



# CITY OF MANSFIELD

1200 E. Broad St.  
Mansfield, TX 76063  
mansfieldtexas.gov

## Meeting Agenda - Final

### Planning and Zoning Commission

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Monday, May 3, 2021

6:00 PM

City Hall Council Chambers

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**PARTICIPATION IN THIS MEETING WILL BE AVAILABLE IN PERSON OR BY VIDEO  
CONFERENCING. To participate by video, please register at**

**[https://mansfieldtexas.zoom.us/webinar/register/WN\\_MNV4z6jbQHCQUHUoZTkaMg](https://mansfieldtexas.zoom.us/webinar/register/WN_MNV4z6jbQHCQUHUoZTkaMg)**

**by 6:00 pm on Monday, May 3, 2021 or join by telephone at 1-888-788-0099 (Toll Free).  
When you call into the meeting, provide the Webinar ID number and password below:**

**Webinar ID: 933 6787 6927**

**Passcode: 878429**

**Citizen comments on any agenda item for the May 3, 2021, Planning and Zoning  
Commission meeting may be submitted by email at [planning@mansfieldtexas.gov](mailto:planning@mansfieldtexas.gov). All  
comments must be received by 12:00 noon, Monday, May 3, 2021, for presentation to  
the Commissioners prior to the meeting.**

**1. CALL TO ORDER**

**2. APPROVAL OF MINUTES**

[21-4060](#)

Minutes - Approval of the April 19, 2021 Planning and Zoning Board  
Meeting Minutes

**Attachments:** [Meeting Minutes 04-19-2021.pdf](#)

**3. CITIZENS COMMENTS**

*Citizens wishing to address the Commission on non-public hearing agenda items and  
items not on the agenda may do so at this time. Once the business portion of the  
meeting begins, only comments related to public hearings will be heard. All comments  
are limited to 5 minutes. Please refrain from "personal criticisms".*

*In order to be recognized during the "Citizens Comments" or during a public hearing  
(applicants included), please complete a blue "Appearance Card" located at the entry to  
the Chambers and present it to the Planning Secretary.*

**4. PUBLIC HEARINGS**

- [21-4058](#) SD#21-011: Public Hearing on a Preliminary Plat of Easy Drive Business Park being a revision of Lot 1, McAnier Addition and a 2.117 acre unplatted tract situated in the Elizabeth McAnier Survey, Abstract No. 571, for a total of approximately 4.330 acres; Altar Holdings, LLC, owner and G.A. Dixon Associates, engineer

**Attachments:** [Preliminary Plat.pdf](#)

[Previously Approved Plat.pdf](#)

- [21-4055](#) OA#21-003: Public hearing to consider a proposed amendment of Section 155.099(B)(9)(b) of the Code of Ordinances, "Zoning," related to the setback for a swimming pool from a rear property line

**5. OTHER ITEMS**

- [21-4041](#) Consideration of Revised City of Mansfield Standard Construction Details, April 2021, and Sanitary Sewer Lift Station Standards, April 2021

**Attachments:** [Standard Construction Details-2021.pdf](#)

[Sanitary Sewer Lift Station Standards, April 2021](#)

- [21-4042](#) Consideration of the City of Mansfield Roadway Design Manual, May 2021

**Attachments:** [Roadway Manual-May 2021.pdf](#)

**6. COMMISSION ANNOUNCEMENTS**

**7. STAFF ANNOUNCEMENTS**

**8. ADJOURNMENT OF MEETING**

**9. NEXT MEETING DATE: Monday, May 17, 2021**

I certify that the above agenda was posted on the bulletin board next to the main entrance of City Hall on April 30, 2021, in accordance with Chapter 551 of the Texas Government Code.

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Jennifer Johnston, Development Coordinator

\* This building is wheelchair accessible. Disabled parking spaces are available. Request for sign interpreter services must be made 48 hours ahead of meeting to make arrangements. Call 817 473-0211 or TDD 1-800-RELAY TX,

\* In deciding a zoning change application, the Planning & Zoning Commission and City Council are required to determine the highest and best use of the property in question. The Commission may recommend and the Council may approve a change in zoning to the category or district requested by the applicant or to any zoning category or district of lesser intensity. Notice is presumed sufficient for every District up to the intensity set forth in the zoning change application.



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## STAFF REPORT

File Number: 21-4060

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**Agenda Date:**

**Version:** 1

**Status:** Approval of Minutes

**In Control:** Planning and Zoning Commission

**File Type:** Meeting Minutes

### Title

Minutes - Approval of the April 19, 2021 Planning and Zoning Board Meeting Minutes

### Description/History

The minutes of the April 19, 2021 Planning and Zoning Board meeting are in DRAFT form and will not become effective until approved by the Board at this meeting.





# CITY OF MANSFIELD

1200 E. Broad St.  
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## Meeting Minutes - Draft

### Planning and Zoning Commission

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Monday, April 19, 2021

6:00 PM

City Hall Council Chambers

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**This meeting was open to the public and conducted with video conferencing with access to the public.**

#### 1. CALL TO ORDER

*Chairman Knight called the meeting to order at 6:00 p.m. in the City Council Chambers of City Hall, 1200 East Broad Street, with the meeting being open to the public and notice of said meeting, giving date, place, and subject thereof, having been posted as prescribed by Chapter 551, Texas Government Code. Commissioner Gilmore was present virtually.*

*Staff:*

*Matt Jones, Director of Planning and Development*

*Jennifer Johnston, Development Coordinator*

*Raymond Coffman, City Engineer*

*David Boski, Assistant Director of Public Works*

*Commissioners:*

**Present** 7 - Anne Weydeck; Blake Axen; Kent Knight; Stephen Groll; Justin Gilmore; David Goodwin and Michael Mainer

#### 2. APPROVAL OF MINUTES

[21-4039](#)

Minutes - Approval of the April 5, 2020 Planning and Zoning Committee Meeting Minutes

**Commissioner Groll made a motion to approve the April 5, 2020 minutes as presented. Commissioner Weydeck seconded the motion which carried by the following vote:**

**Aye:** 7 - Anne Weydeck; Blake Axen; Kent Knight; Stephen Groll; Justin Gilmore; David Goodwin and Michael Mainer

**Nay:** 0

**Abstain:** 0

#### 3. CITIZENS COMMENTS

*None*

#### 4. PUBLIC HEARINGS

[21-4040](#)

SD#21-004: Public hearing on a replat to create Lots 1R and 2, Block 1, Trinity Forge Industrial Addition, being approximately 35.31 acres located at 947 Trinity Drive; Trinity Forge Inc., owner, and Transglobal Services, LLC, surveyor/engineer

*Chairman Knight opened the public hearing and called for anyone wishing to speak to come forward.*

*Seeing no come forward to speak, Chairman Knight closed the public hearing.*

**After discussion, Commissioner Groll made a motion to recommend approval of the replat as presented. Commissioner Goodwin seconded the motion which carried by the following vote:**

**Aye:** 7 - Anne Weydeck; Blake Axen; Kent Knight; Stephen Groll; Justin Gilmore; David Goodwin and Michael Mainer

**Nay:** 0

**Abstain:** 0

## **5. DISCUSSION ITEMS**

[21-4041](#)

Presentation and Discussion of Revised City of Mansfield Standard Construction Details, April 2021, and Sanitary Sewer Lift Station Standards, April 2021

*Raymond Coffman presented the Revised City of Mansfield Standard Construction Details and was available for questions.*

[21-4042](#)

Presentation and Discussion of the Roadway Design Manual, April 2021

*David Boski presented the Roadway Design Manual and was available for questions.*

## **6. COMMISSION ANNOUNCEMENTS**

*None*

## **7. STAFF ANNOUNCEMENTS**

*None*

## **8. ADJOURNMENT OF MEETING**

**Vice-Chairman Axen made a motion to adjourn the meeting. Commissioner Weydeck seconded the motion which carried by the following vote:**

**Aye:** 7 - Anne Weydeck; Blake Axen; Kent Knight; Stephen Groll; Justin Gilmore; David Goodwin and Michael Mainer

**Nay:** 0

**Abstain:** 0

**With no further business, Chairman Knight adjourned the meeting at 6:44 p.m.**

\_\_\_\_\_  
Kent Knight, Chairman

\_\_\_\_\_  
Jennifer Johnston, Development Coordinator



# CITY OF MANSFIELD

1200 E. Broad St.  
Mansfield, TX 76063  
mansfieldtexas.gov

## STAFF REPORT

File Number: 21-4058

**Agenda Date:** 5/3/2021

**Version:** 1

**Status:** Public Hearing

**In Control:** Planning and Zoning Commission

**File Type:** Plat

### Title

SD#21-011: Public Hearing on a Preliminary Plat of Easy Drive Business Park being a revision of Lot 1, McAnier Addition and a 2.117 acre unplatted tract situated in the Elizabeth McAnier Survey, Abstract No. 571, for a total of approximately 4.330 acres; Altar Holdings, LLC, owner and G.A. Dixon Associates, engineer

### Description/History

The purpose of this plat is to create nine industrial lots. The plat includes a replat of Lot 1, McAnier Addition, being 2.213 acres and approximately 2.117 acres of unplatted property at the southwest corner of Easy Drive and S. 2nd Avenue. The property is zoned I-2, Heavy Industrial District. No right-of-way dedication is required.

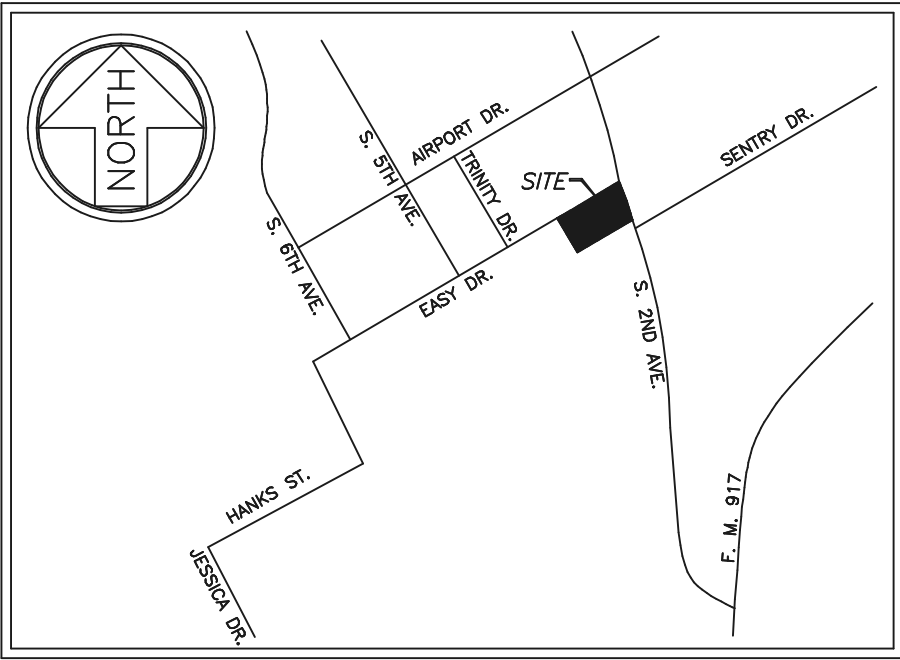
The lots conform to the zoning and subdivision regulations except that Lots 6, 7 and 8 do not have direct street frontage. The Subdivision Control Ordinance requires lots to have frontage on a public street. As is typical with commercial developments, these lots will be accessed by a 36-foot common access easement from both S. 2nd Avenue and Easy Drive.

### Recommendation

Staff recommends approval with the variance.

### Attachments:

Preliminary Plat  
Previously Approved Plat



VICINITY MAP  
NOT TO SCALE

* LOT SUMMARY *		
LOT	ACRES	SQUARE FEET
1	0.743	32,374
2	0.532	23,181
3	0.530	23,067
4	0.528	22,987
5	0.556	24,216
6	0.325	14,137
7	0.365	15,902
8	0.307	13,372
9	0.445	19,389

\* NOTES \*

1. NOTICE: SELLING A PORTION OF ANY LOT IN THIS ADDITION BY METES AND BOUNDS IS A VIOLATION OF STATE LAW AND CITY ORDINANCE AND IS SUBJECT TO PENALTIES IMPOSED BY LAW.
2. BEARINGS SHOWN HEREON ARE GRID BEARINGS BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL TEXAS ZONE, DERIVED FROM CITY OF MANSFIELD MONUMENTS.
3. THE 24' AND 36' COMMON ACCESS AND UTILITY EASEMENTS ARE FOR THE USE OF LOTS 1-9. NO IMPROVEMENTS SHALL BE MADE THAT IMPEDE INGRESS AND EGRESS ALONG THESE EASEMENTS.
4. THE 24' AND 36' COMMON ACCESS AND UTILITY EASEMENTS SHALL BE MAINTAINED BY THE PROPERTY OWNERS.

LOT 1, BLOCK 1  
TRINITY FORGE INDUSTRIAL ADDITION  
VOL. 8, PG. 59  
P.R.J.C.T.

ZONED "I-2"

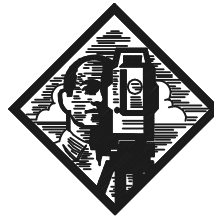
MANSFIELD ECONOMIC  
DEVELOPMENT CORPORATION  
VOL. 3840, PG. 319  
D.R.J.C.T.  
ZONED "I-2"

BASIS OF BEARINGS: BEARINGS SHOWN HEREON ARE GRID BEARINGS BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL TEXAS ZONE (NAD 83) AS DERIVED FROM CITY OF MANSFIELD MONUMENTS. ELEVATIONS SHOWN HEREON AREA DERIVED FROM CITY BENCHMARK No. 224, BEING A CITY OF MANSFIELD MONUMENT ON THE N.W. CORNER OF A 10' INLET IN THE NORTH SIDE OF AIRPORT DRIVE 150' WEST OF SECOND AVENUE. ELEV. = 666.08

\* LEGEND \*

IRF IRON ROD FOUND  
IRS IRON ROD SET  
W/O ORANGE PLASTIC CAP STAMPED  
TR. W. COOMBS RPLS 5294

C.M. CONTROLLING MONUMENT  
VOL. VOLUME  
PG. PAGE  
D.R.J.C.T. DEED RECORDS, JOHNSON COUNTY, TEXAS  
P.R.J.C.T. PLAT RECORDS, JOHNSON COUNTY, TEXAS  
O.R.J.C.T. OFFICIAL RECORDS, JOHNSON COUNTY, TEXAS  
Ac. ACRE  
S.F. SQUARE FEET  
ES/MT. EASEMENT



Coombs Land Surveying, Inc.  
P.O. Box 6160 Fort Worth, Texas 76115  
(817) 920-7600

T.B.P.L.S. FIRM No. 10111800  
CLS JOB No. 20-0127  
GF No. NONE

\* NOTE \*

NO PORTION OF THIS PROPERTY LIES WITHIN A 100-YEAR FLOOD BOUNDARY LINE ACCORDING TO THE NATIONAL FLOOD INSURANCE PROGRAM'S FLOOD INSURANCE RATE MAP FOR THE CITY OF MANSFIELD, JOHNSON COUNTY, TEXAS, COMMUNITY PANEL No. 48251C0100 J. MAP EFFECTIVE DECEMBER 4, 2012

LEGAL DESCRIPTION

WHEREAS, ALTAR HOLDINGS, LLC, acting by and through the undersigned, its duly authorized agent, is the sole owner of a 4.330 acre tract of land located in the ELIZABETH McANIER SURVEY, ABSTRACT No. 571, City of Mansfield, Johnson County, Texas as recorded in Document No. 2020-25354 and Document No. 2020-39233 of the Official Public Records of Johnson County, Texas, including all of Lot 1, McAnier Addition, an addition to the City of Mansfield, Texas according to the plat recorded in Volume 8, Page 540 of the Plat Records of Johnson County, Texas and being more particularly described by metes and bounds as follows:

BEGINNING at a 1/2-inch iron rod found at the Northeast corner of said Altar Holdings, Tract, lying in the Westerly right-of-way line of South 2nd Avenue (a 100-foot wide right-of-way) at its intersection with the Southerly right-of-way line of Easy Drive (a variable width right-of-way);

THENCE SOUTHEASTERLY, 340.10 feet along the Westerly right-of-way line of said South 2nd Avenue with a Curve to the Right, having a radius of 2864.79 feet, a central angle of 06° 48' 07" and a chord bearing S 19° 11' 59" E, 339.90 feet to a 1/2-inch iron rod found at the Southeast corner of said Altar Holdings Tract, being the Southeast corner of said Lot 1, McAnier Addition and the Northeast corner of Lot 2, Block 1, McAnier Addition, an addition to the City of Mansfield, Texas according to the plat recorded in Volume 8, Page 946 of the Plat Records of Johnson County, Texas;

THENCE S 59° 37' 13" W, along the Northerly boundary line of said Lot 2, passing the Southwest corner of said Lot 1 and continuing in all a total distance of 532.59 feet to a 1/2-inch iron rod found at the Southwest corner of aforesaid Altar Holdings Tract, being the Southeast corner of that certain tract of land described in deed to James H. Stevens, Robert E. Stevens and William J. Stevens, recorded in Volume 2996, Page 251 of the Deed Records of Johnson County, Texas;

THENCE N 30° 29' 15" W, 330.00 feet along the common boundary line between said Altar Holdings Tract and said Stevens Tract to a 1/2-inch iron rod found at the Northwest corner of said Altar Holding Tract, lying in the aforesaid Southerly right-of-way line of Easy Drive;

THENCE along the said Southerly right-of-way line of Easy Drive as follows:

N 59° 36' 44" E, 100.41 feet to a 1/2-inch iron rod found;

N 59° 13' 30" E, 498.72 feet to the PLACE OF BEGINNING, containing 4.330 acres (188,626 square feet) of land.

PRELIMINARY PLAT  
**LOTS 1-9, BLOCK 1**  
**EASY DRIVE BUSINESS PARK**

BEING A REVISION OF LOT 1, McANIER ADDITION  
ACCORDING TO THE PLAT RECORDED IN VOLUME 8, PAGE 540, DRAWER A, P.R.J.C.T.  
CITY OF MANSFIELD, JOHNSON COUNTY, TEXAS

9 LOTS  
4.330 ACRES

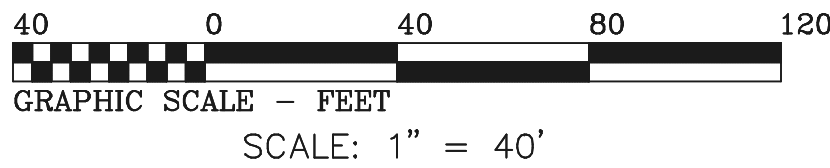
OWNER: ALTAR HOLDINGS, LLC  
309 E. BROAD STREET  
MANSFIELD, TEXAS 76063  
(817) 473-3332  
e-mail: david@harriscooklaw.com

ENGINEER: G. A. DIXON ASSOCIATES  
4305 MOSSRIDGE COURT  
ARLINGTON, TEXAS 76016  
(682) 808-3156  
e-mail: egad1258@gmail.com

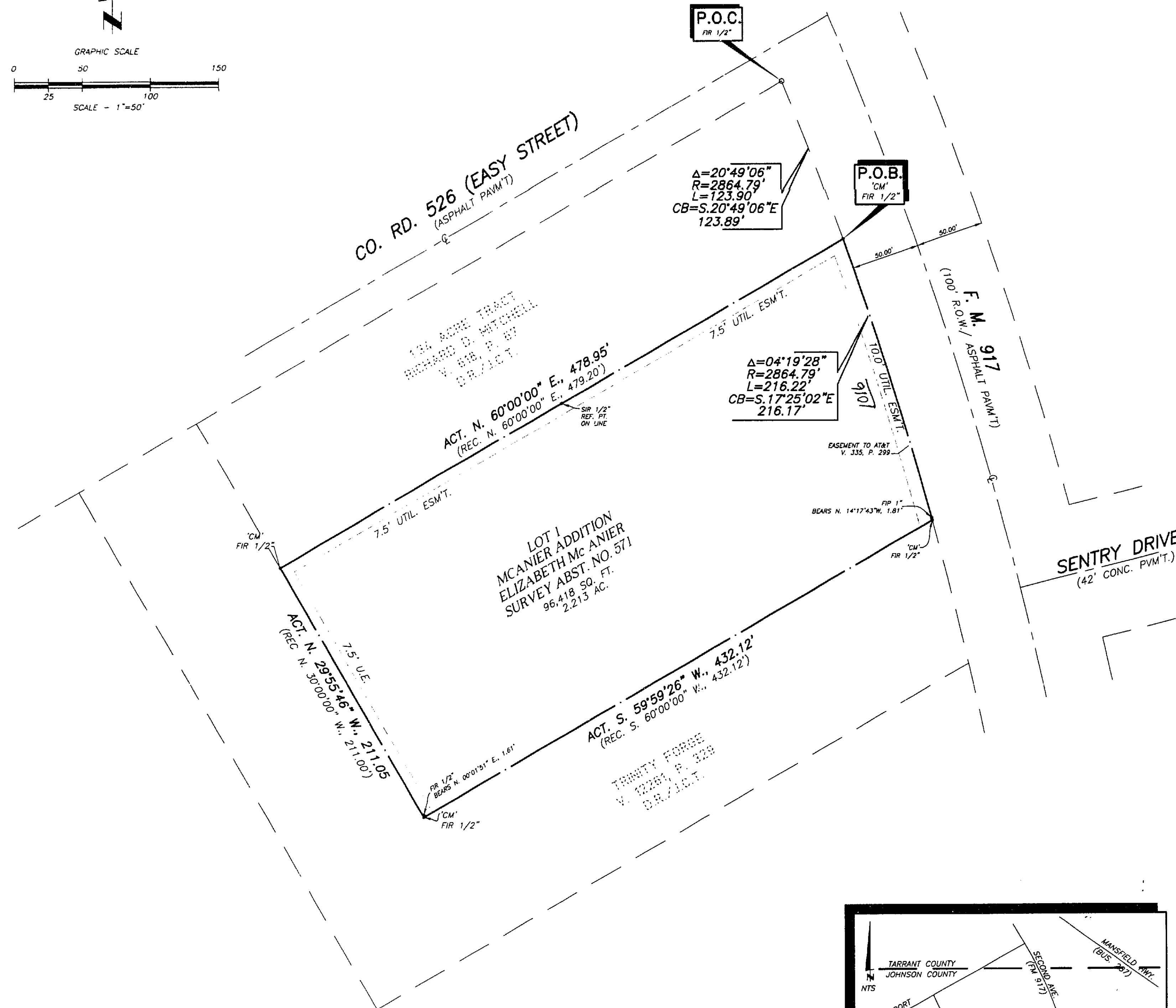
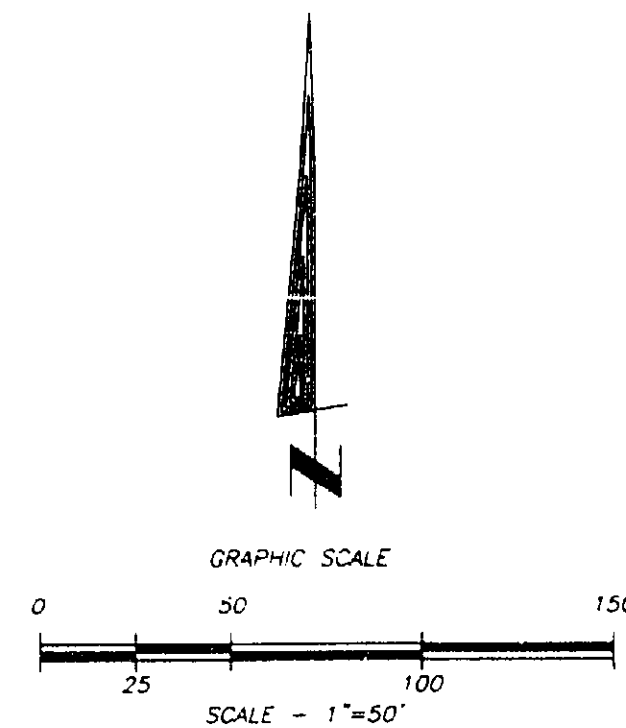
SURVEYOR: COOMBS LAND SURVEYING, INC.  
P.O. BOX 6160  
FORT WORTH, TEXAS 76115  
(817) 920-7600  
e-mail: ron.coombs@sbcglobal.net

SD#21-011

APRIL 23, 2021







#### PREPARED BY:

KEETON SURVEYING COMPANY  
H.B. KEETON M.S. "STEVE" KEETON  
REGISTERED PROFESSIONAL SURVEYOR P.O. BOX 204  
2037 DALWORTH STREET GRAND PRAIRIE, TEXAS 75051  
PHONE: (972) 641-0843 METRO: (972) 647-0154

#### LEGEND:

"CM" = CONTROLLING MONUMENT  
"D." & "U.E." = DRAINAGE AND UTILITY EASEMENT  
"U.E." = UTILITY EASEMENT  
FIR = FOUND IRON ROD  
SIR = SET IRON ROD  
B.L. = BUILDING LINE  
o = SET 1/2 INCH IRON ROD  
• = FOUND IRON ROD

AFTER RECORDING RETURN TO:  
CITY OF MANSFIELD  
1305 E. BROAD STREET  
MANSFIELD, TEXAS 76063

#### DEDICATION:

NOW, THEREFORE:

KNOW ALL MEN BY THESE PRESENTS:

THAT GARY ALKIRE DO HEREBY ADOPT THIS PLAT DESIGNATING THE HEREON ABOVE DESCRIBED PROPERTY AS LOT 1 MCANIER ADDITION, AN ADDITION TO THE CITY OF MANSFIELD, TEXAS, AND DOES HEREBY DEDICATE TO THE CITY OF MANSFIELD IN FEE SIMPLE FOREVER THE STREETS AND ALLEYS SHOWN THEREON. THE EASEMENTS SHOWN THEREON ARE HEREBY DEDICATED AND RESERVED FOR THE PURPOSES AS INDICATED. THE UTILITY, ACCESS AND FIRE LANE EASEMENTS SHALL BE OPEN TO THE PUBLIC AND PRIVATE UTILITIES FOR EACH PARTICULAR USE. THE MAINTENANCE OF PAVING ON THE UTILITY, ACCESS EASEMENTS IS THE RESPONSIBILITY OF THE PROPERTY OWNER. NO BUILDINGS OR OTHER IMPROVEMENTS OR GROWTHS, EXCEPT FENCES, VEGETATION, DRIVEWAYS, AND SIDEWALKS LESS THAN 6 FEET IN WIDTH SHALL BE CONSTRUCTED OR PLACED UPON, OVER OR ACROSS THE EASEMENTS AS SHOWN EXCEPT AS PERMITTED BY CITY ORDINANCES. NO IMPROVEMENTS WHICH MAY OBSTRUCT THE FLOW OF WATER MAY BE CONSTRUCTED OR PLACED IN DRAINAGE EASEMENTS. ANY PUBLIC UTILITY SHALL HAVE THE RIGHT TO REMOVE AND KEEP REMOVED ALL OR PARTS OF THE ENCROACHMENTS ALLOWED ABOVE WHICH IN ANY WAY ENDANGER OR INTERFERE WITH THE CONSTRUCTION, MAINTENANCE OR EFFICIENCY OF ITS RESPECTIVE SYSTEM ON THE EASEMENTS, AND ALL PUBLIC UTILITIES SHALL AT ALL TIMES HAVE FULL RIGHT OF INGRESS AND EGRESS TO OR FROM AND UPON THE SAID EASEMENTS FOR THE PURPOSE OF CONSTRUCTING, RECONSTRUCTING, INSPECTING, PATROLLING, MAINTENANCE AND ADDING TO OR REMOVING ALL OR PARTS OF ITS RESPECTIVE SYSTEMS WITHOUT THE NECESSITY AT ANY TIME OF PROCURING THE PERMISSION OF ANYONE. ANY PUBLIC UTILITY SHALL HAVE THE RIGHT OF INGRESS AND EGRESS TO PRIVATE PROPERTY FOR THE PURPOSE OF READING METERS AND ANY MAINTENANCE AND SERVICE REQUIRED OR ORDINARILY PERFORMED BY THAT UTILITY.

THIS PLAT APPROVED SUBJECT TO ALL PLATTING ORDINANCES, RULES, REGULATIONS, AND RESOLUTIONS OF THE CITY OF MANSFIELD, TEXAS.

WITNESS MY HAND AT DALLAS COUNTY TEXAS THIS THE 7<sup>th</sup> DAY OF October 1998.

*Gary Alkire*  
GARY ALKIRE

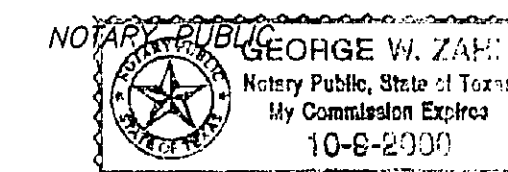
#### ACKNOWLEDGMENTS:

STATE OF TEXAS:

BEFORE ME THE UNDERSIGNED AUTHORITY, A NOTARY PUBLIC, ON THIS DAY PERSONALLY APPEARED GARY ALKIRE, KNOWN TO ME TO BE THE PERSON WHOSE NAME IS SUBSCRIBED TO THE FOREGOING INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME FOR THE PURPOSES AND CONSIDERATION THEREIN EXPRESSED AND IN THE CAPACITY THEREIN STATED.

GIVEN UNDER MY HAND AND SEAL OF OFFICE ON THE 7<sup>th</sup> DAY OF October, 1998.

*George V. Zahner*  
MY COMMISSION EXPIRES 10-9-2000



#### APPROVED BY THE CITY OF MANSFIELD

10/19/98 1998 *Mike DeMauro*  
APPROVED: CHAIRMAN P & Z COMMISSION  
10-19 1998 *Vicki Redmon*  
ATTEST: PLANNING & ZONING SECRETARY

#### TEXAS UTILITIES SERVICE COMPANY

APPROVED BY: *Joe Davis* 10-7-98

#### SOUTHWESTERN BELL TELEPHONE CO.

APPROVED BY: *Ed Z. [Signature]*

#### MARCUS CABLE SERVICE

APPROVED BY: *Beverly Sellers* 7/7-98

#### OWNER:

GARY ALKIRE  
1941 RUDY ROAD  
IRVING, TEXAS 75060  
(972) 986-2908  
DALLAS COUNTY, TEXAS

"CM" ~ DENOTES CONTROLLING MONUMENT

BASIS OF BEARINGS  
DEED RECORDED IN VOL 618, PG. 67,  
D.R./J.C.T.

#### OWNER'S CERTIFICATE:

WHEREAS, GARY ALKIRE, IS THE SOLE OWNER OF A CERTAIN 2.213 ACRE TRACT OUT OF THE ELIZABETH MCANIER SURVEY, ABSTRACT NO. 571, JOHNSON COUNTY, TEXAS, AND BEING PART OF TRACT NO. 4 OF THE W.I. SEETON TRACT IN SAID ELIZABETH MCANIER SURVEY, SAME 2.213 ACRE TRACT BE MORE PARTICULARLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

#### LEGAL DESCRIPTION:

COMMENCING AT A 1/2" IRON ROD AT THE INTERSECTION OF THE SOUTHWESTERLY LINE OF F.M. ROAD 917 (100' R.O.W.) WITH THE SOUTHEASTERLY LINE OF COUNTY ROAD NO. 526 (EASY STREET) AND MARKING THE NORTHEAST CORNER OF A CERTAIN 1.34 ACRE TRACT OF LAND CONVEYED UNTO RICHARD D. MITCHELL BY DEED RECORDED IN VOLUME 618, PAGE 67, DEED RECORDS OF JOHNSON COUNTY, TEXAS.

THENCE IN SOUTHEASTERLY DIRECTION WITH THE SOUTHWESTERLY LINE OF SAID F.M. ROAD 917, AND WITH A CURVE TO THE RIGHT HAVING A RADIUS OF 2,864.79 FEET, FOR AN ARC LENGTH OF 123.90 FEET, WHOSE CHORD BEARS S. 20°49'06"E., 123.89 FEET, TO A 5/8" IRON ROD FOUND, FOR THE POINT OF BEGINNING OF HEREIN DESCRIBED SAID 2.213 ACRE TRACT.

THENCE IN A SOUTHEASTERLY DIRECTION, ALONG SAID SOUTHWESTERLY LINE OF SAID F.M. ROAD 917 AND WITH A CURVE TO THE RIGHT HAVING A RADIUS OF 2,864.79 FEET, AND THROUGH A CENTRAL ANGLE OF 04°19'28", FOR AN ARC LENGTH OF 216.22 FEET, AND WHOSE CHORD BEARS S. 17°25'02"E., 216.17 FEET TO A 1/2" IRON ROD FOUND FROM WHICH A 1" IRON PIPE FOUND BEARS N. 14°17'43"W., 1.81 FEET.

THENCE N. 59°59'26"W., WITH THE COMMON SOUTHEASTERLY LINE OF SAID 2.213 ACRE TRACT WITH THE NORTHWESTERLY LINE OF A CERTAIN 2.0 ACRE TRACT CONVEYED UNTO TRINITY FORGE INC., BY DEED RECORDED IN VOLUME 12261, PAGE 329, DEED RECORDS OF JOHNSON COUNTY, TEXAS, FOR A DISTANCE OF 432.12 FEET TO A 1/2" IRON ROD FOUND FROM WHICH A 1/2" IRON ROD BEARS N. 00°01'51"E., 1.61 FEET.

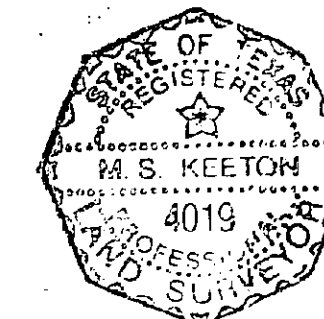
THENCE N. 29°55'46"W., WITH THE COMMON SOUTHWESTERLY LINE OF SAID 2.213 ACRE TRACT WITH THE NORTHEASTERLY LINE OF SAID TRINITY FORGE INC., 2.0 ACRE TRACT FOR A DISTANCE OF 211.05 FEET TO A 5/8" IRON ROD FOUND BEARS N. 01°29'43"E., 0.34 OF A FOOT AND AT THE SOUTH CORNER OF SAID 1.34 ACRE TRACT.

THENCE N. 60°00'00"E., WITH THE COMMON NORTHWESTERLY LINE OF SAID 2.213 ACRE TRACT WITH THE SOUTHEASTERLY LINE OF SAID TRINITY FORGE INC., A DISTANCE OF 478.95 FEET TO THE POINT OF BEGINNING AND CONTAINING 96.418 SQUARE FEET OR 2.213 ACRES OF LAND.

#### SURVEYOR'S CERTIFICATE:

I, M.S. KEETON, A REGISTERED PROFESSIONAL LAND SURVEYOR, HEREBY CERTIFY THAT THE FOREGOING PLAT WAS COMPILED FROM AN ACCURATE SURVEY MADE ON THE GROUND UNDER MY PERSONAL SUPERVISION, AND THERE ARE NO ENCROACHMENTS, CONFLICTS, OR PROTRUSIONS EXCEPT AS SHOWN.

*M.S. Keeton*  
REGISTERED PROFESSIONAL LAND SURVEYOR



*Filed for record in Johnson County Texas  
Plat records June 27, 1999  
Vol 8 pgs 540 thru A  
Curtis H. Douglas Co. Clerk  
by Laurie McLoghlin*

FINAL PLAT  
LOT 1  
MCANIER ADDITION  
BEING 2.213 ACRES TRACT OUT OF  
THE ELIZABETH MCANIER  
SURVEY ABST. NO. 571

City of Mansfield, Johnson County, Texas

CASE NO. \_\_\_\_\_

RECORDED IN CABINET , SLIDE , P.R./J.C.T.

PREVIOUSLY APPROVED PLAT

98-54



# CITY OF MANSFIELD

1200 E. Broad St.  
Mansfield, TX 76063  
mansfieldtexas.gov

## STAFF REPORT

File Number: 21-4055

**Agenda Date:** 5/3/2021

**Version:** 1

**Status:** Public Hearing

**In Control:** Planning and Zoning Commission

**File Type:** Ordinance  
Amendment

### Title

OA#21-003: Public hearing to consider a proposed amendment of Section 155.099(B)(9)(b) of the Code of Ordinances, "Zoning," related to the setback for a swimming pool from a rear property line

### Description/History

Section 155.099(B)(9)(b) currently requires the water's edge of a swimming pool to be located at least 7.5 feet from the rear property line. This setback was established when the City required residential lots to have a 7.5 utility easement along the rear property line. The setback was intended to prevent damage to the pool when a franchise utility conducted work in the easement.

The City now requires franchise utilities to be located in a 10-foot easement along the front property line except in special cases where utilities are needed in the rear yard. Additionally, many of the new developments have smaller lots with smaller rear yards. With these changes, Staff proposes an amendment to reduce the minimum rear yard setback for swimming pools from 7.5 feet to 5 feet. The 5-foot side yard setback and the requirement that pool cannot encroach into an utility easement will remain.

Staff surveyed neighboring cities to compare pool setbacks. Of the cities contacted, the most common setbacks were 5 feet for both the side and rear properties lines. A minimum 5-foot setback between the fence on the side and rear property lines and the pool will provide adequate circulation around the pool. A pool setback is measured from the water's edge of the pool to the property line. Flatwork decking is permitted in the setback up to the property line.

The proposed amendment reads as follows:

"(b) A swimming pool may be located anywhere on a premise except in the required front yard, provided that the water's edge of the swimming pool shall not be located closer than five feet to any side property line or ~~seven and one-half~~ five feet to any rear property line, or within any easement. Swimming pool pump and filter installations shall not be located within the front yard or any public easement and shall be screened from adjacent property and public streets."

### Recommendation

Staff recommends approval.



# CITY OF MANSFIELD

1200 E. Broad St.  
Mansfield, TX 76063  
mansfieldtexas.gov

## STAFF REPORT

File Number: 21-4041

**Agenda Date:** 5/3/2021

**Version:** 2

**Status:** Consideration

**In Control:** Planning and Zoning Commission

**File Type:** Consideration Item

### Title

Consideration of Revised City of Mansfield Standard Construction Details, April 2021, and Sanitary Sewer Lift Station Standards, April 2021

### Description/History

Revised Standard Construction Details and Sanitary Sewer Lift Station Standards were distributed at the April 19, 2021 Planning and Zoning Commission meeting with a presentation highlighting changes that are being proposed to public infrastructure construction requirements.

In accordance with the Subdivision Control Ordinance, Staff is seeking approval of the revised standards from the Planning and Zoning Commission. The documents will be filed with the City Secretary and become effective May 15, 2021.

Please contact Raymond Coffman, City Engineer, at 817-276-4238 with any questions.

### Recommendation

Staff recommends approval of the revised City of Mansfield Standard Construction Details, April 2021, and Sanitary Sewer Lift Station Standards, April 2021

### Attachments

Standard Construction Details, April 2021

Sanitary Sewer Lift Station Standards, April 2021



# THE CITY OF MANSFIELD

## STANDARD CONSTRUCTION DETAILS



**ENGINEERING DEPT.**  
**APRIL 2021**

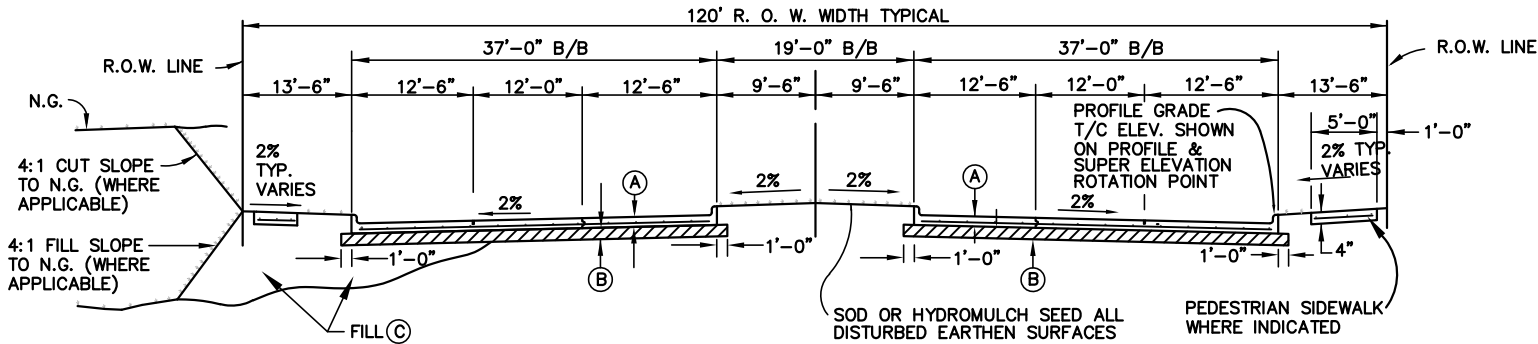
THE STANDARD SPECIFICATIONS FOR CONSTRUCTION SHALL BE THE 5TH EDITION OF THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" PREPARED BY THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS EXCEPT AS AMENDED BY THESE STANDARD DETAILS & C.O.M. MATERIAL TESTING POLICIES.

### SHEET INDEX

SHEET No.	DESCRIPTION
P-1	PAVING - TYPICAL STREET SECTIONS: ARTERIALS
P-2	PAVING - MEDIAN, LEFT TURN LANE, & CONDUIT DETAILS
P-3	PAVING - TYPICAL STREET SECTIONS: RESIDENTIAL & COLLECTORS
P-4	PAVING - DRIVE APPROACHES, CURB, & ASPHALT DETAILS
P-5	PAVING - JOINT & SEALANT DETAILS
P-6	PAVING - SIDEWALK & RAMP DETAILS
P-7	PAVING - BARRICADE & SUBDRAIN DETAILS
P-8	PAVING - STRIPING, PAVEMENT MARKERS, SIGNS
SD-1	STORM DRAIN - CURB INLET DETAILS
SD-2	STORM DRAIN - MANHOLE AND DROP INLET DETAILS
SD-3	STORM DRAIN - TRENCH, COLLAR & MISCELLANEOUS DETAILS
SD-4	STORM DRAIN - TYPE "A" AND "B" HEADWALLS
SD-5	STORM DRAIN - TYPE "P" HEADWALLS
W-1	WATER - WATER SERVICE, GENERAL NOTES & TRENCH DETAILS
W-2	WATER - GATE VALVE, BLOCKING, MARKER & LOWERING DETAILS
W-3	WATER - BLOW OFF & AIR RELEASE VALVE DETAILS
W-4	WATER - FIRE HYDRANT, TEMPORARY FLUSH VALVE, & BORE DETAILS
W-5	WATER- 3" & LARGER WATER SERVICE DETAILS
W-6	WATER- 3" & LARGER BACKFLOW PREVENTION DEVICE DETAILS
SS-1	SANITARY SEWER - MANHOLE & CLEANOUT DETAILS
SS-2	SANITARY SEWER - SERVICE & TRENCH DETAILS
M-1	MISCELLANEOUS- TRENCH DETAILS
MS-1	MATERIAL SPECIFICATIONS
MS-2	MATERIAL SPECIFICATIONS

GENERAL NOTES:

- 1. ALL CONSTRUCTION MATERIALS, METHODS AND PLACEMENT NOT DETAILED BELOW SHALL MEET OR EXCEED THE STANDARD SPECIFICATIONS OF THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS, 5TH EDITION, UNLESS SUPERSEDED BY CITY OF MANSFIELD STANDARD SPECIFICATIONS OR MATERIAL TESTING POLICIES.
- 2. SEE SHEET P-3 FOR PAVING GENERAL NOTES.
- 3. SEE OTHER PAVING DETAIL SHEETS FOR WALKWAY, CURB, JOINTING, STRIPING AND OTHER RELATED CONSTRUCTION DETAILS.
- 4. ALL CURBS MUST BE MONOLITHIC.



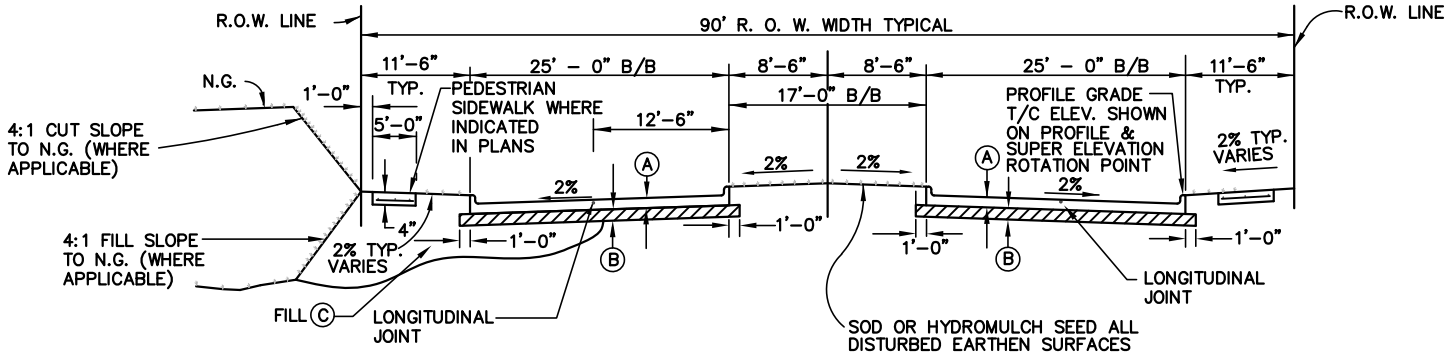
STANDARD SECTION

N.T.S.

- (A) 9" CONCRETE PAVEMENT WITH MONOLITHIC CURB WITH #4 STEEL REINFORCING BARS ON 18" CENTERS BOTH WAYS IN CENTER OF SLAB.
- (B) 12" STABILIZED SUBGRADE (SEE SHEET P-3, NOTE 5).
- (C) FILL EMBANKMENTS (EXTENDING TO EDGE OF SLOPES) SHALL BE COMPACTED TO A MINIMUM 95% ASTM D698 IN MAXIMUM 12" LOOSE, 6" COMPACTED LAYERS. MOISTURE SHALL BE OPTIMUM AND ABOVE.

NOTE:

PROVIDE EROSION CONTROL BLANKET ON SLOPES GREATER THAN 4:1.

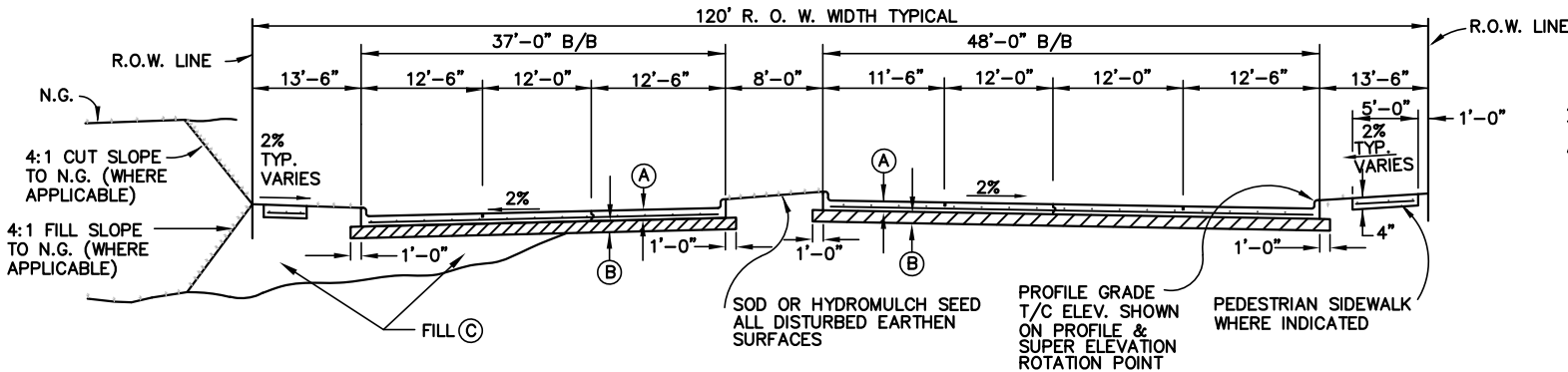


STANDARD SECTION

N.T.S.

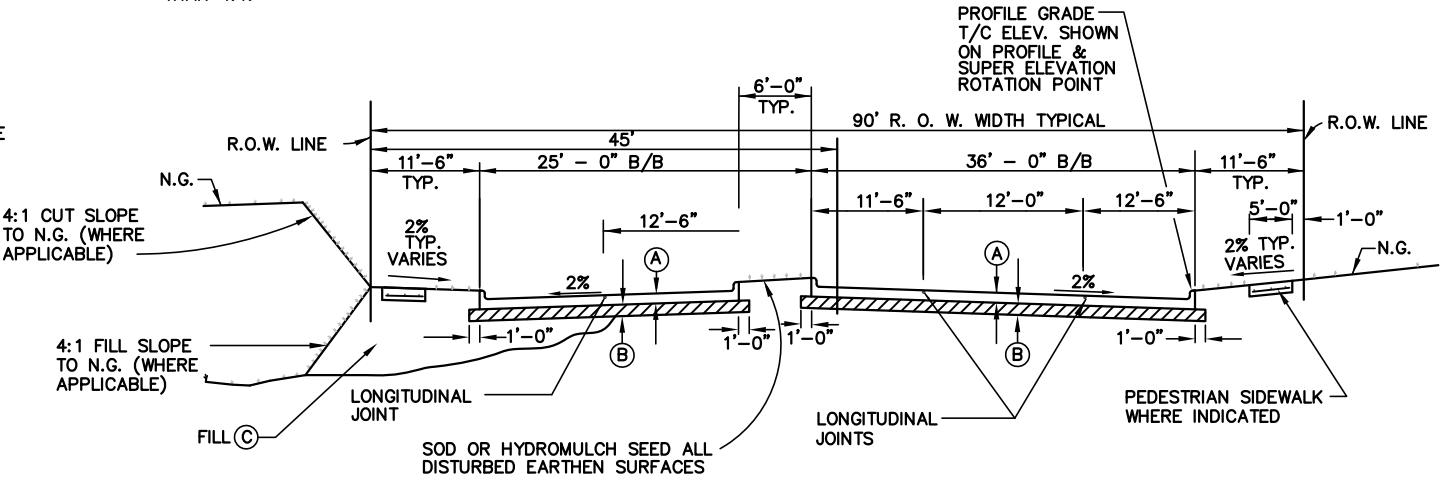
NOTE:

PROVIDE EROSION CONTROL BLANKET ON SLOPES GREATER THAN 4:1.



LEFT TURN SECTION

N.T.S.



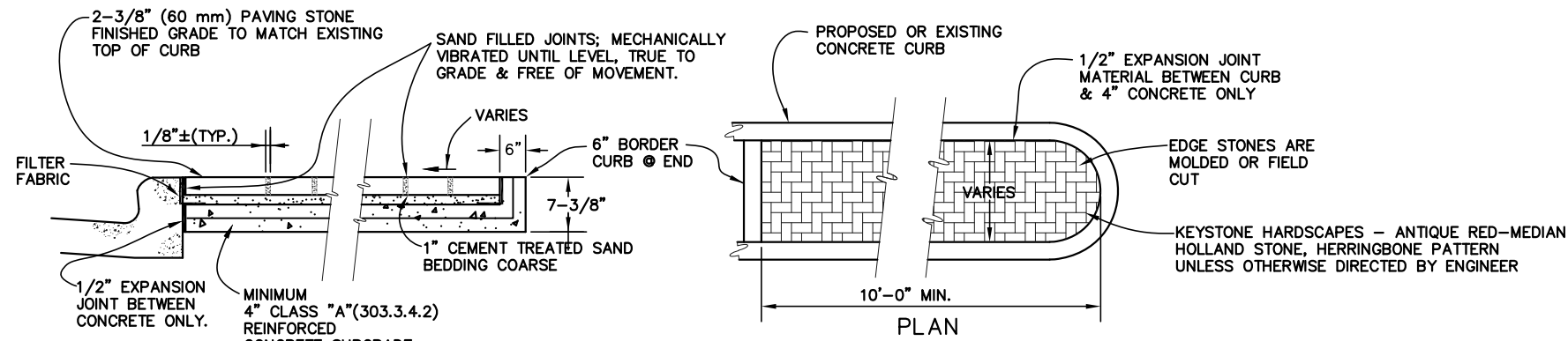
LEFT TURN SECTION

N.T.S.

6 – LANE DIVIDED PRINCIPLE ARTERIAL (P6D) TYPICAL SECTIONS

4 – LANE DIVIDED MAJOR ARTERIAL (M4D) TYPICAL SECTIONS

TYPICAL STREET SECTIONS: ARTERIALS		
CITY OF MANSFIELD STANDARD CONSTRUCTION DETAILS		
PAVING	DATE: APR. 2021	SHEET NO. P-1



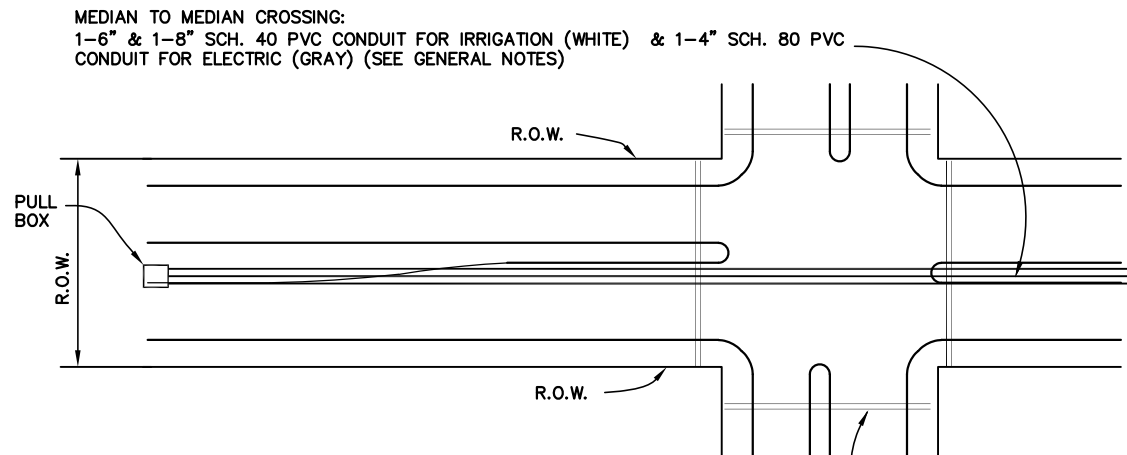
TYPICAL CROSS SECTION

N.T.S.

NOTE: EXPANSION JOINTS IN PAVING TO BE  
EXTENDED THROUGH PAVER SECTIONS.

MEDIAN PAVING STONE DETAIL

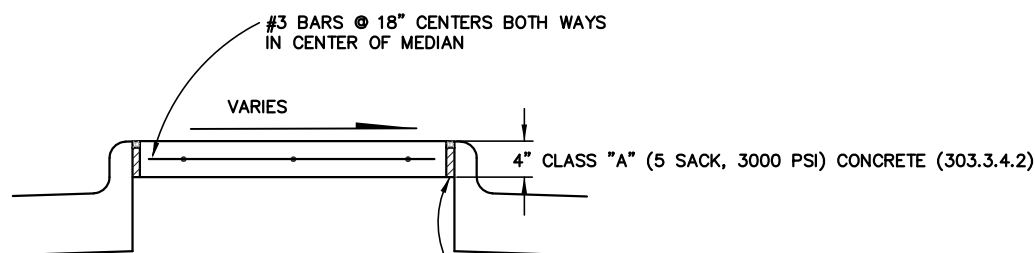
N.T.S.



CONDUIT

N.T.S.

INTERSECTION CROSSING:  
2-4" SCH. 40 PVC CONDUITS (PER CROSSING)



SECTION

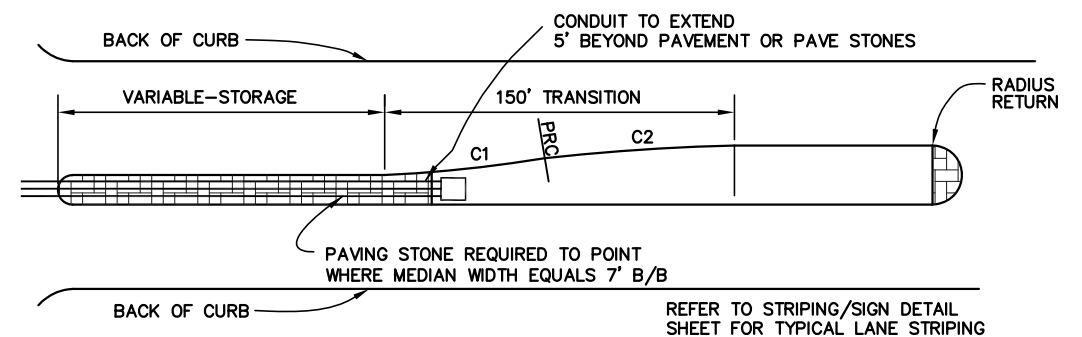
CONCRETE MEDIAN CAP

N.T.S.

EXPANSION JOINTS:  
3/4" ASPHALT IMPREGNATED FIBER BOARD  
W/ PLASTIC COVER STRIP  
REMOVED BEFORE SEALING.  
EXPANSION JOINT FILLER  
MUST EXTEND TO SUBGRADE OF  
MEDIAN PAVEMENT.  
PROVIDE 3/4" ISOLATION JOINT  
AROUND LIGHT STANDARDS.

GENERAL NOTES:

1. ALL CONSTRUCTION MATERIALS, METHODS AND PLACEMENT NOT DETAILED BELOW SHALL MEET OR EXCEED THE STANDARD SPECIFICATIONS OF THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS, 5TH EDITION UNLESS SUPERSEDED BY CITY OF MANSFIELD STANDARD SPECIFICATIONS, OR MATERIAL TESTING POLICIES.
2. PVC CONDUIT TO BE INSTALLED CONTINUOUS ACROSS INTERSECTION, EXTENDING TO 5' BEHIND CURBS OR PAVE STONES, TERMINATING IN PULL BOX W/LONG SWEEP 90° BENDS & CAPPED (BOX-DFW D-1500, OLSB).
3. RED MARKER TAPE IS TO BE INSTALLED ON THE ENDS OF THE CONDUIT.
4. THE EXACT LOCATIONS WHERE THE CONDUIT CROSSES UNDER THE PAVEMENT IS TO BE MARKED WITH RED PAINT ON THE CURB OR PAVING. A NYLON CORD SHALL BE PLACED IN ALL CONDUIT. THE CORD SHALL EXTEND A MINIMUM 1' FROM THE END OF THE CONDUIT.
5. ALL CONDUIT SHALL BE PLACED ADJACENT TO THE CURB WITH A BURY DEPTH OF 3'-0" BELOW FINISHED GRADE AND BE SPACED ONE FOOT APART.
6. SCH. 40 CONDUIT PLACEMENT SHALL BE WEST OF CENTER LINE OF ELECTRICAL CONDUIT ON STREETS RUNNING NORTH & SOUTH & NORTH OF CENTERLINE OF ELECTRIC CONDUIT ELECTRIC ON STREETS RUNNING EAST & WEST. SCH. 80 CONDUIT (ELECTRIC) TO BE PLACED AT CENTERLINE OF R.O.W.
7. CONDUIT BACK FILL TO BE NATIVE MATERIAL MECHANICALLY TAMPED TO 95% OF ASTM D698, OPTIMUM MOISTURE OR ABOVE PER NCTCOG ITEM 504.
8. FOR TURN LANES ADDED TO EXISTING STREETS, CEMENT TREATED SAND MAY BE USED FOR LIME SUBSTITUTE SUB-GRADE AT DISCRETION OF CITY ENGINEER.



LEFT TURN LANE LAYOUT DETAIL

N.T.S.

1. ALL DIMENSIONS ARE TO BACK OF CURB UNLESS NOTED OTHERWISE.
2. TURN LANES TO BE 11'-0" TO FACE OF CURB, MAIN LANES 12'-0".
3. MEDIAN NOSES TO BE SEMI-CIRCLES, EXCEPT WHERE 4 LANES INTERSECT 4 LANES OR LARGER.
4. TURN LANES AND MEDIAN OPENINGS TO BE DETERMINED BY ROADWAY AND ACCESS MANAGEMENT DESIGN CRITERIA.

MEDIAN, LEFT TURN LANE, &  
CONDUIT DETAILS

CITY OF MANSFIELD  
ENGINEERING DEPARTMENT

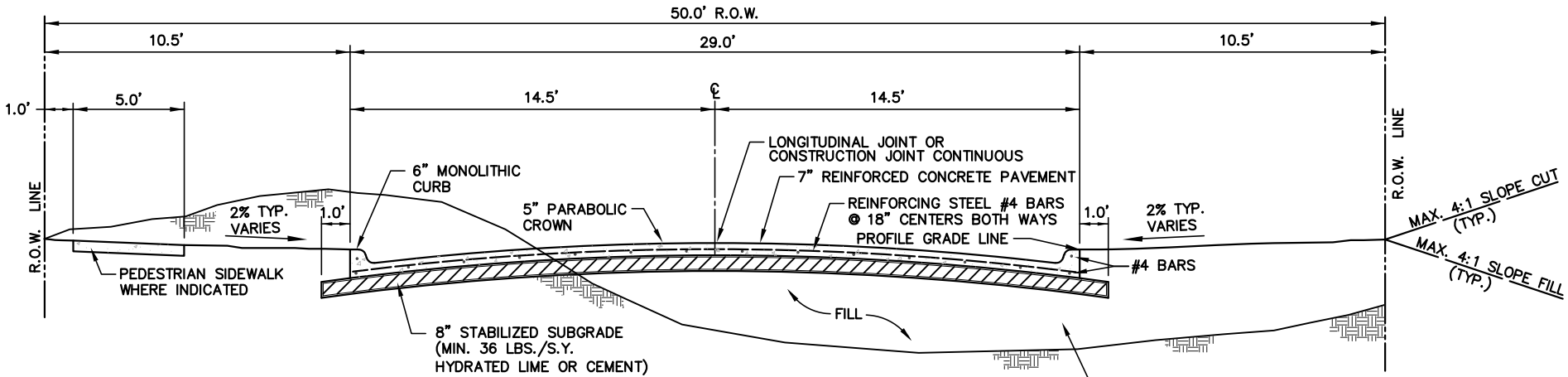
PAVING

DATE:  
APR. 2021

SHEET NO.  
P-2

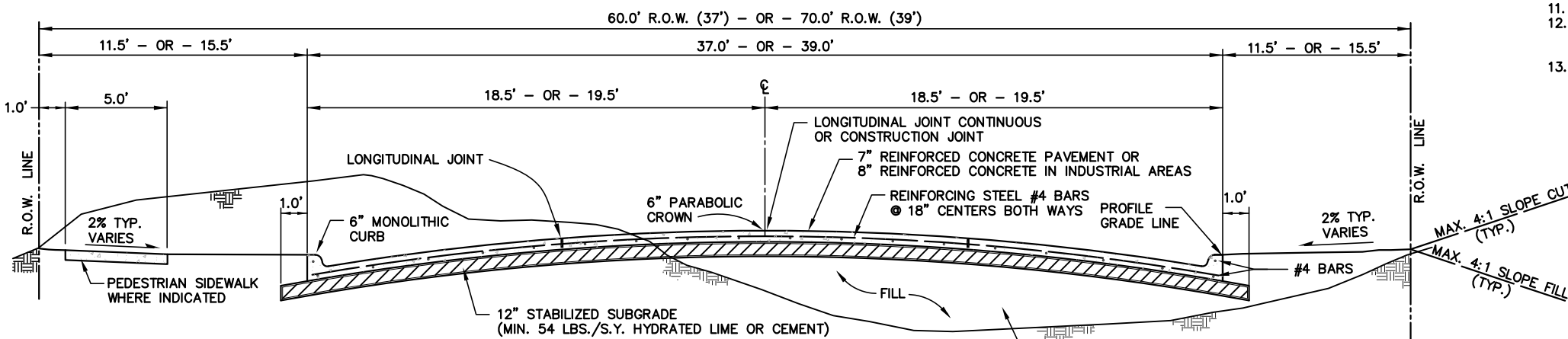
GENERAL NOTES:

1. ALL CONSTRUCTION MATERIALS, METHODS AND PLACEMENT NOT DETAILED BELOW SHALL MEET OR EXCEED THE STANDARD SPECIFICATIONS OF THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS, 5TH EDITION UNLESS SUPERSEDED BY CITY OF MANSFIELD STANDARD SPECIFICATIONS OR MATERIAL TESTING POLICIES.
2. CONCRETE FOR MACHINE PAVING TO BE CLASS P1 (5½ SACK, 4000 PSI) AND CONCRETE FOR HAND PAVING TO BE CLASS P2 (6 SACK, 4500 PSI) PER NCTCOG SPEC. 303.3.4.2. ALL CONCRETE SHALL CONTAIN SUFFICIENT AIR ENTRAINING AGENT TO YIELD 5% AIR CONTENT. ALL OTHER ADMIXTURES SHALL REQUIRE THE PERMISSION OF THE ENGINEERING DEPARTMENT. ALL MIX DESIGNS TO BE 100% CRUSHED ANGULAR STONE WITH A MAXIMUM SIZE OF 1". FLY ASH MAY BE USED IN MIX DESIGNS AS DETAILED IN NCTCOG, ITEM 303.2.4, 20% MAX. FINE AGGREGATE NOT TO EXCEED 25% MANUFACTURED SAND. BATCH PLANTS REQUIRE SPECIAL USE PERMIT.
3. AN APPROVED WHITE PIGMENTED CURING COMPOUND SHALL BE APPLIED TO THE SURFACE OF THE PAVEMENT AS SOON AS IT HAS BEEN PLACED AND FINISHED.
4. CONCRETE STREET PAVEMENT SHALL BE CONSTRUCTED BY USE OF A PAVING MACHINE THAT INCORPORATES AN AUGER/STRIKE OFF UNIT, HYDRAULICALLY POWERED, MOTOR-IN-HEAD, VARIABLE SPEED, INDEPENDENTLY CONTROLLED VIBRATORS (MIN. 4 VIBRATORS 2" DIAMETER HEADS MIN., SPACE 2' APART MAX.) AND AN INTEGRATED MONOLITHIC VIBRATED "CURB MULE". HAND PLACEMENT OF STREET PAVEMENT WILL ONLY BE ALLOWED FOR AREAS NOT POSSIBLE WITH A MACHINE (EX. CUL-DE-SACS, INTERSECTIONS, EYEBROWS, SMALL BLOCK-OUTS, ETC.).
5. CITY OF MANSFIELD SHALL REVIEW LIME SERIES RECOMMENDATION FROM GEOTECHNICAL ENGINEER TO DETERMINE PERCENTAGE OF LIME OR PORTLAND CEMENT NECESSARY TO PREPARE SUBGRADE. 6% (36 LBS./S.Y. FOR 8" OR 54 LBS./S.Y. FOR 12") WILL BE MINIMUM LIME OR CEMENT CONTENT. SEE C.O.M. MATERIAL TESTING POLICIES FOR ADDITIONAL INFORMATION.
6. ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A-615 GRADE 60. REINFORCING STEEL SHALL BE PLACED WITH A MINIMUM OF 1½" OF COVER FOR #5 BARS OR SMALLER. WHERE REINFORCING BARS ARE SPLICED, A 30 DIAMETER LAP SHALL BE USED.
7. SEE JOINT DETAIL SHEET P-5 FOR JOINT DETAILS, SPACING, JOINT MATERIALS, AND SEALANT.
8. THE CONTRACTOR SHALL INSTALL SUPPORTING CHAIRS, WITH PLATES OR BASES, FOR REINFORCING STEEL ON A ONE SQUARE YARD SPACING IN ALL CONCRETE PAVEMENT.
9. PAVEMENT TO INSTALL GRIPPER PLUGS IN PIPE ENDS OF ALL MANHOLES OR FALSE BOTTOMS IN "IN SERVICE" MANHOLES PRIOR TO EXCAVATION OR SUBGRADE PREPARATION. MANHOLES SHALL BE PLACED MONOLITHIC WITH STREET.
10. MAJOR COLLECTORS AND ALL 4 LANE ARTERIALS OR LARGER SHALL HAVE SUBDRAINS INSTALLED AT BACK OF CURB ON BOTH SIDES OF ROAD WHERE GROUND WATER OR IRRIGATION WATER IS ANTICIPATED TO BE PRESENT. CITY ENGINEER SHALL DETERMINE LOCATIONS (SEE SHEET P-7).
11. ALL STREETS SHALL RECEIVE MEDIUM BAKER BROOM FINISH.
12. MAINTAIN 2% MAXIMUM CROSS SLOPE FOR FULL WIDTH OF PEDESTRIAN ROUTES AND CROSSWALKS THAT CROSS DRIVEWAYS AND INTERSECTIONS. SEE SHEETS P-6 & P-8 FOR ADDITIONAL ACCESSIBILITY REQUIREMENTS.
13. MATERIALS USED AS TOPSOIL MUST BE PRE-APPROVED BY ENGINEER.



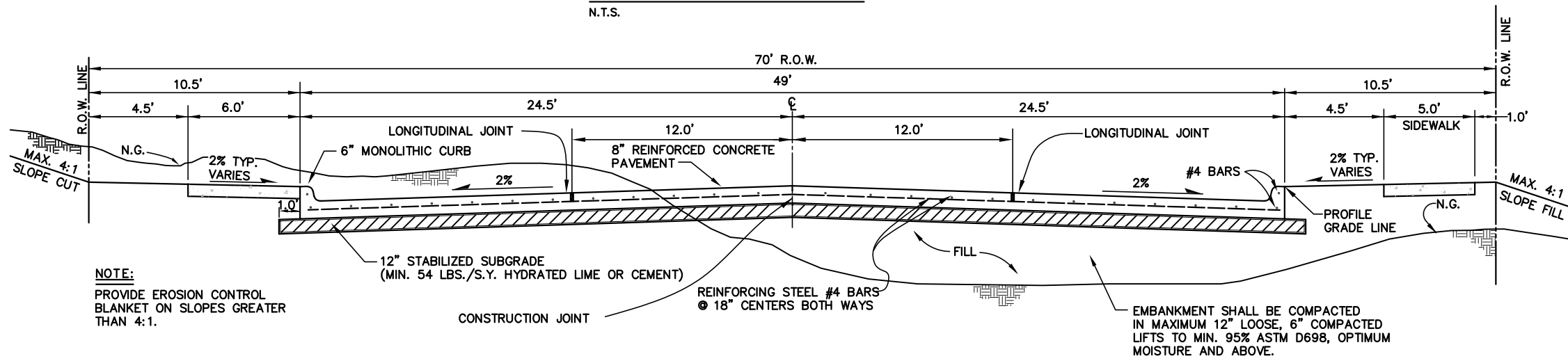
NOTE:  
PROVIDE EROSION CONTROL  
BLANKET ON SLOPES GREATER  
THAN 4:1.

LOCAL RESIDENTIAL (RES2U)  
N.T.S.



NOTE:  
PROVIDE EROSION CONTROL  
BLANKET ON SLOPES GREATER  
THAN 4:1.

LOCAL COLLECTOR (RESIDENTIAL, C2U, 37')  
N.T.S.  
MINOR COLLECTOR (C3U, 39')  
N.T.S.

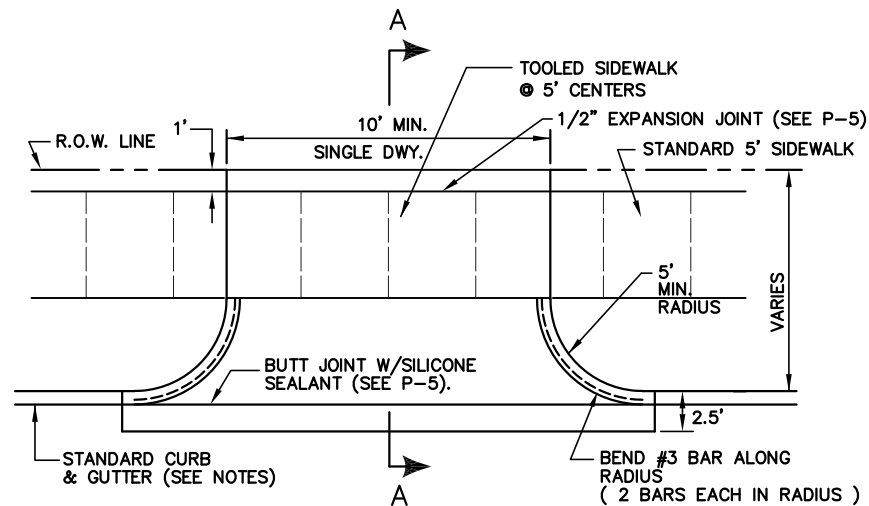


NOTE:  
PROVIDE EROSION CONTROL  
BLANKET ON SLOPES GREATER  
THAN 4:1.

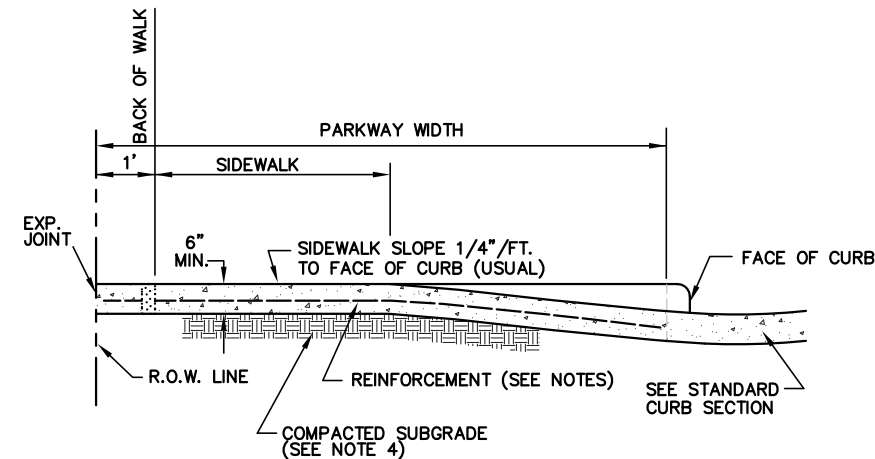
MAJOR COLLECTOR (C4U)  
N.T.S.

TYPICAL STREET SECTIONS:  
RESIDENTIAL AND COLLECTORS  
CITY OF MANSFIELD  
STANDARD CONSTRUCTION DETAILS

PAVING	DATE: APR. 2021	SHEET NO. P-3
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PLAN VIEW



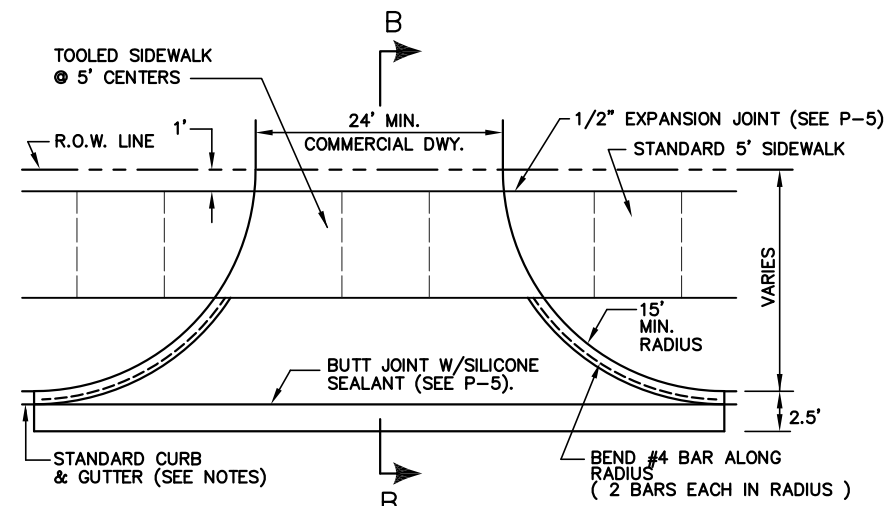
SECTION A-A

**NOTES:**

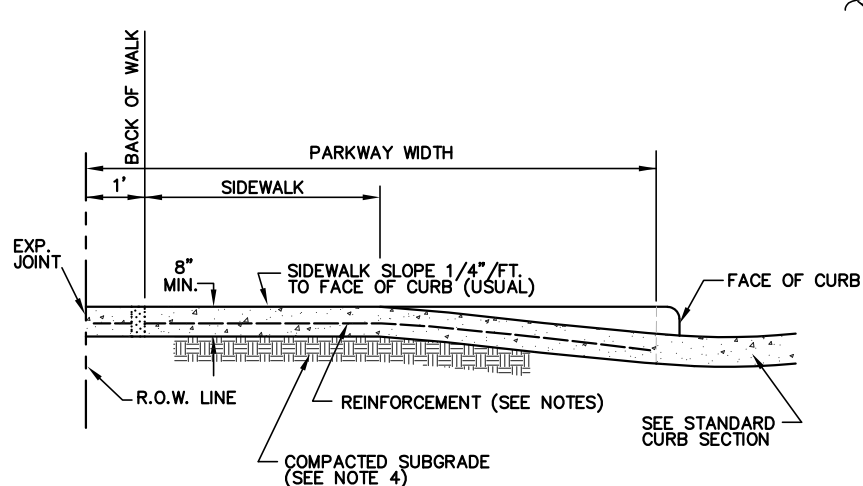
- EXISTING CURB AND GUTTER, IF ANY, MUST BE SAUED.
- REINFORCE DRIVE WITH #3 BARS AT 18" CENTERS, BOTH WAYS, SUPPORTED BY STANDARD CHAIRS (3' MAX. SPACING).
- SIDEWALK SECTION THRU DRIVEWAY TO BE THE SAME THICKNESS AS THE DRIVEWAY APPROACH & TOOLED TO MATCH SIDEWALK.
- SCARIFY, REMOVE ORGANIC MATERIALS, AND COMPACT SUBGRADE TO MINIMUM 95% ASTM D698, OPTIMUM MOISTURE CONTENT OR ABOVE.
- DRILL INTO EXISTING STREET AT 18" CENTERS PER DETAIL SHT. P-5, BUTT JOINT DETAIL.
- DRIVEWAY CURB CUT SHALL NOT EXTEND INTO INTERSECTION RADIUS OR CURB INLET TRANSITION.
- DRIVEWAY REQUIRING CULVERTS: CULVERT MUST BE MIN. 18" AND BE RCP OR HDPE W/ TYPE P HEADWALL.
- DRIVE APPROACH W/ 3-CAR GARAGE FACING STREET: 24' WIDTH MAX. MAY BE USED PER PLAN. ALL OTHERS MUST BE MAXIMUM 20'.

**RESIDENTIAL DRIVE APPROACH**

N.T.S.



PLAN VIEW



SECTION B-B

**NOTES:**

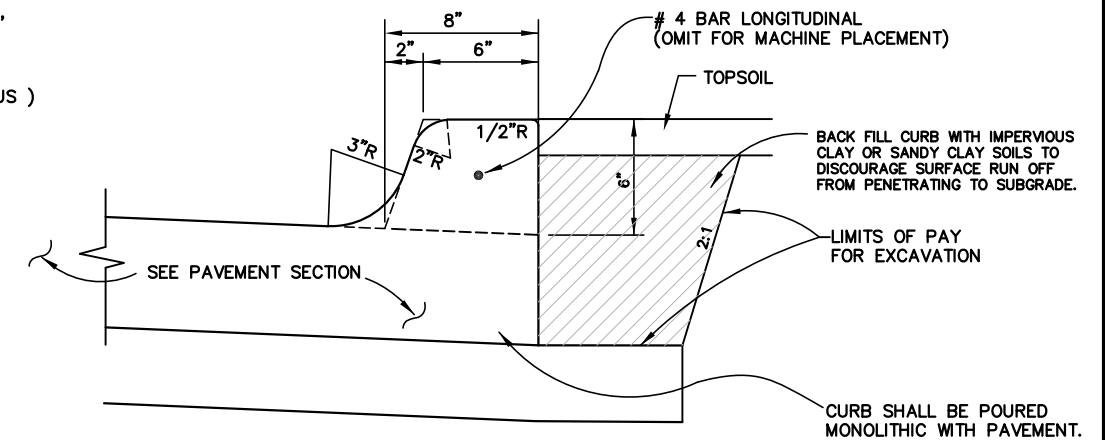
- EXISTING CURB AND GUTTER, IF ANY, MUST BE SAUED.
- REINFORCE DRIVE WITH #4 BARS AT 12" CENTERS, BOTH WAYS, SUPPORTED BY STANDARD CHAIRS (3' MAX. SPACING).
- SIDEWALK SECTION THRU DRIVEWAY TO BE THE SAME THICKNESS AS THE DRIVEWAY APPROACH & TOOLED TO MATCH SIDEWALK.
- SCARIFY, REMOVE ORGANIC MATERIALS, AND COMPACT SUBGRADE TO MINIMUM 95% ASTM D698, OPTIMUM MOISTURE CONTENT OR ABOVE.
- DRILL INTO EXISTING STREET AT 12" CENTERS PER DETAIL SHT. P-5, BUTT JOINT DETAIL.
- DRIVEWAY CURB CUT SHALL NOT EXTEND INTO INTERSECTION RADIUS OR CURB INLET TRANSITION.

**COMMERCIAL DRIVE APPROACH**

N.T.S.

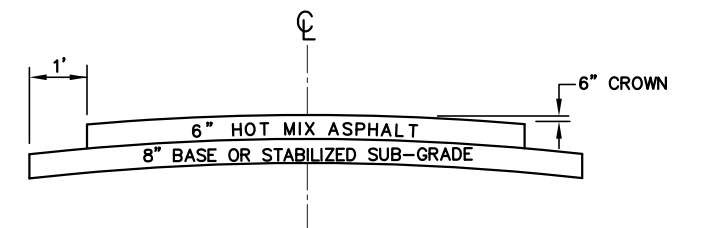
**GENERAL NOTES:**

- ALL CONSTRUCTION MATERIALS, METHODS AND PLACEMENT NOT DETAILED BELOW SHALL MEET OR EXCEED THE STANDARD SPECIFICATIONS OF THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS, 5TH EDITION UNLESS SUPERSEDED BY CITY OF MANSFIELD STANDARD SPECIFICATIONS OR MATERIAL TESTING POLICIES.
- ALL CONCRETE SHALL MEET THE QUALITY ON GENERAL PAVING STANDARDS SHEET.
- DRIVE APPROACH BLOCK OUTS TO BE 2'6" FROM BACK OF CURB INTO SLAB AND EXTEND FROM CURB RETURN TO CURB RETURN.
- ALL CONCRETE SHALL BE CLASS "C" CONTAINING A MINIMUM OF 6 SACKS OF TYPE 1 CEMENT PER YARD AND HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,600 P.S.I. AT 28 DAYS (303.3.4.2). AGGREGATE SHALL BE 100% CRUSHED ANGULAR STONE (1" MAX.). ALL CONCRETE PLACED SHALL CONTAIN SUFFICIENT AIR ENTRAINING AGENT TO YIELD 5% AIR CONTENT. ALL OTHER ADMIXTURES SHALL REQUIRE THE PERMISSION OF THE ENGINEERING DEPARTMENT. FLY ASH MAY BE USED IN MIX DESIGNS AS DETAILED IN NCTOG ITEM 303.2.4., 20% MAX. FINE AGGREGATE NOT TO EXCEED 25% MANUFACTURED SAND.
- ALL DRIVE APPROACHES AND SIDEWALKS SHALL RECEIVE A LIGHT BROOM FINISH.



**TYPICAL SECTION - MONOLITHIC CURB**

N.T.S.



**NOTE:**

BASE-8" CRUSHED STONE BASE COMPACTED TO A MINIMUM OF 95% OF STANDARD PROCTOR AT OPTIMUM MOISTURE OR 8" LIME STABILIZED MATERIAL (TEX 113E).

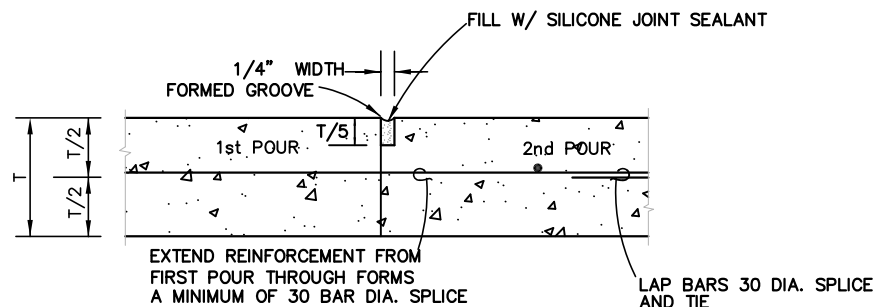
ASPHALT-4" BINDER BASE 2" TYPE "D" SURFACE (CRUSHED STONE TYPE) (TXDOT 341)

TACK COAT - 0.05 GAL/S.Y. OF MC - 30 TO BE APPLIED IF SURFACE OF HMA IS OPENED TO TRAFFIC OR ALLOWED TO SET BETWEEN PLACEMENTS.

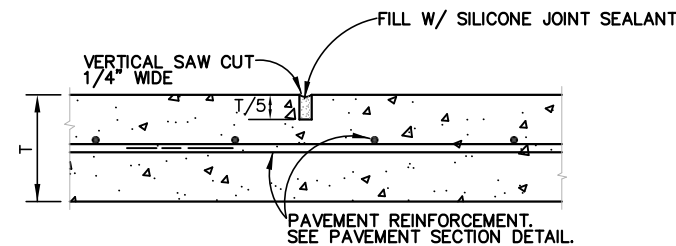
**TEMPORARY ASPHALT TRANSITION DETAIL**

N.T.S.

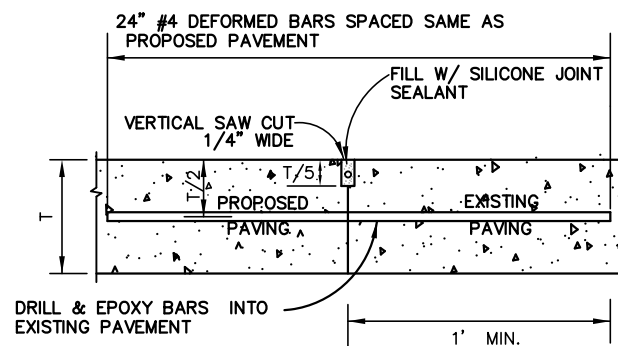
DRIVE APPROACHES, CURB, & ASPHALT DETAILS		
CITY OF MANSFIELD		
STANDARD CONSTRUCTION DETAILS		
PAVING	DATE: APR. 2021	SHEET NO. P-4



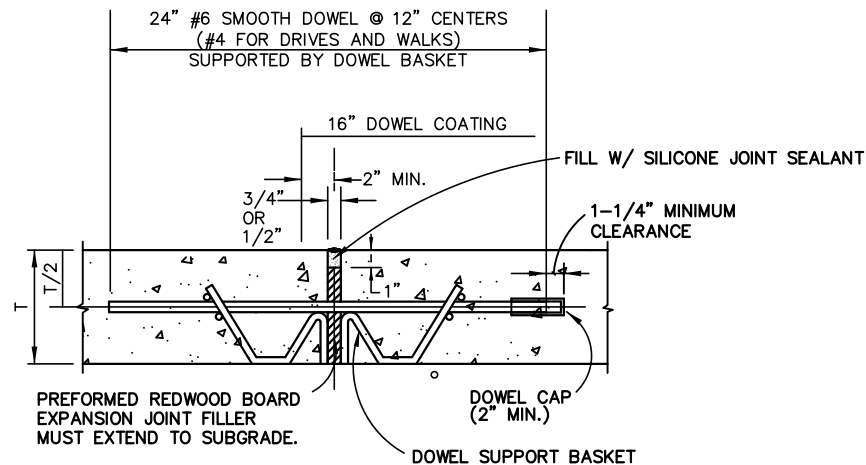
**CONSTRUCTION JOINT**  
N.T.S.



**SAWED CONTRACTION JOINT**  
N.T.S.



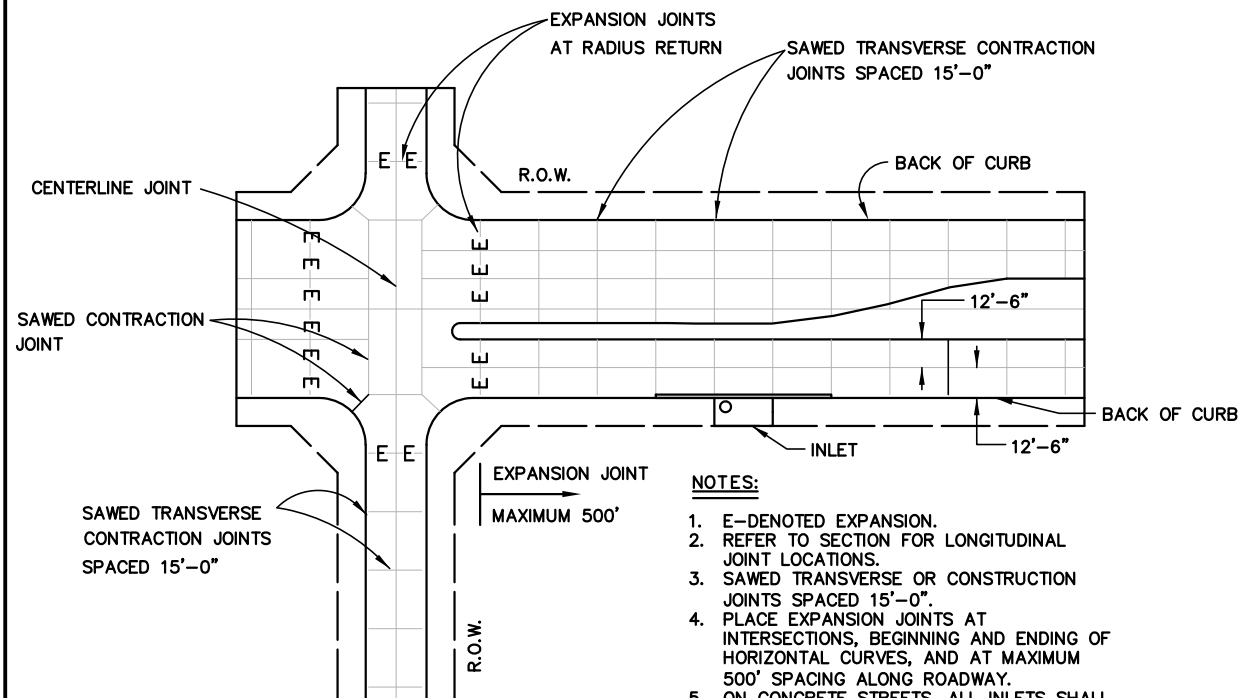
**BUTT JOINT**  
N.T.S.



NOTE:

1. CAPPED SIDE OF DOWEL TO BE GREASED.
2. 3/4" JOINT TO BE USED IN PAVEMENT, 1/2" JOINT TO BE USED IN SIDEWALK.

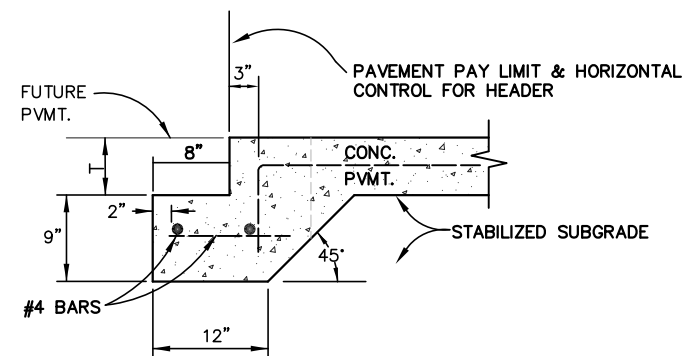
**EXPANSION JOINT**  
N.T.S.



**SPACING DIAGRAM FOR TRANSVERSE JOINTS**  
N.T.S.

NOTES:

1. E-DENOTED EXPANSION.
2. REFER TO SECTION FOR LONGITUDINAL JOINT LOCATIONS.
3. SAWED TRANSVERSE OR CONSTRUCTION JOINTS SPACED 15'-0".
4. PLACE EXPANSION JOINTS AT INTERSECTIONS, BEGINNING AND ENDING OF HORIZONTAL CURVES, AND AT MAXIMUM 500' SPACING ALONG ROADWAY.
5. ON CONCRETE STREETS, ALL INLETS SHALL BE SEPARATED FROM THE PAVEMENT AND CURB BY BLOCKING OUT AS SHOWN ON SHEET SD-1.
6. EXTEND EXPANSION JOINT THROUGH PAVER SECTIONS ON DIVIDED ROADWAY (P-2).



NOTE:

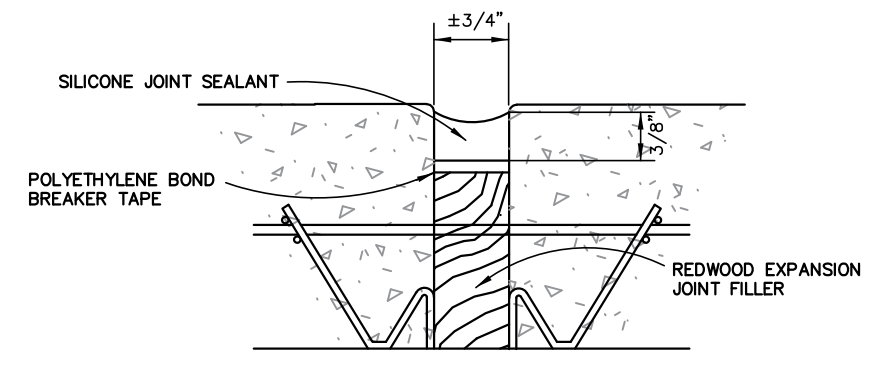
1. PAVEMENT BARS TO BE BENT DOWN INTO HEADER AND PAVEMENT TO BE MONOLITHIC.

**CONCRETE HEADER**  
N.T.S.

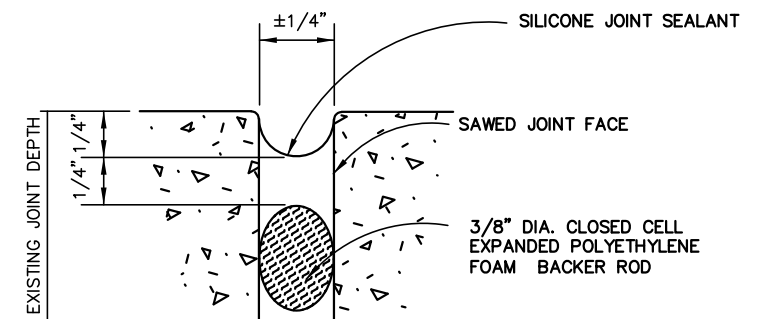
**GENERAL NOTES:**

T= PAVEMENT THICKNESS

1. ALL CONSTRUCTION MATERIALS, METHODS AND PLACEMENT NOT DETAILED BELOW SHALL MEET OR EXCEED THE STANDARD SPECIFICATIONS OF THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS, 5TH EDITION UNLESS SUPERSEDED BY CITY OF MANSFIELD STANDARD SPECIFICATIONS OR MATERIAL TESTING POLICIES.
2. CONTRACTOR MUST USE MONOLITHIC CURB UNLESS DOWELED CURB IS PRE-APPROVED BY ENGINEERING DEPARTMENT.
3. DOWEL BARS OR REBAR PLACED INTO EXISTING PAVEMENT SHALL BE DRILLED INTO PAVEMENT HORIZONTALLY. PUSHING DOWEL BARS OR REBAR INTO GREEN CONCRETE IS NOT ACCEPTABLE. SECURE DOWEL BARS OR REBAR INTO EXISTING PAVING WITH EPOXY GROUT INJECTED INTO HOLE WITH CAULKING GUN.
4. SEALANT SHALL BE SELF-LEVELING SILICONE PER CITY OF MANSFIELD DETAIL: "SILICONE JOINT SEALANT FOR CONCRETE PAVEMENT."
5. THE CONSTRUCTION JOINT IS TO BE USED BETWEEN SEPARATE POURS OF PROPOSED PAVEMENT. NOTE THAT IT REQUIRES THE REINFORCEMENT TO BE EXTENDED THROUGH THE FORM TO TIE TO THE NEXT POUR. THE BUTT JOINT IS TO BE USED BETWEEN EXISTING CONCRETE PAVEMENT (STREET, DRIVEWAY, OR BLOCK OUT) AND PROPOSED PAVEMENT, UNLESS AN EXPANSION JOINT IS CALLED FOR OR AN "L" BAR IN A KEYWAY MAY BE ATTACHED TO STEEL MAT TO BE BENT OUT INTO NEXT PLACEMENT. TWO-PIECE TIE BARS MAY ALSO BE USED. DRILL AND EPOXY WILL ONLY BE PERMITTED ON EXISTING PAVEMENT.

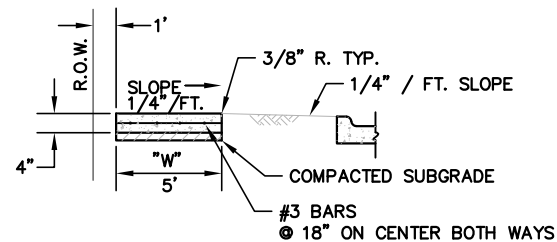


**SEALANT DETAIL FOR TRANSVERSE EXPANSION JOINT**  
N.T.S.



**SEALANT DETAIL FOR SAWED CONTRACTION JOINT**  
N.T.S.

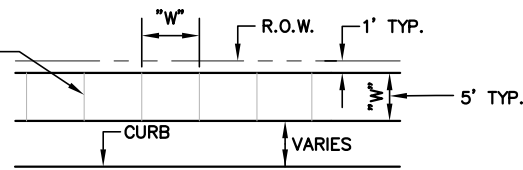
JOINT & SEALANT DETAILS		
CITY OF MANSFIELD		
STANDARD CONSTRUCTION DETAILS		
PAVING	DATE: APR. 2021	SHEET NO. P-5



**STANDARD SIDEWALK SECTION**

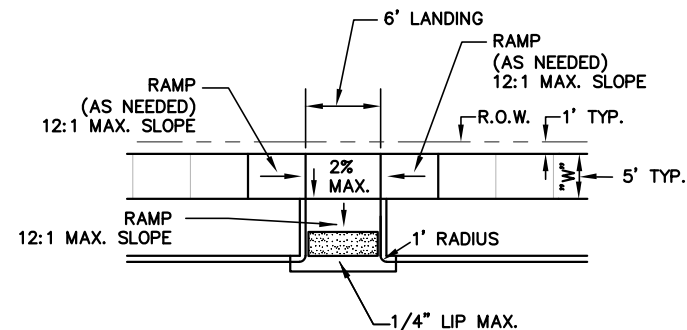
N.T.S.

SIDEWALK JOINTS SHALL BE GROOVED 3/8" DEEP W/ REDWOOD EXPANSION JOINTS EVERY 40' MAX. W/24"- #4 SMOOTH DOWELS @ 12" CENTERS



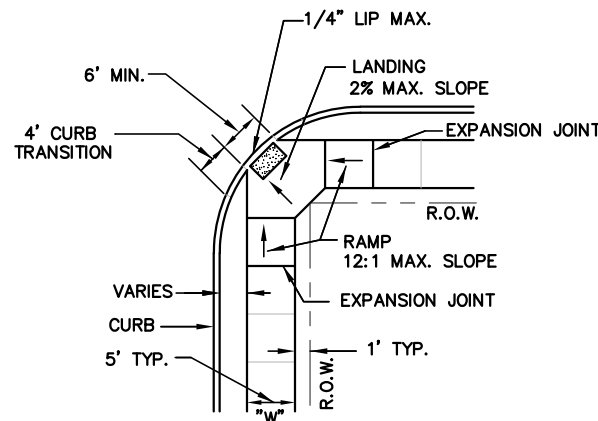
**STANDARD SIDEWALK PLAN**

N.T.S.



**PERPENDICULAR RAMP**

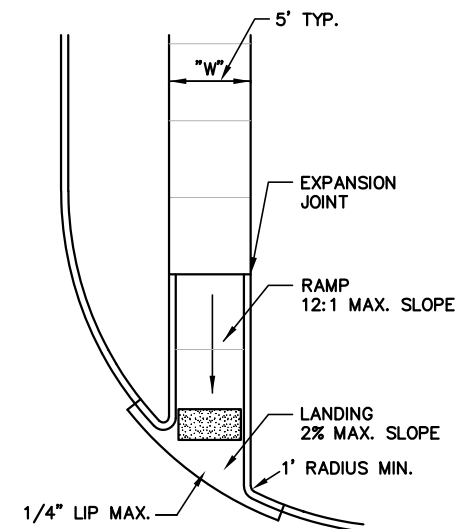
N.T.S.



**INTERSECTION RAMP**

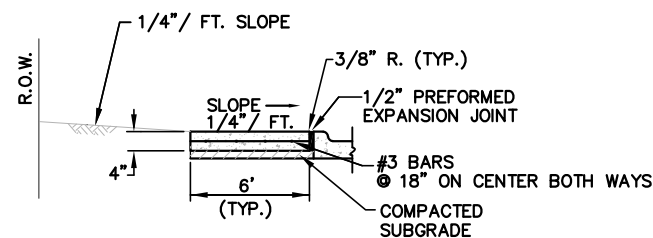
N.T.S.

NOTE: CURB LAYDOWN AND OPENING TO BE 1' WIDER THAN LARGEST INTERSECTION WALK.



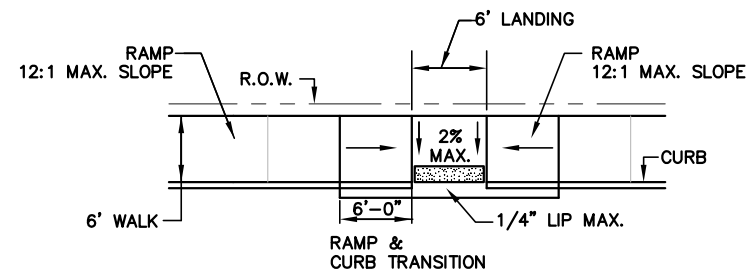
**DIRECTIONAL CURB RAMP**

N.T.S.



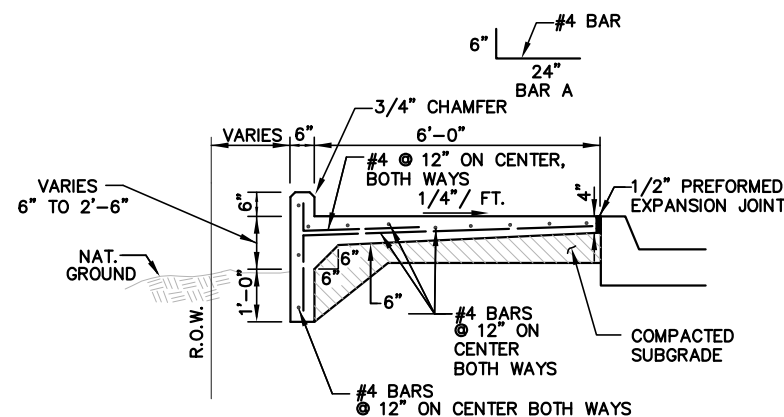
**SIDEWALK ABUTTING CURB SECTION**

N.T.S.



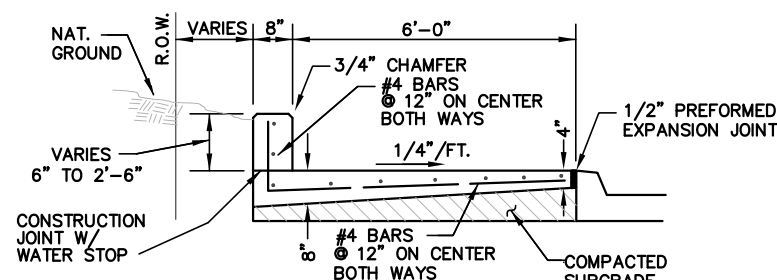
**PARALLEL RAMP**

N.T.S.



**SIDEWALK WITH CURB AND TOEWALL**

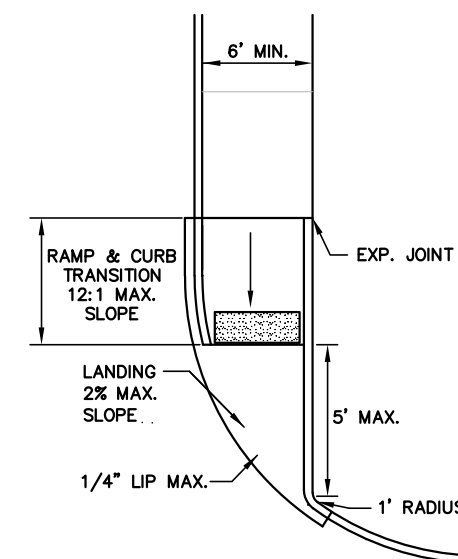
N.T.S.



**SIDEWALK WITH RETAINING WALL**

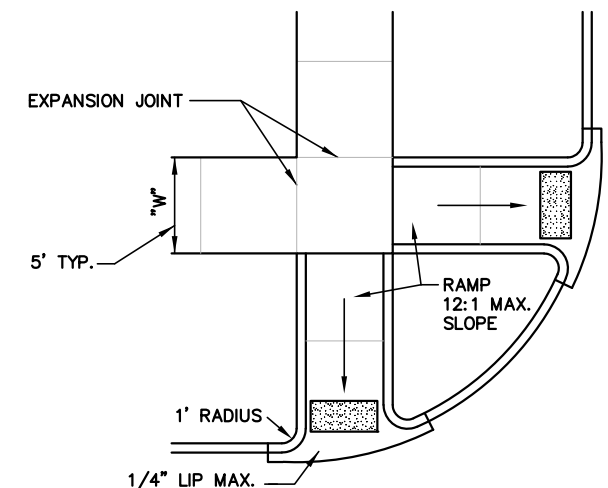
N.T.S.

- NOTES:
1. INSTALL 1" DIA. PVC WEEP HOLE ON 10' CENTERS.
  2. SIDEWALK JOINTING TO BE CONTINUOUS UP FACE OF WALL WITH CHAMFER.



**DIRECTIONAL CURB RAMP FOR WALK ABUTTING CURB**

N.T.S.



**SPLIT RAMPS (STREET RADIUS < 15')**

N.T.S.

## SIDEWALK GENERAL NOTES:

1. ALL CONSTRUCTION MATERIALS, METHODS AND PLACEMENT NOT DETAILED BELOW SHALL MEET OR EXCEED THE STANDARD SPECIFICATIONS OF THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS, 5TH EDITION UNLESS SUPERSEDED BY CITY OF MANSFIELD STANDARD SPECIFICATIONS OR MATERIAL TESTING POLICIES.
2. CONCRETE SHALL BE A MINIMUM OF 4 INCHES THICK, CLASS "A", (303.3.4.2) CONTAINING A MINIMUM OF 5 SACKS OF TYPE 1 CEMENT PER YARD (3000 PSI). AGGREGATE SHALL BE 100% CRUSHED ANGULAR STONE (1" MAX.). ALL CONCRETE PLACED SHALL CONTAIN SUFFICIENT AIR ENTRAINING AGENT TO YIELD 5% AIR CONTENT. FINE AGGREGATE NOT TO EXCEED 50% MANUFACTURED SAND.
3. CHAMFER ALL EXPOSED EDGES OF CONCRETE WALLS 3/4 INCH.
4. ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A-615 GRADE 60. REINFORCING STEEL SHALL BE PLACED WITH A MINIMUM OF 1-1/2 INCH OF COVER FOR #5 BARS OR SMALLER. WHERE REINFORCING BARS ARE SPLICED, A 30 DIAMETER LAP SHALL BE USED.
5. CURBED RAMP BLOCK OUTS TO BE 1'6" FROM BACK OF CURB INTO SLAB AND EXTEND FROM CURB RETURN TO CURB RETURN.
6. SUBGRADE SHALL CONSIST OF NATIVE SOIL OR SAND COMPACTED TO A DENSITY NOT LESS THAN 95% ASTM D698, OPTIMUM MOISTURE CONTENT OR ABOVE.
7. SIDEWALKS SHALL BE FINISHED BY LIGHTLY BROOMING SURFACE TRANSVERSE TO DIRECTION OF TRAFFIC.
8. AN APPROVED WHITE PIGMENTED CURING COMPOUND SHALL BE APPLIED TO THE SURFACE OF THE PAVEMENT AS SOON AS IT HAS BEEN PLACED AND FINISHED.
9. RETAINING WALLS TO HAVE REDWOOD EXPANSION JOINTS @ 40' MAX. W/24"- #4 SMOOTH DOWELS @ 12" CENTERS. SIDEWALK JOINTS TO BE CHAMFERED THROUGH WALL (3/4" TYP.).
10. FOR ADDITIONAL INFORMATION AND DETAILS, SEE TXDOT PED STANDARDS, US ACCESS BOARD PROWAG, AND TAS REGULATIONS.
11. TRUNCATED DOMES TO BE APPROVED ANTIQUE RED BLOCK PAVERS ONLY.
12. ALL JOINTS IN PAVEMENT TO BE SEALED (P-5).

SIDEWALK & RAMP  
DETAILS

CITY OF MANSFIELD  
STANDARD CONSTRUCTION DETAILS

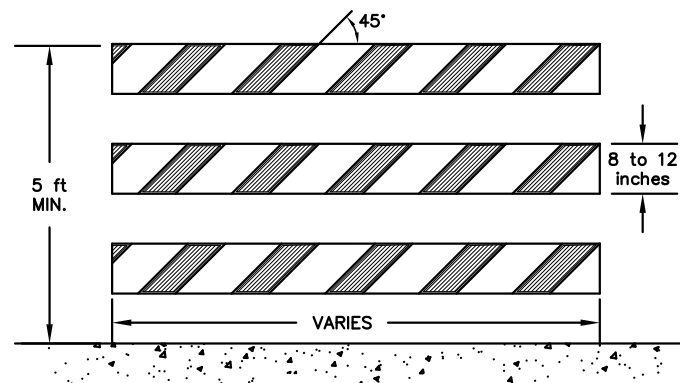
PAVING

DATE:  
APR. 2021

SHEET NO.  
P-6

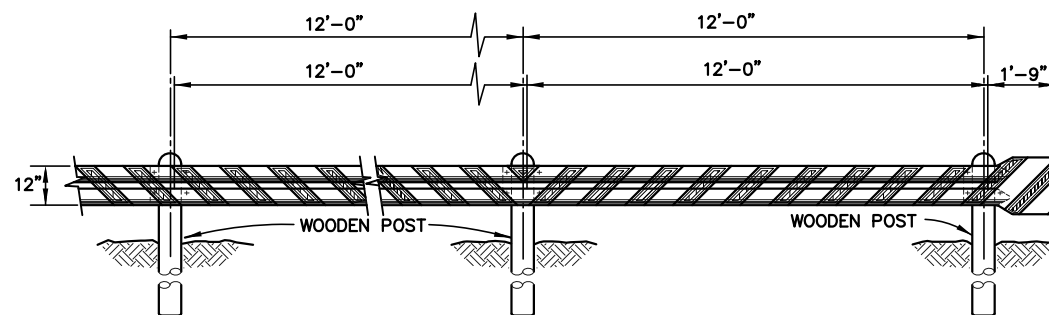
## TEMPORARY END OF ROAD BARRICADE DETAILS

1. ALL CONSTRUCTION MATERIALS, METHODS AND PLACEMENT NOT DETAILED ABOVE SHALL MEET OR EXCEED THE STANDARD SPECIFICATIONS OF THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS, 5TH EDITION, UNLESS SUPERSEDED BY CITY OF MANSFIELD STANDARD SPECIFICATIONS OR MATERIAL TESTING POLICIES.
2. ALL INSTALLATION SHALL BE OF NEW MATERIALS. METAL FLEX-BEAM GUARDRAIL SHALL BE 10 GAUGE, GALVANIZED AS PER ASTM A 93. SUBSTITUTIONS OF ANY ITEM SHALL BE APPROVED BY THE ENGINEERING DEPARTMENT PRIOR TO INSTALLATION.
3. ALL POSTS SHALL BE WOLMANIZED TREATED FOR GROUND CONTACT. SQUARE 6"x6" POSTS (ALSO TREATED) MAY BE SUBSTITUTED, PROVIDED THE TOP OF EACH POST IS BEVELED A MINIMUM OF 10° (DEGREES).
4. ALL BOLTS, WASHERS, OR HARDWARE SHALL BE GALVANIZED TREATED TO RESIST RUST. BOLTS SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE THICKNESS OF THE NUT.
5. POSTS SHALL NOT BE CONCRETED IN PLACE, BUT SHALL INSTEAD BE BACK FILLED WITH WELL-TAMPED SOIL.
6. STRIPING-BARRICADES SHOULD HAVE STRIPE SLOPE DOWNWARD IN THE DIRECTION TOWARD WHICH TRAFFIC MUST TURN IN DETOURING. WHEN BOTH RIGHT AND LEFT TURNS ARE PROVIDED FOR, CHEVRONS SHALL SLOPE AWAY FROM CENTER. IF NO TURN IS PROVIDED (END OF ROAD), CHEVRONS SLOPE TOWARD CENTER (AS SHOWN).
7. TYPE III BARRICADES SHALL BE USED BEHIND THE GUARDRAIL BARRICADE AND SHALL MEET MUTCD STANDARDS.



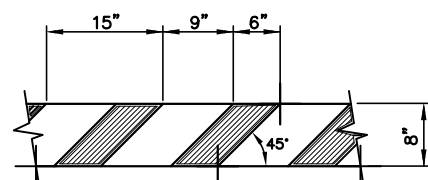
### TYPE 3 BARRICADE

N.T.S. (NOTE 7)



## ELEVATION

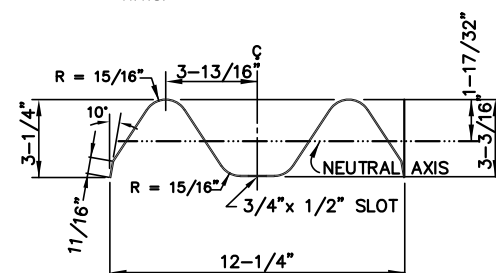
N.T.S.



NOTE: DIAGONAL RED REFLECTIVE TAPE SHALL BE APPLIED ON THE FACE OF ALL GUARD PANELS (THE FULL FACE OF THE PANEL SHALL BE COVERED).

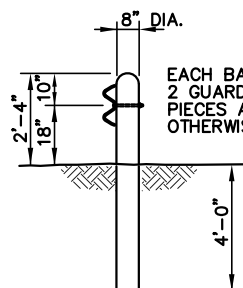
TAPE DETAIL

N.T.S.



METAL BEAM DETAIL

N.T.S.



EACH BARRICADE SHALL CONSIST OF 2 GUARD FENCE PANELS, 2 TERMINAL PIECES AND POSTS - UNLESS OTHERWISE SPECIFIED.

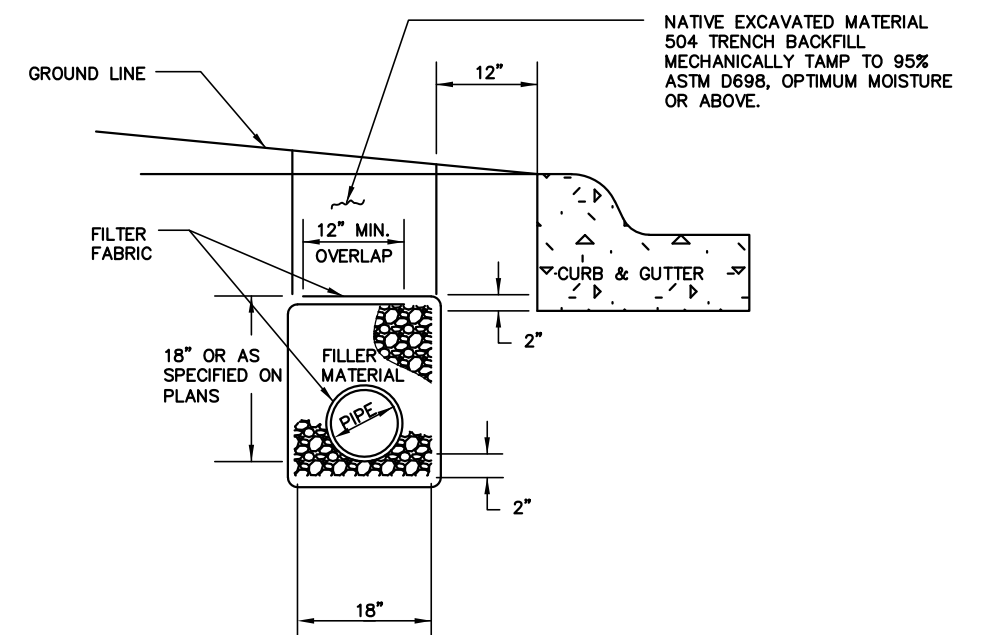
ONE 5/8" BOLT W/LARGE DIA.  
WASHER - 7/8" DIA.  
HOLE IN POST (MIN.)

POST DETAIL

N.T.S.

## SUBDRAIN DETAIL

1. ALL SUBDRAIN PIPES TO BE 6" DIAMETER.
2. FILLER MATERIAL ALONG SUBDRAIN PIPES SHALL BE ¾" CRUSHED STONE, NCTCOG 504.2.2.1 (a) "AGGREGATE GRADE 4".
3. SUBDRAIN PIPE MATERIAL SHALL BE PERFORATED PVC PIPE OR PERFORATED POLYETHYLENE PIPE ENCASED IN "FILTER FABRIC SLEEVE".
4. ALL SUBDRAINS SHALL BE INSTALLED AFTER PAVEMENT AND PRIOR TO SIDEWALK.
5. CLEANOUTS W/CONCRETE PADS (PER SHEET SS-2) SHALL BE PLACED AT 500' INTERVALS ALONG SUBDRAIN AND AT THE UPSTREAM END OF LINE.
6. CONNECTION TO INLET SHALL BE MADE WITH A SECTION OF 6" SCHEDULE 40 PVC PIPE INTO THE INLET SIDE WALL AT TIME OF INLET CONSTRUCTION. THE SUBDRAIN WILL THEN BE ADAPTED TO THE PERFORATED PIPE.

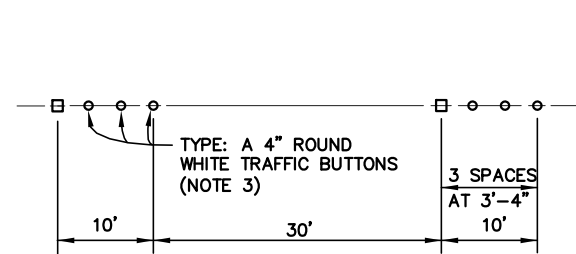


TYPICAL SECTION

N.T.S.

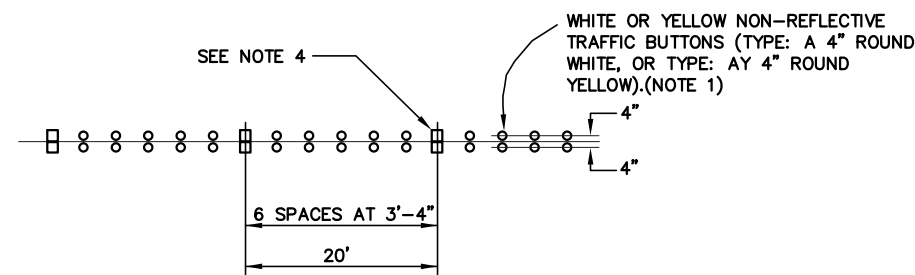
BARRICADE & SUBDRAIN DETAILS		
CITY OF MANSFIELD STANDARD CONSTRUCTION DETAILS		
PAVING	DATE: APR. 2021	SHEET NO. P-7





### SINGLE BROKEN LINE

N.T.S.

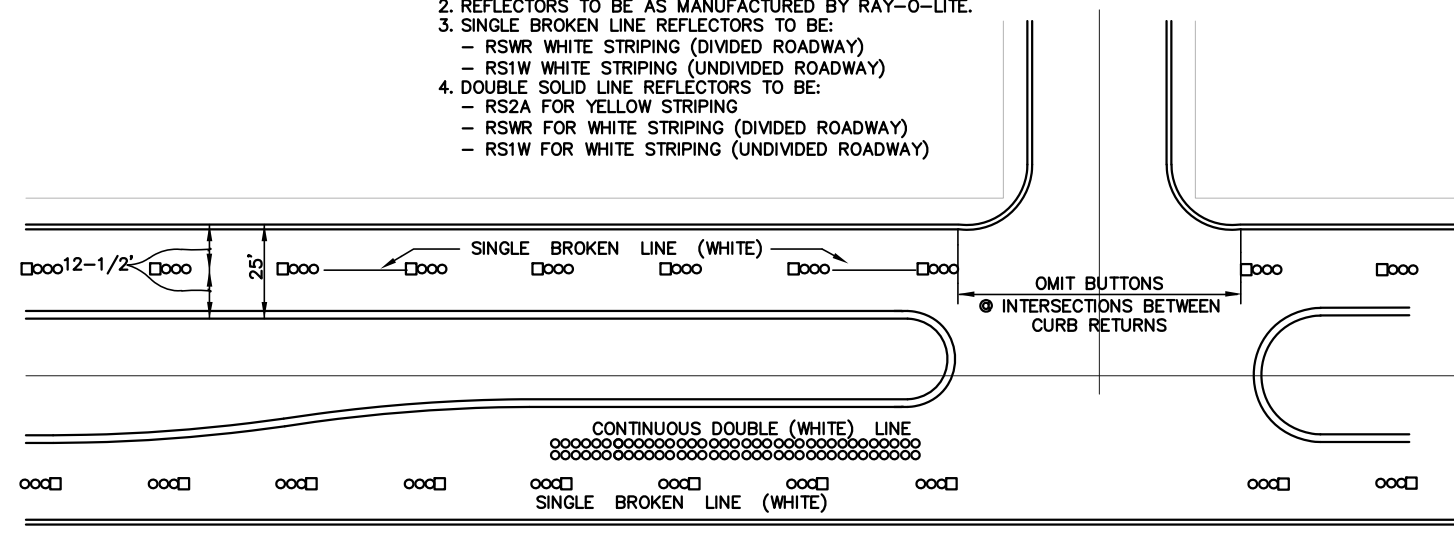


### DOUBLE SOLID LINE

N.T.S.

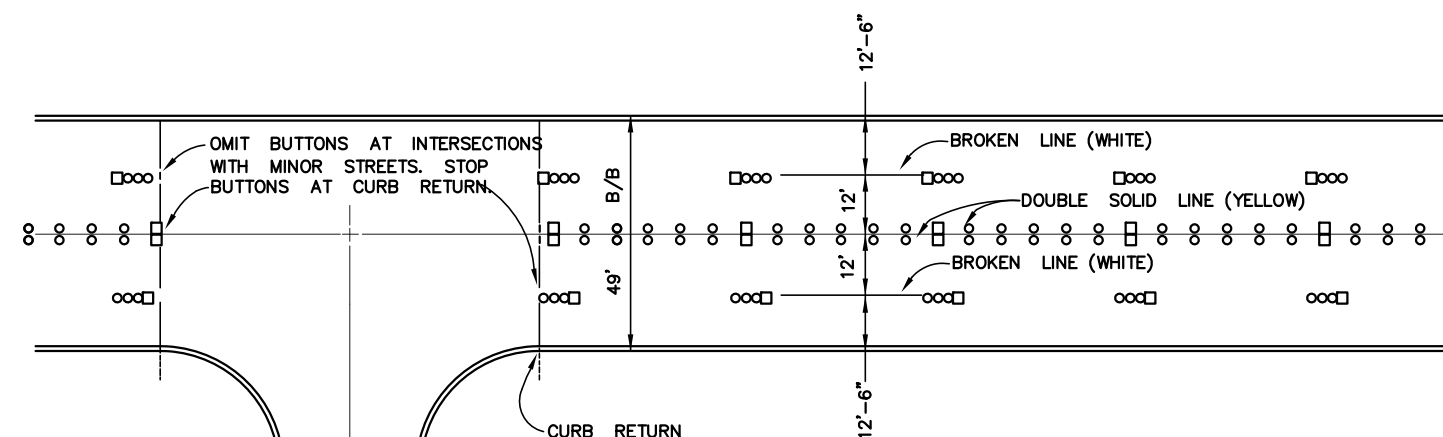
#### NOTES:

1. BUTTONS TO BE AS MANUFACTURED BY APEX UNIVERSAL, INC. AND RAY-O-LITE
2. REFLECTORS TO BE AS MANUFACTURED BY RAY-O-LITE.
3. SINGLE BROKEN LINE REFLECTORS TO BE:
  - RSWR WHITE STRIPING (DIVIDED ROADWAY)
  - RS1W WHITE STRIPING (UNDIVIDED ROADWAY)
4. DOUBLE SOLID LINE REFLECTORS TO BE:
  - RS2A FOR YELLOW STRIPING
  - RSWR FOR WHITE STRIPING (DIVIDED ROADWAY)
  - RS1W FOR WHITE STRIPING (UNDIVIDED ROADWAY)



### TYPICAL BUTTON LAYOUT FOR 4-LANE ARTERIAL SECTION

N.T.S.

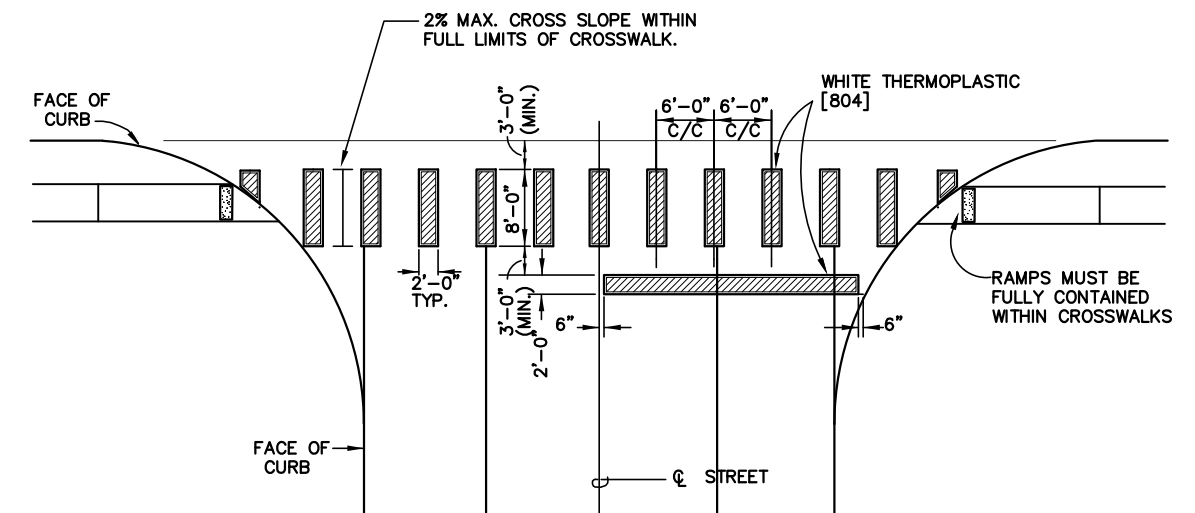


### TYPICAL BUTTON LAYOUT FOR 49' B/B STREET SECTION

N.T.S.

#### NOTE:

1. PAVEMENT PAINTS, MARKINGS, AND TRAFFIC BUTTONS WHERE APPROVED, TO BE IN CONFORMANCE WITH NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION "ITEM 804." PLACEMENT TO BE AS ILLUSTRATED IN CONSTRUCTION PLANS.
2. DO NOT APPLY PAVEMENT MARKINGS UNTIL PAVEMENT SURFACE AND BUTTON LAYOUT HAS BEEN APPROVED BY ENGINEER.
3. ASPHALT ROADWAYS TO BE MARKED WITH THERMO AND WITH RAISED PAVEMENT REFLECTORS PER TXDOT SPECIFICATIONS.



### INTERSECTION CROSSWALK

N.T.S.

### SIGN SPECIFICATIONS

1. ALL SIGNS SHALL BE STANDARD MUTCD SIGNS ON 0.080" ALUMINUM WITH PRISMATIC GRADE REFLECTIVE SHEETING.
2. ALL SIGN POSTS SHALL BE 1 3/4" (14 GAUGE) SQUARE GALVANIZED POSTS WITH HOLES UTILIZING THE THREE PIECE BREAKAWAY SYSTEM CONSISTING OF THE POSTS LISTED ABOVE, A 2 1/4" X 18" (12 GAUGE) SLEEVE, AND A 2" X 36" (12 GAUGE) ANCHOR.
3. RED SERIES REGULATORY SIGNS SHALL BE 30" X 30".
4. BLACK & WHITE SERIES REGULATORY SIGNS SHALL BE STANDARD MUTCD SIZES EXCEPT FOR SPEED LIMIT AND PARKING SIGNS WHICH SHALL BE 24" X 30".
5. PROHIBITIVE SIGNS SHALL BE 24" SQUARE.
6. YELLOW SERIES WARNING SIGNS SHALL BE 30" X 30" DIAMOND. ALL OTHER WARNING SIGNS SHALL BE STANDARD MUTCD SIGNS. GUIDE SIGNS SHALL BE STANDARD MUTCD SIGNS.
7. SCHOOL SIGNS (PENTAGONAL AND DIAMOND) SHALL BE 30" X 30" EXCEPT SCHOOL SPEED LIMIT 20 MPH SIGNS WHICH SHALL BE 24" X 48".
8. STREET NAME SIGNS SHALL BE ON 9" X 30" OR 36" BLADES. BLADES SHALL BE 0.080" ANODIZED ALUMINUM WITH 1 1/2" RADIUS CORNERS, SINGLE SIDED, AND DRILLED FOR BACK TO BACK INSTALLATION ON SQUARE POSTS. BLADES SHALL BE PRISMATIC GRADE GREEN WITH WHITE LETTERS (WHITE SIGN W/GREEN LETTERS FOR PRIVATE STREETS). LETTERS, INCLUDING PREFIXES, ARE 6" HIGH AND SUFFIXES AND BLOCK NUMBERS ARE 3" HIGH. FOR BACK-TO-BACK INSTALLATION, USE DRIVE RIVETS TO ATTACH TO POSTS. PVC SPACERS W/ SIGNMATE RIVETS SHALL BE USED. ALL STREET NAME SIGNS SHALL BE INSTALLED WITH ARTERIAL STREET ON TOP AND SIDE STREET BELOW.
9. ALL SIGNS TO BE INSTALLED ON A TRAFFIC SIGNAL MAST ARM SHALL BE AS INDICATED ON PLANS OR AS DIRECTED BY ENGINEERING DEPARTMENT.

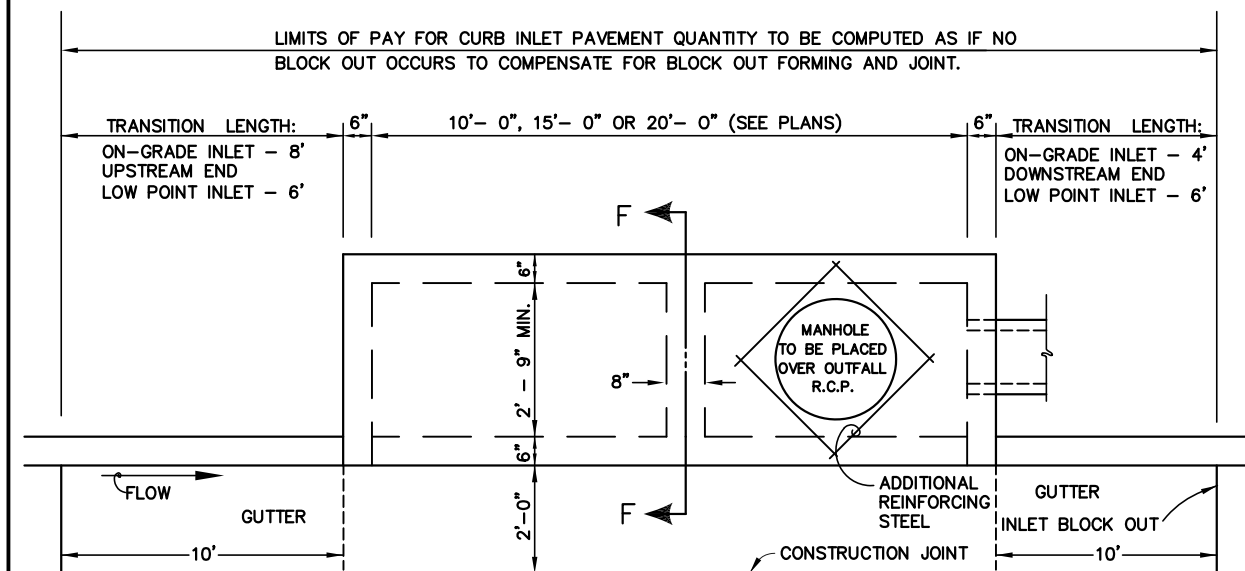
STRIPING \ PAVEMENT MARKERS  
SIGNS

CITY OF MANSFIELD  
ENGINEERING DEPARTMENT

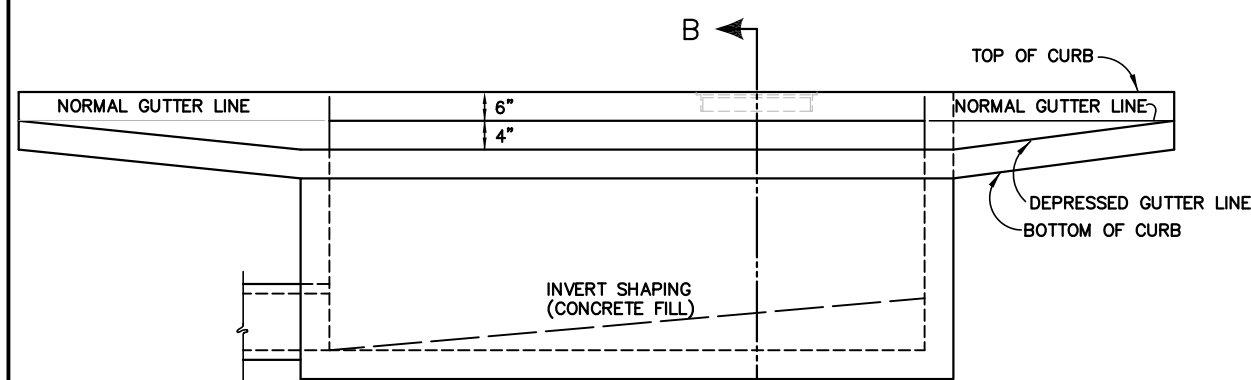
PAVING

DATE:  
APR. 2021

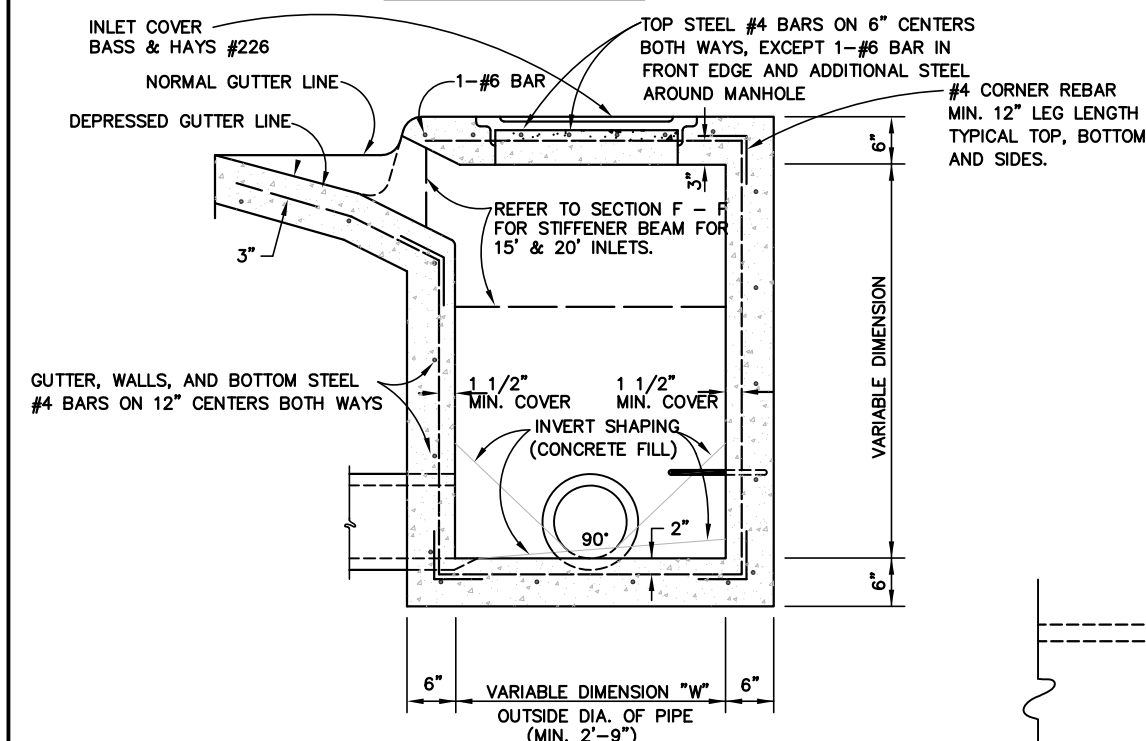
SHEET NO.  
P-8



INLET PLAN

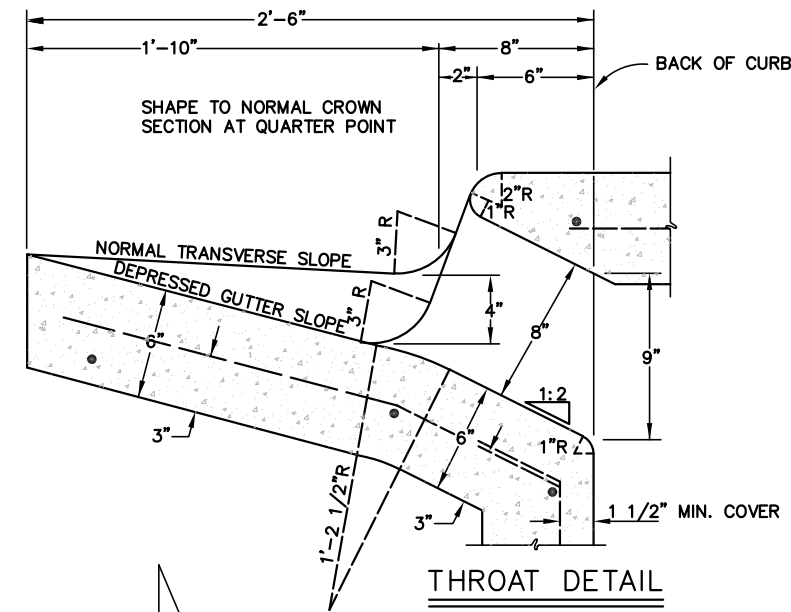


INLET ELEVATION

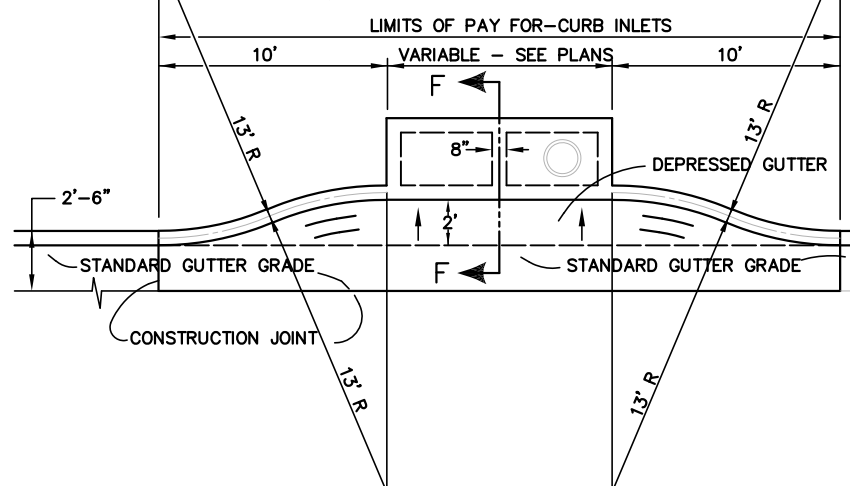


SECTION B-B

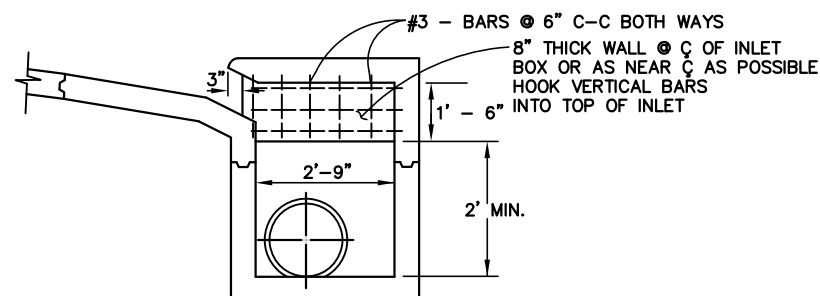
STANDARD CURB INLET DETAIL



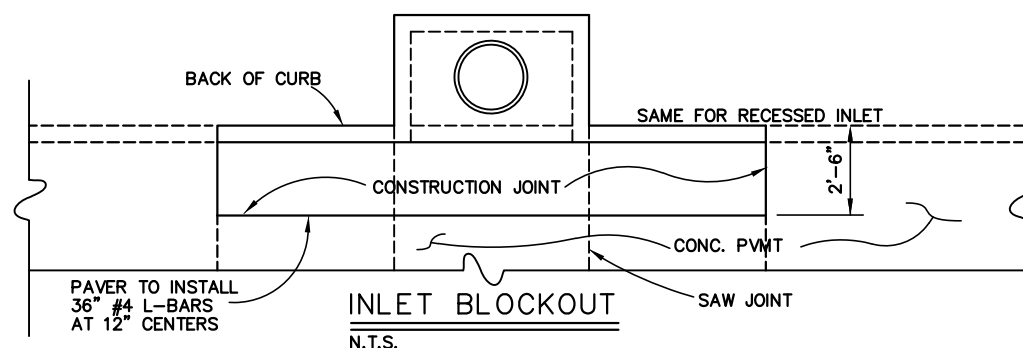
THROAT DETAIL



RECESSED CURB INLET PLAN

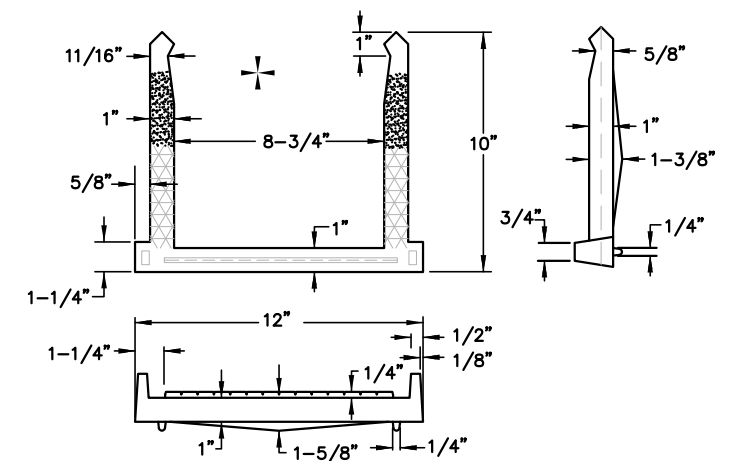


SECTION F-F  
INLET MID BOX STIFFENER BEAM  
FOR 15', 20' & LARGER INLETS

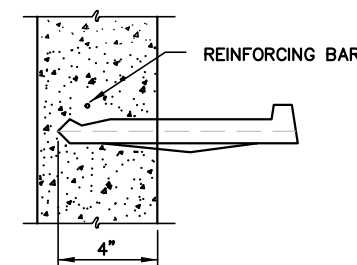


## GENERAL NOTES:

- ALL CONSTRUCTION MATERIALS, METHODS AND PLACEMENTS NOT DETAILED BELOW SHALL MEET OR EXCEED THE STANDARD SPECIFICATIONS OF THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS, 5TH EDITION UNLESS SUPERSEDED BY CITY OF MANSFIELD STANDARD SPECIFICATIONS OR MATERIAL TESTING POLICIES.
- ALL CONCRETE SHALL BE CLASS "C", (6 SACK, 3600 PSI) (702.3.4.2 (a)). AGGREGATE SHALL BE 100% CRUSHED ANGULAR STONE (1" MAX). ALL CONCRETE PLACED SHALL CONTAIN SUFFICIENT AIR ENTRAINING AGENT TO YIELD 5% AIR CONTENT. ALL OTHER ADMIXTURES SHALL REQUIRE THE PERMISSION OF THE ENGINEERING DEPARTMENT.
- ON CONCRETE STREETS ALL INLETS SHALL BE SEPARATED FROM THE PAVEMENT AND CURB BY BLOCKING OUT AROUND INLETS AS SHOWN.
- ALL REINFORCING STEEL SHALL BE DEFORMED BARS (ASTM A-615 GRADE 60). REINFORCING STEEL SHALL BE PLACED WITH A MINIMUM OF 1-1/2" COVER.
- WHERE REINFORCING BARS ARE SPICED, A MINIMUM 30 DIAMETER LAP SHALL BE USED. MANUFACTURED BENDS OR FACTORY MADE "L" BARS SHALL BE USED IN ALL CORNERS, AND SHALL BE LONG ENOUGH TO PERMIT A MINIMUM OF A 30 DIAMETER SPLICE.
- INLETS LARGER THAN 10' SHALL HAVE TWO (2) LIDS. ONE TO BE LOCATED OVER OUTFALL AND THE OTHER LOCATED ON THE OPPOSITE SIDE OF THE STIFFENER BEAM.
- COVER IS A STANDARD CAST IRON LID AND RING WITH AN ATTACHED CHAIN EMBEDDED IN CONCRETE (BASS & HAYS 226).
- PRE-CAST INLETS WILL NOT BE PERMITTED.
- TOP AND THROAT TO BE PLACED MONOLITHICALLY.



STEP DETAILS



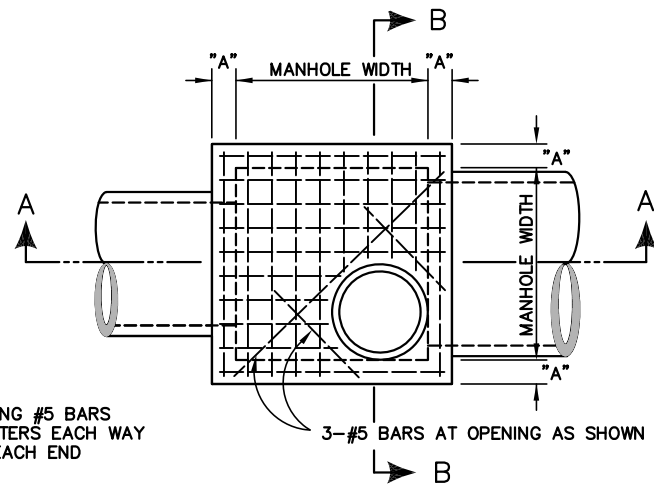
INSTALLATION

## NOTE:

- INLET AND STORM DRAIN STEPS SHALL BE AS MANUFACTURED BY M.A. INDUSTRIES, INC. OF PEACHTREE CITY, GA. OR APPROVED EQUAL. STEPS SHALL REQUIRE A STEEL REINFORCING BAR AS SHOWN IN DETAIL.
- STEPS SHALL BE PLACED IN ALL INLETS OR STORM VAULTS WHERE THE DIMENSION FROM THE FLOW LINE TO THE TOP OF THE MANHOLE LID MEETS OR EXCEEDS 5'.
- STEPS SHALL BE PLACED WITH A MAXIMUM VERTICAL SEPARATION OF 16".

INLET STEP DETAIL

CURB INLET DETAILS		
CITY OF MANSFIELD		
STANDARD CONSTRUCTION DETAILS		
STORM DRAIN	DATE: APR. 2021	SHEET NO. SD-1



NOTE:  
REINFORCING #5 BARS  
@ 6" CENTERS EACH WAY  
HOOKED EACH END

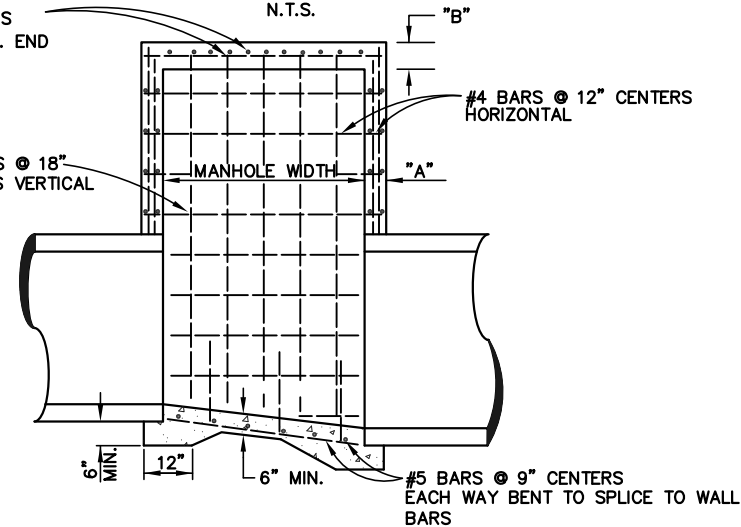
PLAN  
N.T.S.

#5 BARS @ 6" CENTERS  
EACH WAY HOOKED EA. END

#4 BARS @ 18"  
CENTERS VERTICAL

#4 BARS @ 12" CENTERS  
HORIZONTAL

DIMENSIONS FOR SQUARE MANHOLES				
DIMENSION	MANHOLE WIDTH			
	4'	5'	6'	
A	8"	8"	9"	
B	8"	8"	9"	
C	12"	18"	24"	



SECTION A-A  
N.T.S.

STD. MANHOLE RING & COVER (BASS & HAYS  
VRM30 W/ "BASS" DESIGN)

MORTAR COVER  
(EXTERIOR ONLY)  
GRADE RINGS  
AS REQUIRED  
W/ APPROVED  
EXTERIOR WRAP  
SEAL

#4 BARS @ 18"  
CENTERS VERTICAL  
#4 BARS @ 12"  
CENTERS HORIZONTAL

MANHOLE  
STEPS @ 12" C/C  
STAGGERED 12"

SLOPE 3/8" TO  
DRAIN

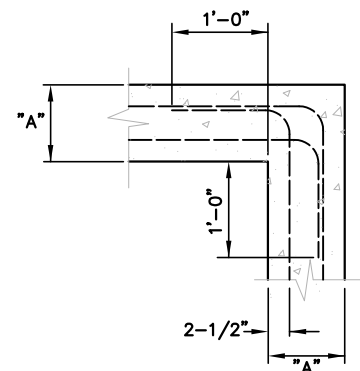
STEEL  
TROWEL  
FINISH

U-SHAPED #5 BARS @ 9"  
CENTERS EACH WAY  
TO EXTEND INTO WALLS  
TO ALLOW A MIN. 30 BAR  
DIA. SPLICE.

SECTION B-B

STANDARD SQUARE MANHOLE  
54" DIAMETER & SMALLER PIPES

N.T.S.

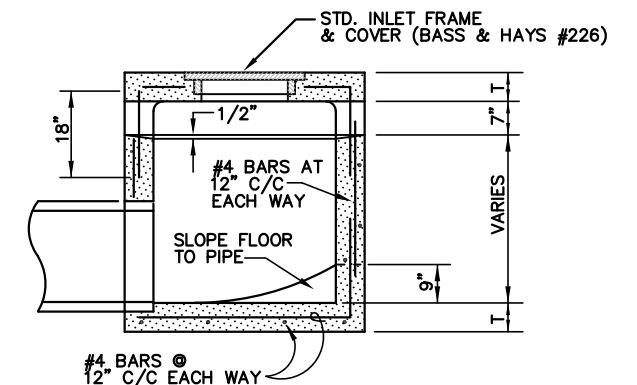


TYPICAL CORNER  
DETAIL  
(PLAN VIEW)

N.T.S.

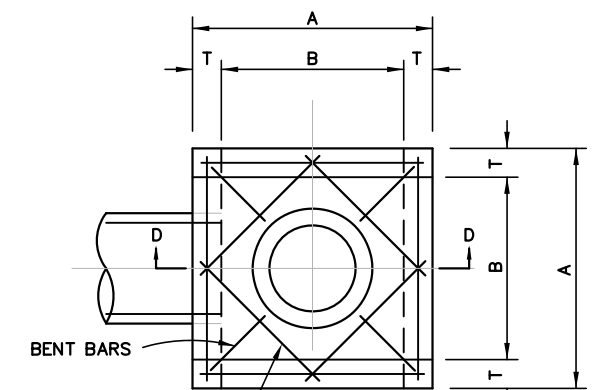
## GENERAL NOTES:

- ALL CONSTRUCTION MATERIALS, METHODS AND PLACEMENT NOT DETAILED BELOW SHALL MEET OR EXCEED THE STANDARD SPECIFICATIONS OF THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS, 5TH EDITION UNLESS SUPERSEDED BY CITY OF MANSFIELD STANDARD SPECIFICATIONS OR MATERIAL TESTING POLICIES.
- ALL REINFORCING STEEL SHALL BE DEFORMED BARS (ASTM A-615 GRADE 60). REINFORCING STEEL SHALL BE PLACED WITH A MINIMUM OF 1-1/2" COVER FOR #5 BARS AND SMALLER.
- WHERE REINFORCING BARS ARE SPICED, A MINIMUM 30 BAR DIAMETER LAP SPICE SHALL BE USED. MANUFACTURED BENDS OR FACTORY MADE "L" BARS SHALL BE USED IN ALL CORNERS, AND SHALL BE LONG ENOUGH TO PERMIT A MINIMUM OF 30 BAR DIAMETER LAP SPICE.
- ALL CONCRETE SHALL BE CLASS "C", (6 SACK, 3600 PSI) (702.3.4.2). AGGREGATE SHALL BE 100% CRUSHED ANGULAR STONE (1" MAX.). ALL CONCRETE PLACED SHALL CONTAIN SUFFICIENT AIR ENTRAINING AGENT TO YIELD 5% AIR CONTENT. ALL OTHER ADMIXTURES SHALL REQUIRE THE PERMISSION OF THE ENGINEERING DEPARTMENT.
- DROP INLET COVER (BASS & HAYS 226) LID SHALL BE ATTACHED WITH A CHAIN EMBEDDED OR ANCHORED IN CONCRETE.
- PRE-CAST INLETS OR MANHOLES WILL NOT BE PERMITTED FOR PUBLIC USE.
- ALL DROP INLETS SHALL HAVE APRON.



SECTION D - D  
N.T.S.

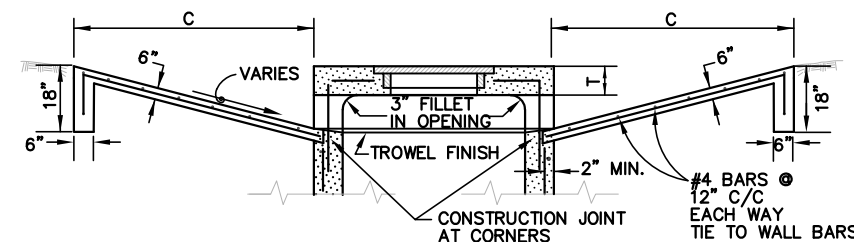
DIMENSIONS FOR DROP INLET				
INLET SIZE	A	B	C	T
2' X 2'	36"	24"	2'	6"
3' X 3'	48"	36"	3'	6"
4' X 4'	60"	48"	4'	6"



PLAN

DROP INLET  
N.T.S.

NOTE:  
ALL REINFORCING IN TOP  
TO BE #5 BARS @ 6"  
CENTERS



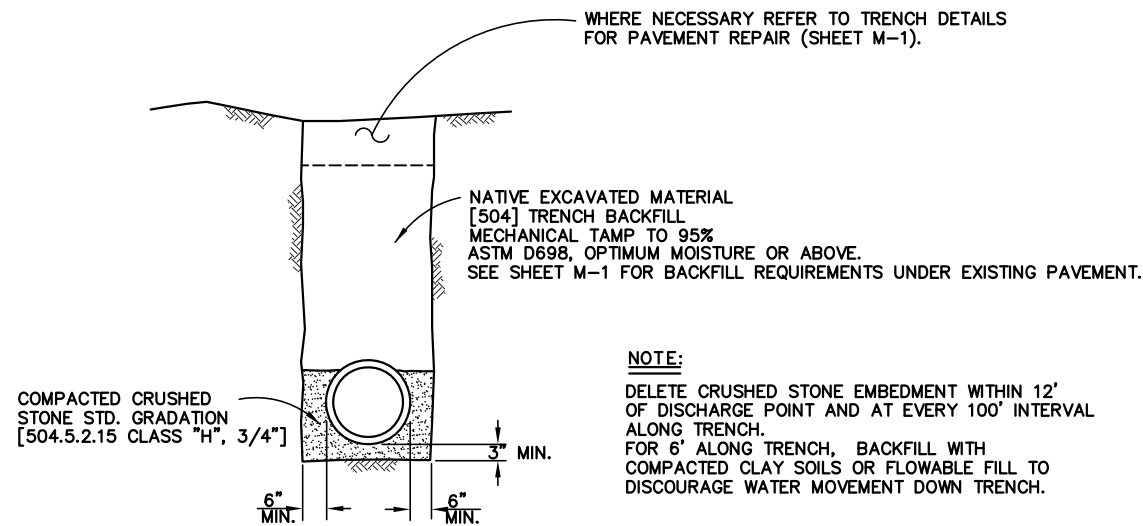
DROP INLET APRON

N.T.S.

\* CHAMFER ALL EXPOSED EDGES 3/4"

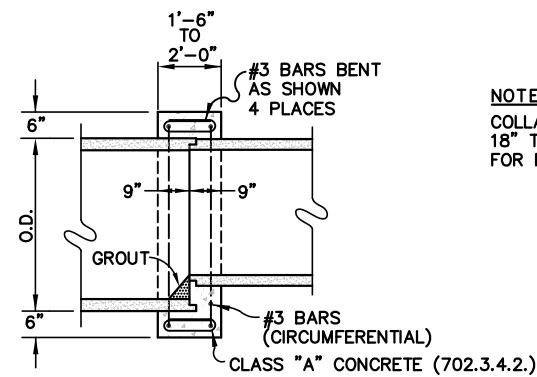
\* WARP APRON TO MATCH FLOWLINES OF INCOMING DITCHES

MANHOLE AND DROP INLET DETAILS		
CITY OF MANSFIELD		
STANDARD CONSTRUCTION DETAILS		
STORM DRAIN	DATE: APR. 2021	SHEET NO. SD-2



## STORM DRAIN PIPE EMBEDMENT DETAIL

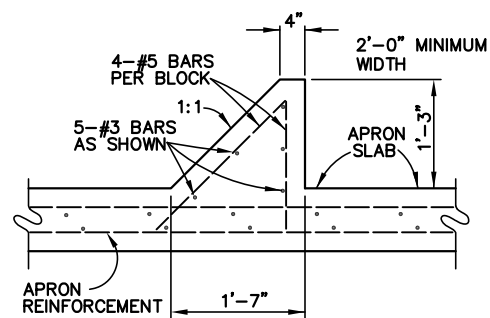
N.T.S.



**NOTE:**  
COLLAR WIDTH TO BE MIN. 18" FOR PIPE SIZES 18" TO 30". COLLAR WIDTH TO BE MIN. 24" FOR PIPE SIZES 33" & LARGER.

## CONCRETE COLLAR DETAIL

N.T.S.



## BAFFLE DETAIL AT CULVERT OUTLET

N.T.S.

## GENERAL NOTES:

1. ALL PUBLIC STORM DRAIN SHALL BE MINIMUM CLASS III RCP.
2. CULVERT PIPES FOR DRIVES MAY BE EITHER RCP OR HDPE.
3. BOX CULVERTS TO BE AS DESIGNED PER CONSTRUCTION PLANS AND SPECIFICATIONS.

TRENCH, COLLAR & MISC. DETAILS

CITY OF MANSFIELD  
STANDARD CONSTRUCTION DETAILS

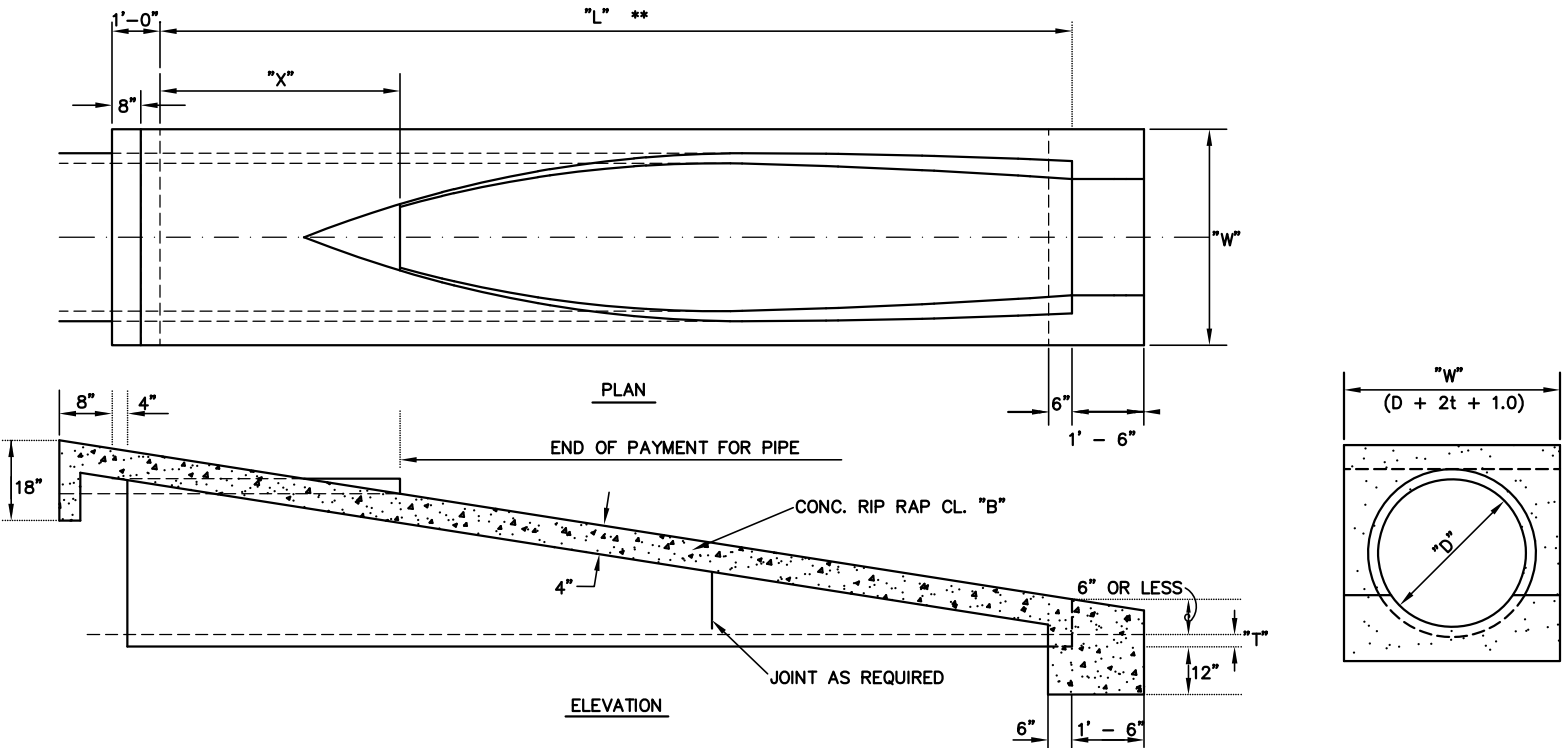
STORM DRAIN	DATE: APR. 2021	SHEET NO. SD-3
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GENERAL NOTES:

- 1. ALL CONCRETE SHALL BE CLASS "C" (6 SACK, 3600 PSI) (702.3.4.2).  
AGGREGATE SHALL BE 100% CRUSHED ANGULAR STONE (1" MAX.). ALL CONCRET PLACED  
SHALL CONTAIN SUFFICIENT AIR ENTRAINING AGENT TO YIELD 5% AIR CONTENT.  
ALL OTHER AD MIXTURES SHALL REQUIRE THE PERMISSION OF THE ENGINEERING DEPARTMENT.
- 2. 3:1 SLOPE IS TYPICAL.

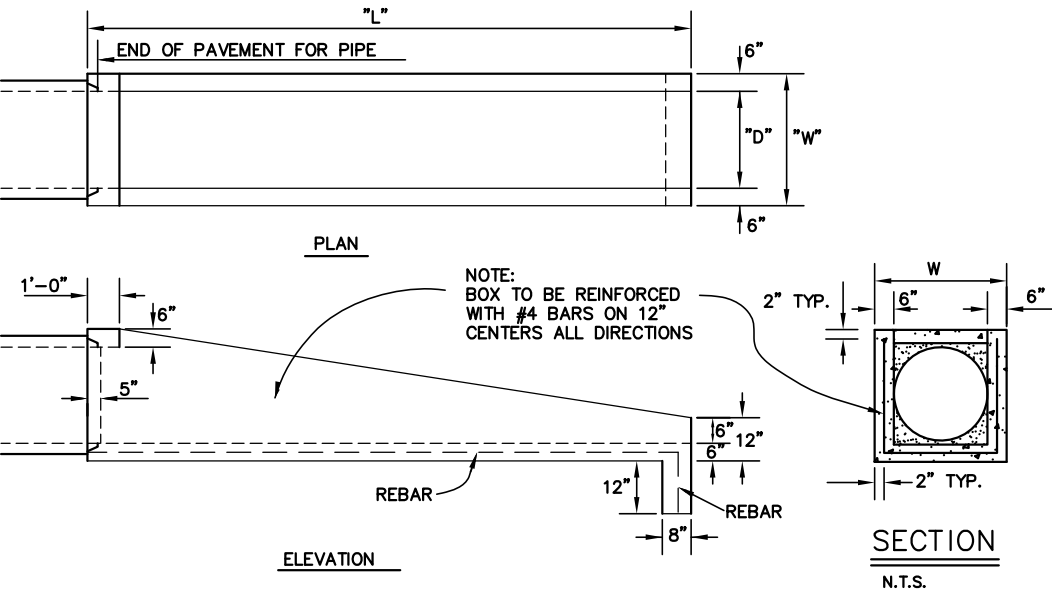
\*\* BASED ON 6" DROP AT END OF PIPE.



SLOPED CONCRETE PIPE

N.T.S.  
OPTION ONE

"D"	SLOPE	"T" *	"W" (MIN.)	"L"	"X"
18"	3:1	2'-1/4"	2' 10-1/2"	5' 3-3/4"	1' - 9"
18"	4:1	2'-1/4"	2' 10-1/2"	7' - 9"	3' - 0"
18"	6:1	2'-1/4"	2' 10-1/2"	10' 1-1/2"	3' - 0"
21"	3:1	2'-1/2"	3' - 2"	5' - 9"	1' 4-1/2"
21"	4:1	2'-1/2"	3' - 2"	8' - 4"	2' - 6"
21"	6:1	2'-1/2"	3' - 2"	11' - 0"	2' - 3"
24"	3:1	3"	3' - 6"	7' - 6"	3' - 0"
24"	4:1	3"	3' - 6"	8' - 0"	2' - 0"
24"	6:1	3"	3' - 6"	12' - 0"	3' - 0"
27"	3:1	3'-1/4"	3' 9-1/2"	7' 10-1/2"	2' 7-1/2"
27"	4:1	3'-1/4"	3' 9-1/2"	10' - 0"	3' - 0"
27"	6:1	3'-1/4"	3' 9-1/2"	15' - 0"	4' - 6"
30"	3:1	3'-1/2"	4' - 1"	8' - 3"	2' - 3"
30"	4:1	3'-1/2"	4' - 1"	10' - 6"	2' - 6"
30"	6:1	3'-1/2"	4' - 1"	15' - 9"	3' - 9"



SLOPED CONCRETE BOX

N.T.S.  
OPTION TWO

"D"	SLOPE	"W"	"L"
18"	3:1	2'-6"	4'6-3/4"
18"	4:1	2'-6"	5'-9"
18"	6:1	2'-6"	8'1-1/2"
21"	3:1	2'-9"	5'4-1/2"
21"	4:1	2'-9"	6'-10"
21"	6:1	2'-9"	9'-9"
24"	3:1	3'-0"	6'-3"
24"	4:1	3'-0"	8'-0"
24"	6:1	3'-0"	11'-6"
27"	3:1	3'-3"	7'0-3/4"
27"	4:1	3'-3"	9'-1"
27"	6:1	3'-3"	13'1-1/2"
30"	3:1	3'-6"	7'10-1/2"
30"	4:1	3'-6"	10'-2"
30"	6:1	3'-6"	14'-9"

TYPE "P" HEADWALLS

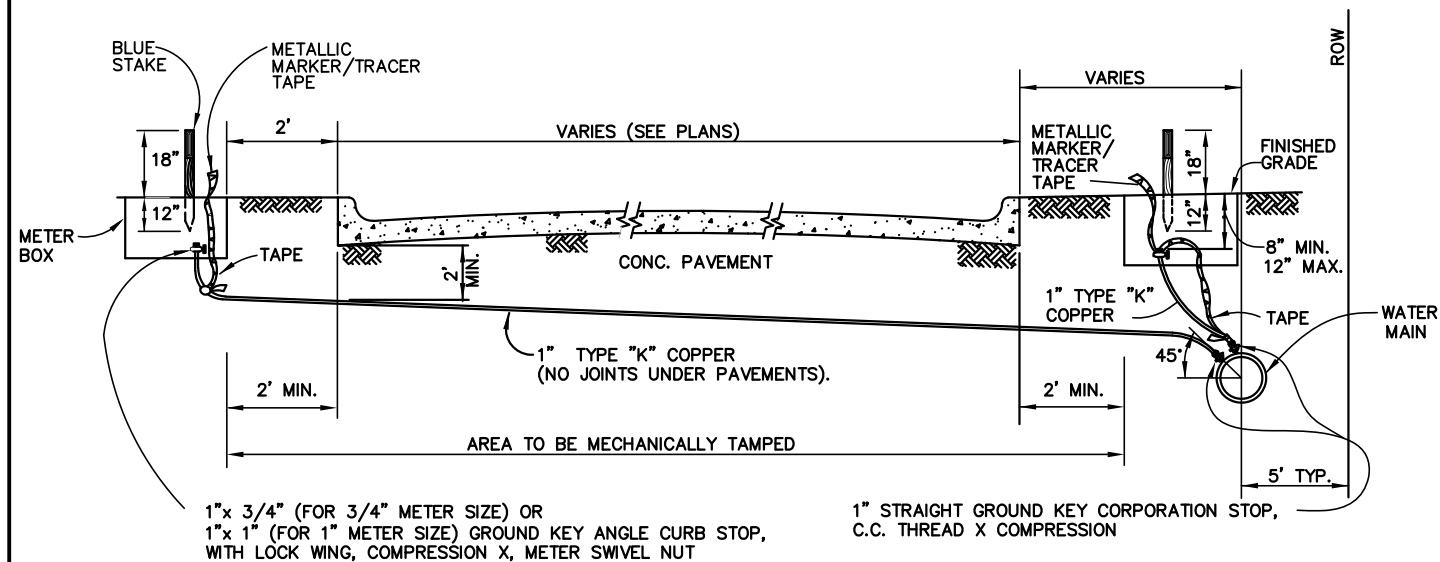
CITY OF MANSFIELD

STANDARD CONSTRUCTION DETAILS

STORM DRAIN

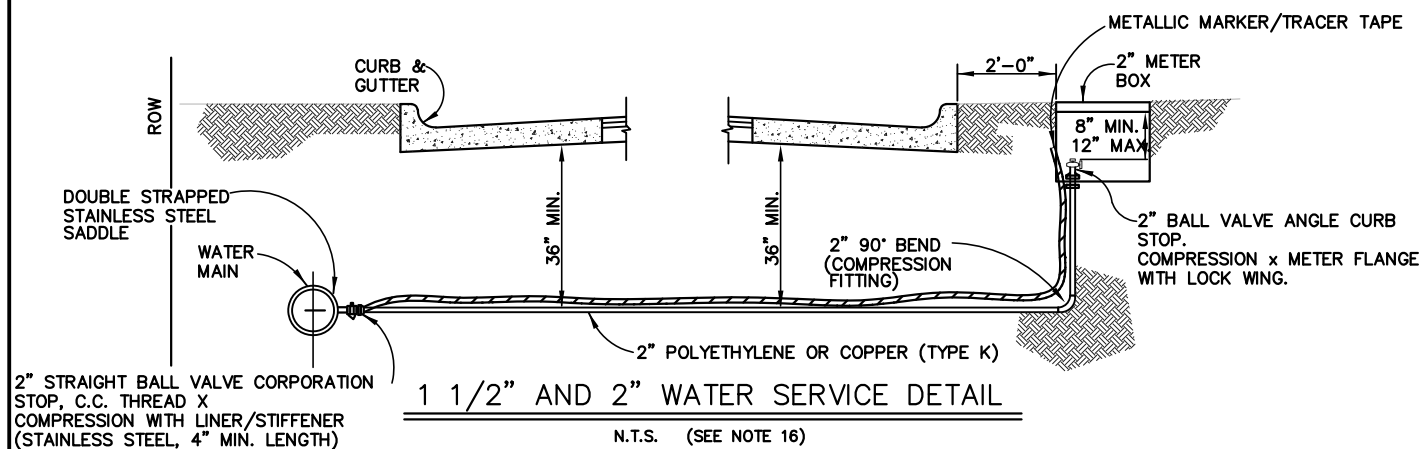
DATE:  
APR. 2021

SHEET NO.  
SD-5



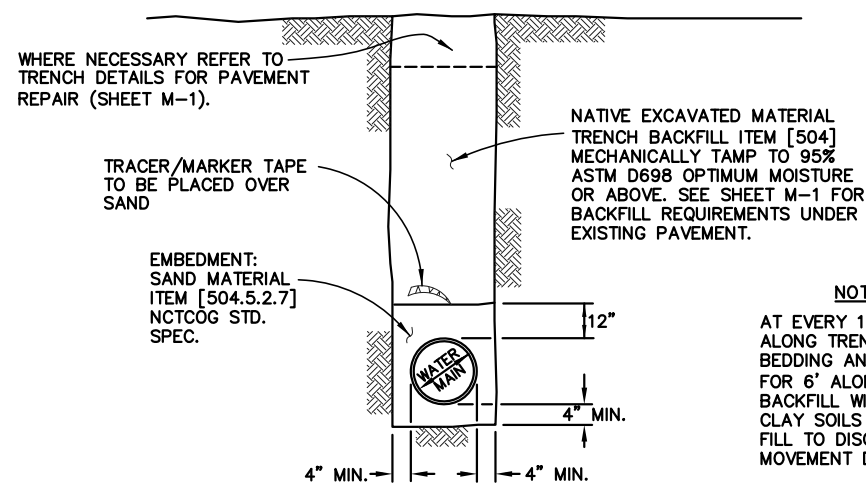
### 3/4" AND 1" WATER SERVICE DETAIL

N.T.S. (SEE NOTE 15)



### 1 1/2" AND 2" WATER SERVICE DETAIL

N.T.S. (SEE NOTE 16)

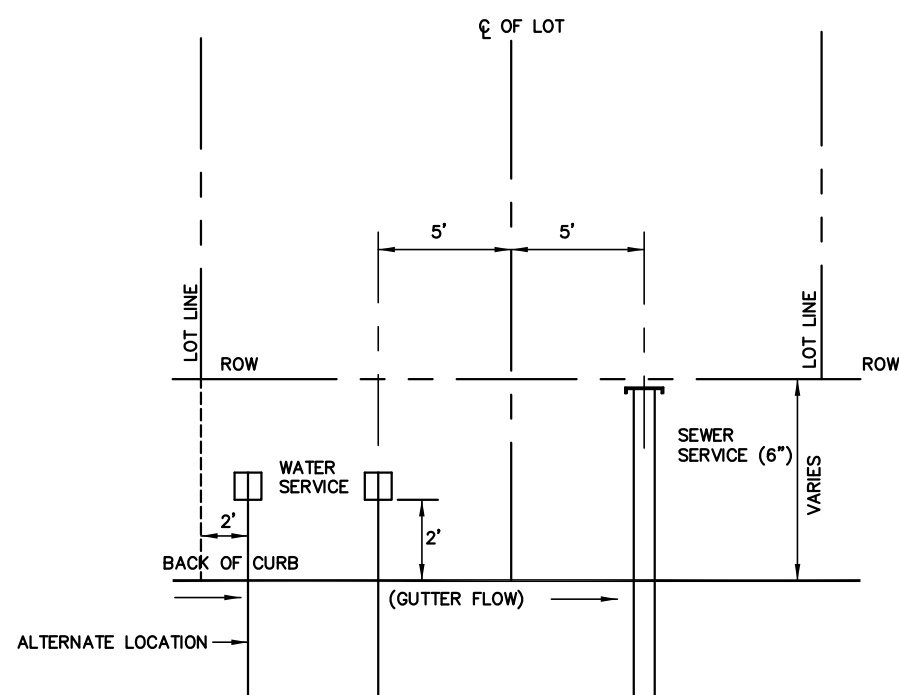


### WATER MAIN PIPE TYPICAL EMBEDMENT DETAIL

N.T.S.

### GENERAL NOTES:

- ALL CONSTRUCTION MATERIALS, METHODS, AND PLACEMENTS NOT DETAILED BELOW SHALL MEET OR EXCEED THE STANDARD SPECIFICATIONS OF THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS, 5TH EDITION, UNLESS SUPERSEDED BY CITY OF MANSFIELD STANDARD SPECIFICATIONS OR MATERIAL TESTING POLICIES.
- ALL WATER MAINS TO BE P.V.C. AWWA C-900, CLASS 150, DR-18 INSTALLED W/METALLIC MARKER TAPE LABELED "WATERLINE BELOW".
- BEVELED END OF PIPE WILL BE REMOVED WHEN USED IN MJ FITTING.
- ALL FITTINGS TO BE MJ UNLESS OTHERWISE NOTED. ALL VERTICAL BENDS TO BE RESTRAINED W/RETAINER GLANDS. HORIZONTAL BENDS OR FITTINGS TO BE RESTRAINED AS NEEDED PER ENGINEER/INSPECTOR.
- ALL 10" AND SMALLER WATER MAINS WILL BE HELD TO A MINIMUM COVER OF 42" UNLESS OTHERWISE BE SET BY THE ENGINEERING DEPARTMENT. 12" MAINS AND LARGER SHALL FOLLOW PLAN GRADE & PROFILE OF APPROVED CONSTRUCTION PLAN.
- SERVICE LOCATION SHALL BE STAKED BY SURVEYOR PRIOR TO THE INSTALLATION OF ANY WATER SERVICES, SEWER SERVICES, AND/OR METER BOXES.
- STORAGE: P.V.C. WATER PIPE IS ALLOWED TO BE STORED A MAXIMUM OF SIX (6) MONTHS WITHOUT COVER. THEREAFTER ALL PIPES SHOULD BE COVERED OR KEPT AWAY FROM SUN LIGHT AND PROTECTED FROM OTHER ELEMENTS.
- ALL IRON FITTINGS, INCLUDING FIRE HYDRANTS AND VALVES, SHALL BE POLY WRAPPED.
- EPOXY COATED TAPPING SADDLES SHALL BE USED. ALL SADDLES WILL HAVE DOUBLE STAINLESS STEEL STRAP. GASKET ON SADDLE TO BE FLAT, NO O-RINGS WILL BE PERMITTED. O.D. OF SADDLE SHALL NOT BE LARGER THAN O.D. OF PIPE. SADDLE MUST BE POLY-WRAPPED.
- ALL TAPS LARGER THAN 2" WILL BE MADE USING TAPPING SLEEVES, NOT SADDLES.
- TAPS WILL BE A MINIMUM OF 2' APART WITH TAPS NO CLOSER THAN 1' TO END OF PIPE. CUTTER FOR TAPS TO BE DOUBLE SLOTTED TYPE.
- IT IS THE RESPONSIBILITY OF THE DEVELOPER TO FURNISH AND INSTALL METER BOXES AS APPROVED BY THE ENGINEERING DEPARTMENT.
- METER BOXES WILL NOT BE PERMITTED IN DRIVEWAYS OR SIDEWALKS EXCEPT FOR COMMERCIAL BUILDING METERS AS APPROVED BY ENGINEERING DEPARTMENT. WHEN METER IS ALLOWED IN CONCRETE A TRAFFIC RATED BOX SHALL BE USED AND BOLLARDS TO BE PLACED AROUND METER FOR PROTECTION WHERE DIRECTED BY ENGINEER.
- METER BOXES SHALL HAVE A 2' MIN. SPACING FROM CURBS, DRIVEWAYS, MAIL BOXES, ETC.
- ALL 3/4" WATER SERVICES SHALL BE MADE BY USING 1" CORPORATION STOP, 1" SADDLE, 1" COPPER, AND 1" x 3/4" ANGLE CURB STOP.
- 1 1/2" WATER SERVICES SHALL BE MADE BY USING ALL 2" PARTS. THE 1 1/2" METER WILL BE SET ON A 2" ANGLE CURB STOP.
- ALL TAPPING VALVES SHALL BE BLOCKED PRIOR TO MOUNTING TAPPING MACHINE.
- SIZE ON SIZE TAPS SHALL NOT BE PERMITTED ON AC PIPE.
- SEE SHEET MS-1 AND MS-2 FOR APPROVED PARTS LIST.
- ALL WATER SERVICES SHALL HAVE NO JOINTS OR SPLICES UNDER PAVEMENT.



### SERVICE LOCATION DETAIL

N.T.S.

WATER SERVICE, GENERAL NOTES, & TRENCH DETAILS		
CITY OF MANSFIELD		
STANDARD CONSTRUCTION DETAILS		
WATER	DATE: APR. 2021	SHEET NO. W-1



1. MARKERS TO BE INSTALLED IN UNDEVELOPED AREAS OR AS INDICATED ON PLANS OR AS DIRECTED BY INSPECTOR.
2. MARKERS MUST BE PURCHASED FROM UTILITY DEPARTMENT. 817-728-3618.



- \* CLASS B (4 SACK, 2000 PSI)

1. THRUST BLOCKS SHALL BE PLACED OR FORMED IN SUCH POSITION THAT ALL BOLTS REMAIN ACCESSIBLE.
2. ALL BLOCKING SHALL BE PLACED AGAINST UNDISTURBED FIRM TRENCH WALL.
3. BLOCKING AREAS SHOWN ABOVE ARE BASED ON 150 PSI PIPE PRESSURE AND MINIMUM SOIL BEARING OF 2000#/S.F.
4. ALL FITTINGS TO BE MJ UNLESS OTHERWISE NOTED. ALL VERTICAL BENDS TO BE RESTRAINED W/RETAINER GLANDS. HORIZONTAL FITTINGS TO BE RESTRAINED AS NEEDED PER ENGINEER OR INSPECTOR.

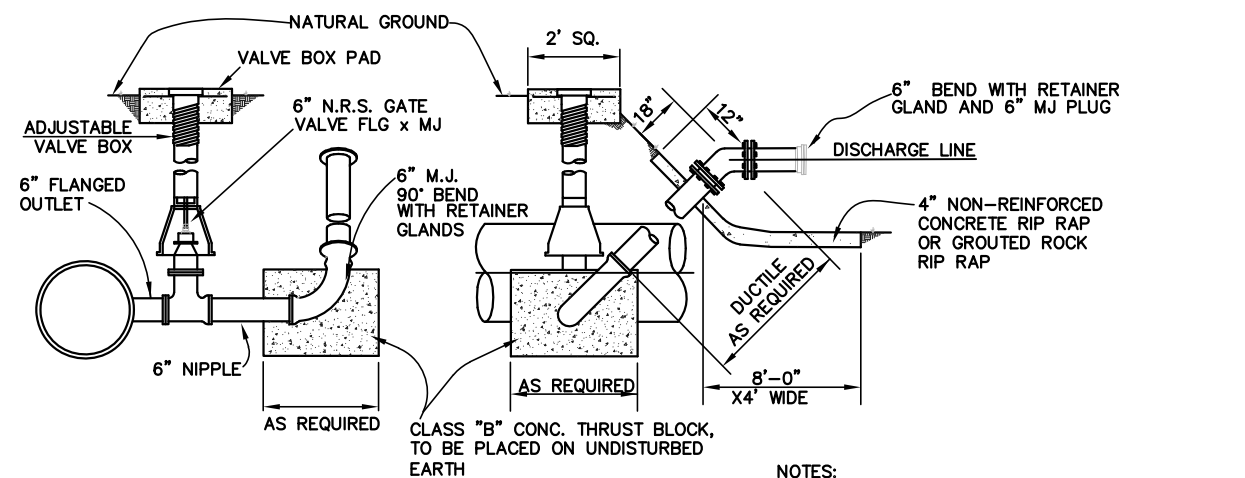


1. ALL VALVES TO BE RESILIENT SEAT GATE VALVES WITH NON-RIISING STEMS, COUNTER- CLOCKWISE OPENING.
2. VALVE STEM EXTENSIONS WITH ROCK GUARDS SHALL BE INSTALLED WHERE NECESSARY TO PLACE OPERATING NUT NOT MORE THAN 36" BELOW FINISHED GRADE. EXTENSIONS SHALL BE PAINTED OR COATED TO PREVENT RUST.
3. ALL VALVES SHALL HAVE CONCRETE PAD. (SEC. A-A)

N.T.S.

GATE VALVE, BLOCKING, MARKER, & LOWERING DETAILS		
CITY OF MANSFIELD STANDARD CONSTRUCTION DETAILS		
WATER	DATE: APR. 2021	SHEET NO. W-2

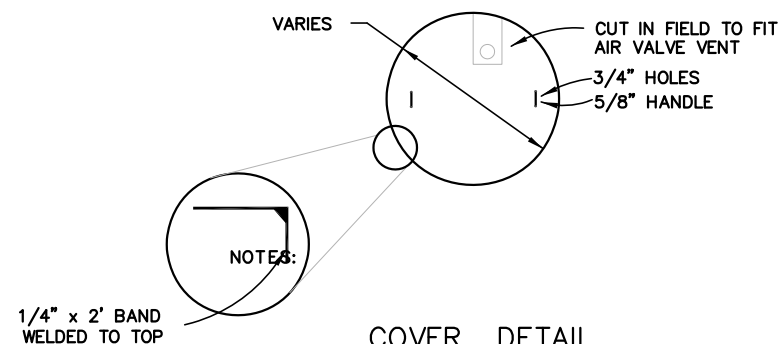




**BLOW OFF VALVE DETAIL**  
N.T.S.

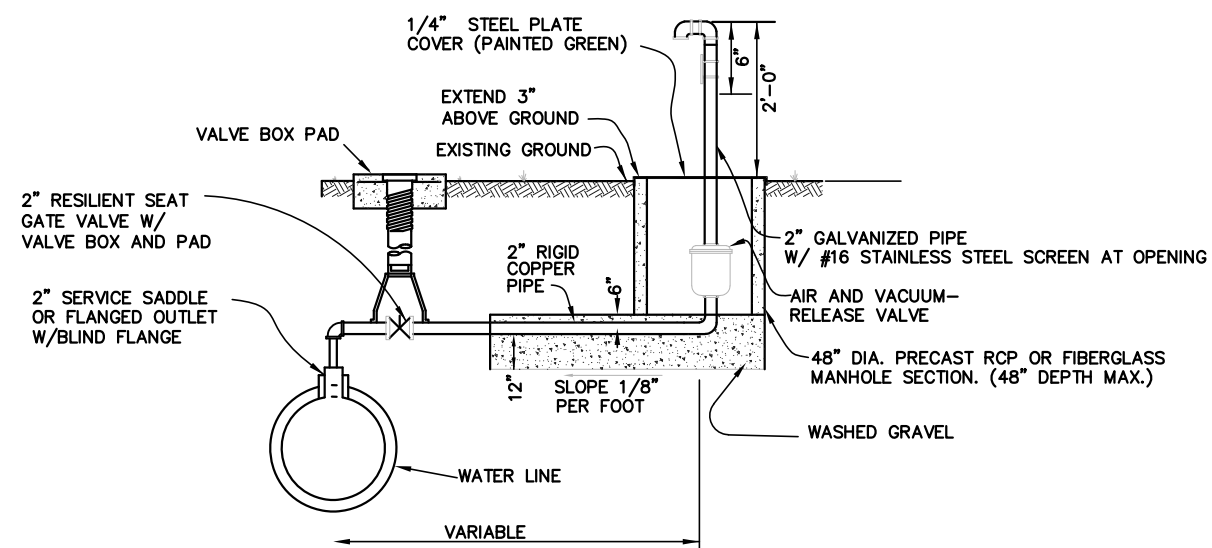
**NOTES:**

1. MUST BE DISCHARGED NEAR/TOWARD STORM SEWER, BRIDGE OR CULVERT.
2. USE APPROPRIATE BEND TO MAKE DISCHARGE END HORIZONTAL.
3. ALL FITTINGS SHALL BE RETAINED & DISCHARGE END SHALL BE CLOSED W/MJ PLUG.



**COVER DETAIL**  
N.T.S.

NOTE: COMBINATION AIR AND VACUUM RELEASE VALVES LARGER THAN 2" TO BE SPECIFIED IN CONSTRUCTION PLANS BY DESIGN ENGINEER.

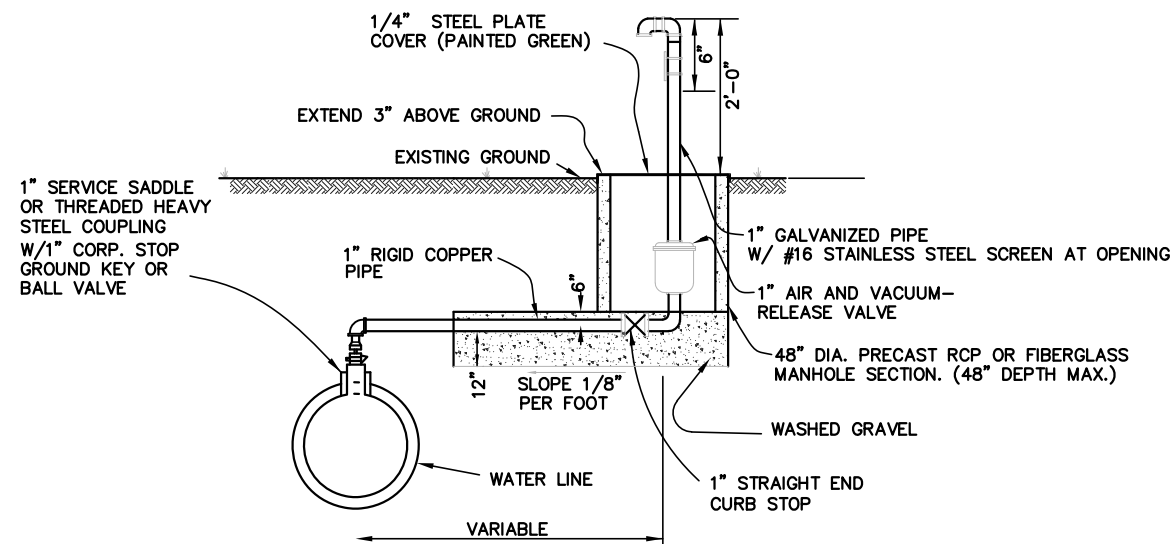


**NOTES:**

1. COMBINATION AIR AND VACUUM-AIR RELEASE VALVE A.R.I. - D040P OR AWWA APPROVED EQUAL.
2. USE OF OFFSET OR NON-OFFSET TO BE DETERMINED BY ENGINEER PER FIELD CONDITION.

**2" OFFSET AIR & VACUUM RELEASE VALVE INSTALLATION**

N.T.S.



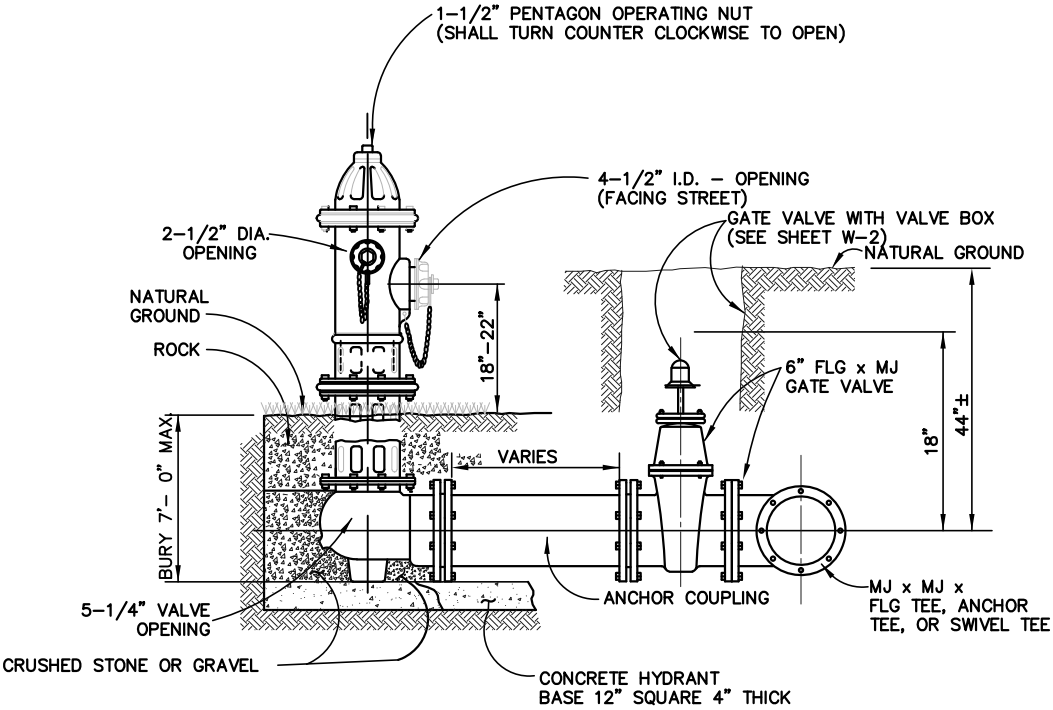
**NOTES:**

1. COMBINATION AIR AND VACUUM-AIR RELEASE VALVE A.R.I. - D040P OR AWWA APPROVED EQUAL.
2. USE OF OFFSET OR NON-OFFSET TO BE DETERMINED BY ENGINEER PER FIELD CONDITION.

**1" OFFSET AIR AND VACUUM RELEASE VALVE INSTALLATION**

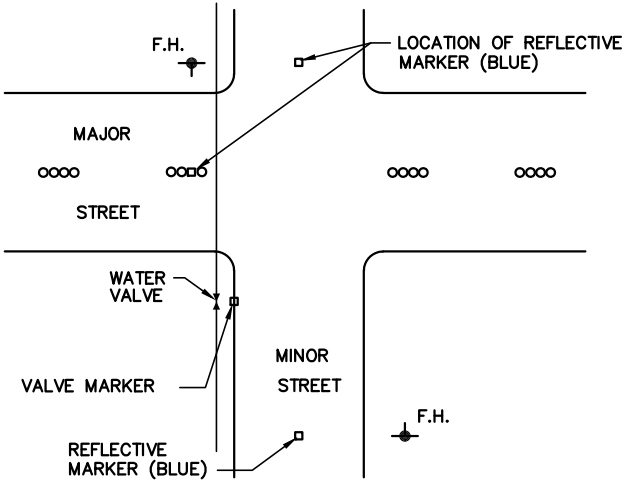
N.T.S.

BLOW OFF & AIR RELEASE VALVE DETAILS		
CITY OF MANSFIELD		
STANDARD CONSTRUCTION DETAILS		
WATER	DATE: APR. 2021	SHEET NO. W-3



STANDARD FIRE HYDRANT DETAIL

N.T.S.



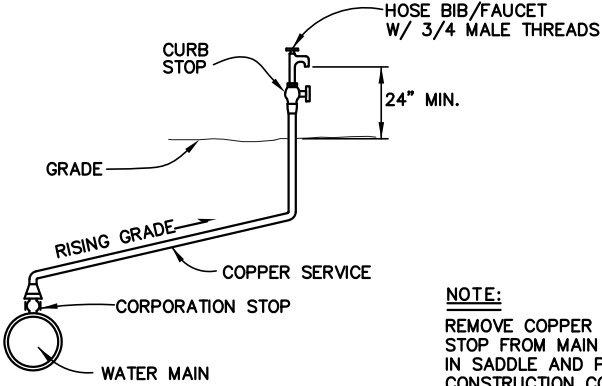
WATER APPURTENANCE MARKERS

NOTES:

1. EACH WATER SYSTEM VALVE LOCATED ADJACENT TO OR IN A CITY STREET FIRE LANE SHALL RECEIVE A MARKER PLACED ON THE CURB AS CLOSE AS POSSIBLE TO THE VALVE. VALVES TO BE MARKED BY SAWING A "V" IN FACE OF CURB ADJACENT TO VALVE BOX. VALVES NOT IN STREET MARKED WITH UPSIDE-DOWN "V".
2. EACH LOCATION OF A FIRE HYDRANT SHALL RECEIVE A BLUE REFLECTORIZED MARKER LOCATED IN THE CENTER OF ANY STREET TO WHICH IT IS ADJACENT (2 FOR HYDRANTS ON STREET CORNERS).
3. ALL BLUE FIRE HYDRANT MARKERS SHALL BE A CUBE CORNER TYPE REFLEX REFLECTOR MOLDED OF OPTIC GRADE PLASTIC, WITH A HOUSING OF HIGH IMPACT ABS PLASTIC, WITH A FILLER OF INERT THERMOSETTING RESINS. APEX UNIVERSAL, INC. TYPE: BB TWO WAY BLUE.

FIRE HYDRANT NOTES:

1. CENTER OF F.H. BARREL SHALL BE NOT LESS THAN 2.5' OR MORE THAN 3.5' FROM BACK OF CURB OR EDGE OF PAVEMENT, UNLESS OTHERWISE APPROVED BY THE ENGINEERING DEPARTMENT. HYDRANT TO BE LOCATED NO CLOSER THAN 3' FROM ANY OTHER OBJECTS, MEASURED FROM CENTER OF OPERATING NUT.
2. ON PRIVATE CONTRACTS, THE DEVELOPER'S ENGINEER WILL STAKE F.H. HORIZONTAL LOCATION AND FLANGE ELEVATION.
3. FIRE HYDRANTS SHALL BE INSTALLED PRIMED ONLY, PAINTED AFTER INSTALLATION. PRIMER COLOR "ALUMINUM".
4. FIRE HYDRANTS SHALL BE COATED WITH HYDRANT HYDE, FLYNT, OR TENEMEC BRAND PAINTS. THE COLOR SHALL BE ALUMINUM.
5. HYDRANT LEADS OR FIRE LINES IN EXCESS OF 200' REQUIRE DOUBLE-CHECK ASSEMBLY AT MAIN (SEE SHEET W-6).
6. ALL HYDRANT EXTENSIONS SHALL HAVE BREAKAWAY FLANGE AND STEM COUPLING. IF EXTENSIONS ARE USED, BREAKAWAY FLANGE MUST BE MOVED TO TOP.
7. BLOCKING OF FIRE HYDRANT SHALL BE REQUIRED FOR EXTENSIONS ACROSS STREETS FROM MAINS OF LEADS LONGER THAN ONE JOINT OF PIPE. LAST JOINT OF PIPE CONNECTING TO HYDRANT MUST BE A FULL JOINT.
8. LOWER BARREL ON FIRE HYDRANT SHALL NOT EXCEED 7'-0". IF NECESSARY, RETAINED BENDS MAY BE USED TO ACHIEVE GRADE NEEDED WITHOUT EXCEEDING 7'-0" LOWER BARREL HEIGHT. ALL PIPING TO BE DUCTILE IRON.
9. PIPE WITH RETAINER GLANDS WILL ONLY BE PERMITTED FOR LEADS THAT EXCEED 36".
10. HYDRANT BARREL TO BE POLY WRAPPED.

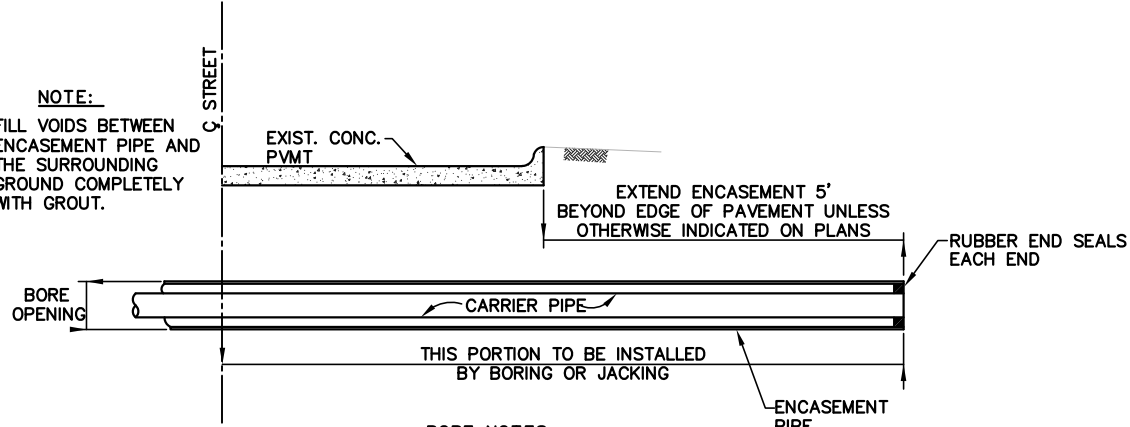


NOTE:

REMOVE COPPER AND CORPORATION STOP FROM MAIN AND INSTALL PLUG IN SADDLE AND POLY WRAP UPON CONSTRUCTION COMPLETION.

TEMPORARY FLUSH VALVE/SAMPLE POINT

N.T.S.



NOTE:

FILL VOIDS BETWEEN ENCASEMENT PIPE AND THE SURROUNDING GROUND COMPLETELY WITH GROUT.

BORE NOTES:

1. ALL BORES SHALL BE CASED. (TYP. 2 NOMINAL SIZES LARGER THAN CARRIER).
2. CASING PIPE SHALL BE COATED INSIDE AND OUTSIDE WITH BITUMINOUS COATING.
3. VOIDS OUTSIDE OF CASING PIPES SHALL BE GROUT FILLED.
4. SEE SHEET MS-2 FOR APPROVED SPACERS.
5. SPACERS TO BE INSTALLED PER MANUFACTURER'S SPECIFICATION.
6. MINIMUM CASING THICKNESS 3/16".

BORE DETAIL

N.T.S.

FIRE HYDRANT, TEMPORARY  
FLUSH VALVE, & BORE DETAILS  
CITY OF MANSFIELD  
STANDARD CONSTRUCTION DETAILS

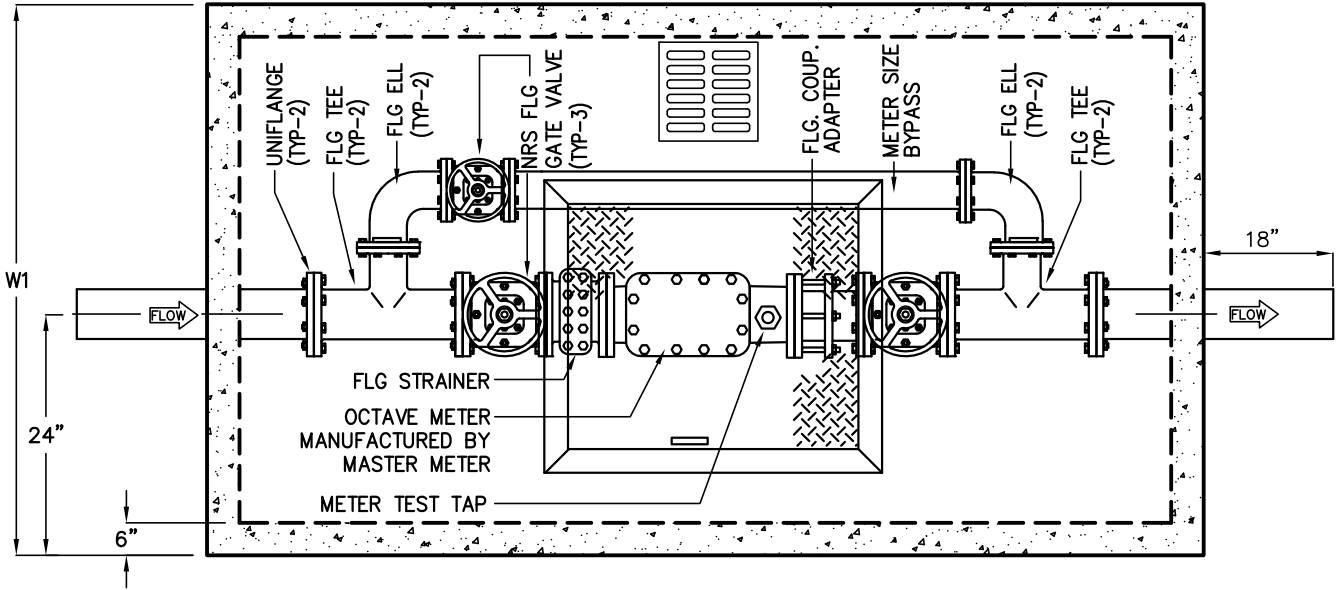
WATER

DATE:  
APR. 2021

SHEET NO.  
W-4

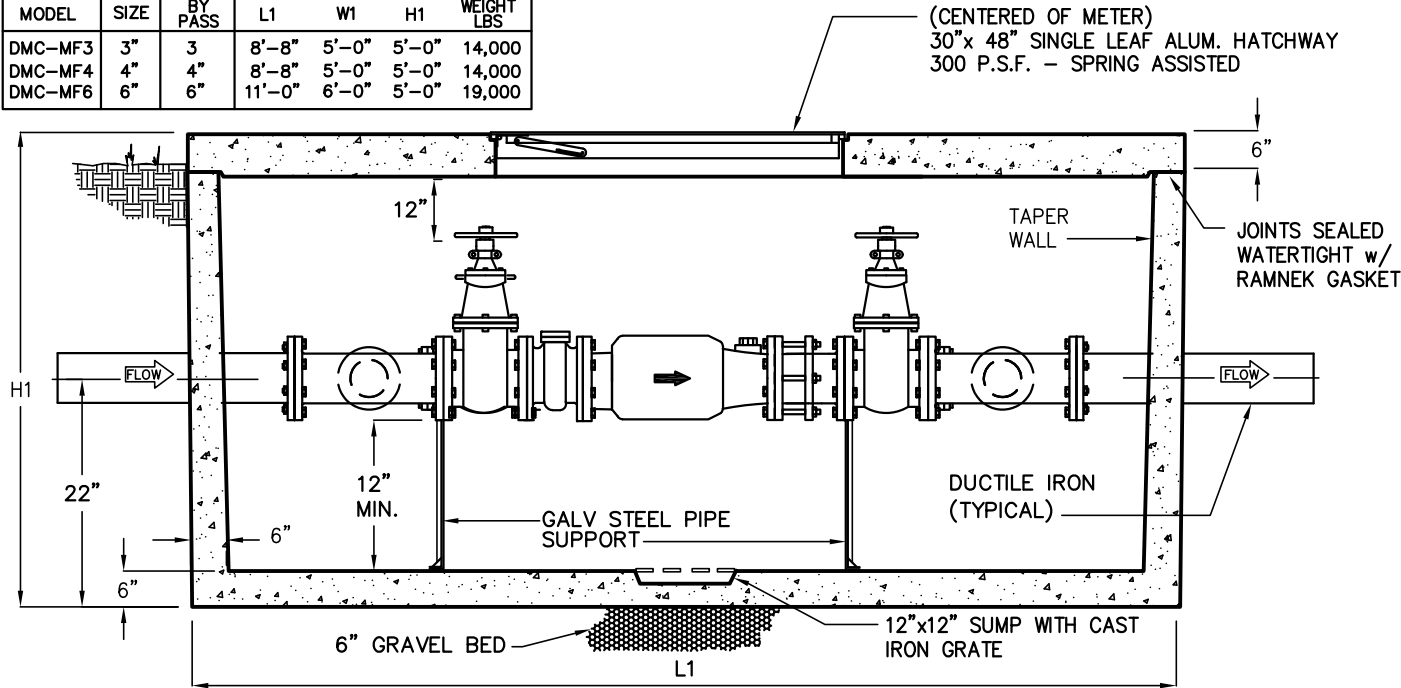
GENERAL NOTES:

1. ALL VAULTS W/METER OR BACKFLOW PREVENTERS SHALL BE PRECAST AND DELIVERED WITH ALL INTERNAL PIPING AND PARTS COMPLETE. METER AND BACKFLOW PREVENTER TO BE IN SEPARATE VAULTS.
2. ALL PIPES MUST BE DUCTILE IRON & ALL FITTINGS MUST BE FLANGED IN VAULT.
3. CONCRETE SHALL BE CLASS "F" WITH DESIGN STRENGTH OF 4200 PSI @ 28 DAYS (702.3.4.2). UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH.
4. GRADE 60 REINFORCED, STEEL REBAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.
5. 1/4"ALUMINUM DIAMOND PLATE COVER WITH EXTRUDED ALUMINUM FRAME. HATCH TO BE FURNISHED WITH 316 STAINLESS STEEL SNAP LOCK & STAINLESS HINGES TO BE CENTERED OVER METER.
6. MODEL NUMBER IS FOR PARK EQUIPMENT COMPANY, MODEL IS DMC-MF. UNITS BY OTHER MANUFACTURERS MUST BE SUBMITTED TO BE APPROVED AS EQUALS.



PLAN VIEW

DIMENSIONS						
MODEL	SIZE	BY PASS	L1	W1	H1	WEIGHT LBS
DMC-MF3	3"	3	8'-8"	5'-0"	5'-0"	14,000
DMC-MF4	4"	4"	8'-8"	5'-0"	5'-0"	14,000
DMC-MF6	6"	6"	11'-0"	6'-0"	5'-0"	19,000



ELEVATION

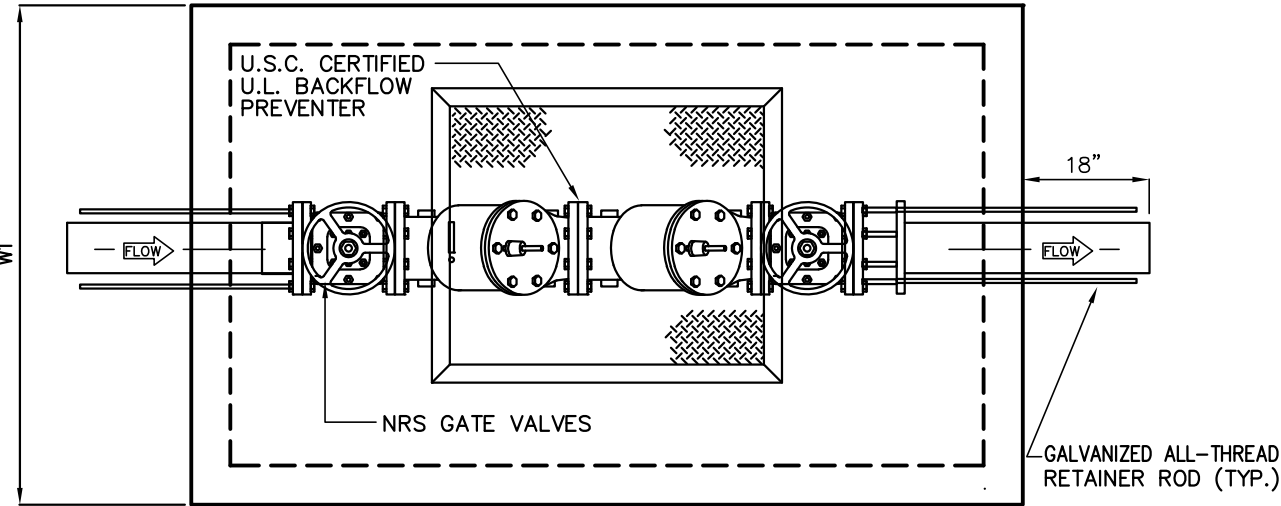
APPROVED GATE VALVES:  
MUELLER, KENNEDY, CLOW  
WATEROUS, M & H

3", 4", & 6" DOMESTIC METER

3" & LARGER WATER SERVICE DETAILS		
CITY OF MANSFIELD STANDARD CONSTRUCTION DETAILS		
WATER	DATE: APR. 2021	SHEET NO. W-5

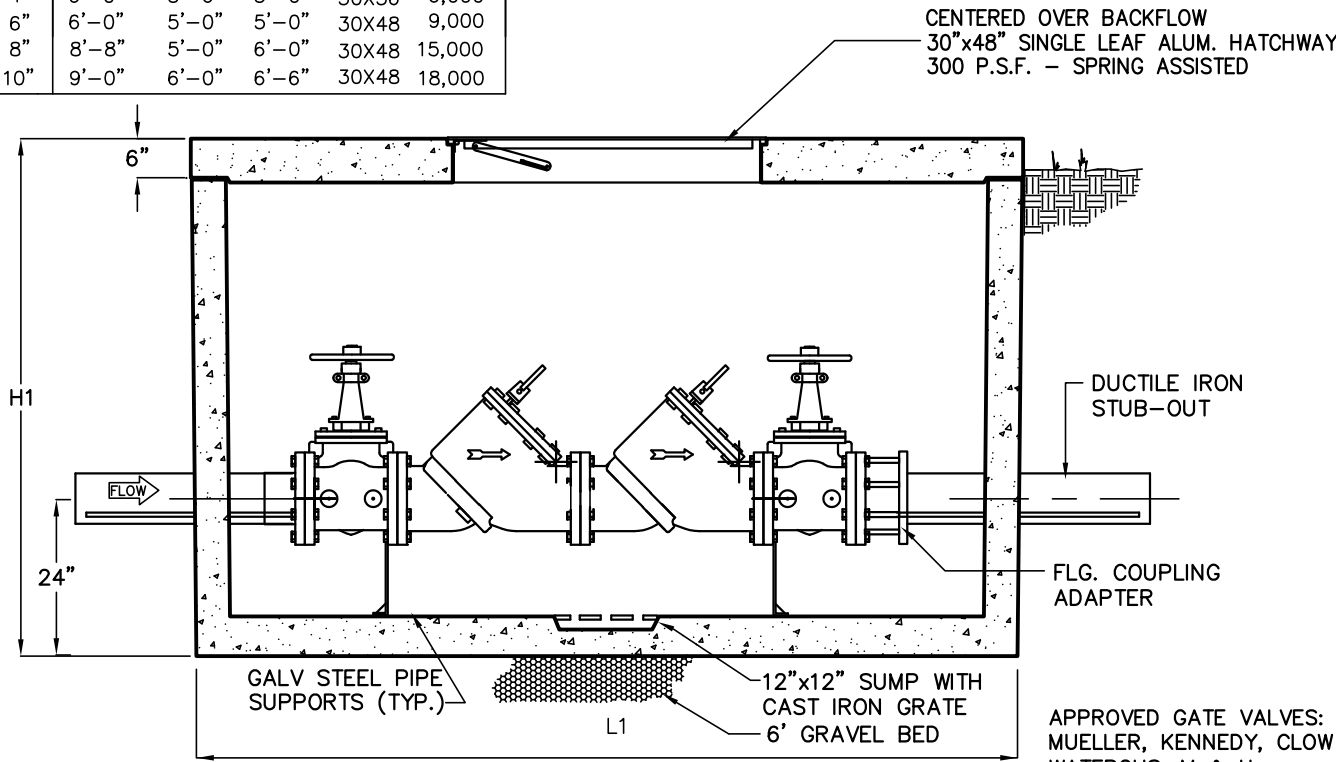
GENERAL NOTES:

1. ALL BACKFLOW PREVENTER VAULTS SHALL BE PRECAST AND DELIVERED WITH ALL INTERNAL PIPING AND PARTS COMPLETE.
2. ALL PIPE MUST BE DUCTILE IRON & ALL FITTINGS MUST BE FLANGED IN VAULT.
3. CONCRETE SHALL BE CLASS "F" WITH DESIGN STRENGTH OF 4200 PSI @ 28 DAYS (702.3.4.2). UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH.
4. GRADE 60 REINFORCED, STEEL REBAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL.
5. 1/4" ALUMINUM DIAMOND PLATE COVER WITH EXTRUDED ALUMINUM FRAME. HATCH TO BE FURNISHED WITH 316 STAINLESS STEEL SNAP LOCK & STAINLESS HINGES.
6. BACKFLOW ASSEMBLY SHALL BE FACTORY ASSEMBLED IN VAULT & HYDROSTATICALLY TESTED PRIOR TO DELIVERY.
7. MODEL NUMBERS ARE FOR PARK EQUIPMENT COMPANY, MODELS ARE DDBP-MF (FIRE SERVICE) OR BP-M (DOMESTIC). UNITS BY OTHER MANUFACTURERS MUST BE SUBMITTED TO BE APPROVED AS EQUALS.



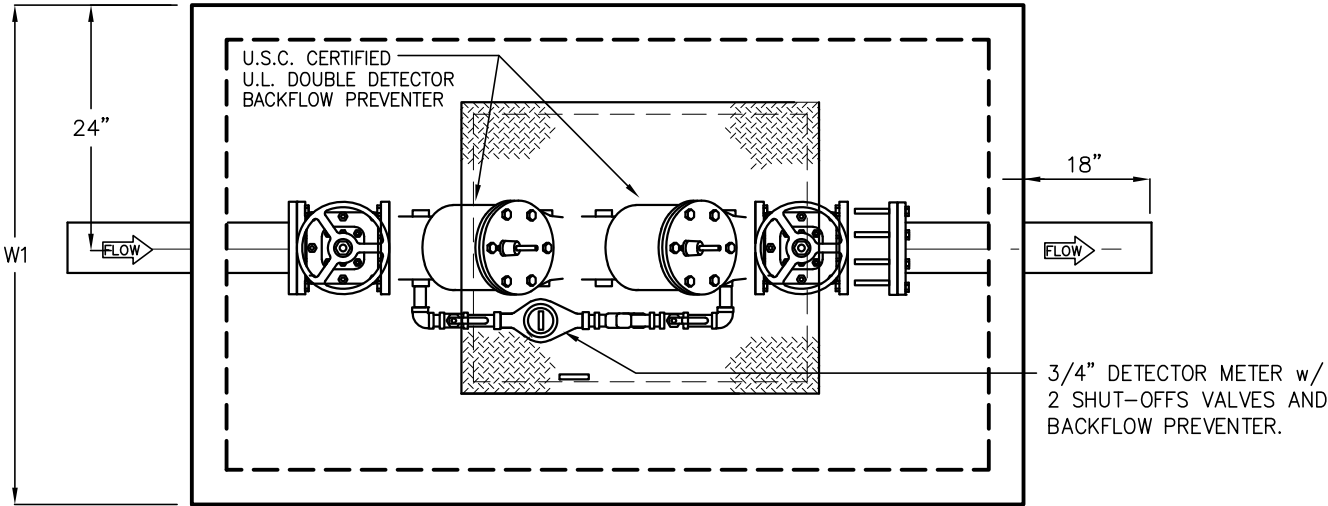
MODEL	SIZE	L1	W1	H1	ALUM. HATCH	WEIGHT LBS
BP-MF3	3"	6'-0"	3'-6"	5'-0"	30X36	6,000
BP-MF4	4"	6'-0"	3'-6"	5'-0"	30X36	6,000
BP-MF6	6"	6'-0"	5'-0"	5'-0"	30X48	9,000
BP-MF8	8"	8'-8"	5'-0"	6'-0"	30X48	15,000
BP-MF10	10"	9'-0"	6'-0"	6'-6"	30X48	18,000

PLAN VIEW



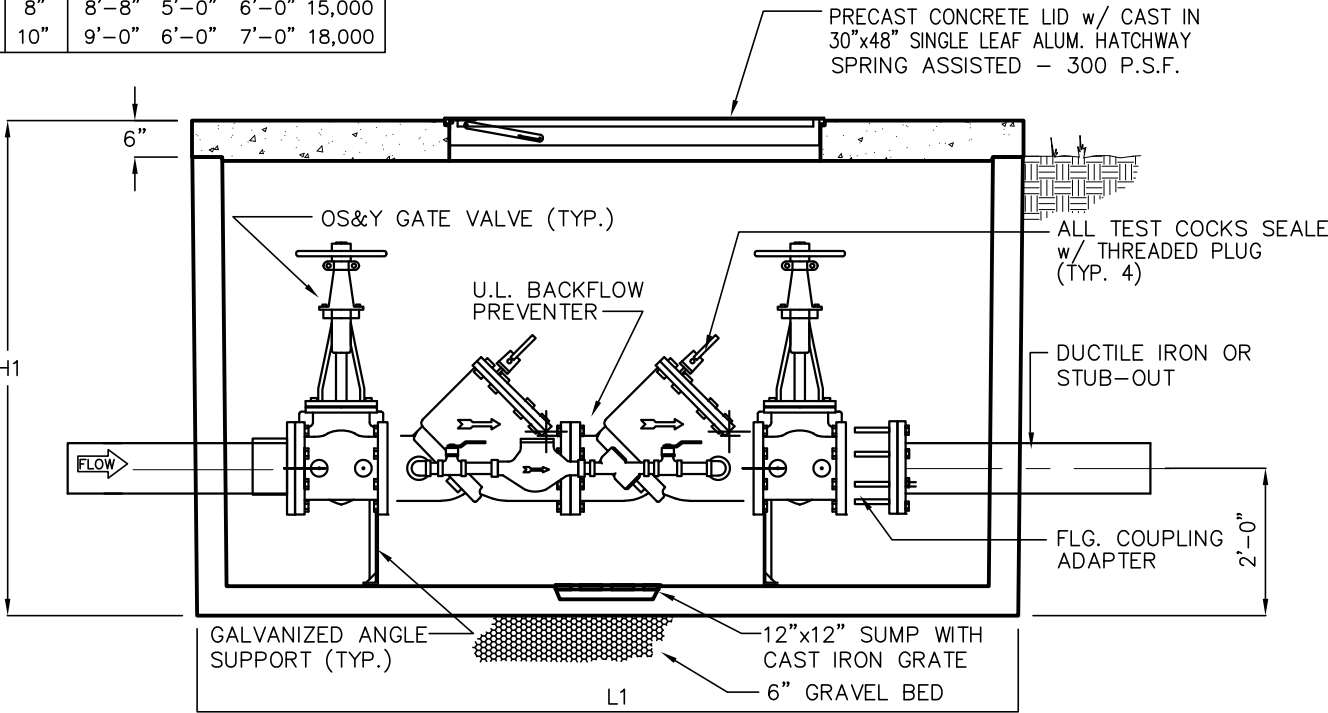
ELEVATION

DOMESTIC DOUBLE-CHECK ASSEMBLY



PLAN VIEW

MODEL	SIZE	L1	W1	H1	WEIGHT LBS
DDBP-MF4	4"	6'-0"	5'-0"	6'-0"	9,000
DDBP-MF6	6"	6'-0"	5'-0"	6'-0"	9,200
DDBP-MF8	8"	8'-8"	5'-0"	6'-0"	15,000
DDBP-MF10	10"	9'-0"	6'-0"	7'-0"	18,000



ELEVATION

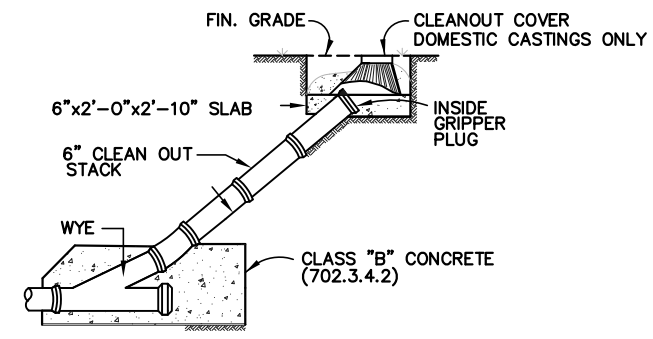
FIRE SERVICE DETECTOR  
DOUBLE-CHECK ASSEMBLY

3" & LARGER BACKFLOW  
PREVENTION DEVICE DETAILS  
CITY OF MANSFIELD  
STANDARD CONSTRUCTION DETAILS

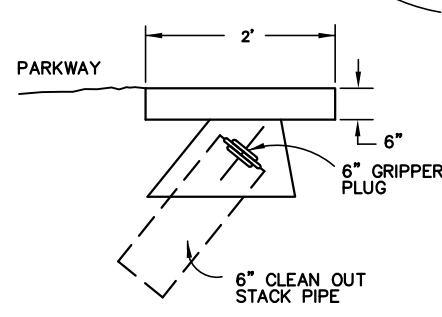
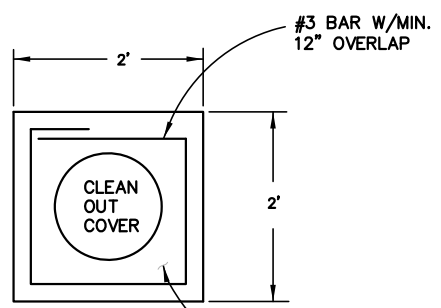
WATER

DATE:  
APR. 2021

SHEET NO.  
W-6

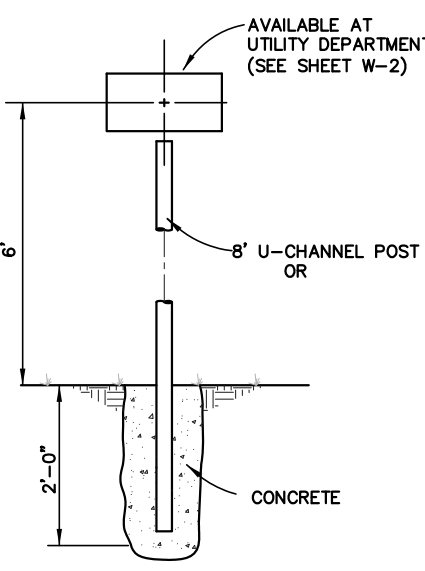


CLEAN - OUT  
N.T.S.

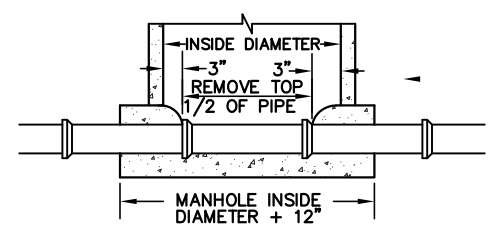


CLEANOUT COVER  
PAD DETAIL  
N.T.S.

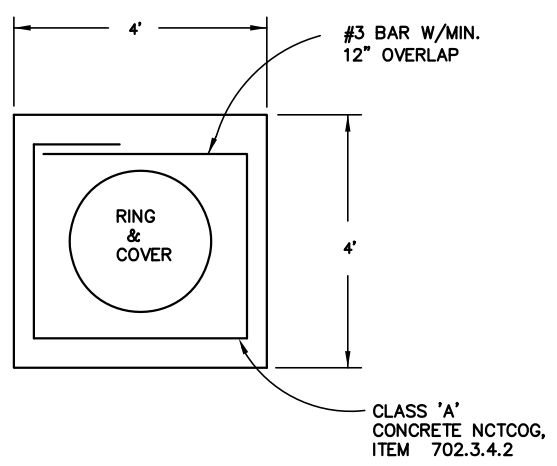
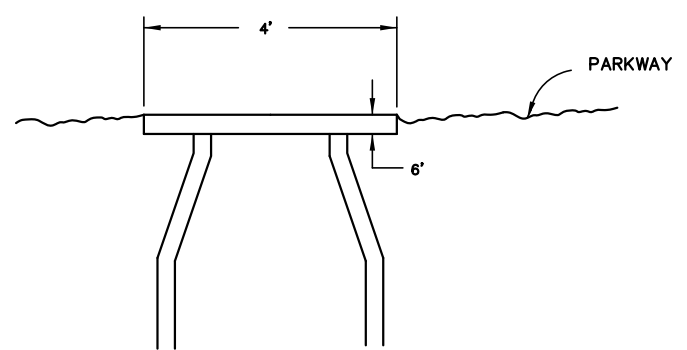
NOTE:  
THIS DETAIL FOR CLEAN  
OUTS NOT IN PAVEMENT.



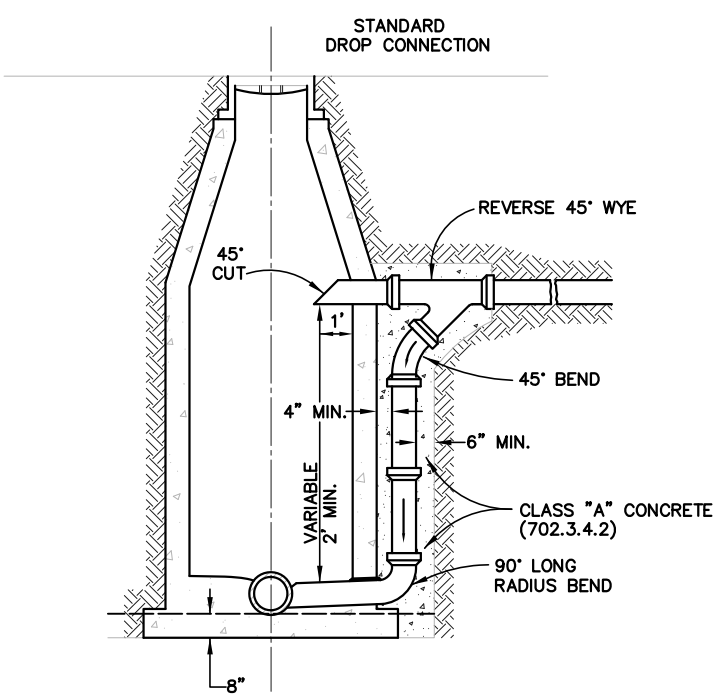
MANHOLE MARKER  
N.T.S.



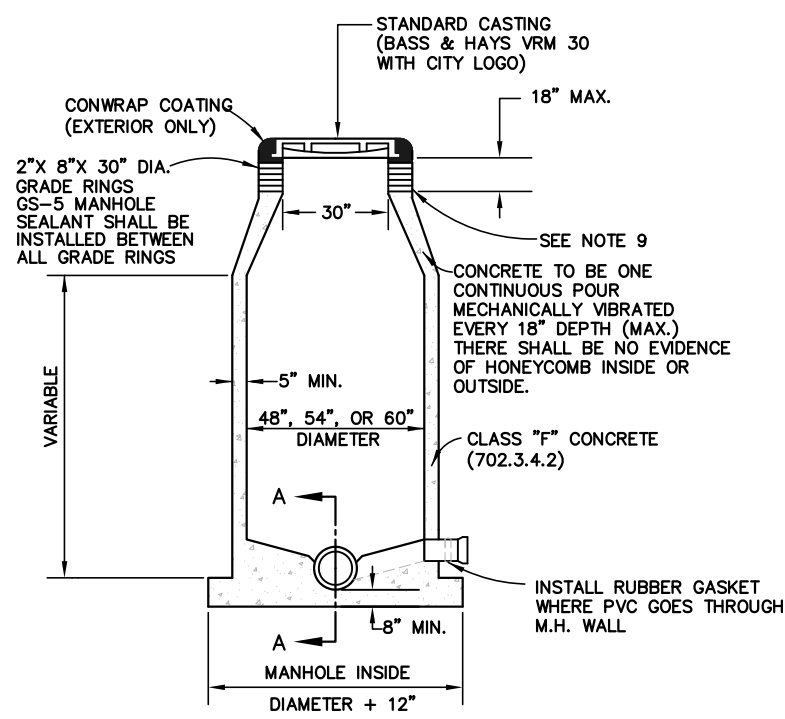
SECTION "A - A"  
N.T.S.



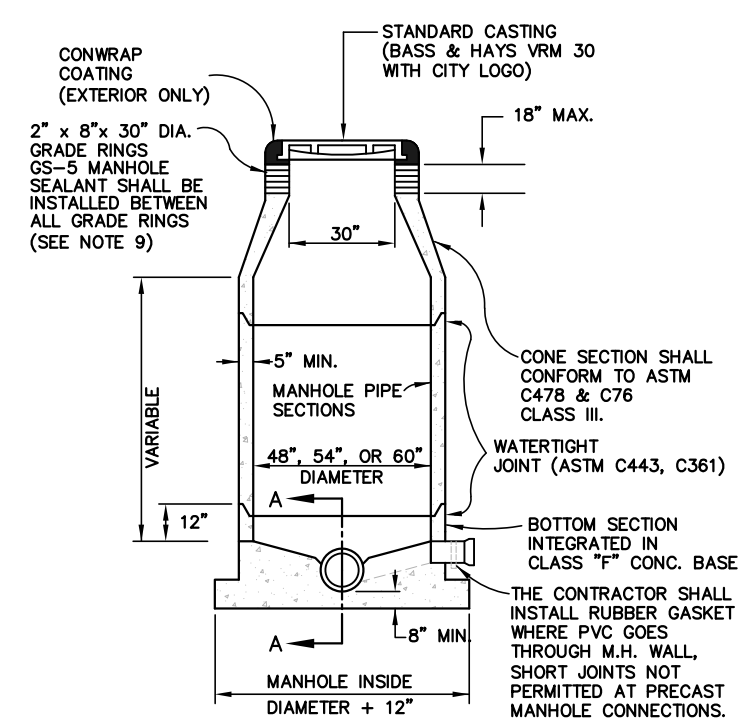
MANHOLE PAD DETAIL  
N.T.S.



DROP CONNECTIONS FOR  
SANITARY SEWER MANHOLE  
N.T.S.



CAST IN PLACE MANHOLE  
N.T.S.



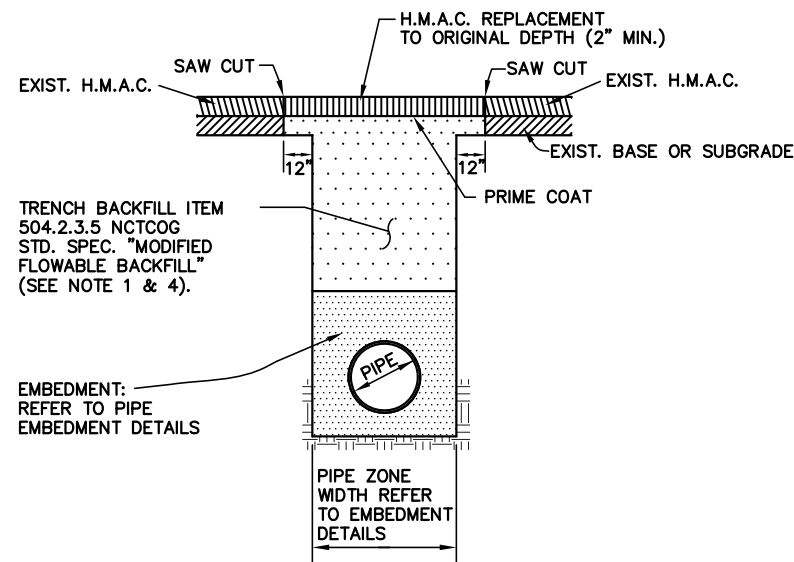
PRECAST CONCRETE MANHOLE  
N.T.S.

GENERAL NOTES:

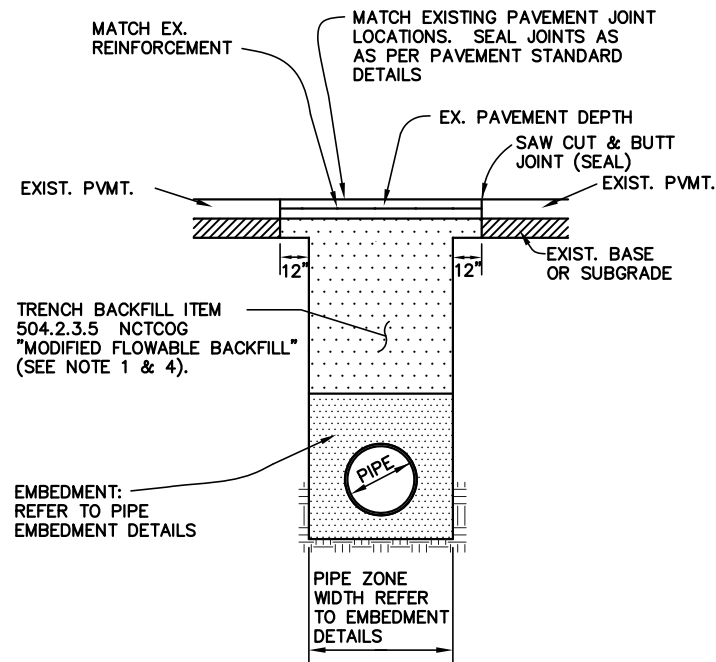
1. ALL CONSTRUCTION MATERIALS, METHODS AND PLACEMENT NOT DETAILED BELOW SHALL MEET OR EXCEED THE STANDARD SPECIFICATIONS OF THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS, 5TH EDITION UNLESS SUPERSEDED BY CITY OF MANSFIELD STANDARD SPECIFICATIONS OR MATERIAL TESTING POLICIES.
2. RING AND COVER SHALL BE DOMESTIC CASTING ONLY. (BASS & HAYS VRM 30 WITH CITY LOGO). CAST IN PLACE MANHOLE OR WEIGHTED DESIGNED CONE WITH BOLT-DOWN, WATER-TIGHT RING AND COVER TO BE USED IN FLOOD-PRONE AREA AND MUST BE ANCHORED INTO CONE.
3. MANHOLE MARKERS SHALL BE INSTALLED IN ALL UNDEVELOPED AREAS.
4. MANHOLES IN DEVELOPED AREAS THAT ARE NOT IN PAVEMENT SHALL HAVE A 4'x4'x6" CONCRETE PAD.
5. MANHOLES SHALL BE PLACED MONOLITHICALLY WITH STREET. IF A BLOCK OUT IS NEEDED INSPECTOR WILL PRE-APPROVE SIZE & SHAPE OF BLOCK OUT.
6. INVERTS FOR CAST-IN-PLACE MANHOLES SHALL BE MADE BY PLACING PIPE CONTINUOUSLY THROUGH MANHOLES AND CUTTING OUT THE TOP OF THE PIPE. A MINIMAL AMOUNT OF CONCRETE INVERT BETWEEN PIPE ENDS WILL BE PERMITTED.
7. CONCRETE FOR MANHOLES TO BE CLASS "F" (6.5 SACK, 4200 PSI) PER NCTCOG SPECIFICATIONS 702.3.4.2. ALL CONCRETE SHALL CONTAIN SUFFICIENT AIR ENTRAINING AGENT TO YIELD 5% AIR CONTENT.
8. INTERSECTING PIPES WITH FLOWLINE ELEVATION DIFFERENCES GREATER THAN 2' MUST USE DROP MANHOLE.
9. MANHOLE EXTERIOR JOINTS AND GRADE RINGS SHALL BE SEALED WITH CONSEAL-CONWRAP OR APPROVED EQUAL. MINIMUM WIDTH 12".

MANHOLE & CLEANOUT DETAILS		
CITY OF MANSFIELD STANDARD CONSTRUCTION DETAILS		
SANITARY SEWER	DATE: APR. 2021	SHEET NO. SS-1





**TYPICAL SECTION  
ASPHALT PAVEMENT REPAIR**  
N.T.S.

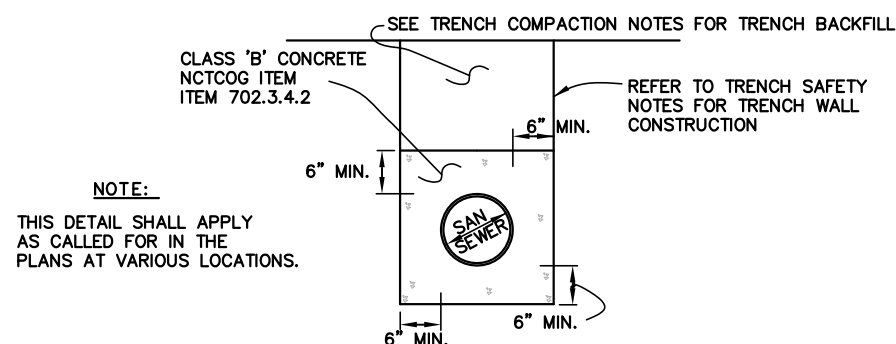


**TYPICAL SECTION  
CONCRETE PAVEMENT REPAIR**  
N.T.S.

**GENERAL NOTES:**

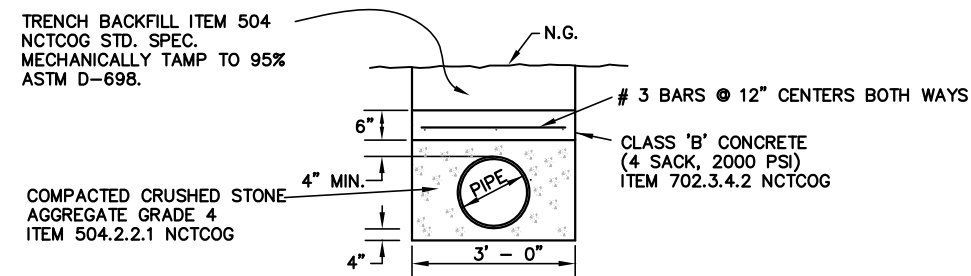
1. BACKFILL FOR OPEN CUTS IN EXISTING IMPROVED PAVED ROADWAYS SHALL BE MODIFIED FLOWABLE BACKFILL PER NCTCOG SPEC 504.2.3.5. NATIVE MATERIAL MAY BE PERMITTED IN LOWER PORTION OF DEEP TRENCHES AT INSPECTOR'S DISCRETION.
2. CONCRETE PAVEMENT REPLACEMENT SHALL BE IN A MINIMUM OF ONE HALF PANEL INCREMENTS.
3. REFER TO CITY OF MANSFIELD MATERIAL TESTING POLICIES FOR BACKFILL TESTING PROCEDURES.
4. TRENCH SAFETY: THE CONTRACTOR SHALL PROVIDE A TRENCH SAFETY PLAN WHICH SPECIFICALLY ADDRESSES AND IDENTIFIES THE TRENCHES TO BE MADE ON THIS PROJECT AND PROVIDES THE TRENCHING DETAILS TO PROVIDE A SAFE WORK PLACE IN ACCORDANCE WITH STATE LAW AND OSHA REGULATIONS. THE TRENCH SAFETY PLAN SHALL BEAR THE SEAL AND SIGNATURE OF A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF TEXAS WITH EXPERIENCE IN PREPARATION OF TRENCH SAFETY SYSTEMS. THE PLAN SHALL INCLUDE ALL SOILS INVESTIGATION AND TEST DATA USED BY THE ENGINEER IN DEVELOPING THIS PLAN. THE CONTRACTOR SHALL CONDUCT HIS TRENCHING OPERATIONS IN ACCORDANCE WITH THIS PLAN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAILY INSPECTION AND ENFORCEMENT OF SUCH PLAN.
5. ALL "POTHOLE" MADE UNDER EXISTING PAVEMENT BY HYRO-EXCAVATION MUST BE BACKFILLED WITH FLOWABLE FILL PER 504.2.3.5. CORE HOLE IN PAVEMENT TO BE REPLACED WITH 6 SACK 4500 PSI CONCRETE.

**PAVEMENT AND TRENCH BACKFILL DETAILS**



**NOTE:**  
THIS DETAIL SHALL APPLY  
AS CALLED FOR IN THE  
PLANS AT VARIOUS LOCATIONS.

**CONCRETE ENCASEMENT**  
N.T.S.



**PIPE CONCRETE CAP DETAIL**  
N.T.S.

TRENCH DETAILS		
CITY OF MANSFIELD		
STANDARD CONSTRUCTION DETAILS		
MISCELLANEOUS	DATE: APR. 2021	SHEET NO. M-1

ITEM	MATERIAL	SPECIFICATION	MIN. PRESS. CLASS	SIZE RANGE	MANUFACTURER/ MODEL	NOTES
WATER						
Water Pipe	PVC	AWWA C-900	DR-18	4" - 48"		Blue
	PVC (MO)	AWWA C-909	150 PSI	6" - 12"		Use D.I. O.D., Blue
	Ductile Iron	AWWA C-150/151	250 PSI	16" - 36"		Pressure Class to be project specific
Service Saddles	Ductile Iron Body, Stainless Straps			1"	Smith Blair 315 Romac 101N	Epoxy Coated (AWWA C-550), Double Stainless Straps Flat Gasket - No O-rings, Controlled OD
					Ford FS 101	
					JCM 405	
				2"	Romac 202N Ford 202 FS	Epoxy Coated (AWWA C-550), Double Stainless Straps Flat Gasket - No O-rings, Controlled OD
					JCM 406	
					Smith Blair 317	
Gate Valves	Cast Iron	AWWA C-509		4" - 12"	M&H/Kennedy/Clow Mueller 2360	Non Rising Stem (NRS), Epoxy Coated (AWWA C-550) Open counter-clock-wise
					American Flow Control 2500	
	Ductile Iron	AWWA C-515		4" - 12"	M&H/Kennedy/Clow Mueller 2361	Non Rising Stem (NRS), Epoxy Coated (AWWA C-550) Open counter-clock-wise
					American Flow Control 2500	
Butterfly Valves		AWWA C-504	Project Specific	16" +	M&H/Kennedy/Clow Pratt	Sealed, Gasketed & Lubed for Direct Bury Service Min. 450 ft-lb Overload Torque; Open counter-clock-wise
					Mueller Lineseal	Epoxy Coated Inside & Out (AWWA C-550)
Tapping Sleeves	Stainless Steel Body, Steel Flange				Smith Blair 662, 664 Powerseal 3490	Full Circle flat gasket - No O-ring Size on Size not permitted on AC Pipe
					JCM 432	
					Mueller H-304	
	Ductile Iron				Mueller H-615	
Hydrants	Cast & Ductile Iron	AWWA C-502		5-1/4"	Waterous Pacer Clow Medallion	Pent Nut, 4-1/2" Pumper Nozzle, Open Counter-clock-wise
					Mueller Super Centurian	
Hydrant Paint	Aluminum				Hydrant Hyde, Flynt, Tnemec	Color: Aluminum
Meter Box	Plastic			3/4" & 1"	D 1200	In Grass – Lid OLSB
	Plastic Box			3/4" & 1"	1118-12	In Sidewalk - 1-piece lid - Fibrelyte lid w\ AMR bracket (Undermount)
	Plastic Box			1-1/2" & 2"	1527-12	All Locations - 1-piece lid - Fibrelyte lid w\ AMR bracket (Undermount)
Retainer Glands	Ductile Iron				EBAA Iron Megalug Romac Roma Grip	EBAA uses special gasket
					Sigma One Lock	
					Star Grip	
Corp. Stops	Brass (Lead Free)			1"	Ford F1000-4G Comp. Mueller H-15008	Male CC Thread x Comp.
				1"	AY McDonald 74701G	
				2"	Ford FB 1000-7G	
				2"	Mueller H-15013	
				2"	AY McDonald 74701G	
Angle Curb Stops	Brass (Lead Free)			1" x 3/4"	Ford KV43-342WG Mueller H-14258	Comp. x Meter Swivel Nut
				1" x 3/4"	AY McDonald 74602G	
				1"	Ford KV43-444WG	
				1"	Mueller H-14258	
				1"	AY McDonald 74602G	
				2"	Ford FV43-777WG -or- BFA43-777WG	Comp. x Meter Flange (Ground Key -or- Ball Valve)
				2"	Mueller H-14277 -or- B-24276	
				2"	AY McDonald BCSG	
Pipe Fittings	Cast Iron	AWWA C-110		16" +		Domestic & Foreign
	Ductile Iron	AWWA C-153		4" - 36"		Domestic & Foreign
Misc. Castings	Cast Iron			24" - 36" / 36" - 48"	Tyler 6850 Series EJ 8550 Series	Valve Boxes - 2 Piece Screw Type (Domestic Only) (w\City logo)

MATERIAL SPECIFICATIONS

CITY OF MANSFIELD

STANDARD CONSTRUCTION DETAILS

MATERIALS

DATE:  
APR. 2021

SHEET NO.  
MS–1



ITEM	MATERIAL	SPECIFICATION	MIN. PRESS.	SIZE	MANUFACTURER/	NOTES
			CLASS	RANGE	MODEL	
SANITARY SEWER						
Sewer Pipe	PVC	ASTM D-3034	SDR-26	6" - 15"		All Piping to be Green Color
	PVC	ASTM D-2241	SDR-26			Pressure rated pipe for TCEQ Water/Wastewater Crossing Separation Exceptions
	PVC	ASTM F-679		18" +		
	PVC Open Profile	ASTM F-794		15" +		
	PVC Dual Wall Corrugated Profile	ASTM F 794, F 949		15" +		
Force Main Sewer Pipe	Green PVC	AWWA C-900	DR-18	4" - 48"		
Sewer Fittings	PVC	ASTM D-3034	SDR-35	6" - 24"	NAPCO - G-series	SDR-26 for Deep Cover (Greater than 20', Project Specific)
					Multi-Fitting - Trench Tough Plus	
End of Line Clean-out	Cast Iron				Bass & Hayes 339	
Service Clean-out Caps	Plastic (In Grass), Cast Iron (In Concrete)			4"	NDS 404; EJIW 404	
SS MH Ring & Cover	Cast Iron				Bass & Hayes VRM30	Domestic Only (with "Sanitary Sewer" lettering)
					Bass & Hayes VRM30WT	Water-Tight Applications
MISCELLANEOUS						
Casing Spacers	Plastic			6" - 12"	Raci F/G	
	Plastic			14" - 20"	Raci M/N	
	Plastic			24" - 30"	Raci E/H	
	Plastic or Stainless Steel			6" - 12"	PSI Ranger Midi or Model SG	
	Plastic or Stainless Steel			14" - 30"	PSI Ranger Maxi or Model SG	
STORM SEWER						
Storm Drain Pipe	Reinforced Concrete		Class III	18" +		All Public Installations
Inlet Ring & Cover	Cast Iron				Bass & Hayes #226	Domestic Only
Storm MH Ring & Cover	Cast Iron				Bass & Hayes VRM30	Domestic Only (with "Storm Sewer" lettering)
Drive Culverts	HDPE – OR – RCP			18" Minimum		For Residential and Commercial Drive Approaches on Roads w/ Bar Ditches. Type "P" headwalls required.

MATERIAL SPECIFICATIONS		
CITY OF MANSFIELD		
STANDARD CONSTRUCTION DETAILS		
MATERIALS	DATE: APR. 2021	SHEET NO. MS-2

## **Sanitary Sewer Lift Station Standards**

### **April 2021**

#### **PUMPS**

1. KSB
2. ABS
3. Flygt

Note: Shall be submersible unless otherwise specified. Each pump shall be equipped with a seal failure early warning system. Wet well shall be equipped with a Wet Well Wizard aerator by Reliant Water Technologies or approved equal. Aerator shall be sized proportionate to wet well capacity. Type 304 stainless steel (ASTM A240) chains shall be attached to each pump and run full length to top of wet well. Chain shall be sized according to recommended manufacturer specifications.

#### **CHECK VALVES**

1. Mueller Swing Type with lever and weight, FL x FL ends. (A-2600-6-01)
2. Kennedy Iron Swing Check with lever and weight, FL x FL ends. (Fig. 126)
3. Waterous Swing Check with lever and weight, FL x FL ends. (Series 6800)
4. Approved Equal

#### **PLUG VALVES**

1. Mueller-Pratt BallCentric Series 601
2. FLG x FLG for interior installations – MJ for direct bury
3. Exposed Hardware (nuts/bolts) to be Grade 316 Stainless Steel, ASTM A240
4. Approved Equal

#### **CONTROL PANEL/ELECTRICAL**

1. Control panel shall be Type 304 stainless steel (ASTM A240) with hinged door and lockable latch installed minimum 3 feet above ground. A Type 304 stainless steel (ASTM A240) sub-panel with hinged door and lockable latch shall be installed outside of wet well for motor lead connections. Sub-panel to be minimum 12 inches tall by 12 inches wide by 8 inches deep and shall be minimum 12 inches above ground elevation. Both shall be watertight and Type 4X.
2. The following electrical components shall be standard equipment in control panel:
  - Main Circuit Breaker
  - Control Circuit Breaker
  - Motor Breaker
  - Duplex Receptacle Breaker

- Motor Starter
- Alternator
- Phase Monitor
- Lightning Arrestor
- Relays 1-6
- Duplex Receptacle (GFCI Protected) mounted to side of panel.
- Control Power Transformer
- Control Circuit Transformer
- Terminal Strips
- Isolated Neutral Block and Ground Buss
- Time Delay Relay (1 per pump)
- H O A Switch
- High Level Alarm Light (red), with audible alarm
- Flasher
- Pilot Lights (pump run-green, pump off-red)
- Fuse Blocks
- Hour meter (1 per pump)
- Warning lights (high pump temperature and seal failure)
- Power and timer for aerator.
- WHECO Data Acquisition and Monitoring System
- Panel shall include 4 foot minimum depth rain shelter/awning that extends the width of the rack (304 Stainless, ASTM A240), with a LED light fixture. Light fixture to be switched and have photocell (see detail).
- Panel shall include 4 feet minimum depth concrete pad (6 inch depth) that extends the width of the rack (see detail).

Note: All breakers and motor starters shall be Square D brand, all relays shall be pin and socket, control power shall be 120 volts, phase and primary voltage to be determined.

## **BACKUP GENERATOR**

Site shall include backup generator with auto switching controls and include the following minimum items:

1. To be sized by engineer based on designed requirements
2. Auto-Run-Off Mode Selector Switch
3. Remote Monitoring and Control Interface (direct interface to SCAD w/ EIA/RS-485 connection)
4. Battery Charger/Maintainer
5. Sound attenuating housing, producing a noise level greater than 75 dB at 7 meters
6. Outdoor Weather Protective Housing
7. O&M Manuals, and factory guided training
8. Minimum 3 year manufacturer's warranty (including any transportation and or shipping costs)
9. Rated for operational temperatures for this region
10. 4 stroke, water cooled, diesel engine w/ minimum of 4 cylinders
11. Emergency Stop Switch
12. Reset switch
13. Panel Lamp Switch (DC powered lighting)
14. Digital Metering Set (RMS voltage, current, frequency, output current, output kW, kW hours, and power factor.
15. Generator Set Alarm Display (alarm and alarm status indicating lamps, high intensity LED type)

Alarm Display to include indicator for:

- a. Low oil pressure (alarm)
- b. Low oil pressure (shutdown)
- c. Oil pressure sender failure (alarm)
- d. Low coolant temperature (alarm)
- e. High coolant temperature (alarm)
- f. High coolant temperature (shutdown)
- g. Engine temperature sender failure (alarm)
- h. Low coolant level (alarm or shutdown selectable)
- i. Fail to crank (shutdown)
- j. Over crank (shut down)
- k. Over speed (shutdown)
- l. Low DC voltage (alarm)
- m. High DC voltage (alarm)
- n. Weak battery (alarm)
- o. Low fuel day tank (alarm)
- p. High AC voltage (shutdown)
- q. Low AC voltage (shutdown)
- r. Under frequency (shutdown)
- s. Over current (shutdown)
- t. Short circuit (shutdown)
- u. Overload (alarm)
- v. Fuel leak (alarm)
- w. Ground fault trip (shutdown)

16. Engine Status Monitoring

- a. Engine oil pressure (psi)
- b. Engine coolant temperature
- c. Engine oil temperature
- d. Engine speed (rpm)
- e. Number of hours of operation
- f. Number of start attempts
- g. Battery voltage (DC Volts)

17. Electromechanical hour meter

18. Control Functions

- a. Cycle Cranking System: selected crank time, rest time, and # of cycles
- b. Idle Mode Control
- c. Engine Governor Control: adjustable gain, damping, and ramping function
- d. Time Delay Start/Stop: adjustable 0-300 second start – 0-600 second stop
- e. Sender Failure Monitoring: logic for speed sensing, oil pressure, and engine temperature

19. Alternator Control Function

- a. Generator phase sequence
- b. Over/under voltage (27/59)
- c. Over/under frequency (81 O/U)
- d. Reverse power (kW)(32RP)
- e. Reverse reactive power (kVAR)(32RV)
- f. Overcurrent protection (50/51)

20. Vibration Isolators

21. Starting and control batteries

22. Exhaust silencer (critical grade muffler(s))

23. Fuel storage tank (24 hour usable capacity @ 100% load)

24. Service and feeder lugs and connectors (copper, crimp type)
25. Circuit Breakers
26. Panelboard (board and housing to be NEMA 4X 316 Stainless Steel, ASTM A240)
27. Generator access platform
28. Spare Parts
  - a. 2 air cleaner elements of each type
  - b. 2 fuses of each type
  - c. One radiator house of each type
  - d. 2 fuel filters of each type
  - e. 2 oil filters of each type
  - f. 1 belt of each type

## **AUTOMATIC CONTROLS**

1. LS 100 Transducer w/ Float Backup
2. Weighted Floats (2): On and Off

## **CONDUIT**

1. Schedule 80 PVC electrical conduit shall be used for all wiring. Underground conduit shall be buried minimum 18 inches.
2. Conduit shall be minimum 3 inch I.D.
3. All conduit ends shall be sealed to prevent gases from entering.

## **WET WELL**

1. Wet well shall be portland concrete cast-in-place or precast reinforced polymer concrete. Concrete to be Class "F" (6.5 sack, 4200 PSI) per NCTCOG specification 702.2.4.2. Precast reinforced polymer concrete by US Composite or approved equal.
2. Structural steel for base and deck to be per engineer's design.
3. Well interior to be completely coated (80 millimeters minimum thickness) with one of the following (*including ductile piping*):
  - a) Belzona International Ltd – Magma Quartz System
  - b) CCI Spectrum - SpectraShield
  - c) Sprayroq Inc. – Spraywall
  - d) Chesterton
4. Guide rails and all hardware shall be Type 304 stainless steel (ASTM A240). Mounting hardware shall include lock nuts and or lock washers.
5. Float hanger (*w/ 10 hooks min.*), all hardware, bolts, nuts, etc. shall be stainless steel (ASTM A240).
6. Location of wet well within fence shall provide direct access for equipment (*eg: crane trucks*) backing into site from driveway.
7. Cover shall be made of aluminum, full opening and capable of being locked. Hatch shall include safety grate. Must open to provide direct access from gate (*should open away from gate to accommodate lift/crane truck to back directly to well*).
8. Wet well shall be vented with minimum 4 inches, 180 degree ductile iron pipe. Ell on end of vent shall be screened with stainless steel #8 mesh.
9. Control floats must be hung away from incoming flow.

10. Water stop gaskets shall be installed where pipe(s) pass through wall.
11. Wet well shall include "Wet Well Wizard" aerator as manufactured by Reliant Water Technologies or approved equal and installed per manufacturer specifications.
12. Wet well top to be 6 – 8 inches above finished grade.
13. Incoming sanitary sewer lines with a height above wet well finished floor of more than 5 feet shall be connected with an outside drop connection. Drop connection outfall shall not be more than 2 feet above finished wet well floor. A cross shall be installed where sewer main turns down to incorporate a cleanout for dropped line to ground level with a cap and concrete pad. Drop connection shall be completely encased in concrete.

## **DRY WELL**

1. A plug valve, check valve and flange coupling adapters are required for each pump. Plug and check valves shall be readily accessible for repair or maintenance.
2. Dry well shall have drain line discharging to wet well. Line shall be minimum 4 inch schedule 40 PVC with a flap valve on end where it enters wet well.
3. Dry well shall be vented with minimum 4 inch ductile iron pipe. Ell on end of pipe shall be screened with stainless #8 mesh.
4. Cover shall be made of aluminum, full opening and capable of being locked.
5. All hardware, bolts, nuts, etc. shall be stainless steel (ASTM A240).
6. An oil filled pressure gauge shall be installed after check valves.

## **PAINTING SYSTEM**

1. Coatings for all piping shall conform to City of Mansfield coating specifications.

Products: The following special coating products are manufactured by Tnemec Company, Inc. Manufacturers of products of equal substance, function and performance subject to the review and approval of the Engineer will be considered.

Coating Schedule: Exterior Exposed Steel: (Piping in dry well, by-pass piping and vents)

1. System Type: Epoxy/urethane
2. Surface Preparation: SSPC-SP 6
3. Primer: Series N69-Color Hi-Build Epoxoline II. DFT 3.0 to 5.0 mils.
4. Intermediate Coat: Series N69-Color Hi-Build Epoxoline II. DFT 4.0 to 6.0 mils.
5. Finish Coat: Series 74-Color Endura-Shield. DFT 3.0 to 5.0 mils.
6. Total DFT: 10.0 to 16.0 mils.
7. Color: Tnemec Bare Beige-RD

## **SITE**

1. Fenced area shall be minimum 25 foot x 25 foot, area shall be accessible from a street or access easement with paved drive.
2. Fence shall be wrought iron and a height of 8 foot. (See detail).
3. Two 6 foot wide wrought iron gates shall be installed. (See detail)
4. The area within the fence shall consist of minimum 6 inch compacted flex base with a 2 inch crushed stone surface. Stone shall be 1 inch nominal in size with geotextile fabric below.

5. The access road shall be minimum 12 foot wide consisting of 6 inch HMAC or 6 inch reinforced concrete (6 sack, 3600 psi concrete, w/ #4 bars @ 12" centers) and shall have a concrete drive approach at street connection (*commercial drive approach per COM Standard Details*). Asphalt will only be permitted in areas not permanently improved.
6. Culverts and or trench drains shall be installed as needed for drainage.
7. All plug valve boxes and by-pass riser shall have a concrete pad per City of Mansfield Standard Construction Details.
8. Connect wet and dry wells with 4" deep concrete slab the width of the dry well.
9. Install one 1" water service, one 1" RPZ valve, and one frost proof yard hydrant (Yard Hydrant: Woodford Y34 IOWA Yard Hydrant 3-ft bury depth ¾-in female orange brass hydrant or approved equal).
10. Site to include landscape buffer around exterior of fence and appropriate screening plants shall be installed (where required by zoning).
11. Site to include irrigation system for locations which have landscape areas. (shared w/yard hydrant)
12. Site to include luminaire appropriately sized to adequately illuminate interior fenced area. Light to include a manual switch and have photocell switch and avoid excess lighting of areas outside of fenced area.

### **ADDITIONAL SPECIFICATIONS**

1. A 6-inch by-pass shall be installed on discharge piping outside of dry well, consisting of a vertical tee with riser and blind flange extending 12 inches above ground.
2. A plug valve shall be installed outside dry well on force main downstream of by-pass. The transition from ductile iron pipe to PVC shall take place downstream of plug valve.
3. All piping in wet well, dry well and to plug valve on force main shall be flanged ductile iron pipe. No MJ fittings allowed. Piping shall be rigidly supported to prevent movement. A flexible coupling shall be installed between wet and dry well. All ferrous items shall be wrapped with polyurethane material.

### **FORCE MAIN PIPING**

1. Force main piping shall be green DR-18 AWWA C-900.
2. Force main shall be hydrostatically tested to 100 p.s.i. for a minimum of 2 hours.

### **ACCEPTANCE TESTING**

1. Both pumps shall be removed and reinstalled to check for proper alignment of guide rails and access cover.
2. Both pumps shall be operated to check for proper rotation and operation and to make sure both are properly seated after reinstallation.
3. All electrical components shall be tested for proper operation.
4. Pump manufacturer shall issue a Certificate of Operation verifying all components have been tested and passed along with performance curves. Two copies of O&M manuals shall be submitted to the City of Mansfield.
5. Backup generator manufacturer shall issue a Certificate of Operation verifying all components have been tested and passed. Two copies of O&M manuals shall be submitted to the City of Mansfield.
6. A 60 day observation period will be observed after pump certification and before final acceptance and warranty begins.

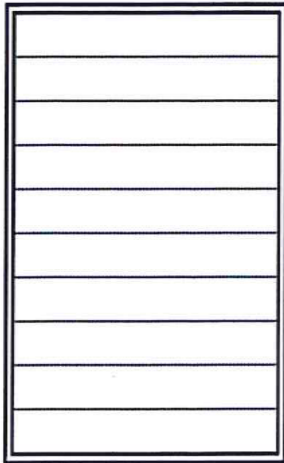
## Detailed Drawings

### Rain Shelter/Awning

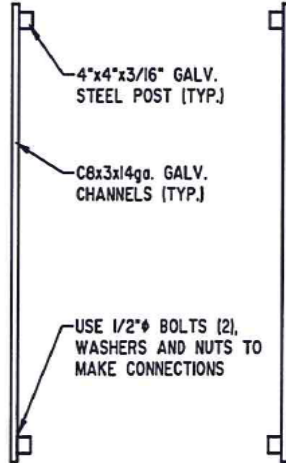
#### NOTES:

1. DIMENSIONS OF THE COVER SHALL BE DETERMINED BY THE SIZE OF ELECTRICAL EQUIPMENT SUPPLIED AND THE FINAL PAD SIZE.
2. VERIFY COMPONENTS AND INSTALLATION PER THE SPECIFICATIONS PROVIDED WITH THE SHELTER MATERIALS.
3. SLOPE ROOF 1/8" PER FT. WITH NATURAL GROUND.
4. MATERIAL OF CONSTRUCTION IS TO BE WHITE PAINTED METAL, "CARPORT" TYPE.

EAVE FLASHING (TYP.)



ROOF PLAN

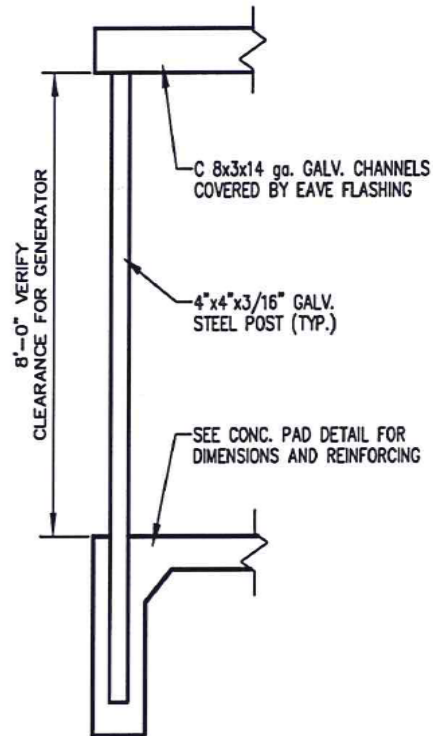


FRAMING PLAN

### RAIN SHELTER DETAILS

NO SCALE

SHELTER.dwg



### RAIN SHELTER POST SECTION

NO SCALE

RAIN SHELTER POST SECTN.dwg



(Page 1 of 3)



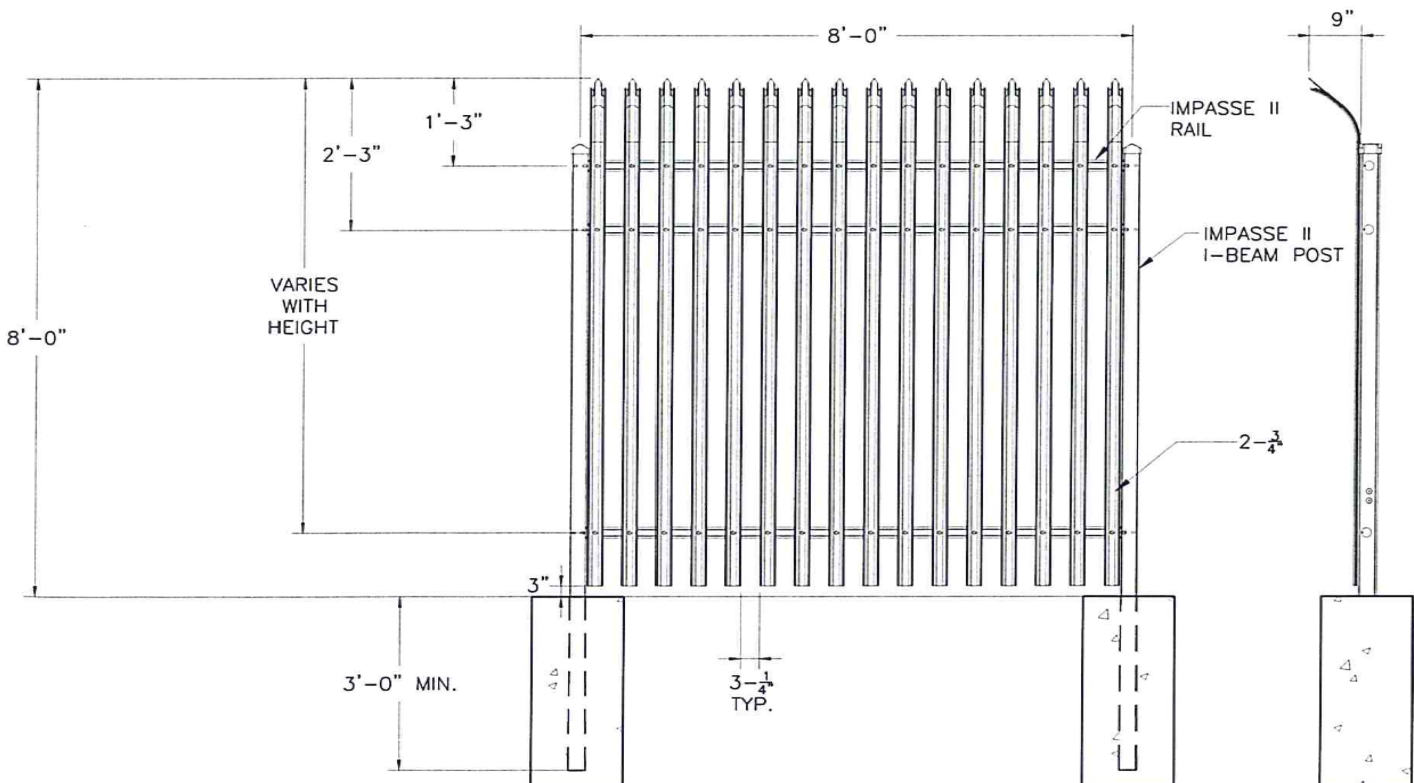
IMPASSE GAUNTLET GATE  
NOT TO SCALE

## Impasse Gauntlet Fence

(Page 2 of 3)

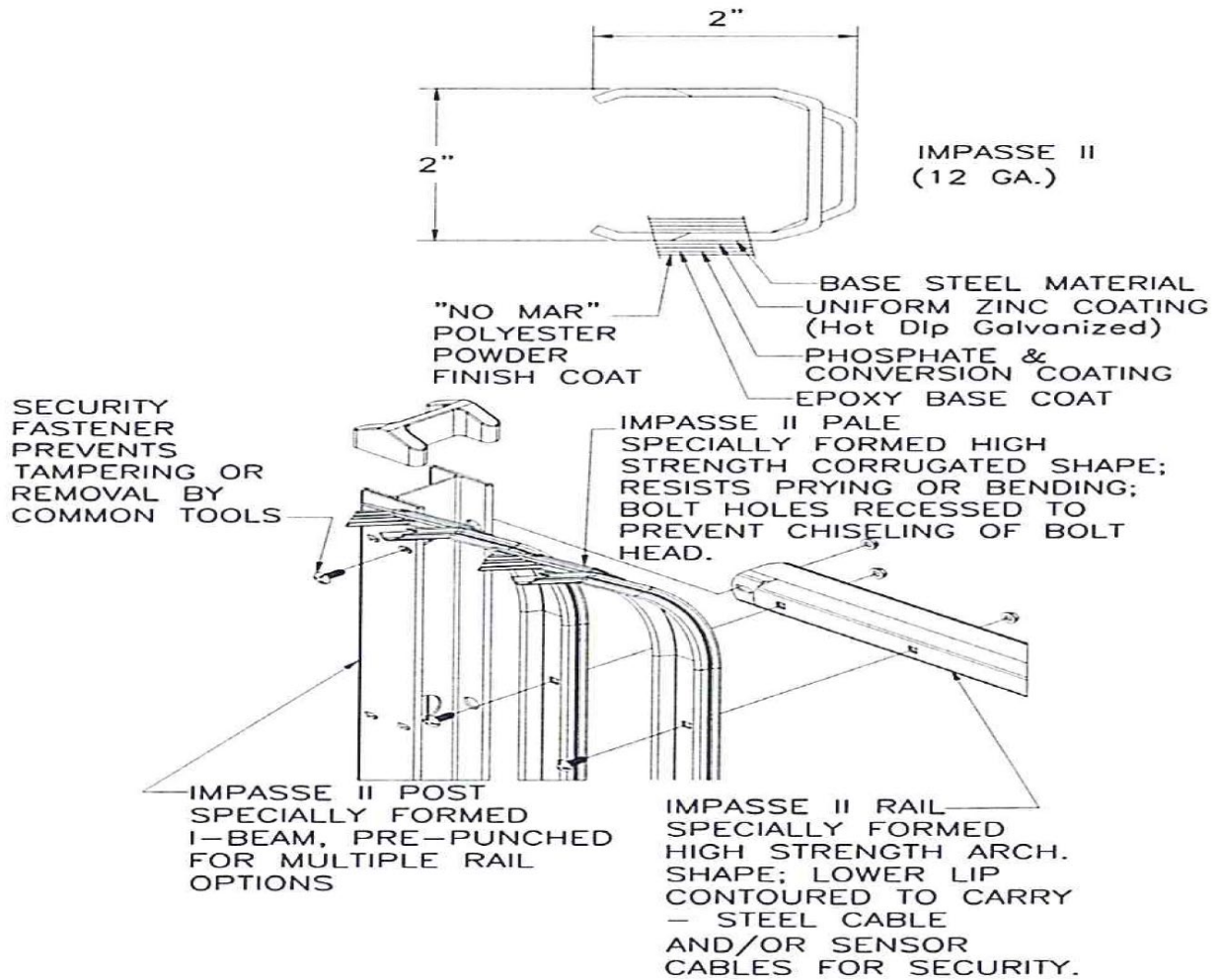
### NOTES

1. FENCES AND GATES SHALL BE FURNISHED COMPLETE WITH ALL NECESSARY FITTINGS AND HARDWARE.
2. FOR GATES, SIZES OF PIPE, SAG RODS AND TURNBUCKLES SHALL BE MANUFACTURER'S STANDARD WHICH ALSO MEET THE REQUIREMENTS OF THIS DRAWING.
3. POSTS SHALL BE ROLLED OR EXTRUDED SECTIONS OR TUBING OF STEEL CAPABLE OF WITHSTANDING A LATERAL FORCE OF 200 POUNDS APPLIED AT THE TOP. ALL HOLLOW POSTS SHALL BE CAPPED.
4. STANDARD PIPE SIZES INDICATED ARE NOMINAL DIAMETER, SCHEDULE 40, PER AMERICAN STANDARDS ASSOCIATION (ASA) B 36.10.
5. PROVIDE PLUNGE ROD AND CATCHES FOR ALL GATES IN OPEN AND CLOSED POSITION.
5. PROVIDE PLUNGE ROD AND CATCHES FOR ALL GATES IN OPEN AND CLOSED POSITION.
6. PIER AND POST LENGTH MAY VARY DEPENDING ON SOIL TYPE, FIELD CONDITIONS AND APPLICATION. DIMENSIONS SHOWN AND SPECIFIED ARE MINIMUM. DIMENSIONS SHALL BE MODIFIED AS REQUIRED BY FENCE MFR / INSTALLER.
7.  $\frac{3}{4}$ "x10' GROUND ROD W/ TOP OF ROD 12" BELOW GRADE. ATTACH #2 BARE COPPER WIRE TO FENCE W/ 3 STEEL CABLE CLAMPS. (MIN. 1 PER SIDE OR AS RECOMMENDED BY FENCE MFR.)
8. FENCE AND GATE SHALL BE MANUFACTURED BY AMERISTAR OR APPROVED EQUAL.



## Impasse Gauntlet Fence

(Page 3 of 3)





# CITY OF MANSFIELD

1200 E. Broad St.  
Mansfield, TX 76063  
mansfieldtexas.gov

## STAFF REPORT

File Number: 21-4042

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**Agenda Date:** 5/3/2021

**Version:** 2

**Status:** Consideration

**In Control:** Planning and Zoning Commission

**File Type:** Consideration Item

**Agenda Number:**

### Title

Consideration of the City of Mansfield Roadway Design Manual, May 2021

### Description/History

The City of Mansfield Roadway Design Manual was distributed at the April 19, 2021 Planning and Zoning Commission meeting with a presentation highlighting the general design elements addressed in the manual. It was noted that revisions to the "Landscaping in Medians" section would be made prior to the next meeting. Those revisions have been completed and are included in the attached manual.

In accordance with the Subdivision Control Ordinance, Staff is seeking approval of the Roadway Design Manual from the Planning and Zoning Commission. The document will be filed with the City Secretary and become effective May 15, 2021.

Please contact David Boski, Assistant Director of Public Works/Transportation, at 817-276-4208 or Raymond Coffman, City Engineer, at 817-276-4238 with any questions.

### Recommendation

Staff recommends approval of the City of Mansfield Roadway Design Manual, May 2021

### Attachments

Roadway Design Manual, May 2021



# **City of Mansfield**

## **Roadway Design Manual**

**MAY 2021**

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## **I. ROADWAY DESIGN MANUAL**

### Purpose of Document

The purpose of the Roadway Design Manual is to establish standard principals and practices for the design of transportation infrastructure that promote uniformity and enhance safety.

The information listed in this document is not intended to be a complete set of design criteria. The City of Mansfield Standard Construction Details, The City of Mansfield Subdivision Ordinance, NCTCOG Standard Specifications for Public Works Construction, AASHTO Geometric Design of Highways and Streets, ITE Transportation and Traffic Engineering Handbook, NACTO (National Association of City Transportation Officials) and Various TxDOT Design Manuals are sources for additional design criteria.

In this document the reference to the City Engineer shall mean the City Engineer or Designee.



## II. ROADWAY DESIGN

### 1) Classification of Roadways

As described in the *Master Thoroughfare Plan*, the standard classifications of roadways in the City of Mansfield are as follows (Refer to the latest MTP for ROW widths for specific roadways)

Street Functional Classification	Configuration	Right-of-Way Width*
<b>Principal Arterial</b>	P6D - 6 Lane Divided	120 ft
<b>Major Arterial</b>	M4D - 4 Lane Divided	90 ft
<b>Minor Arterial</b>	M5U - 5 Lane Undivided	90 ft
<b>Major Collector</b>	C4U – 4 Lane Undivided	70 ft
<b>Minor Collector</b>	C3U – 3 Lane Undivided	70 ft
<b>Local Collector (Residential)</b>	C2U – 2 Lane Undivided	60 ft
<b>Local Residential</b>	Res2U – 2 Lane Undivided	50 ft

#### Mid-Block ROW Width

Some Planned Developments (PD's) will have nonstandard street ROW and sections; refer to the specific PD for ROW information. ROW required at intersections will vary; contact the City Engineer for intersection information.

### 2.) Design Speed

The design speed is a primary factor in the horizontal and vertical alignment on city streets and thoroughfares. Design features such as curvature, super-elevation, radii for turning movements and sight distance are directly related to the design speed. The design speed also affects features such as lane widths, pavement width, pavement crown, and roadside clearances.

The various street and thoroughfare classifications, which make up the roadway network within the City of Mansfield, require different design speeds according to their use and location. The following table lists the design speeds for each roadway classification as identified on the Master Thoroughfare Plan.

Street Functional Classification	Design Speed (mph)
Principal Arterial	50
Major/Minor Arterial	45
Major Collector	40
Minor Collector	35
Local Collector	35-30*
Local Residential	30

\*30 MPH design speed requires approval from City Engineer

### 3.) Horizontal Roadway Design

The following information details the horizontal criteria that is to be used when designing roadways within the City.

#### a.) Lane Widths, Parkways and Roadway Configurations

Desirable lane widths are 12 feet for through lanes and 11 feet for left and right turn lanes.

For detailed information for mid-block lane widths and roadway configurations refer to Mansfield Master Thoroughfare Plan, City of Mansfield On Street Bike plan, the Parks Department Trails Master Plan and City of Mansfield Standard Construction Details. For lane widths, roadway configurations and right-of-way at intersections contact the City Engineer for information.

#### b.) Intersection Corner Clips/Cul-de-Sac Right-of-Way

Right-of-way shall be dedicated to facilitating barrier free ramps, sign placement, curb radii and/or signal construction as follows:

Cul-de-sac/Eyebrow – 50' radius  
 Residential/Residential intersection – 10' x 10'  
 Residential/Local Collector – 10' x 10'  
 All other intersections (excluding arterial/arterial) 15' x 15'  
 Arterial/Arterial – minimum 70' radius

#### c.) Intersection/Cul-De-Sac Curb Radii

The following minimum curb radii shall be used at street intersections (all dimensions are to back of curb)

Cul-de-sac – 40' radius  
 Eyebrow – 40' radius  
 Residential/Residential intersection – 20' radius  
 Local-Minor Collector/Local-Minor Collector – 25' radius  
 Major Collector and below/Major Collector and above – 30' radius  
 Arterial/Arterial – min 80' radius with island  
 Industrial roadways – 35' radius

d.) Centerline Radius

Urban Streets are typically not designed with superelevation due to difficulties associated with drainage, ice formation, driveways, pedestrian crossings and the effect on adjacent property. The following table reflects the minimum centerline radius, without superelevation for each roadway classification.

**MINIMUM CENTERLINE RADIUS FOR ROADWAYS**

Street Functional Classification	Minimum Radius
Principal Arterial	1,400 ft
Major/Minor Arterial	1,050 ft
Major Collector	775 ft
Minor Collector	525 ft
Local Collector*	525/350 ft
Local Residential	175 ft

\*350' based upon 30 MPH design speed

e.) Reverse Curve Tangent Lengths

Reverse curves shall be separated by a centerline tangent section in accordance with the following table:

**MINIMUM TANGENT LENGTH  
BETWEEN REVERSE CURVES**

Street Functional Classification	Minimum Tangent Length
Principal Arterial	200 ft
Major/Minor Arterial	150 ft
Major Collector	100 ft
Minor Collector	50 ft
Local Collector	As approved by the City Engineer
Local Residential	As approved by the City Engineer

**f.) Intersection Approach/Departure Tangents**

Intersecting roadways shall have the following minimum horizontal centerline approach and departure tangent section length as measured from intersecting street ultimate right-of-way per the Master Thoroughfare Plan.

**MINIMUM INTERSECTION APPROACH/DEPARTURE TANGENTS**

<b>Street Functional Classification</b>	<b>Intersecting with</b>	<b>Minimum Approach Tangent Length</b>
<b>Principal/Major/Minor Arterial</b>	Principal /Major/Minor Arterial/ Major Collector	150 ft
<b>Major Collector</b>	Principal /Major/Minor Arterial/Major Collector	125 ft
<b>Minor Collector</b>	Principal /Major/Minor Arterial/ Major Collector	75 ft
<b>Local Collector</b>	Principal /Major/Minor Arterial/ Major/Local Collector	50 ft
<b>Local Residential</b>	Local Collector/Local	25 ft

**g.) Intersection Angles and Street Offsets**

All streets shall intersect at 90 degree angles including the required approach / departure tangents. Any deviation from the 90 degree intersection will require approval from the City Engineer.

Offset through lanes across an intersection shall not be allowed. Lanes shall align on the approach and departure sides of the intersection. If circumstances with an existing intersection do not allow for a zero offset, the amount of allowable offset will be determined by the City Engineer.

New intersections on undivided roadways shall align centerline to centerline with existing intersections on the opposite side of the road. If centerline alignment is not practical, the minimum acceptable centerline offset is 125 feet.

On arterial streets where a median opening exists or is proposed, the street or driveway must align with the centerline of the median opening or be offset a minimum of 150 feet as measured from street centerline to median opening centerline.

**h.) Sight Distance at Intersections and Driveways**

An important consideration in the design of thoroughfares is the visibility provided for vehicles attempting to cross the thoroughfare from the side street, left-turn lane or driveway. The operator of the vehicle attempting to cross should have an unobstructed

view of the whole intersection and a length of the thoroughfare to be crossed sufficient to permit control of the vehicle to avoid collisions. The minimum sight distance considered safe under various assumptions of physical conditions and driver behavior is related directly to vehicle speeds and to the resultant distance traversed during perception reaction time and during braking. This sight distance, which is termed intersection sight distance, can be calculated for different design speeds and grades. Reference the Intersection Sight Distance section of latest edition of *AASHTO Policy on Geometric Design of Highways and Streets* for these sight distance requirements.

To provide for adequate driver visibility the minimum standard dimensions for a visibility triangle at a street intersection or driveway is 7 feet x 60 feet. The visibility triangle is measured 60 feet along the ultimate width right-of-way line and 7 feet along the driveway throat or street right-of-way line. Refer to **Exhibit #1**.

If roadway curvature or other obstructions result in a required line of sight that falls outside the public right-of-way or the standard 7 feet x 60 feet visibility triangle, then a visibility easement of sufficient size to accommodate AASHTO design values for Intersection Sight Distance will be required.

No fence, screening wall, free standing wall, trees, bushes, signs or other visual barriers over 2 feet in height shall be located or placed within the visibility triangle or easement. In zoning districts where street trees are required, the placement of the trees must not impair driver visibility and must be trimmed to a minimum height of 14 feet above the top of curb.

#### i.) Sidewalks

The purpose of the public sidewalk is to provide a safe access way for pedestrians. The City of Mansfield requires that sidewalks and barrier free ramps be constructed with the paving of streets, when new building construction occurs, in all residential areas, or wherever pedestrian traffic may be generated as determined by the City Engineer. All sidewalks must conform to federal and state laws for barrier free construction.

Sidewalks are required on both sides of all streets and thoroughfares; refer to the Subdivision Ordinance for more detail.

Sidewalks along residential streets shall be 5 feet wide and the standard placement is one (1) foot from the ROW line.

Along thoroughfares (C3U – P6D) standard sidewalks shall be 5 feet wide and preferred to be placed 1 foot from the ROW line or 6 feet wide and located along the back of curb. Special zoning districts and/or The Parks Master Trails Plan/On-Street Bicycle Plan may require different widths and placements.

When conditions dictate placing the sidewalk adjacent to the curb (e.g. along a right-turn deceleration lane) the sidewalks shall be a minimum width of 6 feet or one additional foot in width then the sidewalk section.

To create a comprehensive network of trails, sidewalks and bike routes the Parks Department Trails Master Plan specifies a network of enhanced sidewalks and spine trails throughout the City. Refer to the Parks Department Trails Master Plan for the locations of these improvements. In accordance with the Plan the enhanced sidewalks shall be six (6) feet in width on both sides of the roadway. In areas where the enhanced

sidewalks function as a spine trail and/or bike route the width shall be increased to a minimum of 8 feet wide on both sides of the roadway. The placement and location of these enhanced sidewalks shall be determined by the City Engineer. Additional ROW or easements may be needed to accommodate these improvements.

For developments that contain street trees, the trees are to be placed a minimum of 3 feet from the back-of-curb and the sidewalk is to be placed a minimum of 3 feet from the tree. A sidewalk easement adjacent to the right-of-way may be needed to accommodate the sidewalk placement.

#### 4.) Vertical Roadway Alignment

The vertical alignment of all thoroughfares should be designed to ensure the safe operation of vehicles by the traveling public and should allow easy access to adjacent property. A travel-way, which is safe for vehicles, is dependent on criteria which consider operating speeds, maximum grades, vertical curves, and sight distance. In addition to these considerations, other factors related to vertical alignment include storm drainage, crown or cross slope, and the grade and right-of-way elevation relationship.

##### a.) Minimum and Maximum Vertical Street Grades

To ensure positive drainage all streets shall be designed and constructed with a minimum street grade of 0.6%.

To provide for adequate sight distance and to maintain large vehicle (e.g. semi truck, fire engine) performance the maximum street grade allowed is as follows:

#### MAXIMUM VERTICAL GRADES

Street Functional Classification	Maximum Grade
Principal/Major/Minor Arterial	6%
All Others	9%

##### b.) Minimum Vertical Curve Values ("K" Values)

When two (2) longitudinal residential street grades intersect at a point of vertical intersection (PVI) and the algebraic difference in the grades is one point five percent (1.5%) or greater, a vertical curve is required. Vertical curves are utilized in roadway design to effect a gradual change between tangent grades and should result in a design which is safe, comfortable in operation, pleasing in appearance, and adequate for drainage. The vertical curve will be formed by a simple parabola and may be a crest vertical curve or a sag vertical curve.

When a crest curve is required, it must not interfere with the ability of drivers to see a length of street ahead, should they be required to suddenly stop. This is referred to as the stopping sight distance. When sag vertical curve is required it should be of sufficient length to provide a comfortable ride during the change in vertical direction.

In order to provide for stopping sight distance and comfort, all streets shall be designed and constructed to comply with the following minimum “K” values. The “K” value represents the minimum vertical curve length for the algebraic difference in grade. These “K” values are base upon design speed of the roadway and stopping sight distance.

#### MINIMUM “K” VALUES

Street Functional Classification	Stopping Sight Distance	Crest Curve (“K” Value)	Sag Curve (“K” Value)
Principal Arterial	425 ft	84	96
Major/Minor Arterial	360 ft	61	79
Major Collector	305 ft	44	64
Minor/Local Collector	250 ft	29	49
Local Residential	200 ft	19	37

Sight distance at driveways along a vertical curve must meet the criteria listed in the Intersection Sight Distance section of latest edition of *AASHTO Policy on Geometric Design of Highways and Streets*.

#### c.) Intersection Grades

A vehicle traveling on a thoroughfare should be able to traverse intersections at the design speed without discomfort. This is accomplished through a smooth transition.

For the design of major intersections, the paving plans are required to show the profiles of all four (4) legs of the intersection. The following table shows the maximum intersection grades for major intersections. Local Residential Street intersections shall not exceed 5% without approval of the City Engineer.

**MAXIMUM ARTERIAL/COLLECTOR INTERSECTION GRADES**

Street Functional Classification	Intersecting with	Design Street Maximum Grade	Distance*
<b>Principal/Major/Minor Arterial</b>	Arterial	3%	300 ft
<b>Principal/Major/Minor Arterial</b>	Major Collector	3%	300 ft
<b>Major Collector</b>	Arterial	3%	200 ft
<b>Major Collector</b>	Major Collector	3%	200 ft
<b>Minor/Local Collector</b>	Arterial/Major Collector	4%	150 ft

\*Distance measured from the intersecting street centerline.

**5.) Paving Design**

Factors which influence the performance of thoroughfare pavement include the subgrade, the quality of materials used to construct the pavement, the pavement thickness and the type and amount of traffic using the facility. In designing a pavement which will provide a reasonable degree of performance during an expected life, several of these factors can be predetermined. The load bearing capacity of the subgrade will be determined by performing a soil engineering investigation of the site. The strength of the pavement can also be established by specifications and quality control during construction. A reasonable estimate can also be made of the traffic including the number of equivalent 18,000 pound single axle loads anticipated during the expected life of the pavement.

Criteria for acceptable subgrade stabilization shall be determined by a geotechnical investigation and approved by the City of Mansfield prior to any stabilization being performed. Refer to the City of Mansfield *Materials Testing Policies* for more information.

Standard pavement sections are established and are included in the City of Mansfield's *Standard Construction Details*. High traffic volumes or a high percentage of truck traffic may dictate a different pavement section and/or subgrade than the City's Standard. The proposed pavement shall be designed in accordance with the geotechnical investigation or the *Standard Construction Details*, whichever is most suitable to the circumstance.

Refer to the City of Mansfield *Standard Construction Details* for typical street sections, sidewalks, driveways and ramp details.



## 6.) Alley Design

The use of alleys is only permitted in Planned Development Zoning Districts. The City of Mansfield is not responsible for the maintenance of alleys.

### a.) Pavement and Access Easement Width

The minimum width of residential alleys in the City of Mansfield is 14 feet of pavement. Additional pavement width may be required to support trash service, Fire access or traffic volumes. Alleys shall be located within access easements. The width of access/utility easement shall be 20 feet. 10 feet x 10 feet corner clips are required at the intersections to provide visibility. The minimum required intersection radius is 15 feet or as required by the Fire Department.

The pavement depth, rebar and subgrade shall be designed to the standards of a local residential street as presented in the City of Mansfield *Standard Construction Detail*.

## 7.) Slip Street Design

Slip streets allow homes to front along thoroughfare roadways without direct access to thoroughfare streets. These types of streets are typically located on divided roadway sections and the flow of traffic is in one direction. The design of these roadways must accommodate a WB-40 and fire truck. Minimum standards for this design are: 21 foot wide foot travel lane, 12.5 foot wide median separating the slip road from the thoroughfare road and 30 foot radii at the entrance and exit.

# III. ACCESS MANAGEMENT AND DESIGN

Access management is the practice of controlling the character of the access allowed to a roadway by applying criteria for the location, spacing, design and operation of driveways, median openings and intersections. In general, access management has the goal of balancing the access intensity with the desired mobility function of a particular roadway. For example, access management criteria typically allow the fewest access points to an arterial street in order to maximize the mobility of the roadway. Local streets on the other hand, have the highest allowable access intensity because the mobility function is less of a priority. This Section is applicable to all new development, any property that redevelops where a change in land use occurs, an expansion of 30% or greater of an existing use or if roadway and/or site improvements change traffic patterns.

## 1.) Driveway/Circulation Design and Spacing Requirements

### a.) Driveway Design and Spacing

The following table represents the minimum/maximum standards adopted by the City of Mansfield for the design and construction of driveways. For each driveway the City may require a specific combination of dimensions within these ranges based on traffic flow and safety characteristics of the driveway and the public street. See **Exhibit #2** for a diagram defining the criteria.

**DRIVEWAY DESIGN CRITERIA FOR CITY CONTROLLED ROADWAYS**

Criteria	Street Functional Class	Residential Use*	Commercial Retail/ Apartment Use	Industrial Use
<b>Driveway Throat Width</b>	Local Residential Local/ Minor Collector Major Collector Minor/Major Arterial Principal Arterial	10 – 24* ft 10 – 24* ft 15 – 24* ft N/A N/A	24 – 36 ft 24 - 36 ft 24 - 36 ft 30 – 38** ft 30 – 38** ft	24 – 45 ft 24 - 45 ft 30 – 45 ft 30 - 45 ft 30 – 45 ft
<b>Driveway Curb Radius</b>	Local Residential Local/Minor Collector Major Collector Minor/Major Arterial Principal Arterial	5 ft 5 ft 10 – 15 ft N/A N/A	15 - 20 ft 15 - 30 ft 15 – 30 ft 20 - 30 ft 20 - 30 ft	15 – 30 ft 20 - 30 ft 20 – 35 ft 20 - 35 ft 20 – 35 ft
<b>Driveway Angle</b>		90 degrees	90 degrees	90 degrees
<b>Minimum Driveway to Intersection Spacing</b> (measured from street ultimate curb line to driveway edge)	Local Residential Local/Minor Collector Major Collector Minor/Major Arterial Principal Arterial	50 ft 50 ft 75 ft N/A N/A	100 ft 125 ft 150 ft 180 ft 200 ft	100 ft 125 ft 150 ft 180 ft 200 ft
<b>Minimum Driveway Spacing</b> (measured from driveway edge to driveway edge)	Local Residential Local/Minor Collector Major Collector Minor/Major Arterial Principal Arterial	10 ft 20 ft 75 ft N/A N/A	75 ft 100 ft 150 ft 250 ft 300 ft	75 ft 100 ft 150 ft 250 ft 300 ft
<b>Minimum Property Corner Spacing</b> (measured from property line to driveway edge)	Local Residential Local/Minor Collector Major Collector Minor/Major Arterial Principal Arterial	5 ft 10 ft 38 ft N/A N/A	35 ft 50 ft 75 ft 125 ft 150 ft	35 ft 50 ft 75 ft 125 ft 150 ft
<b>Maximum Driveway Grade***</b> (to be maintained for a minimum of 10' beyond ROW line)	Local Residential Local/Minor Collector Major Collector Minor/Major Arterial Principal Arterial	10 % 10 % 10 % N/A N/A	6% 6% 4% 3% 3%	6% 4% 4% 3% 3%

\*Residential driveways may have a maximum driveway width of 24 feet for an attached 3 car front facing garage. 20 feet is the maximum width for all other garage/drive configurations. Residential lots are restricted to 32 foot maximum pavement width on lot, with flared side to the rear property line as per Section 7200-3.20 of the Zoning Ordinance (See **Exhibit #3**).

\*Residential lots that are interior to eyebrows or interior to 75 – 90 degree curves (uncontrolled intersections) may place driveways 30 feet (as measured from the driveway edge) from the interior curve curb line provided that the required AASHTO sight distance is provided.

\*Semi-Circular Drive Configurations: Drive approaches must have a minimum distance between approaches of 42 feet as measured from centerline to centerline. The approach width of the pavement is a minimum of 16 feet.

\*\* 38 foot wide driveway is required for driveways that have access to median openings. The 38 foot wide driveway must be striped with a 14 foot wide ingress lane and two 12 foot wide egress lanes. The egress lanes must include directional arrow markings.

\*\*\* Break over grades shall not exceed 12% for crest conditions and 8% for sag conditions.

**b.) Spacing Criteria for Driveways located on State Roadways**

**DRIVEWAY SPACING CRITERIA  
FOR STATE CONTROLLED ROADWAYS\***

Criteria	Posted Speed Limit	All Uses
<b>Minimum Driveway Spacing</b> (measured from driveway edge to driveway edge)	≤ 30 mph	200 ft
	35 mph	250 ft
	40 mph	305 ft
	45 mph	360 ft
	> 50 mph	425 ft

\*All driveways located on state controlled roadways require a permit from the Texas Department of Transportation. The above dimensions are subject to change based on the State's Access Management Manual.

**c.) Driveway Throat Length (Stacking Distance)**

Inadequate driveway throat length (internal stacking distance) can lead to situations where traffic circulation within a development is chaotic, unsafe and queues backing on the adjacent roadway while waiting for vehicles to clear short driveways.

This creates an unsafe situation on the public roadway system and also increases vehicle delay. Adequate throat length allows vehicle stacking to occur on site. This reduces driver confusion, traffic problems and unsafe conditions. Developments shall be designed to accommodate traffic generated by the development to queue on site and minimize disruption to the public roadway system. The minimum driveway throat length, as measured from the future street curb line to the internal parking space or drive aisle, for any type of development is 30 feet; however, throat length will be based upon the layout and traffic impact of the development. The following table reflects the recommended driveway throat lengths, as measured from the future curb line, for main access points.

#### DRIVEWAY THROAT LENGH

Development Type	Recommended Driveway Throat Length
Developments with 15,000 to 150,000 gross leasable square feet of floor area	50 to 75 ft
Developments with greater than 150,000 gross leasable square feet of floor area	100 ft

The recommended driveway throat length may be increased/decreased based upon the recommendations of a traffic impact analysis or as determined by the City Engineer.

For developments that include a drive through facility the following minimum on-site vehicle storage shall be provided.

#### DRIVE THROUGH FACILITY MINIMUM STACKING

Facility	Vehicle Stacking
Restaurant*	5 vehicles from menu board and 4 between the menu board and window
Bank	6 vehicles per lane
Other Uses	5 vehicles or as determined by the City Engineer

\*Refer to the zoning ordinance for fast food restaurants SUP requirements.

Vehicle storage shall be designed so that vehicles do not queue onto roadways, do not interfere with parking or internal circulation of the development and do not block driveways.

d.) Parking Space Locations

Parking spaces shall be located as not to interfere with driveway locations and operations. No parking spaces will be allowed within the area of the required driveway stacking distance or within the extended driveway throat area. Parking spaces shall not be permitted in areas that will interfere with driveway/roadway operation.

e.) Cross Access/Shared Access

The use of cross access/shared access (Common Access Easements) by developments provides for developments to share driveways or for vehicles/pedestrians to cross between developments without having to access a public roadway. The use of shared driveways and cross access improves operations and safety on the adjacent public roadways by limiting access points along the roadway, reducing traffic volumes and congestion.

The use of cross access/shared access between compatible property uses is strongly encouraged and may be required by the City. If cross access/shared access is provided; an access easement shall be created by plat or separate instrument and filed with the County. The property owners are responsible for the maintenance of these easements.

f.) Driveway Offsets

Driveways (non-single family) on undivided roadways shall align centerline to centerline. If centerline alignment is not practical as determined by the City Engineer, the minimum acceptable centerline offset is 125 feet.

On arterial streets where a median opening exists or is proposed the proposed driveway must align with the centerline of the median opening or be offset 150 feet as measured from driveway centerline to median opening center line.

2.) Median and Median Opening Design and Requirements

a.) Median Opening Design

Median openings are generally permitted at a minimum spacing of 450 feet (measured median nose to median nose) on Major Arterials and 600 feet on Principal Arterials. Median opening spacing may be modified based on topography, adjacent property locations, major intersections, roadway or site characteristics, etc.

Requests for a median opening on an existing roadway should include a drawing to scale that shows the distances to nearest median openings and all existing and proposed driveways, property lines and owner information, utilities, streetlights, landscaping and signage. Letters from affected property owners may be required as a condition of review/approval.

At median opening locations the developer/property owner may be required to provide cross access easements to serve the adjacent properties.

The minimum width of median openings shall be 60 feet. The median noses are typically located 12 to 15 feet beyond the projection of the driveway/street throat (typically 12 feet for bullet noses and 15 feet for semi-circles.) The exact width of the median opening will be dependant upon the roadway geometry and the type of traffic expected to be served.

The median nose design may be bullet or semi-circles depending on the roadway and type of use of the median opening. Where heavy truck traffic is anticipated or roadway geometry does not lend itself to the semi-circle design, the City Engineer may allow/require the nose to be designed as a bullet-nose.

**b.) Median Width**

Refer to the City of Mansfield's *Standard Construction Details* For median width at mid blocks and left-turn lanes

**c.) Landscaping in Medians**

Median landscaping shall be designed in a manner that does not impact driver visibility. Factors that could limit driver visibility are roadway vertical and horizontal curvature, vegetation height and width, tree placement along with median height (berms).

Typical areas of concern are median noses that are located across from left-turn bays and placement of vegetation and trees around horizontal curves. The use of Crepe Myrtles and Feather Grasses near median noses is highly discouraged.

The placement of trees shall be in a manner that does not create a "wall effect" with the tree trunks. The design should accommodate trees that are staggered and provide lines of sight. All trees shall be trimmed to a minimum foliage height of 10 feet.

### 3.) Auxiliary Lanes

Auxiliary lanes consist of left-turn and right-turn lanes. Left-turn and right-turn movements along with vehicle acceleration and deceleration of these turning movements have an impact on the adjacent street system. Auxiliary lanes are provided to remove turning vehicles from the main traffic stream which reduces the delay and impact to thru movement vehicles.

#### a.) Deceleration/Right-Turn Lane Requirements

To minimize the impact right-turn movements have on the adjacent street system the City will require developers to design and construct a right-turn deceleration lane for any driveway located on a major street facility (Major Collector and higher as designated on the latest *Master Thoroughfare Plan*) where the right-turn movements at the drive approach is projected to meet or exceed 50 right-turns in the peak hour of site operation or if the use of the driveway is determined by the City Engineer to cause excessive delay or safety issues on the street system (e.g. high background volumes, heavy truck traffic).

Right-turn lanes are also required at public street intersections where a roadway classified as a Major Collector and above intersects with a roadway classified as a Major Collector and above.

#### b.) Deceleration/Right-Turn Lane Design

Right-turn deceleration lanes at driveways should be designed to handle the traffic and stacking needs of the site as determined by a traffic impact analysis or the City Engineer; however, a minimum of 100 feet of storage and 100 feet of transition will be required. If the deceleration lane also serves a public roadway or a large amount of truck traffic, the transition should be increased to 150 feet. The transition shall consist of equal length reverse curves. The width of the right-turn lane shall be 11 feet wide (11 ½ feet to back of curb). Right-of-way shall be dedicated that follows the storage and transition lengths. The width of this right-of-way dedication shall keep a consistent parkway width (10 feet of ROW dedication is typical).

Drive approaches shall not be allowed within the transition area of any street or driveway deceleration/right-turn lane.

A continuous or extended deceleration lane may be required when the following conditions exist: 1) the approved driveway is located within an existing right-turn lane and the right-turn lane storage to the proposed driveway does not meet the minimum design criteria (minimum 50 feet from the driveway throat to the transition), 2) the driveway that is served by the required deceleration lane is within 200 feet of a major intersection, 3) the location of the right-turn lane creates the visual impression that it serves a distant public street or driveway, 4) two or more consecutive driveways are planned and each meets the requirement for right-turn deceleration lane.

The minimum storage and transition for a deceleration lane that serves a public street is 150 feet of storage and 150 feet of transition. The storage may be increased based up roadway traffic volumes, roadway geometry and adjacent types of development.

### c.) Left-Turn Lane Requirements/Design

Driveways and public/private streets that align with median openings are required to be served by left-turn lanes. The left-turn lanes shall be designed to handle the traffic and stacking needs of the site and/or roadway as determined by a traffic impact analysis or the City Engineer; however, a minimum storage length of 150 feet shall be provided for left-turn lanes that serve driveways and non thoroughfare streets. A minimum 200 feet of storage shall be provided for left-turn lanes that serve thoroughfare streets. All left-turn lanes are required to contain 150 feet of transition. The transition should consist of equal length reverse curves (typical curve radii is 515 feet). The width of the lane shall be 11 feet wide (11 ½ feet to back of curb).

Refer to City of Mansfield *Standard Construction Details* for construction requirements.

### d.) Dual Left-Turn Lane Design

High left turn volumes at signalized intersections greatly reduce the level-of-service and increase delays. To reduce delay and improve the intersection level-of-service dual left-turn lanes may be installed at high volume intersections. The City design criteria is 300 left-turns in the peak hour as a threshold for dual left-turn lanes or as determined by the City Engineer.

Dual left-turn lanes consist of 2 – 11 foot wide lanes (11 ½ feet to back of curb). The recommended storage length is 250 feet. The minimum acceptable transition to accommodate two left-turn lanes is 250 feet. Turning movement templates must be provided to verify the intersection will be able to accommodate the dual left turns. "Puppy track" striping must be included with the design. Signal modifications will also be required. These modifications may include longer mast arms, larger shafts/foundations additional signal heads, and signage. Depending on the existing intersection geometry, additional right-of-way may be required to accommodate a dual left-turn design.

## IV. **Other Infrastructure Improvements**

### 1.) Traffic Signals

The design and layout of a traffic signal is dependent upon the intersection geometry and signal operation however the following standards, in addition to TxDOT Specifications and Standards are required in the signal design.

- Signal poles and foundations are to be located within the parkways.
- Signal heads shall be mounted horizontally for City roadways and vertically for State roadways. These signal heads shall be yellow in color with black back plates.
- Signal cabinets shall be double door NEMA TS2-Type 1.
- All travel directions must include radar detection.
- An Uninterruptible Power Supply (UPS) System shall be installed. This system should be placed in a separate cabinet with a generator plug and a confirmation light. This cabinet should be mounted on the outside of the controller cabinet.
- An Opticom System or approved emergency detection system must be included. This system serves the thoroughfare streets and other high volume approaches.
- A communication system, signal controller and PTZ camera that are compatible with the City's Traffic Management Center must be included.
- Luminaries should be included and positioned directly above and in line with the associated mast arm.
- Initial signal timing plans.



Contact the Transportation Engineer for the most current traffic signal specifications and standards for controllers, cabinets, pedestrian heads and other signal equipment.

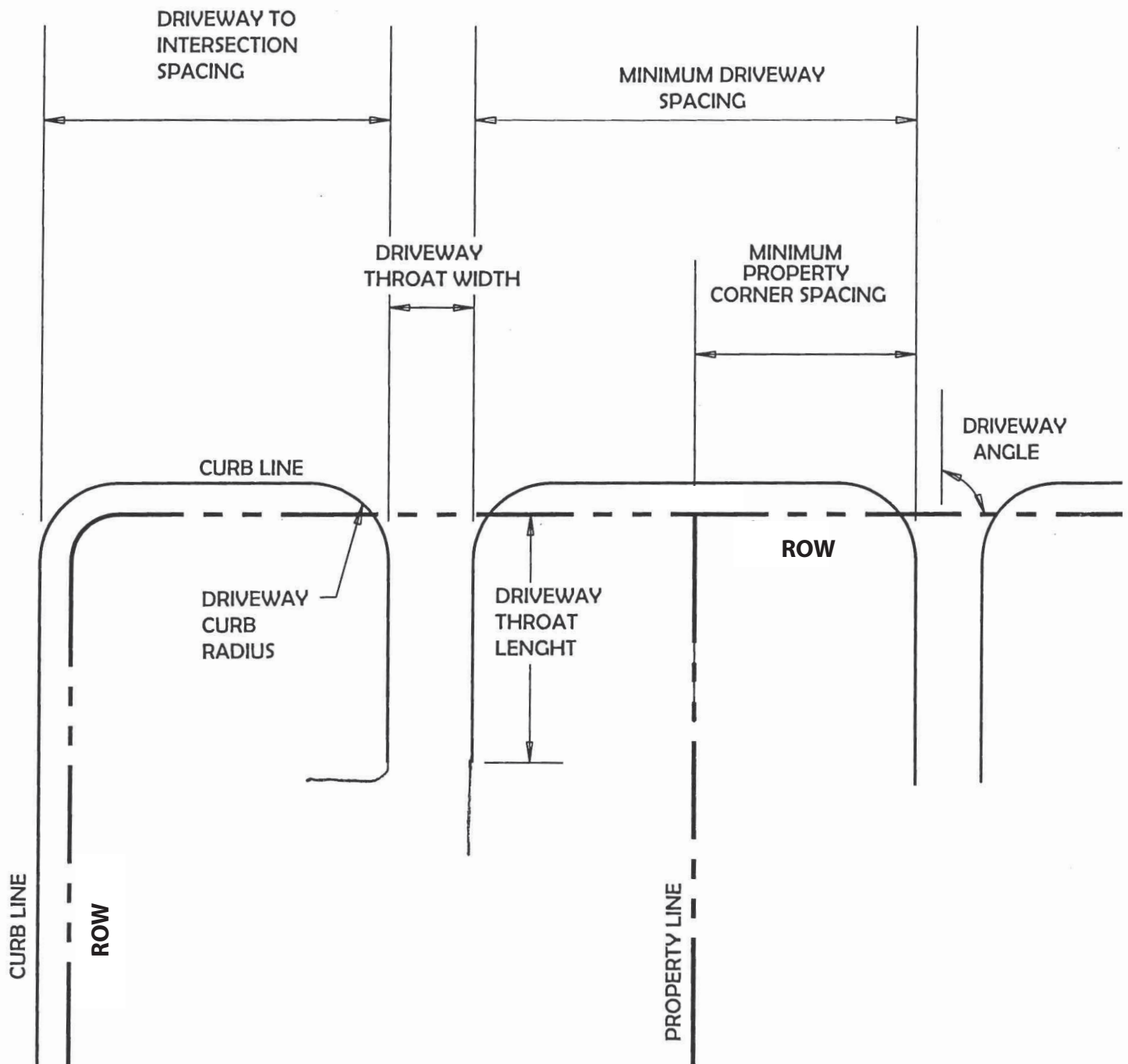
Designs shall be consistent with standards specified in the current Texas Manual on Uniform Traffic Control Devices (TxMUTCD).

## 2.) Striping/Markings/Signage

All striping and signage must follow the TxMUTCD. The City uses traffic buttons to designate lane lines on Concrete pavements and follows TxDOT standards for asphalt pavements. Refer to City of Mansfield *Standard Construction Details* for marking layouts and information. Thermoplastic is used for all other markings (e.g. stop bars, cross walks, arrows, words).

# Exhibit 1

## DRIVEWAY DESIGN CRITERIA

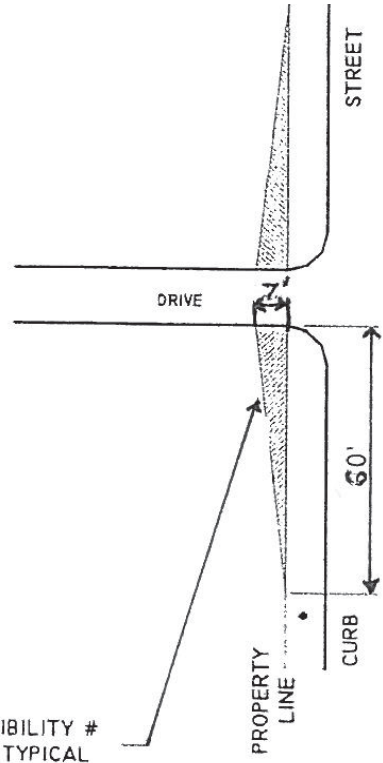
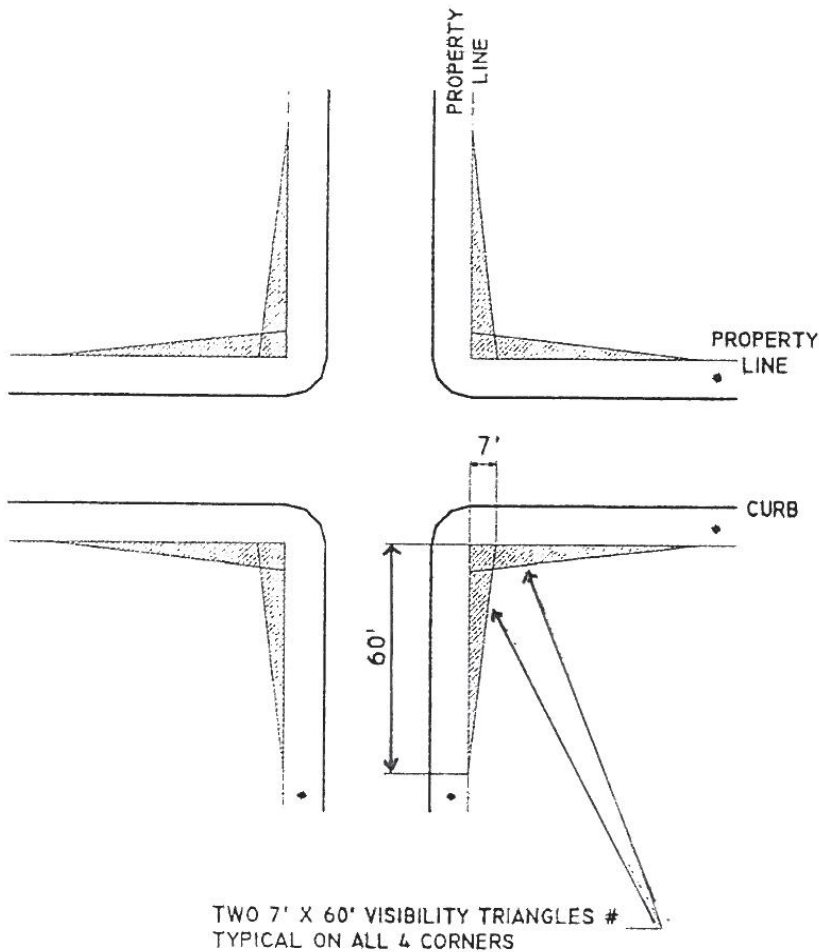


# Exhibit 2



## DRIVEWAY AT ANY PUBLIC STREET

## DRIVEWAY AT ANY PUBLIC STREET



\* – VARIABLE DISTANCE. THIS DISTANCE IS DEPENDENT UPON HORIZONTAL AND VERTICAL CURVATURE OF THE STREET AND SHALL BE CALCULATED IN ACCORDANCE WITH THE LATEST EDITION OF THE AASHTO HANDBOOK.

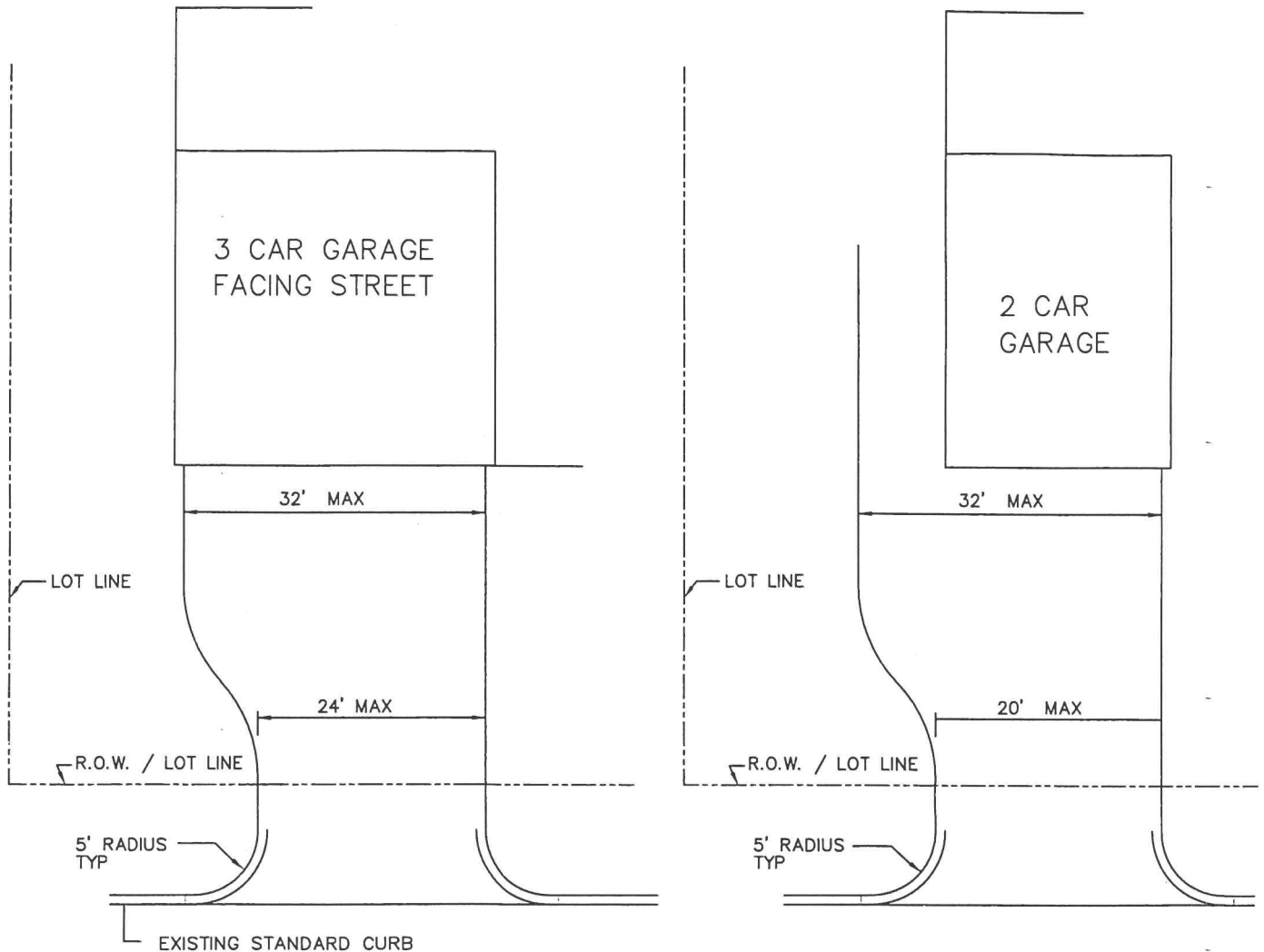
# – NOTHING OVER 2' IN HEIGHT, AS MEASURED FROM THE TOP OF THE CURB, IS ALLOWED WITHIN THESE VISIBILITY TRIANGLES.

\* \_\_ VARIABLE DISTANCE. THIS DISTANCE IS DEPENDENT UPON HORIZONTAL & VERTICAL CURVATURE OF THE STREET AND SHALL BE CALCULATED IN ACCORDANCE WITH THE LATEST EDITION OF THE AASHTO HANDBOOK.

# \_\_ NOTHING OVER 2' IN HEIGHT, AS MEASURED FROM THE TOP OF THE CURB IS ALLOWED WITHIN THESE VISIBILITY TRIANGLES.

# Exhibit 3

## RESIDENTIAL DRIVEWAY WIDTH



- (1) 24' MAX APPROACH FOR ATTACHED 3 CAR FRONT FACING GARAGE
- (2) 20' MAX FOR ALL OTHER GARAGE / DRIVE CONFIGURATIONS
- (3) 32' MAX PAVEMENT WIDTH ON LOT, WITH FLARED SIDE TO THE NEAR PROPERTY LINE  
(SECTION 7200-3.20 OF THE ZONING ORDINANCE)
- (4) SEE CITY STANDARD CONSTRUCTION DETAILS FOR DRIVE APPROACH