WATER, SEWER, STORM DRAIN AND PAVING IMPROVEMENTS

TO SERVE

NICOLE COURT ADDITION
BLOCK 1, LOTS 1-12

IN THE CITY OF
BEDFORD, TEXAS

PUBLIC SERVICES SIGNATURE BLOCK:

_____ _____
DATE

DESIGN SPEED = 30 MPH

Vicinity Map
N.T.S

FEBRUARY 2023

INDEX OF SHEETS	
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CIVIL ENGINEERING PLANS	
	FINAL PLAT
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	CITY STANDARD DETAILS

Engineer:
Keith Hamilton, P.E.
Hamilton Duffy, P.C.
Texas Firm Reg. No. F-5260
8241 Mid-Cities Boulevard, Suite 100
N. Richland Hills, Tx 76182
Ph. 817.268.0408

2-15-23

VICINITY MAP
NOT TO SCALE

Graphic Scale in Feet
0 20' 40' 60'
SCALE: 1"=20'

LINE TABLE		
LINE	BEARING	DISTANCE
L1	N 45°04'33" W	35.54'
L2	N 89°46'55" W	14.50'
L3	N 44°55'27" E	35.17'

CURVE TABLE					
CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	40.50'	200.58'	50.00'	N 00°13'05" E	283°45'50"

LOT 44
J. R. MURPHY ADDITION
VOL. 388-N, PG. 71
P.R.T.C.T.

LOT 9

1/2" IRF W/CAP(C.M.)

S 89°46'55" E 391.30'

1/2" IRF W/CAP "MOAK SURVEYING" BEARS N 89°47'W-0.30'

81.30' 60.00' 60.00' 60.00' 60.00' 70.00'

5' UTILITY EASEMENT VOL. 388-N, PG., 71 P.R.T.C.T.

10' W.L.E. BY THIS PLAT

BLOCK 1

LOT 43
J. R. MURPHY ADDITION
VOL. 388-N, PG. 71
P.R.T.C.T.

30.0'

LOT 10

LOT 6
PRIVATE DRAINAGE & UTILITY EASEMENT
8810 SQ. FT.

LOT 5
6694 SQ. FT.

LOT 4
6720 SQ. FT.

LOT 3
6720 SQ. FT.

LOT 2
6720 SQ. FT.

LOT 1
7592 SQ. FT.

136.85' S 00°13'05" W 105.05' S 00°13'05" W 112.00' S 00°13'05" W 112.00' S 00°13'05" W 112.00' S 00°13'05" W 112.00' 87.01'

10' U.E. & S.W.E. BY THIS PLAT

10' U.E. BY THIS PLAT

20' B.L.

L=90.26' L=9.95' L3

53.03' 60.00' 60.00' 60.00' 46.15'

S 89°46'55" E 279.07'

LOT 11

BLOCK B, PHASE II BEDFORD MEADOWS
VOL. 388-110, PG. 68
P.R.T.C.T.

N 00°22'12" W 273.70'

R=40.50'

25.0'

NICOLE COURT
(50' R.O.W.)

50.0'

PASSING AT 137.00' A 1/2" IRF

N 89°46'55" W 336.30'

25.0'

50.00' S 00°22'12" E 274.00'

MURPHY ROAD
(60' R.O.W.)

5/8" IRF L2 C1

N 89°46'55" W 279.80'

54.79' 60.00' 60.00' 60.00' 45.00'

L=92.73' L=7.72' L1

10' U.E. BY THIS PLAT

20' B.L.

30.0'

LOT 12

LOT 7
8775 SQ. FT.

LOT 8
6690 SQ. FT.

LOT 9
6709 SQ. FT.

LOT 10
6712 SQ. FT.

LOT 11
6714 SQ. FT.

LOT 12
7589 SQ. FT.

136.85' S 00°13'05" W 106.16' S 00°13'05" W 111.79' S 00°13'05" W 111.84' S 00°13'05" W 111.89' S 00°13'05" W 111.93' 86.99'

5' UTILITY EASEMENT VOL. 388-N, PG., 71 P.R.T.C.T.

10' W.L.E. BY THIS PLAT

BLOCK 1

LOT 42
J. R. MURPHY ADDITION
VOL. 388-N, PG. 71
P.R.T.C.T.

10' U.E. BY THIS PLAT

LOT 13

5/8" IRF (C.M.) 80.15' 60.00' 60.00' 60.00' 60.00' 71.15' P.O.B. 1/2" IRF

N 89°44'17" W 391.30'

LOT 14

LOT 41
J. R. MURPHY ADDITION
VOL. 388-N, PG. 71
P.R.T.C.T.

LOT 30
J. R. MURPHY ADDITION
VOL. 388-N, PG. 71
P.R.T.C.T.

LOT 31
J. R. MURPHY ADDITION
VOL. 388-N, PG. 71
P.R.T.C.T.

1/2" IRF

LOT Q
J. R. MURPHY ADDITION
VOL. 388-9, PG. 53
P.R.T.C.T.

SECOND STREET
(60' R.O.W.)

ABBREVIATIONS	
D.R.T.C.T.	DEED RECORDS OF TARRANT COUNTY, TEXAS
P.R.T.C.T.	PLAT RECORDS OF TARRANT COUNTY, TEXAS
VOL.	VOLUME
PG.	PAGE
CAB.	CABINET
DOC. NO.	DOCUMENT NUMBER
C.M.	CONTROLLING MONUMENT
IRF	IRON ROD FOUND
R.O.W.	RIGHT-OF-WAY
B.L.	BUILDING LINE
U.E.	UTILITY EASEMENT
W.L.E.	WATER LINE EASEMENT
S.W.E.	SIDEWALK EASEMENT

NOTES

1. This Survey is issued without the benefit of a current title report and is subject to revision upon receipt thereof. All easements and setback lines shown hereon per the plat of J. R. Murphy Addition, recorded in Volume 388-N, Page 71 P.R.T.C.T. Surveyor has done no additional research for possible easements, restrictions or covenants which may affect this property.

2. All bearings shown hereon are based on the Texas Coordinate System of 1983, North Central Zone.

3. Unless otherwise noted, all boundary and/or lot corners for the subject property shown hereon are 1/2" iron rods set with a cap stamped "SPRY 5647"

4. The Surveyor has not physically located any underground utilities and/or improvements which may be located under or near the subject property.

5. According to the Flood Insurance Rate Map Nos. 48439C0210K dated September 25, 2009, and 48439C0230L dated March 21, 2019, published by the Federal Emergency Management Agency, the surveyed property shown hereon does not lie within any special flood hazard area inundated by the 100-year flood.

6. Perpetual maintenance of private facilities is the obligation of the party owning any interest in the property abutting, adjacent to, or included within a designated private facility or common space.

7. The City of Bedford shall not maintain private facilities.

8. "Party" includes, but is not limited to: individual property owner, home owner's association, and property management company.

9. "Private facility" includes, but is not limited to: dedicated open/common spaces, private drainage easements and facilities, private wastewater facilities, retaining walls, fences, and fire lanes.

This document shall not be recorded for any purpose. This drawing shall be used for REVIEW PURPOSES ONLY
David Carlton Lewis
R.P.L.S. No. 5647
Date: February 10, 2023

APPROVAL BY THE PLANNING AND ZONING COMMISSION

Date

Chairperson, Planning and Zoning Commission

Planning and Zoning Secretary

Mayor, City of Bedford

City Secretary City of Bedford

OWNERS:
Terry Parton & Kelly Parton
2505 Murphy Drive
Bedford, TX 76021

Deloma Parton & Wayne Parton
2511 Murphy Drive
Bedford, TX 76021

ENGINEER:
Hamilton Duffy, P.C.
E.S.&C.M., Inc.
8241 Mid-Cities Blvd., Ste.100
North Richland Hills, TX 76182
Phone: 817-268-0408

SURVEYOR:
Spry Surveyors, LLC
8241 Mid-Cities Blvd., Ste.102
North Richland Hills, TX 76182
Phone: 817-776-4049
Spry Project No. 034-281-30
Firm Reg. No. 10112000

A PRELIMINARY PLAT OF
LOTS 1-12, BLOCK 1

NICOLE COURT ADDITION

AN ADDITION TO THE CITY OF BEDFORD
BEING A REPLAT OF LOTS 42 AND 43,
J.R. MURPHY ADDITION, VOL. 388-N, PG. 71 P.R.T.C.T.
WHICH IS 2.460 ACRES
IN THE A.J. WOODSON SURVEY, A - 1641
CITY OF BEDFORD, TARRANT COUNTY, TEXAS

DATE: JANUARY 2023

OWNER'S DEDICATION
STATE OF TEXAS
COUNTY OF TARRANT

WHEREAS Terry Parton, Kelley Parton, Deloma Parton and Wayne Parton owners of all that certain 2.460 acres of land, by virtue of the deeds recorded in Document Number D202095674 & D207143119, in the Deed Records of Tarrant County, Texas (D.R.T.C.T.), which is all of Lot 42 and Lot 43, J.R. Murphy Addition, recorded in Volume 388–N, Page 71, in the Plat Records of Tarrant County, Texas (P.R.T.C.T.), in the A.J. Woodson Survey, A–1641, City of Bedford, Tarrant County, Texas and more particularly described by metes and bounds as follows: (All bearings shown hereon are based on the Texas Coordinate System of 1983, North Central Zone)

BEGINNING at a 1/2" iron rod found for the southeast corner of said Lot 42, J.R. Murphy Addition, common to the northeast corner of Lot 41 of said J.R. Murphy Addition, in the west right–of–way line of Murphy Road (a 60' right–of–way);

THENCE North 89° 44' 17" West – 391.30' to a 5/8" iron rod found for the common west corner of said Lot 41 and Lot 42, J.R. Murphy Addition, in the east line of Block B, Phase I, Bedford Meadows, recorded in Volume 388–110, Page 68, P.R.T.C.T.;

THENCE North 00° 22' 12" West –273.70', along the east line of said Block B, Phase I, Bedford to a 1/2" iron rod found for the common west corner of Lot 43 and Lot 44, of said J.R. Murphy Addition;

THENCE South 89° 46' 55" East – 391.30' along the north line of said Lot 43, common to the south line of said Lot 44, to the northeast corner of the herein described tract, in the west right–of–way line of said Murphy Road, from which a 1/2" iron rod with a cap stamped "MOAK SURVEYING" bears North 89° 47' West – 0.30';

THENCE South 00° 22' 12" East, along the west right–of–way line of said Murphy Road, passing at a distance of 137.00' a 1/2" iron rod found for the common east corner of said Lot 42 and Lot 43, continuing for a total distance of 274.00' to the POINT OF BEGINNING and containing 2.460 acres of land.

NOW THEREFORE, KNOW ALL PERSONS BY THESE PRESENTS:

That Terry Parton, Kelly Parton, Deloma Parton, and Wayne Parton, the Owners, do hereby adopt this plat designating the herein before described property as LOTS 1–12, BLOCK 1, NICOLE COURT ADDITION, an addition to the City of Bedford, Tarrant County, Texas, and does hereby dedicate fee simple to the public use forever any streets, rights–of–way, and alleys shown thereon, and does hereby reserve the easements shown on this plat for the mutual use and accommodation of all public utilities desiring to use or using the same. Any public utility shall have the right to remove and keep removed all or part of any buildings, fences, trees, shrubs or other improvements or growths in which any way endanger or interfere with the construction , maintenance or efficiency of its respective systems on any of these easements, and any public utility shall at all times have the right of ingress and egress to and from and upon the said easements for the purpose of constructing, reconstructing, inspecting, and patrolling, without the necessity at any time of procuring the permission of anyone. This plat approved subject to all platting ordinances, rules, regulations, and resolutions of the City of Bedford, Texas.

Witness my hand this _____ day of _____, 2023.

_____ _____ _____
Name Title

NOTARY CERTIFICATE

STATE OF TEXAS

COUNTY OF TARRANT

Before me, the undersigned authority, a Notary Public in and for the said County and State, on this day personally appeared Terry Parton, 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 considerations therein expressed and in the capacity therein stated and as the act and deed therein stated.

Given under my hand and seal of office, this _____ day of _____, 2023.

_____
Notary Signature Notary Stamp:

Witness my hand this _____ day of _____, 2023.

_____ _____
Terry Parton

NOTARY CERTIFICATE

STATE OF TEXAS

COUNTY OF TARRANT

Before me, the undersigned authority, a Notary Public in and for the said County and State, on this day personally appeared Kelly Parton, 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 considerations therein expressed and in the capacity therein stated and as the act and deed therein stated.

Given under my hand and seal of office, this _____ day of _____, 2023.

_____
Notary Signature Notary Stamp:

Witness my hand this _____ day of _____, 2023.

_____
Kelly Parton

NOTARY CERTIFICATE

STATE OF TEXAS

COUNTY OF TARRANT

Before me, the undersigned authority, a Notary Public in and for the said County and State, on this day personally appeared Deloma Parton, 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 considerations therein expressed and in the capacity therein stated and as the act and deed therein stated.

Given under my hand and seal of office, this _____ day of _____, 2023.

_____
Notary Signature Notary Stamp:

Witness my hand this _____ day of _____, 2023.

_____ _____
Deloma Parton

NOTARY CERTIFICATE

STATE OF TEXAS

COUNTY OF TARRANT

Before me, the undersigned authority, a Notary Public in and for the said County and State, on this day personally appeared Wayne Parton, 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 considerations therein expressed and in the capacity therein stated and as the act and deed therein stated.

Given under my hand and seal of office, this _____ day of _____, 2023.

_____
Notary Signature Notary Stamp:

Witness my hand this _____ day of _____, 2023.

_____ _____
Wayne Parton

SURVEYOR CERTIFICATE

That I, David Carlton Lewis, a Registered Professional Land Surveyor licensed in the State of Texas, do hereby certify that I have prepared this plat from an actual on the ground survey of the land and the monuments shown hereon were found and/or placed under my personal supervision and in accordance with the Platting Rules and Regulations of the City Plan Commission of the City of Bedford, Texas.

This document shall not be recorded for any purpose. This drawing shall be used for
REVIEW PURPOSES ONLY
David Carlton Lewis
R.P.L.S. No. 5647
Date: February 10, 2023

_____
David Carlton Lewis, R.P.L.S.
Texas Registration No. 5647
Spry Surveyors, LLC.
8241 Mid Cities Blvd Ste 102
N. Richland Hills, TX 76182

STATE OF TEXAS
REGISTERED
DAVID CARLTON LEWIS
5647
PROFESSIONAL
LAND SURVEYOR

OWNERS:
Terry Parton & Kelly Parton
2505 Murphy Drive
Bedford, TX 76021

Deloma Parton & Wayne Parton
2511 Murphy Drive
Bedford, TX 76021

ENGINEER:
Hamilton Duffy, P.C.
E.S.&C.M., Inc.
8241 Mid–Cities Blvd., Ste.100
North Richland Hills, TX 76182
Phone: 817–268–0408

SURVEYOR:
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8241 Mid–Cities Blvd., Ste.102
North Richland Hills, TX 76182
Phone: 817–776–4049
Spry Project No. 034–281–30
Firm Reg. No. 10112000

A PRELIMINARY PLAT OF
LOTS 1-12, BLOCK 1

NICOLE COURT ADDITION

AN ADDITION TO THE CITY OF BEDFORD
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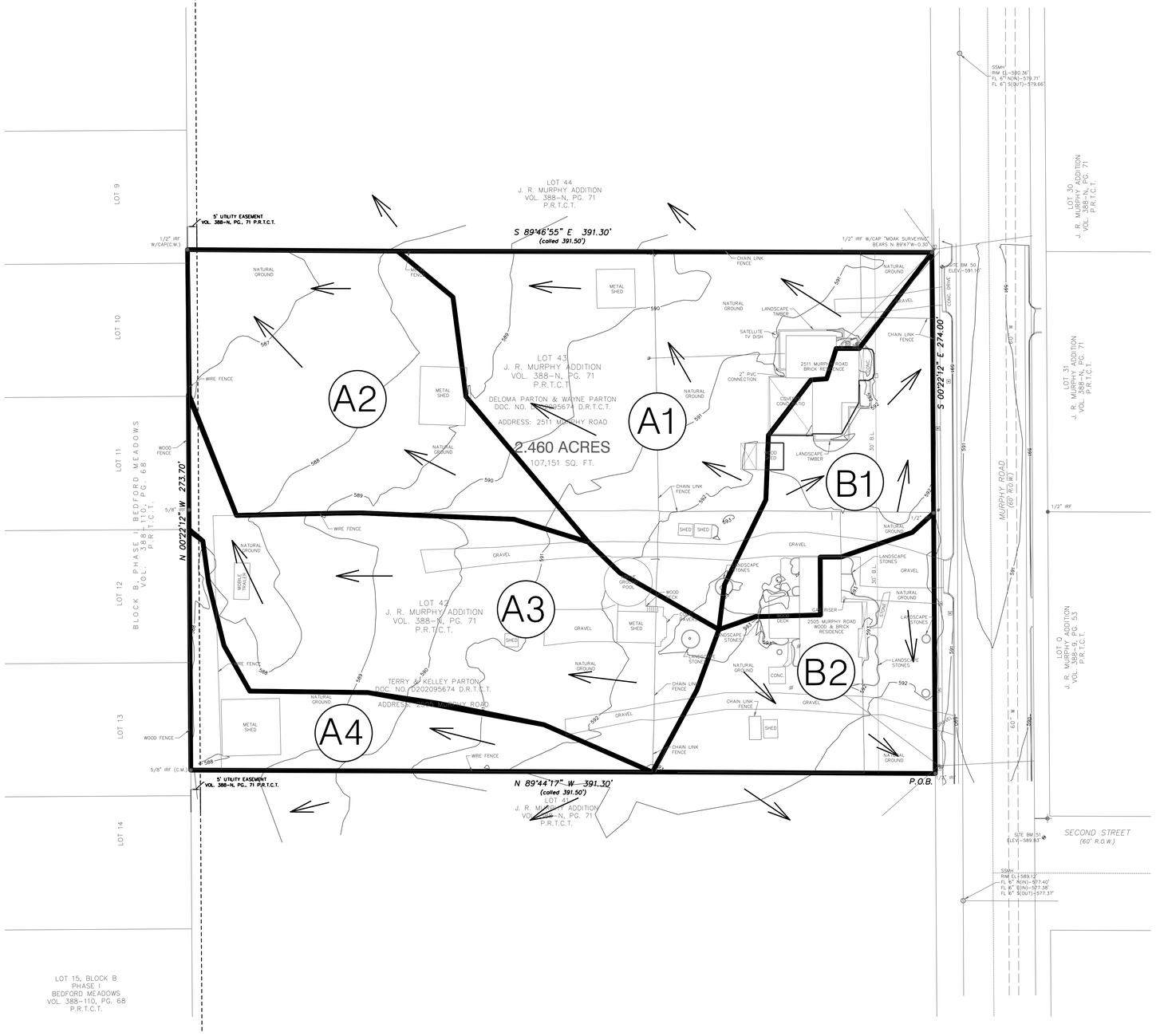
J.R. MURPHY ADDITION, VOL. 388–N, PG. 71 P.R.T.C.T.
WHICH IS 2.460 ACRES
IN THE A.J. WOODSON SURVEY, A – 1641
CITY OF BEDFORD, TARRANT COUNTY, TEXAS

DATE: JANUARY 2023



LEGEND

590 — EXISTING ELEVATION CONTOUR AS SURVEYED (OFFSITE CONTOURS PER NCTCOG)

FLOW DIRECTION

DRAINAGE DIVIDE

SCALE 1" = 30'

0 15 30 60

N

DRAINAGE AREA COMPUTATIONS

BASIS:

- Q = CIA (Rational Method)
- Q = Storm discharge (cubic feet per second)
- C = runoff coefficient, based on land use
- I = average rainfall intensity for time of concentration (inches per hour) (per Technical Paper No. 40)
- A = area contributing runoff (acres)

RUNOFF COEFFICIENT:

- C = 0.95 Impervious Areas (Rooftops, paving)
- C = 0.50 Gravel Areas
- C = 0.30 Undeveloped Areas (Agriculture, grass)
- C = 0.60 Single Family Zoning Districts (<0.25 acre lots)
- C = 0.55 Single Family Zoning Districts (>0.25 acre lots)

STORM FREQUENCY:

5 Years - Enclosed Pipe System
100 Years - Combined Enclosed Pipe System + Street + R.O.W.

TIME OF CONCENTRATION:

Combination of inlet time and time of flow in the drain being the time for water to flow over the surface of the ground to the storm drain inlet (onsite + offsite, if applicable)

MINIMUM INLET TIME OF CONCENTRATION:

Undeveloped, Park Areas	20 minutes
Residential, Single Family	15 minutes
Commercial, Business	10 minutes

UNDEVELOPED SITE DRAINAGE DATA

MARK	AREA (AC)	C	Tc (MIN.)	I_2 (IN/HR)	I_5 (IN/HR)	I_{25} (IN/HR)	I_{50} (IN/HR)	I_{100} (IN/HR)	Q_2 (CFS)	Q_5 (CFS)	Q_{25} (CFS)	Q_{50} (CFS)	Q_{100} (CFS)	COMMENTS
A1	0.66	0.35[1]	15	4.4	5.4	7.7	8.8	9.6	1.0	1.2	1.8	2.0	2.2	SHEETFLOW TO NORTH
A2	0.47	0.33[2]	15	4.4	5.4	7.7	8.8	9.6	0.7	0.8	1.2	1.4	1.5	TO WEST LOT 10
A3	0.58	0.34[3]	15	4.4	5.4	7.7	8.8	9.6	0.9	1.1	1.5	1.7	1.9	TO WEST LOT 11
A4	0.21	0.36[4]	15	4.4	5.4	7.7	8.8	9.6	0.3	0.4	0.6	0.7	0.7	TO WEST LOTS 12 AND 13
B1	0.25	0.45[5]	15	4.4	5.4	7.7	8.8	9.6	0.5	0.6	0.9	1.0	1.1	TO NE (MURPHY ROAD)
B2	0.30	0.43[6]	15	4.4	5.4	7.7	8.8	9.6	0.6	0.7	1.0	1.1	1.2	TO SE (MURPHY ROAD)

1) WEIGHTED RUNOFF COEFFICIENT = [0.04(0.95)+0.02(0.50)+0.60(0.30)]/0.66 = 0.35
2) WEIGHTED RUNOFF COEFFICIENT = [0.02(0.95)+0.45(0.30)]/0.47 = 0.33
3) WEIGHTED RUNOFF COEFFICIENT = [0.02(0.95)+0.06(0.50)+0.50(0.30)]/0.58= 0.34
4) WEIGHTED RUNOFF COEFFICIENT = [0.02(0.95)+0.19(0.30)]/0.21 = 0.36
5) WEIGHTED RUNOFF COEFFICIENT = [0.05(0.95)+0.03(0.50)+0.17(0.30)]/0.25 = 0.45
6) WEIGHTED RUNOFF COEFFICIENT = [0.04(0.95)+0.06(0.50)+0.20(0.30)]/0.30 = 0.43

HAMILTON DUFFY, PC
CONSULTING
CIVIL & ENVIRONMENTAL ENGINEERS - PLANNERS - CONSTRUCTION MANAGERS
8241 MID-CITIES BLVD. - NORTH RICHLAND HILLS, TEXAS 76182
PHONE (817)268-8488 www.hamiltonduffy.com

NICOLE COURT ADDITION

BEDFORD, TEXAS

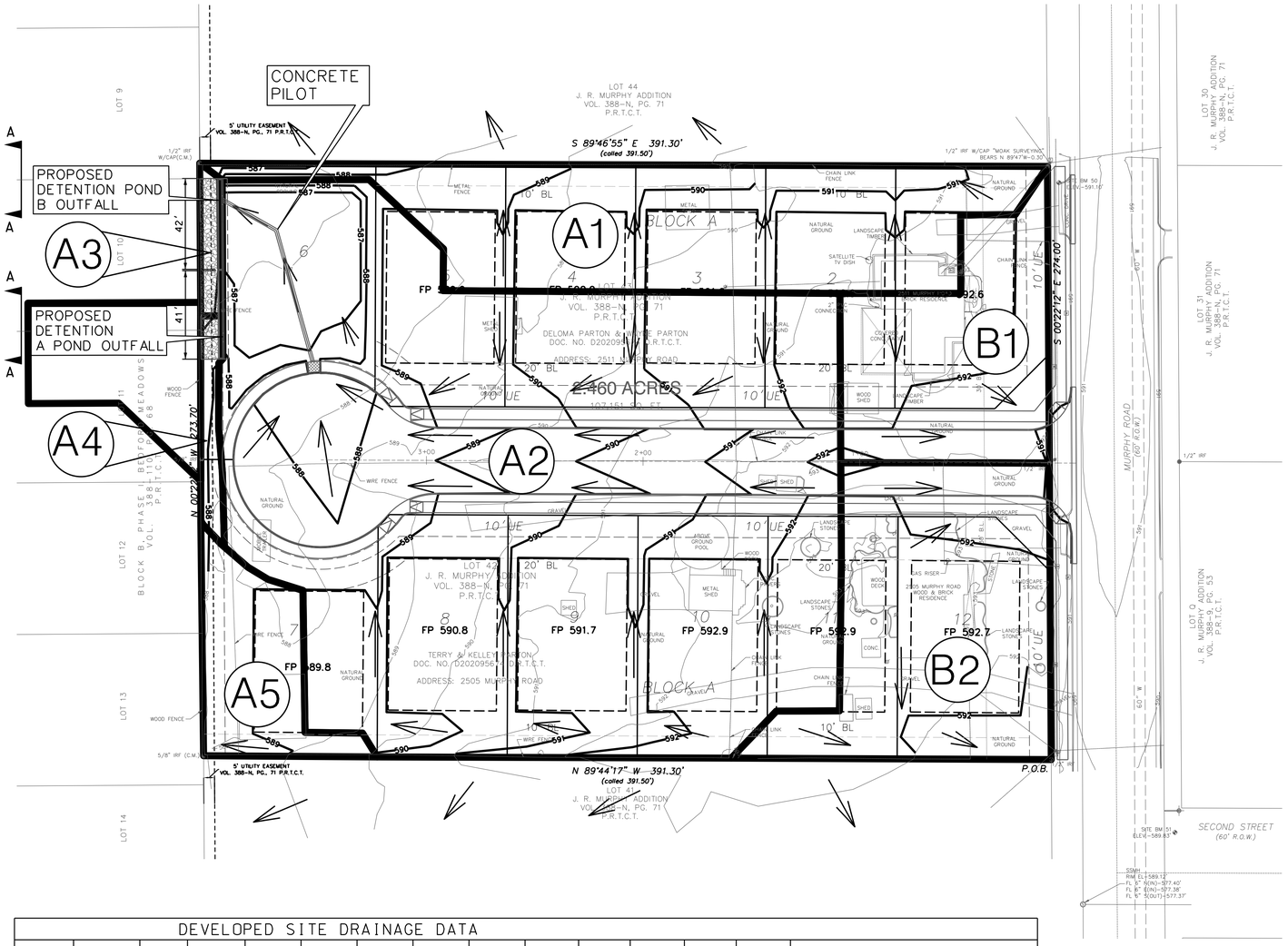
PRE-DEVELOPED DRAINAGE AREA MAP

STATE OF TEXAS
KEITH M. HAMILTON
87384
LICENSED PROFESSIONAL ENGINEER
2-15-23

JOB	999-372
DATE	2-15-23
DESIGNED	K.M.H.
DRAWN	K.M.H.
CHECKED	K.M.H.
TEXAS FIRM NO.	F-4290

NO.	REVISION	BY	DATE

SHEET
C1.10



LEGEND

590 — EXISTING ELEVATION CONTOUR AS SURVEYED (OFFSITE CONTOURS PER NCTCOG)

590 — PROPOSED ELEVATION CONTOUR

FLOW DIRECTION

DRAINAGE DIVIDE

SCALE 1" = 30'

0 15 30 60

N

DRAINAGE AREA COMPUTATIONS

BASIS:

- Q = CIA (Rational Method)
- Q = Storm discharge (cubic feet per second)
- C = runoff coefficient, based on land use
- I = average rainfall intensity for time of concentration (inches per hour) (per Technical Paper No. 40)
- A = area contributing runoff (acres)

RUNOFF COEFFICIENT:

C = 0.60 Single Family Zoning Districts (<0.25 acre lots)

STORM FREQUENCY:

5 Years - Enclosed Pipe System
100 Years - Combined Enclosed Pipe System + Street + R.O.W.

TIME OF CONCENTRATION:

Combination of inlet time and time of flow in the drain being the time for water to flow over the surface of the ground to the storm drain inlet (onsite + offsite, if applicable)

MINIMUM INLET TIME OF CONCENTRATION:

Undeveloped, Park Areas	20 minutes
Residential, Single Family	15 minutes
Commercial, Business	10 minutes

DEVELOPED SITE DRAINAGE DATA

MARK	AREA (AC)	C	Tc (MIN.)	I_2 (IN/HR)	I_5 (IN/HR)	I_{25} (IN/HR)	I_{50} (IN/HR)	I_{100} (IN/HR)	Q_2 (CFS)	Q_5 (CFS)	Q_{25} (CFS)	Q_{50} (CFS)	Q_{100} (CFS)	COMMENTS
A1	0.37	0.60	15	4.4	5.4	7.7	8.8	9.6	1.0	1.2	1.7	2.0	2.1	SHEETFLOW TO NORTH (LESS THAN PRE-DEV)
A2	1.42	0.60	15	4.4	5.4	7.7	8.8	9.6	3.7	4.6	6.6	7.5	8.2	TO 5' CURB CUT (RAMP) (TO DETENTION POND)
A3	0.02	0.30	15	4.4	5.4	7.7	8.8	9.6	–	–	0.1	0.1	0.1	TO WEST TO 10 (BYPASS DETENTION)
A4	0.02	0.30	15	4.4	5.4	7.7	8.8	9.6	–	–	0.1	0.1	0.1	TO WEST TO 11 (BYPASS DETENTION)
A5	0.10	0.30	15	4.4	5.4	7.7	8.8	9.6	0.3	0.3	0.5	0.5	0.6	TO WEST LOTS 12 & 13 (LESS THAN PRE-DEV)
B1	0.21	0.60	15	4.4	5.4	7.7	8.8	9.6	0.6	0.7	1.0	1.1	1.2	TO NE (TO MURPHY RD.)
B2	0.32	0.60	15	4.4	5.4	7.7	8.8	9.6	0.8	1.0	1.5	1.7	1.8	TO SE (TO MURPHY RD.)

DETENTION POND DESIGN (100 YR)

DETENTION POND DESIGNED SUCH THAT THE POST-DEVELOPED RUNOFF LEAVING THE SITE DOES NOT EXCEED THE PRE-DEVELOPED RUNOFF.

Q100(PREDEVELOPED) = 3.4 CFS (SEE PRE-DEV MAP)
Q100(ALLOWABLE) = QPRE - QBYPASS
Q100(BYPASS) = A3+A4 = 0.2 CFS

Q100(ALLOWABLE) = 3.4 - 0.2 = 3.2 CFS
(SEE PRE-DEVELOPED MAP)

Q100 TO DETENTION:

AREA = 1.42 ACRES
C = 0.60
TC = 15 MIN
Q100 = 8.2 CFS

DETENTION POND DESIGN (5 YR)

DETENTION POND DESIGNED SUCH THAT THE POST-DEVELOPED RUNOFF LEAVING THE SITE DOES NOT EXCEED THE PRE-DEVELOPED RUNOFF.

Q5(PREDEVELOPED) = 3.2 CFS
Q5(ALLOWABLE) = QPRE - QBYPASS
Q5(BYPASS) = A1 = 1.9 CFS

Q5(ALLOWABLE) = 3.2 - 1.9 = 1.3 CFS

Q5 TO DETENTION:

AREA = 1.27 ACRES
C = 0.60
TC = 15 MIN
Q5 = 4.1 CFS

DETENTION POND DESIGN (2 YR)

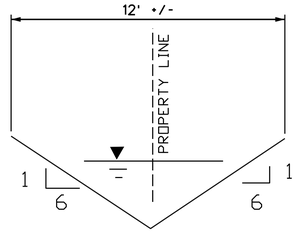
DETENTION POND DESIGNED SUCH THAT THE POST-DEVELOPED RUNOFF LEAVING THE SITE DOES NOT EXCEED THE PRE-DEVELOPED RUNOFF.

Q2(PREDEVELOPED) = 2.6 CFS
Q2(ALLOWABLE) = QPRE - QBYPASS
Q2(BYPASS) = A1 = 1.6 CFS

Q2(ALLOWABLE) = 2.6 - 1.6 = 1.0 CFS

Q2 TO DETENTION:

AREA = 1.27 ACRES
C = 0.60
TC = 15 MIN
Q2 = 3.4 CFS



SWALE HYDRAULICS:

Q100 = 1.6 CFS MAX FROM POND + FLOW FROM LOT ITSELF = 1.6 + 0.5(9.6)(0.10 AC) = 2.1 CFS
N = 0.030
S = 2.0%
D = 0.39'
V = 2.3 FPS

SECTION A-A
TYP. SIDE YARD SWALE
N.T.S.

DETENTION POND DESIGN (25 YR)

DETENTION POND DESIGNED SUCH THAT THE POST-DEVELOPED RUNOFF LEAVING THE SITE DOES NOT EXCEED THE PRE-DEVELOPED RUNOFF.

Q25(PREDEVELOPED) = 4.6 CFS
Q25(ALLOWABLE) = QPRE - QBYPASS
Q25(BYPASS) = A1 = 2.7 CFS

Q25(ALLOWABLE) = 4.6 - 2.7 = 1.9 CFS

Q25 TO DETENTION:

AREA = 1.27 ACRES
C = 0.60
TC = 15 MIN
Q25 = 5.9 CFS

DETENTION POND DESIGN (50 YR)

DETENTION POND DESIGNED SUCH THAT THE POST-DEVELOPED RUNOFF LEAVING THE SITE DOES NOT EXCEED THE PRE-DEVELOPED RUNOFF.

Q50(PREDEVELOPED) = 5.3 CFS
Q50(ALLOWABLE) = QPRE - QBYPASS
Q50(BYPASS) = A1 = 3.1 CFS

Q50(ALLOWABLE) = 5.3 - 3.1 = 2.2 CFS

Q50 TO DETENTION:

AREA = 1.27 ACRES
C = 0.60
TC = 15 MIN
Q50 = 7.3 CFS

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NICOLE COURT ADDITION

BEDFORD, TEXAS

POST-DEVELOPED DRAINAGE AREA MAP

STATE OF TEXAS
KEITH M. HAMILTON
87384
LICENSED PROFESSIONAL ENGINEER
2-15-23

JOB	DATE	DESIGNED	DRAWN	CHECKED	TEXAS FIRM NO. F-2600
999-372	2-15-23	K.M.H.	K.M.H.	K.M.H.	

NO.	REVISION	BY	DATE

SHEET
C1.11

DETENTION POND DESIGN (100 YR)

Q100(PREDEVELOPED) = 3.4 CFS (SEE PRE-DEV MAP)
Q100(ALLOWABLE) = QPRE - QBYPASS
Q100(BYPASS) = A3+A4 = 0.2 CFS

Q100(ALLOWABLE) = 3.4 - 0.2 = **3.2 CFS**
(SEE PRE-DEVELOPED MAP)

Q100 TO DETENTION:

AREA = 1.42 ACRES
C = 0.60
TC = 15 MIN
Q100 = 8.2 CFS

DETENTION POND ELEVATION VS. VOLUME

ELEVATION ABOVE DATUM (FT.)	VOLUME CU FT
586.5 (POND BOTTOM)	0
587	967
588	6824

HEAD IN POND:

$$\frac{588-587}{6824-967} = \frac{X-587}{5720-967}$$

X = 587.81

HEAD IN POND @ B OUTFALL
587.81 - 586.50 = 1.31'

HEAD IN POND @ A OUTFALL
587.81 - 587.10 = 0.71'

OUTFALL DESIGN

MAX RELEASE RATE = 3.2 CFS
STORAGE REQUIRED = 5720 CF

NOTE: STARTING WATER SURFACE FOR POND IS 586.50 FEET FOR OUTFALL B AND 587.10 FOR OUTFALL A

OUTFALL STRUCTURE IS AS FOLLOWS:

POND B: 6" TALL X 5" WIDE OPENING (ORIFICE) BUILT INTO A WALL WITH A 4' WEIR EMERGENCY OPENING (SEE CALCS):
POND A: 4" TALL X 12" WIDE OPENING (ORIFICE) BUILT INTO A WALL WITH A 4' WEIR EMERGENCY OPENING (SEE CALCS:)

ORIFICE FLOW EQUATION OUTFALL B

$Q = CA\sqrt{2GH}$
C = 0.80
A = 0.21 SQ. FT.
G = 32.2
H = (1.31'-0.5(0.50') = 1.06'

Q = 1.4 CFS

ORIFICE FLOW EQUATION OUTFALL A

$Q = CA\sqrt{2GH}$
C = 0.80
A = 0.33 SQ. FT.
G = 32.2
H = (0.71'-0.33(0.50') = 0.54'

Q = 1.6 CFS

Q100 = 1.4+1.6 = **3.0 CFS** < 3.2 CFS (ALLOWABLE)

STORMWATER DETENTION WORKSHEET

HAMILTON DUFFY, PC

PROJECT NAME: NICOLE COURT - BEDFORD
SUB AREAS TOTAL AREA COMBINED FLOW

TOTAL VOLUME CALCULATIONS

EXISTING CONDITIONS: (100 YR)		PROPOSED CONDITIONS: (100 YR)	
RUNOFF COEFFICIENT (c)	0.34	RUNOFF COEFFICIENT (c)	0.6
TIME OF CONCENTRATION (t/c)	15 mins	TIME OF CONCENTRATION (t/c)	15 mins
RAINFALL INTENSITY (i)	9.6 in/hr	RAINFALL INTENSITY (i)	9.6 in/hr
AREA (A acres)	1.05 acres	AREA (A acres)	1.42 acres
DISCHARGE (Q)	3.4 cfs	DISCHARGE (Q)	8.2 cfs

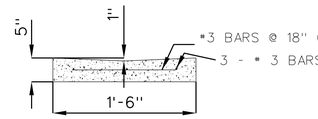
MAXIMUM PERMISSIBLE RELEASE RATE (Qp = Q existing): 3.4 cfs
MAX RUNOFF RATE LESS FREE RELEASE (IF APPLICABLE) 3.4 - 0.2 = 3.2 cfs
FREE RELEASE CALCULATION = 0.2 cfs

REQUIRED STORMWATER VOLUME

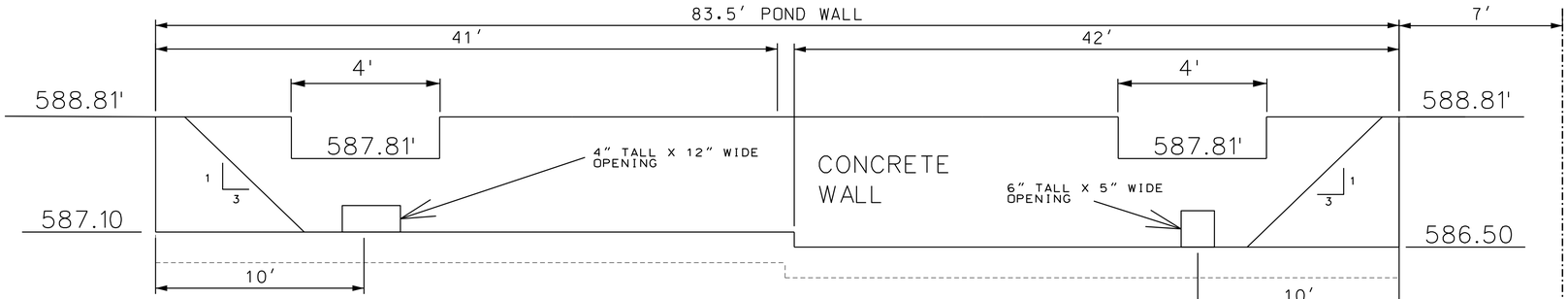
Rainfall Duration T	Rainfall Intensity I	Peak Runoff Rate Q	Storm Runoff Volume V	Release Rate Volume Qr	Storage Volume Sv	
5	14.70	12.5	3757	1936	1821	
10	11.50	9.8	5879	2420	3458	
15	9.60	8.2	7361	2904	4457	
20	8.20	7.0	8384	3389	4995	
30	6.50	5.5	9968	4357	5612	
40	5.40	4.6	11042	5325	5717	
50	4.70	4.0	12013	6293	5720	← MAX
60	4.20	3.6	12882	7261	5621	
120	2.60	2.2	15949	13070	2879	

REQUIRED STORAGE VOLUME (MAX. Sv): Rsv = 5720 Cu. Ft.

CONCRETE SHALL ACHIEVE STRENGTH OF 3,000 PSI CONCRETE AT 28 DAYS

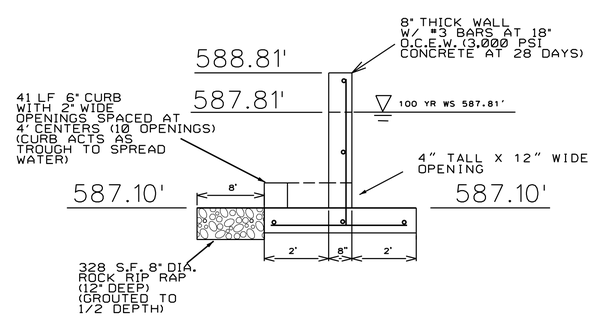


PILOT CHANNEL DETAIL
(N.T.S.)

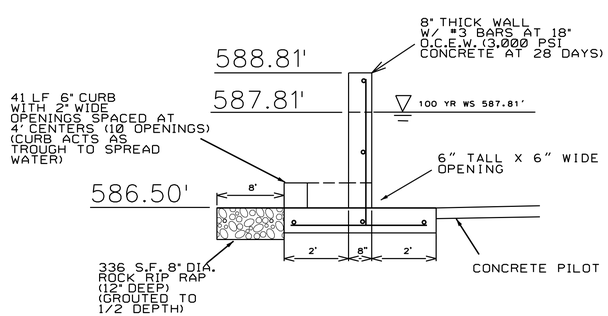


OUTFALL STRUCTURE A DETAIL
N.T.S.

OUTFALL STRUCTURE B DETAIL
N.T.S.



OUTFALL STRUCTURE A SECTION
N.T.S.



OUTFALL STRUCTURE B SECTION
N.T.S.

2" CURB CUTS ACT AS WEIR OPENING

$Q = 3.0\ Y^{1.5} L$ (WEIR EQUATION)

Q = INLET CAPACITY (CFS)
Y = HEAD (FT) 0.50'
L = LENGTH OF OPENING (FT) = 2" = 0.167'

$Q = 3.0\ (0.50)^{1.5}\ (.167)$

Q = 0.2 CFS

THEREFORE 4' SPACED OPENINGS = 4/4 = 10 OPENINGS PER TROUGH
Q PER TROUGH = 0.2 X 10 = 2.0 CFS AND CAN PASS 100 YEAR EVENT WITHOUT OVERFLOWING TROUGH

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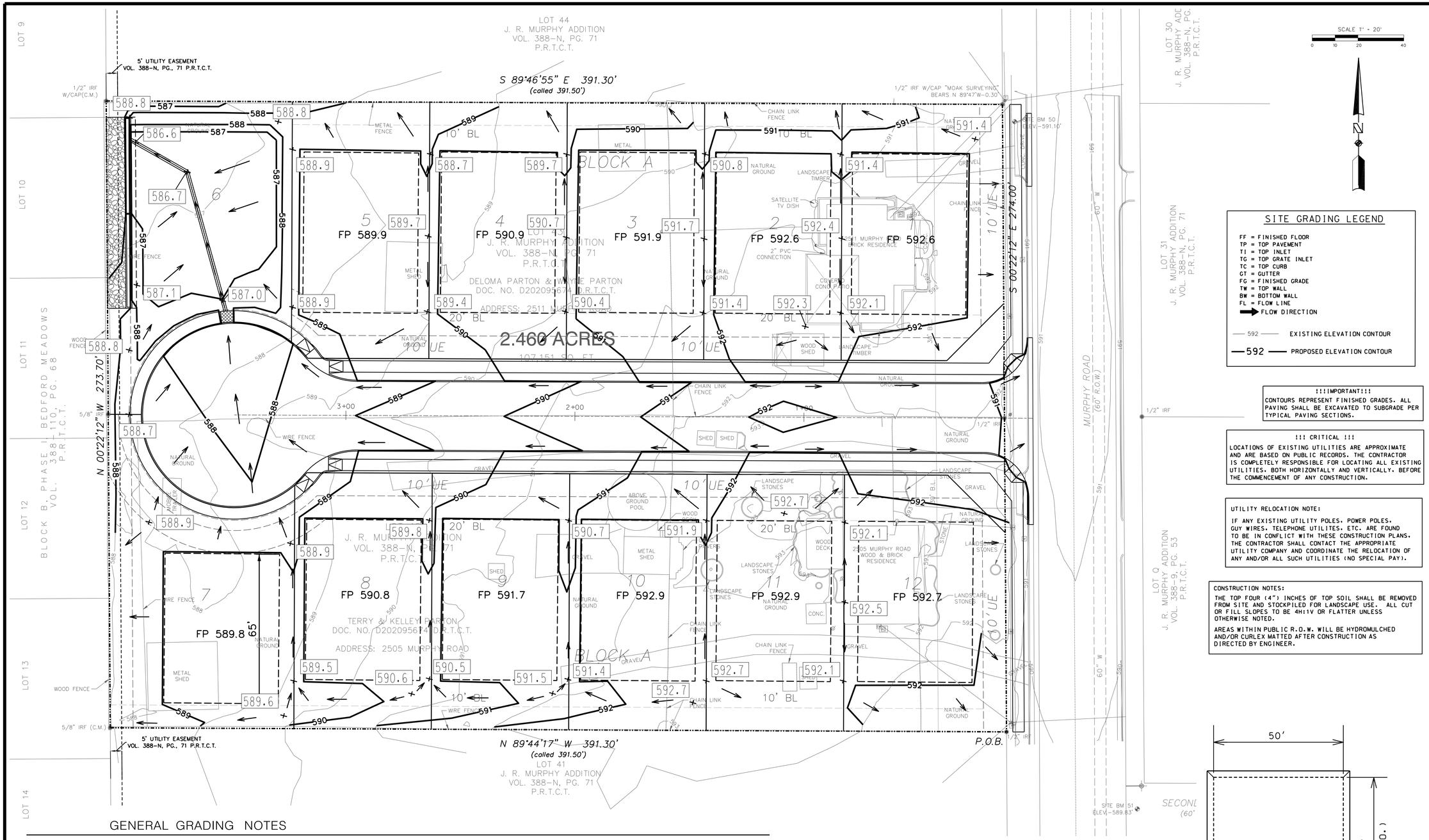
NICOLE COURT ADDITION
BEDFORD, TEXAS
DRAINAGE CALCULATIONS

STATE OF TEXAS
KEITH M. HAMILTON
87384
LICENSED PROFESSIONAL ENGINEER
2-15-23

JOB	999-372
DATE	2-15-23
DESIGNED	K.M.H.
DRAWN	K.M.H.
CHECKED	K.M.H.
TEXAS F.IRM NO. F-2260	

NO.	REVISION	BY	DATE

SHEET
C1.12



SCALE 1" - 20'

0 10 20 40

N

SITE GRADING LEGEND

FF = FINISHED FLOOR
TP = TOP PAVEMENT
TI = TOP INLET
TG = TOP GRATE INLET
TC = TOP CURB
GT = GUTTER
FG = FINISHED GRADE
TW = TOP WALL
BW = BOTTOM WALL
FL = FLOW LINE
FLOW DIRECTION

592 EXISTING ELEVATION CONTOUR

592 PROPOSED ELEVATION CONTOUR

!!!IMPORTANT!!!
CONTOURS REPRESENT FINISHED GRADES. ALL PAVING SHALL BE EXCAVATED TO SUBGRADE PER TYPICAL PAVING SECTIONS.

!!! CRITICAL !!!
LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE AND ARE BASED ON PUBLIC RECORDS. THE CONTRACTOR IS COMPLETELY RESPONSIBLE FOR LOCATING ALL EXISTING UTILITIES, BOTH HORIZONTALLY AND VERTICALLY, BEFORE THE COMMENCEMENT OF ANY CONSTRUCTION.

UTILITY RELOCATION NOTE:
IF ANY EXISTING UTILITY POLES, POWER POLES, GUY WIRES, TELEPHONE UTILITES, ETC. ARE FOUND TO BE IN CONFLICT WITH THESE CONSTRUCTION PLANS, THE CONTRACTOR SHALL CONTACT THE APPROPRIATE UTILITY COMPANY AND COORDINATE THE RELOCATION OF ANY AND/OR ALL SUCH UTILITIES (NO SPECIAL PAY).

CONSTRUCTION NOTES:
THE TOP FOUR (4") INCHES OF TOP SOIL SHALL BE REMOVED FROM SITE AND STOCKPILED FOR LANDSCAPE USE. ALL CUT OR FILL SLOPES TO BE 4H:1V OR FLATTER UNLESS OTHERWISE NOTED.

AREAS WITHIN PUBLIC R.O.W. WILL BE HYDROMULCHED AND/OR CURLEX MATTED AFTER CONSTRUCTION AS DIRECTED BY ENGINEER.

GENERAL GRADING NOTES

1. GRADING CONTRACTOR IS RESPONSIBLE FOR DEMOLITION, CLEARING AND REMOVAL OF EXISTING STRUCTURES INCLUDING REMOVAL OF ANY EXISTING UTILITIES THAT MAY CONFLICT WITH THE PROPOSED LAYOUT.
2. ADEQUATE MEASURES SHALL BE TAKEN TO PREVENT EROSION. THE GRADING CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION OF EROSON CONTROL SYSTEMS PRIOR TO BEGINNING CONSTRUCTION. THE UTILITY CONTRACTOR SHALL BE RESPONSIBLE FOR INLET PROTECTION UPON COMPLETION OF ALL STORM SEWER HEADWALLS, AND INLET TOPS. IN THE EVENT THAT SIGNIFICANT EROSION OCCURS AS A RESULT OF CONSTRUCTION, THE CONTRACTOR SHALL RESTORE THE ERODED AREA TO ORIGINAL CONDITION OR BETTER. RESTORED AREAS INCLUDE, BUT ARE NOT LIMITED TO, TRENCH BACKFILL, SIDE SLOPES, FENCES, CULVERT PIPE, DRAINAGE DITCHES, DRIVEWAYS, PRIVATE YARDS AND ROADWAYS.
3. ALL AREAS TO BE FILLED ARE TO BE SCARIFIED AND PROOFROLLED PRIOR TO FILL PLACEMENT. ALL SOFT AREAS FOUND DURING PROOFROLLING SHALL BE OVER-EXCAVATED. ALL FILL SHALL BE COMPACTED TO A DENSITY OF AT LEAST 95% OF STANDARD PROCTOR DENSITY AND AS APPROVED BY THE CITY. ALL FILL SHALL BE TESTED AS INSTALLED AND CERTIFIED BY AN APPROVED SOILS LAB. ALL COSTS FOR TESTING SHALL BE BORNE BY THE CONTRACTOR.
4. GRADING CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OFF-SITE OF ALL EXCAVATED MATERIAL WHICH SOILS LAB DECLARES TO BE UNSUITABLE FOR ON-SITE USE.
5. DRAINAGE SHALL NOT BE DIRECTED TOWARD THE BUILDING PAD. GRADING CONTRACTOR SHALL PROVIDE A MINIMUM OF 1.0% SLOPE AROUND BUILDING PAD.
6. FINISH FLOOR ELEVATIONS TO BE 0.7' ABOVE FINISHED PAD ELEVATION. DRIVEWAYS ARE NOT TO EXCEED 12% SLOPE. FRONT YARD SLOPES SHALL NOT EXCEED 20%. REAR LOT SLOPES SHALL NOT EXCEED 10% FOR THE FIRST 10' FROM THE PAD WITH THE BALANCE NOT TO EXCEED 20%.
7. INITIAL SITE GRADING SHALL BE COMPLETED TO A TOLERANCE OF PLUS OR MINUS ONE TENTH OF A FOOT IN STREETS AND PLUS OR MINUS THREE TENTHS OF A FOOT FOR BUILDING PADS. FINAL BUILDING PAD GRADING, TO BE DONE UPON COMPLETION OF PAVING AND UTILITY FACILITIES, SHALL BE PROVIDED TO A TOLERANCE OF PLUS OR MINUS TWO TENTHS OF A FOOT AT ALL FOUR CORNERS AND CENTER OF THE PAD, IN ALL SWALES AND LOT CORNERS.
8. CONTRACTOR SHALL FURNISH ALL CONSTRUCTION STAKING UNLESS NOTED OTHERWISE IN THE SPECS.
9. CONTRACTOR SHALL REPLACE ANY EROSION CONTROL MATERIALS AT THE END OF EACH WORK DAY IF SAID MATERIALS WERE REMOVED DURING THE DAY FOR EASE OF CONSTRUCTION OR ACCESS.
10. IF ROCK IS ENCOUNTERED IN THE STREET SUBGRADE, THE ROCK SHALL BE EXCAVATED TO A DEPTH OF SIX INCHES, REMOVED FROM THE STREET, AND NON-ROCK MATERIAL SHALL BE REPLACED FOR THE STREET SUBGRADE. ROCK IN STREET PARKWAYS SHALL BE REMOVED AND REPLACED WITH SIX INCHES OF TOP SOIL. THIS SHALL BE ACCOMPLISHED BY THE EXCAVATION CONTRACTOR, SUBSIDIARY TO THIS CONTRACT.
11. CONTRACTOR SHALL ADHERE TO ALL TERMS AND CONDITIONS AS OUTLINED IN THE GENERAL T.P.D.E.S. PERMIT FOR STORM WATER DISCHARGE ASSOCIATED WITH CONSTRUCTION ACTIVITIES.
12. ALL PARKWAYS ARE TO BE FINAL GRADED TOWARDS THE STREET AT 1/4" PER FOOT FROM THE TOP OF THE CURB TO THE PROPERTY LINE.

ALL EXCAVATION, TRENCHING AND SHORING OPERATIONS SHALL COMPLY WITH THE REQUIREMENTS OF THE U.S. DEPARTMENT OF LABOR, OSHA, "CONST. SAFETY AND HEALTH REGULATIONS", VOL. 29, SUB PART P, PG. 128-137, AND ANY AMENDMENTS THERETO.

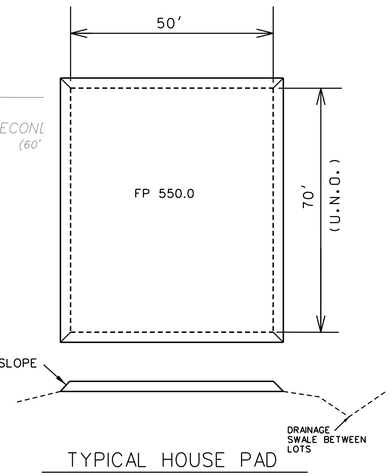
BENCHMARKS

PRIMARY BENCHMARK: CITY OF BEDFORD SURVEY MARKER 39 IS A GRANITE MONUMENT LOCATED AT THE NORTHEAST CORNER OF THE INTERSECTION OF CRYSTAL SPRINGS AND MILLRIDGE.
ELEVATION = 605.81

PROJECT BENCHMARK #50: "X" IN CONCRETE SET AT THE NORTHERLY CORNER OF A CONCRETE DRIVEWAY AND TOP OF CURB, ALONG THE WEST RIGHT-OF-WAY LINE OF MURPHY ROAD, ±300' NORTH OF THE INTERSECTION OF MURPHY ROAD AND SECOND STREET.
ELEVATION = 591.10'

PROJECT BENCHMARK #51: "X" IN CONCRETE SET IN CONCRETE AT THE NORTHEAST CORNER OF THE INTERSECTION OF THE EAST RIGHT-OF-WAY LINE OF MURPHY ROAD, AND THE NORTH RIGHT-OF-WAY LINE OF SECOND STREET.

ELEVATION = 589.83'



TYPICAL HOUSE PAD

N.T.S.

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NICOLE COURT ADDITION

BEDFORD, TEXAS

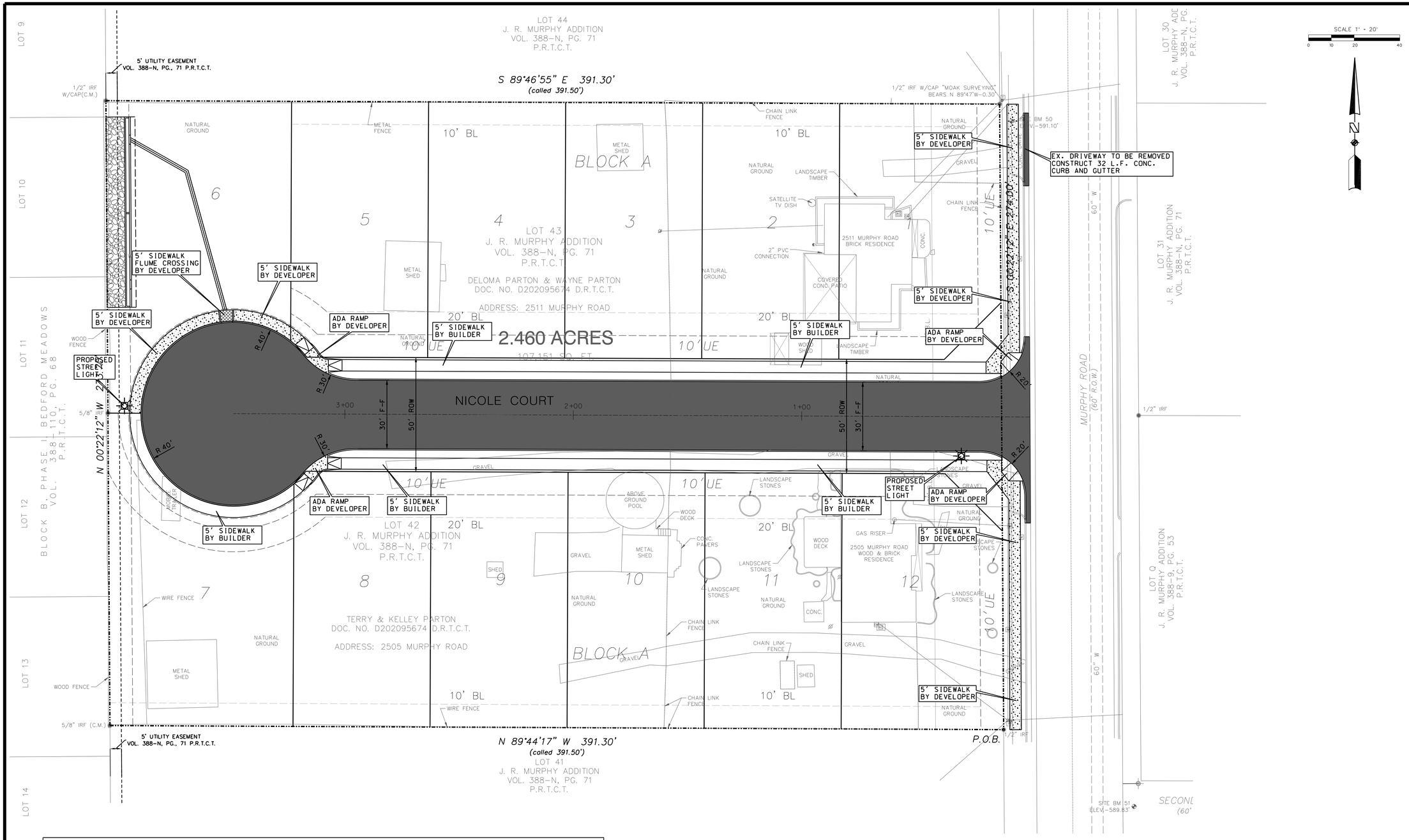
GRADING PLAN

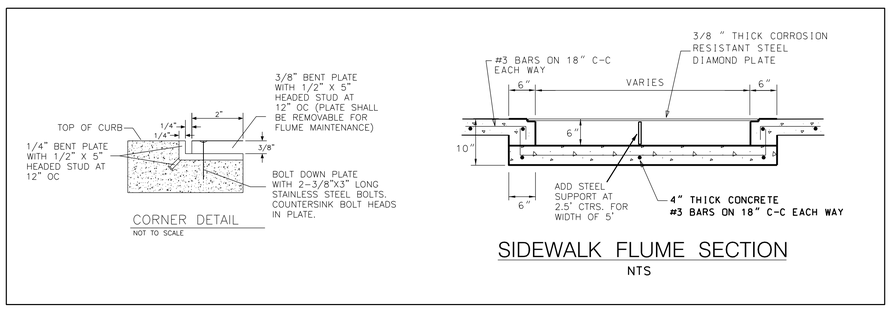
STATE OF TEXAS
KEITH M. HAMILTON
87384
LICENSED PROFESSIONAL ENGINEER
2-15-23

JOB	DATE	DESIGNED	DRAWN	CHECKED	TEXAS FIRM NO. F-4260
999-372	2-15-23	K.M.H.	K.M.H.	K.M.H.	

NO.	REVISION	BY	DATE

SHEET
C1.20





PAVING LEGEND

- 6" THICK CONCRETE PAVEMENT W/ #4 BARS @ 18" O.C.E.W. (PER CITY OF BEDFORD DETAILS)
- 4" THICK CONCRETE SIDEWALK W/ #4 BARS @ 18" O.C.E.W. (PER CITY OF BEDFORD DETAILS)

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NICOLE COURT ADDITION

BEDFORD, TEXAS

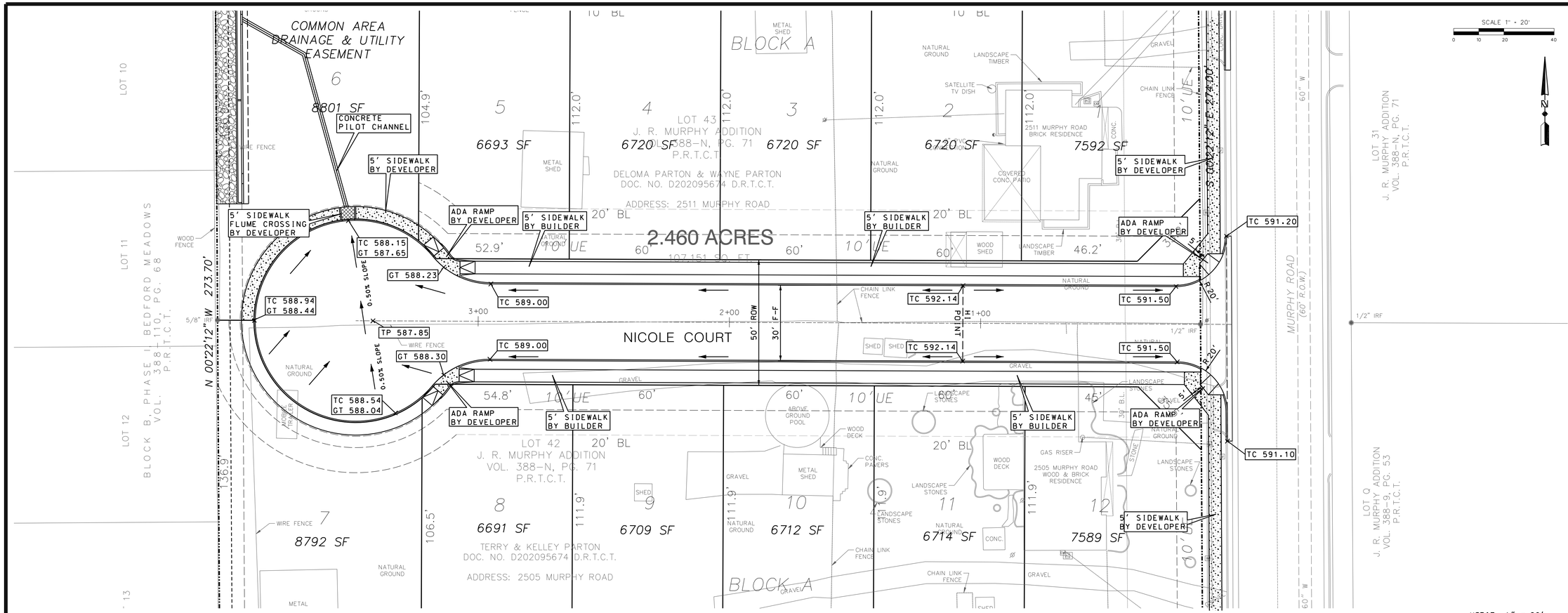
PAVING PLAN

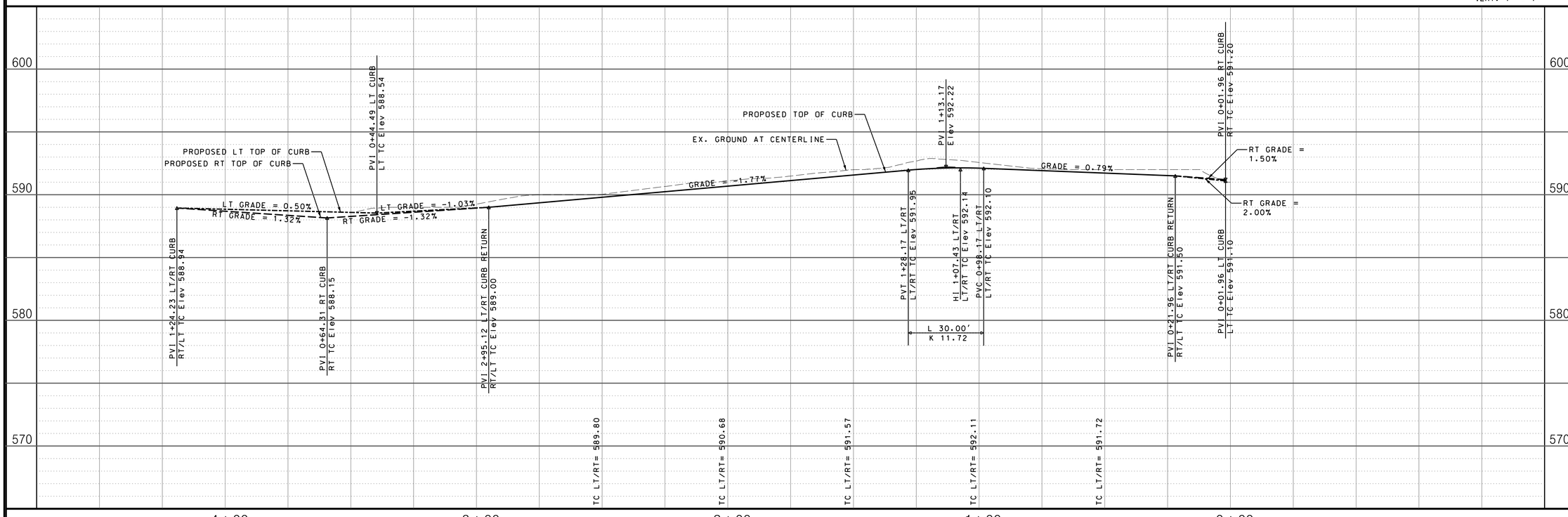
STATE OF TEXAS
KEITH H. HAMILTON
87384
LICENSED PROFESSIONAL ENGINEER
2-15-23

JOB	999-372
DATE	2-15-23
DESIGNED	K.M.H.
DRAWN	K.M.H.
CHECKED	K.M.H.
TEXAS FIRM NO.	F-426

NO.	REVISION	BY	DATE

SHEET
C1.30





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NICOLE COURT ADDITION

BEDFORD, TEXAS

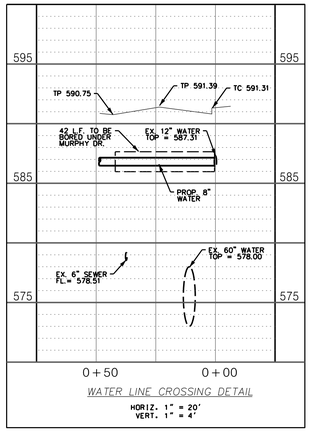
NICOLE COURT PLAN AND PROFILE

KEITH M. HAMILTON
87384
LICENSED PROFESSIONAL ENGINEER
2-15-23

JOB	999-372
DATE	2-15-23
DESIGNED	K.M.H.
DRAWN	K.M.H.
CHECKED	K.M.H.
TEXAS FIRM NO.	F-230

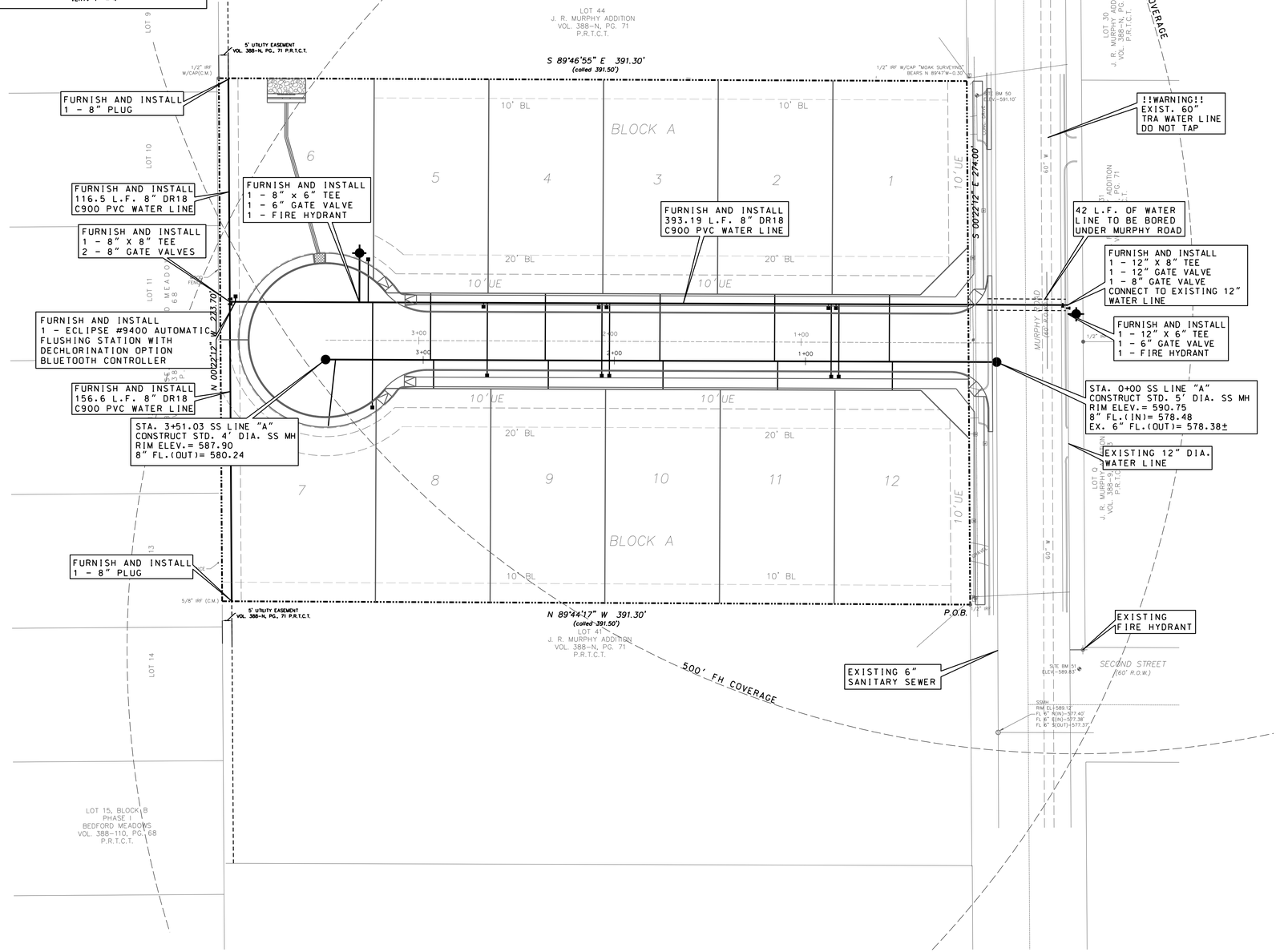
NO.	REVISION	BY	DATE

SHEET
C1.31



WATER LINE CROSSING DETAIL

HORIZ. 1" = 20'
VERT. 1" = 4'



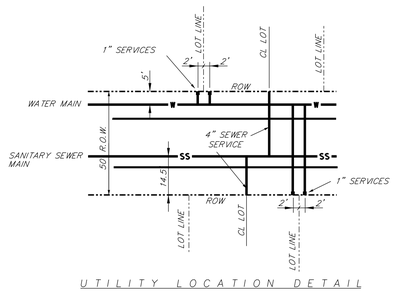
LEGEND

- PROP. WATER
- EXIST. WATER
- PROP. GATE VALVE
- PROP. SEWER
- EXIST. SEWER & MANHOLE

SCALE 1" = 30'

0 15 30 60

N



UTILITY LOCATION DETAIL

N.T.S.

GENERAL NOTES FOR SANITARY SEWER

1. ALL PROPOSED SANITARY SEWER PIPE SHALL BE PVC SDR-26 (U.N.O.).
2. WHEN A PROPOSED SEWER LINE CROSSES AN EXISTING WATER LINE, THE CONTRACTOR SHALL INSTALL ONE 20 FOOT JOINT OF DR-18 (C-900) ON THE SEWER LINE, CENTERED ON THE WATER LINE, USING SDR-26 TO C-900 ADAPTORS. NO SPECIAL PAY WILL BE PERMITTED FOR THIS ITEM.
3. ALL PROPOSED SEWER LINES ARE TO BE LOCATED AS SHOWN ON THE PLANS. ALL LINES LOCATED WITHIN AREAS OF PAVEMENT SHALL HAVE THE TOP 8" OF BACKFILL REPLACED WITH CRUSHED STONE INCLUDING SERVICES.
4. ALL SEWER LINES SHALL BE INSTALLED PER CITY STANDARDS.
5. ALL WATER MAIN CLEARANCE FOR PARALLEL SANITARY SEWER MAIN SHALL BE A MINIMUM SEPARATION OF 3 FEET VERTICAL AND 9 FEET HORIZONTAL.
6. CONTRACTOR SHALL PROVIDE A TRENCH SAFETY PLAN.

GENERAL NOTES FOR WATER IMPROVEMENTS

1. ALL WATER LINES SHALL BE PVC PIPE CONFORMING TO AWWA STANDARD C900 DR-14 PIPE PIPE COLOR CODED BLUE OUTSIDE FOR WATER LINE. WITH NSF SEAL, PRESSURE TESTED AND DISINFECTED IN ACCORDANCE WITH THE NCTCOG STD. SPECS. WATER MAINS TO HAVE A MINIMUM OF 48" COVER TO TOP OF PIPE AS MEASURED FROM THE TOP OF PIPE TO THE EXISTING GROUND OR PROPOSED FINISHED GRADE, WHICHEVER IS GREATER. SERVICE LINE CONNECTORS SHALL BE COMPRESSION-TYPE WITH STAINLESS STEEL TUBE LINERS.
2. ALL WATER METERS SHALL BE SIZED AND INSTALLED BY CITY PERSONNEL AFTER TAP FEES ARE PAID.
3. ALL WATER LINES TO BE ENCASED IN SAND, UNLESS SPECIFIED OTHERWISE AND DETAILED. BACKFILL SHALL BE SELECT MATERIAL COMPACTED TO 95 / STANDARD PROCTOR DENSITY.
4. ALL SERVICES TO METER TO BE 1" DIAMETER, TYPE K COPPER AS SPECIFIED IN ASTM B88 UNLESS NOTED OTHERWISE.
5. UTILITY CONTRACTOR TO FURNISH AND INSTALL WATER METER BOXES AFTER THE PAVING CONTRACT HAS BEEN COMPLETED.
6. ALL FIRE HYDRANT ASSEMBLIES TO BE EQUIPPED WITH A 6" GATE VALVE AND BOX. ALL VALVES AND FIRE HYDRANTS TO BE PER CITY SPECIFICATIONS.
7. ANY WATER VALVES LOCATED WITHIN PAVEMENT AREAS SHALL BE ADJUSTED TO FINAL GRADE BY THE PAVING CONTRACTOR.
8. ALL PROPOSED WATER LINES ARE TO BE LOCATED AS SHOWN ON THE PLANS. ALL LINES LOCATED WITHIN AREAS OF PAVEMENT SHALL HAVE THE TOP 8" OF BACKFILL REPLACED WITH CRUSHED STONE INCLUDING SERVICES.
9. WATER LINES WILL BE INSTALLED AS SHOWN ON THE PLANS. HOWEVER, FIELD ADJUSTMENTS APPROVED BY THE INSPECTOR OR ENGINEER MAY BE MADE TO LESSEN DAMAGE TO THE ROAD PAVEMENT OR WHEN OTHER UTILITY LOCATIONS, TREES, OR STRUCTURES WARRANT SUCH AN ADJUSTMENT.
10. ALL WATER LINES AND APPURTENANCES SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THESE PLANS, THE RULES, REGULATIONS, POLICIES AND PROCEDURES OF THE CITY.
11. ALL PVC PIPE AND APPURTENANCES (FITTINGS, VALVES, NIPPLES, ETC.) 3" DIA. AND SMALLER SHALL BE CONSTRUCTED AS SHOWN.

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PHONE (817) 268-9488 www.hamiltonduffy.com

NICOLE COURT ADDITION

BEDFORD, TEXAS

WATER AND SANITARY SEWER PLAN

STATE OF TEXAS
KEITH M. HAMILTON
87384
LICENSED PROFESSIONAL ENGINEER
2-15-23

JOB	999-372
DATE	2-15-23
DESIGNED	K.M.H.
DRAWN	K.M.H.
CHECKED	K.M.H.
TEXAS FIRM NO. F-2600	

NO.	REVISION	BY	DATE

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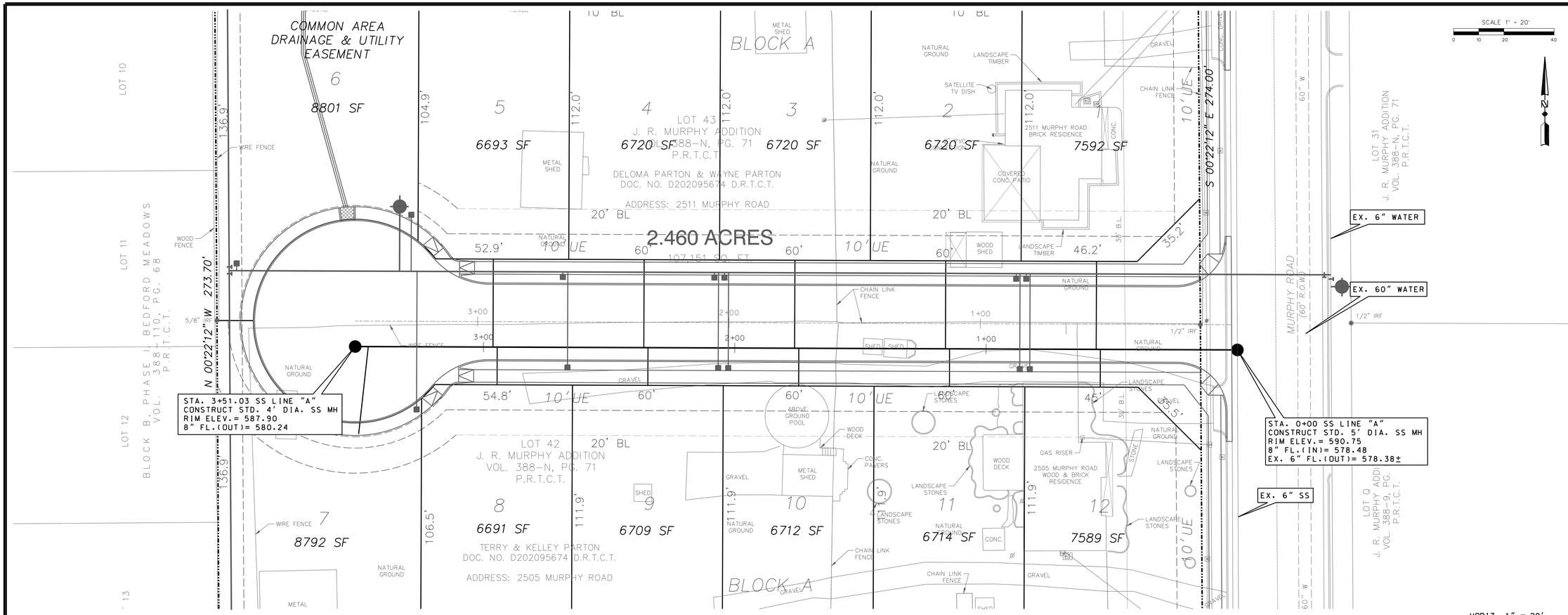

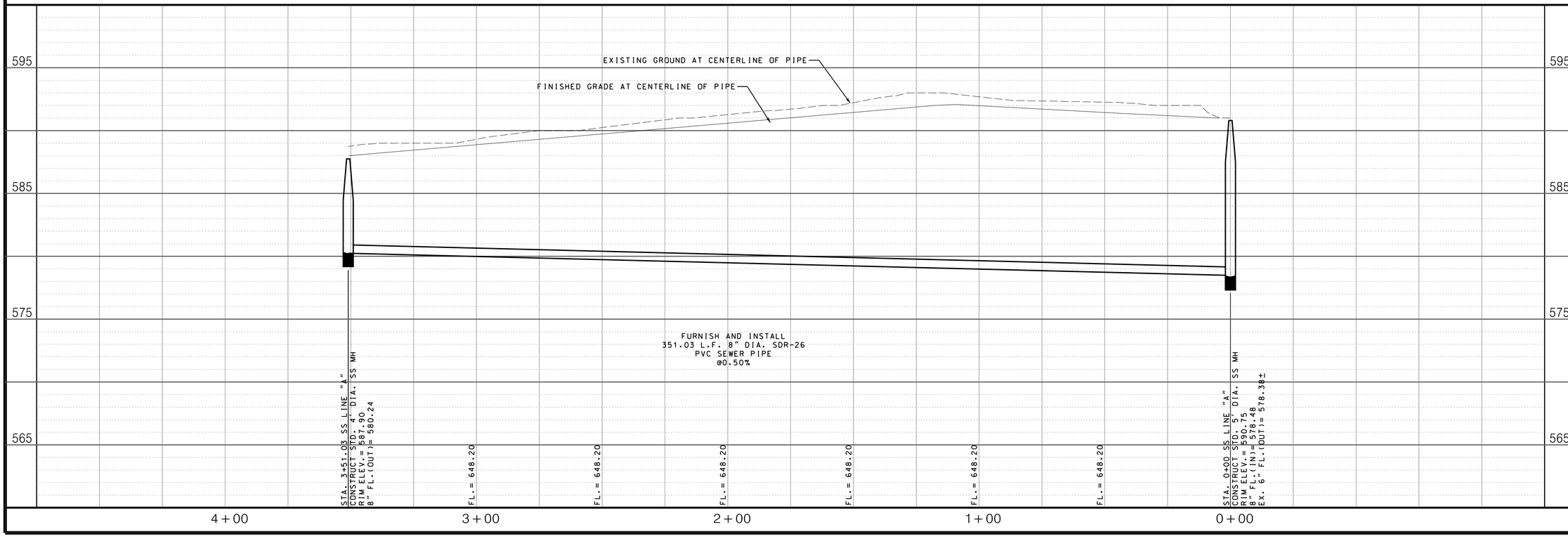

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NICOLE COURT ADDITION

BEDFORD, TEXAS

SEWER LINE "A" PLAN AND PROFILE

STATE OF TEXAS
KEITH M. HAMILTON
87384
LICENSED
PROFESSIONAL ENGINEER
2-15-23

JOB	999-372
DATE	2-15-23
DESIGNED	K.M.H.
DRAWN	K.M.H.
CHECKED	K.M.H.
TX.P.E. FIRM NO. F-4260	

NO.	REVISION	BY	DATE

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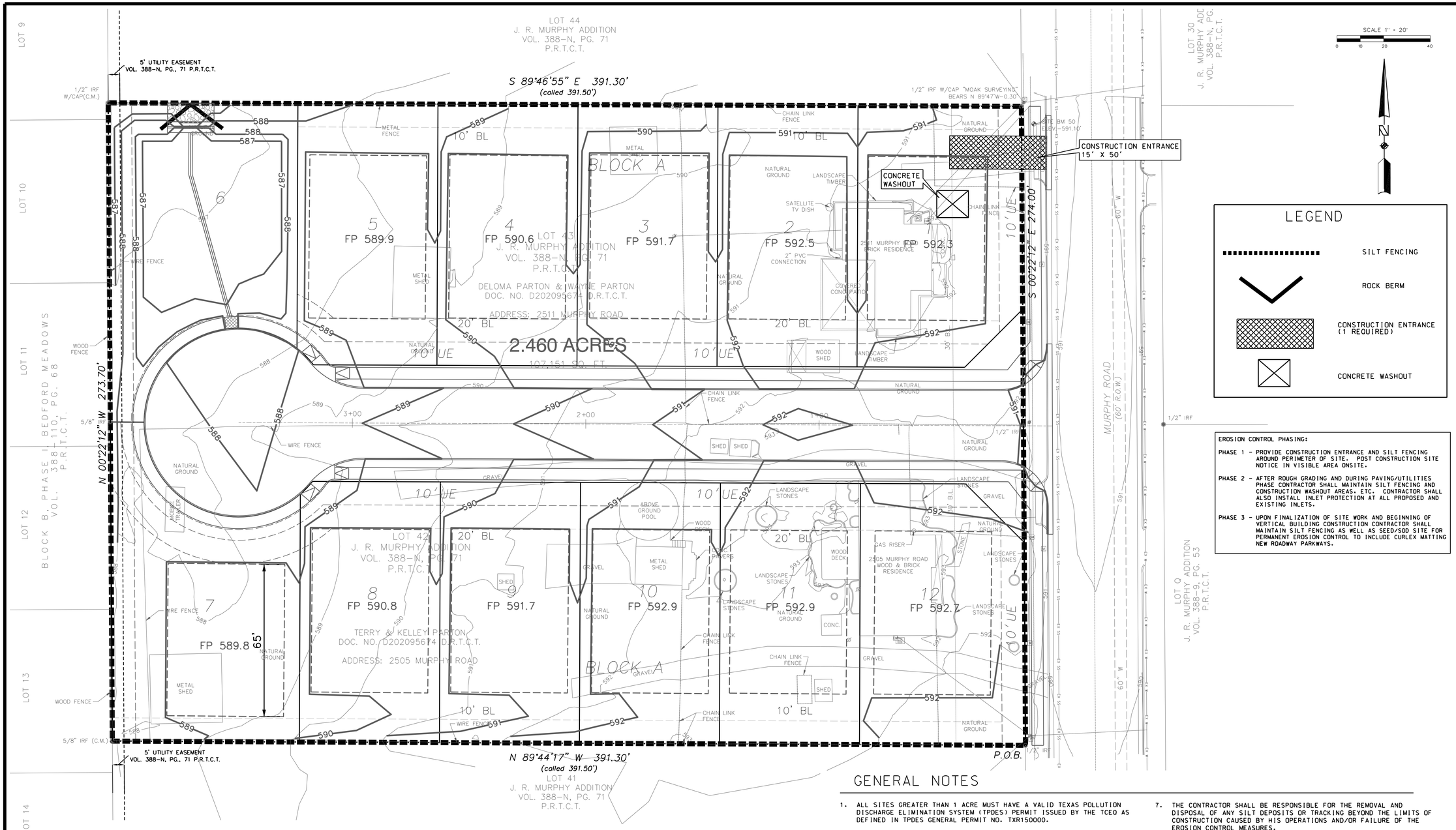

SCALE 1" - 20'
0 10 20 40

N

LEGEND

- SILT FENCING
- ROCK BERM
- CONSTRUCTION ENTRANCE (1 REQUIRED)
- CONCRETE WASHOUT

EROSION CONTROL PHASING:

PHASE 1 - PROVIDE CONSTRUCTION ENTRANCE AND SILT FENCING AROUND PERIMETER OF SITE. POST CONSTRUCTION SITE NOTICE IN VISIBLE AREA ONSITE.

PHASE 2 - AFTER ROUGH GRADING AND DURING PAVING/UTILITIES PHASE CONTRACTOR SHALL MAINTAIN SILT FENCING AND CONSTRUCTION WASHOUT AREAS- ETC. CONTRACTOR SHALL ALSO INSTALL INLET PROTECTION AT ALL PROPOSED AND EXISTING INLETS.

PHASE 3 - UPON FINALIZATION OF SITE WORK AND BEGINNING OF VERTICAL BUILDING CONSTRUCTION CONTRACTOR SHALL MAINTAIN SILT FENCING AS WELL AS SEED/SOD SITE FOR PERMANENT EROSION CONTROL TO INCLUDE CURLEX MATTING NEW ROADWAY PARKWAYS.

GENERAL NOTES

1. ALL SITES GREATER THAN 1 ACRE MUST HAVE A VALID TEXAS POLLUTION DISCHARGE ELIMINATION SYSTEM (TPDES) PERMIT ISSUED BY THE TCEQ AS DEFINED IN TPDES GENERAL PERMIT NO. TXR150000.
2. FOR SITES OF 5 ACRES OR GREATER. A TPDES NOTICE OF INTENT (NOI) FORM MUST BE SUBMITTED TO THE TCEQ AT LEAST TWO (2) DAYS PRIOR TO COMMENCING WORK. FOR SITES GREATER THAN ONE (1) ACRES BUT LESS THAN FIVE (5) ACRES. A TCEQ CONSTRUCTION SITE NOTICE MUST BE COMPLETED. A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) MUST BE COMPLETED PRIOR TO SUBMITTAL OF THE NOI OR SITE NOTICE. THE SIGNED AND COMPLETED SWPPP MUST BE MAINTAINED AT THE JOB SITE AT ALL TIMES.
3. EACH PRIME CONTRACTOR SHALL OBTAIN AND SUBMIT TO OWNER/ENGINEER A POLLUTION PREVENTION CERTIFICATION FROM EACH SUBCONTRACTOR WHOSE WORK IMPACTS THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) PRIOR TO THE PERFORMANCE OF ANY WORK BY SAID SUBCONTRACTOR. THESE CERTIFICATIONS SHALL BECOME A PART OF THE STORM WATER POLLUTION PREVENTION PLAN.
4. CONTRACTOR SHALL FURNISH AND INSTALL EROSION CONTROL MEASURES SHOWN IMMEDIATELY UPON ENTERING SITE. REPAIRS OR MODIFICATIONS TO THE MEASURES WILL BE MADE BY THE CONTRACTOR IF THE CONTROL MEASURES PROVE INEFFECTIVE OR IF ADDITIONAL CONTROL MEASURES ARE NECESSARY.
5. AT A MINIMUM, PERIMETER CONTROLS SUCH AS SILT FENCE SHALL BE INSTALLED AT ALL DOWN SLOPE BOUNDARIES AND AS WARRANTED WHERE PAVEMENT REMOVAL, UTILITY CONSTRUCTION, GRADING, OR OTHER CONSTRUCTION ACTIVITIES ARE TO BE PERFORMED. CONTRACTOR SHALL AT ALL TIMES TAKE SUCH MEASURES AS NECESSARY TO MINIMIZE OFF-SITE TRACKING OR TRANSPORT OF SEDIMENT AND DEBRIS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO ADJACENT PROPERTY OR TO RECEIVING WATERS CAUSED BY IMPROPERLY INSTALLED OR POORLY MAINTAINED EROSION CONTROL MEASURES.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ANY SILT DEPOSITS OR TRACKING BEYOND THE LIMITS OF CONSTRUCTION CAUSED BY HIS OPERATIONS AND/OR FAILURE OF THE EROSION CONTROL MEASURES.
8. CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ACCUMULATED SILT AND SEDIMENT FROM EROSION CONTROL MEASURES WHEN IT REACHES A DEPTH OF SIX (6) INCHES OR IMPAIRS THE EFFECTIVENESS OF THE MEASURES.
9. THE OWNER'S REPRESENTATIVE WILL INSPECT THE PROJECT AT A MINIMUM OF EVERY SEVEN DAYS AND AFTER EVERY RAINFALL OF 0.5 INCHES OR GREATER TO DETERMINE THE INTEGRITY AND EFFECTIVENESS OF THE EROSION CONTROL MEASURES. A WRITTEN INSPECTION REPORT WILL BE FILED WITH THE POLLUTION PREVENTION PLAN. THIS INSPECTION DOES NOT RELIEVE THE CONTRACTOR'S RESPONSIBILITY FOR INSPECTION AND MAINTENANCE OF THE EROSION CONTROL MEASURES OR HIS DUTY TO COMPLY WITH THE INTENT AND CONDITIONS OF THE NPDES GENERAL PERMIT.
10. THE CONTRACTOR SHALL PROVIDE ADEQUATE PROTECTION OF STORM DRAIN INLETS USING MEASURES AS SPECIFIED. WHERE INLETS ARE BEING REMOVED OR INSTALLED, THE CONTRACTOR SHALL PREVENT MATERIAL FROM ENTERING THE STORM DRAIN SYSTEM.
11. ALL OFF-SITE STOCKPILES SOILS WILL BE SURROUNDED BY A SILT FENCE, SEDIMENT CONTROL SWALE, OR EQUIVALENT MEASURE, AS APPROVED BY ENGINEER, TO PROPERLY CONTROL SEDIMENT RUNOFF.
12. THE CONTRACTOR SHALL STABILIZE ANY AREA WHERE CONSTRUCTION ACTIVITY IS TEMPORARILY OR PERMANENTLY CEASED FOR MORE THAN 14 DAYS.

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PHONE (817) 268-9488 www.hamiltonduffy.com

NICOLE COURT ADDITION

BEDFORD, TEXAS

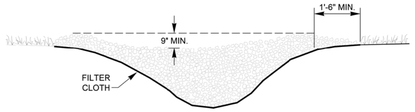
EROSION CONTROL PLAN

STATE OF TEXAS
KEITH H. HAMILTON
87384
LICENSED PROFESSIONAL ENGINEER
2-15-23

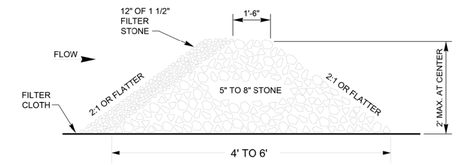
JOB	DATE	DESIGNED	DRAWN	CHECKED	TEXAS FIRM NO. F-230
999-372	2-15-23	K.W.H.	K.W.H.	K.W.H.	

NO.	REVISION	BY	DATE

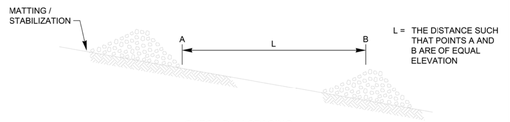
SHEET
C1.50



UPSTREAM VIEW



CROSS SECTION



CHECK DAM SPACING

NOTES:
1. ENSURE THAT CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONES.
2. KEY THE STONE INTO THE DITCH BANKS AND EXTEND IT BEYOND THE ABUTMENTS A MINIMUM OF 1.5 FEET TO AVOID WASHOUT FROM OVERFLOW AROUND THE DAM.
3. DO NOT USE CHECK DAM IN INTERMITTENT OR PERENNIAL STREAMS.
4. CLEAN OUT SEDIMENT AND DEBRIS AND REPAIR WASH OUTS AFTER EVERY 1/2" OF RAIN AND AS NECESSARY.
5. ROCK BAG AND SACK GABION CHECK DAMS ARE PERMISSIBLE.

CONSTRUCTION SITE CONTROL DETAILS	
CHECK DAM	
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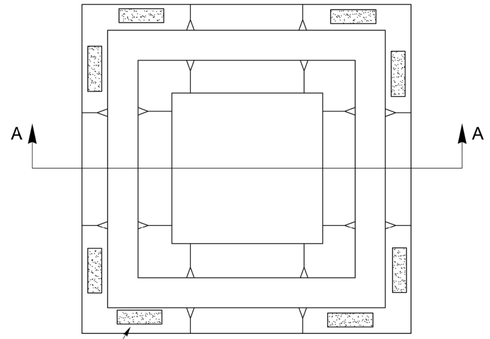
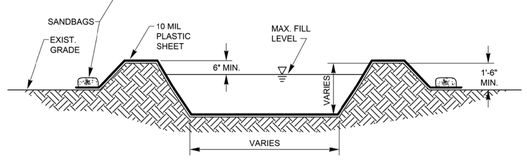
	DETAIL
REVISION ∆ DRAWN 06/2019	CS-4



GENERAL PLAN



SECTION A-A

NOTES:
1. SET LENGTH AND WIDTH AS NECESSARY TO PROVIDE ADEQUATE SPACE FOR WASHOUT ACTIVITIES.
2. IF RESTRICTED BY DEPTH DUE TO BELOW GRADE APPURTENANCES, PLACE EARTHEN BERMS AT GRADE.
3. USE EXCAVATED MATERIAL TO CREATE EARTHEN BERMS SURROUNDING THE AREA TO BE DESIGNATED AS A CONCRETE WASHOUT.
4. PLACE 10MIL OR GREATER PLASTIC SHEETING.
5. SECURE SHEETING ON OUTSIDE OF BERM AREA USING SAND BAGS OR ROCK EQUIVALENT.
6. DISPOSE OF CONTENTS APPROPRIATELY.

CONSTRUCTION SITE CONTROL DETAILS	
CONCRETE WASHOUT	
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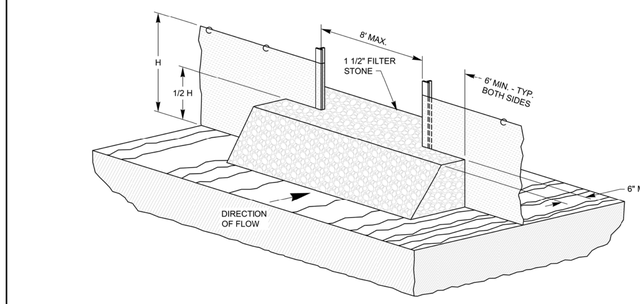
	DETAIL
REVISION ∆ DRAWN 06/2019	CS-8



NOTES:
1. STONE OVERFLOW STRUCTURE(S) OR OTHER OUTLET CONTROL DEVICES SHALL BE INSTALLED AT ALL LOW POINTS ALONG THE SILT FENCE OR EVERY 300' IF THERE IS NO APPARENT LOW POINT.

CONSTRUCTION SITE CONTROL DETAILS	
SILT FENCE STONE OUTLET STRUCTURE	
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	DETAIL
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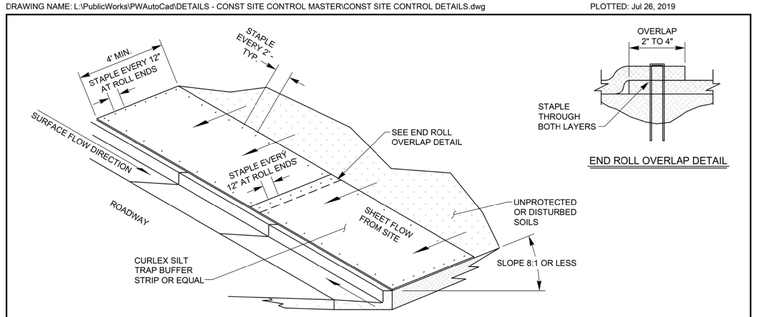
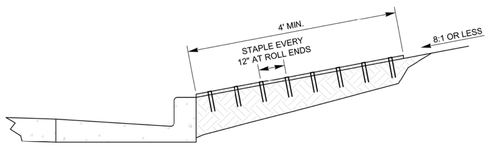


BUFFER STRIP ELEVATION

END ROLL OVERLAP DETAIL



BUFFER STRIP SECTION

CONSTRUCTION SITE CONTROL DETAILS	
PARKWAY SILT TRAP	
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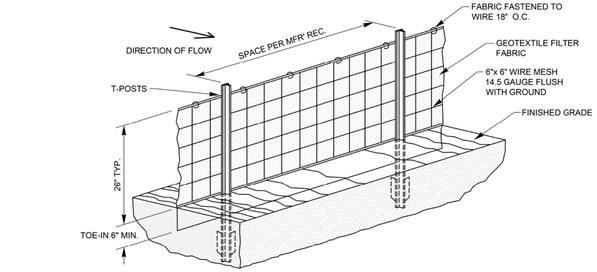
	DETAIL
REVISION ∆ RE-DRAWN 06/2019	CS-7



NOTES:
1. SILT FENCE SHALL BE CONSTRUCTED BEFORE UPSLOPE GROUND COVER IS REMOVED. CLEARING, GRUBBING, AND STUMPING CAN OCCUR BEFORE SILT FENCE INSTALLATION IF GROUND COVER IS NOT REMOVED.
2. ALL SILT FENCE SHALL BE PLACED AS CLOSE TO THE CONTOUR AS POSSIBLE SO THAT WATER WILL NOT CONCENTRATE AT LOW POINTS IN THE FENCE AND SO THAT SMALL SWALES OR DEPRESSIONS THAT MAY CARRY SMALL CONCENTRATED FLOWS TO THE SILT FENCE ARE DISSIPATED ALONG ITS LENGTH.
3. ENDS OF THE SILT FENCES SHALL BE BROUGHT UPSLOPE SLIGHTLY SO THAT WATER PONDED BY THE SILT FENCE WILL BE PREVENTED FROM FLOWING AROUND THE ENDS.
4. SILT FENCE SHOULD PREFERABLY BE A MINIMUM OF 10 FEET FROM THE TOE OF SLOPE.
5. THE TRENCH SHALL BE MADE WITH A TRENCHER, CABLE LAYING MACHINE, SLICING MACHINE, OR OTHER SUITABLE DEVICE THAT WILL ENSURE AN ADEQUATELY UNIFORM TRENCH DEPTH.
6. WHERE TWO SECTIONS OF PREFABRICATED SILT FENCE ARE COMBINED INTO ONE RUN, THE END POSTS SHALL BE CONNECTED TOGETHER, NOT SIMPLY OVERLAPPED.
7. SILT FENCE SHALL ALLOW RUNOFF TO PASS ONLY AS DIFFUSE FLOW THROUGH THE GEOTEXTILE. IF RUNOFF OVERTOPS THE SILT FENCE, FLOWS AROUND THE ENDS, OR IN ANY OTHER WAY BECOMES A CONCENTRATED FLOW, ONE OF THE FOLLOWING SHALL BE PERFORMED, AS APPROPRIATE:
   7.1. A) AN ADDITIONAL RUN OF SILT FENCE SHALL BE PLACED UPSTREAM,
   7.2. B) THE LAYOUT OF THE SILT FENCE SHALL BE CHANGED,
   7.3. C) ACCUMULATED SEDIMENT SHALL BE REMOVED, OR
   7.4. D) OTHER PRACTICES SHALL BE IMPLEMENTED.
8. SEDIMENT DEPOSITS SHALL BE REMOVED WHEN THE DEPOSIT REACHES APPROXIMATELY ONE-HALF OF THE HEIGHT OF THE SILT FENCE.
9. ALL STOCKPILES SHALL BE INCIRCLED WITH SILT FENCE.
10. SILT FENCE FABRIC SHALL MEET THE FOLLOWING SPECIFICATIONS:
   10.1. MINIMUM TENSILE STRENGTH 120 LBS., ASTM D 4632;
   10.2. MAXIMUM ELONGATION AT 60 LBS., 15%%%, ASTM D 4632;
   10.3. MINIMUM PUNCTURE STRENGTH 50 LBS., ASTM D 4833;
   10.4. MINIMUM TEAR STRENGTH 40 LBS., ASTM D 4533;
   10.5. APPARENT OPENING SIZE <= 0.84MM, ASTM D 4751;
   10.6. MINIMUM PERMITTIVITY 1X10-2SEC.-1, ASTM D 4491;
   10.7. WATER FLOW RATE 15GAL./MIN/SQ. FT.;
   10.8. UV EXPOSURE STRENGTH RETENTION, 70%, ASTM G 4355.

CONSTRUCTION SITE CONTROL DETAILS	
SILT FENCE	
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	DETAIL
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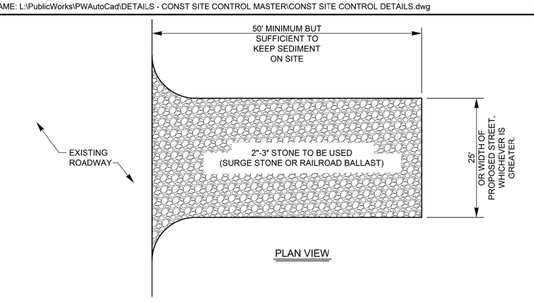
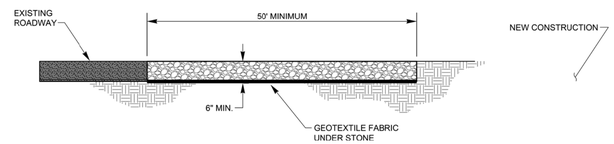


PLAN VIEW



CROSS SECTION

NOTE:
IF CONSTRUCTION ON THE SITE IS SUCH THAT THE MUD IS NOT REMOVED BY THE VEHICLE TRAVELING OVER THE STONE, THEN THE TIRES OF THE VEHICLES MUST BE WASHED BEFORE ENTERING THE PUBLIC ROAD.

CONSTRUCTION SITE CONTROL DETAILS	
CONSTRUCTION ENTRANCE	
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	DETAIL
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NICOLE COURT ADDITION

BEDFORD, TEXAS

EROSION CONTROL DETAILS

STATE OF TEXAS
KEITH H. HAMILTON
87384
LICENSED PROFESSIONAL ENGINEER
2-15-23

JOB	999-372
DATE	2-15-23
DESIGNED	K.M.H.
DRAWN	K.M.H.
CHECKED	K.M.H.
TEXAS F FIRM NO. F-2600	

NO.	REVISION	BY	DATE

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CONSTRUCTION SITE CLOSEOUT

CONSTRUCTION CLOSEOUT SHALL BE PERFORMED IN STAGES AS APPROPRIATE TO THE PROGRESSION OF THE PROJECT.

1. ONCE ALL HEAVY VEHICLE TRAFFIC INTO AND OUT OF THE SITE CEASES AND PERMANENT DRIVE(S) ARE INSTALLED, REMOVE CONSTRUCTION ENTRANCE.
2. AFTER ALL CONCRETE POURS ARE COMPLETE, PROPERLY DISPOSE OF ACCUMULATED CONCRETE WASHOUT MATERIALS, BREAK DOWN AND GRADE THE WASHOUT AREA.
3. PRIOR TO SEEDING OR SODDING THE SITE, REMOVE THE PARKWAY SILT TRAP MATERIALS.
4. FOR HYDRO-MULCHED AREAS, AFTER A UNIFORM STAND OF GRASS IS ESTABLISHED, AS DEFINED IN THE CITY OF BEDFORD INFRASTRUCTURE CONSTRUCTION PROVISIONS AND DETAILS, REMOVE AND PROPERLY DISPOSE OF SILT FENCES, OVERFLOW STRUCTURE(S), CHECK DAM(S), ORGANIC FILTER TUBES AND INLET PROTECTION.
5. AFTER ACCEPTANCE OF THE PUBLIC INFRASTRUCTURE IMPROVEMENTS BY THE CITY, REMOVE AND PROPERLY DISPOSE OF TREE PROTECTION.

CONSTRUCTION SITE CONTROL DETAILS

CONSTRUCTION SITE CLOSEOUT

CITY OF BEDFORD — PUBLIC WORKS ENGINEERING DEPT. 1813 RELIANCE PARKWAY BEDFORD, TEXAS 76021 817-952-2100 WWW.BEDFORDTX.GOV

DETAIL

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PLOTTED: Jul 29, 2019

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PHONE (817)268-9488 www.hamiltonduffy.com

NICOLE COURT ADDITION

BEDFORD, TEXAS

EROSION CONTROL DETAILS

2-15-23

JOB	999-372
DATE	2-15-23
DESIGNED	K.M.H.
DRAWN	K.M.H.
CHECKED	K.M.H.
TEXAS FIRM NO.	F-4290

NO.	REVISION	BY	DATE

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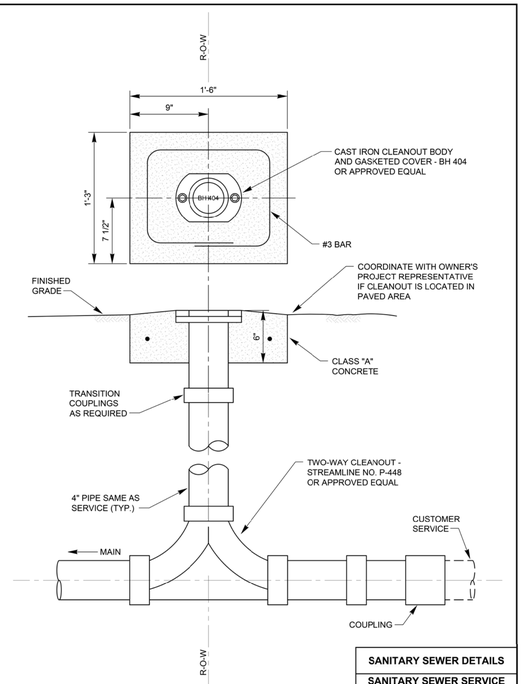

SANITARY SEWER DETAILS

SANITARY SEWER SERVICE CLEANOUT

CITY OF BEDFORD — PUBLIC WORKS ENGINEERING DEPT., 1813 RELIANCE PARKWAY, BEDFORD, TEXAS 76021, 817-952-2290, WWW.BEDFORDTX.GOV

DETAIL S-3

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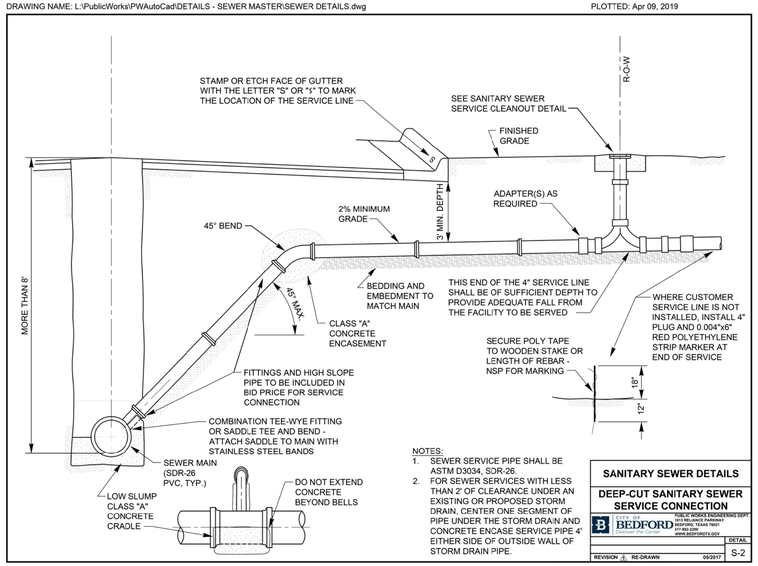

NOTES:
1. SEWER SERVICE PIPE SHALL BE ASTM D3034, SDR-26.
2. FOR SEWER SERVICES WITH LESS THAN 2' OF CLEARANCE UNDER AN EXISTING OR PROPOSED STORM DRAIN, CENTER ONE SEGMENT OF PIPE UNDER THE STORM DRAIN AND CONCRETE ENCASE SERVICE PIPE 4' EITHER SIDE OF OUTSIDE WALL OF STORM DRAIN PIPE.

SANITARY SEWER DETAILS

DEEP-CUT SANITARY SEWER SERVICE CONNECTION

CITY OF BEDFORD — PUBLIC WORKS ENGINEERING DEPT., 1813 RELIANCE PARKWAY, BEDFORD, TEXAS 76021, 817-952-2290, WWW.BEDFORDTX.GOV

DETAIL S-2

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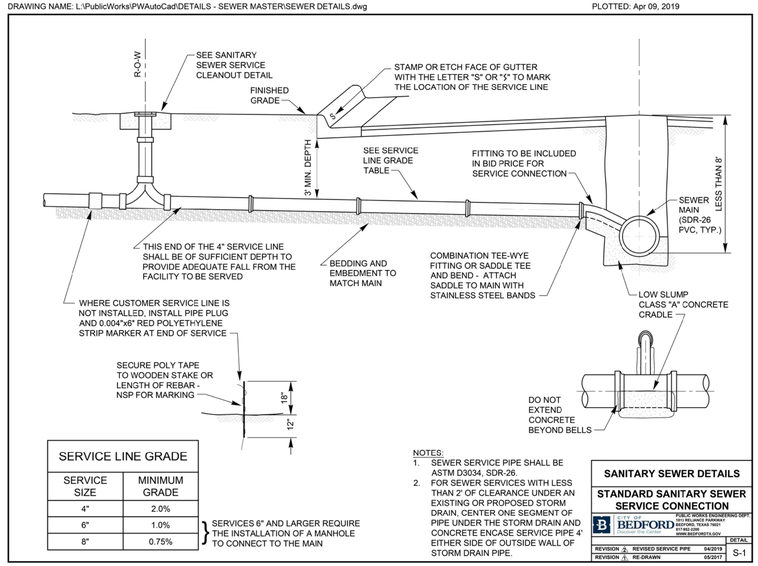

SERVICE LINE GRADE	
SERVICE SIZE	MINIMUM GRADE
4"	2.0%
6"	1.0%
8"	0.75%

} SERVICES 6" AND LARGER REQUIRE THE INSTALLATION OF A MANHOLE TO CONNECT TO THE MAIN

NOTES:
1. SEWER SERVICE PIPE SHALL BE ASTM D3034, SDR-26.
2. FOR SEWER SERVICES WITH LESS THAN 2' OF CLEARANCE UNDER AN EXISTING OR PROPOSED STORM DRAIN, CENTER ONE SEGMENT OF PIPE UNDER THE STORM DRAIN AND CONCRETE ENCASE SERVICE PIPE 4' EITHER SIDE OF OUTSIDE WALL OF STORM DRAIN PIPE.

SANITARY SEWER DETAILS

STANDARD SANITARY SEWER SERVICE CONNECTION

CITY OF BEDFORD — PUBLIC WORKS ENGINEERING DEPT., 1813 RELIANCE PARKWAY, BEDFORD, TEXAS 76021, 817-952-2290, WWW.BEDFORDTX.GOV

DETAIL S-1

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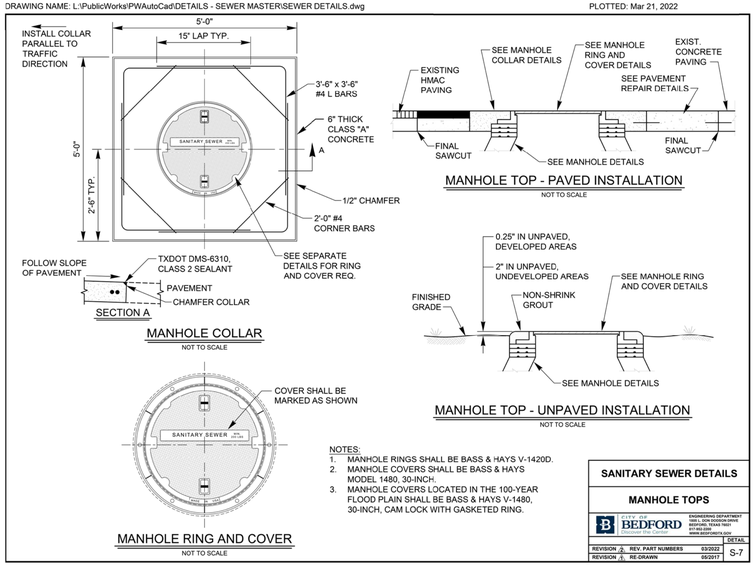
PLOTTED: Mar 21, 2022



NOTES:
1. MANHOLE RINGS SHALL BE BASS & HAYS V-1420D.
2. MANHOLE COVERS SHALL BE BASS & HAYS MODEL 1480, 30-INCH.
3. MANHOLE COVERS LOCATED IN THE 100-YEAR FLOOD PLAIN SHALL BE BASS & HAYS V-1480, 30-INCH, CAM LOCK WITH GASKETED RING.

SANITARY SEWER DETAILS

MANHOLE TOPS

CITY OF BEDFORD — ENGINEERING DEPARTMENT, 2301 L. DON DODSON DRIVE, BEDFORD, TEXAS 76021, 817-952-2290, WWW.BEDFORDTX.GOV

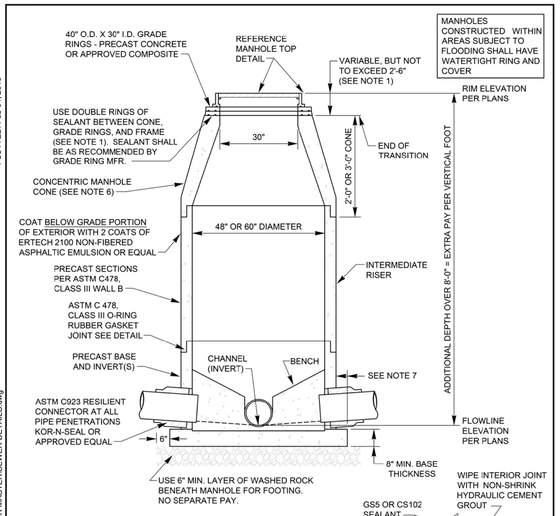
DETAIL S-7

REVISION — REV. PART NUMBERS — 03/2022

REVISION — RE-DRAWN — 05/2017

DRAWING NAME: L:\PublicWorks\PWAutoCad\DETAILS - SEWER MASTER\SEWER DETAILS.dwg

PLOTTED: Feb 04, 2019



NOTES:
1. GRADE RINGS MAY BE USED TO ADJUST NECK 12" OR LESS. WHEN ADJUSTMENT IS GREATER THAN 12", CONTRACTOR SHALL USE SONO TUBE AND PLACE CONCRETE FOR NECK ADJUSTMENT. GRADE RINGS SHALL BE CONSTRUCTED BY MANUFACTURER IN STANDARD 2", 3", 6", 8" AND 12" HEIGHTS.
2. USE 60" INSIDE DIAMETER MANHOLES UNDER ANY OF THE FOLLOWING CIRCUMSTANCES:
   A. DEPTH FROM TOP OF COVER TO FLOWLINE OF MH IS 10' OR GREATER.
   B. PIPES INTO MANHOLE ARE 15" DIAMETER OR LARGER.
   C. MANHOLE IS A DROP MANHOLE.
3. SEE DETAILS FOR BENCH AND INVERT (CHANNEL) REQUIREMENTS.
4. SEE DETAILS FOR MANHOLE COLLAR REQUIREMENTS.
5. INSTALL APPROVED 7' HIGH FIBERGLASS MARKER WITHIN 12" OF PAD IN UNDEVELOPED AREAS - REFERENCE DETAIL.
6. ECCENTRIC CONES AND FLAT TOPS MAY BE USED IF REQUIRED BY OWNER.
7. CONCRETE FOOTER TO EXTEND 6" FROM EXTERIOR MANHOLE WALL.
8. FIELD POURED INVERTS ARE PROHIBITED WITHOUT PRIOR APPROVAL FROM THE CITY OF BEDFORD.

SANITARY SEWER DETAILS

STANDARD PRECAST MANHOLE

CITY OF BEDFORD — PUBLIC WORKS ENGINEERING DEPT., 1813 RELIANCE PARKWAY, BEDFORD, TEXAS 76021, 817-952-2290, WWW.BEDFORDTX.GOV

DETAIL S-5

REVISION — RE-DRAWN — 05/2017

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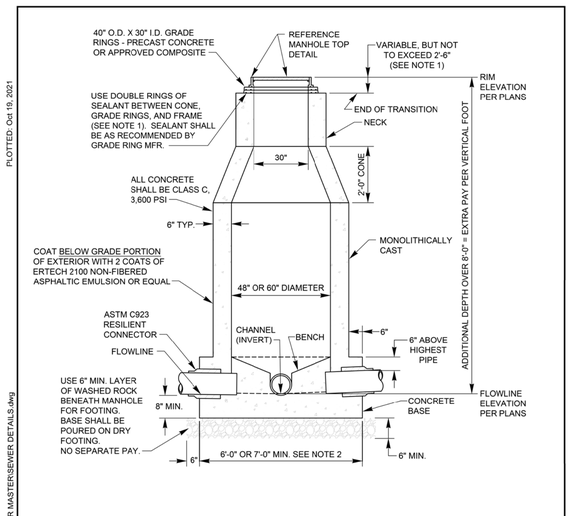
PLOTTED: Oct 19, 2021



NOTES:
1. GRADE RINGS MAY BE USED TO ADJUST NECK 12" OR LESS. WHEN ADJUSTMENT IS GREATER THAN 12", CONTRACTOR SHALL USE SONO TUBE AND PLACE CONCRETE FOR NECK ADJUSTMENT. GRADE RINGS SHALL BE CONSTRUCTED BY MANUFACTURER IN STANDARD 2", 3", 6", 8" AND 12" HEIGHTS.
2. USE 60" INSIDE DIAMETER MANHOLES UNDER ANY OF THE FOLLOWING CIRCUMSTANCES:
   A. DEPTH FROM TOP OF COVER TO FLOWLINE OF MH IS 10' OR GREATER.
   B. PIPES INTO MANHOLE ARE 15" DIAMETER OR LARGER.
   C. MANHOLE IS A DROP MANHOLE.
3. SEE DETAILS FOR BENCH AND INVERT (CHANNEL) REQUIREMENTS.
4. SEE DETAILS FOR MANHOLE COLLAR REQUIREMENTS.
5. INSTALL APPROVED 7' HIGH FIBERGLASS MARKER WITHIN 12" OF PAD IN UNDEVELOPED AREAS - REFERENCE DETAIL.
6. ECCENTRIC CONES AND FLAT TOPS MAY BE USED IF REQUIRED BY OWNER.
7. CONCRETE FOOTER TO EXTEND 6" FROM EXTERIOR MANHOLE WALL.
8. RUB INTERIOR SURFACES (LESS BENCH) TO A SMOOTH FINISH USING A RICH GROUT MIX.
9. CONTRACTOR SHALL NOT REMOVE ANY FORMS UNTIL 24 HOURS AFTER CONCRETE IS PLACED. NO BACKFILL SHALL BEGIN UNTIL 96 HOURS AFTER CONCRETE IS PLACED.

MANHOLES CONSTRUCTED WITHIN AREAS SUBJECT TO FLOODING SHALL HAVE WATERTIGHT RING AND COVER

SANITARY SEWER DETAILS

STANDARD CAST IN PLACE MANHOLE

CITY OF BEDFORD — ENGINEERING DEPARTMENT, 2301 L. DON DODSON DRIVE, BEDFORD, TEXAS 76021, 817-952-2290, WWW.BEDFORDTX.GOV

DETAIL S-4

REVISION — REVISED NOTES — 10/2021

REVISION — RE-DRAWN — 05/2017

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8241 MID-CITIES BLVD. - NORTH RICHLAND HILLS, TEXAS 76182
PHONE (817)268-9488 www.hamiltonduffy.com

NICOLE COURT ADDITION

BEDFORD, TEXAS

SEWER DETAILS

STATE OF TEXAS — KEITH H. HAMILTON — 87384 — LICENSED PROFESSIONAL ENGINEER

2-15-23

JOB	999-372
DATE	2-15-23
DESIGNED	K.M.H.
DRAWN	K.M.H.
CHECKED	K.M.H.
TEXAS FIRM NO.	F-2600

NO.	REVISION	BY	DATE

SHEET

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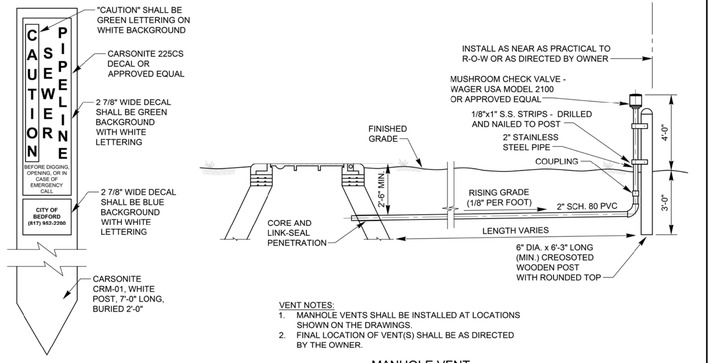

MARKER NOTE:
SEWER LINE PIPELINE MARKER SHALL BE PLACED AT ALL HIGHWAY, RAILROAD, FENCE, ETC. CROSSINGS, CHANGES IN PIPELINE DIRECTION, OR AS DIRECTED BY THE OWNER.

SEWER LINE MARKER
NOT TO SCALE

VENT NOTES:
1. MANHOLE VENTS SHALL BE INSTALLED AT LOCATIONS SHOWN ON THE DRAWINGS.
2. FINAL LOCATION OF VENT(S) SHALL BE AS DIRECTED BY THE OWNER.

MANHOLE VENT
NOT TO SCALE

SANITARY SEWER DETAILS	
SEWER LINE MARKER AND MANHOLE VENT	
CITY OF BEDFORD	PUBLIC WORKS ENGINEERING DEPT. 2511 RELIANCE PARKWAY BEDFORD, TEXAS 76021 817-952-2356 WWW.BEDFORDTX.GOV
	DETAIL S-11
REVISION RE-DRAWN	06/2017

PLOTTED: Feb 04, 2019

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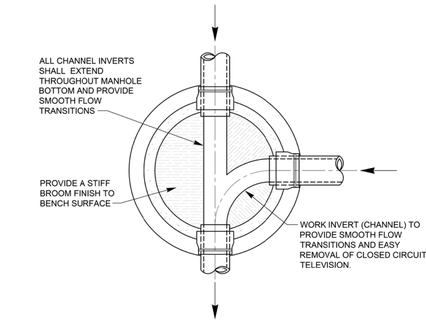
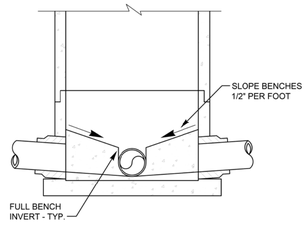


TYPICAL INVERT (CHANNEL)
NOT TO SCALE



STANDARD MANHOLE BENCH
NOT TO SCALE

NOTES:
1. PRECAST MANHOLE SHOWN. DETAILS ALSO APPLY TO CAST IN PLACE MANHOLES.

SANITARY SEWER DETAILS	
STANDARD MANHOLE INVERTS AND BENCHES	
CITY OF BEDFORD	PUBLIC WORKS ENGINEERING DEPT. 2511 RELIANCE PARKWAY BEDFORD, TEXAS 76021 817-952-2356 WWW.BEDFORDTX.GOV
	DETAIL S-8
REVISION RE-DRAWN	05/2017

PLOTTED: Feb 04, 2019

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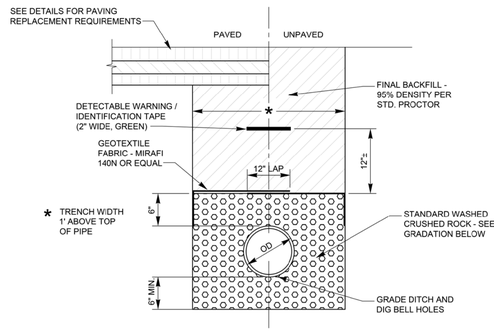

TYPICAL PVC SANITARY SEWER MAIN

PIPE WITH BELLS	MIN. TRENCH WIDTH *	MAX. TRENCH WIDTH *
6"-30"	OD + 12"	OD + 16"
36" & LARGER	OD + 16"	OD + 24"

PIPE WITH SLEEVES SOCKETS OR COUPLINGS	MIN. TRENCH WIDTH *	MAX. TRENCH WIDTH *
4"-12"	OD + 12"	OD + 16"
15" & LARGER	OD + 16"	OD + 21"

STANDARD CRUSHED ROCK GRADATION

RETAINED ON 1 - INCH SIEVE	0 - 5%
RETAINED ON 1/2 - INCH SIEVE	40 - 75%
RETAINED ON NO. 4 SIEVE	90 - 100%
RETAINED ON NO. 8 SIEVE	95 - 100%

NOTE:
THIS GRADATION IS FOR GRADATION SIZE NUMBER 4 AS DEFINED IN ASTM C 33

SANITARY SEWER DETAILS	
SANITARY SEWER PIPE CLASS B EMBEDMENT	
CITY OF BEDFORD	PUBLIC WORKS ENGINEERING DEPT. 2511 RELIANCE PARKWAY BEDFORD, TEXAS 76021 817-952-2356 WWW.BEDFORDTX.GOV
	DETAIL S-12A
REVISION RE-DRAWN	06/2017

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PHONE (817) 268-8488 www.hamiltonduffy.com

NICOLE COURT ADDITION

BEDFORD, TEXAS

SEWER DETAILS

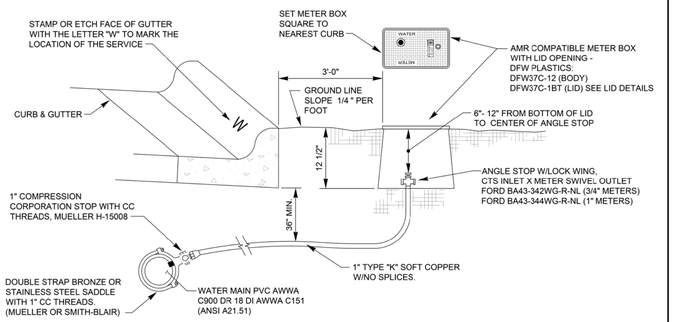
2-15-23

JOB	999-372
DATE	2-15-23
DESIGNED	K.M.H.
DRAWN	K.M.H.
CHECKED	K.M.H.
TEXAS FIRM NO.	F-230

NO.	REVISION	BY	DATE

SHEET

DRAWING NAME: L:\PublicWorks\PWAutoCad\DETAILS - WATER MASTER\WATER DETAILS.dwg PLOTTED: Feb 22, 2019



NOTES:
1. DOUBLE STRAPPED BRONZE, OR STAINLESS STEEL SADDLES SHALL BE USED FOR TAPPING ALL MAINS.
2. ALL COPPER FITTINGS SHALL BE COMPRESSION FITTINGS. NO FLARED OR SOLDER.
3. ALL FITTINGS SHALL BE MUELLER, FORD, OR CITY APPROVED EQUAL IN QUALITY.
4. INSTALL 1" SERVICE AND TAPS FOR BOTH 3/4" AND 1" METERS.
5. METERS SHALL NOT BE INSTALLED IN EXISTING OR PROPOSED SIDEWALKS OR WITHIN 3' OF DRIVEWAYS OR STREETS.

WATER DETAILS

1" WATER SERVICE

CITY OF BEDFORD — PUBLIC WORKS ENGINEERING DEPT. 1813 RELIANCE PARKWAY BEDFORD, TEXAS 76021 (817) 952-2100 WWW.BEDFORDTX.GOV

		DETAIL
ADDED TOP VIEW	03/2018	W-2
REVISION 1: RE-DRAWN	09/2016	

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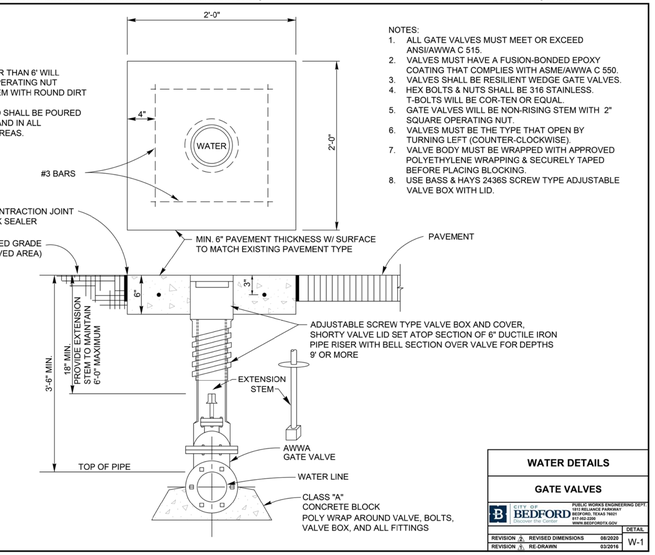

NOTES:
1. ALL GATE VALVES MUST MEET OR EXCEED ANSI/AWWA C 515.
2. VALVES MUST HAVE A FUSION-BONDED EPOXY COATING THAT COMPLIES WITH ASME/AWWA C 550.
3. VALVES SHALL BE RESILIENT WEDGE GATE VALVES.
4. HEX BOLTS & NUTS SHALL BE 316 STAINLESS. T-BOLTS WILL BE COR-TEN OR EQUAL.
5. GATE VALVES WILL BE NON-RISING STEM WITH 2" SQUARE OPERATING NUT.
6. VALVES MUST BE THE TYPE THAT OPEN BY TURNING LEFT (COUNTER-CLOCKWISE).
7. VALVE BODY MUST BE WRAPPED WITH APPROVED POLYETHYLENE WRAPPING & SECURELY TAPED BEFORE PLACING BLOCKING.
8. USE BASS & HAYS 2436S SCREW TYPE ADJUSTABLE VALVE BOX WITH LID.

WATER DETAILS

GATE VALVES

CITY OF BEDFORD — PUBLIC WORKS ENGINEERING DEPT. 1813 RELIANCE PARKWAY BEDFORD, TEXAS 76021 (817) 952-2100 WWW.BEDFORDTX.GOV

		DETAIL
REVISION 2: REVISED DIMENSIONS	08/2020	W-1
REVISION 1: RE-DRAWN	03/2016	

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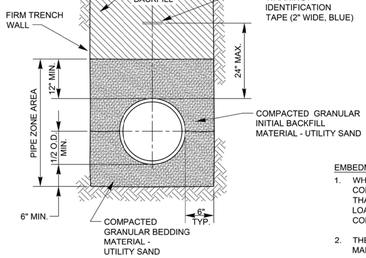

EMBEDMENT NOTES:
1. WHERE THE MAXIMUM TRENCH WIDTH IS EXCEEDED, THE CONTRACTOR SHALL PROVIDE ADDITIONAL SUITABLE BEDDING THAT WILL ADEQUATELY RESIST THE ADDITIONAL EXTERNAL LOAD, AND THE ADDITIONAL COST SHALL BE BORNE BY THE CONTRACTOR.
2. THE TRENCH WALLS IN THE PIPE ZONE AREA SHALL BE MAINTAINED VERTICAL.

WATER DETAILS

PVC AND DUCTILE IRON WATER PIPE BEDDING AND EMBEDMENT

CITY OF BEDFORD — PUBLIC WORKS ENGINEERING DEPT. 1813 RELIANCE PARKWAY BEDFORD, TEXAS 76021 (817) 952-2100 WWW.BEDFORDTX.GOV

		DETAIL
REVISION 1: RE-DRAWN	03/2018	W-7A

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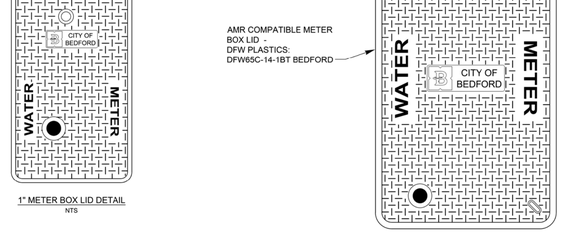

WATER DETAILS

WATER METER LIDS

CITY OF BEDFORD — PUBLIC WORKS ENGINEERING DEPT. 1813 RELIANCE PARKWAY BEDFORD, TEXAS 76021 (817) 952-2100 WWW.BEDFORDTX.GOV

		DETAIL
REVISION 1: RE-DRAWN	05/2018	W-4

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PHONE (817) 268-9488 www.hamiltonduffy.com

NICOLE COURT ADDITION

BEDFORD, TEXAS

WATER DETAILS

STATE OF TEXAS — KEITH H. HAMILTON — 87384 — LICENSED PROFESSIONAL ENGINEER

2-15-23

JOB	999-372
DATE	2-15-23
DESIGNED	K.M.H.
DRAWN	K.M.H.
CHECKED	K.M.H.
TEXAS F.I.R.M NO.	F-2501

NO.	REVISION	BY	DATE

SHEET

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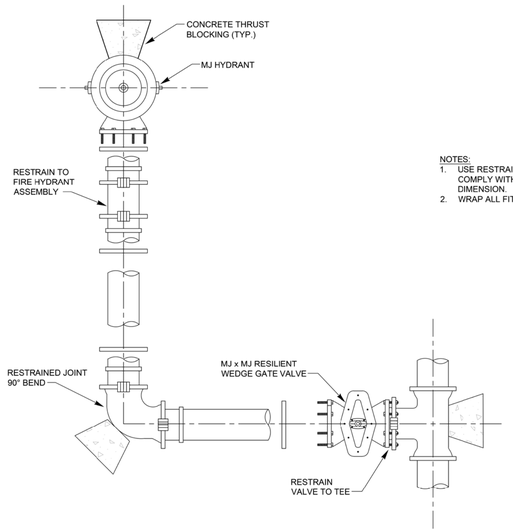


NOTES:
1. USE RESTRAINED 90° BEND AS REQUIRED TO COMPLY WITH CURB TO FIRE HYDRANT DIMENSION.
2. WRAP ALL FITTINGS WITH 8 MIL POLY & TAPE.

WATER DETAILS

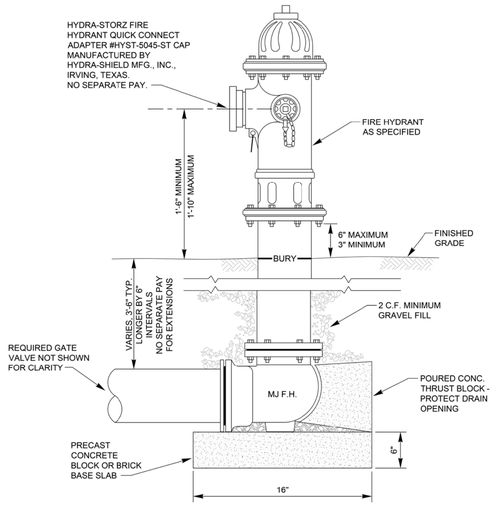
TYPE 1 FIRE HYDRANT INSTALLATION

CITY OF BEDFORD — PUBLIC WORKS ENGINEERING DEPT. 1813 RELIANCE PARKWAY BEDFORD, TEXAS 76021 817-952-2200 WWW.BEDFORDTX.GOV

DETAIL W-6B

REVISION 1: RE-DRAWN 03/2019

DRAWING NAME: L:\PublicWorks\PWAutoCad\DETAILS - WATER MASTER\WATER DETAILS.dwg PLOTTED: Mar 13, 2020



NOTES:
1. FIRE HYDRANTS SHALL COMPLY WITH AWWA C502, 250 PSI RATED.
2. ALL FIRE HYDRANTS SHALL CONFORM TO SPECIFICATIONS AND SHALL BE MUELLER SUPER CENTURION OR APPROVED EQUAL.
3. ONLY NEWLY MANUFACTURED HYDRANTS SHALL BE ACCEPTABLE. CASTING DATE STAMP ON HYDRANT BODY SHALL NOT BE MORE THAN 12 MONTHS PRIOR TO CONSTRUCTION OR PERMITTING DATE.
4. FIRE HYDRANT SHALL BE A MINIMUM OF 3' AND A MAXIMUM OF 6' FROM BACK OF CURB.
5. BURY DEPTH SHALL BE NO MORE THAN 6'. ONLY ONE (1) EXTENSION SHALL BE PERMITTED.
6. CONCRETE SHALL BE PLACED OR POURED AGAINST UNDISTURBED SOIL.
7. DEPTH OF HYDRANT LEAD AND BURY OF HYDRANT SHALL CONFORM TO COVER PIPE AS SPECIFIED, OR AS EXISTING.
8. NATIONAL STANDARD FOR SIZE AND SHAPE OF OPERATING NUT IS 1-1/2" PENTAGON.
9. WRAP ALL FITTINGS WITH 8 MIL POLY & TAPE.
10. HYDRANT SHALL BE PAINTED WITH 2 COATS WEATHER RESISTANT RED ENAMEL - FLYNT SAFETY RED OR APPROVED EQUAL.
11. REFERENCE DETAILS FOR REQUIRED GATE VALVE.

WATER DETAILS

FIRE HYDRANT

CITY OF BEDFORD — PUBLIC WORKS ENGINEERING DEPT. 1813 RELIANCE PARKWAY BEDFORD, TEXAS 76021 817-952-2200 WWW.BEDFORDTX.GOV

DETAIL W-6A

REVISION 3: REVISED NOTES 03/2020
REVISION 2: RE-DRAWN 03/2019

DRAWING NAME: L:\PublicWorks\PWAutoCad\DETAILS - WATER MASTER\WATER DETAILS.dwg PLOTTED: Feb 13, 2020

HORIZONTAL BLOCKING TABLE						
PIPE SIZE	"X", INCHES, MIN.*	MINIMUM THRUST BLOCKING AREA, SQUARE FEET				
		11.25° BEND	22.5° BEND	45° BEND	90° BEND	TEE & PLUG
6"	18"	4.0	4.0	4.0	4.5	4.0
8"	18"	4.0	4.0	4.3	8.0	5.7
10"	18"	4.0	4.0	6.8	12.5	8.8
12"	18"	4.0	5.0	9.7	18.0	12.7
16"	20"	4.4	8.8	17.3	32.0	22.6
FOR PIPES LARGER THAN 16", FOLLOW PLAN SPECIFICATIONS						

MINIMUM THRUST BLOCKING AREA SHALL BE 4.0 SQUARE FEET.

* DIMENSION "X" TO BE INCREASED WHERE NECESSARY TO PROVIDE BEARING AGAINST UNDISTURBED EARTH.

NOTES:
1. BLOCKING SIZES ARE BASED ON A WATER LINE PRESSURE OF 225 PSI, AN ALLOWABLE SOIL BEARING VALUE OF 3,000 PSF AND A MINIMUM PIPE COVER OF 3.5'.
2. CLASS "A", 3,000 PSI, CONCRETE SHALL BE USED FOR ALL BLOCKING.
3. DIMENSIONS SHALL BE INCREASED FOR HIGHER LINE PRESSURES OR IF BEARING VALUE OF THE TRENCH SOIL IS LESS THAN 3,000 PSF.
4. ALL FITTINGS AND DUCTILE IRON PIPE SHALL BE WRAPPED WITH 8 MIL POLY PRIOR TO CONCRETE PLACEMENT.
5. USE UNI-FLANGE, MEGALUG, OR SIMILAR JOINT RESTRAINT GLANDS ON ALL FITTINGS.
6. KEEP CONCRETE CLEAR OF PIPE JOINTS AND BOLTS.

WATER DETAILS

THRUST BLOCKING

CITY OF BEDFORD — PUBLIC WORKS ENGINEERING DEPT. 1813 RELIANCE PARKWAY BEDFORD, TEXAS 76021 817-952-2200 WWW.BEDFORDTX.GOV

DETAIL W-8

REVISION 1: RE-DRAWN 01/2020

DRAWING NAME: L:\PublicWorks\PWAutoCad\DETAILS - WATER MASTER\WATER DETAILS.dwg PLOTTED: Feb 22, 2019

NOTES:
1. LENGTH OF FIRE HYDRANT LEAD LINE VARIES DEPENDING ON LOCATION OF MAIN LINE AND DISTANCE OF FIRE HYDRANT BEHIND CURB.
2. WRAP ALL FITTINGS WITH 8 MIL POLY & TAPE.

WATER DETAILS

TYPE 2 FIRE HYDRANT INSTALLATION

CITY OF BEDFORD — PUBLIC WORKS ENGINEERING DEPT. 1813 RELIANCE PARKWAY BEDFORD, TEXAS 76021 817-952-2200 WWW.BEDFORDTX.GOV

DETAIL W-6C

REVISION 1: RE-DRAWN 03/2019

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8241 MID-CITIES BLVD. - NORTH RICHLAND HILLS, TEXAS 76182
PHONE (817) 268-9488 www.hamiltonduffy.com

NICOLE COURT ADDITION

BEDFORD, TEXAS

WATER DETAILS

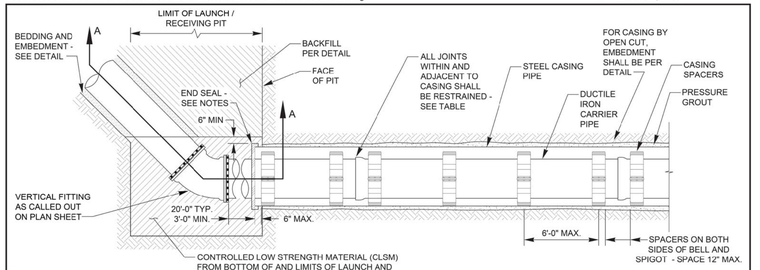
STATE OF TEXAS — KEITH H. HAMILTON — 87384 — LICENSED PROFESSIONAL ENGINEER — 2-15-23

JOB	999-372
DATE	2-15-23
DESIGNED	K.M.H.
DRAWN	K.M.H.
CHECKED	K.M.H.
TEXAS F.IRM NO. F-2460	

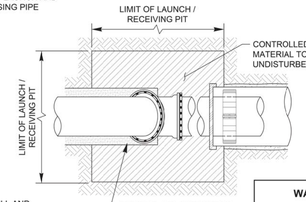
NO.	REVISION	BY	DATE

SHEET

DRAWING NAME: L:\PublicWorks\PWAutoCad\DETAILS - WATER MASTER\WATER DETAILS.dwg PLOTTED: Feb 22, 2019



CARRIER PIPE WITH RESTRAINED JOINTS			
	8" Ø - 20" Ø DIP	24" Ø - 42" Ø DIP	STEEL PIPE - ALL SIZES
FITTINGS	MJ WITH MEGALUGS	MJ WITH MEGALUGS OR RESTRAINED PUSH-ON *	WELDED JOINTS
PIPE	BELL AND SPIGOT W / GRIPPER GASKET	RESTRAINED PUSH-ON *	WELDED JOINTS
* TR-FLEX, FLEX-RING, OR APPROVED EQUAL			



PLAN VIEW AT A-A

NOTES:
1. FOR BELL AND SPIGOT PIPE REMOVE ALL SLACK IN LINE PRIOR TO BACKFILL AND PRESSURE TESTING .
2. END SEALS SHALL BE PIPELINE SEAL AND INSULATOR INC., ADVANCED PRODUCT SYSTEMS OR APPROVED EQUAL.
3. CONTROLLED LOW STRENGTH MATERIAL (CLSM) SHALL BE A MIXTURE OF PORTLAND CEMENT, FLY ASH, WATER AND AGGREGATES. MIX DESIGN SHALL PROVIDE A MINIMUM UNCONFINED COMPRESSIVE STRENGTH OF 50 PSI @ 28 DAYS AND A MAXIMUM UNCONFINED STRENGTH OF 150 PSI @ 28 DAYS.

WATER DETAILS

WATER CARRIER PIPE IN STEEL CASING PIPE

CITY OF BEDFORD — PUBLIC WORKS ENGINEERING DEPT. 1813 RELIANCE PARKWAY BEDFORD, TEXAS 76021 (817) 952-2200 WWW.BEDFORDTX.GOV

DETAIL W-18A

REVISION 1: RE-DRAWN 01/2019

PLOTTED: Feb 13, 2020

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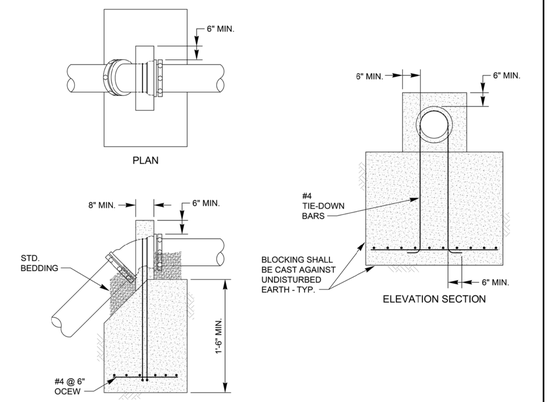

PROFILE SECTION

VERTICAL TIE-DOWN BLOCKING TABLE						
	90° BEND	45° BEND		22.5° BEND		11.25° BEND	
PIPE SIZE	ALL 90° BENDS SHALL BE RESTRAINED	MIN. VOLUME, CF	#4 BARS	MIN. VOLUME, CF	#4 BARS	MIN. VOLUME, CF	#4 BARS
6"		48.7	2	24.8	2	12.5	2
8"		86.6	2	44.1	2	22.2	2
10"		135.3	3	69.0	2	34.6	2
12"		194.8	4	99.3	2	49.9	2
FOR PIPES 16" AND LARGER, PROVIDE TIE-DOWN FOR SPECIFIC LOCATION(S)							

NOTES:
1. BLOCKING SIZES ARE BASED ON A WATER LINE PRESSURE OF 225 PSI AND 150 PCF CONCRETE DENSITY.
2. CLASS "A", 3,000 PSI, CONCRETE SHALL BE USED FOR ALL BLOCKING.
3. WIDTHS, LENGTHS AND DEPTHS MAY VARY BUT SATISFACTION OF ABOVE MINIMUM VOLUMES MUST BE DEMONSTRATED.
4. ALL FITTINGS AND DUCTILE IRON PIPE SHALL BE WRAPPED WITH 8 MIL POLY PRIOR TO CONCRETE PLACEMENT.
5. USE UNI-FLANGE, MEGALUG, OR SIMILAR JOINT RESTRAINT GLANDS ON ALL FITTINGS.

WATER DETAILS

VERTICAL TIE-DOWN BLOCKING

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DETAIL W-9

REVISION 1: RE-DRAWN 01/2020

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PHONE (817) 268-8488 www.hamiltonduffy.com

NICOLE COURT ADDITION

BEDFORD, TEXAS

WATER DETAILS

TEXAS FIRM NO. F-4230

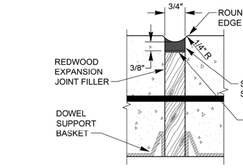
JOB 999-372
DATE 2-15-23
DESIGNED K.M.H.
DRAWN K.M.H.
CHECKED K.M.H.

NO.	REVISION	BY	DATE

SHEET

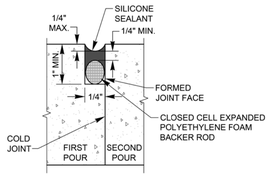
KEITH M. HAMILTON 87384 LICENSED PROFESSIONAL ENGINEER

2-15-23



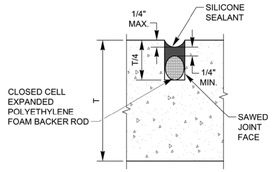
SEAL FOR TRANSVERSE EXPANSION JOINTS

NOT TO SCALE



SEAL FOR TRANSVERSE AND LONGITUDINAL CONSTRUCTION BUTT JOINTS

NOT TO SCALE



SEAL FOR SAWED DUMMY JOINTS

NOT TO SCALE

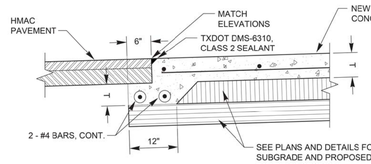
PAVING DETAILS

REINFORCED CONCRETE PAVEMENT JOINT SEALS

CITY OF BEDFORD — PUBLIC WORKS ENGINEERING DEPT. 1813 RELIANCE PARKWAY BEDFORD, TEXAS 76021 817-952-2200 WWW.BEDFORDTX.GOV

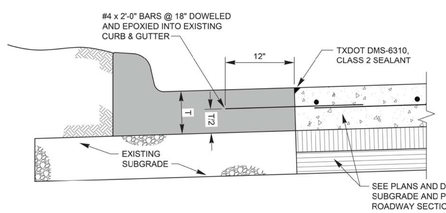
DETAIL P-8B

REVISION | RE-DRAWN | 08/2017



BUTT JOINT CONNECTION (HEADER BLOCK) BETWEEN NEW REINFORCED CONCRETE PAVING AND HMAC PAVIING

NOT TO SCALE



BUTT JOINT CONNECTION (HEADER BLOCK) BETWEEN NEW REINFORCED CONCRETE PAVING AND EXISTING CURB AND GUTTER

NOT TO SCALE

PAVING DETAILS

REINFORCED CONCRETE PAVEMENT BUTT JOINT CONNECTIONS

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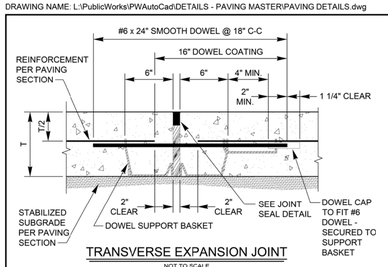
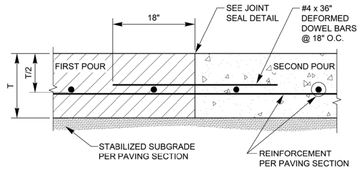
DETAIL P-8

REVISION | RE-DRAWN | 08/2017



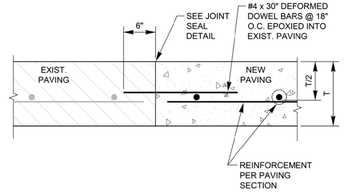
TRANSVERSE EXPANSION JOINT

NOT TO SCALE



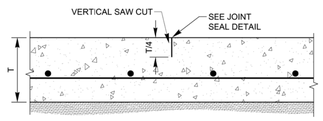
TRANSVERSE AND LONGITUDINAL CONSTRUCTION BUTT JOINT

NOT TO SCALE



CONSTRUCTION BUTT JOINT AT EXISTING PAVEMENT

NOT TO SCALE



SAWED DUMMY JOINT

NOT TO SCALE

JOINT DEPTH	
PAVEMENT THICKNESS (T)	SAW CUT DEPTH (T/4)
6"	1 1/2"
7"	1 3/4"
8"	2"
10"	2 1/4"

PAVING DETAILS

REINFORCED CONCRETE PAVEMENT JOINTS

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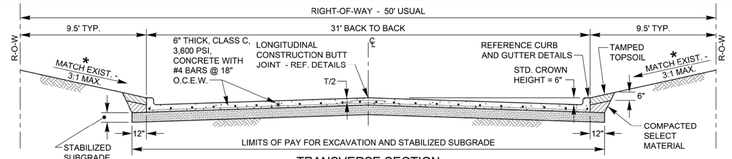
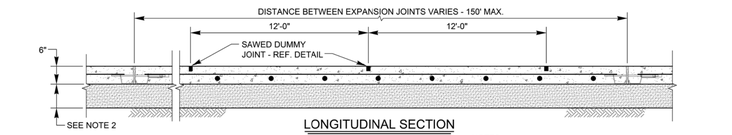
DETAIL P-6A

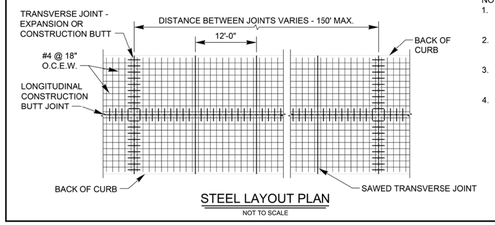
REVISION | RE-DRAWN | 08/2017



TRANSVERSE SECTION



LONGITUDINAL SECTION



STEEL LAYOUT PLAN

NOT TO SCALE

NOTES:
1. REINFORCING SHALL EXTEND THROUGH BOTH LONGITUDINAL CONSTRUCTION JOINTS AND TRANSVERSE CONSTRUCTION BUTT JOINTS.
2. SUBGRADE THICKNESS (8" MINIMUM) AND STABILIZATION MATERIAL (LIME OR CEMENT) SHALL BE AS RECOMMENDED BY GEOTECHNICAL INVESTIGATION REPORT.
3. SUBGRADE SHALL BE MECHANICALLY COMPACTED TO A DENSITY NOT LESS THAN 95% (AT -2% TO +4% OF OPTIMUM MOISTURE) OF STANDARD PROCTOR (ASTM D-698).
4. ★ REFERENCE AND WORK SIDEWALK DETAIL FOR PARKWAYS WITH SIDEWALKS.

PAVING DETAILS

RESIDENTIAL STREET SECTION 6" REINFORCED CONCRETE PAVEMENT

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DETAIL P-3

REVISION | RE-DRAWN | 08/2017

MONOLITHIC CURB & GUTTER

NOT TO SCALE

SEPARATELY POURED CURB & GUTTER

NOT TO SCALE

SUPERIMPOSED CURB

NOT TO SCALE

CURB & GUTTER NOTES:
1. TOOLED JOINTS SHALL BE PLACED AT FIVE FOOT INTERVALS OR MATCHING ABUTTING SIDEWALK JOINTS AND PAVEMENT JOINTS.
2. DOWELED EXPANSION JOINTS SHALL BE PLACED AT ALL INTERSECTIONS PC'S, PT'S DRIVEWAYS, INLETS, OTHER CURB AND GUTTER, AND EVERY 200 FEET.

PAVING DETAILS

CURB & GUTTER SECTIONS FOR ASPHALT AND CONCRETE PAVEMENT

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DETAIL P-7

REVISION | RE-DRAWN | 08/2017

NOTES:
1. ★ REFERENCE AND WORK ACCESSIBILITY RAMP DETAILS WITH JOINTING.

RESIDENTIAL STREET SECTION

PAVING DETAILS

REINFORCED CONCRETE PAVEMENT JOINT SPACING DIAGRAM

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DETAIL P-6C

REVISION | RE-DRAWN | 08/2017

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NICOLE COURT ADDITION

BEDFORD, TEXAS

PAVING DETAILS

STATE OF TEXAS — KEITH H. HAMILTON — 87384 — LICENSED PROFESSIONAL ENGINEER — 2-15-23

NO.	REVISION	BY	DATE

JOB 999-372
DATE 2-15-23
DESIGNED K.M.H.
DRAWN K.M.H.
CHECKED K.M.H.
TEXAS FIRM NO. F-2460

SHEET

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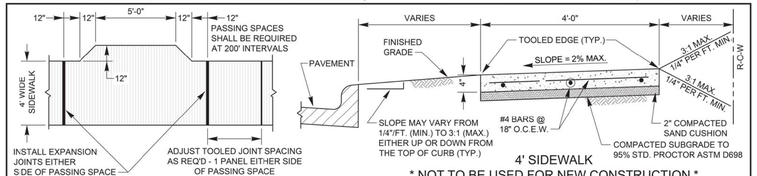


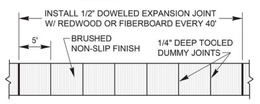
PASSING SPACE

NOT TO SCALE

4' SIDEWALK

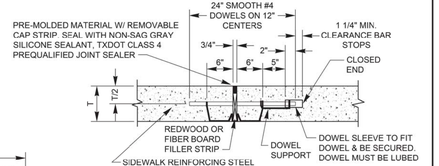
* NOT TO BE USED FOR NEW CONSTRUCTION *

NOT TO SCALE



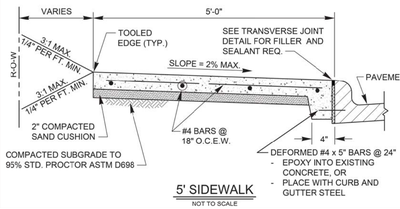
STANDARD SIDEWALK LAYOUT

NOT TO SCALE



SIDEWALK TRANSVERSE EXPANSION JOINT

NOT TO SCALE



5' SIDEWALK

NOT TO SCALE

NOTES:
1. CLASS A, 3,000 PSI, CONCRETE SHALL BE USED FOR ALL SIDEWALKS.
2. REFER TO PLANS FOR NEW AND REPLACEMENT SIDEWALK LOCATION AND DIMENSIONS.
3. NEW AND REPLACEMENT SIDEWALKS SHALL BE DOWELED INTO EXISTING SIDEWALKS WHERE APPLICABLE.

PAVING DETAILS

STANDARD SIDEWALKS

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		DETAIL
REVISION 2	REBAR SIZE	11/2016
REVISION 1	RE-DRAWN	09/2016
		P-13

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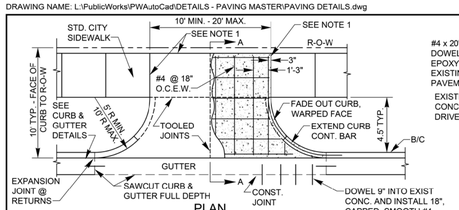
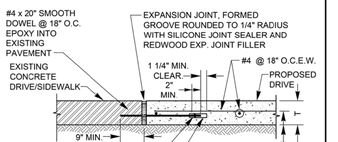
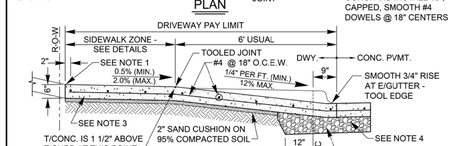


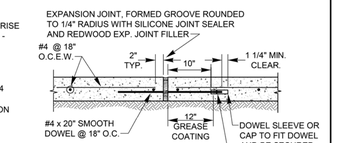
PLAN



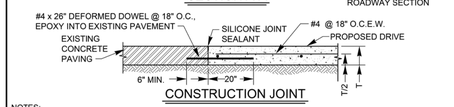
EXPANSION JOINT - ONE SIDE PROPOSED



SECTION A-A



EXPANSION JOINT - TWO SIDES PROPOSED



CONSTRUCTION JOINT

NOTES:
1. INSTALL EXPANSION JOINT (SEE DETAIL) WHERE DRIVEWAY CONNECTS TO SIDEWALK. PLACE EXPANSION JOINT FOR CONNECTION TO EXIST. DRIVE AT BACK OF SIDEWALK. IF DRIVE CONSTRUCTION EXTENDS BEYOND R-O-W, PLACE EXPANSION JOINT AT BACK OF SIDEWALK THEN PLACE CONSTRUCTION JOINT AT CONNECTION WITH EXISTING DRIVE.
2. SIDEWALK SECTION THRU DRIVEWAY TO BE POURED SAME THICKNESS AS DRIVEWAY APPROACH, AND PAID FOR AS DRIVEWAY APPROACH. EXISTING SIDEWALK, IF ANY, SHALL BE REMOVED AND REPLACED.
3. MATCH CONCRETE PAVING THICKNESS FROM BACK OF CURB TO CONSTRUCTION JOINT TIE-IN TO CONCRETE PAVING.
4. THE GRADE BREAK AT THE GUTTER LINE AND AT ANY POINT WITHIN 10 FEET OF GUTTER LINE MUST NOT EXCEED 12%.
5. CONCRETE SHALL BE POURED WITHIN 72 HOURS OF COMPLETING CURB CUTS.
6. ALL CONCRETE SHALL BE CLASS C, 3,000 PSI, FOR RESIDENTIAL DRIVEWAYS.

PAVING DETAILS

RESIDENTIAL DRIVEWAY

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		DETAIL
REVISION 1	RE-DRAWN	01/2013
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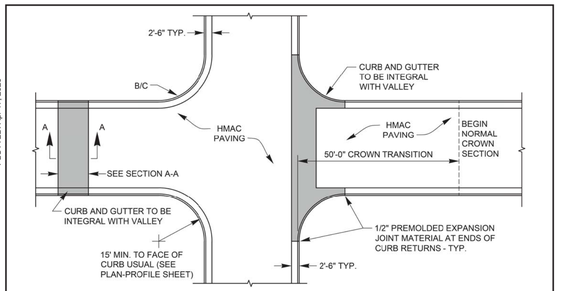
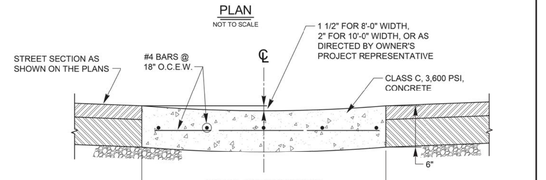


PLAN

NOT TO SCALE



SECTION A-A

NOT TO SCALE

CROWN TRANSITION FOR VALLEY GUTTER			
DISTANCE FROM ℄ OF VALLEY	CROWN		
	6"	7"	8"
0'	0.000'	0.000'	0.000'
5'	0.167'	0.167'	0.167'
10'	0.290'	0.290'	0.290'
20'	0.445'	0.455'	0.465'
30'	0.500'	0.540'	0.580'
40'	0.500'	0.583'	0.635'
50'	0.500'	0.583'	0.667'

PAVING DETAILS

VALLEY GUTTER FOR ASPHALT STREETS

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		DETAIL
REVISION 1	RE-DRAWN	05/2016
		P-9

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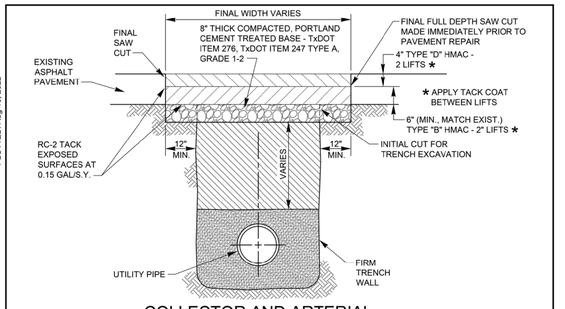
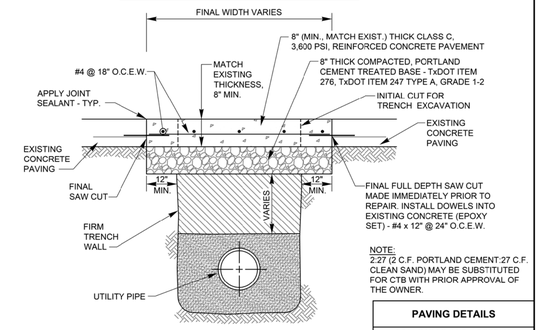


COLLECTOR AND ARTERIAL ASPHALT PAVEMENT REPAIR



NOTE:
2.27 (2 C.F. PORTLAND CEMENT 27 C.F. CLEAN SAND) MAY BE SUBSTITUTED FOR CTB WITH PRIOR APPROVAL OF THE OWNER.

COLLECTOR AND ARTERIAL REINFORCED CONCRETE PAVEMENT REPAIR

PAVING DETAILS

COLLECTOR AND ARTERIAL PAVEMENT REPAIR FOR UTILITY CUT

CITY OF BEDFORD — Discover the Center
ENGINEERING DEPARTMENT
2000 FOREST RIDGE DRIVE
BEDFORD, TEXAS 76021
817-952-2294
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		DETAIL
REVISION 2	CHANGE TO CTB	08/2022
REVISION 1	RE-DRAWN	08/2017
		P-15

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PHONE (817) 268-9488 www.hamiltonduffy.com

NICOLE COURT ADDITION

BEDFORD, TEXAS

PAVING DETAILS

STATE OF TEXAS — KEITH M. HAMILTON — 87384 — LICENSED PROFESSIONAL ENGINEER

2-15-23

JOB	999-372
DATE	2-15-23
DESIGNED	K.M.H.
DRAWN	K.M.H.
CHECKED	K.M.H.
TEXAS F-FIRM NO.	F-2480

NO.	REVISION	BY	DATE

SHEET

GENERAL NOTES

CURB RAMPS

1. Install a curb ramp or blended transition at each pedestrian street crossing.
2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
4. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is desirable. Where a 5' sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4' for short distances. 5'x 5' passing areas at intervals not to exceed 200' are required.
5. Turning Spaces shall be 5'x 5' minimum. Cross slope shall be maximum 2%.
6. Clear space at the bottom of curb ramps shall be a minimum of 4'x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the flare, such as where the adjacent surface is planted, substantially obstructed, or otherwise protected.
8. Additional information on curb ramp location, design, light reflective value and texture may be found in the latest draft of the Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (access Board).
9. To serve as a pedestrian refuge area, the median should be a minimum of 6' wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.
10. Small channelization islands, which do not provide a minimum 5'x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.
11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.
12. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.
13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.
15. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.
16. Provide a smooth transition where the curb ramps connect to the street.
17. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.
18. Existing features that comply with applicable standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to unstained concrete, unless specified elsewhere in the plans.
20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4150 and be listed on the Materials Producer List. Install products in accordance with manufacturer's specifications.
21. Detectable warning surfaces must be firm, stable and slip resistant.
22. Detectable warning surfaces shall be a minimum of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

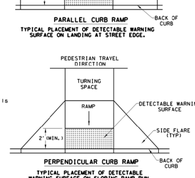
DETECTABLE WARNING PAVERS (IF USED)

25. Furnish detectable warning paver units meeting all requirements of ASTM C-936, C-33. Lay in a two by two unit basket weave pattern or as directed.
26. Lay full-size units first followed by closure units consisting of at least 25 percent (25%) of a full unit. Cut detectable warning paver units using a power saw.

SIDEWALKS

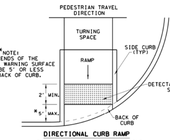
27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.
28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.
29. Street grades and cross slopes shall be as shown elsewhere in the plans.
30. Changes in level greater than 1/4 inch are not permitted.
31. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than five percent (5%) must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with PROWAG R409.
32. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
33. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".
34. Sidewalk details are shown elsewhere in the plans.

DETECTABLE WARNING SURFACE DETAILS



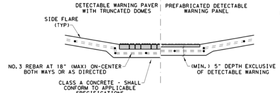
PARALLEL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.

PERPENDICULAR CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



NOTE: BOTH EDGES OF THE DETECTABLE WARNING SURFACE SHALL BE 5' OR LESS FROM BACK OF CURB.

DIRECTIONAL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

DATE FILED:

SHEET 2 OF 4

Texas Department of Transportation | Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN:TxDOT	CK:	DW:	CK:	CONT: SECT:	JOB:	HIGHWAY:
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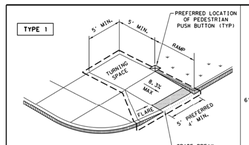
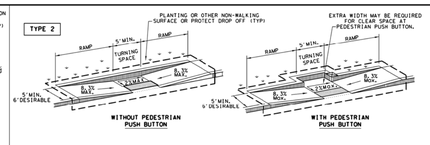
REVISIONS	DN:	CK:	DW:	CK:	DIST:	COUNTY:	SHEET NO.:

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

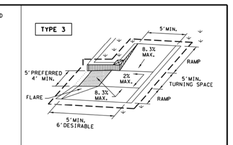


WITHOUT PEDESTRIAN PUSH BUTTON

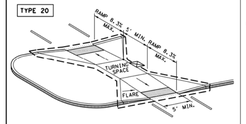
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

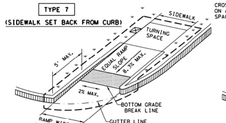


TYPE 20

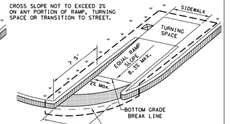


CURB RAMPS AT MEDIAN ISLANDS

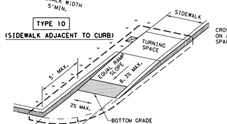
TYPE 7
(SIDEWALK SET BACK FROM CURB)



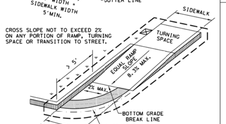
CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



TYPE 10
(SIDEWALK ADJACENT TO CURB)



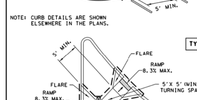
CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

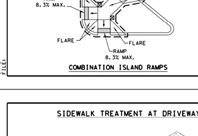
TYPE 21

INSTALL DETECTABLE WARNING SURFACE ON EACH SIDE OF THE CUT-THROUGH RAMP WITH CONTINUOUS DETECTABLE WARNING SURFACE BETWEEN. IF MEDIAN IS LESS THAN 6' WIDE, ELIMINATE DETECTABLE WARNING SURFACES.

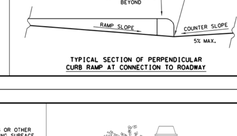


NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22

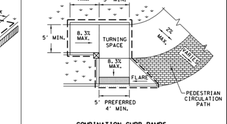


COMBINATION ISLAND RAMPS



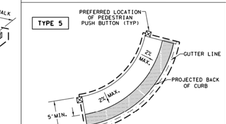
TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

TYPE 6



COMBINATION CURB RAMPS

TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

NOTES / LEGEND:

SEE GENERAL NOTES ON SHEET 2 OF 4 FOR MORE INFORMATION.

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH. — GUTTER LINE

DETECTABLE WARNING SURFACE — GRADE BREAK

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE. — RAMP LIMITS OF PAYMENT

SHEET 1 OF 4

Texas Department of Transportation | Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN:TxDOT	CK:	DW:	CK:	CONT: SECT:	JOB:	HIGHWAY:
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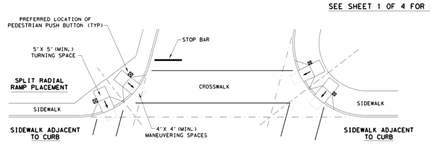
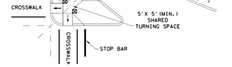
REVISIONS	DN:	CK:	DW:	CK:	DIST:	COUNTY:	SHEET NO.:

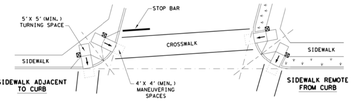
TYPICAL CROSSING LAYOUTS
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



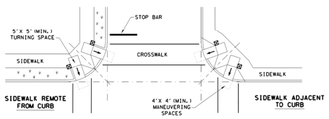
SKEWED INTERSECTION WITH "LARGE" RADIUS



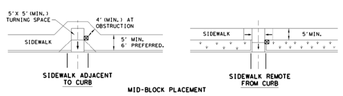
AT INTERSECTION
W/FREE RIGHT TURN & ISLAND



SKEWED INTERSECTION WITH "SMALL" RADIUS



NORMAL INTERSECTION WITH "SMALL" RADIUS



MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

LEGEND:

SHOWS DOWNWARD SLOPE. →

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON (IF APPLICABLE). ⊠

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

SHEET 4 OF 4

Texas Department of Transportation | Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

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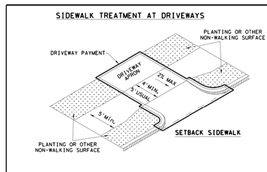
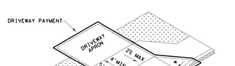
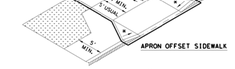
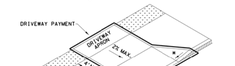
SIDEWALK TREATMENT AT DRIVEWAYS

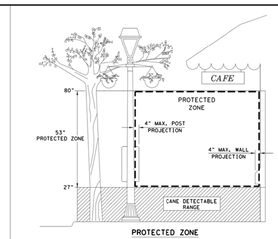






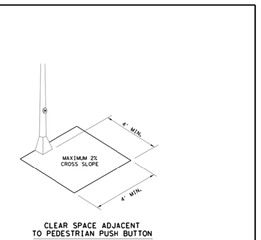


NOTES:
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.
* * IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%. HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.



PROTECTED ZONE

NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



CLEAR SPACE ADJACENT
TO PEDESTRIAN PUSH BUTTON

PLAN VIEW
PLACEMENT OF STREET FIXTURES

NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.

WHEN AN OBSTRUCTION OF A HEIGHT GREATER THAN 27" FROM THE SURFACE WOULD CREATE A PROTRUSION OF MORE THAN 4" INTO THE PEDESTRIAN CIRCULATION AREA, CONSTRUCT ADDITIONAL CURB OR FOUNDATION AT THE BOTTOM TO PROVIDE A MAXIMUM 4" OVERHANG.

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

PROTRUDING OBJECTS OF A HEIGHT ≤ 27" ARE DETECTABLE BY CANE AND DO NOT REQUIRE ADDITIONAL TREATMENT.

SHEET 3 OF 4

Texas Department of Transportation | Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

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HAMILTON DUFFY, PC
CONSULTING
CIVIL & ENVIRONMENTAL ENGINEERS - PLANNERS - CONSTRUCTION MANAGERS
8241 MID-CITIES BLVD. - NORTH RICHLAND HILLS, TEXAS 76182
PHONE (817) 268-9488 www.hamiltonduffy.com

NICOLE COURT ADDITION

BEDFORD, TEXAS

PAVING DETAILS

STATE OF TEXAS
KEITH M. HAMILTON
87384
LICENSED PROFESSIONAL ENGINEER
2-15-23

JOB	999-312
DATE	2-15-23
DESIGNED	K.M.H.
DRAWN	K.M.H.
CHECKED	K.M.H.
TEXAS F.I.R.M NO.	F-2260

NO.	REVISION	BY	DATE

SHEET