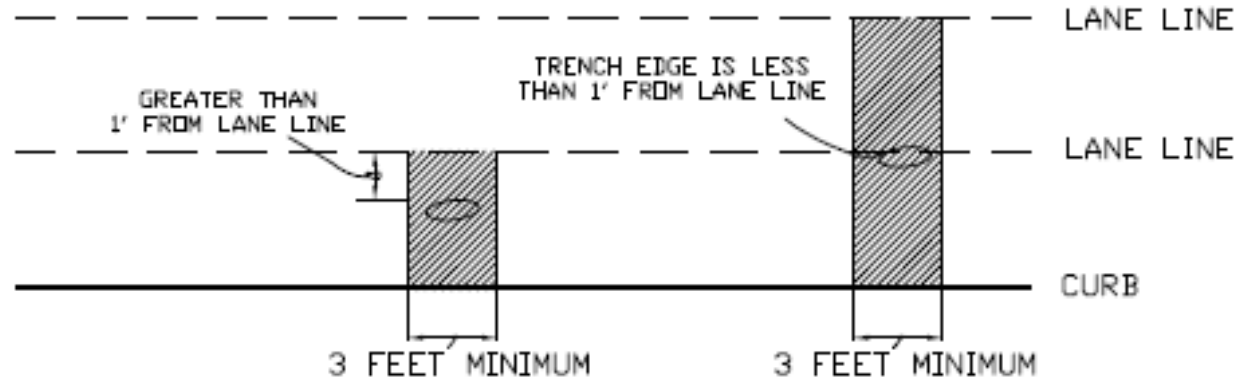


VARIABLE WIDTH RESIDENTIAL STREET

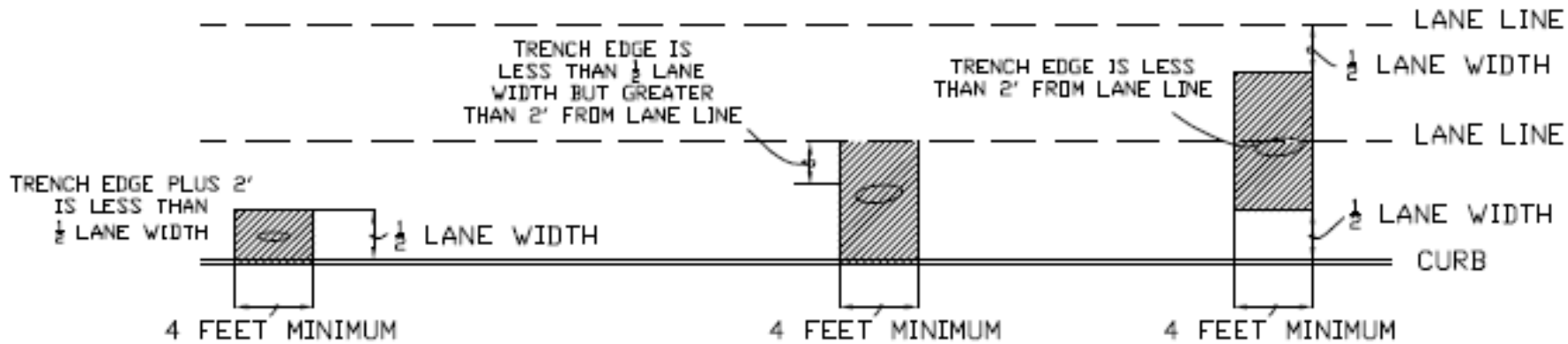
PAVEMENT CUT AND REPAIR	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE: 402	
EXTENT - RESIDENTIAL		DATE: OCT. '04	STANDARD DRAWING NO: 3070C

GENERAL NOTES

1. REMOVE AND REPLACE A MINIMUM OF 3' (CONCRETE) OR 4' (ASPHALT) LONGITUDINAL, OR 1' (CONCRETE) OR 2' (ASPHALT) FROM THE EDGE OF THE TRENCH, WHICHEVER IS GREATER
2. IF WITHIN 3' OF AN EXISTING JOINT, THEN REMOVE TO THE EXISTING JOINT
3. MULTIPLE LOCATIONS ARE TO BE A MINIMUM OF 10' APART FROM EDGE OF REPAIR TO EDGE OF REPAIR. IF LESS THAN 10' APART, A CONTINUOUS SECTION MUST BE REPLACED.
4. A GUTTER OF AT LEAST 12" MAY REMAIN, PROVIDED THAT THE CURB AND GUTTER IS NOT DAMAGED BY THE CONSTRUCTION ACTIVITY.
5. EXACT PAVEMENT REMOVAL LOCATIONS TO BE APPROVED BY OWNER PRIOR TO CONSTRUCTION.



VARIABLE WIDTH CONCRETE STREET WITH MULTIPLE LANES



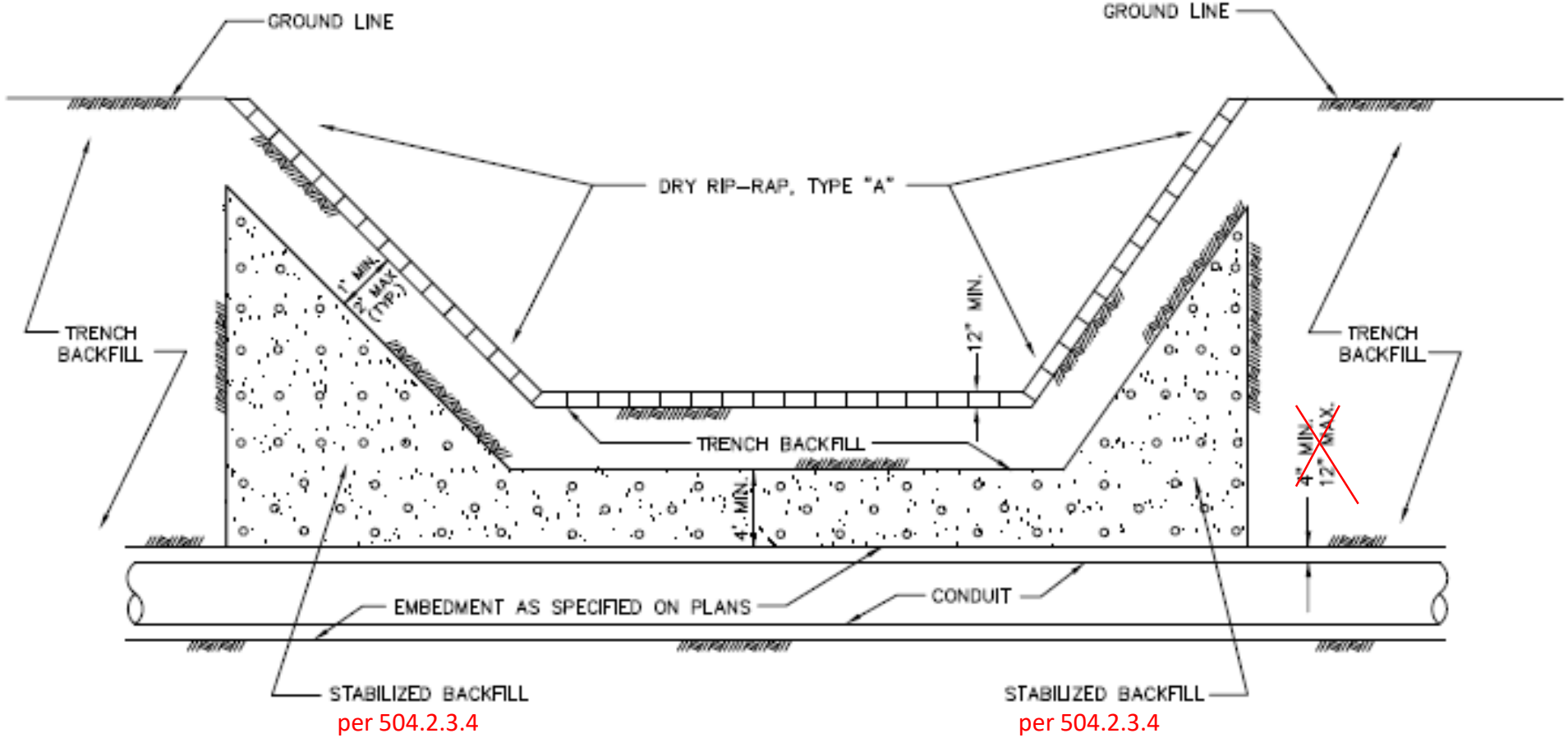
VARIABLE WIDTH ASPHALT STREET WITH MULTIPLE LANES

STANDARD DRAWING NO. 3070D

PAVEMENT CUT AND REPAIR
EXTENT – MULTIPLE LANES

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE	
402	
DATE	STANDARD DRAWING NO.
OCT. '04	3070D



STANDARD DRAWING NO. 3080

INFILTRATION PROTECTION
CONDUIT UNDER CHANNEL

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE
504; 803

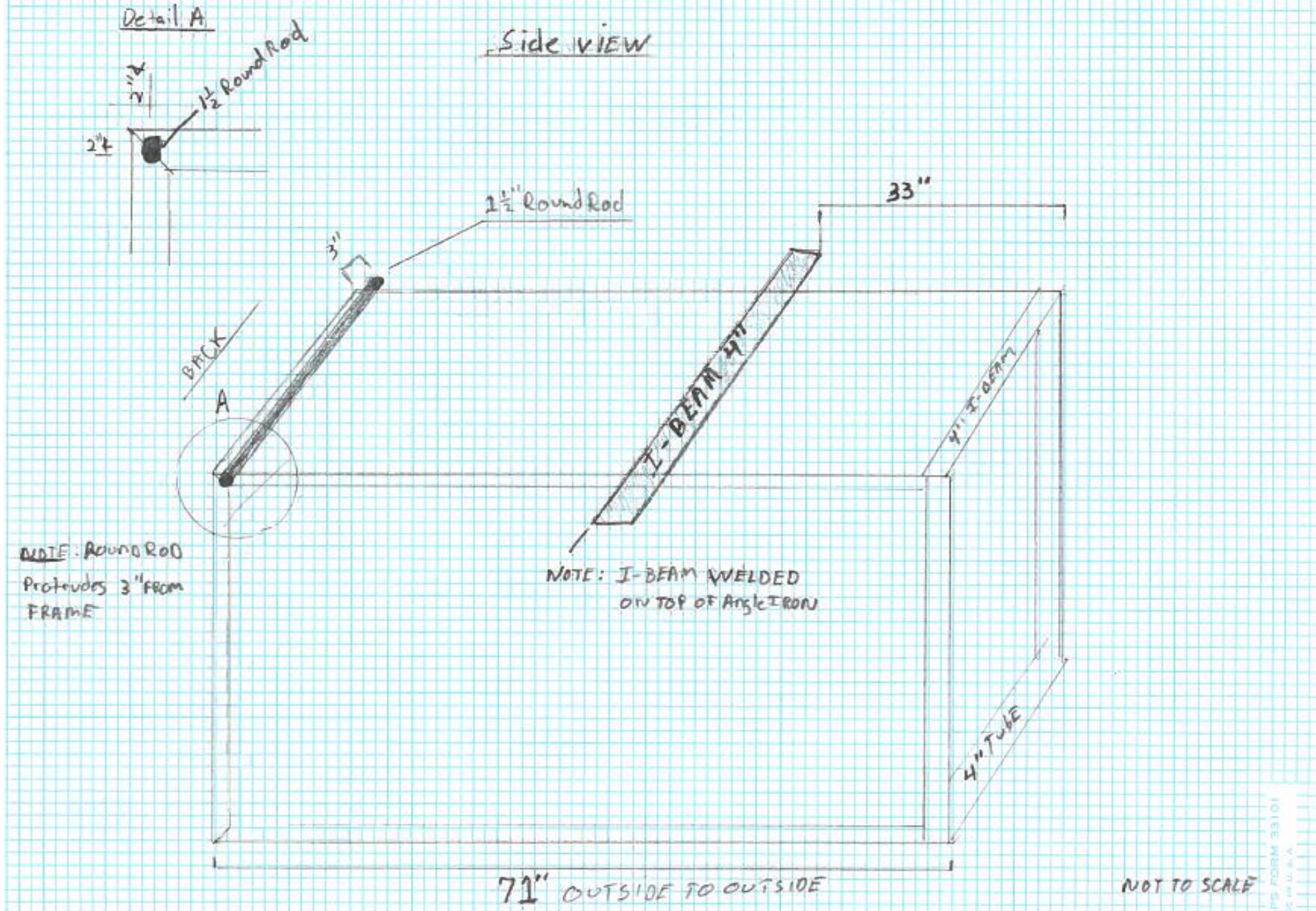
DATE
OCT. '04

STANDARD DRAWING NO.
3080

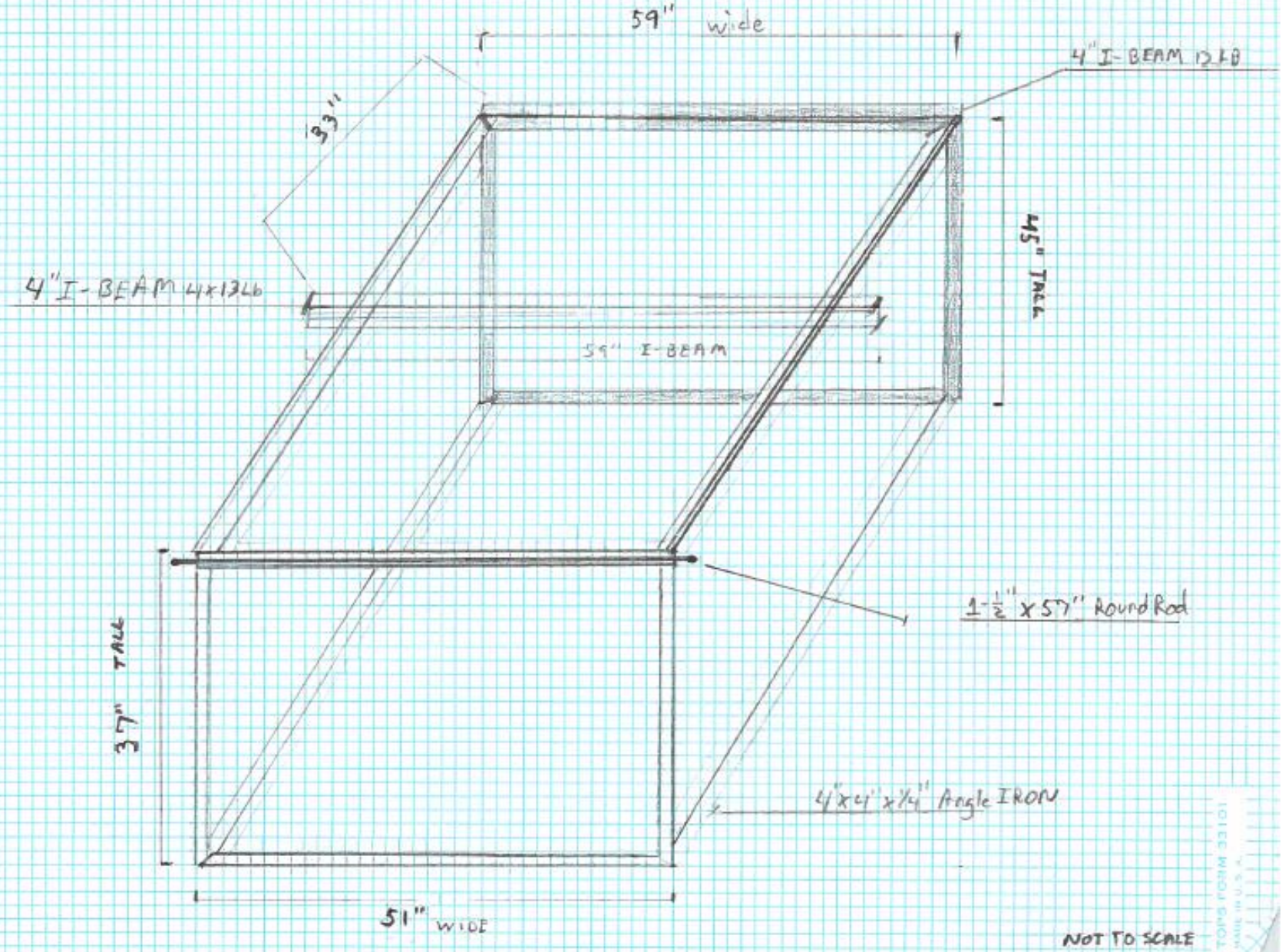
Additional Comments

- Edit Spec 504.5.2.7 from granular material back to sand for water mains
- Edit Spec 504.5.2.12 to include granular material
- Incorporate note “Use 95% density under paved areas and 90% density in unpaved areas” into Specs 504.5
- Note 2 on 3070C change 3’ to 5’ only after the specs are modified (402.4.4 and others)

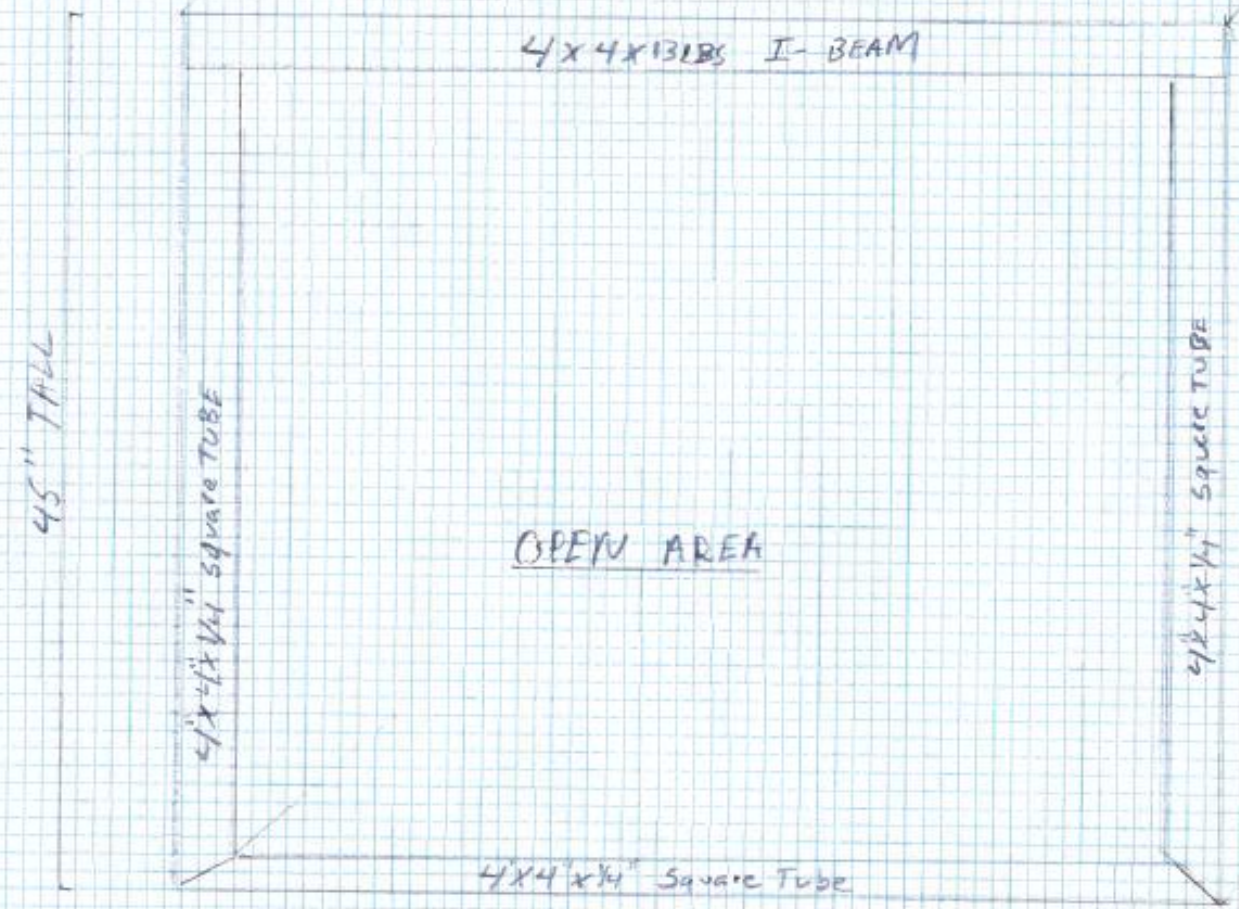
Trash Screen for Division 1000


Detail A
2"
2"
1½ Round Rod
Side view
1½" Round Rod
33"
3"
BACK
A
I-BEAM 4"
4" I-BEAM
NOTE: Round Rod
Protrudes 3" from
FRAME
NOTE: I-BEAM WELDED
ON TOP OF Angle IRON
4" Tube
71" OUTSIDE TO OUTSIDE
NOT TO SCALE

OVER ALL VIEW TRASH COLLECTOR BASKETS



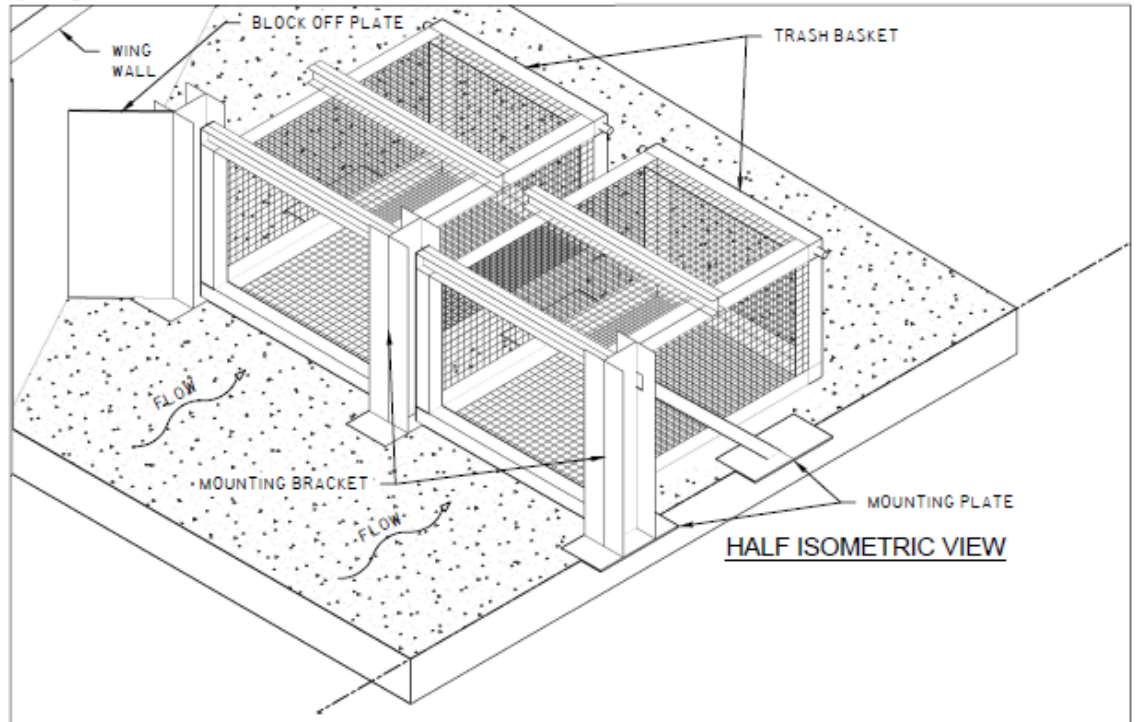
FRONT VIEW



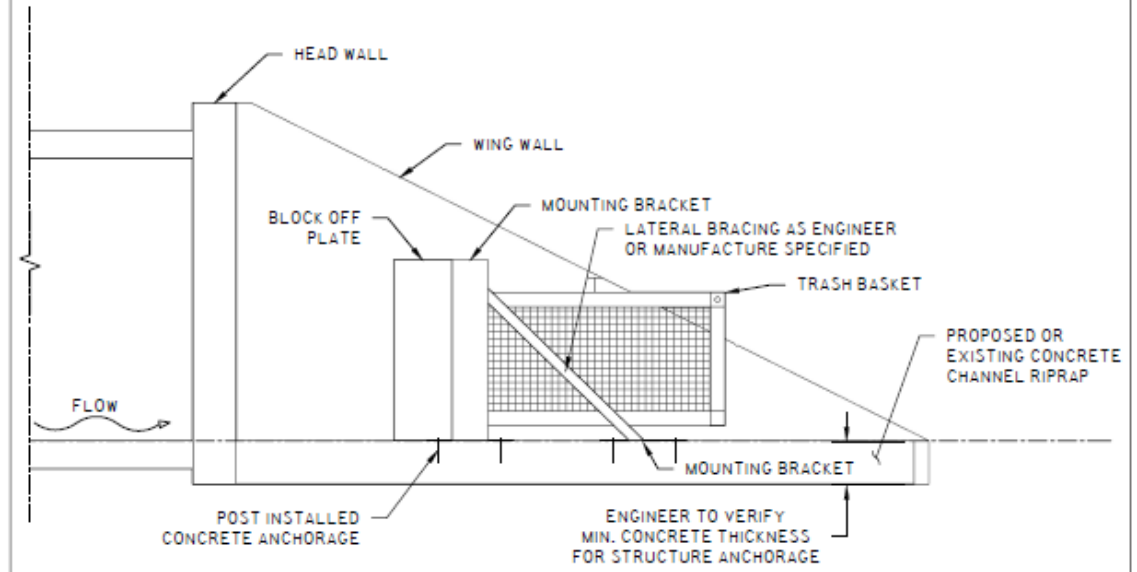
NOTE: REMAINING STRUCTURE LINED WITH 2" square opening Lockedcrimped .25 x2'

ITEM # 3693920141

NOT TO SCALE

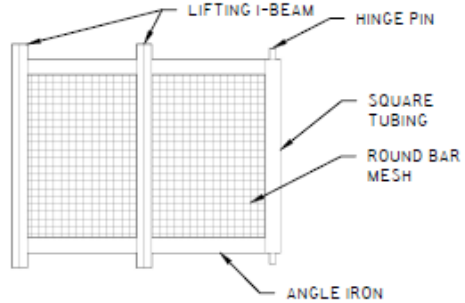


HALF ISOMETRIC VIEW

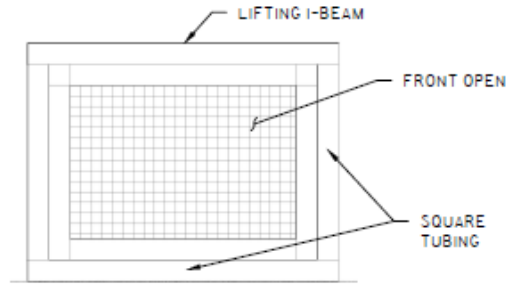


SIDE VIEW WITH HEADWALL

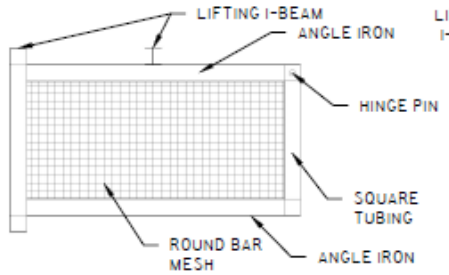
FIGURE X.XX TRASH RACK ISOMETRIC



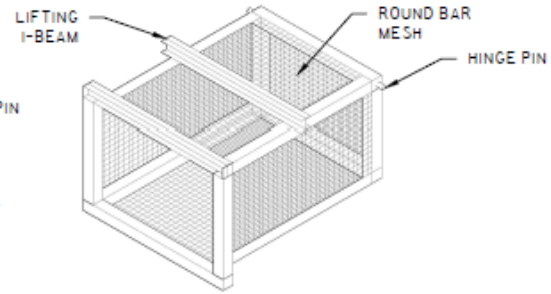
TRASH BASKET
TOP VIEW



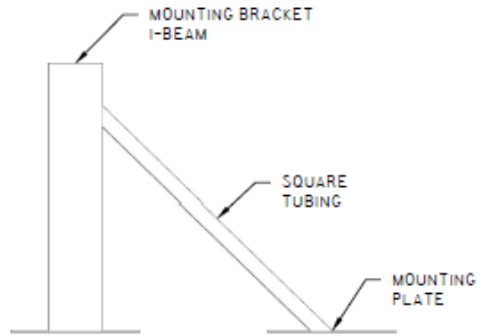
TRASH BASKET
FRONT VIEW



TRASH BASKET
SIDE VIEW



TRASH BASKET
ISOMETRIC VIEW



MOUNTING BRACKET

NOTES:
1. OVERALL SIZE AND LOCATION TO BE DETERMINED BY THE ENGINEER.
2. SIZE AND SPACING OF MESH VARIES AS NEEDED.

FIGURE X.XX TRASH RACK PLAN

Division 2000: Pavement Systems

DIVISION 2000 PAVEMENT SYSTEMS

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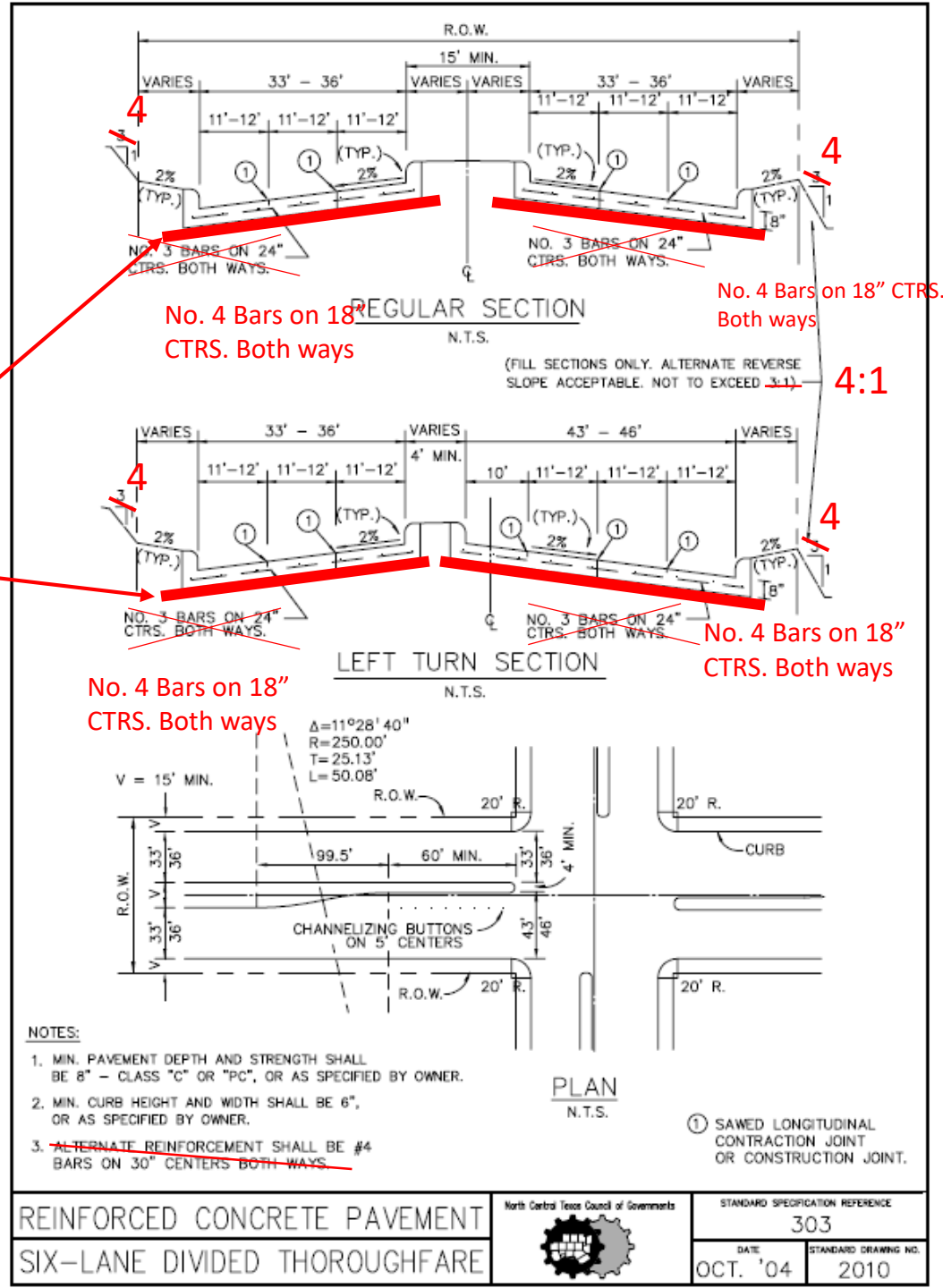
2200	**Subdrains** Pavement Subgrade	301. pages 301-1 to 301-15
2210	**Alley Geometrics** Type "A" & Type "B"	303.5. pages 303-1 to 303-23
2220	**Alley Geometrics** Type "C" & Type "D"	303.5. pages 303-1 to 303-23
2230	**Alley Geometrics** Type "E" & Type "F"	303.5. pages 303-1 to 303-23
2240	**Alley Geometrics** Type "G" & Type "H"	303.5. pages 303-1 to 303-23
2250	**Alley Geometrics** Type "J"	303.5. pages 303-1 to 303-23
2260	**Alley Intersection** Proposed To Existing	303.5. pages 303-1 to 303-23
2270A	**Metal Beam Guard Fence** Roadside Placement & Beam Elements	801.2. pages 801-1 to 801-5
2270B	**Metal Beam Guard Fence** Line Post &Connections	801.2. pages 801-1 to 801-5
2270C	**Metal Beam Guard Fence** End Section & Angle Anchor Post	801.2. pages 801-1 to 801-5
2270D	**Metal Beam Guard Fence** Special End Shoe & Anchor Post	801.2. pages 801-1 to 801-5
2270E	**Metal Beam Guard Fence** General Notes	801.2. pages 801-1 to 801-5
2280A	**Metal Beam Guard Fence** Two-Way Traffic Bridge End	801.2. pages 801-1 to 801-5
2280B	**Metal Beam Guard Fence** Two-Way Traffic Bridge End	801.2. pages 801-1 to 801-5
2290	**Metal Beam Barricade** End of Road	801.2. pages 801-1 to 801-5

8” minimum stabilized subgrade per section 301 and as approved or specified by owner

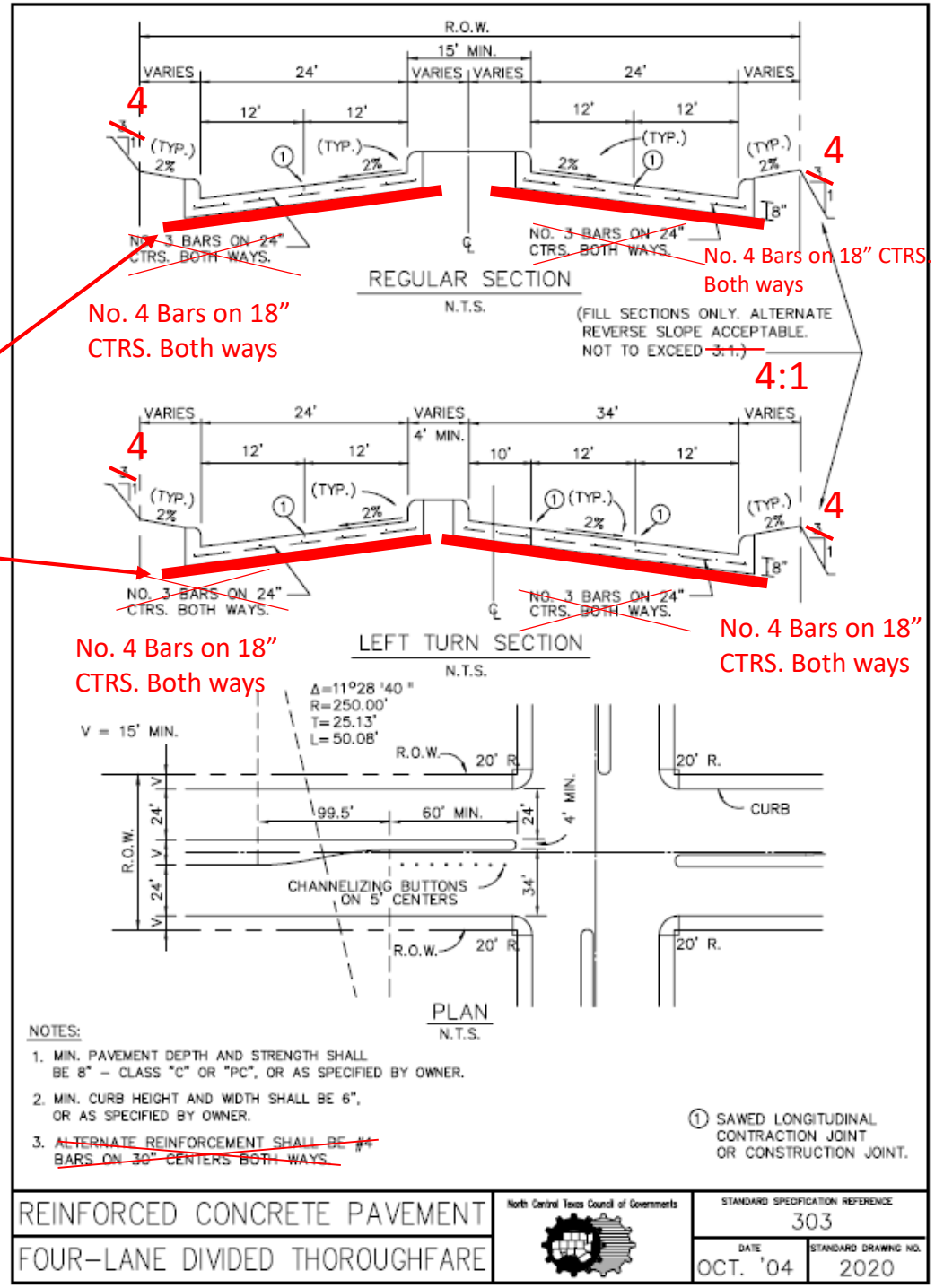


3. Alternative subgrade, thickness, and steel may be utilized with more detailed study and analysis and as approved by owner

4. If lime stabilized subgrade is utilized a minimum of 40 lbs/sy is required

Replace Plan with a more general layout to include crosswalks, ADA ramps, striping, and possibly additional lane width for bicycle lanes per TxDOT

8” minimum stabilized subgrade per section 301 and as approved or specified by owner

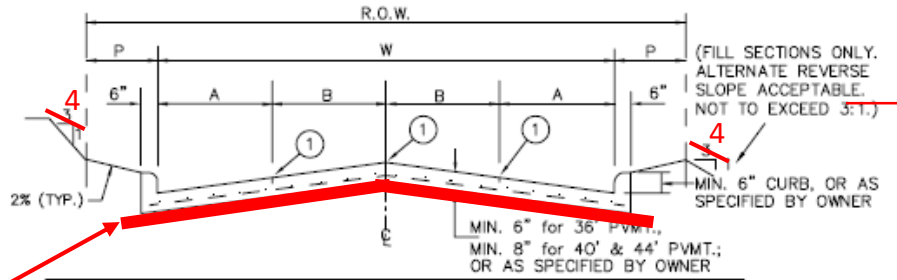


Replace Plan with a more general layout to include crosswalks, ADA ramps, striping, and possibly additional lane width for bicycle lanes per TxDOT

3. Alternative subgrade, thickness, and steel may be utilized with more detailed study and analysis and as approved by owner

4. If lime stabilized subgrade is utilized a minimum of 40 lbs/sy is required

8” minimum stabilized subgrade per section 301 and as approved or specified by owner

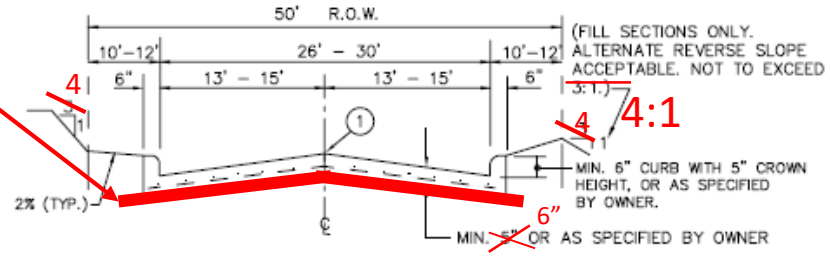


4:1

STREET WIDTH(W)	A	B	R.O.W. WIDTH	P	CROWN HEIGHT
36'	8'	10'	VARIES	VARIES	6"
40'	8' OR 10'	10' OR 12'	VARIES	VARIES	6"
44'	11'	11'	VARIES	VARIES	8"

*(see note 4)

FOUR TRAVEL LANES OR
TWO TRAVEL LANES & TWO PARKING LANES
N.T.S.



4:1

ONE TRAVEL LANE & TWO PARKING LANES
N.T.S.

① INDICATES SAWED LONGITUDAL CONTRACTION OR CONSTRUCTION JOINT.

NOTES :

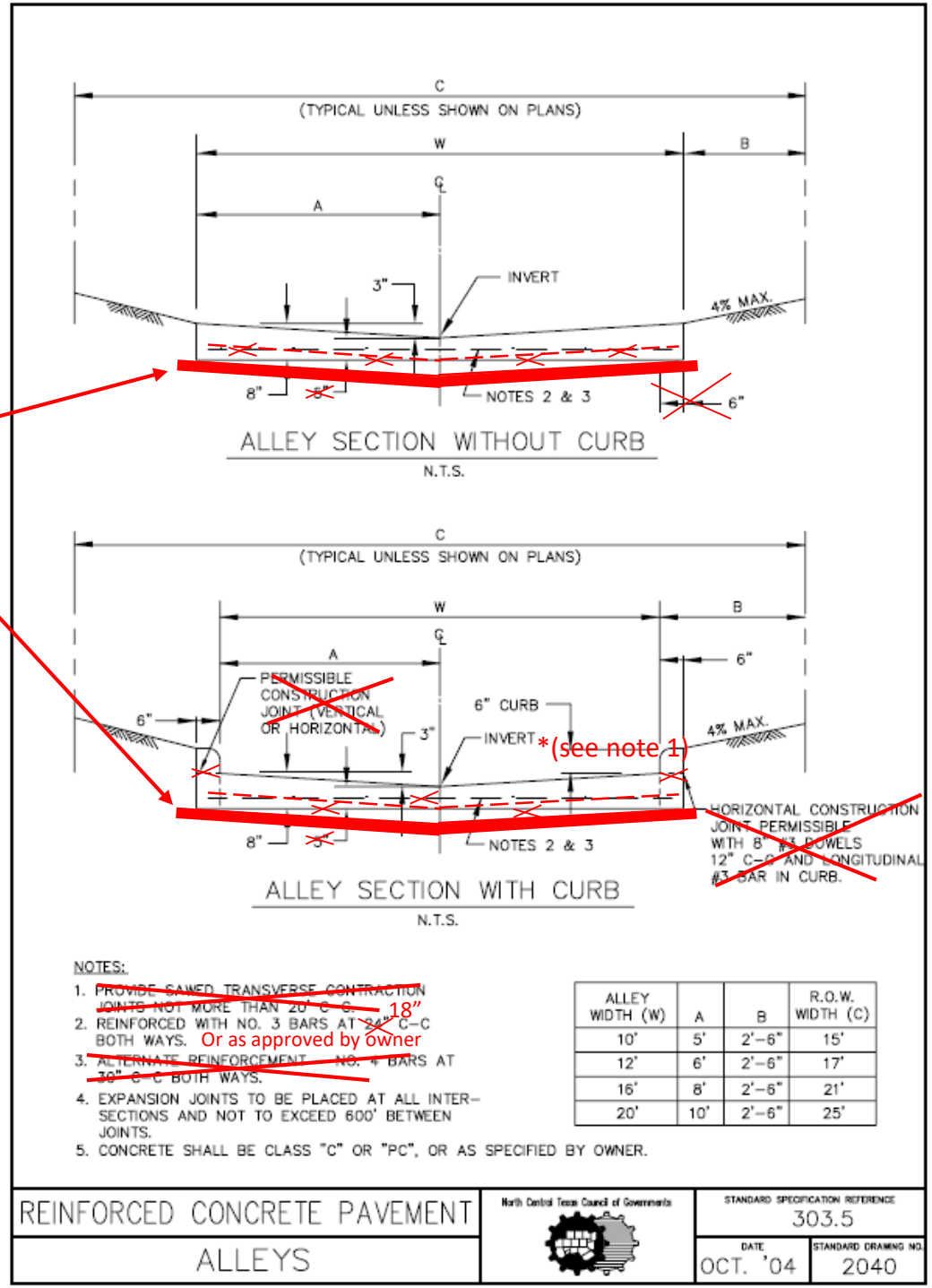
1. ALL REINFORCEMENT SHALL BE ~~#3 BARS ON 24"~~ 4” 18” CENTERS BOTH WAYS, EXCEPT WHERE NOTED.
2. ~~ALTERNATE REINFORCEMENT SHALL BE #4 BARS ON 30" CENTERS BOTH WAYS.~~
3. PAVEMENT STRENGTH SHALL CONFORM TO CLASS "C" OR "PC" CONCRETE, OR AS SPECIFIED BY THE OWNER.

4. Straight crown or parabolic crown as approved by owner

2. Alternative subgrade, thickness, and steel may be utilized with more detailed study and analysis and as approved by owner

REINFORCED CONCRETE PAVEMENT	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 303
2- & 4-LANE UNDIVIDED THOROUGHFARE		DATE OCT. '04 / STANDARD DRAWING NO. 2030

8” minimum stabilized subgrade per section 301 and as approved or specified by owner

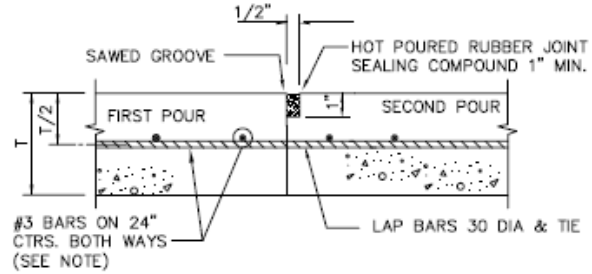


18”

Or as approved by owner

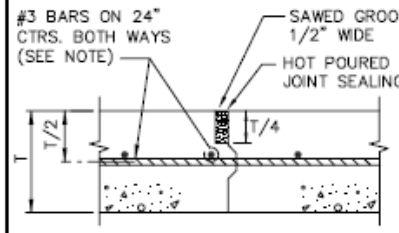
1. Crown section may be used in lieu of invert with provision of an adequate drainage design and as approved by owner

3. Alternative subgrade, thickness, and steel may be utilized with more detailed study and analysis and as approved by owner



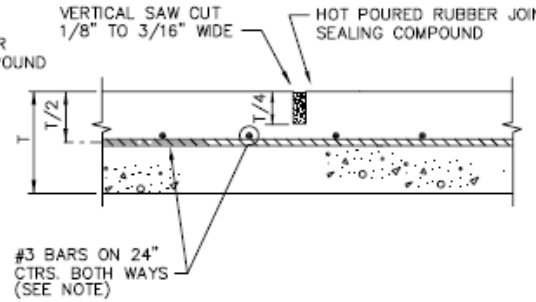
CONSTRUCTION JOINT

N.T.S.



KEYWAY JOINT

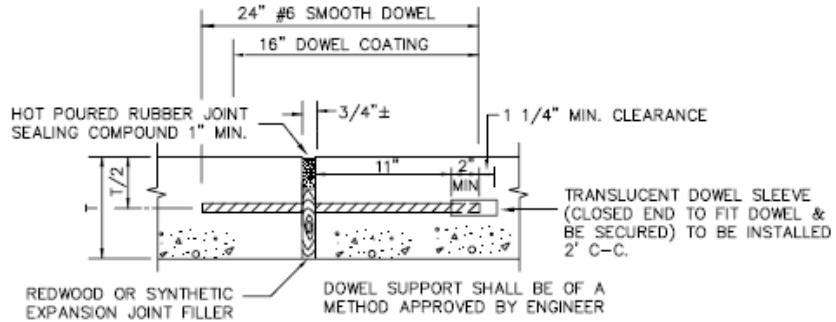
(FOR PAVEMENT THICKNESS > 6")
N.T.S.



SAWED CONTRACTION JOINT

N.T.S.

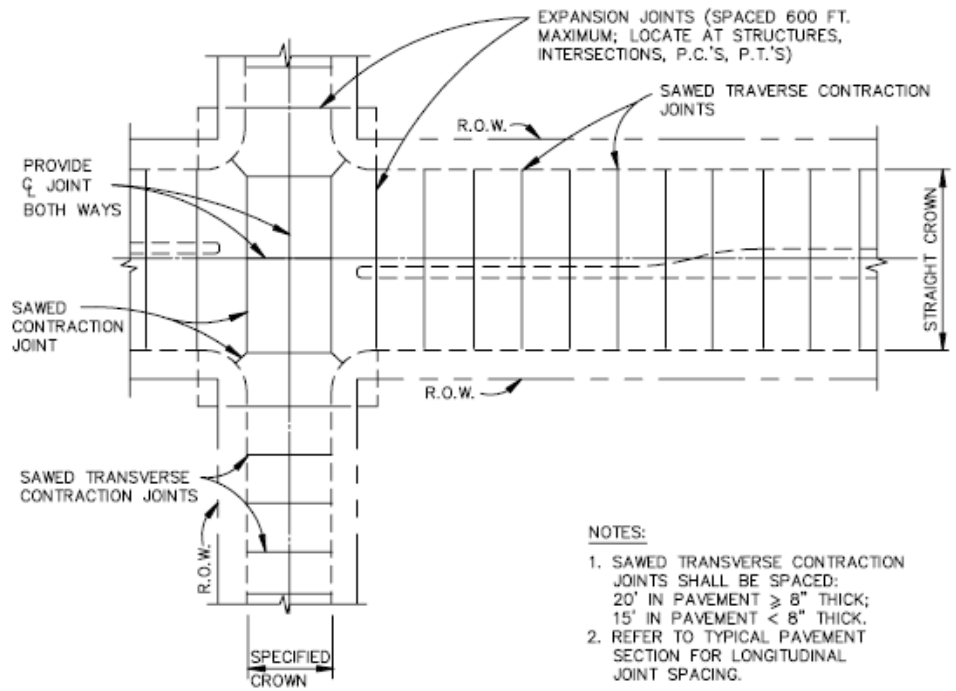
NOTE:
ALTERNATE REINFORCEMENT
#4 BARS ON 30" CTRS.
BOTH WAYS.



EXPANSION JOINT

(SPACED 600 FT. MAXIMUM; LOCATE AT
STRUCTURES AND AT INTERSECTION P.C.'S & P.T.'S)
N.T.S.

REINFORCED CONCRETE PAVEMENT	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE: 303.5.4.	
JOINTS		DATE: OCT. '04	STANDARD DRAWING NO.: 2050



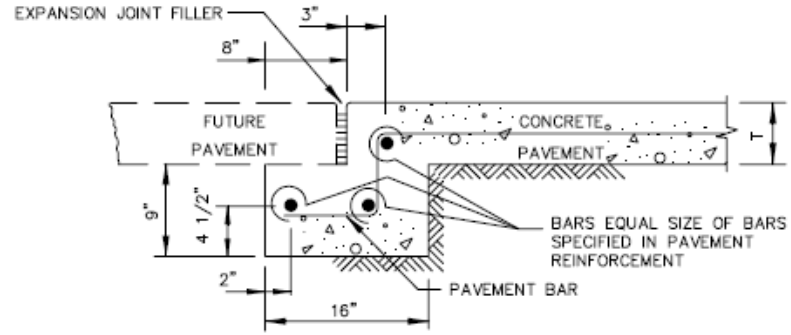
NOTES:

1. SAWED TRANSVERSE CONTRACTION JOINTS SHALL BE SPACED: 20' IN PAVEMENT ≥ 8" THICK; 15' IN PAVEMENT < 8" THICK.
2. REFER TO TYPICAL PAVEMENT SECTION FOR LONGITUDINAL JOINT SPACING.

SPACING DIAGRAM FOR TRANSVERSE JOINTS

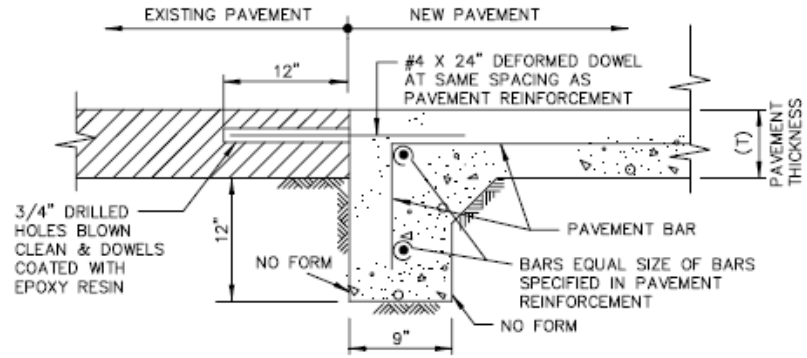
N.T.S.

REINFORCED CONCRETE PAVEMENT	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 303.5.4.	
TRANSVERSE JOINT SPACING		DATE OCT. '04	STANDARD DRAWING NO. 2060



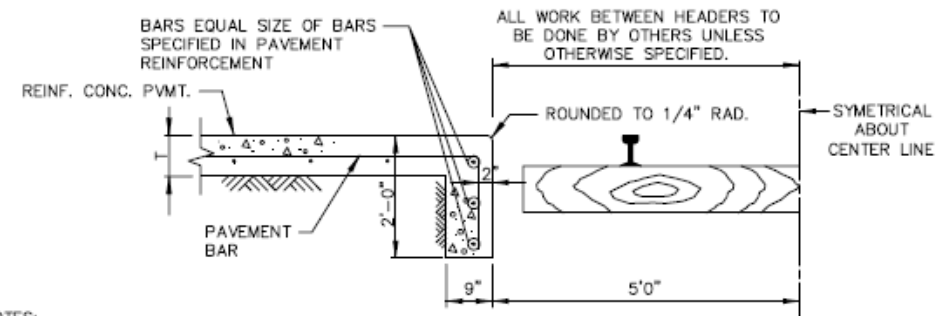
STREET HEADER FOR FUTURE PAVEMENT

N.T.S.



STREET HEADER AT EXISTING PAVEMENT

N.T.S.



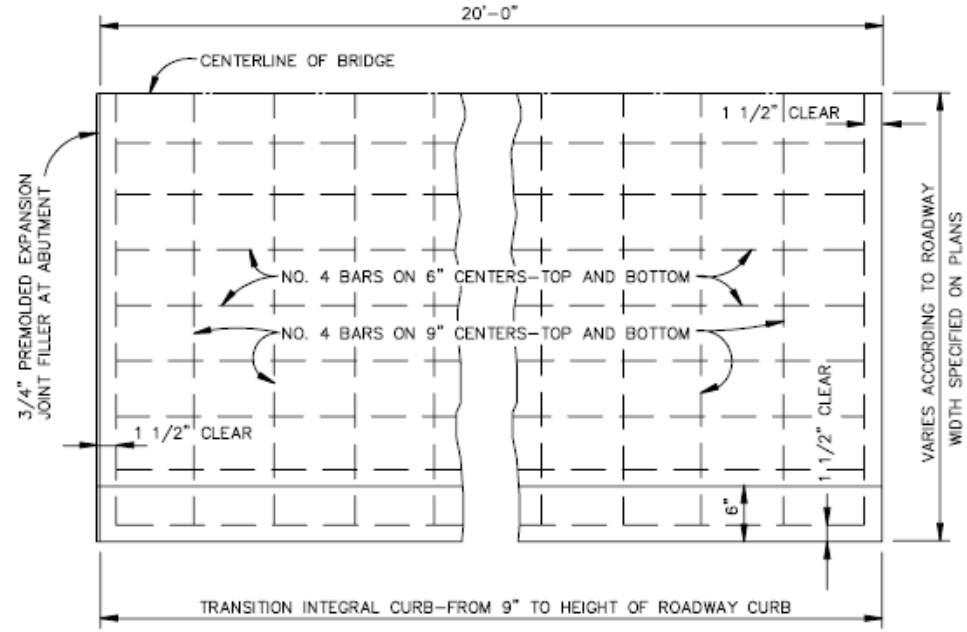
STREET HEADER AT RAILROAD

N.T.S.

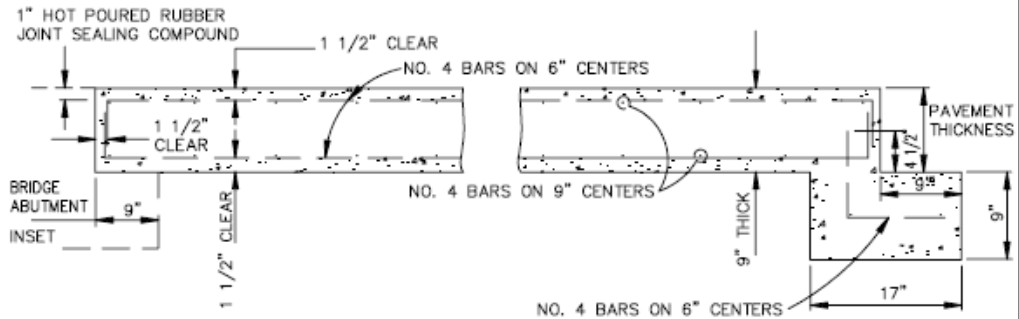
NOTES:

1. PAVEMENT BARS TO BE BENT DOWN INTO HEADER.
2. HEADER AND PAVEMENT TO BE MONOLITHIC.

REINFORCED CONCRETE PAVEMENT	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 305.4
STREET HEADERS		DATE OCT. '04 / STANDARD DRAWING NO. 2070

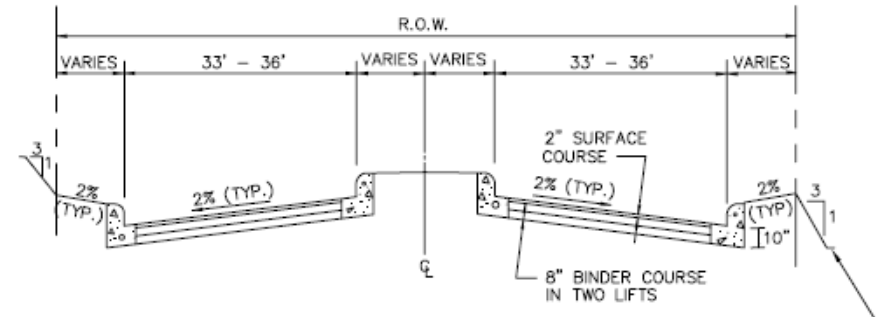


PLAN
N.T.S.

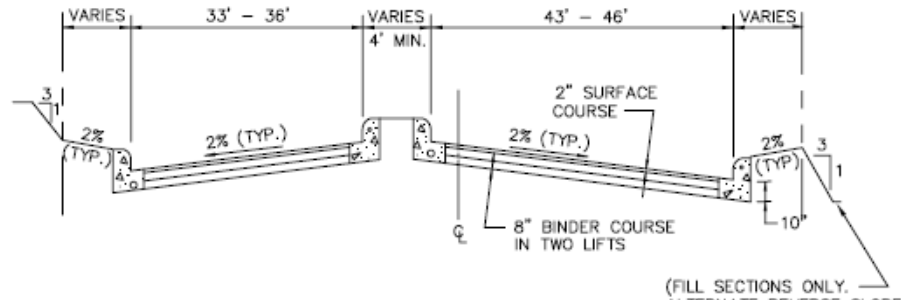


SECTION
N.T.S.

REINFORCED CONCRETE PAVEMENT	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 303	
BRIDGE APPROACH SLAB		DATE OCT. '04	STANDARD DRAWING NO. 2080



REGULAR SECTION
N.T.S.



LEFT TURN SECTION
N.T.S.

MIN. PAVEMENT DEPTH = 10" { 2 " HMA SURFACE COURSE; 8" HMA BINDER COURSE }

(SEE STANDARD DRAWING NO. 2010 FOR PLAN VIEW)

NOTES:

1. A SOIL INVESTIGATION FOR SUBGRADE DESIGN SHALL BE CONDUCTED BY THE ENGINEER AND THIS DESIGN SHALL BE APPROVED BY THE OWNER PRIOR TO CONSTRUCTION.
2. WHERE FULL–DEPTH ASPHALT PAVEMENTS ARE BEING CONSIDERED FOR USE, THE ASPHALT PAVEMENT THICKNESS SHALL BE BASED UPON NECESSARY SUBGRADE ANALYSES AND PAVEMENT THICKNESS DESIGN DETERMINATIONS AS APPROVED BY THE OWNER.
3. MIN. CURB HEIGHT AND WIDTH SHALL BE 6", OR AS SPECIFIED BY OWNER.
4. TACK COAT BETWEEN COURSES AS REQUIRED.

HOT MIX ASPHALT PAVEMENT

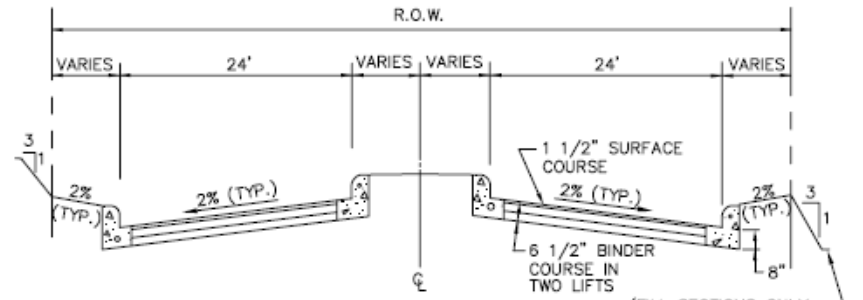
SIX–LANE DIVIDED THOROUGHFARE

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE
302

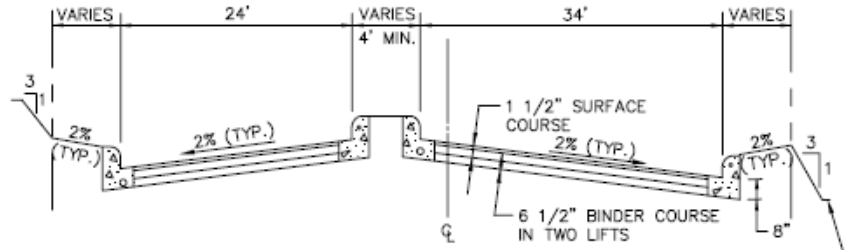
DATE
OCT. '04

STANDARD DRAWING NO.
2090



REGULAR SECTION

N.T.S.



LEFT TURN SECTION

N.T.S.

MIN. PAVEMENT DEPTH = 8" { 1 1/2" HMA SURFACE COURSE; 2–3 1/4" HMA BINDER COURSES }

(SEE STANDARD DRAWING NO. 2020 FOR PLAN VIEW)

NOTES:

1. A SOIL INVESTIGATION FOR SUBGRADE DESIGN SHALL BE CONDUCTED BY THE ENGINEER AND THIS DESIGN SHALL BE APPROVED BY THE OWNER PRIOR TO CONSTRUCTION.
2. WHERE FULL–DEPTH ASPHALT PAVEMENTS ARE BEING CONSIDERED FOR USE, THE ASPHALT PAVEMENT THICKNESS SHALL BE BASED UPON NECESSARY SUBGRADE ANALYSES AND PAVEMENT THICKNESS DESIGN DETERMINATIONS AS APPROVED BY THE OWNER.
3. MIN. CURB HEIGHT AND WIDTH SHALL BE 6", OR AS SPECIFIED BY OWNER.
4. TACK COAT BETWEEN COURSES AS REQUIRED.

HOT MIX ASPHALT PAVEMENT

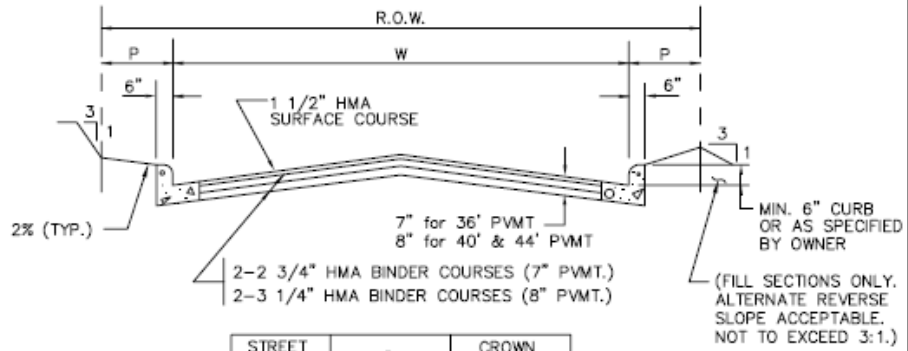
FOUR–LANE DIVIDED THOROUGHFARE

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE: 302

DATE: OCT. '04

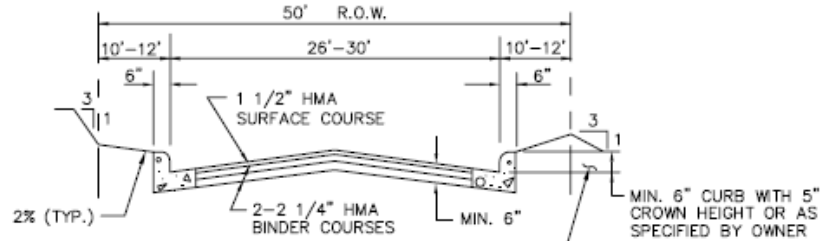
STANDARD DRAWING NO.: 2100



STREET WIDTH(W)	P	CROWN HEIGHT
36'	VARIES	6"
40'	VARIES	6"
44'	VARIES	8"

FOUR TRAVEL LANES OR
TWO TRAVEL LANES &
TWO PARKING LANES

N.T.S.



ONE TRAVEL LANE &
TWO PARKING LANES

N.T.S.

NOTES:

1. A SOIL INVESTIGATION FOR SUBGRADE DESIGN SHALL BE CONDUCTED BY THE ENGINEER THIS DESIGN SHALL BE APPROVED BY THE OWNER PRIOR TO CONSTRUCTION.
2. WHERE FULL-DEPTH ASPHALT PAVEMENTS ARE BEING CONSIDERED FOR USE, THE ASPHALT PAVEMENT THICKNESS SHALL BE BASED UPON NECESSARY SUBGRADE ANALYSES AND PAVEMENT THICKNESS DESIGN DETERMINATIONS AS APPROVED BY THE OWNER. THICKNESSES SHOWN ARE TYPICAL.
3. TACK COAT BETWEEN COURSES AS REQUIRED.

HOT MIX ASPHALT PAVEMENT

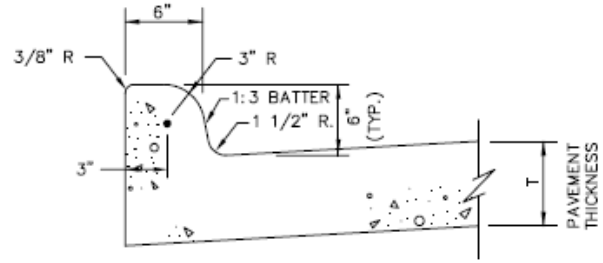
2- & 4-LANE UNDIVIDED THOROUGHFARE

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE
302

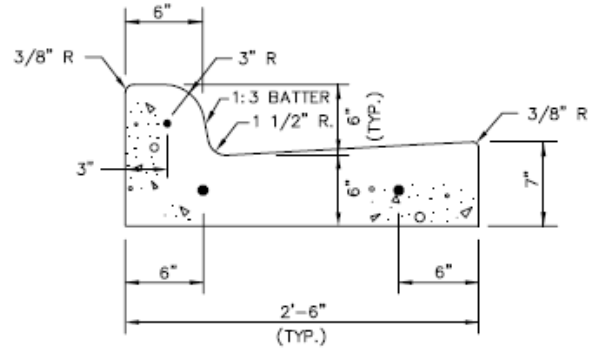
DATE
OCT. '04

STANDARD DRAWING NO.
2110



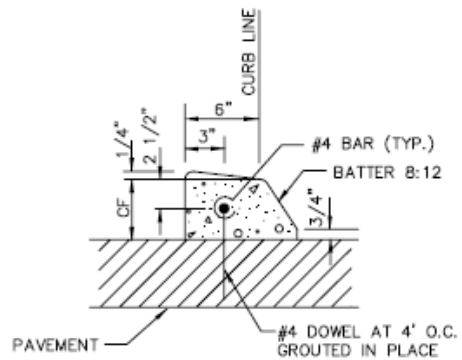
INTEGRAL CURB & GUTTER

N.T.S.



SEPARATE CURB & GUTTER

N.T.S.



DOWELED CURB

N.T.S.

NOTES:

1. REINFORCEMENT SHALL BE NO. 4 BARS, UNLESS OTHERWISE SPECIFIED.
2. CONCRETE SHALL BE CLASS "C" OR "PC".
3. "CF" IS 6" UNLESS OTHERWISE SPECIFIED.
4. ALL CURBS ARE CONSTRUCTED OF PORTLAND CEMENT CONCRETE UNLESS OTHERWISE SHOWN.
5. GRADE SHALL BE MEASURED AT BACK OF CURB.

CONCRETE CURB & GUTTER

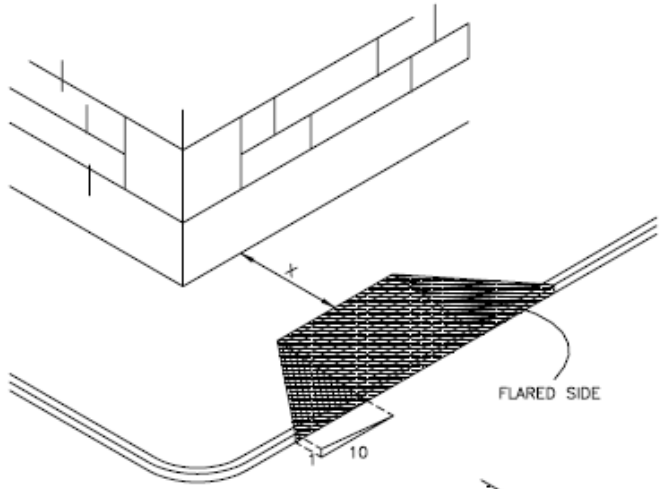
INTEGRAL, SEPARATE, & DOWELED

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE: 305.1

DATE: OCT. '04

STANDARD DRAWING NO.: 2120



(A)
FLARED SIDES

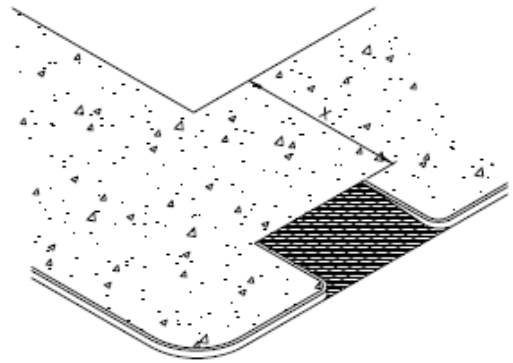


FIGURE 1
PARKWAY CURB RAMPS

IF "X" IS LESS THAN 48"
THEN THE SLOPE OF THE FLARED SIDE
SHALL NOT EXCEED 1:12.

(B)
RETURNED CURB

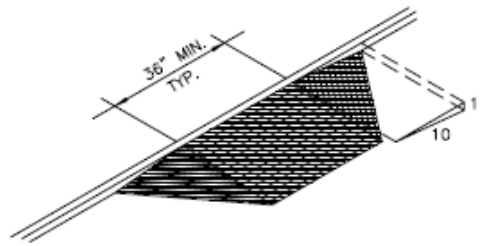


FIGURE 2
BUILT–UP CURB RAMP

CURB RAMPS	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE	
		DATE: OCT. '04	STANDARD DRAWING NO.: 2125A

CURB RAMPS NOTES:

GENERAL REQUIREMENTS

CURB RAMPS SHALL BE CONSTRUCTED AS PER THE REQUIREMENTS AND SPECIFICATIONS OF THE TEXAS ACCESSIBLITY STANDARDS AND THE ADA & ABA ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES. (FEDERAL REGISTER/ VOL. 69, NO. 141, FRIDAY, JULY 23, 2004)

LOCATION:

CURB RAMPS UNDER THESE PROVISIONS, SHALL BE WHEREVER AN ACCESSIBLE ROUTE CROSSES A CURB.

SLOPE:

SLOPES ON CURB RAMPS SHALL BE MEASURED AS FOLLOWS: (Y:X = VERTICAL:HORIZONTAL)

A) TRANSITIONS FROM RAMPS TO WALKS, GUTTERS, OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES.

B) MAXIMUM SLOPES OF ADJOINING GUTTERS, ROAD SURFACE IMMEDIATLEY ADJACENT TO THE CURB OR ACCESSIBLE ROUTE SHALL NOT EXCEED 1:20.

C) THE LEAST POSSIBLE SLOPE SHALL BE USED FOR ANY RAMP. THE MAXIMUM SLOPE OF A RAMP IN NEW CONSTRUCTION SHALL BE 1:12. THE MAXIMUM RISE FOR ANY RUN SHALL BE 30" (760 MM). CURB RAMPS AND RAMPS TO BE CONSTRUCTED ON EXISTING SITES OR IN EXISTING BUILDINGS OR FACILITIES MAY HAVE SLOPES AND RISES IF SPACE LIMITATIONS PROHIBIT THE USE OF A 1:12 SLOPE OR LESS, AS FOLLOWS:

1. A SLOPE BETWEEN 1:10 AND 1:12 IS ALLOWED FOR A MAXIMUM RISE OF 6".
2. A SLOPE BETWEEN 1:8 AND 1:10 IS ALLOWED FOR A MAXIMUM OF 3"

A SLOPE STEEPER THAN 1:8 IS NOT ALLOWED.

RAMP WIDTH:

THE MINIMUM WIDTH OF A CURB RAMP SHALL BE 36" EXCLUSIVE OF FLARED SIDES.

SURFACE:

SURFACES OF CURB RAMPS, SHALL BE STABLE FIRM, AND SLIP RESISTANT. SURFACE TEXTURES SHALL CONSIST OF EXPOSED CRUSHED STONE AGGREGATE, ROUGHENED CONCRETE, RUBBER, RAISED ABRASIVE STRIPS, OR GROOVES. EXTENDING THE FULL WIDTH AND DEPTH OF THE CURB RAMP. SURFACES THAT ARE RAISED, ETCHED, OR GROOVED IN A WAY THAT WOULD ALLOW WATER TO ACCUMULATE ARE PROHIBITED. FOR PURPOSES OF WARNING, THE FULL WIDTH AND DEPTH OF CURB RAMPS SHALL HAVE A LIGHT REFLECTIVE VALUE AND TEXTURE THAT SIGNIFICANTLY CONTRASTS WITH THAT OF ADJOINING PEDESTRIAN ROUTES.

SIDES OF CURB RAMPS:

IF A CURB RAMP IS LOCATED WHERE PEDESTRIANS MUST WALK ACROSS THE RAMP, OR WHERE IT IS NOT PROTECTED BY HANDRAILS OR GUARDRAILS, IT SHALL HAVE FLARED SIDES. THE MAXIMUM SLOPE OF THE FLARE SHALL BE 1:10 (SEE FIG. 1 (A)) CURB RAMPS WITH RETURNED CURBS MAY BE USED WHERE PEDESTRIANS WOULD NOT WALK ACROSS THE RAMP. (SEE FIG. 1 (B))

BUILT-UP RAMPS:

BUILT-UP CURB RAMPS SHALL BE LOCATED SO THEY DO NOT PROJECT INTO VEHICULAR TRAFFIC LANES (SEE FIG. 2)

OBSTRUCTIONS:

CURB RAMPS SHALL BE LOCATED OR PROTECTED TO PREVENT THEIR OBSTRUCTION BY PARKED VEHICLES.

LOCATION AT MARKED CROSSINGS:

CURB RAMPS AT MARKED CROSSINGS SHALL BE WHOLLY CONTAINED WITHIN THE MARKINGS, EXCLUDING ANY FLARED SIDES.

DIAGONAL CURB RAMPS:

IF DIAGONAL (OR CORNER TYPE) CURB RAMPS HAVE RETURNED CURBS OR OTHER WELL DEFINED EDGES, SUCH EDGES SHALL BE PARALLEL TO THE DIRECTION OF PEDESTRIAN FLOW. THE BOTTOM OF DIAGONAL CURB RAMPS SHALL HAVE 48" (1220 MM) MINIMUM. IF DIAGONAL CURB RAMPS ARE PROVIDED AT MARKED CROSSINGS, THE 48" (1220 MM) CLEAR SPACE SHALL BE WITHIN THE MARKINGS. IF DIAGONAL CURB RAMPS HAVE FLARED SIDES, THEY SHALL ALSO HAVE AT LEAST A 24" (610 MM) LONG SEGMENT OF STRAIGHT CURB LOCATED ON EACH SIDE OF THE CURB RAMP AND WITHIN THE MARKED CROSSING. ANY RAISED ISLANDS IN CROSSINGS SHALL BE CUT THROUGH LEVEL WITH THE STREET OR HAVE CURB RAMPS AT BOTH SIDES AND A LEVEL AREA AT LEAST 48" (1220 MM) LONG BETWEEN THE CURB RAMPS IN THE PART OF THE ISLAND INTERSECTED BY THE CROSSINGS.

CONSTRUCTION

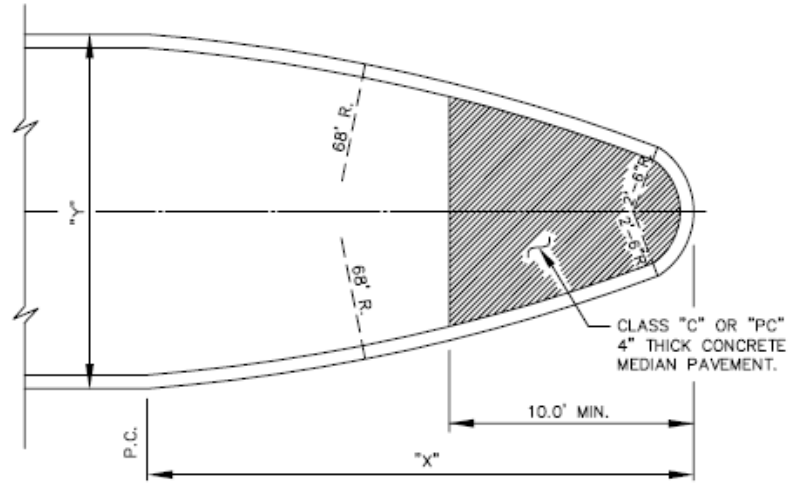
(A.) THE CONTRACTOR SHALL SAWCUT, REMOVE AND DISPOSE OFF-SITE THE REQUIRED EXISTING CONCRETE SIDEWALK, CURB AND GUTTER, TO CONSTRUCT THE PROPOSED RAMPS.

(B.) CONCRETE SIDEWALKS AND RAMPS SHALL BE MINIMUM 4" THICK, 4000 PSI, 5 SACK CONCRETE, REINFORCED WITH #3 BARS AT 14" CENTERS BOTH WAYS, PLACED OVER A 2" THICK SAND CUSHION EMBEDMENT.

(C.) THE CONTRACTOR SHALL USE 1" PREMOLDED EXPANSION JOINT MATERIAL BETWEEN THE PROPOSED SIDEWALKS AND RAMPS AT THE BACK OF CURBS, AND AT JOINTS AT NO EXTRA PAY.

(D.) DUMMY JOINT REQUIRED EVERY 4' IN 4' WIDE SIDEWALKS AND EVERY 5' IN 6' WIDE SIDEWALK.

CURB RAMPS	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE	
		DATE: OCT. '04	STANDARD DRAWING NO.: 2125B



DIMENSIONS OF MEDIAN NOSE

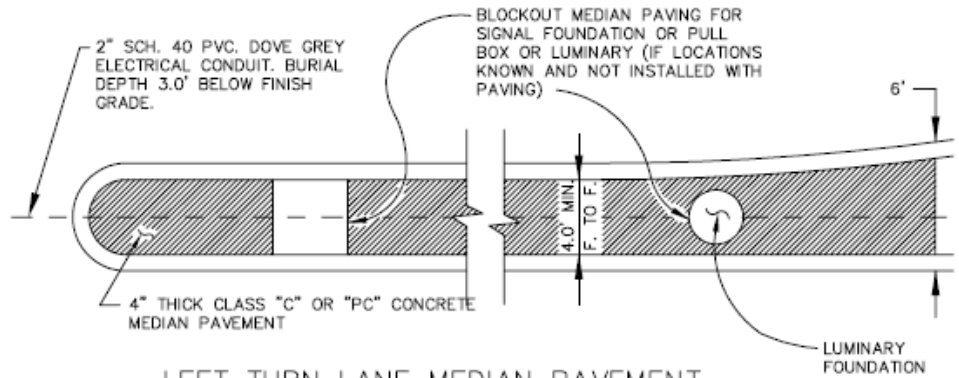
Y = 15'	X = 27.6'
Y = 16'	X = 28.8'
Y = 17'	X = 29.9'
Y = 18'	X = 30.9'

CONCRETE NOSE FOR MEDIAN ISLAND

N.T.S.

NOTE:

MEDIAN PAVING SHALL EXTEND TO POINT WHERE MEDIAN IS 6' WIDE. IF MEDIAN IS 6' WIDE, PAVING SHALL EXTEND 15' FROM NOSE. FOR MEDIANS WIDER THAN 6' PAVING SHALL EXTEND 10' FROM NOSE. ALL DISTANCES ARE MINIMUM.



LEFT TURN LANE MEDIAN PAVEMENT

N.T.S.

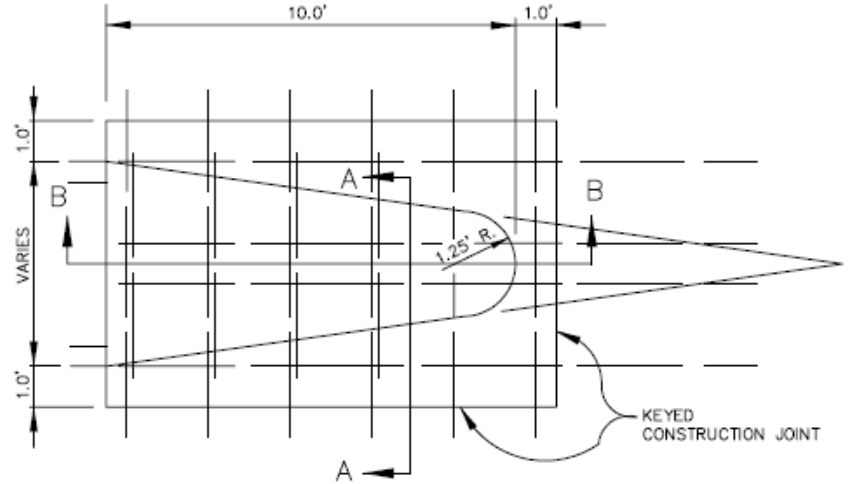
MEDIAN ISLAND PAVEMENT
NOSE & LEFT TURN LANE

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE: 305.3

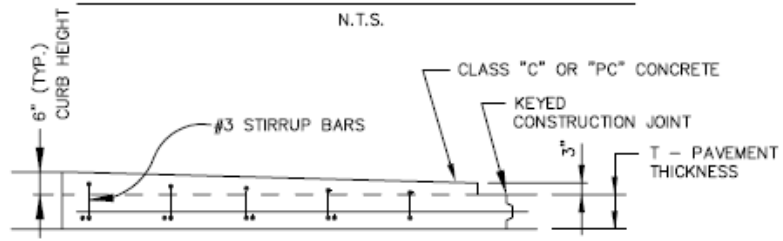
DATE: OCT. '04

STANDARD DRAWING NO.: 2130



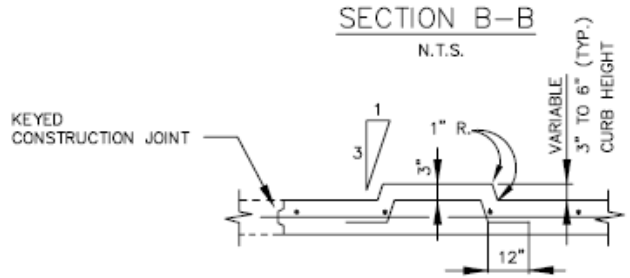
MONOLITHIC CONCRETE MEDIAN NOSE

N.T.S.



SECTION B–B

N.T.S.

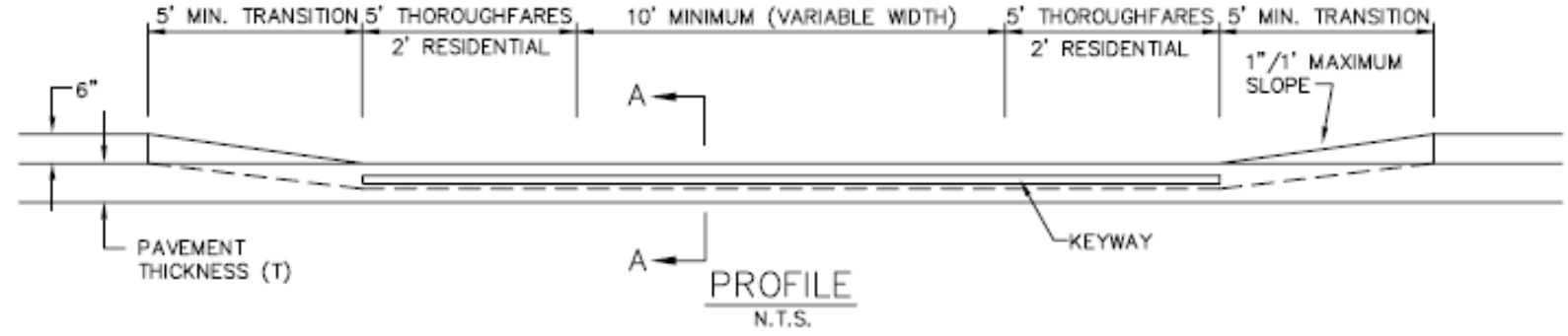


SECTION A–A

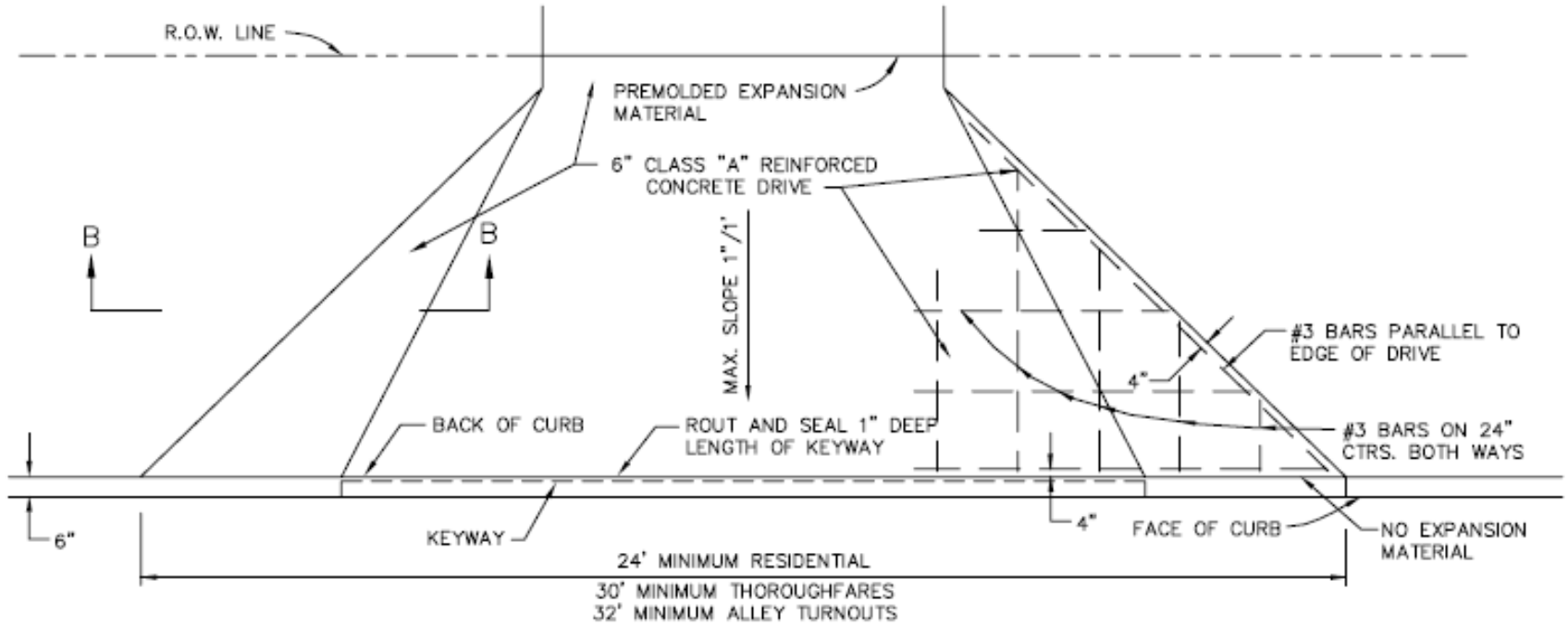
N.T.S.

NOTE:
REINFORCEMENT BARS SHALL MATCH THOSE IN PAVEMENT.

MEDIAN ISLAND PAVEMENT	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 305.3	
MONOLITHIC CONCRETE NOSE		DATE OCT. '04	STANDARD DRAWING NO. 2140



PROFILE
N.T.S.



PLAN
N.T.S.

SEE NOTES, STANDARD DRAWING NO. 2150B.

STANDARD DRAWING NO. 2150A

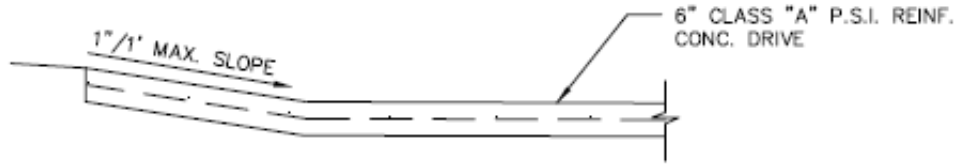
DRIVEWAY APPROACH
FLARED RETURN TYPE

North Central Texas Council of Governments

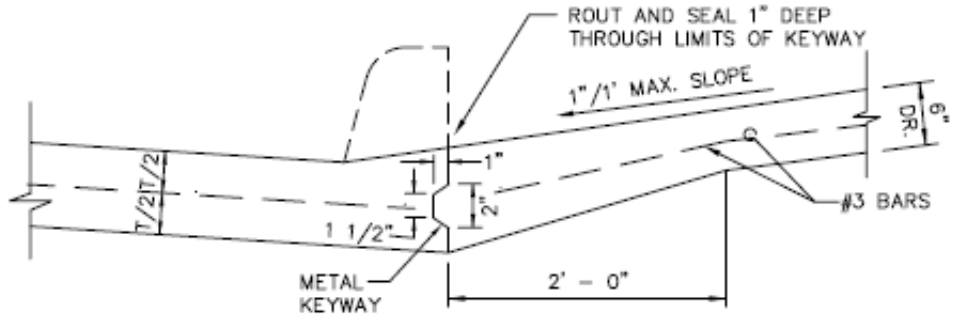
STANDARD SPECIFICATION REFERENCE 305.2

DATE OCT. '04

STANDARD DRAWING NO. 2150A



SECTION "B–B"
N.T.S.



SECTION "A – A"
N.T.S.

NOTES:

1. OFFSETS IN DRIVES TO MATCH PROPOSED WALKS SHALL BE BUILT MONOLITHIC WITH THE DRIVE.
2. PAVEMENT JOINTS SHALL NOT EXTEND THROUGH DRIVE.
3. KEYWAY LIMITS SHALL COINCIDE WITH LIMITS OF 1" CURB.
4. REINFORCING STEEL SHALL NOT EXTEND THROUGH KEYWAY. DRIVE SHALL NOT BE TIED TO PAVEMENT.
5. MAXIMUM SLOPE ON DRIVE IN ANY DIRECTION SHOULD BE 1"/1', WITH EXCEPTION OF 1/4"/1' THROUGH ANY SIDEWALK PASSTHROUGH,TO RESPECT PRINCIPLES OF BARRIER FREE CONSTRUCTION.
6. LENGTH OF TRANSITION FOR CURB AT EACH SIDE OF DRIVE MAY VARY DUE TO STREET GRADES AND REQUIREMENT TO HOLD MAXIMUM SLOPE OF 1"/1'.
7. SIDEWALKS SHALL BE AS DIRECTED BY OWNER AND SHALL MEET REQUIREMENTS OF A.D.A.
8. EXTEND TRANSVERSE PAVEMENT SAWED JOINTS TO R.O.W.

STANDARD DRAWING NO. 2150B

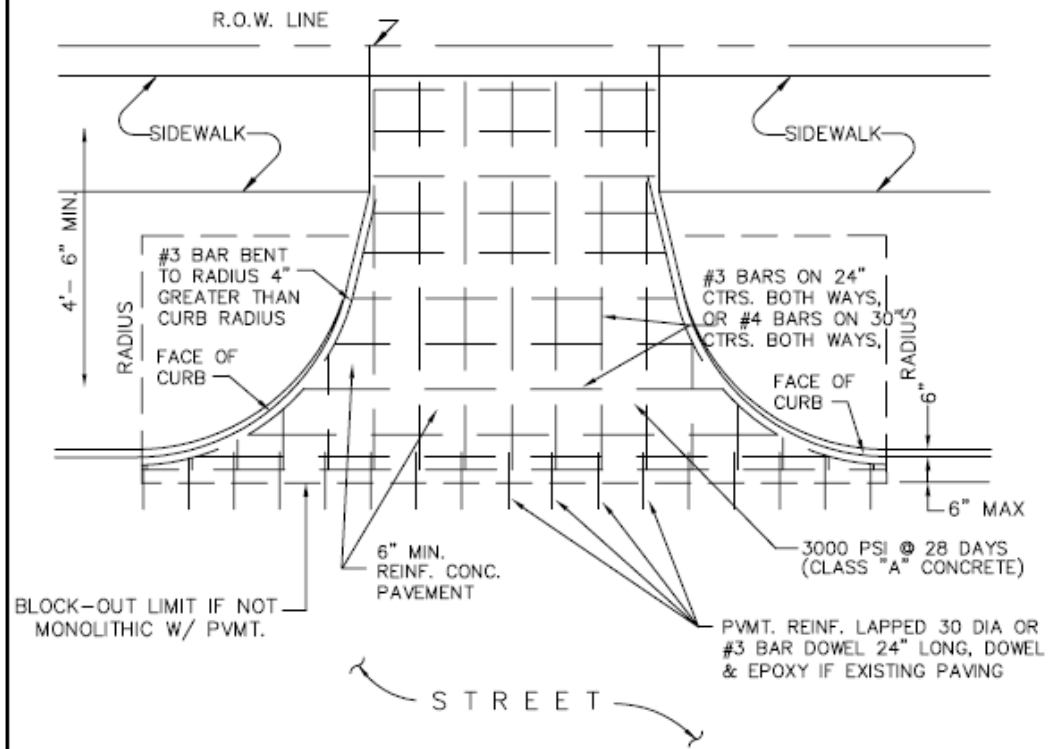
DRIVEWAY APPROACH
FLARED RETURN TYPE

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE: 305.2

DATE: OCT. '04

STANDARD DRAWING NO.: 2150B



PLAN VIEW

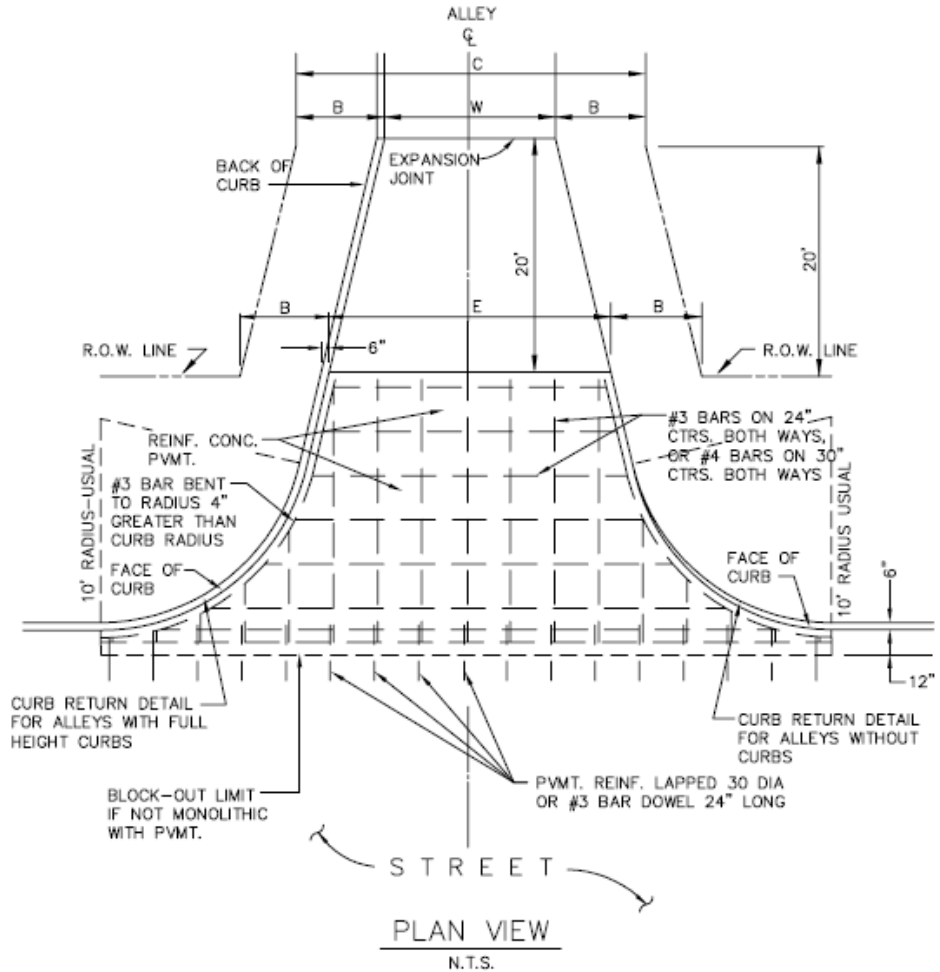
N.T.S.

DRIVEWAY APPROACH
RADIUS RETURN TYPE

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE

DATE	STANDARD DRAWING NO.
OCT. '04	2155



PLAN VIEW

N.T.S.

ALLEY WIDTH (W)	R.O.W. WIDTH (C)	B	E
10'	15'	2' – 6"	12'
12'	17'	2' – 6"	14'
16'	21'	2' – 6"	18'
20'	25'	2' – 6"	22'

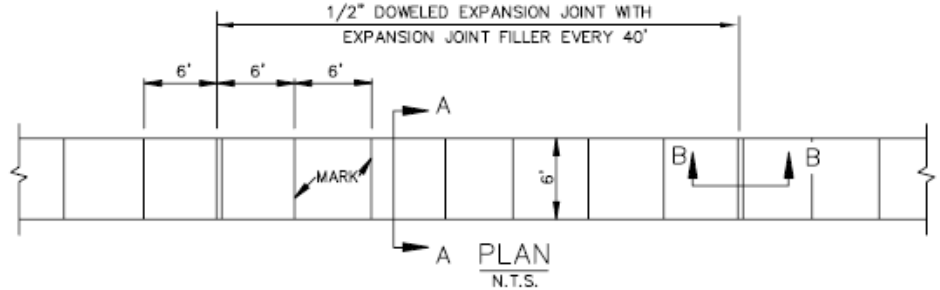
ALLEY APPROACH
RADIUS RETURN TYPE

North Central Texas Council of Governments

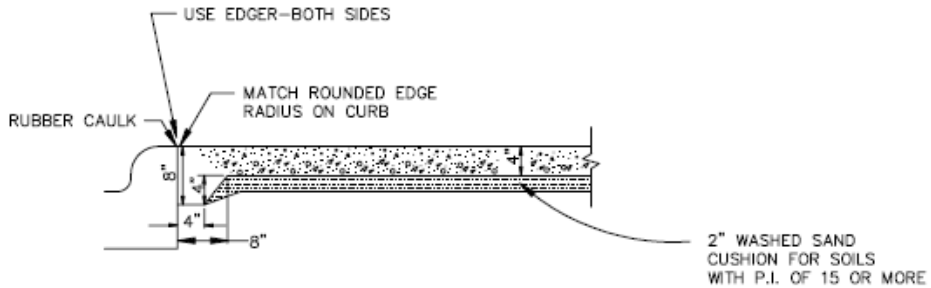
STANDARD SPECIFICATION REFERENCE
305.2

DATE
OCT. '04

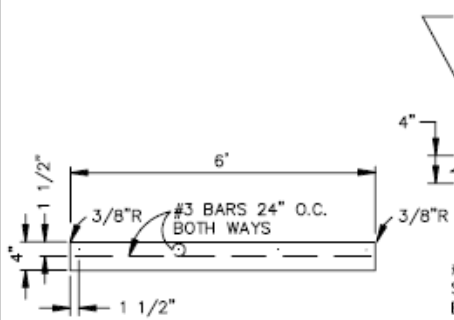
STANDARD DRAWING NO.
2160



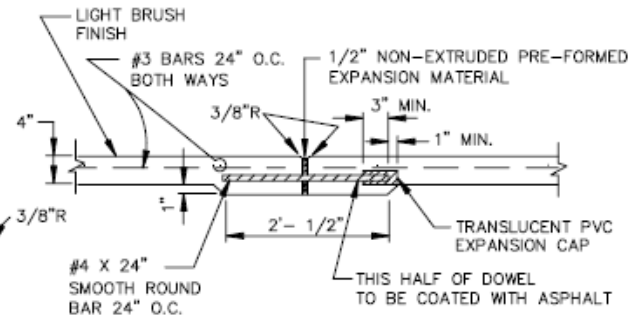
PLAN
N.T.S.



JOINT LUG DETAIL FOR MEDIAN PAVEMENT
OR SIDEWALK ADJACENT TO CURB
N.T.S.



SECTION "A-A"
N.T.S.



SECTION "B-B"
N.T.S.

NOTE:

1. REFER TO STANDARD SPECIFICATION ITEM 305.2 FOR ALTERNATE REINFORCEMENT.
2. CROSS SLOPE OF SIDEWALK SHALL BE ± 1/4" PER FT. MIN. TO ± 3/8" PER FT. MAX.
3. OTHER THAN 6'-0" SIDEWALK WIDTH MAY BE SPECIFIED BY OWNER.
4. SIDEWALK SHALL BE CLASS "A" CONCRETE UNLESS OTHERWISE SPECIFIED BY OWNER.
5. ALL HONEYCOMB IN BACK OF CURB TO BE TROWEL-PLASTERED BEFORE POURING SIDEWALK.
6. LUG MAY BE FORMED BY SHAPING SUBGRADE TO APPROXIMATE DIMENSIONS SHOWN.

REINFORCED CONCRETE SIDEWALKS

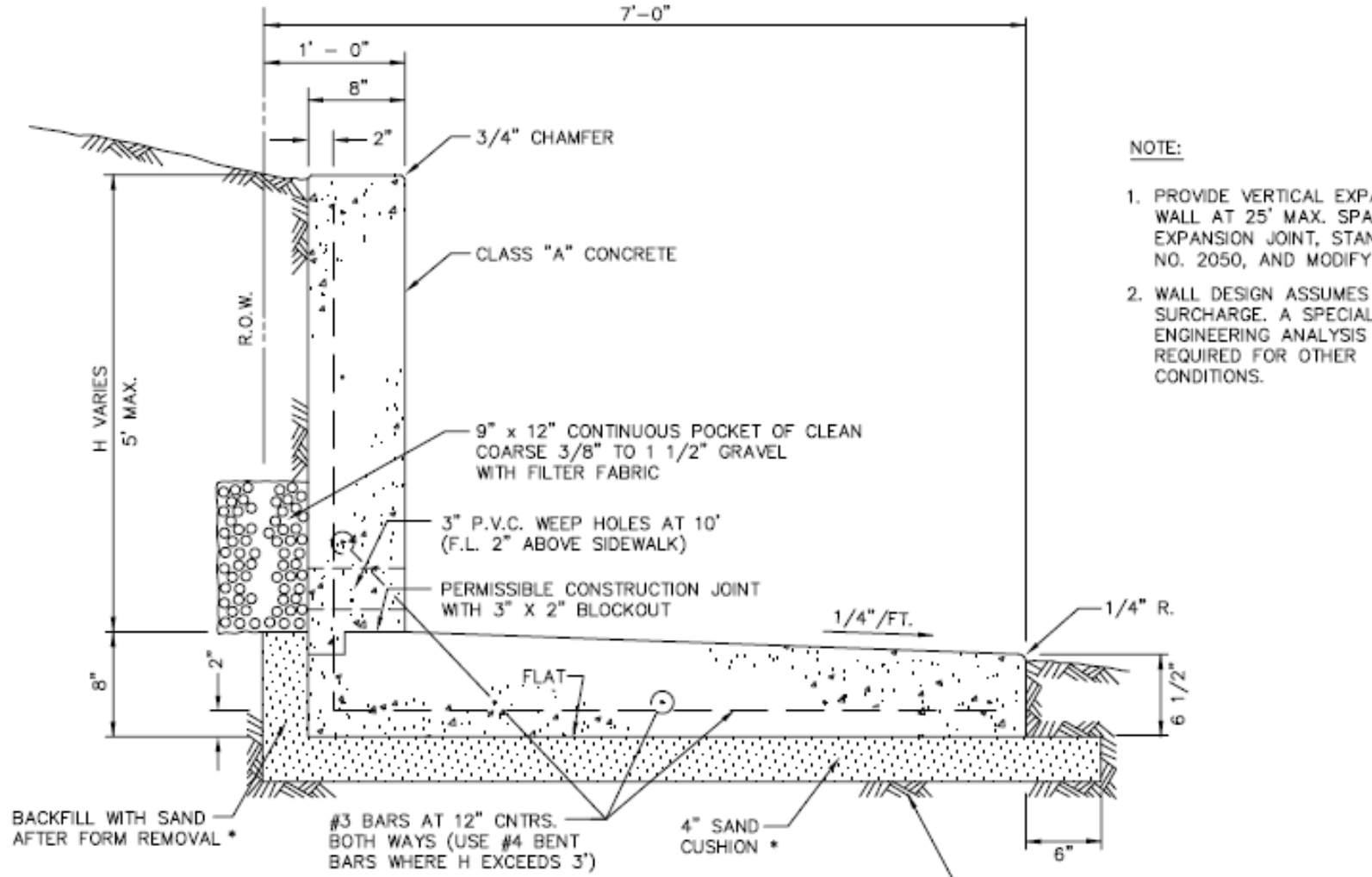
JOINTS AND SPACING

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE
305.2

DATE
OCT. '04

STANDARD DRAWING NO.
2170



NOTE:

1. PROVIDE VERTICAL EXPANSION IN WALL AT 25' MAX. SPACING (USE EXPANSION JOINT, STANDARD DRAWING NO. 2050, AND MODIFY AS REQUIRED)
2. WALL DESIGN ASSUMES NO SURCHARGE. A SPECIAL ENGINEERING ANALYSIS IS REQUIRED FOR OTHER CONDITIONS.

RETAINING WALL WITH INTEGRAL SIDEWALK

N.T.S.

* WHEN SPECIFIED ON PLANS

STANDARD DRAWING NO. 2180

REINFORCED CONCRETE RETAINING WALL INTEGRAL WITH SIDEWALK

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 802.2

DATE OCT. '04

STANDARD DRAWING NO. 2180

GENERAL NOTES:

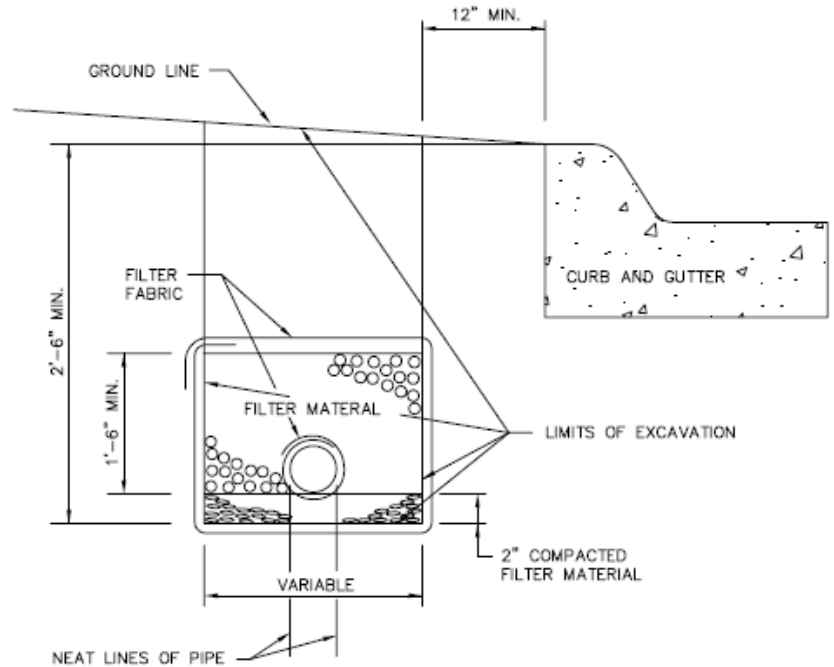
1. REINFORCED CONCRETE PAVEMENT:
   A. ALL CURBS SHALL BE PLACED INTEGRAL WITH PAVEMENT UNLESS OTHERWISE APPROVED BY THE OWNER.
   B. CURBS SHALL MEET THE SAME COMPRESSIVE STRENGTH AS SPECIFIED FOR THE PAVEMENT.
   C. BAR LAPS SHALL BE 30 DIAMETERS.
   D. REINFORCING BARS SHALL BE SUPPORTED BY CHAIRS OR OTHER DEVICES APPROVED BY THE OWNER.

2. SUBGRADE: (UNLESS OTHERWISE SPECIFIED BY OWNER)
   A. SUBGRADE UNDER ALL PAVEMENTS SHALL BE STABILIZED TO A MINIMUM DEPTH OF 6" WITH HYDRATED LIME OR CEMENT WHEN THE P.I. OF THE INPLACE MATERIAL IS GREATER THAN 15. LABORATORY TESTS MUST BE PERFORMED TO DETERMINE THE AMOUNT OF LIME OR CEMENT REQUIRED TO LOWER THE P.I. TO 15 OR BELOW. SATURATION P.I. (PH $\geq$ 12.4) WILL BE THE LIMIT WHEN A SOIL'S P.I. CANNOT BE BROUGHT TO 15 OR LOWER.

   B. WHERE THE INPLACE MATERIAL HAS A P.I. OF LESS THAN 15, THE SUBGRADE SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 6" AND RECOMPACTED.

3. IF THE ROADWAY IS A DESIGNATED BIKE ROUTE OR BIKE USAGE IS ANTICIPATED, REFER TO NCTCOG'S REGIONAL BICYCLE AND PEDESTRIAN FACILITIES DESIGN MANUAL FOR DESIGN GUIDANCE.

PAVEMENT SYSTEMS	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE: 302,303	
GENERAL NOTES		DATE: OCT. '04	STANDARD DRAWING NO.: 2190



SECTION

N.T.S.

LIMITS OF EXCAVATION

DEPTH OF TRENCH (FT.)	DIST. IN FT. OUTSIDE NEAT LINES OF PIPE SUBDRAIN
0 TO 6	1.00
6 TO 10	1.50
10 TO 15	2.00
OVER 15	2.50

FILTER MATERIAL SPECIFICATIONS

SIEVE SIZE	PERCENTAGE RETAINED ON SIEVE	
	TYPE A	TYPE B
1 1/2	---	0 – 10
3/4	0 – 10	20 – 40
3/8	15 – 35	---
NO. 4	35 – 55	40 – 60

MATERIAL FINER THAN NO. 4 SIEVE	
4	---
20	35 – 65
50	75 – 100

TYPES OF PIPE ACCEPTABLE FOR USE AS SUBDRAIN

1. PERFORATED CORRUGATED METAL PIPE.
2. PERFORATED PVC PIPE.
3. PERFORATED POLYETHYLENE PIPE.

SUBDRAINS

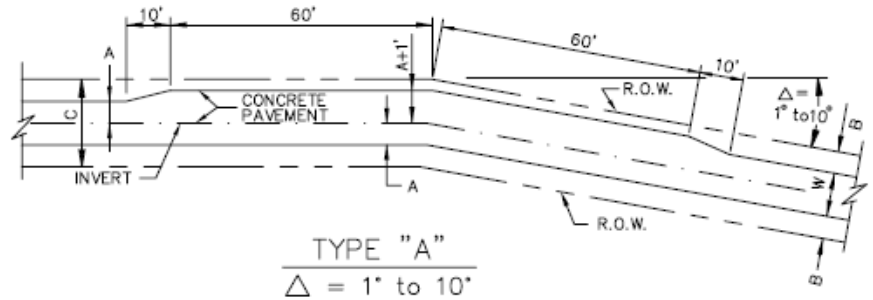
PAVEMENT SUBGRADE

North Central Texas Council of Governments

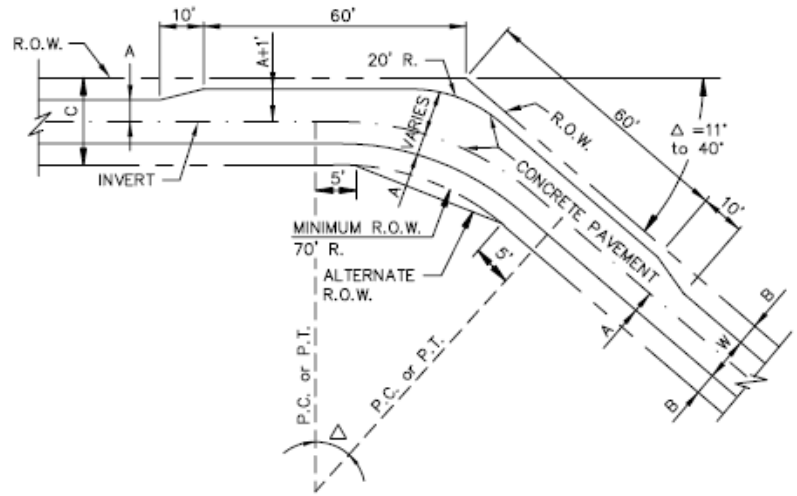
STANDARD SPECIFICATION REFERENCE: 301

DATE: OCT. '04

STANDARD DRAWING NO.: 2200



TYPE "A"
Δ = 1° to 10°
N.T.S.

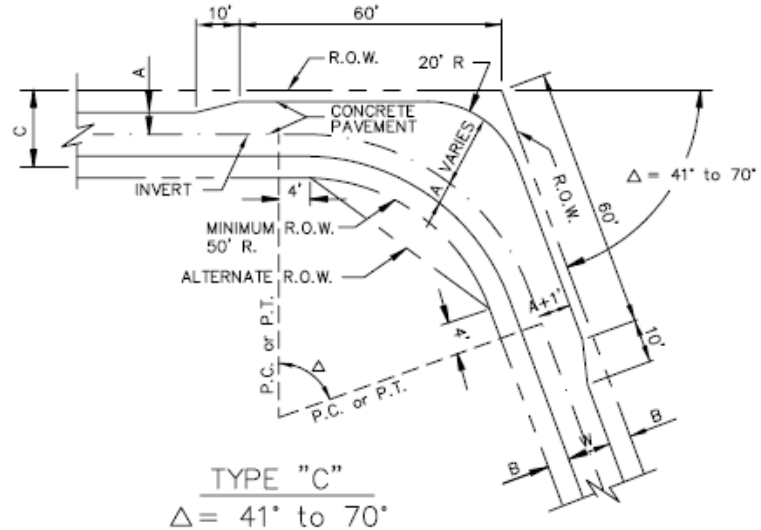


TYPE "B"
Δ = 11° to 40°
N.T.S.

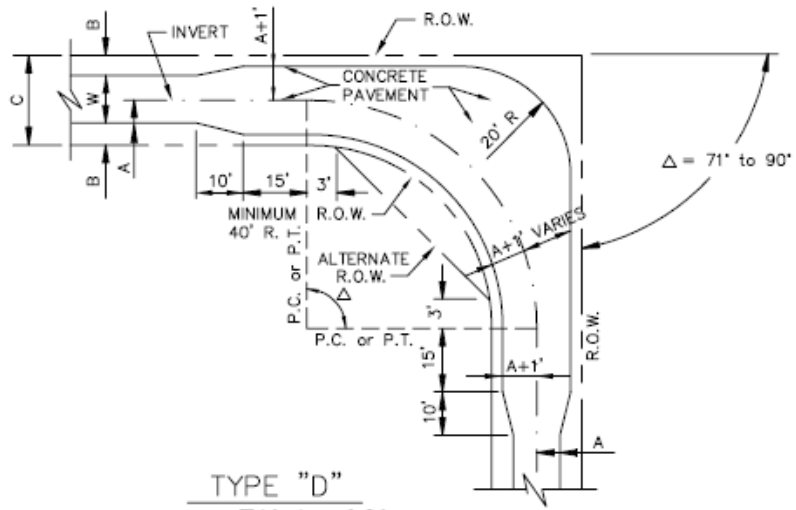
NOTES:

1. DIMENSIONS W, C, A, AND B SHALL BE SPECIFIED ON THE PLANS IN ACCORDANCE WITH STD. DWG. NO. 2040.

ALLEY GEOMETRICS	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 303.5	
TYPE "A" & TYPE "B"		DATE OCT. '04	STANDARD DRAWING NO. 2210



TYPE "C"
Δ = 41° to 70°
N.T.S.

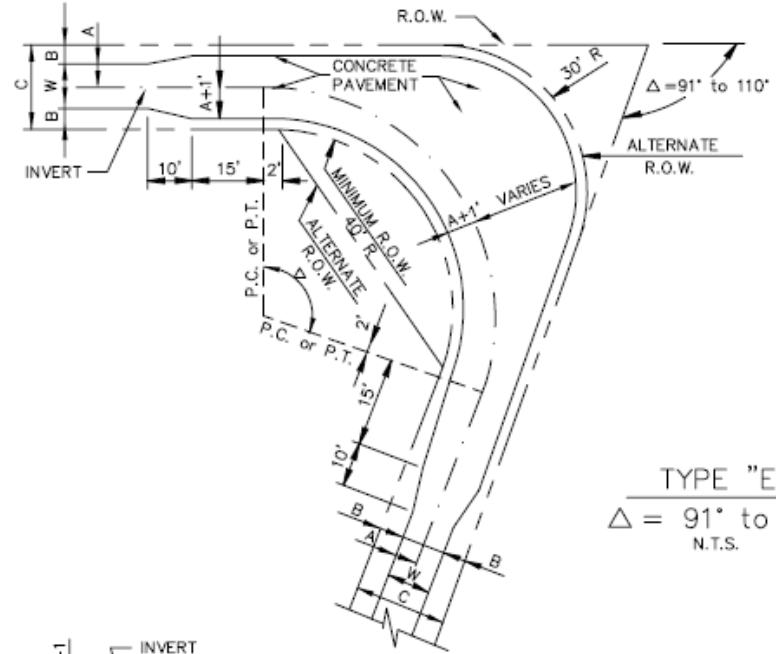


TYPE "D"
Δ = 71° to 90°
N.T.S.

NOTES:

1. DIMENSIONS W, C, A, AND B SHALL BE SPECIFIED ON THE PLANS IN ACCORDANCE WITH STD. DWG. NO. 2040.

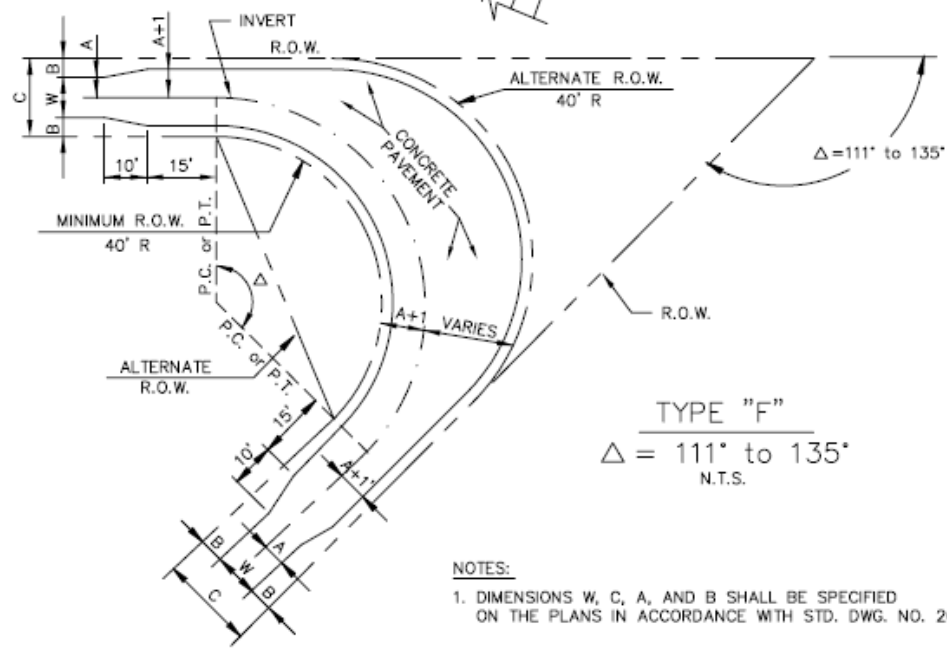
ALLEY GEOMETRICS	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 303.5	
TYPE "C" & TYPE "D"		DATE OCT. '04	STANDARD DRAWING NO. 2220



TYPE "E"

Δ = 91° to 110°

N.T.S.



TYPE "F"

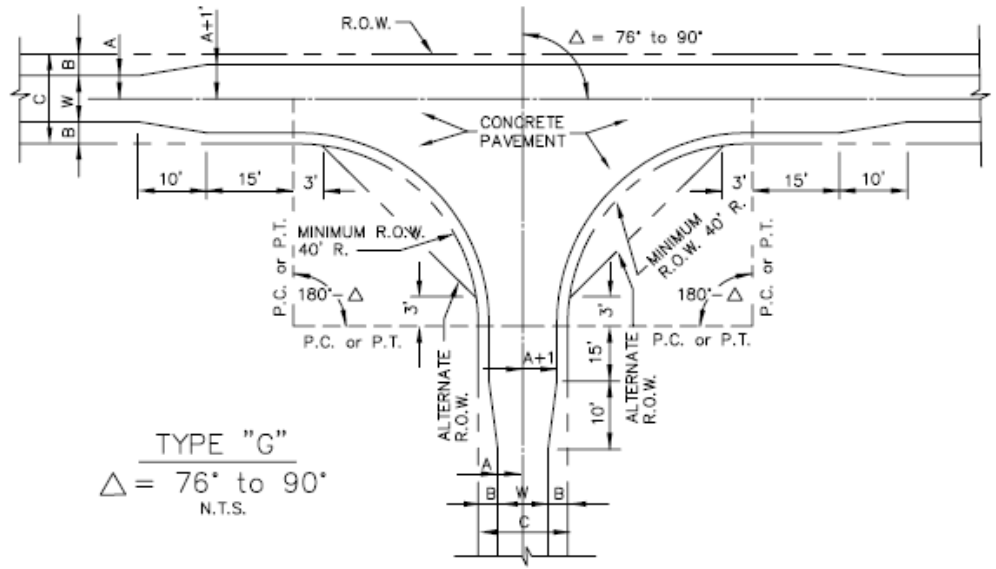
Δ = 111° to 135°

N.T.S.

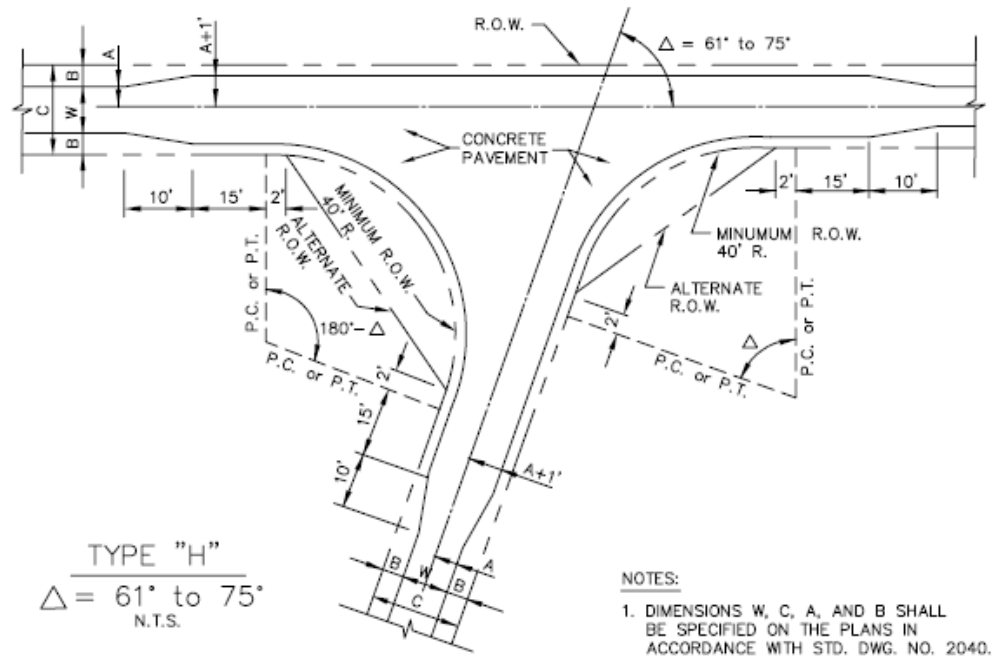
NOTES:

1. DIMENSIONS W, C, A, AND B SHALL BE SPECIFIED ON THE PLANS IN ACCORDANCE WITH STD. DWG. NO. 2040.

ALLEY GEOMETRICS	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 303.5	
TYPE "E" & TYPE "F"		DATE OCT. '04	STANDARD DRAWING NO. 2230



TYPE "G"
Δ = 76° to 90°
N.T.S.



TYPE "H"
Δ = 61° to 75°
N.T.S.

NOTES:

1. DIMENSIONS W, C, A, AND B SHALL BE SPECIFIED ON THE PLANS IN ACCORDANCE WITH STD. DWG. NO. 2040.

ALLEY GEOMETRICS

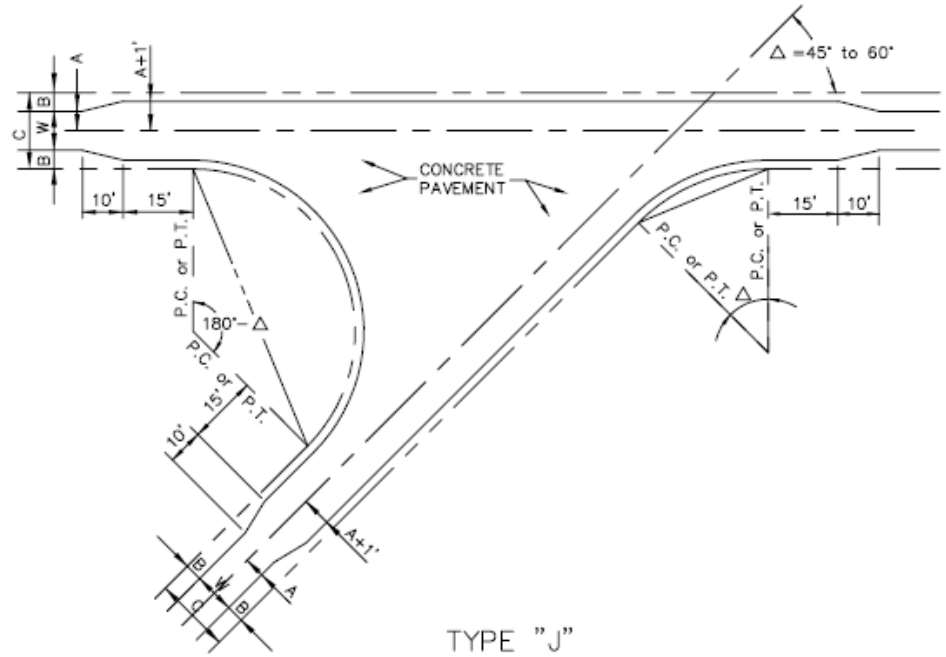
TYPE "G" & TYPE "H"

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE
303.5

DATE
OCT. '04

STANDARD DRAWING NO.
2240



TYPE "J"

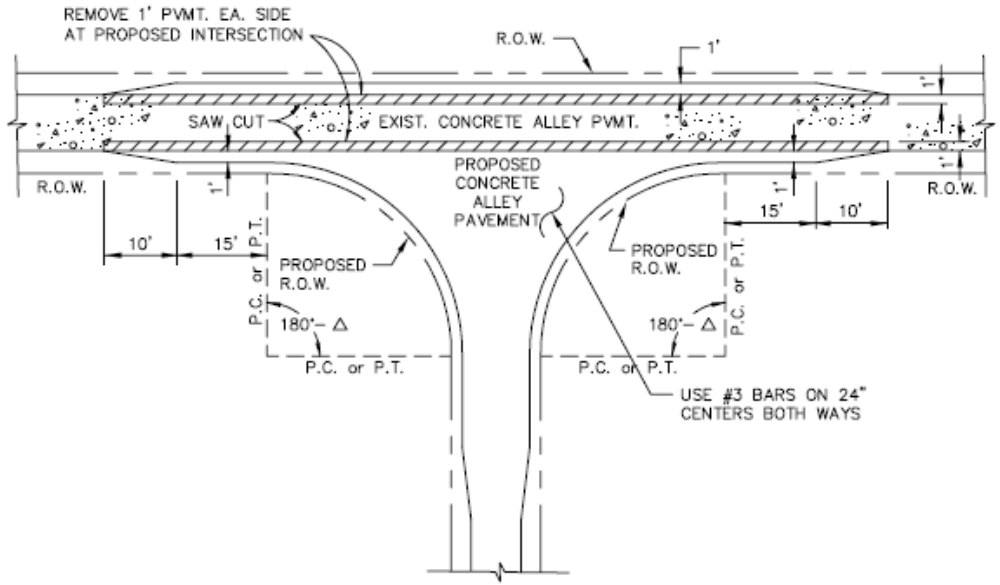
Δ = 45° to 60°

N.T.S.

NOTES:

1. DIMENSIONS W, C, A, AND B SHALL BE SPECIFIED ON THE PLANS IN ACCORDANCE WITH STD. DWG. NO. 2040.

ALLEY GEOMETRICS	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE	
TYPE "J"		303.5	
		DATE	STANDARD DRAWING NO.
		OCT. '04	2250



INTERSECTION OF PROPOSED ALLEY
WITH EXISTING ALLEY PAVEMENT

N.T.S.

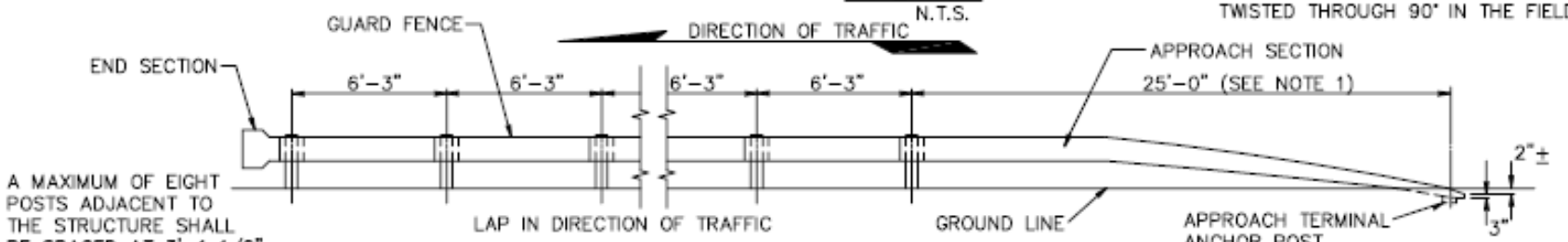
NOTE:

GEOMETRICS OF PROPOSED ALLEY SHALL BE SHOWN ON THE PLANS IN ACCORDANCE WITH TYPE "G", "H", OR "J".

ALLEY INTERSECTION	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 303.5	
PROPOSED TO EXISTING		DATE OCT. '04	STANDARD DRAWING NO. 2260

PLAN
N.T.S.

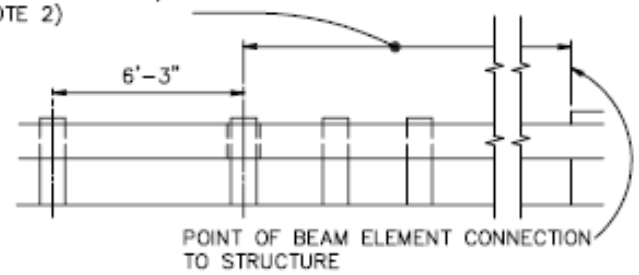
THIS METAL BEAM ELEMENT IS TO BE TWISTED THROUGH 90° IN THE FIELD.



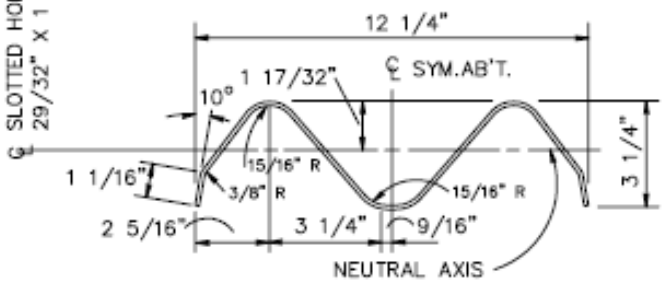
ELEVATION
N.T.S.

NOTES:

1. THIS DIMENSION MEASURED TO CENTER OF SPLICE WHEN SPECIAL END SHOE IS USED.
2. VARIATIONS IN POST SPACING AND/OR THE USE OF SPACER BLOCKS OR SHIMS, MAY BE REQUIRED BY THE ENGINEER, IN ORDER TO ACCOMMODATE THE REQUIRED BEAM ELEMENT CONNECTION TO STRUCTURES.

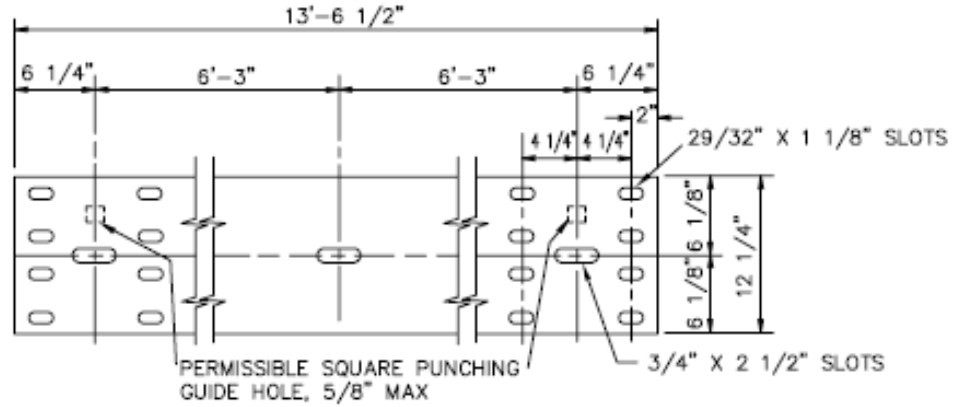


POST TREATMENT AT STRUCTURES
N.T.S.



SECTION THRU METAL BEAM ELEMENT
N.T.S.

ACTUAL SECTION MAY BE SLIGHTLY DIFFERENT DEPENDING UPON THE MANUFACTURER



ELEVATION OF NOMINAL 12 1/2 FOOT METAL BEAM ELEMENT N.T.S.

STANDARD DRAWING NO. 2270A

METAL BEAM GUARD FENCE

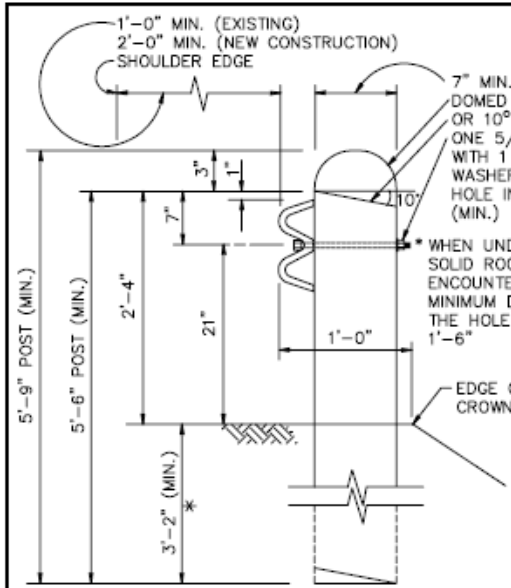
ROADSIDE PLACEMENT & BEAM ELEMENTS

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE 801.2

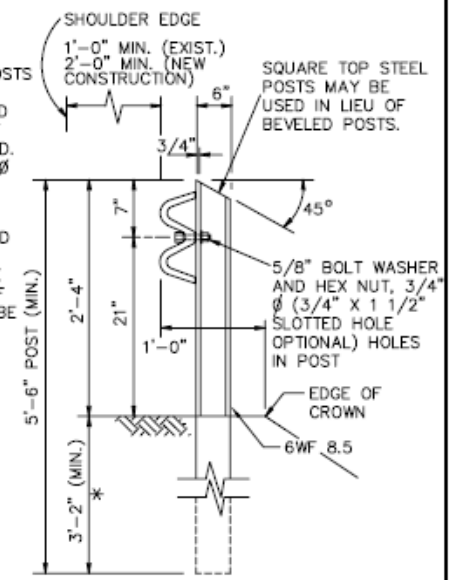
DATE OCT. '04

STANDARD DRAWING NO. 2270A



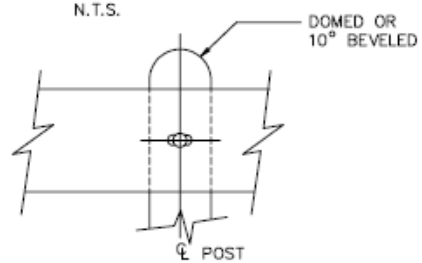
WOOD LINE POST

N.T.S.



STEEL LINE POST

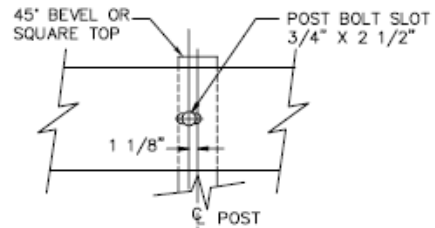
N.T.S.



WOOD POST CONNECTION

WOOD POST MAY BE DOMED OR BEVELED.

N.T.S.



STEEL POST CONNECTION

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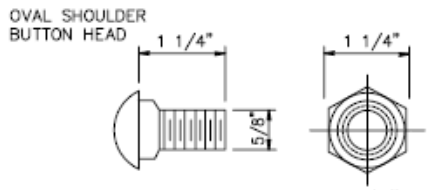
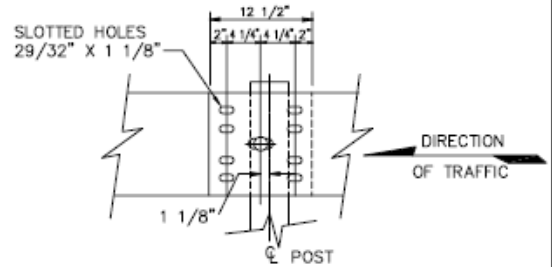


ANCHOR OR SPLICE BOLT 5/8" NUT

POST BOLT: SIMILAR EXCEPT LENGTH.

(7/8" HEX BOLTS REQUIRED FOR SPECIAL END SHOE)

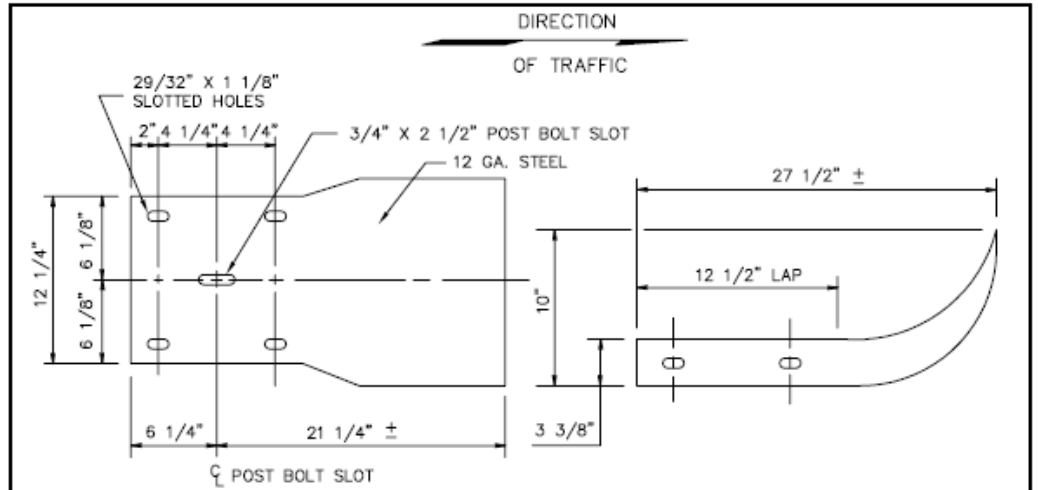
N.T.S.



BEAM ELEMENT SPLICE

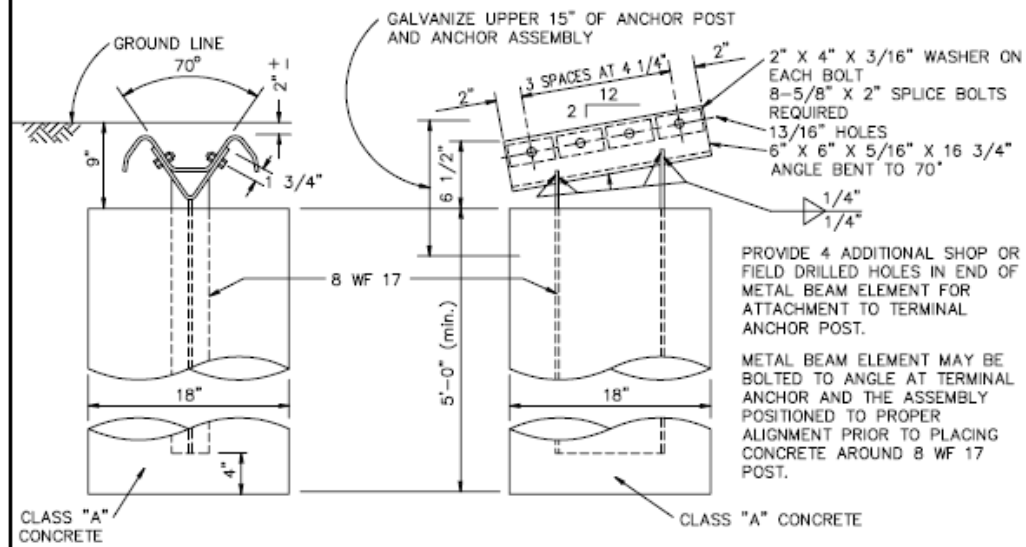
N.T.S.

METAL BEAM GUARD FENCE	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 801.2	
LINE POST & CONNECTIONS		DATE OCT. '04	STANDARD DRAWING NO. 2270B



END SECTION – AWAY FROM DIRECTION OF TRAFFIC

N.T.S.



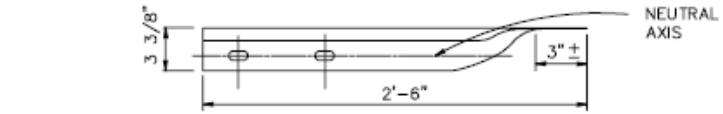
PROVIDE 4 ADDITIONAL SHOP OR FIELD DRILLED HOLES IN END OF METAL BEAM ELEMENT FOR ATTACHMENT TO TERMINAL ANCHOR POST.

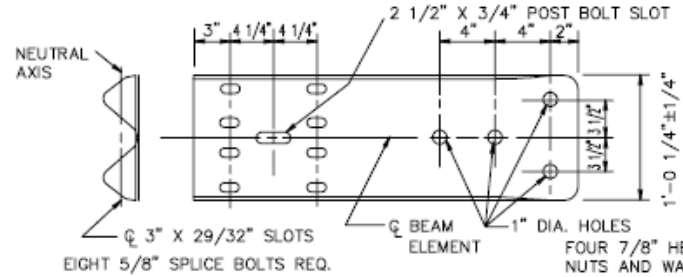
METAL BEAM ELEMENT MAY BE BOLTED TO ANGLE AT TERMINAL ANCHOR AND THE ASSEMBLY POSITIONED TO PROPER ALIGNMENT PRIOR TO PLACING CONCRETE AROUND 8 WF 17 POST.

TERMINAL ANGLE ANCHOR POST

N.T.S.

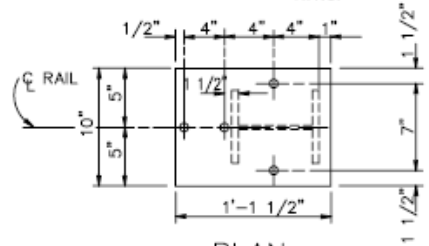
METAL BEAM GUARD FENCE	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 801.2	
END SECTION & ANGLE ANCHOR POST		DATE OCT. '04	STANDARD DRAWING NO. 2270C





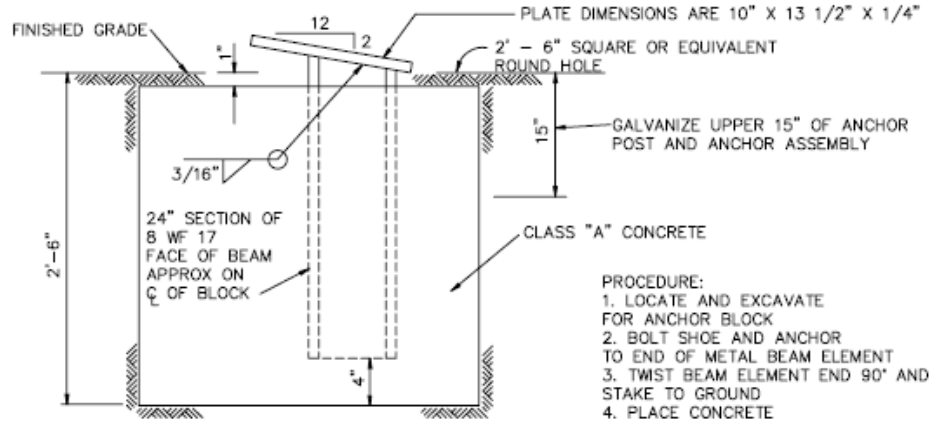
SPECIAL END SHOE

N.T.S.



PLAN

N.T.S.



ELEVATION

N.T.S.

SPECIAL END SHOE ANCHOR POST

METAL BEAM GUARD FENCE	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 801.2	
SPECIAL END SHOE & ANCHOR POST		DATE OCT. '04	STANDARD DRAWING NO. 2270D

METAL BEAM GUARD FENCE
GENERAL NOTES

1. EXCEPT WHERE USED AT STRUCTURES THAT ARE NARROWER THAN CROWN WIDTH OR WHERE OTHERWISE INDICATED ON PLANS, THE FACE OF THE GUARD FENCE SHALL BE LOCATED A MINIMUM OF ONE FOOT FROM THE SHOULDER EDGE ON EXISTING ROADWAYS AND A MINIMUM OF TWO FEET FROM THE SHOULDER EDGE ON NEW CONSTRUCTION. THE EXACT POSITION SHALL BE AS SHOWN ELSEWHERE ON THE PLANS OR AS DIRECTED BY THE ENGINEER. BEAM ELEMENTS SHALL BE TRANSITIONED TO A SMOOTH CONNECTION WITH OTHER STRUCTURES OR BEAM ELEMENTS AS SHOWN ELSEWHERE ON PLANS.

2. AT THE OPTION OF THE CONTRACTOR THE METAL BEAM ELEMENTS FOR THE GUARD FENCE MAY BE FURNISHED IN EITHER 12 1/2 OR 25 FOOT NOMINAL LENGTHS. BEAM ELEMENTS SHALL BE FURNISHED WITH POST BOLT SLOTS FOR 5/8" DIAMETER BOLT CONNECTIONS TO POSTS.

3. BOLTS SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN 3/4" BEYOND IT.

4. THE TOP OF THE TERMINAL ANCHOR POST ASSEMBLY AND ALL STEEL FITTINGS THEREON SHALL BE GALVANIZED AS SHOWN.

5. WHERE ROCK IS ENCOUNTERED OR WHERE SHOWN ON THE PLANS, THE DIAMETER OF THE HOLES AND THE MATERIAL FOR BACKFILLING SHALL BE AS DIRECTED BY THE ENGINEER. TIMBER POSTS SHALL NOT BE SET IN CONCRETE.

6. THE TERMINAL ANCHOR POST SHALL BE SET IN CLASS "A" CONCRETE. CONCRETE SHALL BE SUBSIDIARY TO THE BID ITEM"METAL BEAM GUARD FENCE."

7. TIMBER POSTS MAY BE BEVELED AT APPROXIMATELY 10 DEGREES ON THE TOP OR BOTH ENDS WITH HIGH SIDE OF TOP OF POST PLACED TOWARD THE ROADWAY OR THEY MAY BE DOMED.

8. AN ANCHOR OTHER THAN TO A TERMINAL ANCHOR POST SHALL CONSIST OF A CONNECTION SIMILAR TO THE BEAM ELEMENT SPLICE OR SIMILAR TO THE SPECIAL END SHOE.

9. SPECIAL FABRICATION WILL BE REQUIRED IN INSTALLATIONS HAVING A CURVATURE OF LESS THAN 150' RADIUS.

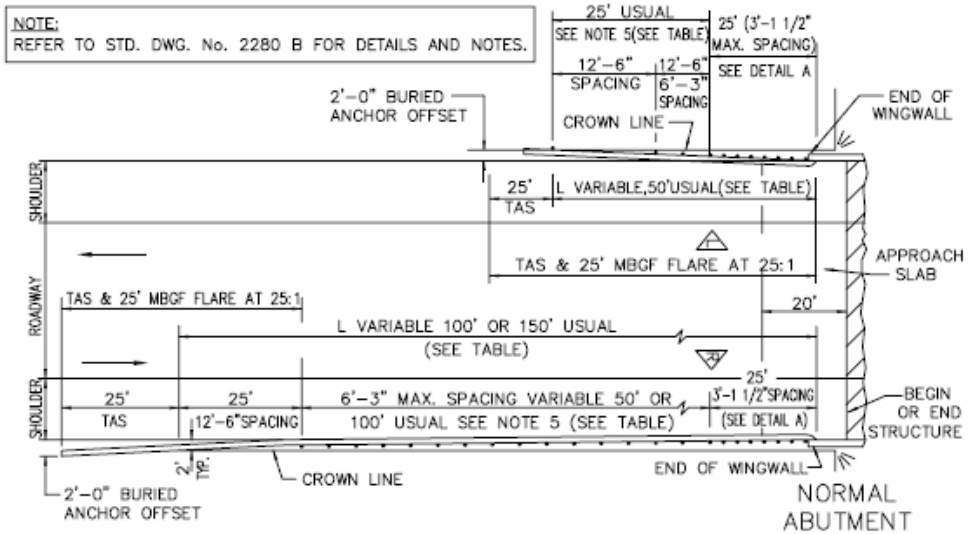
10. WOOD POSTS MUST BE TREATED IN MANNER APPROVED BY THE ENGINEER.

11. THE SPECIAL END SHOE ANCHOR MAY BE USED WITH THE 18" X 5'-0" CONCRETE FOOTING OR THE ANGLE ANCHOR MAY BE USED WITH THE 2'-6" SQUARE OR EQUIVALENT CONCRETE FOOTING.

12. ALL METAL ELEMENTS WILL BE 12 GAUGE STEEL UNLESS STATED OTHERWISE ON PLANS.

METAL BEAM GUARD FENCE GENERAL NOTES	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 801.2	
		DATE OCT. '04	STANDARD DRAWING NO. 2270E

NOTE:
REFER TO STD. DWG. No. 2280 B FOR DETAILS AND NOTES.

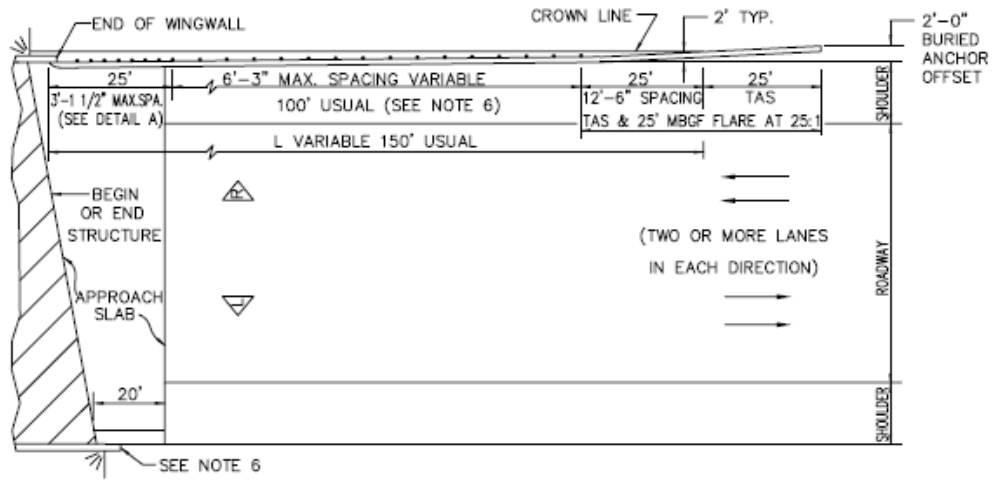


NORMAL ABUTMENT BENT

TWO LANE ROADWAY

N.T.S.

TAS: TERMINAL ANCHOR SECTION



SKEWED ABUTMENT BENT

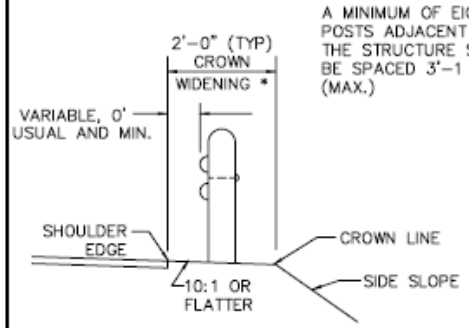
MULTILANE UNDIVIDED ROADWAY

N.T.S.

CROWN WIDTH BRIDGE

(SEE NOTE 7 FOR RESTRICTIVE WIDTH BRIDGE)

METAL BEAM GUARD FENCE	North Central Texas Council of Governments	STANDARD SPECIFICATION REFERENCE 801.2	
TWO-WAY TRAFFIC BRIDGE END		DATE OCT. '04	STANDARD DRAWING NO. 2280A

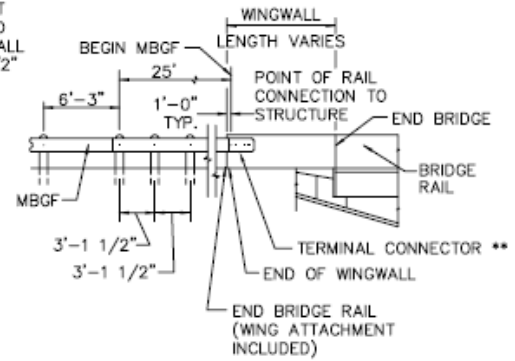


A MINIMUM OF EIGHT POSTS ADJACENT TO THE STRUCTURE SHALL BE SPACED 3'-1 1/2" (MAX.)

TYPICAL CROSS SECTION

N.T.S.

* APPLIES TO CONSTRUCTION ON NEW ALIGNMENT OR WHERE EXISTING ROADWAY CROSS SECTION IS TO BE WIDENED TO INCREASE ROADWAY WIDTH. DOES NOT APPLY TO REHABILITATION WORK WHERE EXISTING ROADWAY CROWN WIDTH IS TO BE RETAINED.



POST TREATMENT AT STRUCTURES DETAIL A

N.T.S.

** TYPICAL CONNECTION–SEE BRIDGE RAIL OR OTHER PLAN SHEETS FOR DETAILS OF MBGR TO BRIDGE RAIL CONNECTION.

LENGTH Ⓔ OF NEED, L, FT.

TWO LANE HIGHWAYS				MULTILANE UNDIVIDED HWYS.	
750 or less ADT		more than 750 ADT		all ADT's	
◁ side	▷ side	◁ side	▷ side	◁ side	▷ side
50 ①	100	50 ①	150	0	150

Ⓔ LENGTHS ARE FOR TYPICAL CROSS SECTIONAL & PLACEMENT CONDITIONS. FOR UNUSUAL CONDITIONS, A CUSTOM DESIGN SHOULD BE DEVELOPED.

◁ INDICATES LEFT SIDE OF TRAFFIC APPROACHING BRIDGE.

▷ INDICATES RIGHT SIDE OF TRAFFIC APPROACHING BRIDGE.

DESIGN NOTES:

1. THE T.A.S. AND TYPICALLY ADJACENT 25' MBGF SHOULD BE FLARED FROM THE SHOULDER EDGE AT 25:1 TO PROVIDE A 2' USUAL OFFSET TO BURIED ANCHOR.
2. WHERE LENGTH (L) OF MBGF IS 50 FEET, POST SPACING SHALL BE AS DETAILED HEREON (SEE PLAN LAYOUT FOR TWO LANE (RURAL) HIGHWAY), LEFT SIDE OF TRAFFIC APPROACHING BRIDGE. WHERE LENGTH (L) OF MBGF IS 75 FEET OR MORE, POST SPACING SHALL BE 3'-1 1/2" FOR THE 25' SECTION ADJACENT TO THE BRIDGE, 12'-6" FOR THE 25' SECTION ADJACENT TO THE T.A.S. AND 6'-3" FOR THE REMAINING INTERVENING LENGTH.
3. THE SLOPE BETWEEN THE CROWN LINE AND OUTSIDE EDGE OF SHOULDER SHOULD BE 10:1 OR FLATTER. THE CROWN SHOULD BE WIDENED TO ACCOMODATE MBGF. TYPICALLY THE CROWN LINE SHOULD BE 2 FEET FROM THE OUTSIDE SHOULDER EDGE (SEE TYPICAL CROSS SECTION).
4. FOR RESTRICTIVE WIDTH BRIDGES, A 25 FOOT TANGENT SECTION OF MBGF SHOULD CONNECT TO THE WINGWALL. THE ADJOINING MBGF THAT LIES WITHIN THE ROADWAY (LANE & SHOULDER AREAS) CROWN SHOULD BE FLARED AT THE RATE OF 25:1 (LONGITUDINAL:LATERAL). LENGTH SHOULD BE GOVERNED BY TABULATED VALUES OR THE LENGTH NECESSARY TO LOCATE THE BURIED ANCHOR AT A 2-FOOT OFFSET FROM SHOULDER EDGE, WHICHEVER IS GREATER.
5. AVERAGE DAILY TRAFFIC (ADT) IS FOR THE CURRENT YEAR. WHERE SIGNIFICANT TRAFFIC VOLUME GROWTH IS ANTICIPATED ON LOW VOLUME (0-750 ADT) HIGHWAYS, USE LENGTHS SHOWN FOR HIGHER VOLUME CATEGORY.
6. PROVIDE MINIMUM 50 FT. MBGF PLUS T.A.S. FOR FOUR LANE UNDIVIDED HIGHWAYS. FOR FOUR LANE HIGHWAYS WITH A FLUSH MEDIAN OR FOR HIGHWAYS WITH SIX OR MORE LANES, MBGF IS NOT A REQUIRED BRIDGE END TREATMENT. HOWEVER, OTHER NEARBY HAZARDS MAY WARRANT SHIELDING WITH MBGF.

GENERAL NOTES:

1. FOR METAL BEAM GUARD FENCE DETAILS AND METHOD OF TERMINATION, SEE STD. DWGS. No. 2270A – 2270E.
2. VARIATIONS IN POST SPACINGS AND/OR THE USE OF SPACER BLOCKS OR SHIMS MAY BE REQUIRED BY THE ENGINEER IN ORDER TO ACCOMODATE THE REQUIRED BEAM ELEMENT CONNECTION TO STRUCTURES.
3. QUANTITIES OF METAL BEAM GUARD FENCE (MBGF) AT INDIVIDUAL BRIDGE ENDS ARE SHOWN ELSEWHERE IN THE PLANS.

METAL BEAM GUARD FENCE

TWO-WAY TRAFFIC BRIDGE END

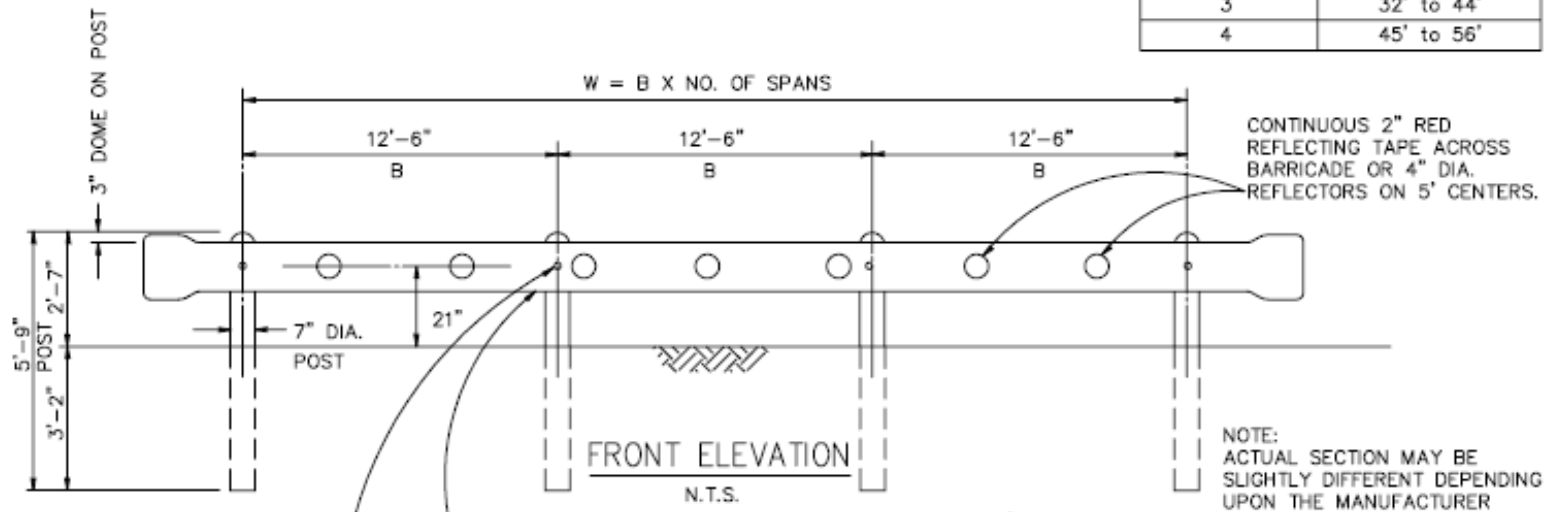
North Central Texas Council of Governments

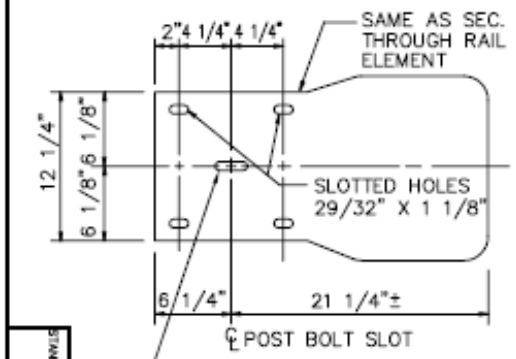
STANDARD SPECIFICATION REFERENCE: 801.2

DATE: OCT. '04

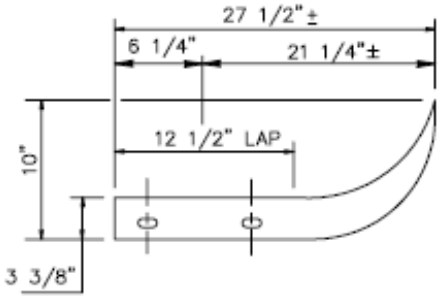
STANDARD DRAWING NO.: 2280B

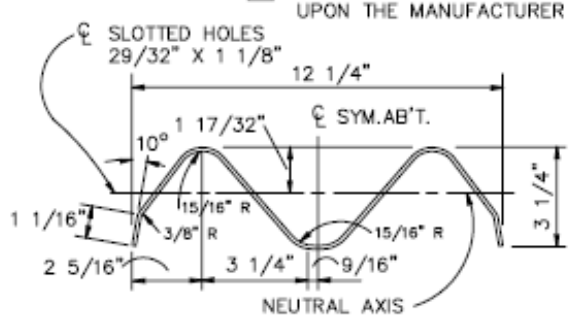
NO. OF SPANS	ROADWAY SECTION WIDTH
2	18' to 31'
3	32' to 44'
4	45' to 56'





TERMINAL SECTION
N.T.S.





SECTION THRU RAIL ELEMENT
N.T.S.

STANDARD DRAWING NO. 2290

METAL BEAM BARRICADE
END OF ROAD

North Central Texas Council of Governments

STANDARD SPECIFICATION REFERENCE
801.2

DATE
OCT. '04

STANDARD DRAWING NO.
2290

Next Steps

- Determine action items for Subcommittee Members and NCTCOG staff

Next Standard Drawings Meetings

February 10, 2020
10am-11:30am

Regional Forum Room