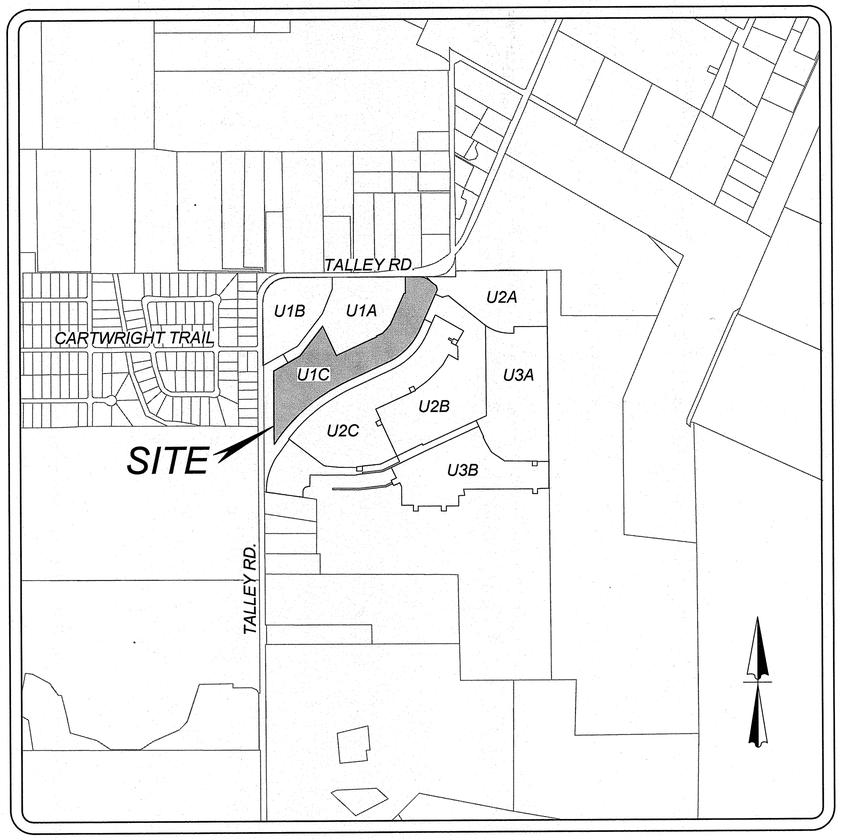
MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

STREET, DRAINAGE, WATER, SANITARY SEWER, AND UTILITY IMPROVEMENTS



LOCATION MAP
NOT-TO-SCALE

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OVERALL GRADING PLAN (SHEET 2 OF 2)	3.1
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SHEET REVISION LOG

DATE	SHEET NO.	REVISION NO.	DESCRIPTION
4/15/2022	5.2	1	ADDED LEFT AND RIGHT TURN LANES AT ENTRY
4/15/2022	5.8	1	ADDED LEFT AND RIGHT TURN LANES AT ENTRY
4/15/2022	3.0	1	REVISED GRADING
2/2/2023	3.0	2	REVISED GRADING
2/2/2023	0.0, 4.1 - 4.11	1	REVISED SHEET NUMBERS
2/2/2023	4.0	1	REVISED DRAIN "A" DESIGN
2/2/2023	4.5	2	REVISED DRAIN "F" DESIGN
2/2/2023	4.5	1	REVISED DRAIN "A" AND "F" GRADING & ROCK BERM LOCATION

OWNER INFORMATION
TALLEY EXTENSION REVITALIZATION INITIATIVE, LLC.
5210 THOUSAND OAKS, SUITE 1318
SAN ANTONIO, TX 78233

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
2/17/2023

KFW
ENGINEERS + SURVEYING
has joined Colliers Engineering & Design
3421 Paesanos Pkwy., Suite 200, San Antonio, TX 78232
Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm #: 9513 • TBPLS Firm #: 10122300

MORGAN MEADOWS UNIT 1C

JOB NO.: 205-41-07

PLAT NO. 21-11800502 SHEET 0.0

Date: Feb 08, 2023, 9:34am User ID: cmeiners
File: P:\205\41\07\Design\Civil\205410701.dwg

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TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT. IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

COMPACTION NOTE:

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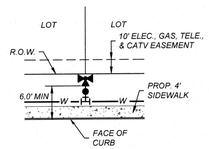
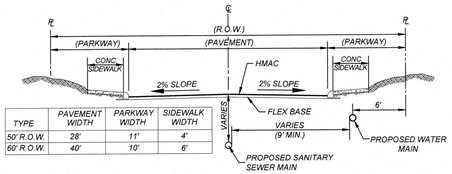
DRY UTILITY CONDUIT NOTE:

CONDUIT LOCATIONS SHOWN ON PLAN ARE FOR GEOGRAPHICAL PURPOSES ONLY AND ARE APPROXIMATE. CONTRACTOR TO INSTALL PROPOSED CONDUITS IN ACCORDANCE WITH DRY UTILITY PURVEYOR'S SPECIFICATIONS. CONTRACTOR TO VERIFY THE CONDUIT LOCATIONS AND SIZES BASED ON THE DRY UTILITY PURVEYOR'S PLAN.

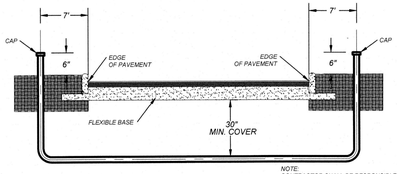


TYPICAL FIRE HYDRANT DETAIL
NOT-TO-SCALE



TYPE	PAVEMENT WIDTH	PARKWAY WIDTH	SIDEWALK WIDTH
50' R.O.W.	28'	11'	4'
60' R.O.W.	40'	10'	6'

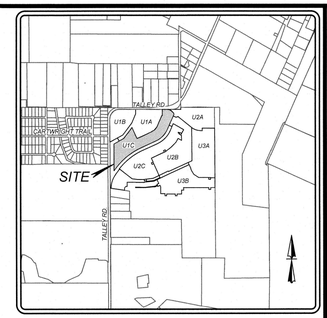
TYPICAL STREET SECTION
N.T.S.



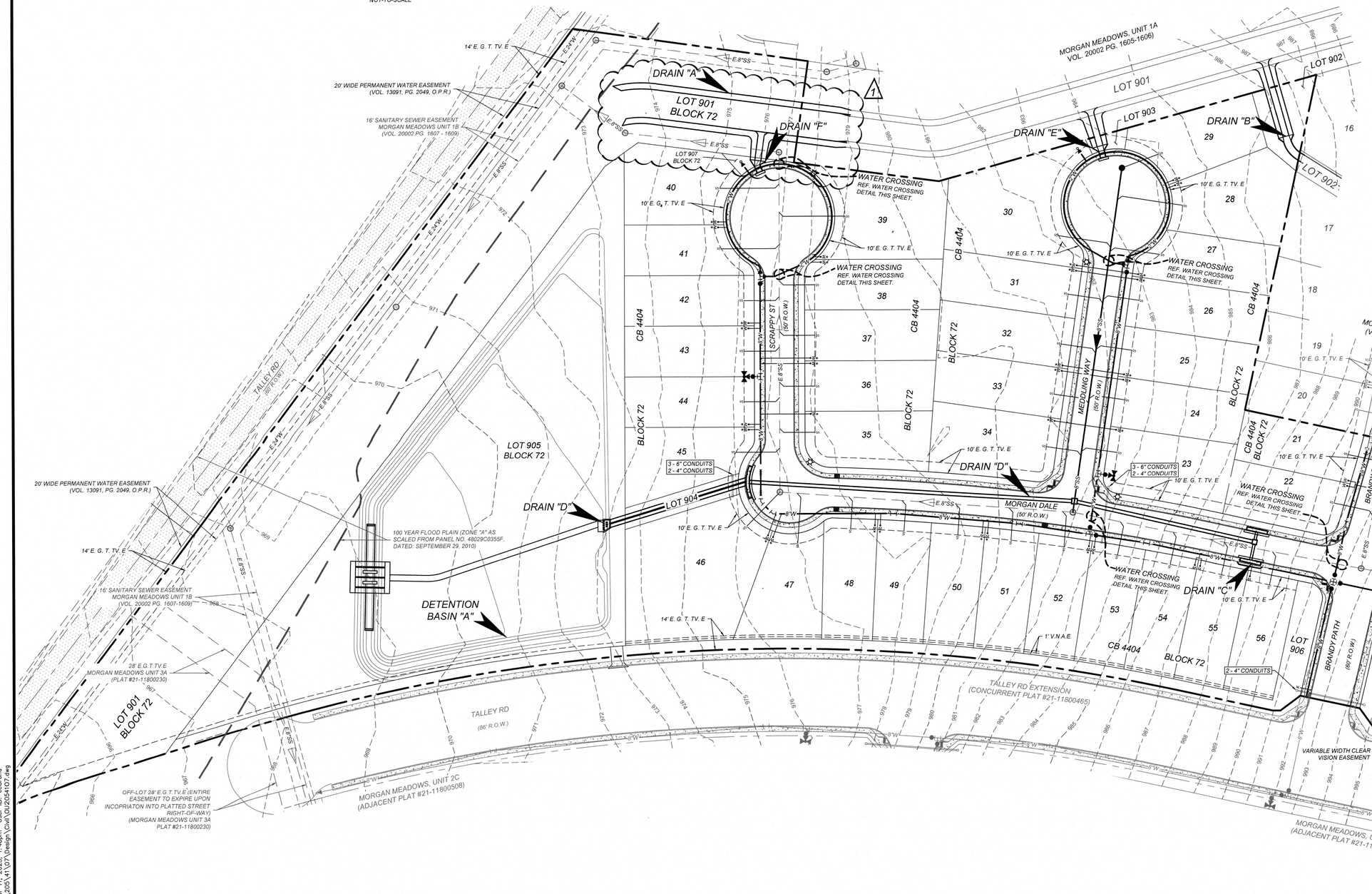
TYPICAL CONDUIT DETAIL
NOT-TO-SCALE

NOTE:
CONTRACTOR SHALL BE RESPONSIBLE FOR PLACING CONDUIT SLEEVES FOR EACH CPS FACILITY AT ALL STREETS AND DRAIN CROSSING IF BUILT AHEAD OF CPS CONSTRUCTION. SLEEVES MUST ALSO BE LOCATED FOR CPS CREWS DURING CONSTRUCTION. (SEPARATE ITEM) SEE THIS SHEET FOR CONDUIT CROSSING DETAIL AND SCHEDULE

SCALE : 1"=50'
0' 50' 150'
100'



LOCATION MAP
NOT-TO-SCALE



LEGEND

PROPOSED WATER MAIN	=	W
PROPOSED WATER SERVICE & METER BOX	=	W
PROPOSED WATER SERVICE WITH PRESSURE REDUCING VALVE	=	W
PROPOSED WATER 3/4" IRRIGATION SERVICE & METER BOX	=	3/4W
PROPOSED FIRE HYDRANT	=	
PROPOSED WATER VALVE	=	
PROPOSED 100W STREETLIGHT	=	
PROPOSED SANITARY SEWER MAIN	=	SS
PROPOSED SANITARY SEWER MANHOLE	=	
PROPOSED SANITARY SEWER LATERAL	=	
PROPOSED ELECTRIC, GAS, TELEPHONE, & CABLE TV EASEMENT	=	E. G. T. TV. E
EXISTING WATER MAIN	=	E.W
EXISTING FIRE HYDRANT	=	
EXISTING WATER VALVE	=	
EXISTING SANITARY SEWER MAIN	=	E.SS
EXISTING SANITARY SEWER MANHOLE	=	
EXISTING OVERHEAD ELECTRIC W/POWER POLE	=	OHE
EXISTING GUY WIRE/OVERHEAD ELECTRIC	=	OHE

KFW
ENGINEERS + SURVEYING
3421 Paesanos Pkwy, Suite 200, San Antonio, TX 78231
Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm #: 9513 • TBPLS Firm #: 10122300

REVISIONS
1 REVISED DRAIN "A"
ISSUE DATE
2/2/2023

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
4/13/2023

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

OVERALL UTILITY PLAN (SHEET 1 OF 2)

PLAT NO. 21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN OM CHECKED CL

SHEET NUMBER:
1.0

Date: Apr 11, 2023, 1:48pm User ID: escrone
File: P:\205\41\07\Design\Civil\Q4205410704.dwg

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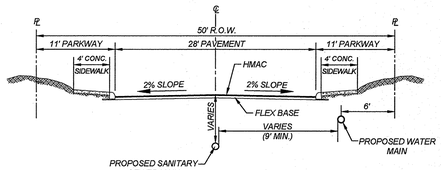
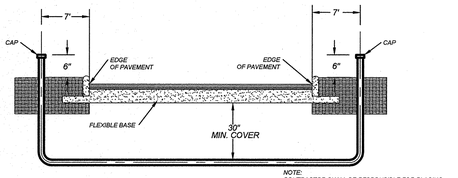


TYPICAL STREET SECTION
N.T.S.



TYPICAL CONDUIT DETAIL
NOT-TO-SCALE

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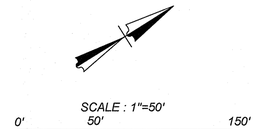

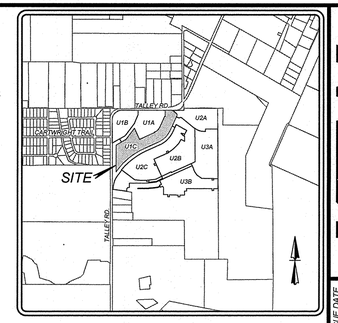

LOCATION MAP
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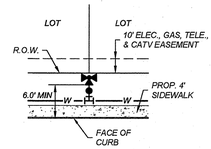
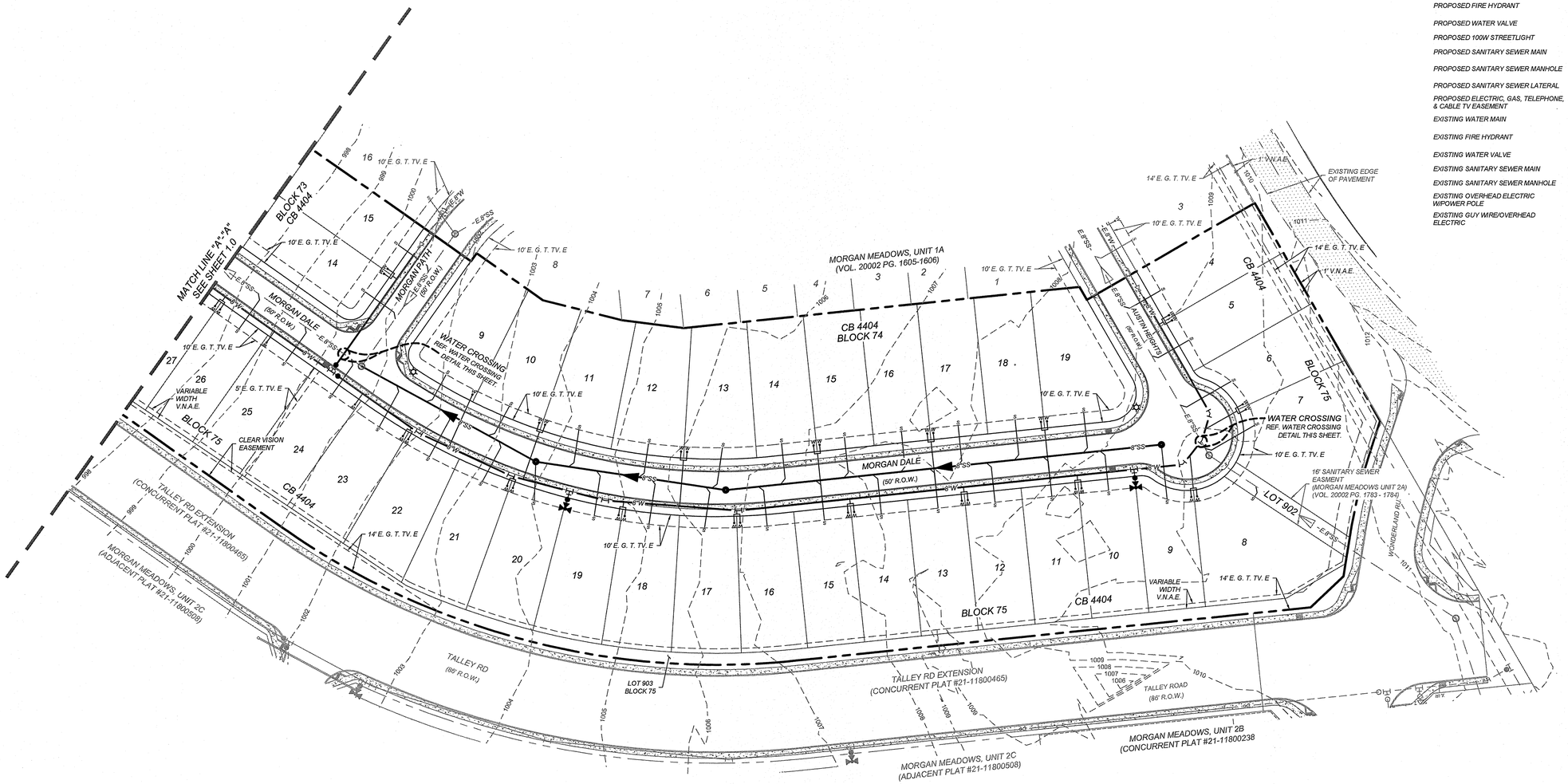


TYPICAL FIRE HYDRANT DETAIL
NOT-TO-SCALE

LEGEND

PROPOSED WATER MAIN	=	W
PROPOSED WATER SERVICE & METER BOX	=	W
PROPOSED WATER SERVICE WITH PRESSURE REDUCING VALVE	=	W
PROPOSED WATER 3/4" IRRIGATION SERVICE & METER BOX	=	W/IRR
PROPOSED FIRE HYDRANT	=	
PROPOSED WATER VALVE	=	
PROPOSED 100W STREETLIGHT	=	
PROPOSED SANITARY SEWER MAIN	=	SS
PROPOSED SANITARY SEWER MANHOLE	=	
PROPOSED SANITARY SEWER LATERAL	=	
PROPOSED ELECTRIC, GAS, TELEPHONE, & CABLE TV EASEMENT	=	E. G. T. TV. E
EXISTING WATER MAIN	=	E.W
EXISTING FIRE HYDRANT	=	
EXISTING WATER VALVE	=	
EXISTING SANITARY SEWER MAIN	=	E.SS
EXISTING SANITARY SEWER MANHOLE	=	
EXISTING OVERHEAD ELECTRIC W/POWER POLE	=	OHE
EXISTING GUY WIRE/OVERHEAD ELECTRIC	=	OHE



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ISSUE DATE

REVISIONS

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
6/15/2022

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

OVERALL UTILITY PLAN (SHEET 2 OF 2)

PLAT NO. 21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN:OM CHECKED:CL

SHEET NUMBER:

1.1

Date: Jun 14, 2022, 3:56pm User ID: eoprone
File: P:\205\41\07\Design\Civil\Q\205410707.dwg

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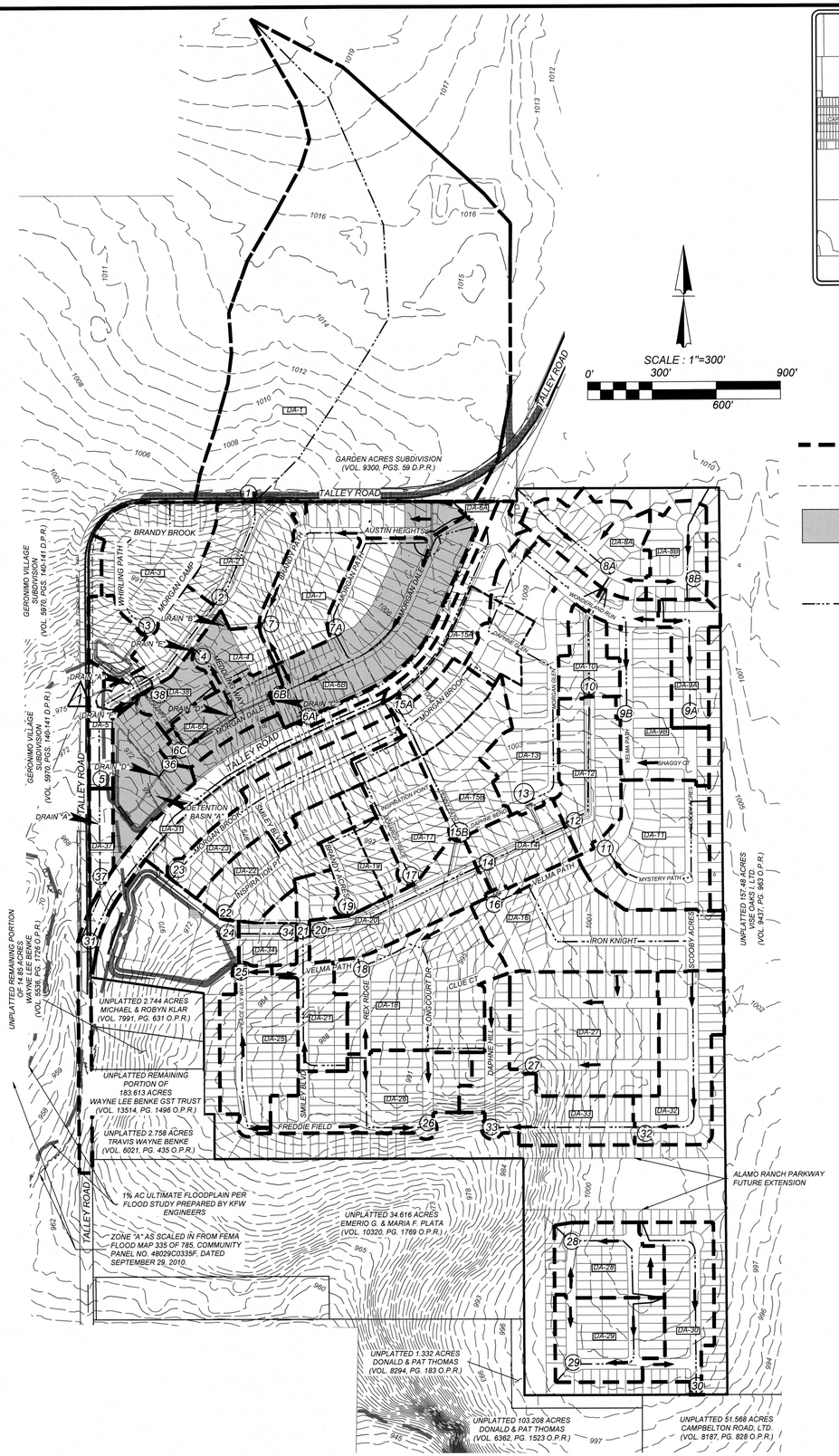
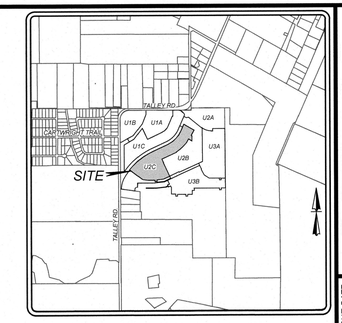
STUDY POINT	AREA	(Acres)	C	T_{ovr}(min)		T_{sc} (min)	T_{ch} (min)	T_{ter} (min)	I_5 (in/hr)	I_{25} (in/hr)	I_{100} (in/hr)	Q_5 (ft^3/s)	Q_{25} (ft^3/s)	Q_{100} (ft^3/s)
1	OS-1	50.03	0.68	20.00		10.00	4.00	34	3.466	4.779	5.918	117.93	162.59	201.32
2	OS- 1 + DA-2	54.59	0.68	20.00	CARRYOVER FROM PT. 1	10.00	5.00	35	3.413	4.707	5.828	126.98	175.10	216.83
	DA-2	4.56	0.70											
3	DA-3	5.48	0.77	10.00		1.00	2.00	13	5.662	7.888	9.854	23.89	33.29	41.58
4	DA-4	1.87	0.67	10.00		1.00	1.00	12	5.864	8.186	10.238	7.35	10.26	12.83
5	PT.2+PT.4+DA-5+DA-7+ BASIN OUTFALL + DA-38	68.39	0.68	20.00	CARRYOVER FROM PT. 2	10.00	8.00	38	3.264	4.504	5.580	165.65	229.25	284.35
	DA-5	3.81	0.67											
6A	DA-6A	1.68	0.95	5.00		0.00	4.00	9	6.542	9.166	11.494	10.44	14.63	18.34
6B	PT. 6A + DA-6B + DA-7A	11.21	0.71	10.00		3.00	2.00	15	5.280	7.320	9.115	42.14	58.42	72.75
	DA-6B	9.53	0.67											
PT. 6B BYPASS		BYPASS FROM ON GRADE CURB INLETS (PT. 6B)										10.42	19.78	28.78
PT. 6B CAPTURED		CAPTURED FROM ON GRADE CURB INLETS (PT.6B)										31.28	38.04	43.20
6C	DA-6C	2.89	0.67	10.00		2.00	1.00	13	5.662	7.888	9.854	10.96	15.27	19.08
	DA-6C+ 6B BYPASS											21.38	35.05	47.86
7	DA-7	6.66	0.67	10.00		2.00	2.00	14	5.468	7.600	9.480	24.40	33.91	42.30
7A	DA-7A	3.85	0.67	10.00		2.00	2.00	14	5.468	7.600	9.480	14.10	19.61	24.45
8A	DA-8A	4.28	0.67	10.00		0.00	1.00	11	6.075	8.495	10.637	17.42	24.36	30.50
8B	DA-8B	2.74	0.67	10.00		0.00	1.00	11	6.075	8.495	10.637	11.15	15.60	19.53
9A	DA-9A + DA-8B	5.43	0.67	10.00		2.00	1.00	13	5.662	7.888	9.854	20.60	28.70	35.85
9B	DA-9A	2.69	0.67											
	DA-9B+ PT. 9A	11.54	0.67	10.00	CARRYOVER FROM PT. 9A	3.00	1.00	14	5.468	7.600	9.480	42.28	58.77	73.30
	DA-9B	6.11	0.67	10.00		2.00	1.00	13	5.662	7.888	9.854	23.18	32.29	40.34
10	PT.8A + DA-10	6.35	0.67	11.00	CARRYOVER FROM PT.8A	0.00	1.00	12	5.864	8.186	10.238	24.95	34.83	43.56
	DA-10	2.07	0.67											
11	DA-11	6.80	0.67	10.00		3.00	1.00	14	5.468	7.600	9.480	24.91	34.63	43.19
12	PT.9B+PT.10+ PT.11 +DA-12	28.99	0.67	10.00	CARRYOVER FROM PT.9B	4.00	2.00	16	5.101	7.066	8.791	99.08	137.24	170.75
	DA-12	4.30	0.67											
13	DA-13	10.98	0.67	20.00		1.00	3.00	24	4.143	5.715	7.081	30.48	42.04	52.09
14	PT.12+PT.13+DA-14+PT.16	52.40	0.69	10.00	CARRYOVER FROM PT.12	6.00	1.00	17	4.941	6.838	8.501	179.02	247.78	308.03
	DA-14	3.04	0.73											
15A	DA-15A	1.71	0.95	5.00		0.00	3.00	8	6.807	9.540	11.967	11.06	15.50	19.44
15B	DA-15A + DA 15B	8.47	0.73	8.00	CARRYOVER FROM PT.15A	0.00	2.00	10	6.300	8.820	11.053	38.77	54.28	68.02
	DA-15B	6.76	0.67											
16	DA-16	9.39	0.77	10.00		2.00	3.00	15	5.280	7.320	9.115	38.18	52.93	65.91
17	DA-17	3.97	0.67	10.00		2.00	2.00	14	5.468	7.600	9.480	14.54	20.22	25.22
18	DA-18	8.68	0.77	10.00		4.00	1.00	15	5.280	7.320	9.115	35.29	48.92	60.92
19	DA-19	2.54	0.67	10.00		2.00	1.00	13	5.662	7.888	9.854	9.64	13.42	16.77
20	PT.14+PT.15B+PT.17+PT.18+PT.19+DA-20	80.75	0.71	10.00	CARRYOVER FROM PT.14	7.00	2.00	19	4.664	6.447	8.005	266.06	367.76	456.61
	DA-20	4.69	0.77											
21	DA-21	3.83	0.75	10.00		1.00	2.00	13	5.662	7.888	9.854	16.18	22.54	28.15
22	DA-22	4.66	0.67	10.00		3.00	0.00	13	5.662	7.888	9.854	17.68	24.63	30.77
23	DA-23	5.54	0.67	10.00		4.00	2.00	16	5.101	7.066	8.791	18.93	26.23	32.63
24	DA-24+PT.34	86.18	0.71	10.00	CARRYOVER FROM PT.34	9.00	0.00	19	4.664	6.447	8.005	285.13	394.12	489.34
	DA-24	1.60	0.77											
25	DA-25	5.52	0.77	10.00		5.00	1.00	16	5.101	7.066	8.791	21.68	30.03	37.36
26	DA-26	6.58	0.77	10.00		4.00	1.00	15	5.280	7.320	9.115	26.75	37.09	46.18
27	DA-27	8.71	0.77	10.00	CAPTURED BY CURB INLET ON GRADE	1.00	6.00	17	4.941	6.838	8.501	33.14	45.86	57.02
28	DA-28	3.83	0.67	10.00		1.00	2.00	13	5.662	7.888	9.854	14.53	20.24	25.29
29	DA-29	4.39	0.67	10.00		1.00	2.00	13	5.662	7.888	9.854	16.65	23.20	28.98
30	DA-30	4.34	0.67	10.00		0.00	3.00	13	5.662	7.888	9.854	16.46	22.94	28.65
31	DA-31	8.50	0.90	5.00		3.00	4.00	12	5.864	8.186	10.238	44.86	62.62	78.32
32	DA-32	5.60	0.77	10.00		3.00	0.00	13	5.662	7.888	9.854	24.41	34.01	42.49
33	DA-33	5.66	0.77	10.00		3.00	0.00	13	5.662	7.888	9.854	24.68	34.38	42.94
34	PT.20+PT.21	84.58	0.71	10.00	CARRYOVER FROM PT.20	9.00	0.00	19	4.664	6.447	8.005	279.38	386.18	479.48
35	PT.5+PT.6B+PT.23+PT.24+PT.25+DA-31	185.34	0.71	10.00	CARRYOVER FROM PT.5	28.00	0.00	38	3.264	4.504	5.580	428.16	590.74	731.90
36	PT. 6B CAPTURED + DA. 6C + PT. 6B BYPASS											52.66	73.09	91.06
37	PT 5 + BASIN OUTFALL											181.39	250.22	310.97
38	DA-38	1.46	0.67	10.00		4.00	0.00	14	5.468	7.600	9.480	5.35	7.43	9.27





LOCATION MAP
NOT-TO-SCALE

LEGEND

- STUDY POINT
- DRAINAGE AREA BOUNDARY
- 802 EXISTING CONTOURS
- PROPOSED UNIT
- FLOW ARROW
- FLOW PATH

KFW
ENGINEERS + SURVEYING
343 Pasadena Plaza, Suite 200 • San Antonio, TX 78231
Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm # 9513 • TBPLS Firm #: 10122500

REVISIONS
1 REVISED DRAIN "A" DESIGN

ISSUE DATE
2/2/2023

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
4/13/2023

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

MASTER DRAINAGE PLAN

PLAT NO. 21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN:OM CHECKED:CL

SHEET NUMBER:
2.0

Date: Apr 17, 2023, 10:09am User ID: ecorona
File: P:\205\41\07\Design\Civil\MD205407.dwg

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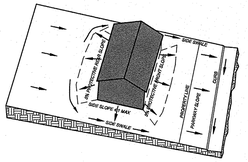
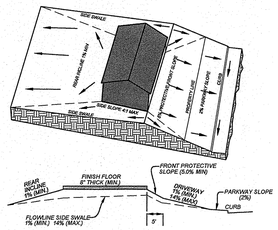
GENERAL NOTES:

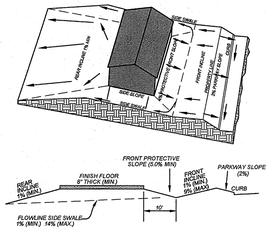
1. ELEVATION SHOWN ON FOUNDATION IS FOR FINISHED FLOOR.
2. CONTRACTOR SHALL PROVIDE OWNER ALL NECESSARY DENSITY TESTS FOR FILL LOTS AS REQUIRED BY HUD SPECIFICATIONS.
3. HOME BUILDER SHALL REFER TO THE APPROVED SUBDIVISION PLAT TO CONFIRM ALL BUILDING SETBACKS PRIOR TO ANY FOUNDATION WORK.
4. AS SOON AS PRACTICAL HOME BUILDER SHALL ESTABLISH VEGETATION (HYDROMULCH, SEEDING, SODDING, ETC...) TO PREVENT EROSION FROM OCCURRING.
5. CONTRACTOR SHALL CONTACT ENGINEER REGARDING ANY QUESTIONS ON THE INTENT OF THIS PLAN.
6. POSITIVE DRAINAGE SHALL BE MAINTAINED ON ALL SURFACE AREAS WITHIN THE SCOPE OF THIS PROJECT. DRAINAGE SHALL BE DIRECTED AWAY FROM ALL BUILDING FOUNDATIONS AND TOWARDS THE PROPER DRAINAGE EASEMENT OR STREET RIGHT OF WAY ACCORDING TO THE MASTER DRAINAGE PLAN FOR THE PROJECT. CONTRACTOR SHOULD TAKE PRECAUTIONS NOT TO ALLOW PONDING OF WATER.
7. ALL ELEVATIONS AND CONTOURS SHOWN ON THIS GRADING PLAN REFLECT FINISHED GRADES. THE THICKNESS OF PAVEMENT, CURBS, AND SIDEWALKS MUST BE SUBTRACTED TO OBTAIN SUBGRADE ELEVATIONS.
8. GRADING PLAN IS INTENDED FOR USE IN LOT GRADING ONLY. CONTRACTOR SHOULD REFER TO CONSTRUCTION DRAWINGS FOR ALL OTHER GRADES, INCLUDING, BUT NOT LIMITED TO, CHANNELS, ROADS, AND DETENTION PONDS.
9. CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE ALL SWALES.



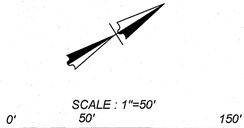
TYPE 'A' LOT GRADING

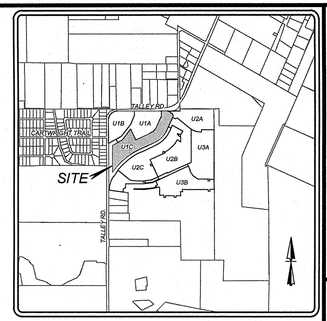


TYPE 'B' LOT GRADING

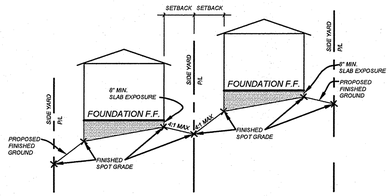


TYPE 'C' LOT GRADING





LOCATION MAP
NOT-TO-SCALE



TYPICAL SIDE YARD GRADING
N.T.S.

LEGEND

E, G, T, & TV. E. = GAS, ELECTRIC, TELEPHONE, CABLE T.V. EASEMENT
= FLOW ARROW
(A) = LOT GRADE TYPE
= PROPOSED DRIVEWAY LOCATION
H.P. = HIGH POINT

100 YEAR FLOOD PLAIN (ZONE "A" AS SCALED FROM PANEL NO. 48029C0355F, DATED: SEPTEMBER 29, 2010)
14' E. G. T. TV. E
20' WIDE PERMANENT WATER EASEMENT (VOL. 13091, PG. 2049, O.P.R.)
16' SANITARY SEWER EASEMENT MORGAN MEADOWS UNIT 1B (VOL. 20002 PG. 1607 - 1609)
1% AC ULTIMATE FLOODPLAIN PER FLOOD STUDY PREPARED BY KFW ENGINEERS
MORGAN MEADOWS, UNIT 1A VOL. 20002 PG. 1605-1606)
LOT 907 BLOCK 72
DRAIN "A"
DRAIN "B"
DRAIN "C"
DRAIN "D"
DRAIN "E"
DRAIN "F"
LOT 901
LOT 902
LOT 903
LOT 904
LOT 905
LOT 906
10' E. G. T. TV. E
CB 4404
BLOCK 72
BLOCK 73
SCRAPPY ST (60' R.O.W.)
MEDDLING WAY (60' R.O.W.)
BRANDY PATH (VARIABLE WIDTH R.O.W.)
BRANDY PATH (65' R.O.W.)
MORGAN DALE (50' R.O.W.)
TALLEY RD (65' R.O.W.)
TALLEY RD EXTENSION (CONCURRENT PLAT #21-11800465)
MORGAN MEADOWS, UNIT 2C (ADJACENT PLAT #21-11800508)
DETENTION BASIN "A"
1' V.N.A.E.
VARIABLE WIDTH CLEAR VISION EASEMENT
H.P.
MATCH LINE "A"-"A" SEE SHEET 3.1
20' WIDE PERMANENT WATER EASEMENT (VOL. 13091, PG. 2049, O.P.R.)
16' SANITARY SEWER EASEMENT MORGAN MEADOWS UNIT 1B (PLAT #19-11800443) (VOL. 20002 PG. 1607 - 1609)
14' E.G.T.TV.E
28' E.G.T.TV.E MORGAN MEADOWS UNIT 3A (VOL. 20002 PG. 1608)
MORGAN MEADOWS, UNIT 2C (ADJACENT PLAT #21-11800508)

KFW
ENGINEERS + SURVEYING
3421 Pleasanos Pkwy, Suite 200, San Antonio, TX 78231
Phone #: (210) 979-9444 • Fax #: (210) 979-9441
TBPE Firm #: 9513 • TBPLS Firm #: 10122600

REVISIONS	ISSUE DATE
REVISED GRADING	5/11/2022
REVISED GRADING	2/2/2023

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED
PROFESSIONAL ENGINEER
2/17/2023

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

OVERALL GRADING PLAN (SHEET 1 OF 2)

PLAT NO. 21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN: OM CHECKED: CL

SHEET NUMBER:
3.0

Date: Feb 16, 2023, 3:43pm User ID: cgroff
File: P:\205\41\07\Design\Civil\GR20541107.dwg

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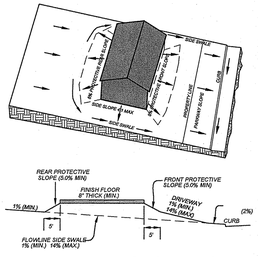
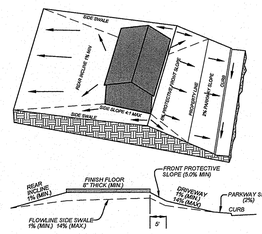
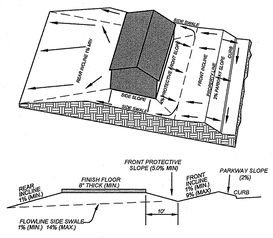


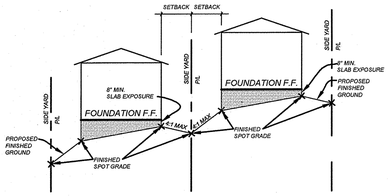
TYPE 'A' LOT GRADING



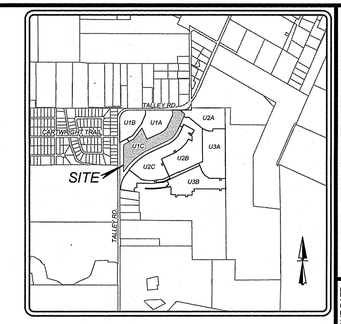
TYPE 'B' LOT GRADING



TYPE 'C' LOT GRADING



TYPICAL SIDE YARD GRADING
N.T.S.



LOCATION MAP
NOT-TO-SCALE

LEGEND

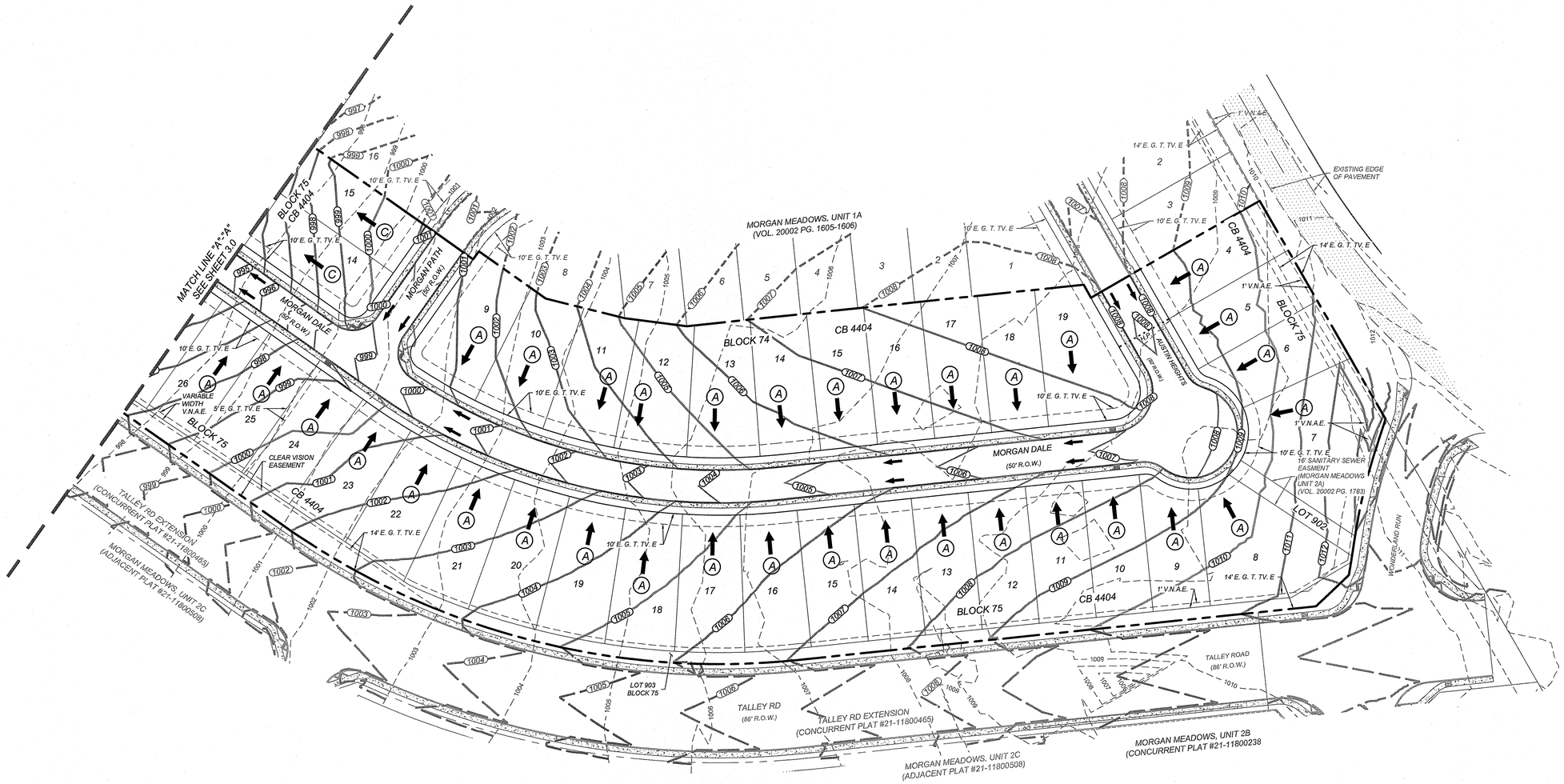
E, G, T, & TV. E. = GAS, ELECTRIC, TELEPHONE, CABLE T.V. EASEMENT

= FLOW ARROW

(A) = LOT GRADE TYPE

= PROPOSED DRIVEWAY LOCATION

H.P. = HIGH POINT



KFW ENGINEERS + SURVEYING
3421 Paesanos Pkwy, Suite 200, San Antonio, TX 78231
Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm #: 9513 • TBPLS Firm #: 10122300

ISSUE DATE

REVISIONS

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
6/15/2022

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

OVERALL GRADING PLAN (SHEET 2 OF 2)

PLAT NO. 21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN: OM CHECKED: CL

SHEET NUMBER:

3.1

Date: Jun 14, 2022, 3:30pm User ID: ecorona
File: P:\2057\4-1\07\Design\Civil\GR2054107.dwg

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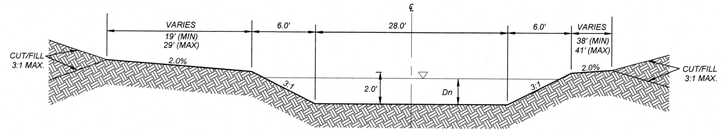
NOTE:

1. ALL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.

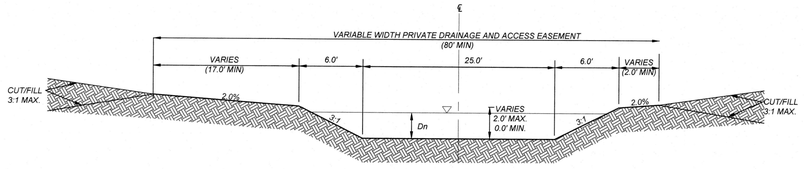
2. ANY DISTURBED AREAS WILL BE VEGETATED BY SEEDING OR SODDING. EIGHTY-FIVE PERCENT OF THE DISTURBED SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT.

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.



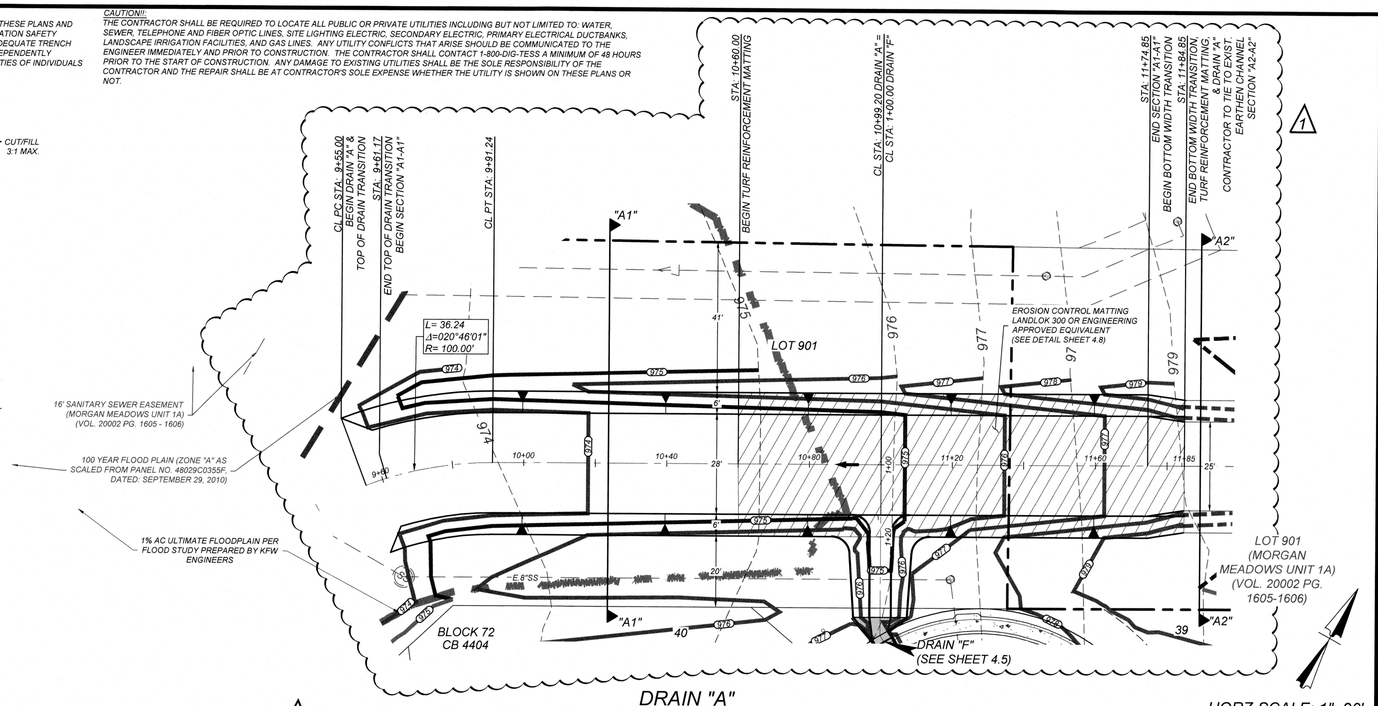
SECTION "A1-A1"
STA. 9+55.00 - STA. 11+74.85
N.T.S.



SECTION "A2-A2"
STA. 11+84.85
N.T.S.

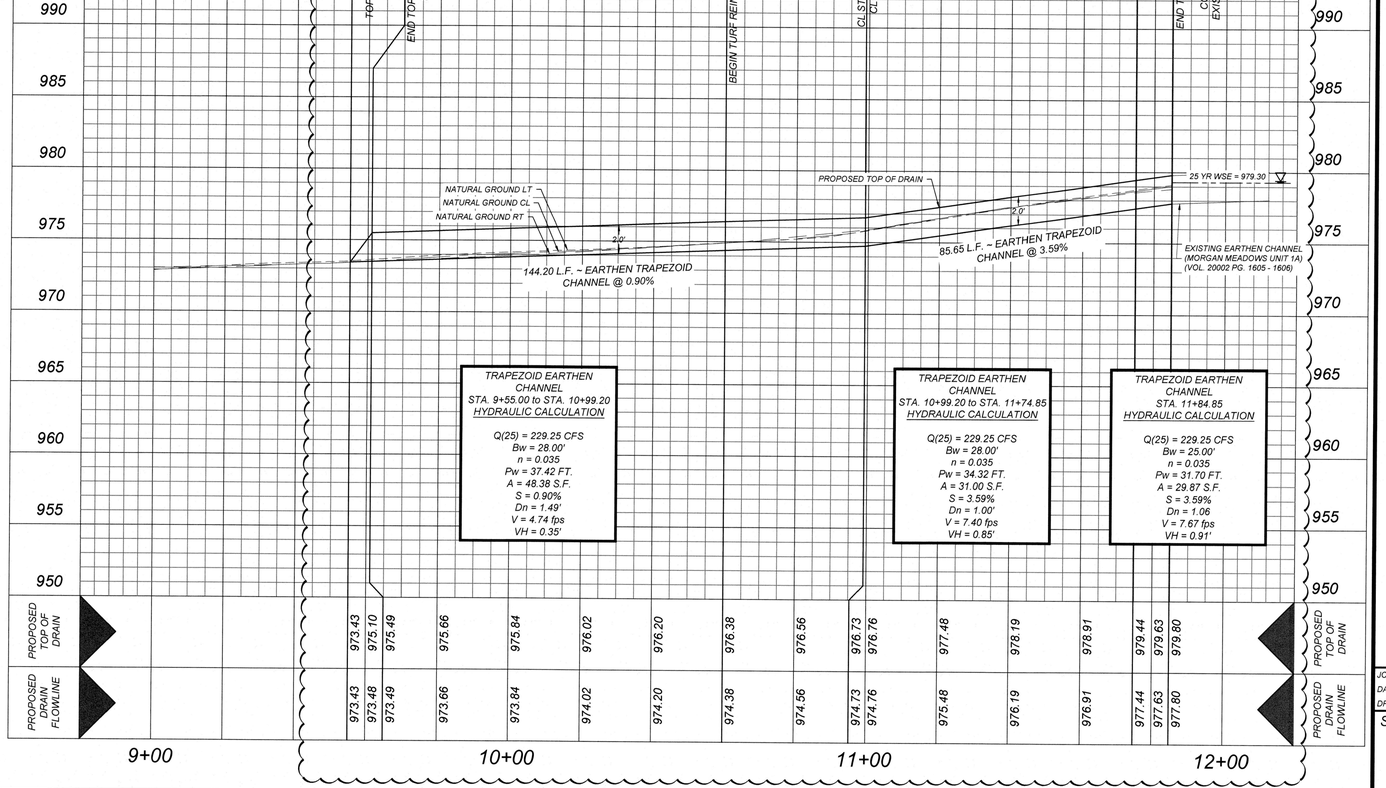
CAUTION!!!

THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.



DRAIN "A"
STA: 9+55.00 - END

HORZ SCALE: 1"=20'
VERT SCALE: 1"=5'



TRAPEZOID EARTHEN CHANNEL
STA. 9+55.00 to STA. 10+99.20
HYDRAULIC CALCULATION

Q(25) = 229.25 CFS
Bw = 28.00'
n = 0.035
Pw = 37.42 FT.
A = 48.38 S.F.
S = 0.90%
Dn = 1.49'
V = 4.74 fps
VH = 0.35'

TRAPEZOID EARTHEN CHANNEL
STA. 10+99.20 to STA. 11+74.85
HYDRAULIC CALCULATION

Q(25) = 229.25 CFS
Bw = 28.00'
n = 0.035
Pw = 34.32 FT.
A = 31.00 S.F.
S = 3.59%
Dn = 1.00'
V = 7.40 fps
VH = 0.85'

TRAPEZOID EARTHEN CHANNEL
STA. 11+84.85
HYDRAULIC CALCULATION

Q(25) = 229.25 CFS
Bw = 25.00'
n = 0.035
Pw = 31.70 FT.
A = 29.87 S.F.
S = 3.59%
Dn = 1.06
V = 7.67 fps
VH = 0.91'

KFW
ENGINEERS + SURVEYING
3421 Paesanos Pkwy, Suite 200, San Antonio, TX 78231
Fax # (210) 979-8441 Tel # (210) 979-8444
TBPE Firm # 3031 - TBPLS Firm # 10124200

ISSUE DATE
2/2/2023

REVISIONS
1 REVISED DRAIN "A" DESIGN

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
4/10/2023

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

DRAIN "A" PLAN & PROFILE

PLAT NO.
21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN:OM CHECKED:CL

SHEET NUMBER:
4.0

Date: Apr. 17, 2023, 10:10am User ID: ecorona
File: P:\205\41\07\Design\Civil\DRAINS\DR20541107.dwg

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TRENCH EXCAVATION SAFETY PROTECTION

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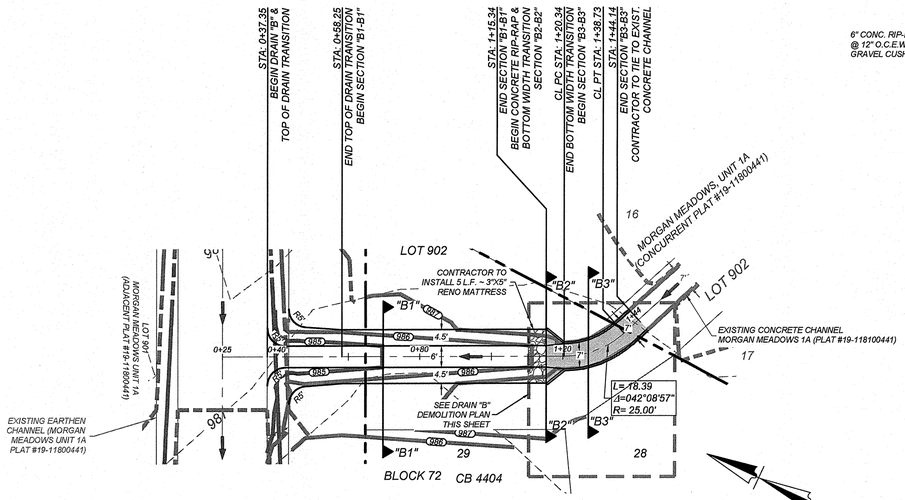
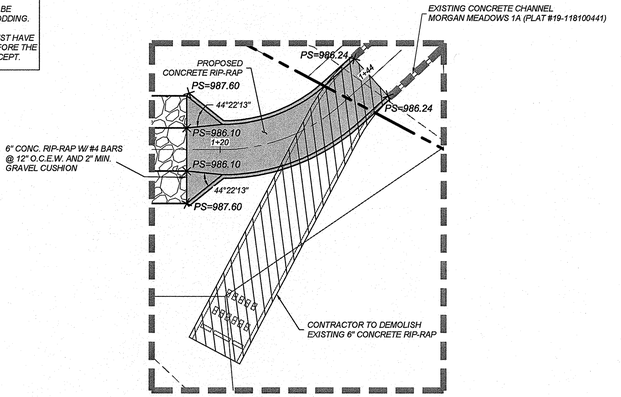


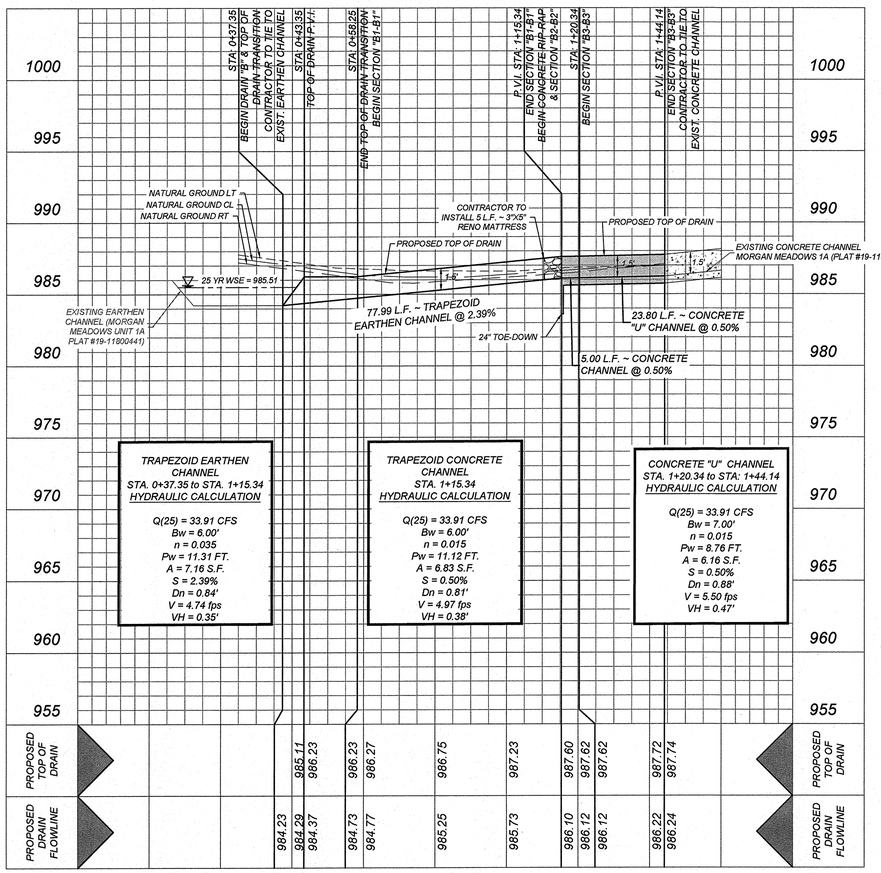
DRAIN "B"
STA: 0+37.35 - END

HORZ SCALE: 1"=20'
VERT SCALE: 1"=5'



DRAIN "B"
DEMOLITION PLAN

MATERIAL	UNITS	QUANTITIES
6" CONCRETE RIP-RAP	S.Y.	40



TRAPEZOID EARTHEN CHANNEL
STA. 0+37.35 to STA. 1+15.34
HYDRAULIC CALCULATION

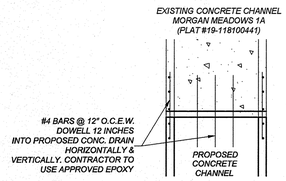
Q(25) = 33.91 CFS
Bw = 6.00'
n = 0.035
Pw = 11.31 FT.
A = 7.16 S.F.
S = 2.39%
Dn = 0.84'
V = 4.74 fps
VH = 0.35'

TRAPEZOID CONCRETE CHANNEL
STA. 1+15.34
HYDRAULIC CALCULATION

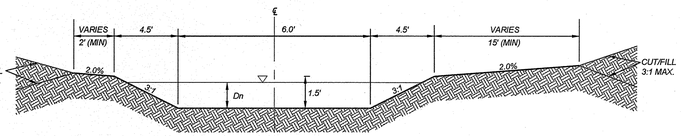
Q(25) = 33.91 CFS
Bw = 6.00'
n = 0.015
Pw = 11.12 FT.
A = 6.83 S.F.
S = 0.50%
Dn = 0.81'
V = 4.97 fps
VH = 0.38'

CONCRETE "U" CHANNEL
STA. 1+20.34 to STA. 1+44.14
HYDRAULIC CALCULATION

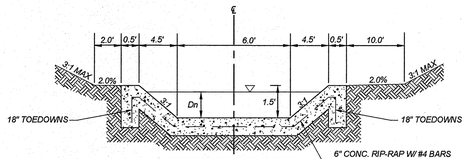
Q(25) = 33.91 CFS
Bw = 7.00'
n = 0.015
Pw = 8.76 FT.
A = 6.16 S.F.
S = 0.50%
Dn = 0.88'
V = 5.50 fps
VH = 0.47'



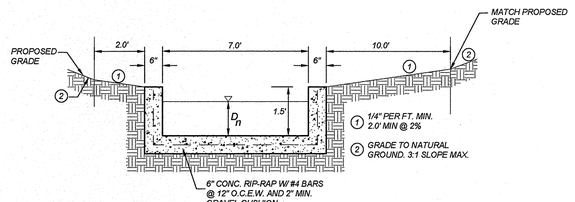
CONCRETE TIE-IN DETAIL
N.T.S.



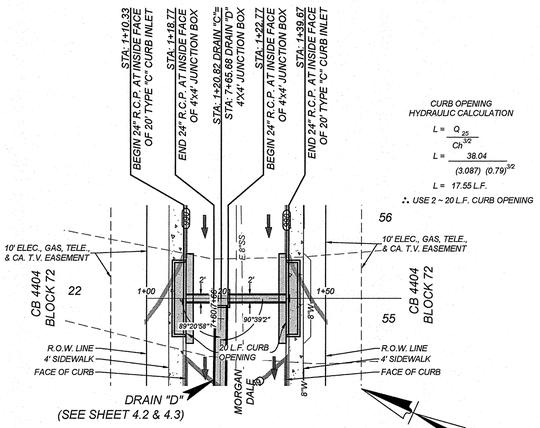
SECTION "B1-B1"
STA. 0+58.25 - STA. 1+15.34
N.T.S.



SECTION "B2-B2"
STA. 1+15.34
N.T.S.

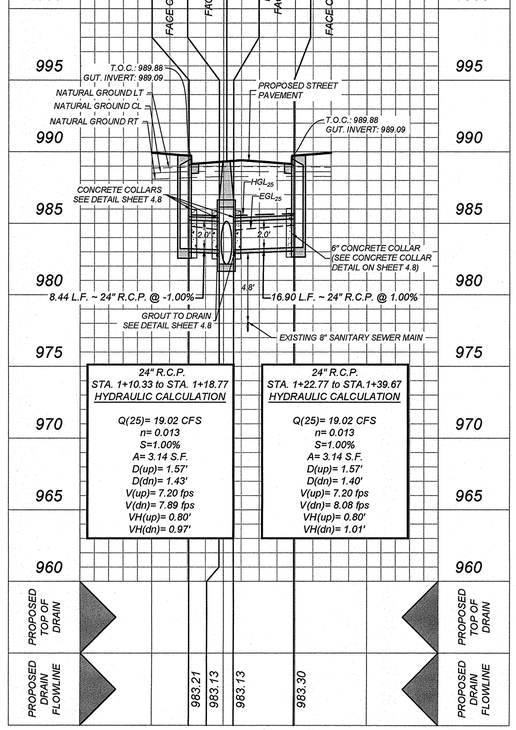


SECTION "B3-B3"
STA.1+20.34 - STA. 1+44.14
N.T.S.



DRAIN "C"
STA: 1+10.33 - END

HORZ SCALE: 1"=20'
VERT SCALE: 1"=5'



24" R.C.P.
STA. 1+10.33 to STA. 1+18.77
HYDRAULIC CALCULATION

Q(25)= 19.02 CFS
n= 0.013
S=1.00%
A= 3.14 S.F.
D(up)= 1.57'
D(dn)= 1.43'
V(up)= 7.20 fps
V(dn)= 7.89 fps
VH(up)= 0.80'
VH(dn)= 0.97'

24" R.C.P.
STA. 1+22.77 to STA.1+39.67
HYDRAULIC CALCULATION

Q(25)= 19.02 CFS
n= 0.013
S=1.00%
A= 3.14 S.F.
D(up)= 1.57'
D(dn)= 1.40'
V(up)= 7.20 fps
V(dn)= 8.08 fps
VH(up)= 0.80'
VH(dn)= 1.01'

KFW
ENGINEERS + SURVEYING
4225 Pleasanton Road, Suite 230, San Antonio, Texas 78231
Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm #: 9513 • TBPLS Firm #: 10122300

REVISIONS: 1 REVISED SHEET NUMBER
ISSUE DATE: 2/2/2023

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
2/17/2023

MORGAN MEADOWS UNIT 1C
BEXAR COUNTY, TX

DRAIN "B" & DRAIN "C" PLAN & PROFILE

PLAT NO. 21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN:OM CHECKED:CL

SHEET NUMBER: 4.1

Date: Feb 08, 2023, 9:35am User ID: cmeiners
File: P:\205\41\07\Design\Civil\DRAINS\DR2054107.dwg

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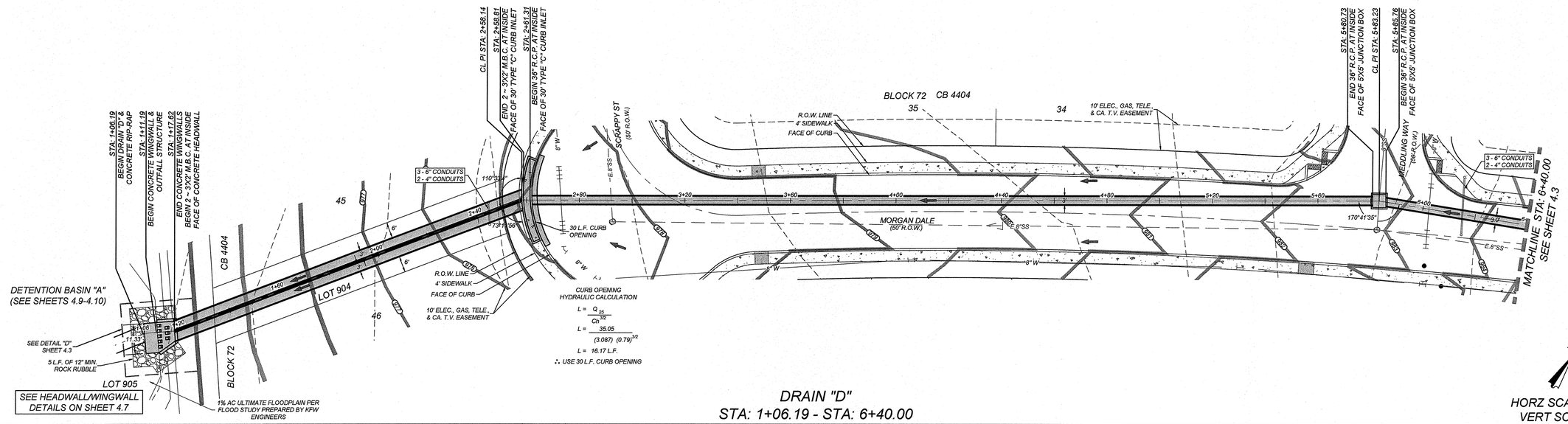
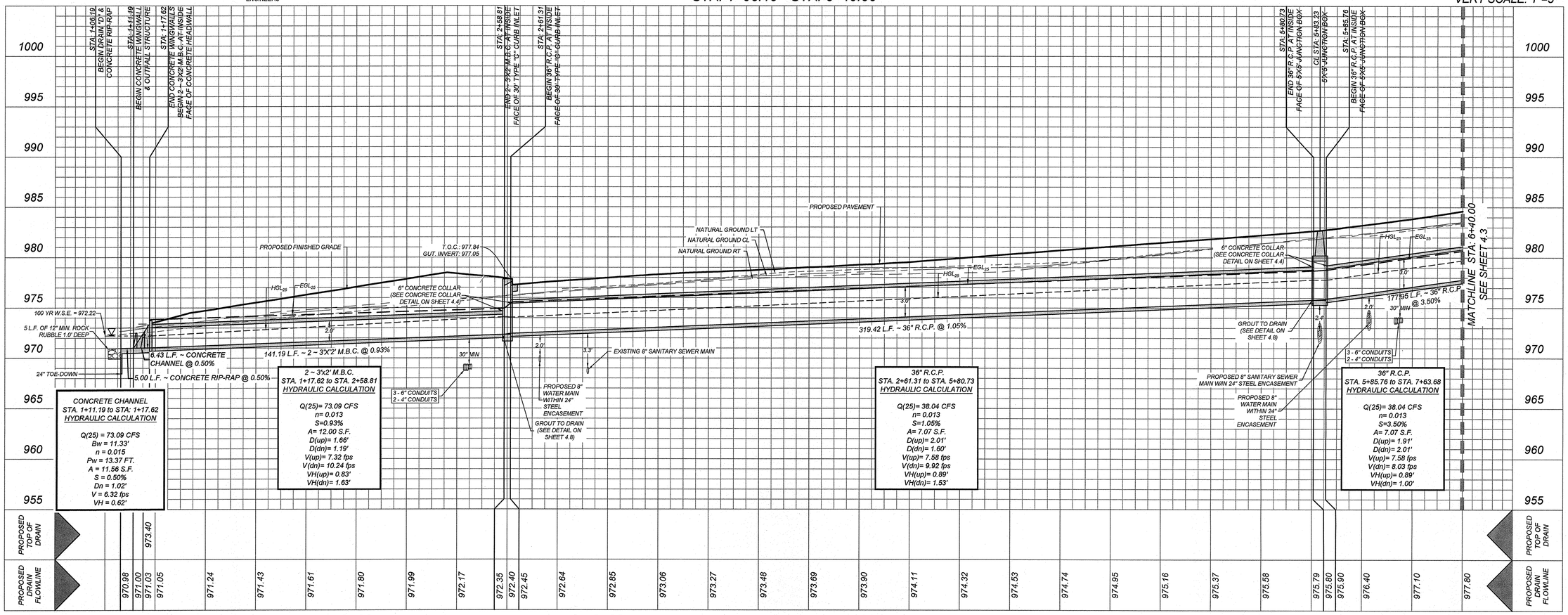


DRAIN "D"
STA: 1+06.19 - STA: 6+40.00

HORZ SCALE: 1"=20'
VERT SCALE: 1"=5'



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ISSUE DATE
2/2/2023

REVISIONS
1 REVISED SHEET NUMBER

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
2/1/2023

MORGAN MEADOWS UNIT 1C
BEXAR COUNTY, TX
DRAIN "D" PLAN & PROFILE (SHEET 1 OF 2)

PLAT NO.
21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN:OM CHECKED:CL

SHEET NUMBER:
4.2
1

Date: Feb 08, 2023, 9:35am User ID: omeiners
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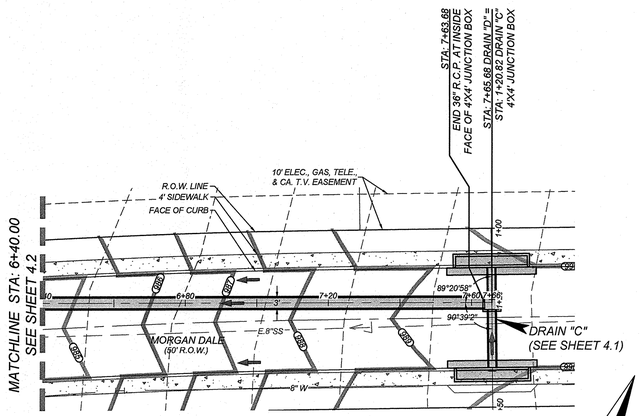
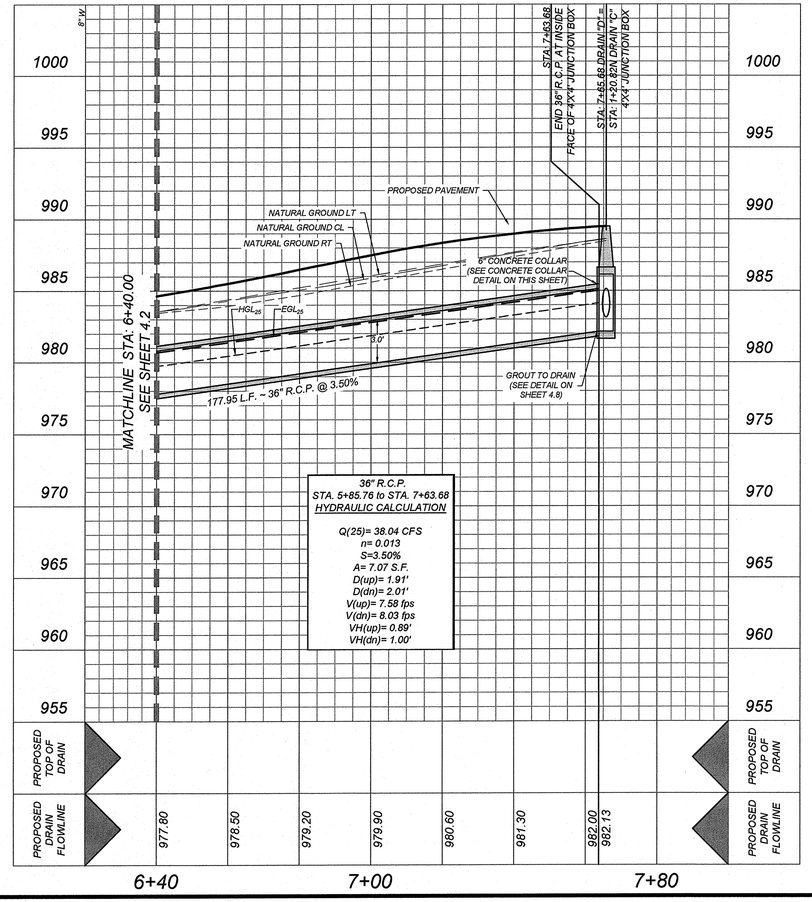


DRAIN "D"
STA: 6+40.00 - END

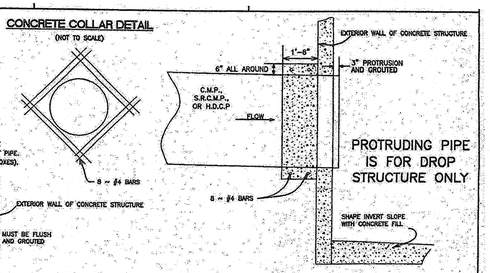
HORZ SCALE: 1"=20'
VERT SCALE: 1"=5'



36" R.C.P.
STA. 5+85.76 to STA. 7+63.68
HYDRAULIC CALCULATION

Q(25)= 38.04 CFS
n= 0.013
S=3.50%
A= 7.07 S.F.
D(up)= 1.91'
D(dn)= 2.01'
V(up)= 7.58 fps
V(dn)= 8.03 fps
VH(up)= 0.89'
VH(dn)= 1.00'

CONCRETE COLLAR DETAIL
(NOT TO SCALE)



PIPE FLUSH WITH INVERT

1. CONCRETE FOR STRUCTURE SHALL BE CLASS "A", 3,000 P.S.I. AT 28 DAYS.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4".
3. REINFORCING STEEL SHALL BE NEW BILLET STEEL, INTERMEDIATE GRADE, ASTM. A-15. THE DEFORMATION SHALL CONFORM TO ASTM. A-305.
4. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
5. ALL BARS INTERCEPTING MANHOLE OPENING AND REINFORCED CONCRETE PIPE SHALL BE FIELD-CUT.
6. WHERE LAPPING OF BARS IS REQUIRED, A MINIMUM LAP OF 33 DIAMETERS SHALL BE USED.
7. INVERT OF JUNCTION BOX TO BE SHAPED WITH CONCRETE FILL (2,000 P.S.I. MIN.) TO EFFECT DRAINAGE TO OUTLET PIPE. COST SUBSIDIARY TO CLASS "A" CONCRETE (JUNCTION BOXES).

JANUARY 2006
STANDARD PLANS
CITY OF SAN ANTONIO, TEXAS
DEVELOPMENT SERVICES
CONCRETE COLLAR DETAIL

DRAWN BY: WENDY VORTEL, P.E.	DATE	REVISIONS	SCALE: SEE ABOVE
CHECKED BY: SAM SENT, P.E.			DATED 1ST JANUARY 2006
			SHEET 1 OF 1

BAFFLE BLOCK CALCULATIONS
(ST. ANTHONY FALLS METHOD)

Q(25) = 73.09 CFS
BOTTOM WIDTH UPSTREAM = 7.16 FT
BOTTOM WIDTH DOWNSTREAM = 11.3 FT
Y1 = 1.19' (DEPTH BEFORE JUMP)
Y2 = 1.61' (DEPTH AFTER JUMP)

WIDTH OF BLOCKS = 0.75(Y1) = 0.89 FT. (USE 1.0 FT.)
SPACE BETWEEN BLOCKS = 0.75(Y1) = 0.89 FT. (USE 1.0 FT.)
HEIGHT OF BLOCKS = Y1 = 1.19' FT. (USE 1.5 FT.)
OF BLOCKS ACROSS BOTTOM = 3

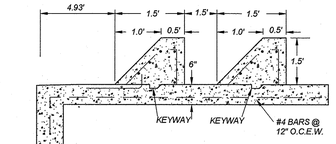
% OF FLOOR COVERED WITH BLOCKS = 3 (1.5 FT) /7.16 FT = 41.9%
(% MUST BE BETWEEN 40% AND 55%)

DEPTH OF TAILWATER (Y2)
FROUDE NUMBER BEFORE JUMP = F1 = 1.49
FROUDE NUMBER AFTER JUMP = F2 = 0.52
LENGTH OF BASIN = LB = 4.5(Y2)/F1*0.76 = 5.35 FT. (USE 8.75 FT.)

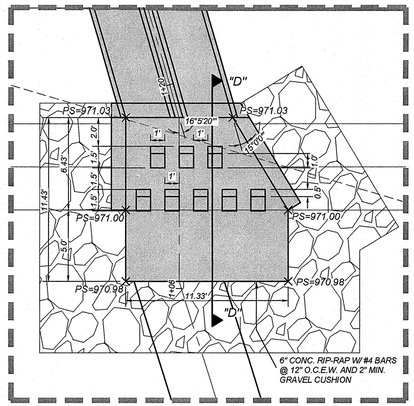
DISTANCE TO FLOOR BLOCKS = LB/3 = 1.78 FT. (USE 2.0 FT.)

HEIGHT OF MAX TAILWATER DEPTH:
Z = Y2/3 = 0.54 FT.
Y2' = 0.85 * Y2 ; H = Z + Y2' = 1.37 FT.

VELOCITY AFTER JUMP:
V = Q/A
A = Y2 * [(B + T) / 2]
A = 1.61' * [(7.16 + 11.3) / 2] = 14.86 SQ. FT.
V = 73.09/14.86 = 4.92 F.P.S.



TYPICAL BAFFLE BLOCK DETAIL
N.T.S.
SECTION D-D



DETAIL "D"
SCALE: 1"=5'

SEE SHEET 4.7 FOR CONCRETE HEADWALL & WINGWALL DETAIL

KFW ENGINEERS + SURVEYING
5421 Fredericksburg Rd. Suite 200 San Antonio, TX 78231
Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm #: 9513 • TBPLS Firm #: 10122300

REVISIONS
1 REVISED SHEET NUMBER

ISSUE DATE
2/2/2023

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
2/2/2023

MORGAN MEADOWS UNIT 1C
BEXAR COUNTY, TX
DRAIN "D" PLAN AND PROFILE (SHEET 2 OF 2)

PLAT NO. 21-11800502
JOB NO. 205-41-07
DATE: JULY 2021
DRAWN:OM CHECKED:CL
SHEET NUMBER: 4.3

Date: Feb. 08, 2023, 9:35am User ID: omeiners
File: P:\205\41\07\Design\Civil\DRAINS\DR20541107.dwg

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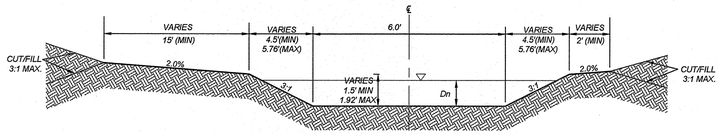
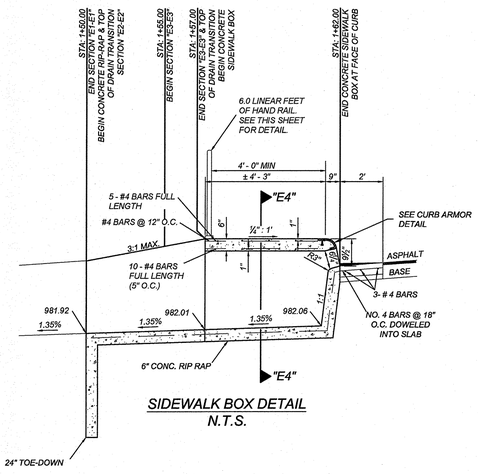


SECTION "E1-E1"
STA. 1+18.50 - STA. 1+50.00
N.T.S.

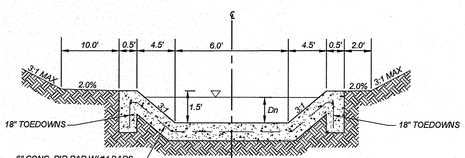
NOTE:

1. ALL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.

2. ANY DISTURBED AREAS WILL BE VEGETATED BY SEEDING OR SODDING. EIGHTY-FIVE PERCENT OF THE DISTURBED SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT.



SIDEWALK BOX DETAIL
N.T.S.



SECTION "E2-E2"
STA. 1+50.00
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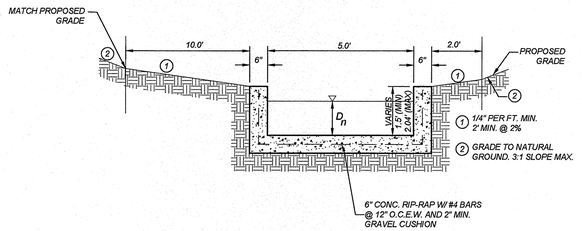

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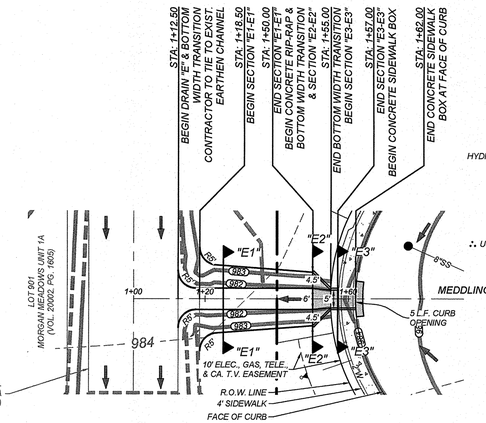
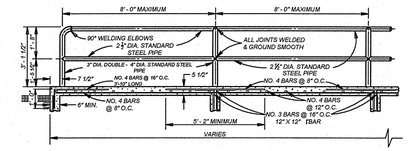


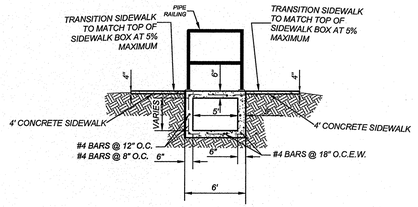
DRAIN "E"
STA: 1+12.50 - END

HORZ SCALE: 1"=20'
VERT SCALE: 1"=5'



TYPICAL SIDEWALK BRIDGE & SIDEWALK PIPE RAILING SECTION

N.T.S.



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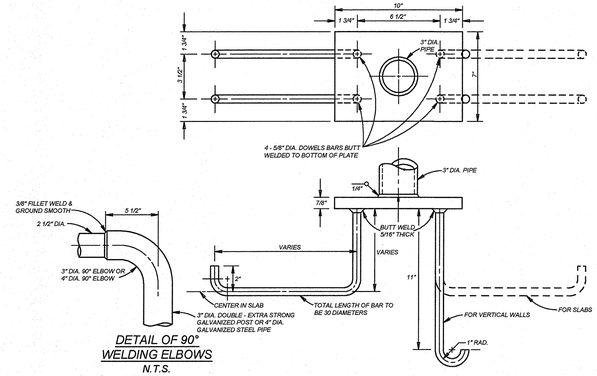
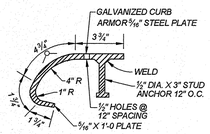


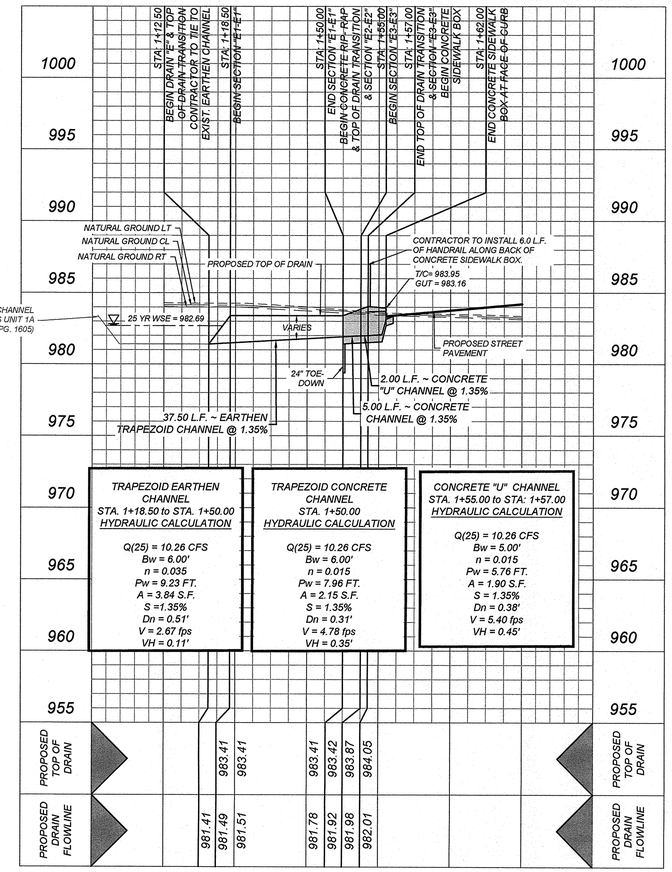
DETAIL OF 90° WELDING ELBOWS
N.T.S.

* A NEAT END SECTION, SATISFACTORY TO THE ENGINEER, FROM SUBMITTED SHOP DRAWINGS, MAY BE USED IN LIEU OF THE 90° WELDING ELBOW SHOWN.

PIPE ANCHORAGE DETAILS
N.T.S.



CURB ARMOR DETAIL
N.T.S.



KFW ENGINEERS + SURVEYING
3421 Paesanos Parkway, Suite 200 • San Antonio, Texas 78231
Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm #: 9513 • TBPLS Firm #: 10123300

REVISIONS
1 REVISED SHEET NUMBER

ISSUE DATE
2/2/2023

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
2/17/2023

MORGAN MEADOWS UNIT 1C
BEXAR COUNTY, TX
DRAIN "E" PLAN & PROFILE

PLAT NO. 21-11800502
JOB NO. 205-41-07
DATE: JULY 2021
DRAWN: OM CHECKED: CL
SHEET NUMBER: 4.4

Date: Feb 08, 2023, 9:35am User ID: omeiners
File: P:\205\st1\07\Design\Civil\DRAINS\DR20541107.dwg

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TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

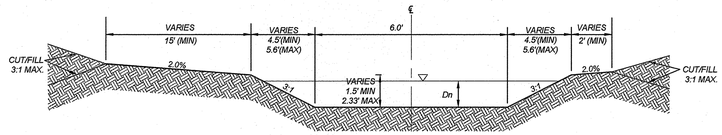
CAUTION!!:

THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

NOTE:

1. ALL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 3000 PSI IN 28 DAYS.

2. ANY DISTURBED AREAS WILL BE VEGETATED BY SEEDING OR SODDING. EIGHTY-FIVE PERCENT OF THE DISTURBED SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT.



SECTION "F1-F1"
STA. 1+20.00 - STA. 1+35.43
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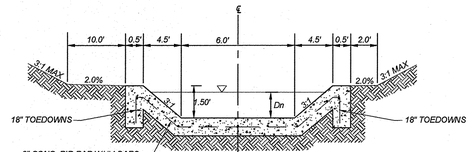

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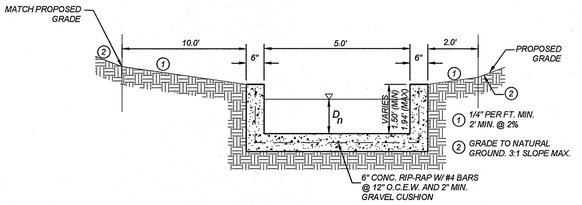

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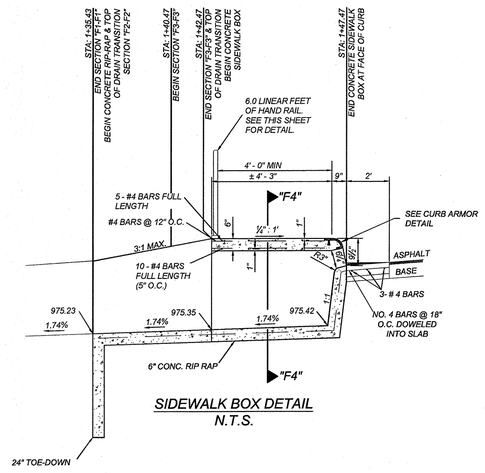
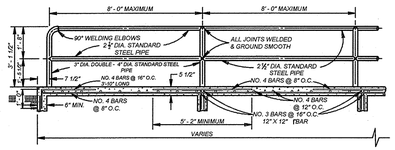
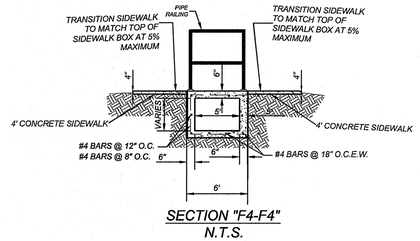


SIDEWALK BOX DETAIL
N.T.S.



TYPICAL SIDEWALK BRIDGE &
SIDEWALK PIPE RAILING SECTION

N.T.S.



SECTION "F4-F4"
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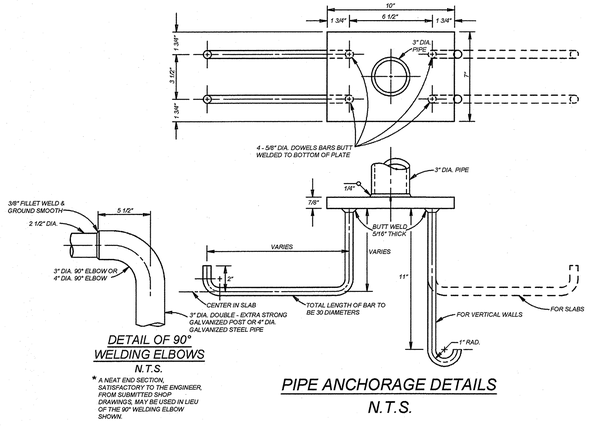
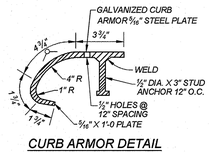


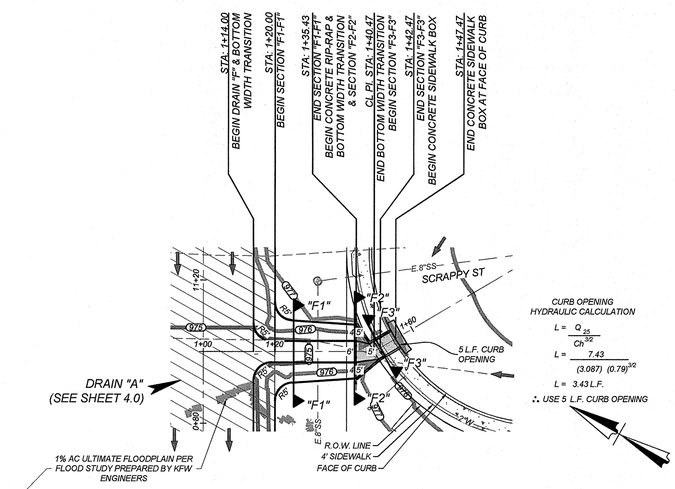
DETAIL OF 90°
WELDING ELBOWS
N.T.S.

* *A NEAT END SECTION, SATISFACTORY TO THE ENGINEER, FROM SUBMITTED SHOP DRAWINGS, MAY BE USED IN LIEU OF THE 90° WELDING ELBOW SHOWN.*

PIPE ANCHORAGE DETAILS
N.T.S.



CURB ARMOR DETAIL
N.T.S.



CURB OPENING
HYDRAULIC CALCULATION

$L = \frac{Q_{25}}{Ch^{3/2}}$

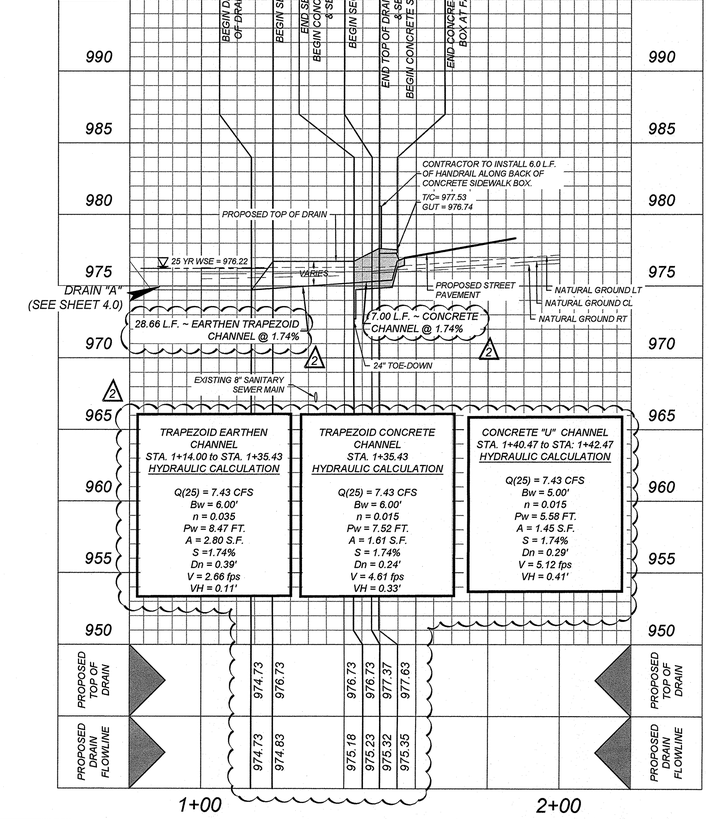
$L = \frac{7.43}{(3.087)\ (0.79)^{3/2}}$

$L = 3.43$ L.F.

∴ USE 5 L.F. CURB OPENING

DRAIN "F"
STA: 1+14.00 - END

HORZ SCALE: 1"=20'
VERT SCALE: 1"=5'



KFW
ENGINEERS + SURVEYING
4225 Pleasant Valley Road • Suite 300 • Austin, TX 78231
Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm #: 9513 • TBPLS Firm #: 10122300

REVISIONS	ISSUE DATE
1 REVISED SHEET NUMBER	2/2/2023
2 REVISED DRAIN "F" DESIGN	2/2/2023

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED
PROFESSIONAL ENGINEER
2/17/2023

MORGAN MEADOWS UNIT 1C
BEXAR COUNTY, TX
DRAIN "F" PLAN & PROFILE

PLAT NO.
21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN: OM CHECKED: CL

SHEET NUMBER:
4.5
1

Date: Feb 16, 2023, 3:55pm User ID: cgroff
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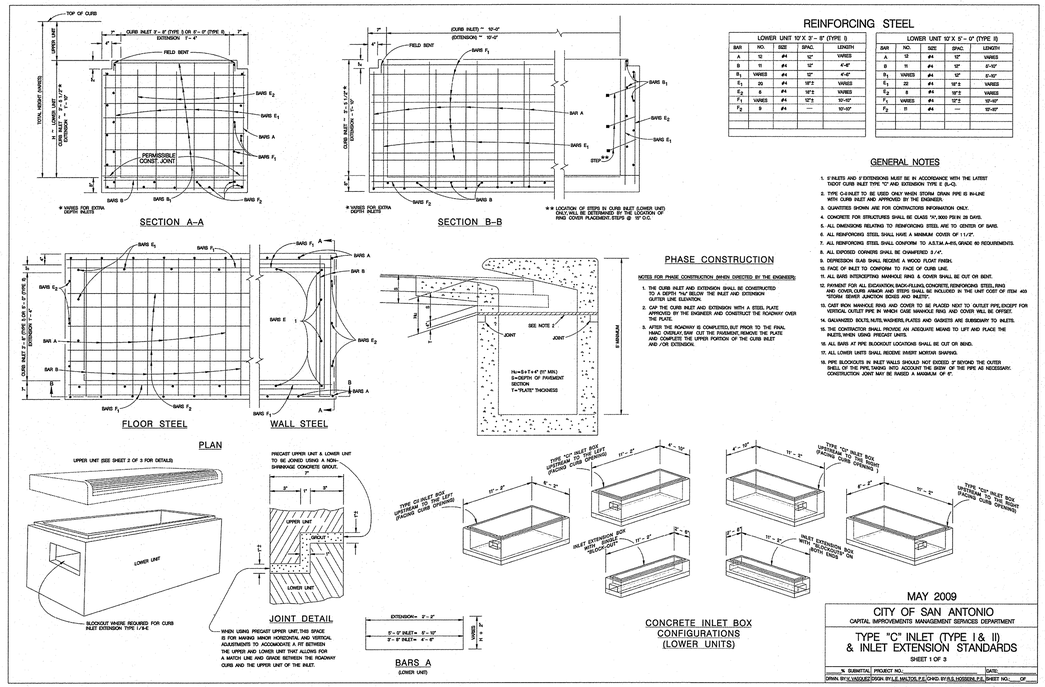


REINFORCING STEEL

LOWER UNIT 10' X 5'- 8" (TYPE I)				
BAR	NO.	SIZE	SPAC.	LENGTH
A	10	#4	12"	VARIES
B	11	#4	12"	4'-6"
B_1	VARIES	#4	12"	4'-6"
E_1	20	#4	18"±	VARIES
E_2	8	#4	18"±	VARIES
F_1	VARIES	#4	12"±	10'-0"
F_2	9	#4	—	10'-0"

LOWER UNIT 10' X 5'- 0" (TYPE II)				
BAR	NO.	SIZE	SPAC.	LENGTH
A	12	#4	12"	VARIES
B	11	#4	12"	5'-10"
B_1	VARIES	#4	12"	5'-10"
E_1	22	#4	18"±	VARIES
E_2	8	#4	18"±	VARIES
F_1	VARIES	#4	12"±	10'-0"
F_2	11	#4	—	10'-0"

GENERAL NOTES

1. E INLETS AND F EXTENSIONS MUST BE IN ACCORDANCE WITH THE LATEST TXDOT CURB INLET TYPE "C" AND EXTENSION TYPE E &-G.
2. TYPE C-2 INLET TO BE USED ONLY WHEN STORM DRAIN PIPE IS IN-LINE WITH CURB INLET AND APPROVED BY THE ENGINEER.
3. QUANTITIES SHOWN ARE FOR CONTRACTORS INFORMATION ONLY.
4. CONCRETE FOR STRUCTURES SHALL BE CLASS "A", 3000 PSI IN 28 DAYS.
5. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
6. ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 1 1/2".
7. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. A-615, GRADE 60 REQUIREMENTS.
8. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4".
9. DEPRESSION SLAB SHALL RECEIVE A WOOD FLOAT FINISH.
10. FACE OF INLET TO CONFORM TO FACE OF CURB LINE.
11. ALL BARS INTERCEPTING MANHOLE RING & COVER SHALL BE CUT OR BENT.
12. PAYMENT FOR ALL EXCAVATION BACK-FILLING CONCRETE, REINFORCING STEEL, RING AND COVER, CURB ARMOR AND STEPS SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 "STORM SEWER JUNCTION BOXES AND INLETS".
13. CAST IRON MANHOLE RING AND COVER TO BE PLACED NEXT TO OUTLET PIPE, EXCEPT FOR VERTICAL OUTLET PIPE IN WHICH CASE MANHOLE RING AND COVER WILL BE OFFSET.
14. GALVANIZED BOLTS, NUTS, WASHERS, PLATES AND GASKETS ARE SUBSIDIARY TO INLETS.
15. THE CONTRACTOR SHALL PROVIDE AN ADEQUATE MEANS TO LIFT AND PLACE THE INLETS, WHEN USING PRECAST UNITS.
16. ALL BARS AT PIPE BLOCKOUT LOCATIONS SHALL BE CUT OR BEND.
17. ALL LOWER UNITS SHALL RECEIVE INSERT MORTAR SHAPING.
18. PIPE BLOCKOUTS IN INLET WALLS SHOULD NOT EXCEED 3" BEYOND THE OUTER SHELL OF THE PIPE, TAKING INTO ACCOUNT THE SLOPE OF THE PIPE AS NECESSARY. CONSTRUCTION JOINT MAY BE RAISED A MAXIMUM OF 6".

PHASE CONSTRUCTION

NOTES FOR PHASE CONSTRUCTION, WHEN DIRECTED BY THE ENGINEER:

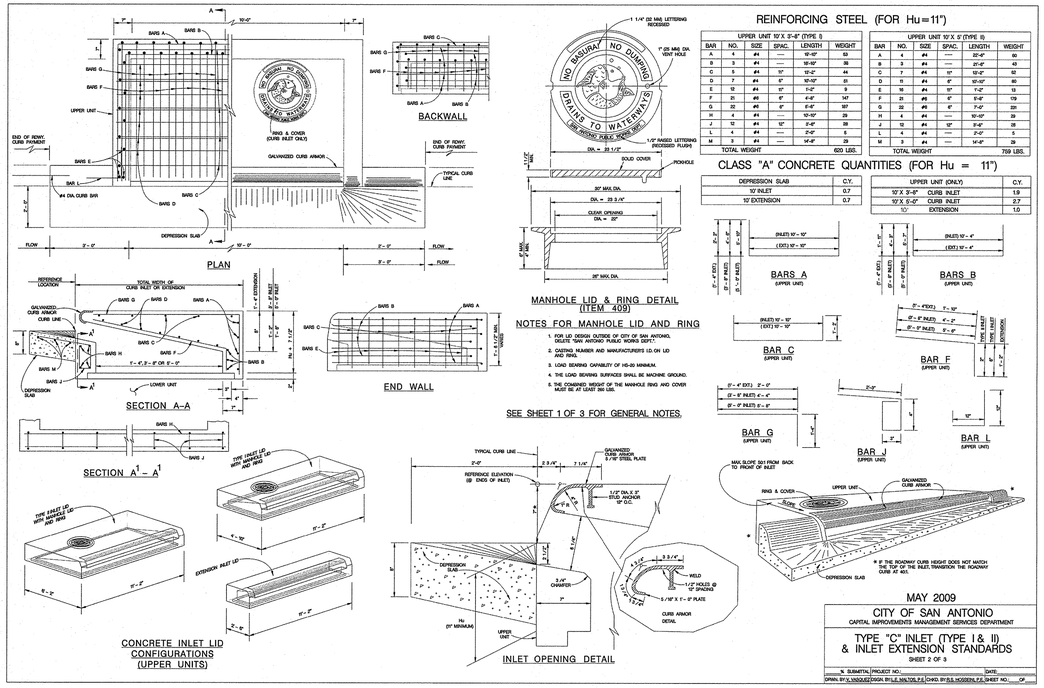
1. THE CURB INLET AND EXTENSION SHALL BE CONSTRUCTED TO A DEPTH "H" BELOW THE INLET AND EXTENSION CUTTER LINE ELEVATION.
2. CAP THE CURB INLET AND EXTENSION WITH A STEEL PLATE APPROVED BY THE ENGINEER AND CONSTRUCT THE ROADWAY OVER THE INLET.
3. AFTER THE ROADWAY IS COMPLETED, BUT PRIOR TO THE FINAL HMAC OVERLAY, SAW CUT THE PAVEMENT, REMOVE THE PLATE, AND COMPLETE THE UPPER PORTION OF THE CURB INLET AND /OR EXTENSION.

MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TYPE "C" INLET (TYPE I & II)
& INLET EXTENSION STANDARDS
SHEET 1 OF 3

% SUBMITTAL PROJECT NO.: DATE:
DRWN. BY:V. VASQUEZ DSGN. BY:L.E. MALTOS, P.E. CHKD. BY:S.S. HOSSEIN, P.E. SHEET NO.: OF



UPPER UNIT 10' X 3'-8" (TYPE I)					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	10'-0"	53
B	3	#4	—	10'-10"	36
C	3	#4	12"	10'-2"	44
D	7	#4	6"	10'-10"	51
E	12	#4	12"	1'-2"	9
F	21	#4	6"	2'-4"	147
G	22	#6	6"	5'-6"	187
H	4	#4	—	10'-10"	29
J	12	#4	12"	2'-4"	39
L	4	#4	—	2'-0"	5
M	3	#4	—	14'-4"	29
TOTAL WEIGHT					620 LBS.

UPPER UNIT 10' X 5' (TYPE II)					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	10'-0"	60
B	3	#4	—	10'-10"	43
C	7	#4	12"	10'-2"	82
D	11	#4	6"	10'-10"	80
E	16	#4	12"	1'-2"	13
F	23	#4	6"	2'-4"	179
G	22	#6	6"	7'-0"	239
H	4	#4	—	10'-10"	29
J	12	#4	12"	2'-4"	39
L	4	#4	—	2'-0"	5
M	3	#4	—	14'-4"	29
TOTAL WEIGHT					759 LBS.

DEPRESSION SLAB	C.Y.
10' INLET	0.7
10' EXTENSION	0.7

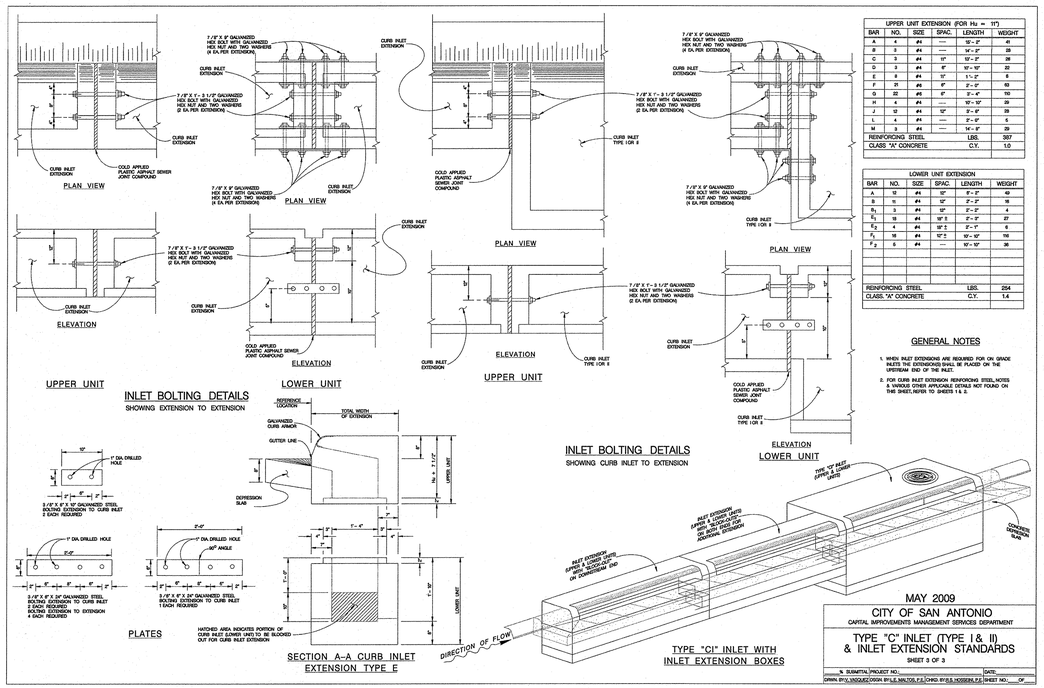
UPPER UNIT (ONLY)	C.Y.
10' X 3'-8" CURB INLET	1.9
10' X 5'-0" CURB INLET	2.7
10' EXTENSION	1.0

MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

TYPE "C" INLET (TYPE I & II)
& INLET EXTENSION STANDARDS
SHEET 2 OF 3

% SUBMITTAL PROJECT NO.: DATE:
DRWN. BY:V. VASQUEZ DSGN. BY:L.E. MALTOS, P.E. CHKD. BY:S.S. HOSSEIN, P.E. SHEET NO.: OF



UPPER UNIT EXTENSION (FOR Hu = 11')					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	10'-2"	41
B	3	#4	—	10'-2"	28
C	3	#4	11"	10'-2"	28
D	3	#4	6"	10'-10"	22
E	8	#4	11"	1'-2"	6
F	23	#6	6"	2'-4"	82
G	22	#6	6"	5'-4"	110
H	4	#4	—	10'-10"	29
J	12	#4	12"	2'-4"	39
L	4	#4	—	2'-0"	5
M	4	#4	—	14'-4"	39
REINFORCING STEEL				LBS.	307
CLASS "A" CONCRETE				C.Y.	1.0

LOWER UNIT EXTENSION					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	12	#4	12"	5'- 2"	49
B	11	#4	12"	5'- 2"	18
B_1	3	#4	12"	5'- 2"	4
E_1	18	#4	18"±	5'- 2"	27
E_2	4	#4	18"±	5'- 1"	6
F_1	16	#4	12"±	10'- 0"	110
F_2	5	#4	—	10'- 0"	36
REINFORCING STEEL				LBS.	254
CLASS "A" CONCRETE				C.Y.	1.4

GENERAL NOTES

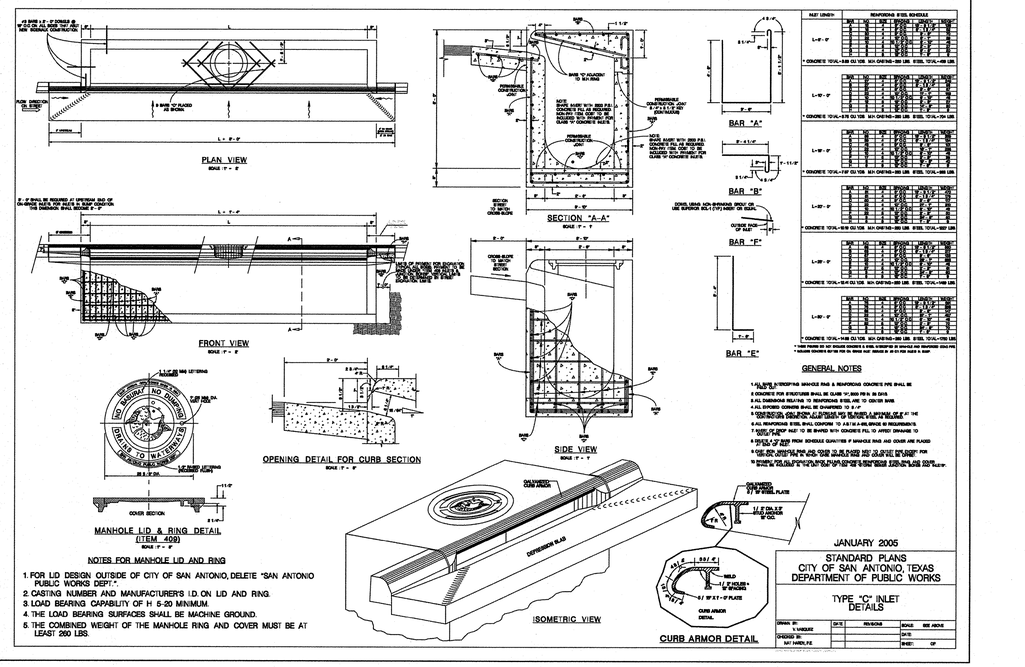
1. WHEN INLET EXTENSIONS ARE REQUIRED FOR ON GRADE INLETS THE EXTENSION(S) SHALL BE PLACED ON THE UPSTREAM END OF THE INLET.
2. FOR CURB INLET EXTENSION REINFORCING STEEL NOTES 5, VARIOUS OTHER APPLICABLE DETAILS NOT FOUND ON THIS SHEET, REFER TO SHEETS 1 & 3.

JANUARY 2005

STANDARD PLANS
CITY OF SAN ANTONIO, TEXAS
DEPARTMENT OF PUBLIC WORKS

TYPE "C" INLET
DETAILS

DRWN. BY:	DATE	REVISIONS	SCALE:	SEE ABOVE
V. VASQUEZ			DATE:	
CHECKED BY:			SHEET:	OF
M.T. HAROLFE				



MAT LENGTH	REINFORCING STEEL SCHEDULE									
	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT	CONCRETE	STEEL		
L=5'-0"	A	4	#4	—	5'-0"	14	1.0 CU YDS	14 LBS		
	B	3	#4	—	5'-10"	12				
	C	3	#4	12"	5'-2"	14				
	D	7	#4	6"	5'-10"	27				
	E	12	#4	12"	1'-2"	9				
	F	21	#4	6"	2'-4"	98				
	G	22	#6	6"	5'-6"	187				
	H	4	#4	—	5'-10"	16				
	J	12	#4	12"	2'-4"	39				
	L	4	#4	—	2'-0"	5				
	M	3	#4	—	7'-4"	15				
L=5'-5"	A	4	#4	—	5'-5"	15	1.1 CU YDS	15 LBS		
	B	3	#4	—	5'-10"	12				
	C	3	#4	12"	5'-2"	14				
	D	7	#4	6"	5'-10"	27				
	E	12	#4	12"	1'-2"	9				
	F	21	#4	6"	2'-4"	98				
	G	22	#6	6"	5'-6"	187				
	H	4	#4	—	5'-10"	16				
	J	12	#4	12"	2'-4"	39				
	L	4	#4	—	2'-0"	5				
	M	3	#4	—	7'-4"	15				
L=5'-10"	A	4	#4	—	5'-10"	16	1.2 CU YDS	16 LBS		
	B	3	#4	—	5'-10"	12				
	C	3	#4	12"	5'-2"	14				
	D	7	#4	6"	5'-10"	27				
	E	12	#4	12"	1'-2"	9				
	F	21	#4	6"	2'-4"	98				
	G	22	#6	6"	5'-6"	187				
	H	4	#4	—	5'-10"	16				
	J	12	#4	12"	2'-4"	39				
	L	4	#4	—	2'-0"	5				
	M	3	#4	—	7'-4"	15				
L=6'-5"	A	4	#4	—	6'-5"	18	1.3 CU YDS	18 LBS		
	B	3	#4	—	5'-10"	12				
	C	3	#4	12"	5'-2"	14				
	D	7	#4	6"	5'-10"	27				
	E	12	#4	12"	1'-2"	9				
	F	21	#4	6"	2'-4"	98				
	G	22	#6	6"	5'-6"	187				
	H	4	#4	—	5'-10"	16				
	J	12	#4	12"	2'-4"	39				
	L	4	#4	—	2'-0"	5				
	M	3	#4	—	7'-4"	15				
L=6'-10"	A	4	#4	—	6'-10"	19	1.4 CU YDS	19 LBS		
	B	3	#4	—	5'-10"	12				
	C	3	#4	12"	5'-2"	14				
	D	7	#4	6"	5'-10"	27				
	E	12	#4	12"	1'-2"	9				
	F	21	#4	6"	2'-4"	98				
	G	22	#6	6"	5'-6"	187				
	H	4	#4	—	5'-10"	16				
	J	12	#4	12"	2'-4"	39				
	L	4	#4	—	2'-0"	5				
	M	3	#4	—	7'-4"	15				
L=7'-5"	A	4	#4	—	7'-5"	20	1.5 CU YDS	20 LBS		
	B	3	#4	—	5'-10"	12				
	C	3	#4	12"	5'-2"	14				
	D	7	#4	6"	5'-10"	27				
	E	12	#4	12"	1'-2"	9				
	F	21	#4	6"	2'-4"	98				
	G	22	#6	6"	5'-6"	187				
	H	4	#4	—	5'-10"	16				
	J	12	#4	12"	2'-4"	39				
	L	4	#4	—	2'-0"	5				
	M	3	#4	—	7'-4"	15				
L=7'-10"	A	4	#4	—	7'-10"	21	1.6 CU YDS	21 LBS		
	B	3	#4	—	5'-10"	12				
	C	3	#4	12"	5'-2"	14				
	D	7	#4	6"	5'-10"	27				
	E	12	#4	12"	1'-2"	9				
	F	21	#4	6"	2'-4"	98				
	G	22	#6	6"	5'-6"	187				
	H	4	#4	—	5'-10"	16				
	J	12	#4	12"	2'-4"	39				
	L	4	#4	—	2'-0"	5				
	M	3	#4	—	7'-4"	15				

* CONCRETE 1.0 CU. YDS. MIN. CHEMTEK-350 LBS. STEEL 1.0 CWT.—65 LBS.
* CONCRETE 1.1 CU. YDS. MIN. CHEMTEK-350 LBS. STEEL 1.1 CWT.—70 LBS.
* CONCRETE 1.2 CU. YDS. MIN. CHEMTEK-350 LBS. STEEL 1.2 CWT.—75 LBS.
* CONCRETE 1.3 CU. YDS. MIN. CHEMTEK-350 LBS. STEEL 1.3 CWT.—80 LBS.
* CONCRETE 1.4 CU. YDS. MIN. CHEMTEK-350 LBS. STEEL 1.4 CWT.—85 LBS.
* CONCRETE 1.5 CU. YDS. MIN. CHEMTEK-350 LBS. STEEL 1.5 CWT.—90 LBS.
* CONCRETE 1.6 CU. YDS. MIN. CHEMTEK-350 LBS. STEEL 1.6 CWT.—95 LBS.
* CONCRETE 1.7 CU. YDS. MIN. CHEMTEK-350 LBS. STEEL 1.7 CWT.—100 LBS.

* INCLUDE CHEMTEK-350 PER THE 10 YARDS MIX* INCREASE BY 20 LBS PER ADDITIONAL CUBIC YARD.

GENERAL NOTES

1. ALL BARS AT STEPPING MANHOLE RING & REINFORCING CONCRETE PIPE SHALL BE FIELD BENT.
2. CONCRETE FOR STRUCTURES SHALL BE CLASS "A", 3000 PSI IN 28 DAYS.
3. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
4. CONTRACTOR SHALL PROVIDE AN ADEQUATE MEANS TO LIFT AND PLACE THE MANHOLE RING AND COVER, WHEN USING PRECAST UNITS.
5. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. A-615, GRADE 60 REQUIREMENTS.
6. INSERT FLOWLINE INLET TO BE BRICK WITH CONCRETE FILL TO AFFECT DRAINAGE TO INLET.
7. DETAILS OF PIPE FROM SCHEDULE QUANTITIES IF MANHOLE RING AND COVER ARE PLACED AT THE END.
8. CURB INLET WIDTH MAY BE INCREASED TO BE PLACED NEXT TO OUTLET PIPE, EXCEPT FOR VERTICAL OUTLET PIPE IN WHICH CASE MANHOLE RING AND COVER WILL BE OFFSET.
9. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4".
10. DEPRESSION SLAB SHALL RECEIVE A WOOD FLOAT FINISH.
11. FACE OF INLET TO CONFORM TO FACE OF CURB LINE.
12. ALL BARS INTERCEPTING MANHOLE RING & COVER SHALL BE CUT OR BENT.
13. PAYMENT FOR ALL EXCAVATION BACK-FILLING CONCRETE, REINFORCING STEEL, RING AND COVER, CURB ARMOR AND STEPS SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 "STORM SEWER JUNCTION BOXES AND INLETS".
14. CAST IRON MANHOLE RING AND COVER TO BE PLACED NEXT TO OUTLET PIPE, EXCEPT FOR VERTICAL OUTLET PIPE IN WHICH CASE MANHOLE RING AND COVER WILL BE OFFSET.
15. GALVANIZED BOLTS, NUTS, WASHERS, PLATES AND GASKETS ARE SUBSIDIARY TO INLETS.
16. THE CONTRACTOR SHALL PROVIDE AN ADEQUATE MEANS TO LIFT AND PLACE THE INLETS, WHEN USING PRECAST UNITS.
17. ALL BARS AT PIPE BLOCKOUT LOCATIONS SHALL BE CUT OR BEND.
18. ALL LOWER UNITS SHALL RECEIVE INSERT MORTAR SHAPING.
19. PIPE BLOCKOUTS IN INLET WALLS SHOULD NOT EXCEED 3" BEYOND THE OUTER SHELL OF THE PIPE, TAKING INTO ACCOUNT THE SLOPE OF THE PIPE AS NECESSARY. CONSTRUCTION JOINT MAY BE RAISED A MAXIMUM OF 6".

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ISSUE DATE
2/2/2023

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REVISED SHEET NUMBER
1

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
2/17/2023

MORGAN MEADOWS UNIT 1C
BEXAR COUNTY, TX
DRAIN DETAILS (SHEET 1 OF 3)

PLAT NO.
21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN:OM CHECKED:CL

SHEET NUMBER:
4.6
1

Date: Feb 08, 2023, 9:35am User ID: omeiners
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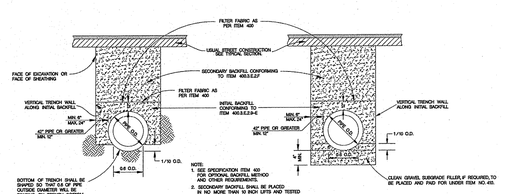
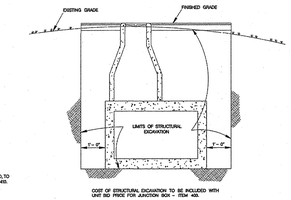


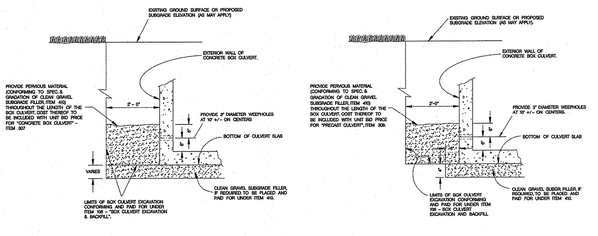
TYPICAL DETAIL

OPTIONAL DETAIL

PIPE BEDDING & BACKFILL DETAILS



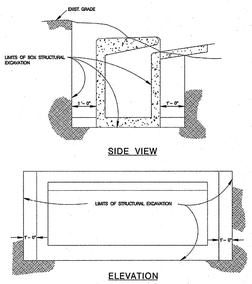
STRUCTURAL EXCAVATION AT JUNCTION BOXES
NO SCALE



CAST-IN-PLACE BOX CULVERT

PRECAST BOX CULVERT

CONCRETE BOX CULVERT



STRUCTURAL EXCAVATIONS AT DRAINAGE INLETS
NO SCALE

MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

PIPE BEDDING & MISCELLANEOUS DRAINAGE DETAILS

% SUBMITTAL	PROJECT NO.	DATE
DRAWN BY:	DESIGN BY:	CHKD BY:	SHEET NO.: OF

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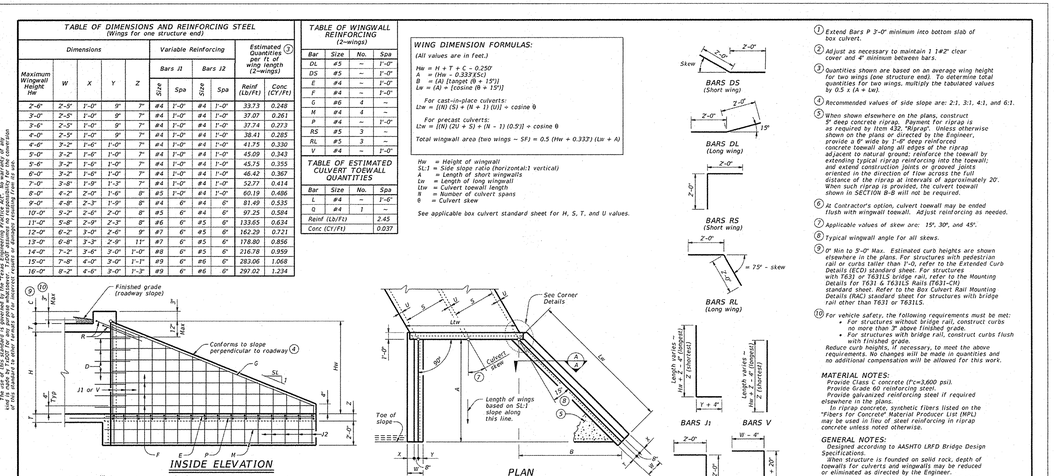

TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

Maximum Wingwall Height Hw	W	X	Y	Z	Variable Reinforcing Bars J1 Size	Bars J1 Spa	Bars J2 Size	Bars J2 Spa	Estimated Quantities per ft of wing length (2-wings) Reinf (Lb/Ft)	Conc (CY/Ft)
2'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'-2"	2'-0"	1'-6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'-8"	2'-3"	1'-9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'-2"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721
13'-0"	6'-8"	3'-3"	2'-9"	11"	#7	6"	#5	6"	178.80	0.856
14'-0"	7'-2"	3'-6"	3'-0"	1'-0"	#8	6"	#5	6"	216.76	0.959
15'-0"	7'-8"	3'-9"	3'-0"	1'-1"	#9	6"	#6	6"	283.06	1.068
16'-0"	8'-2"	4'-0"	3'-0"	1'-3"	#9	6"	#6	6"	297.02	1.234

TABLE OF WINGWALL REINFORCING
(2-wings)

Bar	Size	No.	Spa
DL	#5	–	1'-0"
DS	#5	–	1'-0"
E	#4	–	1'-0"
F	#4	–	1'-0"
G	#6	4	–
H	#4	4	–
P	#4	–	1'-0"
RS	#5	3	–
RL	#5	3	–
V	#4	–	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

Bar	Size	No.	Spa
L	#4	–	1'-0"
Q	#4	1	–
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

WING DIMENSION FORMULAS:
(All values are in feet.)

Hw = H + T + C – 0.250'
A = (Hw – 0.333'(Sc)
B = (A) [tangt (θ + 15°)]
Lw = (A) ÷ [cosine (θ + 15°)]

For cast-in-place culverts:
Ltw = [(N) (S) + (N + 1) (D)] ÷ cosine θ

For precast culverts:
Ltw = [(N) (2U + S) + (N - 1) (0.5')] ÷ cosine θ

Total wingwall area (two wings – SF) = 0.5 (Hw + 0.333') (Lw + A)

Hw = Height of wingwall
SL:1 = Side slope ratio (horizontal:1 vertical)
A = Length of short wingwalls
Lw = Length of long wingwall
Ltw = Culvert toewall length
N = Number of culvert spans
θ = Culvert skew

See applicable box culvert standard sheet for H, S, T, and U values.

1. Extend Bars P 3'-0" minimum into bottom slab of box culvert.
2. Adjust as necessary to maintain 1 1/4" clear cover and 4" minimum between bars.
3. Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings, multiply the tabulated values by 0.5 x (A + Lw).
4. Recommended values of side slope are: 2:1, 3:1, 4:1, and 6:1.
5. When shown elsewhere on the plans, construct 5" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap". Unless otherwise shown on the plans or directed by the Engineer, provide a 6" wide by 1'-0" deep reinforced concrete toewall along all edges of the riprap adjacent to natural ground; reinforce the toewall by extending typical riprap reinforcing into the toewall. Construct transverse contraction joints in the riprap and expansion joints in the toewall at a maximum distance of the riprap at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.
6. At Contractor's option, culvert toewall may be ended flush with wingwall toewall. Adjust reinforcing as needed.
7. Applicable values of skew are: 15°, 30°, and 45°.
8. Typical wingwall angle for all skews.
9. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
10. For vehicle safety, the following requirements must be met:
    - For structures without bridge rail, construct curbs no more than 3" above finished grade.
    - For structures with bridge rail, construct curbs flush with finished grade.

    Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

MATERIAL NOTES:
Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
In riprap concrete, synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
See Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.
The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

Texas Department of Transportation — Bridge Division Standard

CONCRETE WINGWALLS WITH FLARED WINGS FOR SKEWED BOX CULVERTS

FW-S

FILE:	fw-skew-20.dgn	dn: GAF	ck: CAT	dw: TxDOT	ck: TxDOT
©TxDOT	February 2020	CONT	SECT	JOB	HIGHWAY
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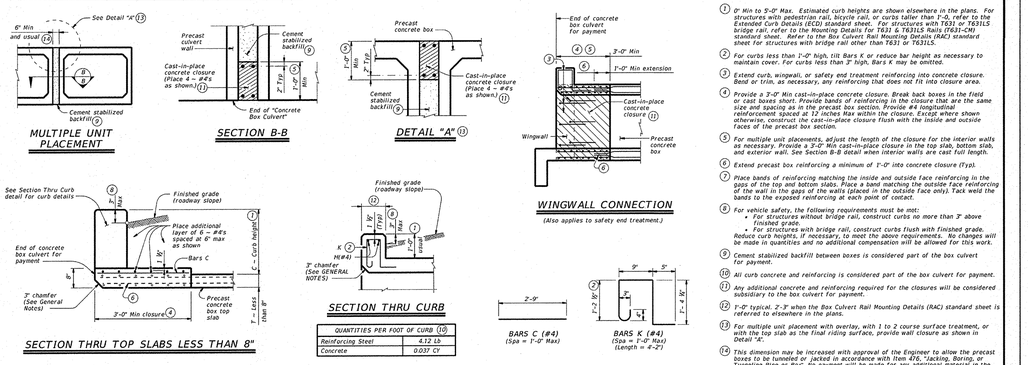

QUANTITIES PER FOOT OF CURB (10)	
Reinforcing Steel	4.12 Lb
Concrete	0.037 CY

1. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail, bicycle rail, or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
2. For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.
3. Extend curb, wingwall, or safety end treatment reinforcing into concrete closure. Bend or trim, as necessary, any reinforcing that does not fit into closure area.
4. Provide a 3'-0" Min cast-in-place concrete closure. Break back bones in the field or cast boxes short. Provide bands of reinforcing in the closure that are the same size and spacing as in the precast box section. Provide #4 longitudinal reinforcement spaced at 12 inches Max within the closure. Except where shown otherwise, construct the cast-in-place closure flush with the inside and outside faces of the precast box section.
5. For multiple unit placements, adjust the length of the closure for the interior walls as necessary. Provide a 3'-0" Min cast-in-place closure in the top slab, bottom slab, and exterior wall. See Section B-B detail when interior walls are cast full length.
6. Extend precast box reinforcing a minimum of 1'-0" into concrete closure (Typ).
7. Place bands of reinforcing matching the inside and outside face reinforcing in the gaps of the top and bottom slabs. Place a band matching the outside face reinforcing of the wall in the gaps of the walls (placed in the outside face only). Tack weld the bands to the exposed reinforcing at each point of contact.
8. For vehicle safety, the following requirements must be met:
    - For structures without bridge rail, construct curbs no more than 3" above finished grade.
    - For structures with bridge rail, construct curbs flush with finished grade.

    Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
9. Cement stabilized backfill between boxes is considered part of the box culvert for payment.
10. All curb concrete and reinforcing is considered part of the box culvert for payment.
11. Any additional concrete and reinforcing required for the closures will be considered subsidiary to the box culvert for payment.
12. 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.
13. For multiple unit placement with overlay, with 1 to 2 course surface treatment, or with the top slab as the final riding surface, provide wall closure as shown in Detail "A".
14. This dimension may be increased with approval of the Engineer to allow the precast boxes to be tunneled or jacked in accordance with Item 476, "Jacking, Boring, or Tunneling Pipe or Box". No payment will be made for any additional material in the gap between adjacent boxes.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class A concrete (f'c = 3,600 psi) for the closures.
Provide cement stabilized backfill meeting the requirements of Item 400, "Excavation and Backfill For Structures".
Any additional concrete required for the closures will be considered subsidiary to the box culvert.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Refer to the Single Box Culverts Precast (SCP) standard sheets for details and notes not shown.
Chamfer the bottom edge of the top slab closure 3 inches at culvert closure ends.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing bars dimensions are out-to-out of bars.

HL93 LOADING

Texas Department of Transportation — Bridge Division Standard

BOX CULVERTS PRECAST MISCELLANEOUS DETAILS

SCP-MD

FILE:	scpmd01-20.dgn	dn: GAF	ck: LMW	dw: BBW/TxDOT	ck: GAF
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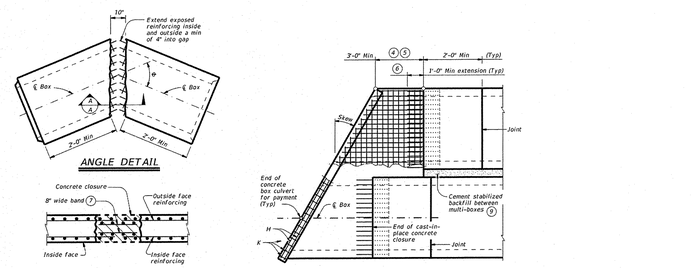
REVISIONS		DIST	COUNTY		SHEET NO.



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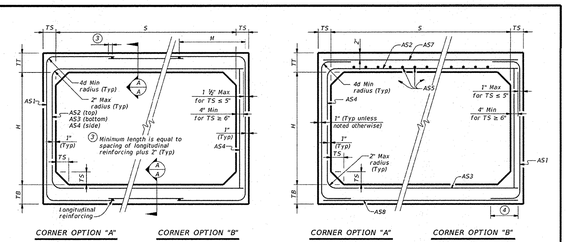
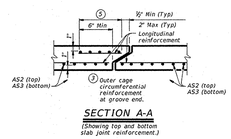
BOX DATA

SECTION DIMENSIONS S (Ft.)	H (Ft.)	TT (in.)	TB (in.)	TS (in.)	Fill Height (Ft.)	H (Min) (in.)	REINFORCING (sq. in. / ft.) AS1	AS2	AS3	AS4	AS5	AS7	AS8	Wt Weight (tons)
3	2	7	6	4	< 2	-	0.17	0.25	0.16	0.10	0.17	0.14	3.3
3	2	4	4	4	2 < 3	31	0.13	0.19	0.18	0.10	-	-	-	2.4
3	2	4	4	4	3 - 5	31	0.10	0.11	0.12	0.10	-	-	-	2.4
3	2	4	4	4	10	31	0.10	0.10	0.10	0.10	-	-	-	2.4
3	2	4	4	4	15	31	0.10	0.13	0.13	0.10	-	-	-	2.4
3	2	4	4	4	20	31	0.13	0.17	0.17	0.10	-	-	-	2.4
3	2	4	4	4	25	31	0.14	0.21	0.21	0.10	-	-	-	2.4
3	2	4	4	4	30	31	0.17	0.25	0.25	0.10	-	-	-	2.4
3	2	4	4	4	35	31	0.20	0.29	0.30	0.10	-	-	-	2.4
3	3	7	6	4	< 2	-	0.17	0.27	0.17	0.10	0.17	0.17	0.14	3.7
3	3	4	4	4	2 < 3	31	0.10	0.22	0.21	0.10	-	-	-	2.8
3	3	4	4	4	3 - 5	31	0.10	0.14	0.14	0.10	-	-	-	2.8
3	3	4	4	4	10	31	0.10	0.11	0.11	0.10	-	-	-	2.8
3	3	4	4	4	15	31	0.10	0.14	0.15	0.10	-	-	-	2.8
3	3	4	4	4	20	31	0.10	0.18	0.19	0.10	-	-	-	2.8
3	3	4	4	4	25	31	0.10	0.23	0.23	0.10	-	-	-	2.8
3	3	4	4	4	30	31	0.12	0.27	0.28	0.10	-	-	-	2.8
3	3	4	4	4	35	31	0.14	0.32	0.32	0.10	-	-	-	2.8

1. For box length = 8'-0"
2. AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



MATERIAL NOTES:
Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.
Provide Class H concrete (f'c = 5,000 psi).

GENERAL NOTES:
Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.
See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.
In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)".

HL93 LOADING

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS PRECAST 3'-0" SPAN

SCP-3

FILE:	scp03cc-20.dgn	dn: TxDOT	ck: TxDOT	dw: TxDOT	ck: TxDOT
©TxDOT	February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS		DIST	COUNTY		SHEET NO.

MORGAN MEADOWS UNIT 1C
BEXAR COUNTY, TX

DRAIN DETAILS (SHEET 2 OF 3)

PLAT NO. 21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN: OM CHECKED: CL

SHEET NUMBER: 4.7

KFW ENGINEERS + SURVEYING
3421 Paesanos Parkway, Suite 200 San Antonio, Texas 78231
Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm #: 9513 • TBPLS Firm #: 10122300

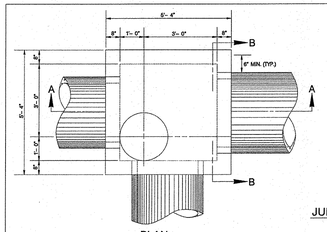
ISSUE DATE
2/2/2023

REVISIONS
A REVISED SHEET NUMBER

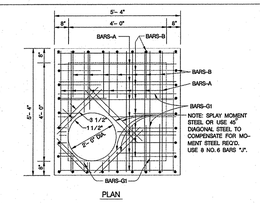
STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
2/1/2023

Date: Feb 08, 2023, 9:36am User ID: omeihers
File: P:\205\41\07\Design\Civil\DRAINS\DR2054107.dwg

THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. RELY ONLY ON FINAL HARDCOPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL.



PLAN



PLAN

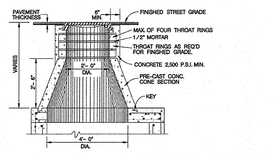
JUNCTION BOX TOP SLAB SHOWING STEEL

SCHEDULE FOR REINFORCING STEEL						
SHAPE	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
STRAIGHT	A	16	4	9" O.C.	5'- 1"	54
	B	32	5	8" O.C.	6'- 10"	228
	C	32	5	8" O.C.	4'- 3"	142
STRAIGHT	D	16	4	9" O.C.	5'- 1"	54
STRAIGHT	E	16	3	12" O.C.	3'-11"	24
STRAIGHT	G	16	4	12" O.C.	5'-1"	54
STRAIGHT	G_1	8	4	AS SHOWN	5'-1"	27
STRAIGHT	H	20	3	12" O.C.	4'-3"	33
STRAIGHT	J	8	6	3 1/2"	2'- 10"	34
					TOTAL	650 LBS.

CLASS "A" CONCRETE– 3.43 CU. YDS.
(DOES NOT EXCLUDE MANHOLE OPENINGS OR PIPE OPENING)

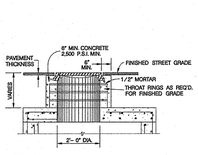
★ NOTE: BAR SIZE AND SPACING BASED ON SPANS AS SHOWN – ANY REVISIONS TO THESE SPANS SHALL INCLUDE A RE-DESIGN ON STEEL REQD.

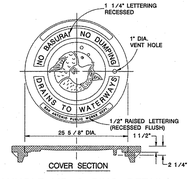
1. CONCRETE FOR STRUCTURE SHALL BE CLASS "A," 3,000 P.S.I. AT 28 DAYS.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED 3 /4".
3. REINFORCING STEEL SHALL BE NEW BILLET STEEL, INTERMEDIATE GRADE, ASTM A-15, THE DEFORMATION SHALL CONFORM TO ASTM A-305.
4. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
5. ALL BARS INTERCEPTING MANHOLE OPENING AND REINFORCED CONCRETE PIPE SHALL BE FIELD-CUT.
6. WHERE LAPPING OF BARS IS REQUIRED, A MINIMUM LAP OF 33 DIAMETERS SHALL BE USED.
7. INVERT OF JUNCTION BOX TO BE SHAPED WITH CONCRETE FILL (2,500 P.S.I. MIN.) TO EFFECT DRAINAGE TO OUTLET PIPE. COST SUBSIDIARY TO CLASS "A" CONCRETE (JUNCTION BOXES).
8. PAYMENT FOR ALL EXCAVATION, BACKFILLING, CONCRETE, REINFORCING STEEL, VERTICAL STACK, RING, AND COVER SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 – "STORM SEWER JUNCTION BOXES AND INLETS".



VARIATION OF VERTICAL STACK

VERTICAL STACK DESIGN SHALL BE GOVERNED BY THE DEPTH OF THE TOP OF THE JUNCTION BOX BELOW THE FINISHED STREET GRADE.





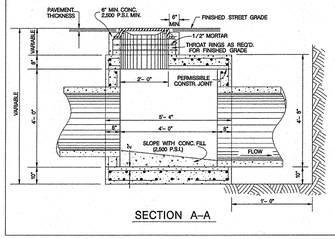
COVER SECTION

MANHOLE LID & RING DETAIL

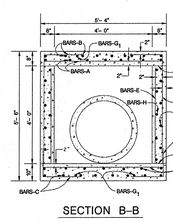
SCALE: 1 : 16

NOTES FOR MANHOLE LID AND RING

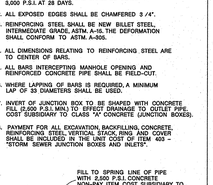
1. FOR LID DESIGN OUTSIDE OF CITY OF SAN ANTONIO, DELETE "SAN ANTONIO PUBLIC WORKS DEPT.".
2. CASTING NUMBER AND MANUFACTURER'S I.D. ON LID AND RING.
3. LOAD BEARING CAPABILITY OF HS-20 MINIMUM.
4. THE LOAD BEARING SURFACES SHALL BE MACHINE GROUND.
5. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER MUST BE AT LEAST 260 LBS.



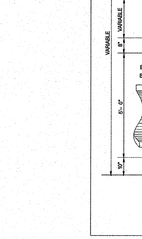
SECTION A–A



SECTION B–B

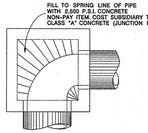


SECTION A–A



SECTION B–B

FILL TO SPRING LINE OF PIPE WITH 2,500 P.S.I. CONCRETE NON-PAY ITEM. COST SUBSIDIARY TO CLASS "A" CONCRETE (JUNCTION BOX).



CURVED DEFLECTOR DETAIL

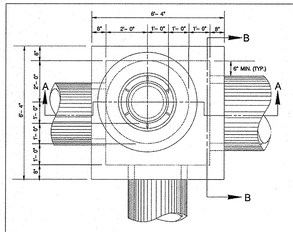
JANUARY 2005

CITY OF SAN ANTONIO

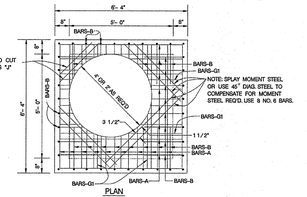
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

4'x4'x4' JUNCTION BOX STANDARDS

% SUBMITTAL	PROJECT NO.:		DATE:
DRWN. BY:	DSGN. BY:	CHKD. BY:	SHEET NO.: OF

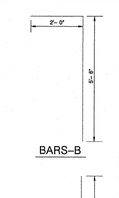


PLAN



PLAN

OF JUNCTION BOX TOP SLAB SHOWING STEEL



SCHEDULE FOR REINFORCING STEEL						
SHAPE	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
STRAIGHT	A	18	4	9" O.C.	6'- 1"	73
	B	38	5	9" O.C.	7'- 5"	282
	C	38	5	8" O.C.	4'- 3"	160
STRAIGHT	D	18	4	9" O.C.	6'- 1"	73
STRAIGHT	E	20	3	12" O.C.	4'- 11"	37
STRAIGHT	G	20	4	12" O.C.	6'- 1"	81
STRAIGHT	G_1	8	4	AS SHOWN	6'- 1"	33
STRAIGHT	H	24	3	12" O.C.	5'- 5"	49
STRAIGHT	J	8	6	3 1/2" O.C.	4'- 11"	59
					TOTAL	847 lbs.

CLASS "A" CONCRETE – 5.03 CU. YDS.
(DOES NOT EXCLUDE MANHOLE OPENINGS OR PIPE OPENING)

★ NOTE: BAR SIZE AND SPACING BASED ON SPANS AS SHOWN – ANY REVISIONS TO THESE SPANS SHALL INCLUDE A RE-DESIGN ON STEEL REQD.

1. CONCRETE FOR STRUCTURE SHALL BE CLASS "A" 3,000 P.S.I. AT 28 DAYS.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4".
3. REINFORCING STEEL SHALL BE NEW BILLET STEEL, INTERMEDIATE GRADE, ASTM A-15, THE DEFORMATION SHALL CONFORM TO ASTM A-305.
4. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
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7. INVERT OF JUNCTION BOX TO BE SHAPED WITH CONCRETE FILL (2,500 P.S.I. MIN.) TO EFFECT DRAINAGE TO OUTLET PIPE. COST SUBSIDIARY TO CLASS "A" CONCRETE (JUNCTION BOXES).
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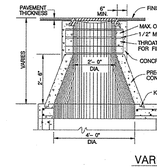
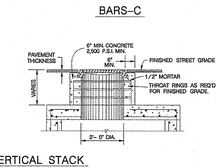
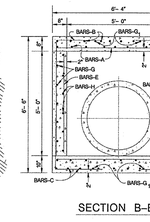


VARIATION OF VERTICAL STACK

VERTICAL STACK DESIGN SHALL BE GOVERNED BY THE DEPTH OF THE TOP OF THE JUNCTION BOX BELOW THE FINISHED STREET GRADE.





SECTION B–B

COVER SECTION

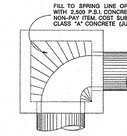
MANHOLE LID & RING DETAIL

SCALE: 1 : 16

NOTES FOR MANHOLE LID AND RING

1. FOR LID DESIGN OUTSIDE OF CITY OF SAN ANTONIO, DELETE "SAN ANTONIO PUBLIC WORKS DEPT.".
2. CASTING NUMBER AND MANUFACTURER'S I.D. ON LID AND RING.
3. LOAD BEARING CAPABILITY OF HS-20 MINIMUM.
4. THE LOAD BEARING SURFACES SHALL BE MACHINE GROUND.
5. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER MUST BE AT LEAST 260 LBS.

FILL TO SPRING LINE OF PIPE WITH 2,500 P.S.I. CONCRETE NON-PAY ITEM. COST SUBSIDIARY TO CLASS "A" CONCRETE (JUNCTION BOX).



CURVED DEFLECTOR DETAIL

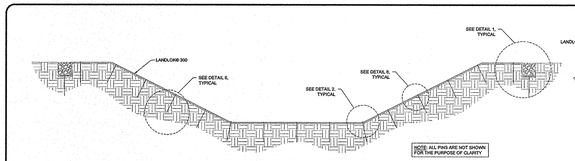
JANUARY 2005

CITY OF SAN ANTONIO

CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

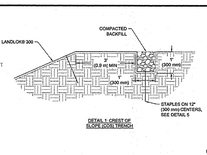
5'x5'x5' JUNCTION BOX STANDARDS

% SUBMITTAL	PROJECT NO.:		DATE:
DRWN. BY:	DSGN. BY:	CHKD. BY:	SHEET NO.: OF



ELEVATION 1: INSTALLATION OF LANDLOK® 300 TRM IN A CHANNEL

NOTE: ALL PINS ARE NOT SHOWN FOR THE PURPOSE OF CLARITY



DETAIL 1: CREST OF SLOPE (CUT) TRENCH

4.1 SITE PREPARATION - High Performance Turf Reinforcement Mat (HPTRM)

A. Grade an compact areas to be treated with HPTRM and compact. The top 6" of subgrade must be free of rock, debris and consist of a cohesive clay soil. If the existing subgrade material does not meet these standards the contractor is responsible for the import of acceptable material.
B. Remove large rocks, soil, roots, vegetation, and other sharp objects (larger than 2" in any dimension) that may come in contact with the installed HPTRM.
C. Prepare the 6" compacted seedbed by loosening the top 1/2" of soil above final subgrade.
D. Construct, as a minimum, 12"x12" anchor trenches at upstream and downstream ends of all areas to be protected by HPTRM. Anchor trenches at the upstream end of the channel shall be excavated to a depth that matches design (vapor depth,) excavate 6"x6" check slots at 25 to 30 foot intervals along length of channel. Cut longitudinal anchor slots 6"x6" in at least two rows for side slopes where dimensions are minimums and the dimensions details on the drawings will control.

4.2 INSTALLATION - HPTRM

A. A mandatory pre-construction conference with an Engineer representing the HPTRM manufacturer, contractor, and inspector must be completed. The conference is to be scheduled after the review of all submittals and notice to all parties involved. Installation by the contractor is not allowed without this conference.

The Contractor is to schedule the Engineer representing the HPTRM to inspect the site preparation prior to installation and the completed installation and provide a certified letter stating the site meets the manufacturer's recommendations.

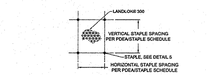
A. Install the HPTRM at elevation and alignment indicated.
B. The HPTRM, is to be soiled filled with 1/2" of fine soil, and vegetated by applying the right mixture of seed and soil amendments. Secure the HPTRM with staples and cover the surface by a light weight erosion control blanket, or by applying the right mixture of seed and soil amendments with a wood fiber mulch, protected by a light weight erosion control blanket, as specified by the Engineer, or as shown on the plans.
C. Beginning at downstream end in center of channel, place initial end of first roll of HPTRM in anchor trench and ensure with ground smoother devices at 12" intervals.
D. Overlap adjacent rolls in anchor trench in same manner, overlapping proceeding roll minimum 3".
E. Secure the HPTRM at 12" intervals along the trench, backfill and compact with specified soil and seed as shown on plans.
F. Unroll center strip of HPTRM upstream over compacted trench. Staple at next check slot or terminal anchor trench. Unroll adjacent rolls of HPTRM upstream in similar fashion, overlapping edges 3".
G. Fold and secure the HPTRM snugly into transverse check slots. Lay material in bottom of slot, and then fold it back against itself as indicated, anchor through both layers of HPTRM with staples. Backfill and compact the check slots with specified soil material within upstream over compacted slot in next check slot or terminal anchor trench.
H. Secure HPTRM to channel bottom with ground anchoring devices at a frequency of 2½/2" anchors per square yard. Anchors should be minimum of 8 gauge and 8" in length or as that they have sufficient ground penetration to resist pullout in a saturated condition. Additional anchoring frequency may be required if site conditions are such that the Engineer determines it necessary.
I. *At the Engineer's discretion a manufacturer's designated representative shall be on site during installation.*
J. Any installation of angular placement, overlapping around curves, or modified placement methods must be detailed on the construction drawings.
K. The Engineer must approve alternate installation methods prior to execution.

4.3 Irrigation, Mowing, and Project Acceptance

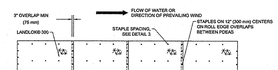
A. Prior to project acceptance by the owner, it shall be the responsibility of the contractor to establish a minimum of 70% of the area seeded shall be covered with the specified vegetation and it shall be free of weeds and undesirable grasses. The contractor shall be responsible to set up and maintain temporary irrigation, as required, to assist in establishment of vegetation.

All areas that erode prior to project acceptance shall be repaired at the expense of the contractor including necessary reseeding, watering, and repair of the HPTRM.

Vegetated areas shall not be mowed prior to establishment of 70% vegetative density and a minimum grass growth of 3". Mower height shall not be set lower than 3". Throughout the maintenance period, the grass shall be mowed to a height of 3" to 4" when it reaches 6" and shall not let the vegetation in the seeded areas exceed 10". In addition, the contractor shall water all grassed areas as often as necessary to establish satisfactory growth and to maintain its growth throughout the duration of the project.



DETAIL 3: STAPLE PATTERN



DETAIL 4: STAPLE PATTERN

DETAIL 5: 1"x" SHAPE STAPLE

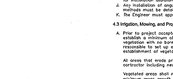
DETAIL 2: BREAK IN SLOPE INTERFACE

DETAIL 7: EMBEDDED CHECK SLOT DETAIL

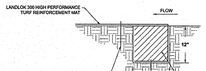
STAPLE SCHEDULE	
SEGURING DEVICE	STAPLE
HORIZONTAL PODA SPACING	2' (0.60 m)
VERTICAL PODA SPACING	2.5' (0.75 m)
EMBEDMENT DEPTH	PER MANUFACTURES DESIGN

NOTE: LANDLOK 300 SHOULD BE SHINGLED IN THE DIRECTION OF THE DOWN SLOPE AND FLOW

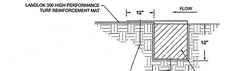
DETAIL 6: OVERLAP AT ROLL END DETAIL



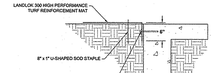
DETAIL 8: VEGETATION ESTABLISHMENT



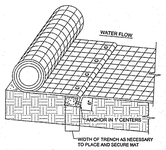
DETAIL 9: INITIAL CHANNEL (IC) TRENCH (DOWNSTREAM)



DETAIL 10: TERMINAL CHANNEL (TC) TRENCH (UPSTREAM)



DETAIL 11: CONCRETE/HPTRM CONNECTION DETAIL



NOTES:
1. SECURE AT 30 cm (1 ft) INTERVALS, BACKFILL AND COMPACT SOIL
2. SLOT @ EVERY 30 FEET

DETAIL 12: INTERMITTENT CHECK SLOT DETAIL

NOTE:
MATERIALS AVAILABLE FROM GEOSOLUTIONS, INC. 210-651-3816

PROPERTY	TEST METHOD	MAR[1] ENGLISH	MAR[1] METRIC
Physical			
Mass/Unit Area	ASTM D-6566	7.5 oz/yd²	254 g/m²
Thickness	ASTM D-6525	0.25 in	6.35 mm
Light Penetration (% Passing)	ASTM D-6567	50%	50%
Color	Visual	Green or Tan	
Mechanical			
Tensile Strength (Grab)	ASTM D-6818	2000 x 1800 lb/ft	29.2 x 26.2 kN/m
Elongation	ASTM D-6818	50% (max)	50% (max)
Resiliency	ASTM D-6524	70%	70%
Flexibility	ASTM D-6575	0.195 in-lb (avg)	225000 mg-cm (avg)
Endurance			
UV Resistance @ 3000 hours	ASTM D-4355	90%	90%
Performance			
Velocity[2] (Vegetated)	Large Scale	20 ft/sec	6.1 m/sec
Shear Stress[3] (Vegetated)	Large-Scale	12 lb/ft²	575 pa
Manning's n[4] (Unvegetated)	Calculated	0.030	0.030
Seedling Emergence[5]	ECTC Draft Method #4	-	-
Roll Sizes		8.5 ft x 106 ft	2.59 m x 32.3 m

REVISIONS

LANDLOK 300 INSTALLATION DETAILS

CHANNEL DETAILS

8105 BROKEN CREEK DRIVE
SAN ANTONIO, TEXAS 78268
Phone: 210-601-8816
www.geosolutions.com
Reg. Eng. Firm #F-1189

Scale: NOT TO SCALE
Date: 02/15/23
Drawn by: KF
Project No.: LANDLOK 300

SHEET 1 OF 1

KFW ENGINEERS + SURVEYING
3421 Paesanos Parkway, Suite 200 • San Antonio, Texas 78231
Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm #: 9513 • TBPLS Firm #: 10123300

ISSUE DATE
2/2/2023

REVISIONS
REVISED SHEET NUMBER

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED
PROFESSIONAL ENGINEER
2/17/2023

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

DRAIN DETAILS (SHEET 3 OF 3)

PLAT NO. 21-11800502

JOB NO. 205-41-07

DATE: JULY 2021

DRAWN: OM CHECKED: CL

SHEET NUMBER: 4.8

Date: Feb 08, 2023, 9:36am User ID: oneihers
File: P:\205\v1\07\Design\Civil\DRAINS\DR20541107.dwg

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NOTE:

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TRENCH EXCAVATION SAFETY PROTECTION

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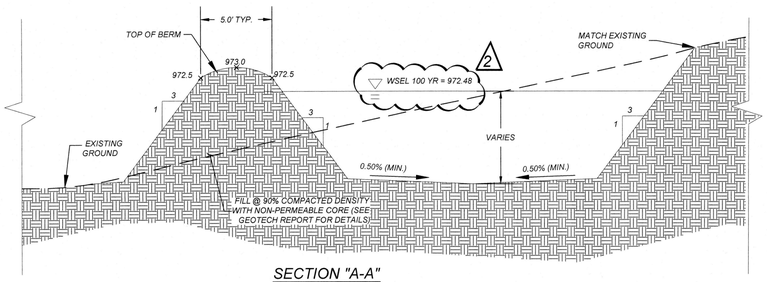


SECTION "A-A"
NOT-TO-SCALE

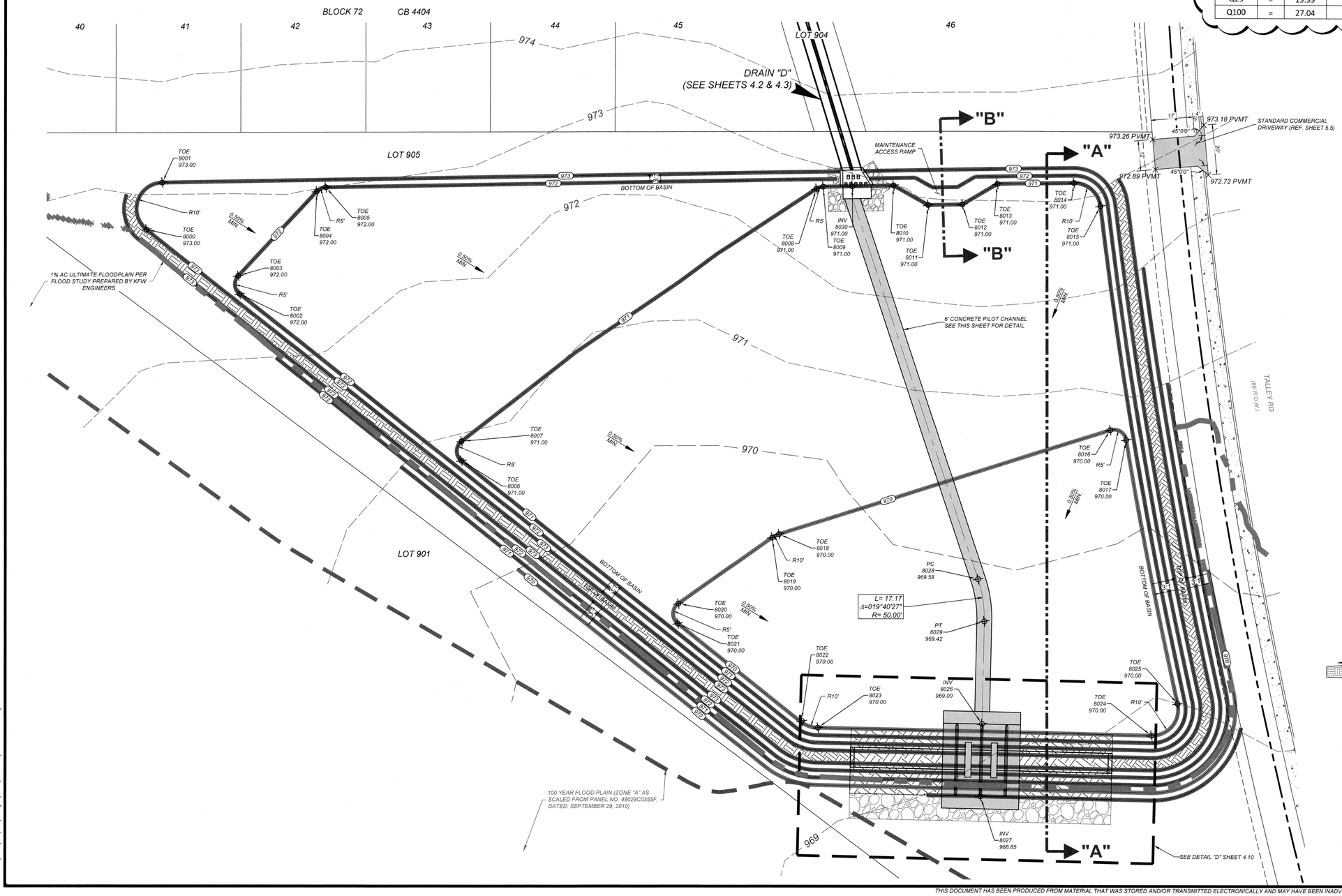
LEGEND

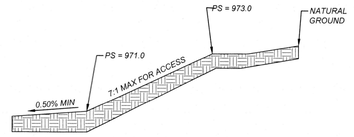
- FLOW ARROW
- 706 — EXISTING CONTOURS
- 707 — PROPOSED CONTOURS
- PROPERTY LINE
- POINT # 707.00 TOE — PROPOSED SPOT ELEVATION (TOE OF SLOPE)

SCALE : 1" = 20'

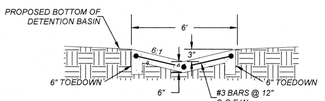
STAGE(FT)	STORAGE (SQFT)	ELEVATION	DISCHARGE (CFS)
0	0	969.0	0
1.00	5,580	970.0	3.37
2.00	35,401	971.0	9.47
3.00	88,205	972.0	17.56
4.00	151,405	973.0	39.58

PROPOSED DISCHARGE								
Q5	=	12.71	WSEL5	=	971.66	VEL5	=	4.01
Q25	=	19.99	WSEL25	=	972.14	VEL25	=	3.14
Q100	=	27.04	WSEL100	=	972.48	VEL100	=	3.34





SECTION "B-B"
NOT-TO-SCALE



TYPICAL PILOT CHANNEL
NOT-TO-SCALE

Point Table

Point #	Elevation	Northing	Easting
8000	973.00	13731100.70	2036386.81
8001	973.00	13731106.85	2036405.60
8002	972.00	13731055.16	2036388.55
8003	972.00	13731059.99	2036394.06
8004	972.00	13731055.30	2036439.89
8005	972.00	13731053.40	2036443.33
8006	971.00	13730943.81	2036388.46
8007	971.00	13730948.50	2036394.76
8008	971.00	13730895.57	2036561.15
8009	971.00	13730893.93	2036563.41
8010	971.00	13730871.57	2036580.78
8011	971.00	13730855.74	2036582.94
8012	971.00	13730844.91	2036591.36
8013	971.00	13730838.62	2036606.37
8014	971.00	13730814.27	2036625.28
8015	971.00	13730800.24	2036624.24
8016	970.00	13730743.20	2036554.89
8017	970.00	13730735.69	2036555.61
8018	970.00	13730824.23	2036441.59
8019	970.00	13730825.62	2036438.84
8020	970.00	13730839.76	2036394.97
8021	970.00	13730835.14	2036388.44
8022	970.00	13730771.81	2036387.18
8023	970.00	13730765.03	2036388.91
8024	970.00	13730656.32	2036466.97
8025	970.00	13730655.63	2036483.49
8026	969.00	13730713.32	2036429.73
8027	968.85	13730696.41	2036406.17
8028	969.58	13730749.55	2036475.17
8029	969.42	13730737.36	2036463.20
8030	971.00	13730884.70	2036570.57

KFW ENGINEERS + SURVEYING
3421 Paesanos Pkwy, Suite 200, San Antonio, TX 78231
Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm # 3913 • TBPLS Firm # 10122300

REVISIONS

	REVISED SHEET NUMBER	ISSUE DATE 2/2/2023
1	REVISED BASIN CALCULATIONS	4/11/2023

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
4/18/2023

MORGAN MEADOWS UNIT 1C
BEXAR COUNTY, TX

DETENTION BASIN "A" PLAN & PROFILE

PLAT NO. 21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN:OM CHECKED:CL

SHEET NUMBER: 4.9

Date: Apr 11, 2023, 1:48pm User ID: ecorona
File: P:\205\41\07\Design\Civil\DRAINS\BA20541O7.dwg

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LEGEND

- FLOW ARROW
- 706 — EXISTING CONTOURS
- 707 — PROPOSED CONTOURS
- PROPERTY LINE
- POINT # 707.00 TOE — PROPOSED SPOT ELEVATION (TOE OF SLOPE)

SCALE : 1" = 40'

0' 40' 120' 80'

3

STAGE(FT)	STORAGE (SQFT)	ELEVATION	DISCHARGE (CFS)
0	0	969.0	0
1.00	5,580	970.0	3.37
2.00	35,401	971.0	9.47
3.00	88,205	972.0	17.56
4.00	151,405	973.0	39.58

PROPOSED DISCHARGE									
Q5	=	12.71		WSEL5	=	971.66		VEL5	=	4.01
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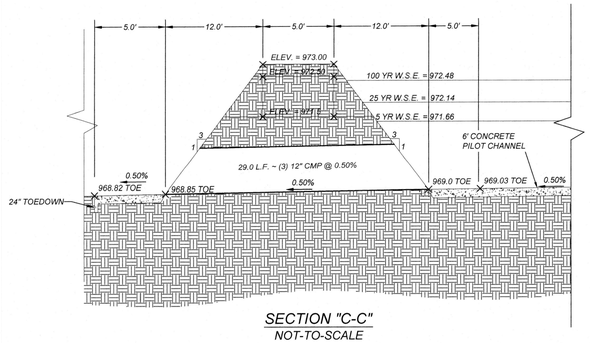
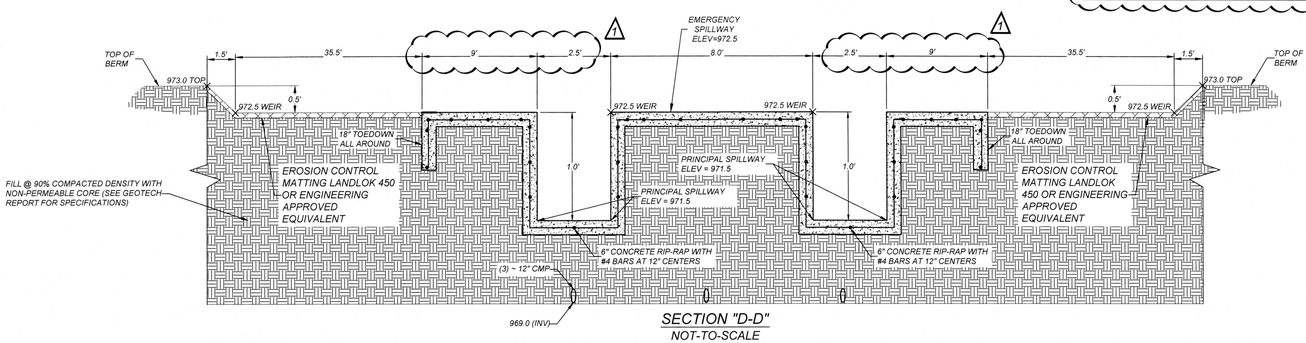
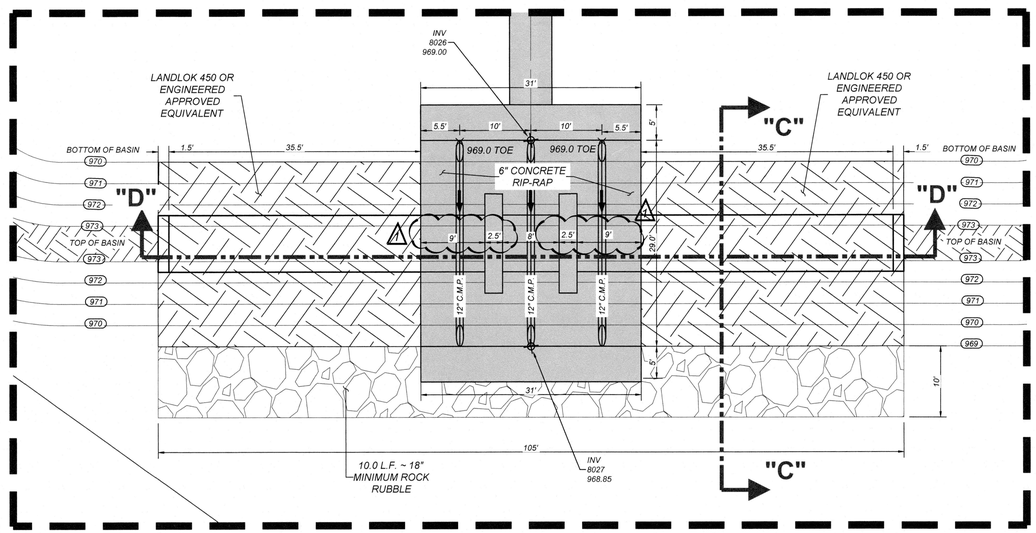


SECTION "C-C"
NOT-TO-SCALE



SECTION "D-D"
NOT-TO-SCALE



DETAIL "D"
SCALE: 1" = 10'

DETENTION BASIN "A"
EMERGENCY SPILLWAY CALCULATION

$L = \frac{Q100}{CH^{3/2}}$

$L = \frac{110.89\ cfs}{(3.087)(0.5)^{3/2}}$

$L_{REQ.} = 101.60$ FEET

$L_{USED} = 102.00$ FEET

KFW ENGINEERS + SURVEYING
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Phone: (210) 979-8444 Fax: (210) 979-8441
TBPE Firm # 19513 • TBPLS Firm #: 10122300

REVISIONS	ISSUE DATE
1 REVISED OUTFALL STRUCTURE	2/2/2023
2 REVISED SHEET NUMBER	2/2/2023
3 REVISED BASIN CALCULATIONS	4/17/2023

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
4/18/2023

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

DETENTION BASIN "A" DETAILS

PLAT NO. 21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN: OM CHECKED: CL

SHEET NUMBER: 4.10 (2)

Date: Apr 11, 2023, 1:48pm User ID: ecorona
File: P:\205\41\07\Design\Civil\DRAINS\BA2054107.dwg

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Installation Guidelines for Landlok® 450

Turf Reinforcement Mat (TRM)

Thank you for purchasing the Landlok® 450 Turf Reinforcement Mat (TRM) by Propex Operating Company, LLC (Propex). This document provides installation and maintenance guidelines for Landlok 450 used as slope armoring to increase earthen slope resiliency. Landlok 450 provides permanent erosion protection on either the flood side and/ or protected side of an earthen slope.

Temporary securing pins (pins) are used during installation to hold Landlok 450 in place. Pins also promote vegetation establishment keeping Landlok 450 in intimate contact with the soil.

Landlok 450 is an engineered solution with a unique design for each specific project. While Propex has made every effort to ensure general validity, this information should not be used for a specific application without independent professional examination and verification of its suitability, applicability, and accuracy. The information provided herein is for general information only, and is intended to present installation guidance. Project specific contract documents take precedence when pin placements are different than what is represented in this document. Depending upon the critical nature of the structure to be armored, work restrictions may be in place such as limiting work based on growing seasons, weather patterns, etc. Work should be performed under the provisions set forth for the specific project. Propex Engineering Services is available for support during installation to consult for solving constructability issues encountered in specific applications. Please feel free to call our technical support hotline at (423) 553-2450.

BEFORE INSTALLATION BEGINS

- *Coordinate with a Propex Representative:* A pre-construction meeting is suggested with the construction team and a representative from Propex. This meeting should be scheduled by the contractor with at least a two week notice.
- *Gather the Tools Needed:* Tools that you will need to install Landlok 450 include a pair of industrial shears to cut Landlok 450, tape measure, and mallet or hammer.
- *Determine how to Establish Vegetation:* The method of vegetation establishment should be determined prior to the start of installation. Different vegetation establishment methods require different orders of installation. Refer to *Establish Vegetation* for further guidance.

PREPARE THE SITE

It is recommended during all stages of site preparation that disturbed soils remain unprotected for not more than a single day. Depending on project size this may require progressive site preparation during installation.

1. Grade and compact the area on the slope where Landlok 450 will be installed. The slope surface should be uniform and smooth, having all rocks, clods, vegetation or other objects removed so that during *Landlok 450 Laydown*, Landlok 450 comes in direct, intimate contact with the slope surface.
2. Prepare the area to be armored with Landlok 450 by loosening the topsoil to promote better vegetation establishment. This may be accomplished with a rotary tiller on slopes 3:1 or flatter. For slopes greater than 3:1, prepare topsoil in a safe manner.
3. Excavate a Crest of Slope (COS) trench 12 in x 12 in (300 mm x 300 mm) minimum at a distance of 3 ft (900 mm) from the crest of the slope. (Figure 1).

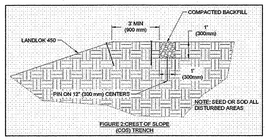

Figure 1: Crest of Slope (COS) Trench

4. Excavate a Toe of Slope (TOS) trench 12 in x 12 in (300 mm x 300 mm) minimum at a minimum distance of 5 ft (1.5 m) from the toe of the slope. (Figure 2)
5. If seeding, refer to *Vegetation Establishment* for additional considerations during site preparation.

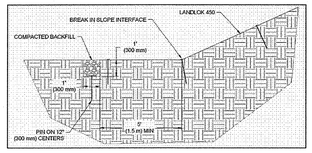

Figure 2: Toe of Slope (TOS) Trench

Propex | INSTALLATION GUIDELINES | LANDLOK® 450 TURF REINFORCEMENT MAT
GEOSYNTHETICS | CONCRETE REINFORCEMENT | SOIL & EROSION CONTROL | Infrastructure Solutions

LANDLOK 450 LAYDOWN

1. Begin the Landlok 450 laydown process by starting with the downstream / downwind end of the site. To ensure proper pining of the overlapped areas the proceeding roll width must be laid out before the current roll width can be pinned with exception to the final roll width. For straight sections of a slope, Landlok 450 panel lengths should be long enough to construct COS and TOS trenches while also covering the surface of the slope being armored (Figure 12). Panel edges should rest approximately perpendicular to the slope center line. For best results, panels of Landlok 450 should be continuous and free from seams or roll end overlaps that are parallel to the centerline of the slope. Panel edge overlapping should follow a pattern of placing each proceeding panel's edge overtop the previous panel edge, shingling the panels in the direction of the water flow or prevailing wind.
2. Starting at the COS trench, lay Landlok 450 roll so that the roll ends point towards the crest of the slope (Figure 3), with a 3 inch (75 mm) overlap created at adjacent panel edge locations. Ensure that adjacent panel edges maintain a minimum 3 inch overlap during Landlok 450 laydown. (Figure 8)

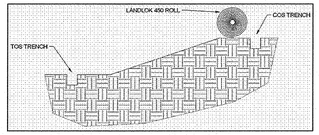

Figure 3: Crest of Slope (COS) Trench Alignment

3. Secure Landlok 450 with pins in the COS trench. Pins should be made of steel with a 0.20 in (5 mm) minimum diameter, having a 1.5 in (38mm) diameter washer at the head, and a length between 12 and 24 in (300-600 mm) with sufficient ground penetration to resist pullout (Figure 4). Longer pins may be required for looser soils. Heavier metal stakes may be required in rocky soils. Suggested placement of pins for the COS trench is along the bottom of the trench with pins on 12 in (300 mm) centers. Pins should also be installed on panel edge overlaps in the COS trench.

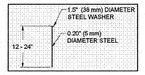

Figure 4: Securing Pin

4. Backfill and compact the COS trench in the location of the first Landlok 450 panel only (Figure 5).

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- For slope lengths greater than 45 ft (13.7 m), install simulated check slots. This method includes placing two rows of pins 12 in (300 mm) apart on 12 in (300 mm) centers at 45 ft (13.7 m) maximum intervals or across the midpoint of the slope for slope lengths less than 60 ft (18.2 m) (Figure 10).
- At the break in slope interface towards the TOS, it is suggested that pins be installed on 4 ft (1.2 m) centers (Figure 11).

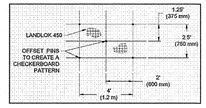

Figure 7: Example Pin Pattern

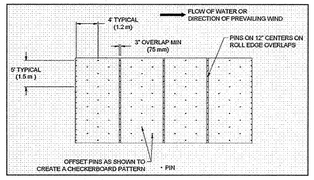

Figure 8: Example of Panel Overlap

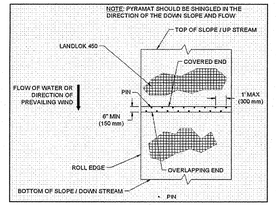

Figure 9: Roll End Overlap

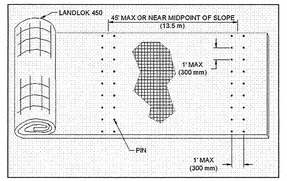

Figure 10: Simulated Check Slot

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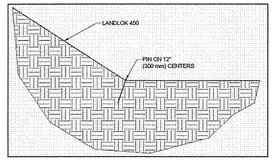

Figure 11: Break in Slope Interface

7. Secure Landlok 450 with pins in the TOS trench. Suggested placement of pins for the TOS trench is along the bottom of the trench with pins on 12 in (300 mm) centers (Figure 12).

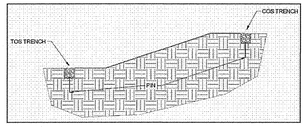

Figure 12: Crest of Slope (COS) Trench and Toe of Slope (TOS) Trench Complete

8. Backfill and compact the TOS trench. (Figure 12)
9. Continue to work down the length of the slope by repeating steps 1 through 8 overlapping each adjacent Landlok 450 panel by 3 inches (75 mm) (Figure 8). The last Landlok 450 panel should terminate on the Slope Armoring Edge (SAE) with pins on 12 in (300 mm) centers. At a minimum, Landlok 450 panels should be pinned entirely across the slope surface, pins should be installed in the trenches, and the trenches should be backfilled and compacted at the end of each day to minimize rework in the case of a major rain event. Specific project conditions may warrant further evaluation of installation order for ease.

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An example isometric view (Figure 13) of a slope armored with Landlok 450 can be seen below for overall reference. Consult Propex Engineering Services at (423) 553-2450 with any questions that you may have.

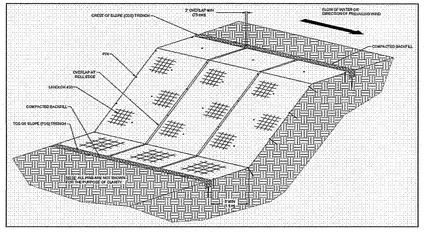

Figure 13: Completed Slope Isometric View

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ESTABLISH VEGETATION

Vegetation can be established with Landlok 450 by broadcast seeding, hydraulic seed application (hydroseeding), or sodding. Seed application rate, seed type, sod type, and irrigation rate should be selected based on local or site specific knowledge and time of year. For best results, consider having a site specific soil test performed to help determine what soil amendments, such as lime and fertilizer, need to be incorporated into the soil to promote healthy vegetation.

WITH SEED

1. Determine the seed location. Seed can be placed entirely on top of soil filled Landlok 450, or alternatively 50% below Landlok 450 prior to pinning, with the remainder placed on top of soil filled Landlok 450. If a rain event occurs prior to vegetation establishment, having 50% of the seed below Landlok 450 ensures that some seed remains in place. Seed placed entirely on top of soil filled Landlok 450 will allow for faster vegetation establishment.
2. If seeding below Landlok 450, ensure 50% of the seed is placed prior to the installation of Landlok 450.
3. Once Landlok 450 is in place, distribute soil on top by filling the pyramid like projections of Landlok 450. The proper amount can be visually measured by making the top ridges of the pyramid projections barely visible, or is approximately 1 inch thick when measured. Soil filling can be accomplished manually or by using a small piece of equipment. Do not place excessive soil above Landlok 450. See *Consider Project Specific Needs* for guidance on driving equipment across Landlok 450.
4. After seed has been placed, for added protection, install a Landlok Erosion Control Blanket (ECB) above the soil-filled Landlok 450.
5. Irrigate as necessary to establish and maintain vegetation until 75% of vegetation has established and has reached a height of 2 inches. Frequent, light irrigation will need to be applied to seeded areas if natural rain events have not occurred within two weeks of seeding. When watering seeded areas, use a fine spray to prevent erosion of seeds or soil. Do not over irrigate. Proper irrigation guidance is provided under the Maintenance portion of this document.

WITH SOD

1. Sod will be always placed on top of Landlok 450.
2. Sod staples should be used to secure the sod against Landlok 450. During the placement of the sod, ensure that Landlok 450 is 100% covered by tightly adjoining rolls or squares of sod along edges. Any voids in between sod pieces should be filled with clean loose soil.
3. Irrigate as necessary. Proper irrigation guidance is provided under the Maintenance portion of this document.
4. Monitor to identify areas where browned/dead sod emerges. These areas may need to be addressed to ensure proper sod establishment.

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CONSIDER PROJECT SPECIFIC NEEDS

1. For applications that require special transitions (i.e. connections to riprap, concrete, T-walls, etc.), refer to the project specific drawings or consult with Propex Engineering Services at (423) 553-2450.
2. A deeper terminal trench and/or hard armoring may be required when slopes have severe scour potential at the toe location.
3. For installing Landlok 450 panels around curved sections of a slope, trim panels at an angle so that no more than two layers of Landlok 450 overlap at any point in time. Additional pins may be needed to secure panel edges towards the toe of the slope depending upon the radius of the curved slope. Install pins as necessary to securely fasten Landlok 450 to the ground.
4. Allowable Vehicle Traffic:
   A. If using equipment on Landlok 450, it should be of the rubber-tired type and should avoid sharp turns. Tracked equipment is not permitted to drive over the Landlok 450 without vegetation at any time.
   B. Avoid any traffic over Landlok 450 if loose or wet soil conditions exist.
5. Disturbed areas should be reseeded. If ruts or depressions develop for any reason, rework soil until smooth and reseed such areas.
6. Do not mulch areas where Landlok 450 is to be placed.

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SHORT-TERM AND LONG-TERM MAINTENANCE OF LANDLOK 450

The purpose of this section is to provide some general guidelines for performing short-term and long-term maintenance of Landlok 450 with respect to maintaining vegetation reinforced with Landlok 450, and patching of Landlok 450 (in the event it needs to be removed or replaced). These procedures are to be considered minimum guidelines for proper maintenance, and further maintenance techniques may be appropriate considering local practices and procedures.

LANDLOK 450 PROTECTED SLOPES

For Landlok 450 to be most effective, it is important to ensure that it is properly maintained both during construction and after construction. Identifying trouble areas is easy with Landlok 450, and it can make identifying potential threats much simpler and manageable. Look for areas with sparse, dying, or no vegetation as these are obvious signs that Landlok 450 is losing intimate contact with the slope surface. If loss of ground surface occurs, Landlok 450 will need to be removed and reinstalled as described in *Patching and Repairs* Section after the eroded area is backfilled with compacted soil that is similar to material of the slope. After Landlok 450 is reinstalled, re-establish vegetation on the newly installed Landlok 450 and disturbed areas. Monitor the sites to determine if frequent watering may be required to establish vegetation.

To minimize exposure to unwanted maintenance and repair, Landlok 450 armored slopes should be free of unauthorized vehicular traffic. Routine maintenance and slope inspections should be performed with rubber tired vehicles. Tracked equipment such as skid steers, excavators, or dozers should only be allowed to traffic over Landlok 450 in times of emergency after vegetation establishment is complete. Failure to control unauthorized traffic can result in Landlok 450 being damaged resulting in erosion below Landlok 450 during storm events. In addition, routine mowing maintenance should be used to keep the protected area free of unwanted brush, saplings, and trees. Selective herbicides that target only the unwanted plants can be used as long as the vegetation established with Landlok 450 is not impaired. Failure to control the sapling and tree growth can result in the trees being uprooted during a flood.

MAINTAINING VEGETATION

Good vegetative cover will ensure maximum performance of Landlok 450. Vegetative cover care starts before a project is complete and is ongoing until all Landlok 450 is installed. Vegetative cover should be given every opportunity to grow and establish well. This will require that a contractor periodically fertilize, water, and mow the grasses as needed until a project is complete in the short-term, with the owner of the slope fulfilling the maintenance of the slope in a similar fashion for the long-term. For the entire lifecycle of Landlok 450, every effort must be made to prevent unauthorized encroachments, grazing, vehicle traffic, the misuse of chemicals, or burning during inappropriate seasons.

1. After the installation of vegetation is complete, immediately water and soak the entire area using a fine spray to prevent erosion and loss of seeds. A suggested amount of water is identified below. Prior to installation if using sod, the sod pads in storage should be kept moist at all times and not stored for more than 24 hours from site arrival to installation. Warmer weather will necessitate more frequent applications than listed below.
   A. For each reach/segment of installed vegetation, watering shall be conducted immediately after each installation or the day's work.
   B. First 30 days, completed segments shall be watered daily with a minimum of 0.75 and a maximum of 1.0 inches per square foot per day (20,364 gallons minimum, 27,152 gallons maximum per acre per day).
   C. Second 30 days, the watering may be reduced to 0.50 inches per square foot per day (13,576 gallons maximum per acre per day) or as required based upon the condition of the sod.
   D. Avoid excessive application of water, so that surface runoff does not occur. Runoff should be prohibited. However, additional watering may be required for repaired or damaged areas.
4. Initial fertilizing should be applied 14 days after vegetation is placed, using 25-lbs per acre ammonium nitrate or ammonium sulfate. Post-fertilization should be conducted 30 to 45 days after installation, using an application rate of 25-lbs per acre (ammonium nitrate or ammonium sulfate). Application example: in order to apply ammonium nitrate or ammonium sulfate at a rate of 25-lbs per acre, 75 lbs of 33-0-0 is required.
5. Implement best practices for mowing over Landlok 450. While Landlok 450 is designed to withstand non-hydraulic stresses such as mowing, there are procedures to minimize exposure to unwanted damage.
   A. Immediately after installation, signage and post shall be installed stating that "Vehicles and Pedestrians are Prohibited from Access" on the slopes and the newly installed vegetation. Signage shall be posted every 1,500 lineal feet.
   B. Vegetated areas should be mowed to a height no less than 6 inches and no greater than 12 inches from natural ground after a period of 60 days of growth. The excessive grass clippings created from mowing shall be evenly spread on the slope section outside of the armored area. Periodic and final grass mowing should be performed until final inspection and acceptance of slope work. Monitor the vegetated areas throughout winter months and generate reports as needed, noting any issues that should be addressed.
   C. To prevent damage to the newly established vegetation, the mowing tractor should be fitted with 3-rib agriculture tires. Note that tractors with 8-foot flail mowers provide best results. Tractors with 15-foot brush hogs should avoid sharp turns up the slope to prevent damage to vegetation.
   D. Mowing should not take place for a minimum of 48 hours after a rainfall event of 2 inches or more to minimize the potential for rutting and/or damage to the slope surface. Maintenance mowing of the slope should be done on a consistent basis to prevent vegetation growing to more than 3 feet in height. This will minimize thatch thickness and potential damage to Landlok 450. If turn-around pads are present, operate mowing equipment utilizing the turn-around pads to the fullest extent. The mowing blade height over Landlok 450 should be a minimum of 6 inches. However, should vegetation grow to more than 3 feet in height, the mowing blade height for the condition should be a minimum of 12 inches.
6. Some special circumstances may exist. When mowing the crown of a slope with a crown or crest equal to or exceeding 20%, it should be mowed with an articulating arm mower to minimize the potential for the mower blades to catch Landlok 450 at the slope surface. The articulating arm mower should be level on the surface with the articulating arm extending over the crown. **Pay close attention to areas where the slope changes.** The mower blades should be set at a minimum height of 8 inches. If Landlok 450 is damaged by the mowing blades at any time, mowing should stop immediately and further direction should be obtained to continue activity. Repair the damaged area as described in the *Patching and Repairs* section below.
7. Landlok 450 protected slopes are not as susceptible to animal burrowing due the tenacity of the Landlok 450; however, inspections to detect the presence of burrowing animal activity are generally most effective immediately after the slope has been mowed. Animal burrows that are identified should be thoroughly excavated and inspected, backfilled with compacted soil that is similar to material of the slope, and vegetation re-established. This will avoid the possibility of water piping through unfilled portions of the burrows. Should Landlok 450 be damaged, it is to be repaired as described *Patching and Repairs* section below.

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PATCHING AND REPAIRS

Landlok 450 may require localized repair at times. For emergency repairs, an adequate supply of Landlok 450 should be maintained in inventory with the necessary tools to install. This will allow for a timely, initial repair of the system.

1. In order to identify areas in need of repair, the site should be patrolled immediately after mowing and after rain events of 2 inches or more. When patrolling look for areas of sparse vegetation, exposed edges of Landlok 450, and areas where direct contact between Landlok 450 and the slope surface is compromised. Landlok 450 should be rated as *Acceptable, Minimally Acceptable*, or *Unacceptable* during inspection.
   A. *Acceptable (A)* - The rated area is in satisfactory, acceptable condition, and will function as designed and intended during the rain event. Landlok 450 has no exposed edges, is installed tightly by maintaining direct contact to the slope surface with no rilling beneath, and has over 90% vegetation cover. There is no noticeable damage present.
   B. *Minimally Acceptable (M)* - The rated area has a minor deficiency that needs to be corrected. The minor deficiency will not seriously impair the functioning of the area during the next rain event; however, the overall reliability of the project will be lowered because of the minor deficiency. Landlok 450 has 75% vegetation cover with unvegetated patches as large as one square yard. Edges of Landlok 450 are exposed with noticeable damage. Minimal erosion has occurred underneath Landlok 450.
   C. *Unacceptable (U)* - The rated area is unsatisfactory. The deficiency is so serious that the area will not adequately function in the next rain event. Landlok 450 has been physically torn, ripped, or lifted from the slope surface. Less than 75% vegetation cover is present with unvegetated patches being greater than 1 square yard, and there is evidence that erosion is occurring beneath Landlok 450.
2. Repair any raised or exposed edges of Landlok 450 by driving existing and additional pins along the edges as necessary to securely fasten to the ground. Inspect areas where the vegetation is not growing on top of Landlok 450. Many times this is an indicator that Landlok 450 has lost contact with the ground beneath. Check for voids beneath Landlok 450 and fill any holes, gullies, etc. with compacted fill material if required. Replace Landlok 450 as described below.
3. To repair Landlok 450, cut out and remove damaged areas in a square configuration a minimum size of 2 ft by 2 ft. Remove all vegetation and debris atop of Landlok 450. Loosen the top 1 to 2 in of soil in the patch area then seed. The subgrade of area to be patched shall be prepared to be smooth and uniform and transition smoothly into the in-situ area. Cut a square Landlok 450 patch a minimum of 12 in greater than the damaged area for all four sides of the patch. Overlap the patch area in all directions a minimum of 12 in. The patch overlaps shall be tucked under the existing damaged Landlok 450 material (Figure 14 and Figure 15)

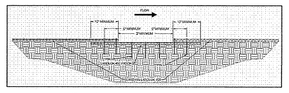

Figure 14: Landlok 450 Patch Cross Section

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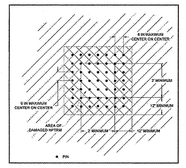

Figure 15: Landlok 450 Patch Plan View

4. Install pins on 6 in (150 mm) (max) centers. For larger areas of damage, pins should be installed to match existing pin pattern. Once Landlok 450 is in place, vegetate per project specifications.

SUMMARY

Maintenance should consist of watering and weeding, repair of all erosion, and any re-seeding as necessary to establish a uniform stand of vegetation during construction and beyond. A minimum of 70% of the armored area should be covered with no bare or dead spots greater than 10 ft² (1 m²). Establishing vegetation should not be mowed prior to 70% vegetative density and a minimum grass growth of 4 in (100 mm). Throughout the duration of the project, the contractor should be responsible for mowing to facilitate growth and should not let the vegetation in the armored areas exceed 18 in (450 mm). In addition, the Contractor should water all grassed areas as often as necessary to establish satisfactory growth and to maintain its growth throughout the duration of the project. After the project is complete, it is the responsibility of the Owner to maintain and upkeep all Landlok 450 installed areas for long term performance and best results as described herein for superior slope armoring.

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ISSUE DATE
2/2/2023

REVISIONS
REVISED SHEET NUMBER
1

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
2/17/2023

MORGAN MEADOWS UNIT 1C
BEXAR COUNTY, TX
DETENTION BASIN "A" DETAILS

PLAT NO. 21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN:OM CHECKED:CL

SHEET NUMBER: 4.11

Date: Feb 08, 2023, 9:37am User ID: omeihers
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TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!:

THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCT BANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

BEXAR COUNTY R.O.W. NOTE

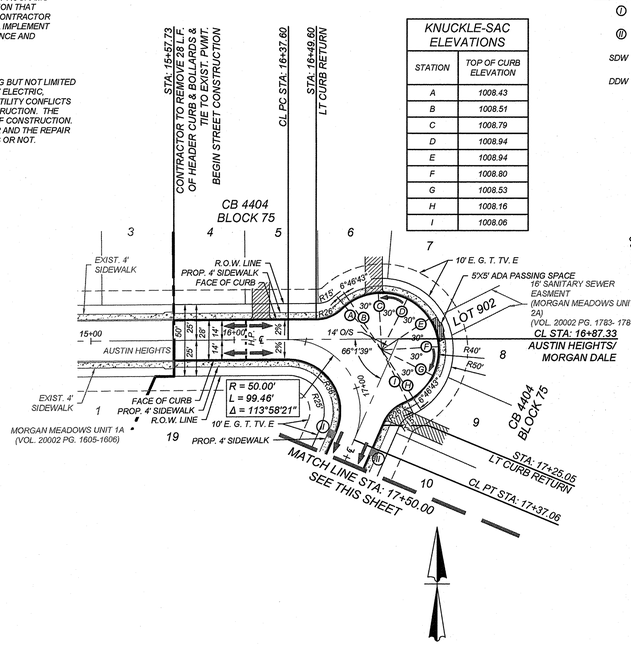
A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.

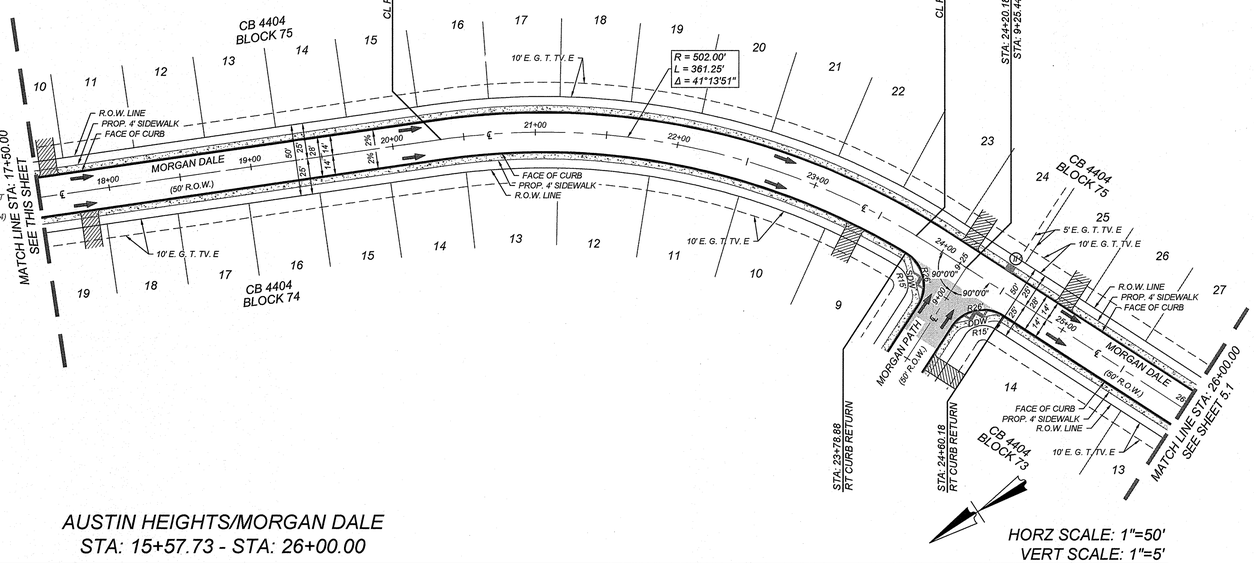
LEGEND

R.O.W. = RIGHT OF WAY
G.E.T.TV.E. = GAS, ELECTRIC, TELEPHONE & CABLE EASEMENT
= WASHOUT CROWN
(I) = WHEELCHAIR RAMP TYPE I SEE SHEET 5.6
(II) = WHEELCHAIR RAMP TYPE II SEE SHEET 5.6
SDW = SINGLE DIRECTIONAL WHEELCHAIR RAMP SEE SHEET 5.6
DDW = DUAL DIRECTIONAL WHEELCHAIR RAMP SEE SHEET 5.6
= SIDEWALK TO BE CONSTRUCTED BY DEVELOPER
= SIDEWALK TO BE BUILT AT THE TIME OF HOME CONSTRUCTION
= PROPOSED DRIVEWAY LOCATION
H.P. = HIGH POINT
L.P. = LOW POINT
= FLOW ARROW

KNUCKLE-SAC ELEVATIONS

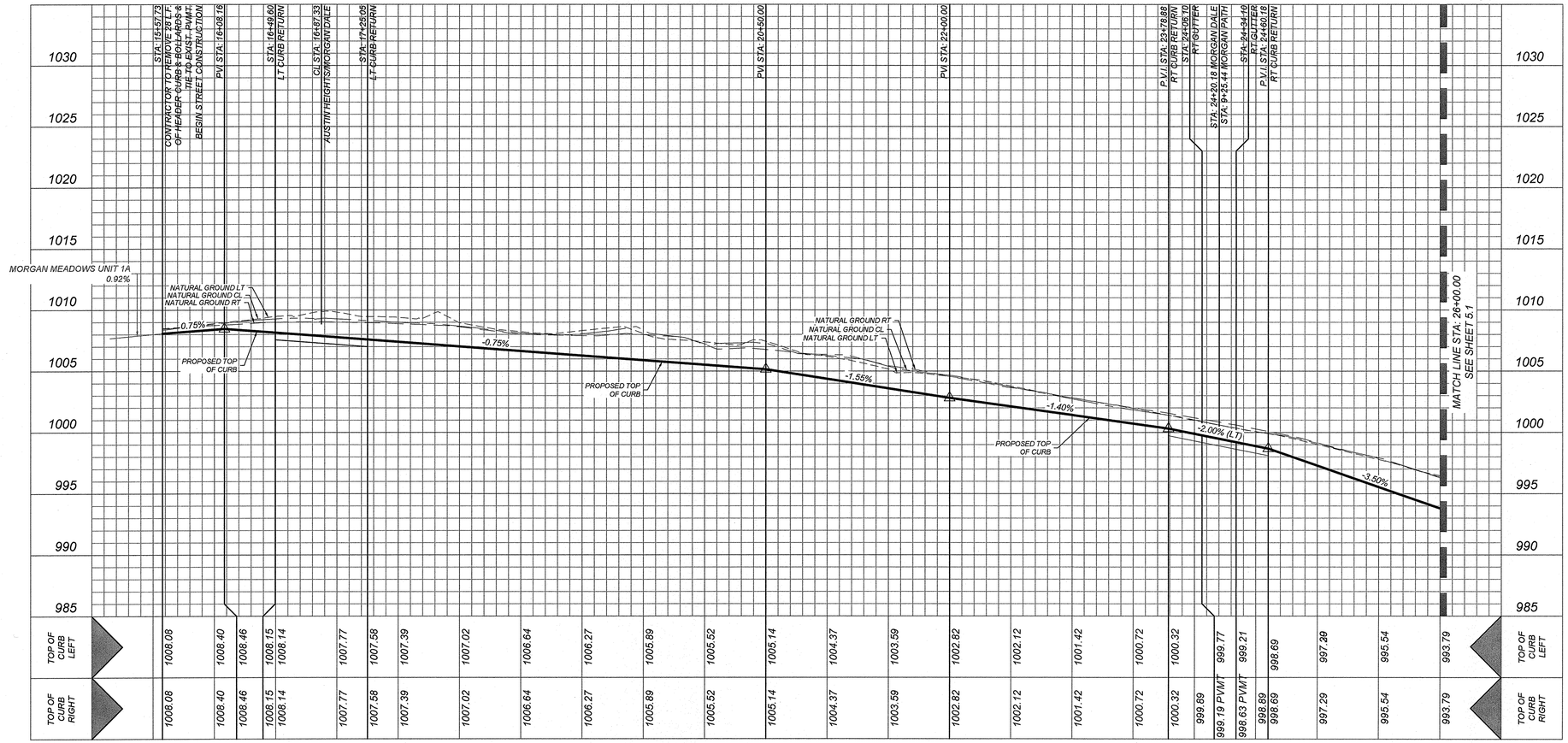
STATION	TOP OF CURB ELEVATION
A	1008.43
B	1008.51
C	1008.79
D	1008.94
E	1008.94
F	1008.80
G	1008.53
H	1008.16
I	1008.06





AUSTIN HEIGHTS/MORGAN DALE
STA: 15+57.73 - STA: 26+00.00

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



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TBPE Firm # 3613 • TBPLS Firm #: 10123300

ISSUE DATE

REVISIONS

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
6/15/2022

MORGAN MEADOWS UNIT 1C
BEXAR COUNTY, TX
AUSTIN HEIGHTS & MORGAN DALE PLAN & PROFILE
(SHEET 1 OF 2)

PLAT NO. 21-11800502
JOB NO. 205-41-07
DATE: JULY 2021
DRAWN: OM CHECKED: CL
SHEET NUMBER: 5.0

Date: Jun 14, 2022, 3:38pm User ID: eserong
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TRENCH EXCAVATION SAFETY PROTECTION

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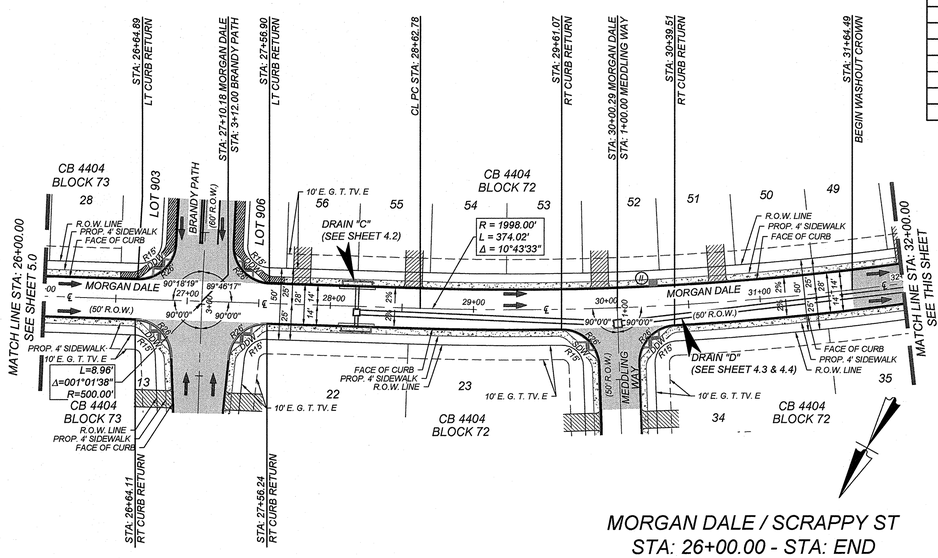
BEXAR COUNTY R.O.W. NOTE

A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.

KNUCKLE-SAC ELEVATIONS	
STATION	TOP OF CURB ELEVATION
A	978.80
B	978.49
C	978.58
D	978.19
E	977.95
F	977.84
G	977.92
H	978.10

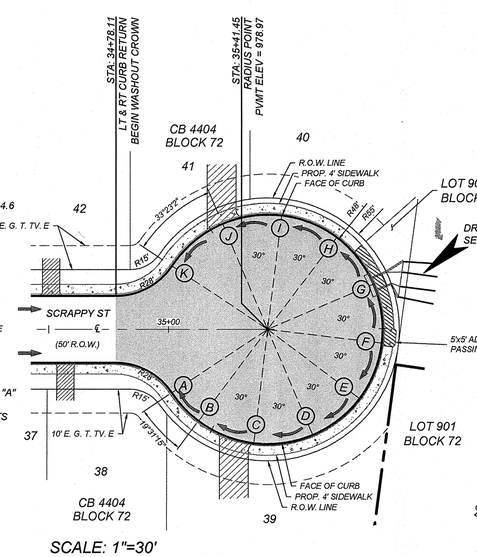
LEGEND

R.O.W. = RIGHT OF WAY
G.E.T.T.V.E. = GAS, ELECTRIC, TELEPHONE & CABLE EASEMENT
= WASHOUT CROWN
(I) = WHEELCHAIR RAMP TYPE I SEE SHEET 5.6
(II) = WHEELCHAIR RAMP TYPE II SEE SHEET 5.6
SDW = SINGLE DIRECTIONAL WHEELCHAIR RAMP SEE SHEET 5.6
DDW = DUAL DIRECTIONAL WHEELCHAIR RAMP SEE SHEET 5.6
= SIDEWALK TO BE CONSTRUCTED BY DEVELOPER
= SIDEWALK TO BE BUILT AT THE TIME OF HOME CONSTRUCTION
= PROPOSED DRIVEWAY LOCATION
H.P. = HIGH POINT
L.P. = LOW POINT
= FLOW ARROW



MORGAN DALE / SCRAPPY ST
STA: 26+00.00 - STA: END

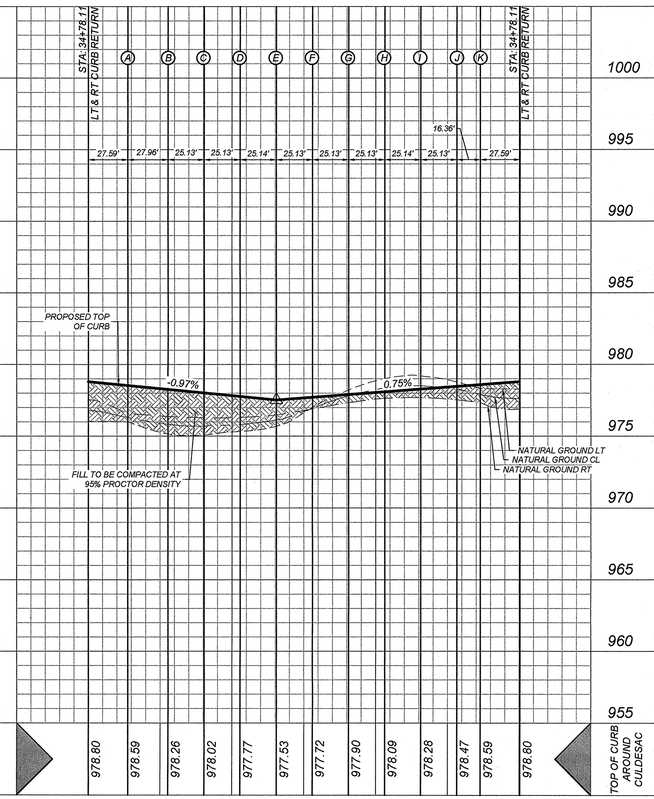
HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'

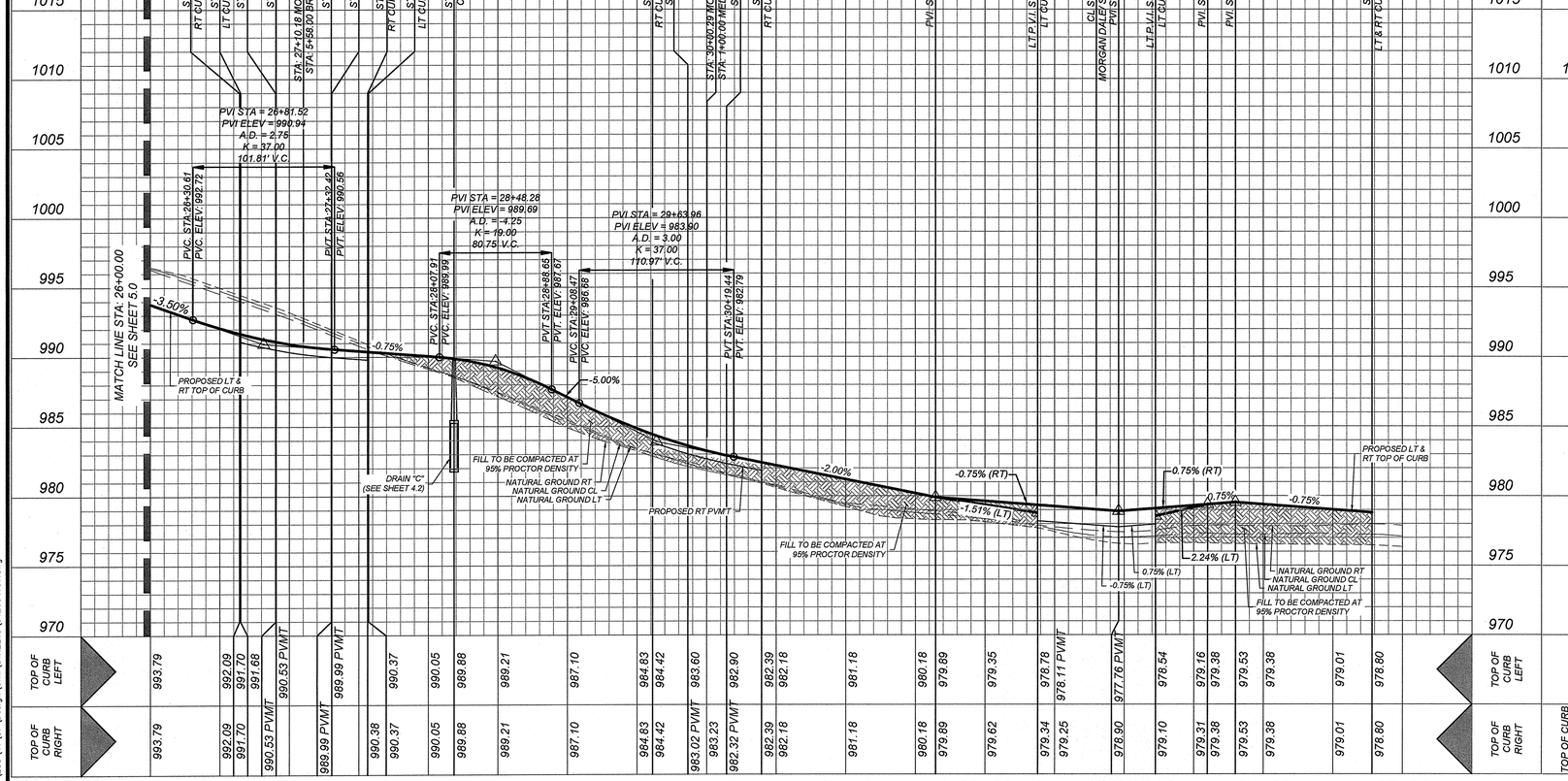


SCALE: 1"=30'

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'

CUL-DE-SAC DETAIL





	26+00	27+00	28+00	29+00	30+00	31+00	32+00	33+00	34+00	35+00
TOP OF CURB LEFT	993.79	992.09 / 991.70 / 991.68 / 990.53 PVMT	989.99 PVMT	990.38 / 990.37 / 990.05	989.88 / 989.21	987.10	984.83 / 984.42 / 983.60	983.02 PVMT / 983.23 / 982.90	982.32 PVMT / 982.39 / 982.18	981.18 / 980.18 / 979.89 / 979.35 / 978.78 / 978.11 PVMT / 977.76 PVMT / 978.54 / 979.16 / 979.38 / 979.53 / 979.38 / 979.01 / 978.80
TOP OF CURB RIGHT	993.79	992.09 / 991.70 / 991.68 / 990.53 PVMT	989.99 PVMT	990.38 / 990.37 / 990.05	989.88 / 989.21	987.10	984.83 / 984.42 / 983.60	983.02 PVMT / 983.23 / 982.90	982.32 PVMT / 982.39 / 982.18	981.18 / 980.18 / 979.89 / 979.62 / 979.34 / 979.25 / 978.90 / 979.10 / 979.31 / 979.38 / 979.53 / 979.38 / 979.01 / 978.80

TOP OF CURB AROUND CULDESAC	1000	995	990	985	980	975	970	965	960	955
	978.80	978.59	978.26	978.02	977.77	977.53	977.72	977.90	978.09	978.28	978.47	978.59	978.80

KFW ENGINEERS + SURVEYING
3421 Paesanos Pkwy, Suite 200, San Antonio, TX 78231
Phone #: (210) 979-8444 Fax #: (210) 979-8441
TBPE Firm #: 8131 TBPLS Firm #: 10028300

ISSUE DATE

REVISIONS

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
6/15/2022

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

MORGAN DALE & SCRAPPY ST PLAN & PROFILE
(SHEET 2 OF 2)

PLAT NO. 21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN:OM CHECKED:CL

SHEET NUMBER:
5.1

Date: Jun 14, 2022, 3:43pm User ID: ecorona
File: P:\205\41\07\Design\Civil\STREETS\ST20541107.dwg

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BEXAR COUNTY R.O.W. NOTE

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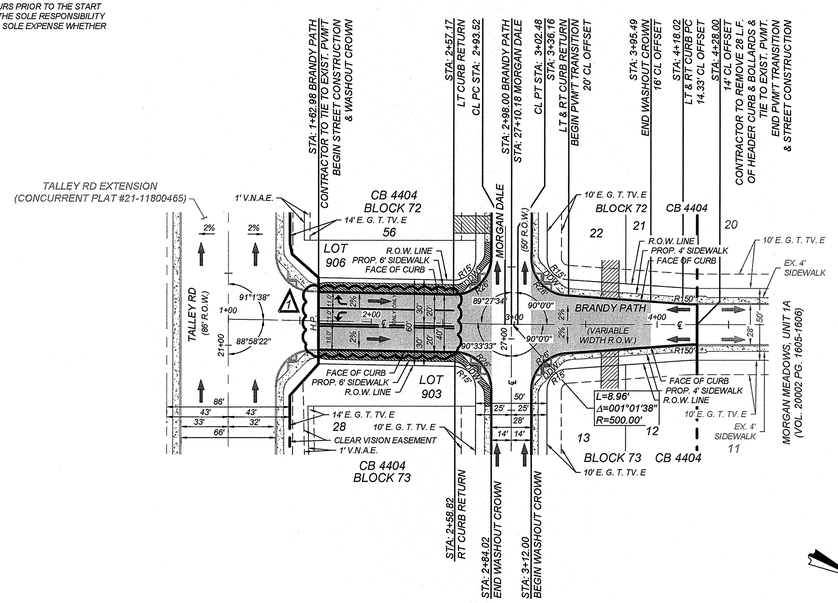

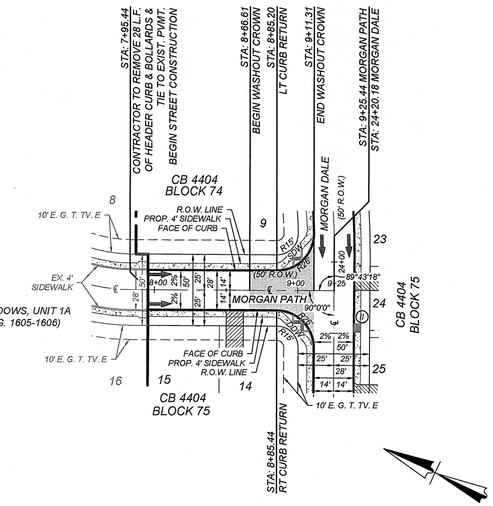

LEGEND

R.O.W.	= RIGHT OF WAY		= SIDEWALK TO BE CONSTRUCTED BY DEVELOPER
G.E.T.TV.E.	= GAS, ELECTRIC, TELEPHONE & CABLE EASEMENT		= SIDEWALK TO BE BUILT AT THE TIME OF HOME CONSTRUCTION
	= WASHOUT CROWN		= PROPOSED DRIVEWAY LOCATION
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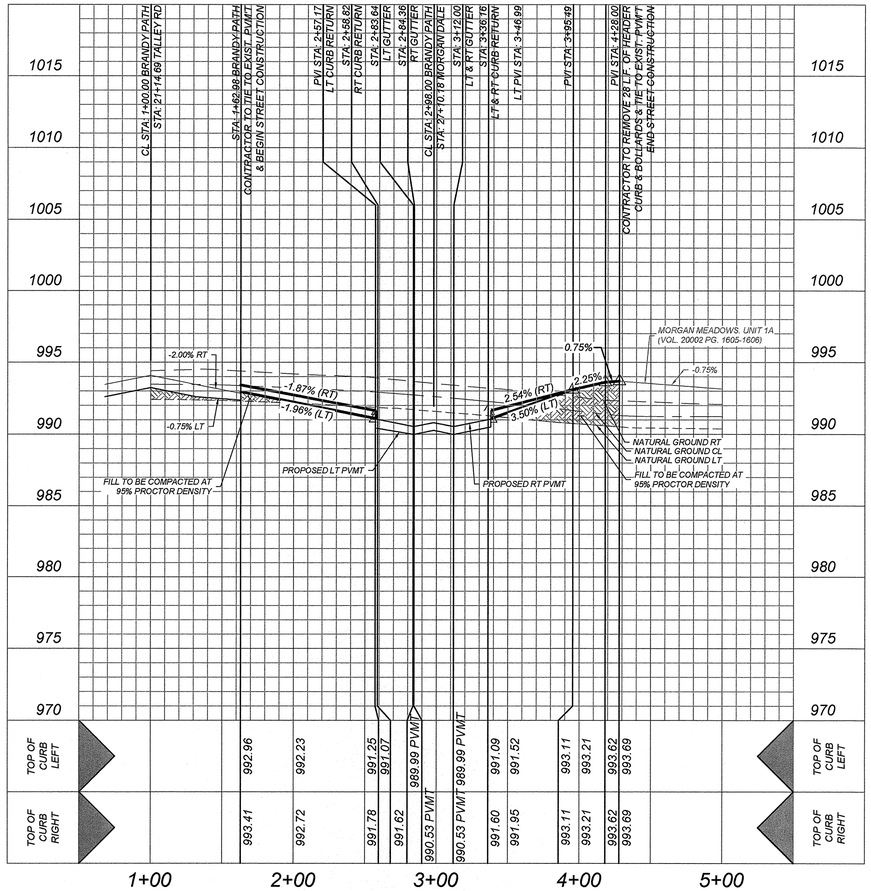
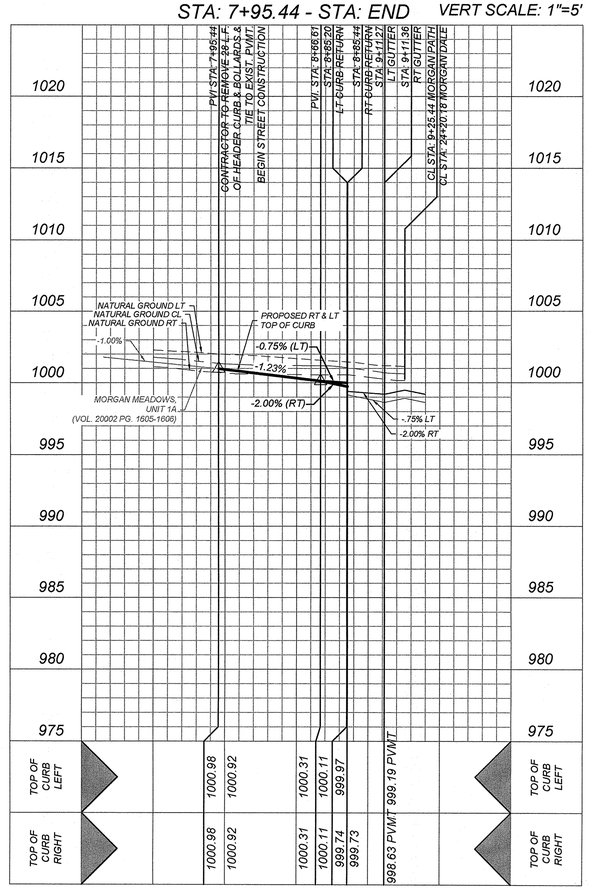
BRANDY PATH
STA: 1+62.98 - STA: 4+28.00

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



MORGAN PATH
STA: 7+95.44 - STA: END

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



KFW ENGINEERS + SURVEYING
3421 Paesanos Parkway, Suite 200 San Antonio, TX 78231
Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm #: 9513 • TBPLS Firm #: 10122800

REVISIONS / ISSUE DATE
ADDED LEFT AND RIGHT TURN LANES AT ENTRY — 4/15/2022

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
6/23/2022

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

BRANDY PATH & MORGAN PATH PLAN & PROFILE

PLAT NO. 21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN: OM CHECKED: CL

SHEET NUMBER: 5.2

Date: Jun 23, 2022, 1:27pm User ID: aconcno
File: P:\205\41\07\Design\Civil\STREETS\ST20541107.dwg

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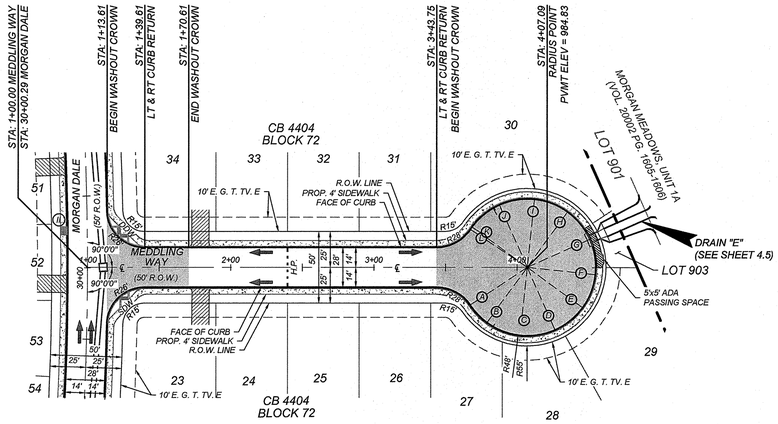
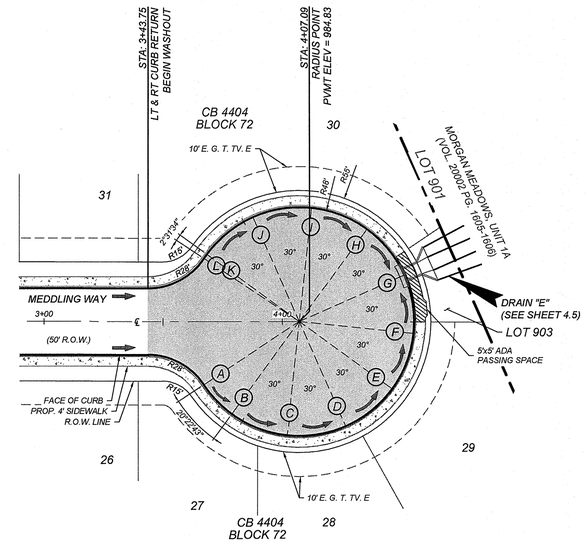


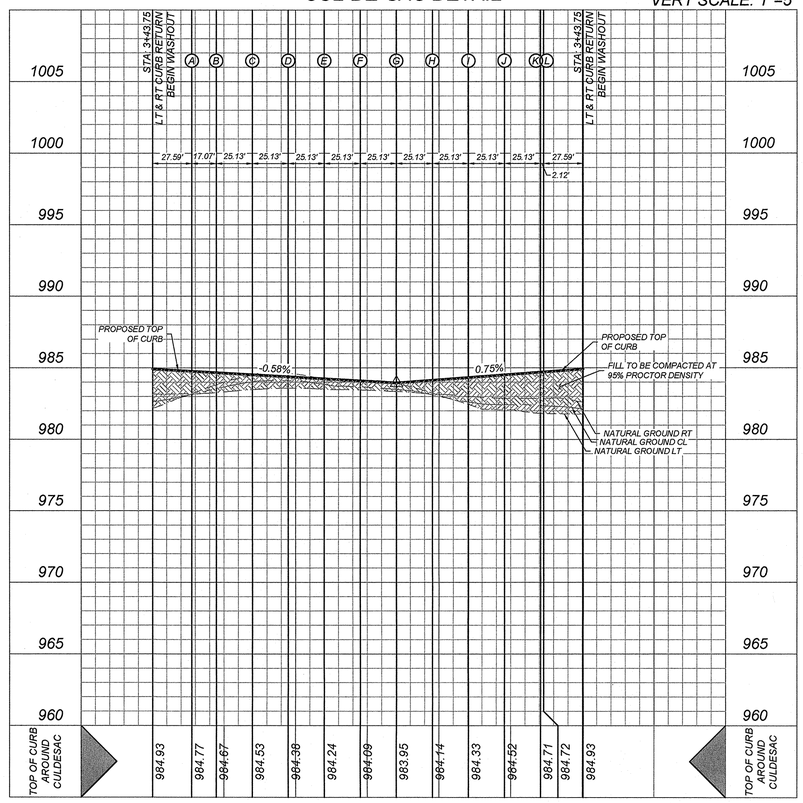
MEDDLING WAY
STA: 1+00.00 - END

HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'



CUL-DE-SAC DETAIL

HORZ SCALE: 1"=30'
VERT SCALE: 1"=5'



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ENGINEERS + SURVEYING
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Phone: 210.979.8444 Fax: 210.979.8441
TBPE Firm #: 5619 • TBPLS Firm #: 10122300

ISSUE DATE

REVISIONS

CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
6/23/2022

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

MEDDLING WAY PLAN & PROFILE

PLAT NO. 21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN:OM CHECKED:CL

SHEET NUMBER:

5.3

Date: Jun 23, 2022, 8:29am User ID: aspross
File: P:\205\41\07\Design\Civil\STREETS\ST20541107.dwg

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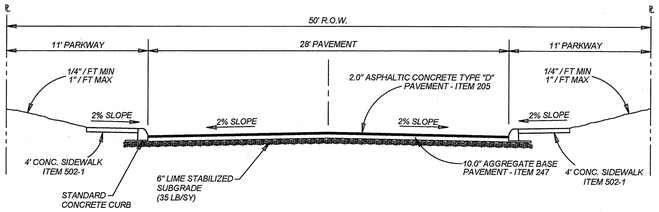


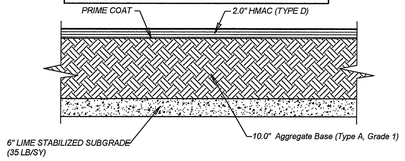
TYPICAL LOCAL "A" STREET SECTION

NOT TO SCALE

USE LOCAL "A" STREET SECTION FOR STREETS BELOW:

AUSTIN HEIGHTS: STA. 15+57.73 - 16+87.33
MORGAN DALE: STA. 16+87.33 - 26+90.46
STA. 27+30.60 - 32+80.16
SCRAPPY ST: STA. 32+80.16 - END
MEDDLING WAY: STA. 1+00.00 - END
MORGAN PATH: STA. 7+95.44 - END

Pavement Section
2.0" HMAC Type "D"
10.0" Aggregate Base (Type A, Grade 1)
6.0" Lime Stablized Subgrade (35 LB/SY)
Total: 18.0"
Structural No: 2.76
CBR: 2.5



ASPHALT PAVEMENT DETAIL

NOT-TO-SCALE

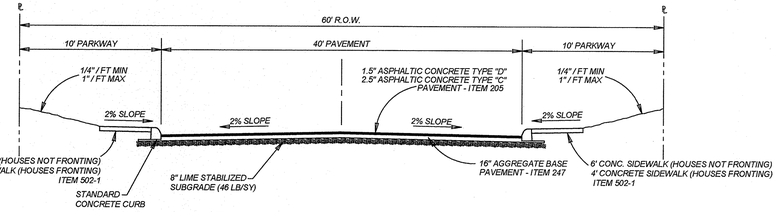
DETAIL FOR ALL LOCAL TYPE A

NOTES:
1. PAVEMENT DESIGN THICKNESS BASED ON GEOTECHNICAL REPORT BY INTEC, LLC. PROJECT NO. S211392 DATED SEPTEMBER 29, 2021.

2. REFERENCE PROJECT GEOTECHNICAL REPORT AND PROJECT SPECIFICATION FOR ADDITIONAL REQUIREMENTS AND ALTERNATE PAVEMENT SECTIONS.

3. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING MATERIAL TESTING. TESTING TO BE PAID BY OWNER.

4. CONTRACTOR MAY LEAVE VERTICAL CUT BANKS AT R.O.W. LINE AND MEDIANS PROVIDED PROJECT GEOTECHNICAL ENGINEER DETERMINES ROCK IS COMPETENT TO STAND ON ITS OWN.



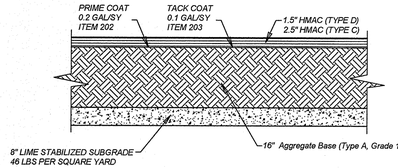
TYPICAL LOCAL "B" STREET SECTION

NOT TO SCALE

USE LOCAL "B" STREET SECTION FOR STREETS:

BRANDY PATH: STA: 1+00.00 - 4+28.00

Pavement Section
1.5" HMAC Type "D"
2.5" HMAC Type "C"
16" Aggregate Base (Type A, GRADE 1)
8.0" Lime Stabilized Subgrade(46 LB/SY)
Total: 28.0"
Structural No: 4.64
CBR: 2.5



ASPHALT PAVEMENT DETAIL

NOT-TO-SCALE

DETAIL FOR ALL LOCAL TYPE B

NOTES:
1. PAVEMENT DESIGN THICKNESS BASED ON GEOTECHNICAL REPORT BY INTEC, LLC. PROJECT NO. S211392 DATED SEPTEMBER 29, 2021.

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5. GEOTECHNICAL ENGINEER TO BE ON SITE TO MAKE FINAL SUBGRADE DETERMINATION. CHANGES TO THIS PAVEMENT DESIGN SHALL BE SUBMITTED TO COSA-DSD TO PLACEMENT OF BASE MATERIAL.

GENERAL NOTES:

1. THE SUBGRADE SOILS SHOULD BE TESTED FOR SOLUBLE SULPHATE CONTENT PRIOR TO INSTALLATION OF THE LIME OR CEMENT.

2. THE APPLICATION RATE OF LIME SHALL BE DETERMINED BASED ON LABORATORY TESTING AND SHALL BE THE LOWEST PERCENTAGE OF LIME THAT PROVIDES AN UNCONFINED COMPRESSIVE STRENGTH (UCS) AT 7-DAYS OF AT LEAST 160 PSI IN ACCORDANCE WITH ASTM D5102 STANDARD TEST METHODS FOR UNCONFINED COMPRESSIVE STRENGTH OF COMPACTED SOIL-LIME MIXTURES (PROCEDURE B) (IN ADDITION, CURING SHOULD OCCUR FOR 7 DAYS AT 40° AND SPECIMENS SHOULD BE SUBJECT TO 24-HR CAPILLARY SOAK PRIOR TO TESTING.

FOR CONSTRUCTION VERIFICATION THE FOLLOWING SHALL BE CONDUCTED IN THE FIELD:

1. AFTER INITIAL MIXING THE SOIL-LIME MIXTURE SHALL MELLOW FOR A PERIOD OF TWO TO THREE (2 - 3) DAYS. MAINTAIN MOISTURE DURING MELLOWING;

2. AFTER MELLOWING AND FINAL MIXING, THE PULVERIZATION SHALL BE CHECKED USING THE FOLLOWING CRITERIA (REMOVE NON-SLAKING AGGREGATES RETAINED ON THE ⅝ INCH SIEVE FROM THE SAMPLE):

MINIMUM PASSING 1 ½" SIEVE	100
MINIMUM PASSING ¾" SIEVE	85
MINIMUM PASSING NO. 4 SIEVE	60

3. SAMPLE SOIL-LIME MIXTURE FOR DETERMINATION OF MAXIMUM DRY DENSITY (MDD). IN THE LABORATORY, MOLD SPECIMENS TO 95% OF MDD AT OPTIMUM MOISTURE CONTENT AND VERIFY UCS TO BE AT LEAST 160 PSI IN ACCORDANCE WITH PROCEDURE OUTLINED ABOVE FOR MIXTURE DESIGN.

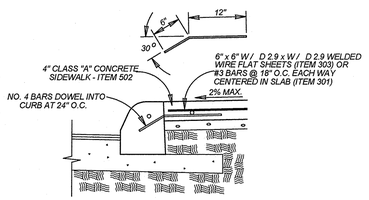
4. COMPACT AND CHECK FIELD DENSITY (MINIMUM OF 95% OF MDD REQUIRED)

5. CURE FOR AN ADDITIONAL 2 TO 5 DAYS (TOTAL MELLOWING AND CURING TIME SHOULD TOTAL AT LEAST 5 DAYS).

6. VERIFY DEPTH OF LIME STABILIZED LAYER TO DEPTH AS NOTED ON PLAN TO WITHIN ± 1.0 INCH.

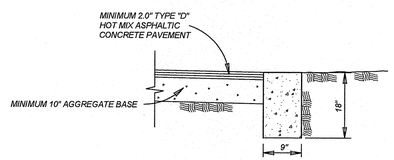
NOTES:

ANY FILL USED TO RAISE THE SUBGRADE:
- SHOUD NOT CONTAIN ANY DELETERIOUS MATERIAL.
- SHOULD HAVE A CBR VALUE OF 2.5 OR GREATER
- SHOULD HAVE THE "LIME PERCENTAGE/APPLICATION RATE" RE-EVALUATED AND TESTED PRIOR TO INSTALLATION
- PI SHOULD BE A MAXIMUM OF 60



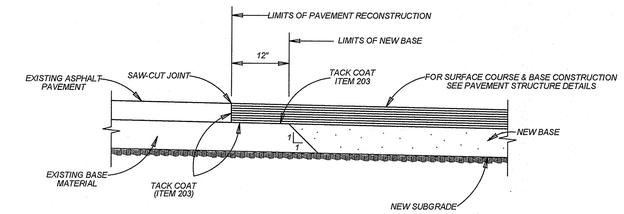
CONCRETE SIDEWALK ABUTTING CURB SECTION

ITEM 502
NOT TO SCALE



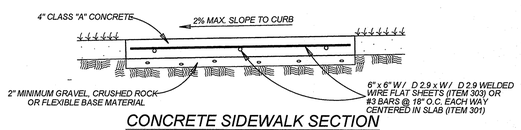
HEADER CURB

ITEM 500 ON SAND OR GRAVEL
NOT TO SCALE



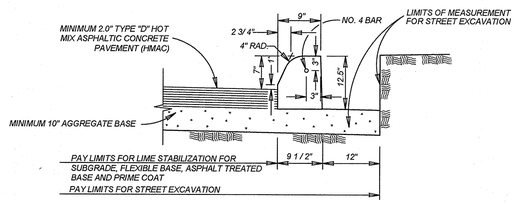
PAVEMENT JUNCTION DETAILS

NOT TO SCALE



CONCRETE SIDEWALK SECTION

ITEM 502
NOT TO SCALE



CONCRETE CURB

ITEM 500 ON ASPHALT TREATED BASE OR ASPHALTIC CONCRETE BASE
NOT TO SCALE

KFW
ENGINEERS + SURVEYING
3421 Pasadena Pkwy, Suite 200, San Antonio, TX 78231
Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm #: 6313 • TBPLS Firm #: 10122300

ISSUE DATE

REVISIONS

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
6/15/2022

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

TYPICAL STREET DETAILS

PLAT NO. 21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN:OM CHECKED:CL

SHEET NUMBER:

5.4

Date: May 02, 2022, 11:01am User ID: ecorona
File: P:\205\41\07\Design\Civil\STREETS\STD12054107.dwg

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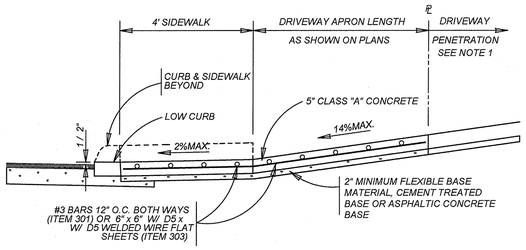
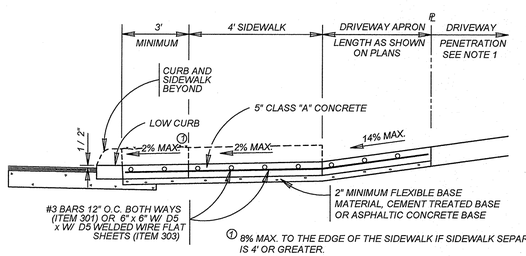


TYPICAL RESIDENTIAL DRIVEWAY SECTION

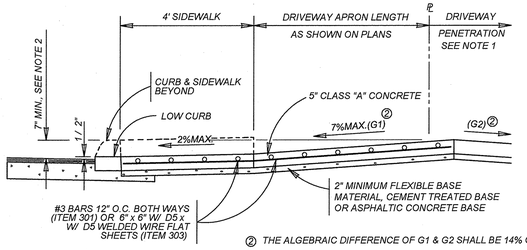
WITH SIDEWALK ABUTTING CURB
ITEM 503.1



① 8% MAX. TO THE EDGE OF THE SIDEWALK IF SIDEWALK SEPARATION IS 4' OR GREATER.

TYPICAL RESIDENTIAL DRIVEWAY SECTION

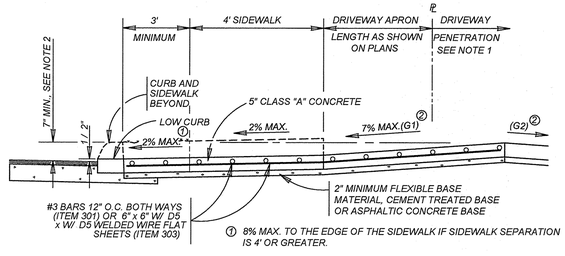
WITH SIDEWALK SEPARATED FROM CURB
ITEM 503.1



② THE ALGEBRAIC DIFFERENCE OF G1 & G2 SHALL BE 14% OR LESS

TYPICAL RESIDENTIAL DRIVEWAY SECTION

WHERE PROPERTY IS LOWER THAN STREET & SIDEWALK IS ABUTTING CURB
ITEM 503.1

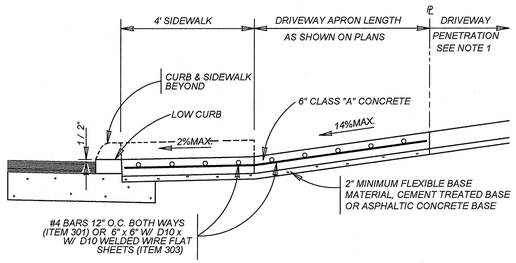


① 8% MAX. TO THE EDGE OF THE SIDEWALK IF SIDEWALK SEPARATION IS 4' OR GREATER.

② THE ALGEBRAIC DIFFERENCE OF G1 & G2 SHALL BE 14% OR LESS

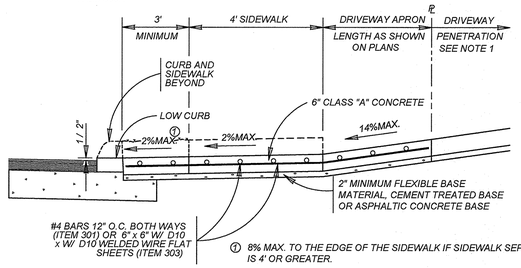
TYPICAL RESIDENTIAL DRIVEWAY SECTION

WHERE PROPERTY IS LOWER THAN STREET & SIDEWALK IS SEPARATED FROM CURB
ITEM 503.1



TYPICAL COMMERCIAL DRIVEWAY SECTION

WITH SIDEWALK ABUTTING CURB
ITEM 503.2



① 8% MAX. TO THE EDGE OF THE SIDEWALK IF SIDEWALK SEPARATION IS 4' OR GREATER.

TYPICAL COMMERCIAL DRIVEWAY SECTION

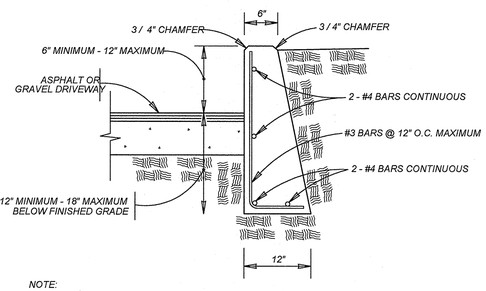
WITH SIDEWALK SEPARATED FROM CURB
ITEM 503.2

CONCRETE DRIVEWAY NOTES

1. DRIVEWAY PENETRATION REFERS TO A PORTION OF THE DRIVEWAY THAT MAY BE NECESSARY TO RECONSTRUCT WITHIN PRIVATE PROPERTY TO COMPLY WITH A MAXIMUM DRIVEWAY SLOPE. THIS PORTION OF THE DRIVEWAY SHALL BE PAID FOR UNDER THE FOLLOWING ITEMS AS MAY APPLY:
   A.) CONCRETE DRIVEWAY PAID FOR UNDER ITEM NO. 503.1 OR 503.2.
   B.) ASPHALTIC CONCRETE DRIVEWAY PAID FOR UNDER ITEM NO. 503.4 AND SHALL INCLUDE A MINIMUM OF 1" ASPHALT TYPE 'D' & 6" FLEXIBLE BASE
   C.) GRAVEL DRIVEWAY PAID FOR UNDER ITEM NO. 503.5 AND SHALL INCLUDE A MINIMUM OF 6" FLEXIBLE BASE
2. 7" MINIMUM HEIGHT WILL NOT NECESSARILY OCCUR AT THE PROPERTY LINE. IT MAY OCCUR WITHIN THE RIGHT OF WAY OR WITHIN THE DRIVEWAY PENETRATION ON PRIVATE PROPERTY.
3. THE PROPOSED DRIVEWAY SHOULD MATCH THE EXISTING WIDTH AT THE PROPERTY LINE BUT UNLESS AUTHORIZED BY THE CITY TRAFFIC ENGINEER, THE WIDTH SHALL BE WITHIN THE FOLLOWING VALUES:

TYPE	MINIMUM	MAXIMUM
RESIDENTIAL	10'	20'
COMMERCIAL - ONE WAY	12'	20'
COMMERCIAL - TWO WAY	24'	30'

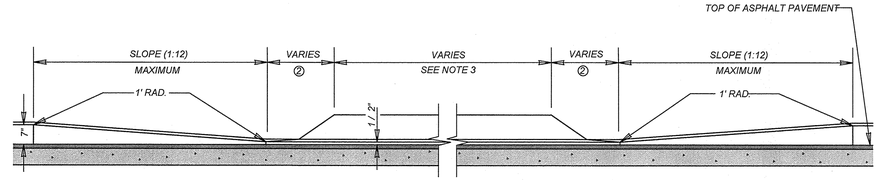
4. FOR LOCAL TYPE "A" STREETS, SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 4' AND IF SEPARATED FROM THE CURB, THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 3' FROM THE BACK OF CURB.
5. FOR OTHER THAN LOCAL TYPE "A" STREETS, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 4' AND SEPARATED A MINIMUM OF 3' FROM THE BACK OF CURB OR, AS AN OPTION, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 6' WHEN LOCATED AT THE BACK OF CURB.
6. DUMMY JOINTS PARALLEL TO THE CURB SHALL BE PLACED WHERE THE SIDEWALK MEETS THE DRIVEWAY. DUMMY JOINTS PERPENDICULAR TO THE CURB, AND WITHIN THE BOUNDARIES OF THE PARALLEL DUMMY JOINTS, SHALL BE PLACED AT INTERVALS EQUAL TO THE WIDTH OF THE SIDEWALK.
7. A MINIMUM OF TWO ROUND AND SMOOTH DOWEL BARS 3 /8" IN DIAMETER AND 18" IN LENGTH SHALL BE SPACED 18" APART AT EACH EXPANSION JOINT.
8. SIDEWALK RAMP LENGTHS SHALL BE OF SUFFICIENT LENGTH TO MAINTAIN 8.33% (1:12) MAXIMUM SLOPE. WHERE SIDEWALKS CROSS DRIVEWAYS, SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2%.
9. SIDEWALK RAMP SURFACE SHALL BE BRUSH FINISHED.



NOTE:
1. COST OF REINFORCEMENT TO BE INCLUDED IN UNIT COST OF ITEM 307.1.
2. CONCRETE RETAINING WALL COMBINATION TYPE SHALL BE USED FOR CONCRETE DRIVEWAYS.

DRIVEWAY - CONCRETE RETAINING WALL

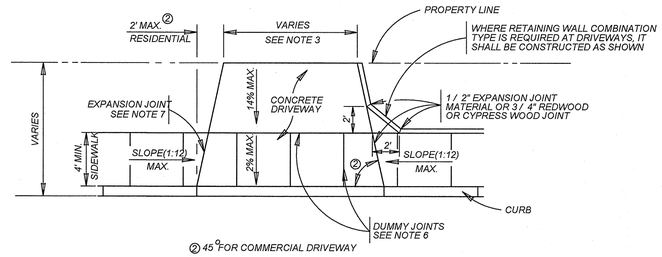
ON COMPACTED SUBGRADE
ITEM 307.1



② RESIDENTIAL : 2' MAXIMUM;
COMMERCIAL: SEE PLAN VIEW

CURB PROFILE AT DRIVEWAY

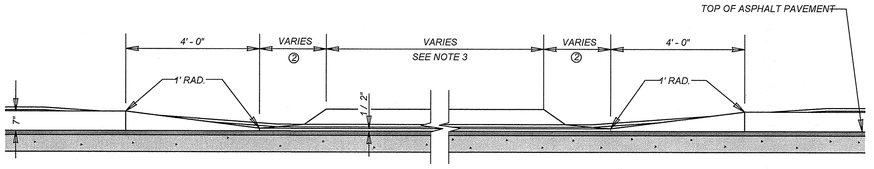
WITH SIDEWALK ABUTTING CURB



② 45° FOR COMMERCIAL DRIVEWAY

TYPICAL DRIVEWAY PLAN VIEW

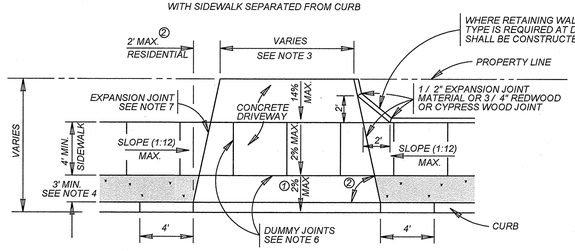
WITH SIDEWALK ABUTTING CURB



② RESIDENTIAL : 2' MAXIMUM;
COMMERCIAL: SEE PLAN VIEW

CURB PROFILE AT DRIVEWAY

WITH SIDEWALK SEPARATED FROM CURB



① 8% MAX. TO THE EDGE OF THE SIDEWALK IF SIDEWALK SEPARATION IS 4' OR GREATER.

② 45° FOR COMMERCIAL DRIVEWAY

TYPICAL DRIVEWAY PLAN VIEW

WITH SIDEWALK SEPARATED FROM CURB

MAY 2009

CITY OF SAN ANTONIO

CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

CONCRETE DRIVEWAY STANDARDS

% SUBMITTAL	PROJECT NO.:	DATE:
DRWN. BY: V. VASQUEZ	DSGN. BY:	CHKD. BY: R.S. HOSSEINI, P.E.	SHEET NO.: OF

KFW
ENGINEERS + SURVEYING
3421 Paesanos Pkwy, Suite 200, San Antonio, TX 78231
Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm #: 9513 • TBPLS Firm #: 10122300

ISSUE DATE
REVISIONS

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED
PROFESSIONAL ENGINEER
2/10/2022

MORGAN MEADOWS UNIT 1C
BEXAR COUNTY, TX
CONCRETE DRIVEWAY DETAILS

PLAT NO.
21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN:OM CHECKED:CL

SHEET NUMBER:
5.5

Date: Feb 10, 2022, 10:51am User ID: cgroff
File: P:\205\41\07\Design\Civil\STREETS\STD120541107.dwg

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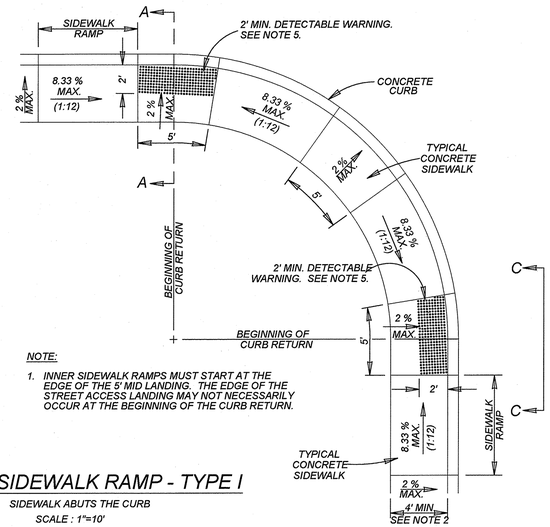


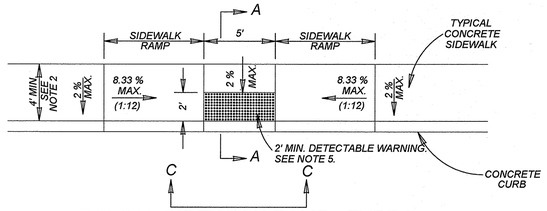
TYPICAL SIDEWALK RAMP - TYPE I

SIDEWALK ABUTS THE CURB

SCALE : 1"=10'

NOTE:

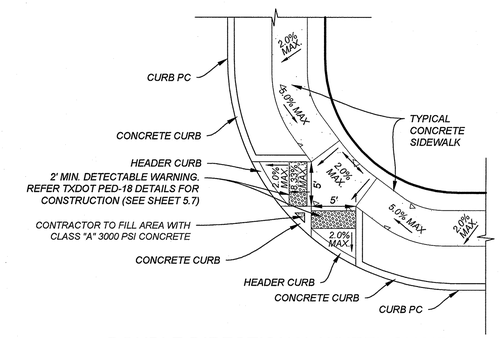
1. INNER SIDEWALK RAMPS MUST START AT THE EDGE OF THE 5' MID LANDING. THE EDGE OF THE STREET ACCESS LANDING MAY NOT NECESSARILY OCCUR AT THE BEGINNING OF THE CURB RETURN.



TYPICAL SIDEWALK RAMP - TYPE II

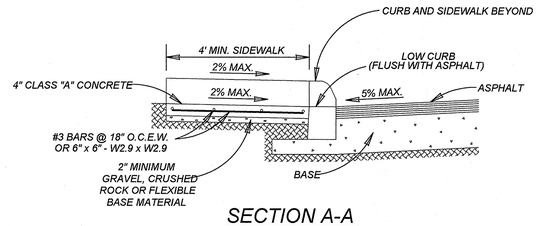
USED AT TEE INTERSECTIONS WHERE SIDEWALK ABUTS CURB

SCALE : 1"=10'



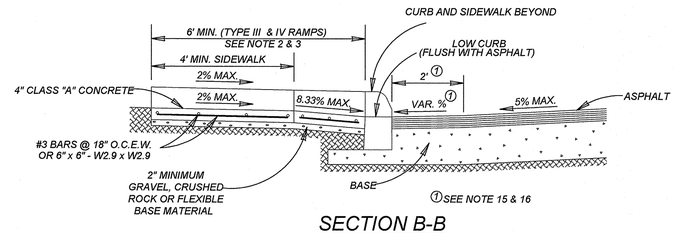
DOUBLE DIRECTIONAL WHEEL CHAIR RAMP (DDWCR)

NOT TO SCALE



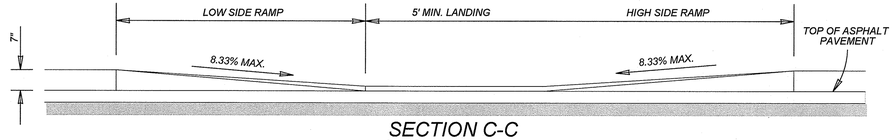
SECTION A-A

SCALE : 1"=4'



SECTION B-B

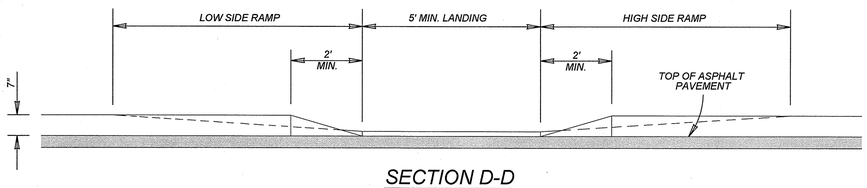
SCALE : 1"=4'



SECTION C-C

CURB PROFILE WHERE SIDEWALK ABUTS CURB

SCALE : 1"=4'



SECTION D-D

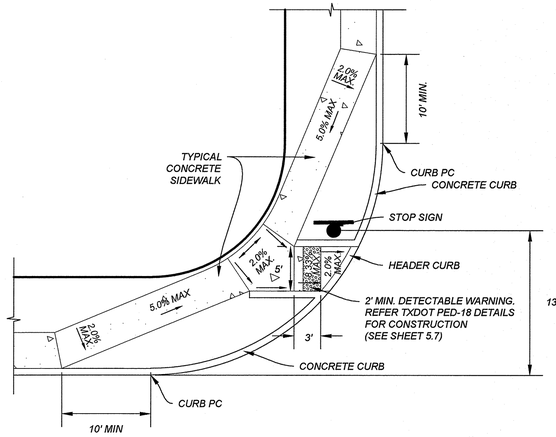
CURB PROFILE WHERE SIDEWALK IS SEPARATED FROM CURB

SCALE : 1"=4'

TABLE 1 (SEE NOTE 4)		
GUTTER SLOPE	SIDEWALK RAMP LENGTH (1:12)	
	LOW SIDE	HIGH SIDE
1%	5'-6"	7'-2"
2%	5'-0"	8'-4"
3%	4'-6"	10'-0"
4%	4'-2"	12'-8"
5%	3'-10"	16'-8"

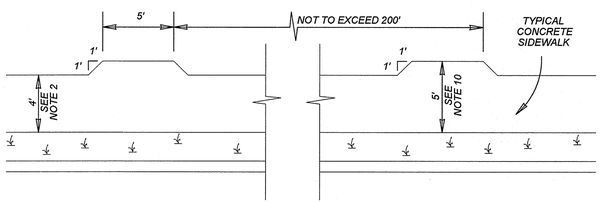
GENERAL NOTES

1. WHEN POSSIBLE SIDEWALKS SHOULD BE PLACED NEXT TO THE PROPERTY LINE, ALLOWING A MINIMUM OF 1 FOOT BUFFER. DEVIATION OF THE PATHWAY FROM A STRAIGHT LINE IS ENCOURAGED TO AVOID TREES OR OTHER OBSTRUCTIONS.
2. FOR LOCAL TYPE "A" STREETS, SIDEWALKS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 4' AND IF SEPARATED FROM THE CURB, THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 3' FROM THE BACK OF CURB.
3. FOR OTHER THAN LOCAL TYPE "A" STREETS, SIDEWALKS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 4' AND SEPARATED A MINIMUM OF 3' FROM THE BACK OF CURB OR AS AN OPTION, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 6' WHEN LOCATED AT THE BACK OF CURB.
4. SIDEWALK RAMP LENGTHS PRESENTED IN TABLE 1 ARE GUIDELINES ONLY. SIDEWALK RAMP LENGTHS SHALL BE OF SUFFICIENT LENGTH TO MAINTAIN 8.33% (1:12) MAXIMUM SLOPE.
5. ALL CURB-RAMPS OR LANDINGS ABUTTING THE CROSSWALK SHALL HAVE A DETECTABLE WARNING 24 INCHES DEEP (IN THE DIRECTION OF PEDESTRIAN TRAVEL) AND EXTENDING THE FULL WIDTH OF THE CURB RAMP OR LANDING. THE DETECTABLE WARNING SHALL CONSIST OF RAISED TRUNCATED DOMES, ALIGNED IN A GRID PATTERN WITH A DIAMETER OF A NOMINAL 0.9 INCHES (23 MM), A HEIGHT OF NOMINAL 0.2 INCHES (5 MM) AND A CENTER-TO-CENTER SPACING OF NOMINAL 2.35 INCHES (60 MM). THE DETECTABLE WARNING SURFACE SHALL BE PAVERS CONFORMING TO TXDOT STANDARD PED-05, PEDESTRIAN FACILITIES.
6. DETECTABLE WARNINGS SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT. THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE.
7. SIDEWALK RAMP TYPE V SHALL BE USED ONLY WHERE THERE IS SIGNIFICANT RESTRICTION WITHIN THE PARKWAY TO CONSTRUCT TYPE I OR TYPE III RAMPS.
8. CONSTRUCTION OF ALL WHEELCHAIR RAMPS TO BE INCLUDED UNDER ITEMS "500 - CONCRETE CURB, GUTTER, AND CONCRETE CURB AND GUTTER" AND / OR "502 - CONCRETE SIDEWALKS". RAMP SURFACE SHALL BE BRUSH
9. THESE DETAILS ARE FOR REFERENCE ONLY. ACTUAL LOCATIONS OF WHEELCHAIR RAMPS TO BE SHOWN ON CONSTRUCTION PLANS. CITY CONSTRUCTION INSPECTOR CAN ADJUST LOCATIONS FOR SAFETY OR
10. SIDEWALKS LESS THAN 5 FEET IN WIDTH SHALL BE PROVIDED WITH A PASSING SPACE AT A MAXIMUM
11. WHEELCHAIR RAMP SHALL BE CONSTRUCTED WITH 4" CLASS "A" CONCRETE AND 2" MINIMUM GRAVEL, CRUSHED ROCK OR FLEXIBLE BASE MATERIAL.
12. REINFORCING STEEL SHALL BE #3 BARS AT 18" O.C.E.W. OR 6" x 6" - W2.9 x W2.9 WIRE MESH.
13. SIDEWALK GRADES SHALL NOT EXCEED THE GRADE ESTABLISHED FOR THE ADJACENT ROADWAY, ANY SIDEWALK CONSTRUCTION THAT DEVIATES FROM THE NATURAL GRADE OF THE ROADWAY TO CREATE A GRADE STEEPER THAN THE EXISTING ROADWAY WILL REQUIRE RAMPS, HANDRAILS AND RESTING PLATFORMS TO BE CONSTRUCTED IN ACCORDANCE WITH ADA AND TAS STANDARDS.
14. SIDEWALK CROSS GRADE SHALL HAVE A MAXIMUM SLOPE OF 2%. LANDINGS SHALL HAVE A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
15. THE CHANGE OF GRADE BETWEEN ADJACENT SURFACES SHALL BE LESS THAN 11%. THE CHANGE OF GRADE SHALL BE DEFINED AS THE ALGEBRAIC DIFFERENCE OF THE ADJACENT SURFACE SLOPES. IN THE CASE OF A STREET ACCESS RAMP DESIGNED AT THE 8.33% MAXIMUM SLOPE, THE ADJACENT PAVEMENT CROSS SLOPE SHALL BE LESS THAN 2.67% (I.E. 8.33-(-2.67)=11). IN ADDITION, THE ADJACENT PAVEMENT CROSS SLOPE SHALL BE LESS THAN OR EQUAL TO 5%.
16. IF THE CHANGE OF GRADE BETWEEN ADJACENT SURFACES IS GREATER THAN OR EQUAL TO 11%, A LEVELING STRIP, 2 FEET IN LENGTH, SHALL BE PROVIDED TO TRANSITION THE ADJACENT SURFACES.
17. ADA COMPLIANCE IN ALTERATIONS INCLUDE ONLY THAT WORK WITHIN THE LIMITS, BOUNDARIES OR SCOPE OF A PLANNED PROJECT.



SINGLE DIRECTIONAL WHEEL CHAIR RAMP (SDWCR)

NOT TO SCALE

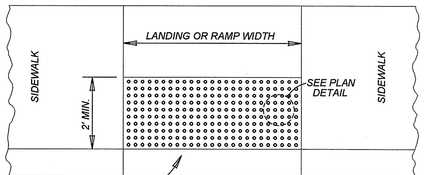


SIDEWALK PASSING SPACE

SCALE : 1"=10'

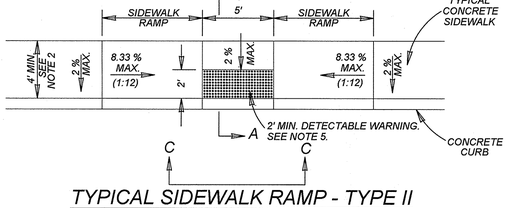
NOTE:

STAMPED CONCRETE TRUNCATED DOMES WILL NOT BE ALLOWED TO BE USED FOR DETECTABLE WARNING ON WHEELCHAIR RAMPS. CONTRACTOR MUST SUBMIT TRUNCATED DOME INFORMATION THAT IS TO BE USED ON WHEELCHAIR RAMPS TO THE PROJECT MANAGER FOR APPROVAL AT LEAST 30 DAYS PRIOR TO INSTALLATION.



DETECTABLE WARNING SURFACE

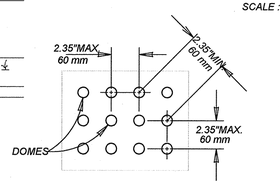
SCALE : 1"=4'



TYPICAL SIDEWALK RAMP - TYPE II

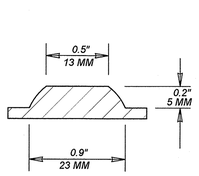
USED AT TEE INTERSECTIONS WHERE SIDEWALK ABUTS CURB

SCALE : 1"=10'



PLAN DETAIL

NO SCALE



DOME SECTION

NO SCALE

MAY 2009

CITY OF SAN ANTONIO

CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

WHEELCHAIR RAMP STANDARDS

_____% SUBMITTAL	PROJECT NO.:_____	DATE:_____
DRWN. BY: V. VASQUEZ	DSGN. BY:_____	CHKD. BY: R.S. HOSSEINI, P.E.	SHEET NO.:____OF____

KFW ENGINEERS + SURVEYING
3421 Paesanos Pkwy, Suite 200, San Antonio, TX 78231
Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm #: 8313 • TBPLS Firm #: 10123300

ISSUE DATE

REVISIONS

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
2/10/2022

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

WHEELCHAIR RAMP DETAILS

PLAT NO. 21-11800502

JOB NO. 205-41-07

DATE: JULY 2021

DRAWN:OM CHECKED:CL

SHEET NUMBER: 5.6

Date: Feb 10, 2022, 10:51am User ID: cgroff
File: P:\205\41\07\Design\Civil\STREETS\STD120541107.dwg

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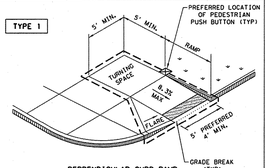
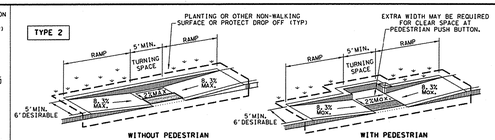
DATE:
FILE:

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

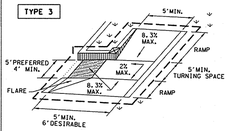


WITHOUT PEDESTRIAN PUSH BUTTON

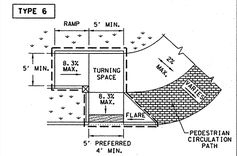
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

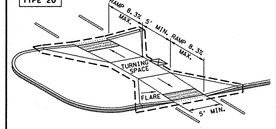


TYPE 6



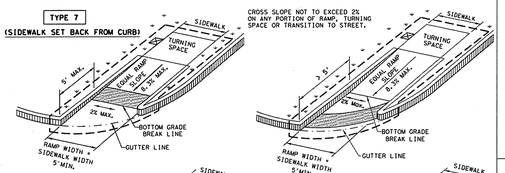
COMBINATION CURB RAMPS

TYPE 20

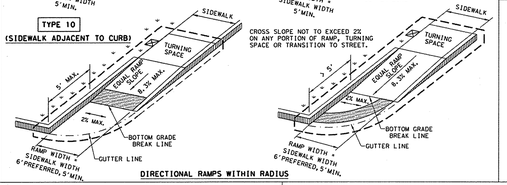


CURB RAMPS AT MEDIAN ISLANDS

TYPE 7
(SIDEWALK SET BACK FROM CURB)

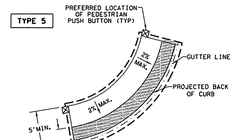


TYPE 10
(SIDEWALK ADJACENT TO CURB)



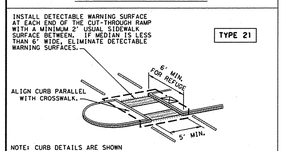
DIRECTIONAL RAMPS WITHIN RADIUS

TYPE 5



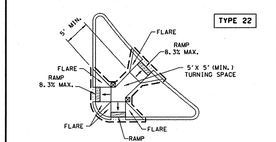
BLENDED TRANSITION
(FLUSH LANDING)

TYPE 21

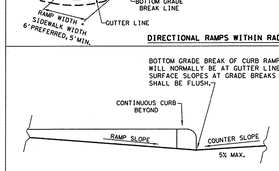


NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

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:VP	CK:KM	CK:PN & JG
©TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS	DIST	COUNTY			SHEET NO.
REVISED 08.2005					
REVISED 05.2010					
REVISED 01.2014					

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DATE:
FILE:

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 ramp, either because 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 uncolored concrete, unless specified elsewhere in the plans.
20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material 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.

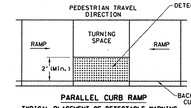
DETECTABLE WARNING PAVERS (IF USED)

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.

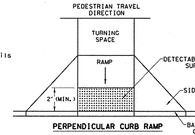
SIDEWALKS

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.

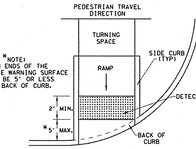
DETECTABLE WARNING SURFACE DETAILS



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

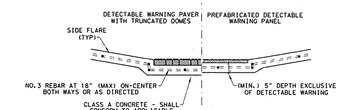


PERPENDICULAR CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



*NOTE: BOTH ENDS 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

SHEET 2 OF 4

Texas Department of Transportation | Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN:TxDOT	CK:	DW:VP	CK:KM	CK:PN & JG
©TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS	DIST	COUNTY			SHEET NO.
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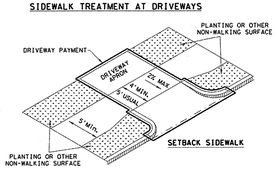
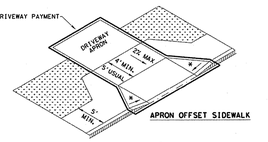
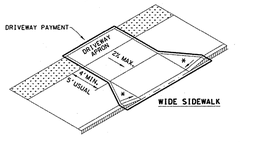
SIDEWALK TREATMENT AT DRIVEWAYS



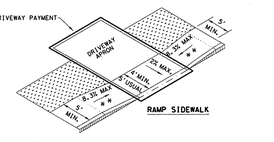
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



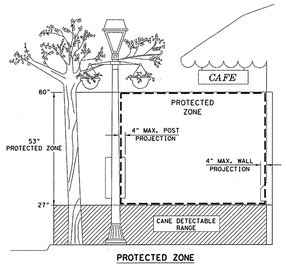
WIDE SIDEWALK



RAMP SIDEWALK

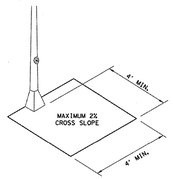
NOTES:
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

* * IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%. HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.

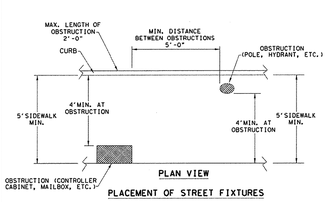


PROTECTED ZONE

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



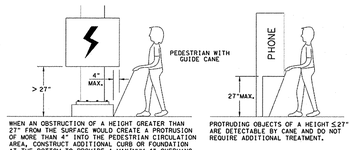
CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



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.

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

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

SHEET 3 OF 4

Texas Department of Transportation | Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN:TxDOT	CK:	DW:VP	CK:KM	CK:PN & JG
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REVISIONS	DIST	COUNTY			SHEET NO.
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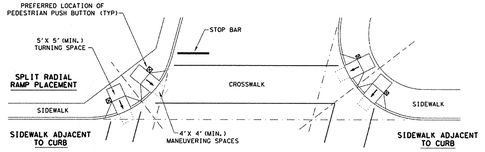
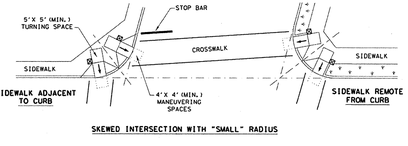
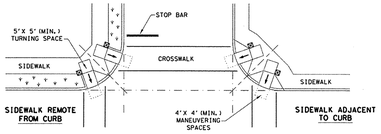
TYPICAL CROSSING LAYOUTS
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



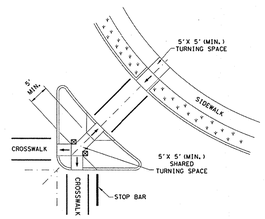
SKEWED INTERSECTION WITH "LARGE" RADIUS



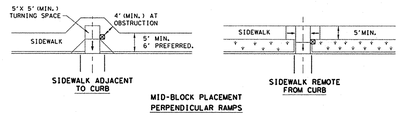
SKEWED INTERSECTION WITH "SMALL" RADIUS



NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION W/FREE RIGHT TURN & ISLAND



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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TBPE Firm #: 9513 • TBPLS Firm #: 10102300

ISSUE DATE

REVISIONS

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CLAYTON J. LINNEY
111543
LICENSED
PROFESSIONAL ENGINEER

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

TXDOT PEDESTRIAN CURB RAMP DETAILS

PLAT NO.
21-11800502

JOB NO. 205-41-07
DATE: DECEBER 2021
DRAWN:OM CHECKED:CS

SHEET NUMBER:

5.7

Date: Feb 10, 2022, 10:51am User ID: cgroff
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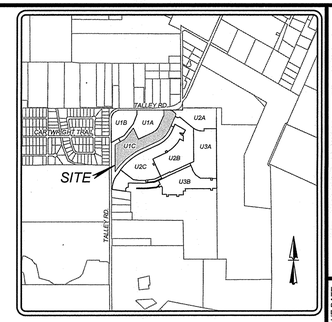
BEXAR COUNTY R.O.W. NOTE

A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY R.O.W.

SCALE : 1"=50'

0' 50' 150'

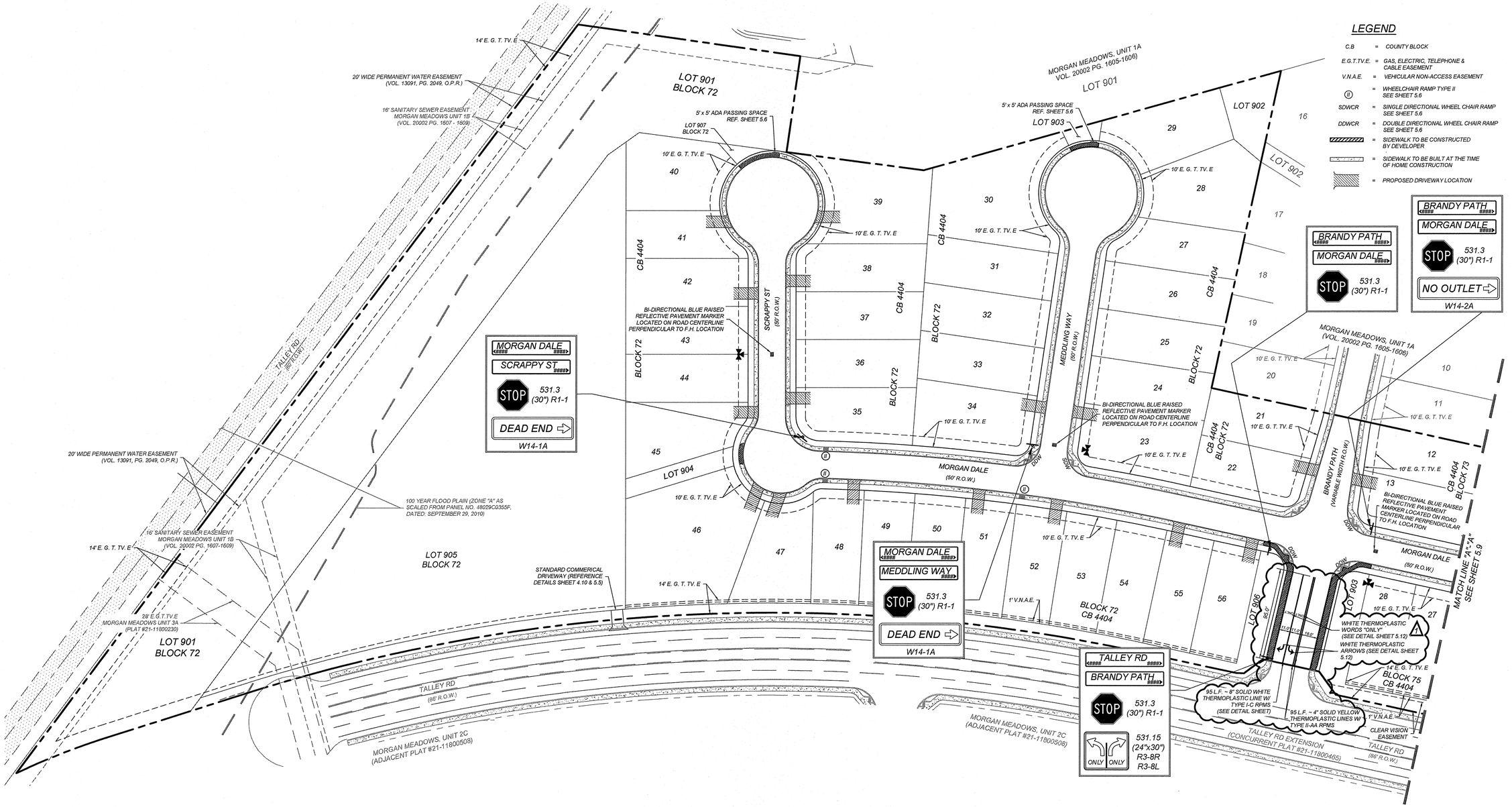
100'



LOCATION MAP
NOT-TO-SCALE

LEGEND

C.B	=	COUNTY BLOCK
E.G.T.TV.E.	=	GAS, ELECTRIC, TELEPHONE & CABLE EASEMENT
V.N.A.E.	=	VEHICULAR NON-ACCESS EASEMENT
(II)	=	WHEELCHAIR RAMP TYPE II SEE SHEET 5.6
SDWCR	=	SINGLE DIRECTIONAL WHEEL CHAIR RAMP SEE SHEET 5.6
DDWCR	=	DOUBLE DIRECTIONAL WHEEL CHAIR RAMP SEE SHEET 5.6
	=	SIDEWALK TO BE CONSTRUCTED BY DEVELOPER
	=	SIDEWALK TO BE BUILT AT THE TIME OF HOME CONSTRUCTION
	=	PROPOSED DRIVEWAY LOCATION



KFW ENGINEERS + SURVEYING
9421 Pasadena Pkwy, Suite 200, San Antonio, TX, 78231
Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm #: 9513 • TBPLS Firm #: 10122800

REVISIONS
ADDED LEFT AND RIGHT TURN LANES AT ENTRY — ISSUE DATE 04/18/2022

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
6/27/2022

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

TRAFFIC SIGNAGE & PEDESTRIAN ACCESSIBILITY PLAN (SHEET 1 OF 2)

PLAT NO. 21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN: OM CHECKED: CL

SHEET NUMBER: 5.8

Date: Jun 27, 2022, 10:29am User ID: escorona
File: P:\205\41\07\Design\Civil\STREETS\12205410707.dwg

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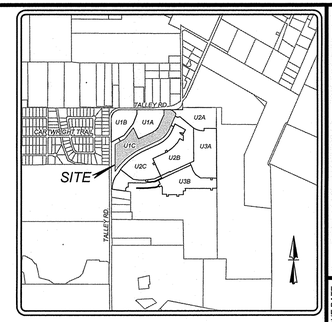

LOCATION MAP
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LEGEND

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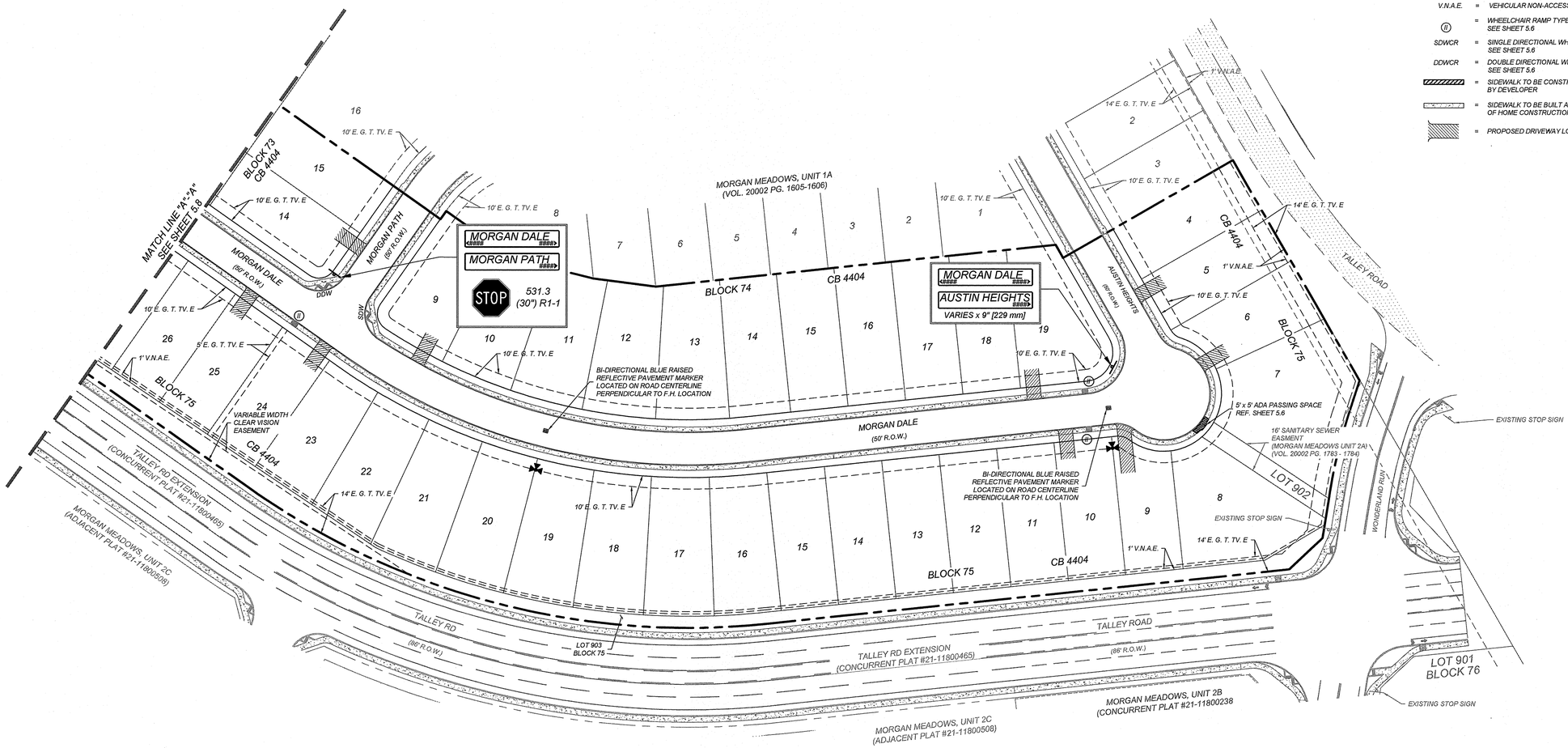

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ISSUE DATE

REVISIONS

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
6/27/2022

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

TRAFFIC SIGNAGE & PEDESTRIAN ACCESSIBILITY PLAN
(SHEET 2 OF 2)

PLAT NO. 21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN:OM CHECKED:CL

SHEET NUMBER:

5.9

Date: Jun 27, 2022, 10:30am User ID: ecorona
File: P:\205\41\07\Design Civil\SHEETS\12820541107.dwg

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SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

Post Type

- FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
- TWT = Thin-Walled Tubing (see SMD(TWT))
- 10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
- S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

Anchor Type

- UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
- UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
- WS = Wedge Anchor Steel - (see SMD(TWT))
- WP = Wedge Anchor Plastic (see SMD(TWT))
- SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
- SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

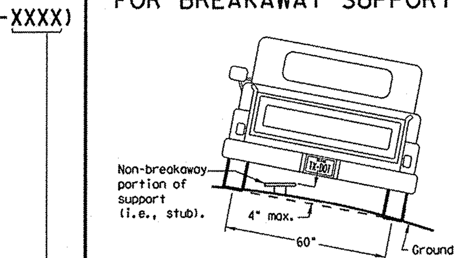
Sign Mounting Designation

- P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
- T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
- U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))

IF REQUIRED

- 1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
- BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
- WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
- EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

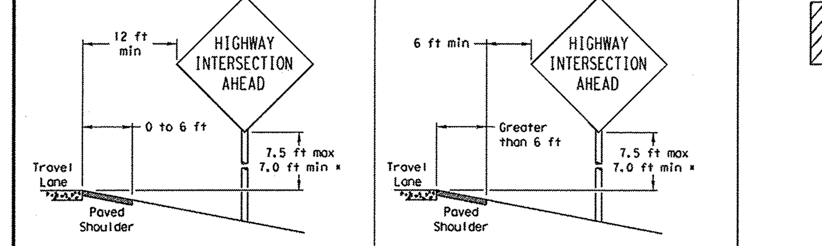
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

SIGN LOCATION

PAVED SHOULDERS



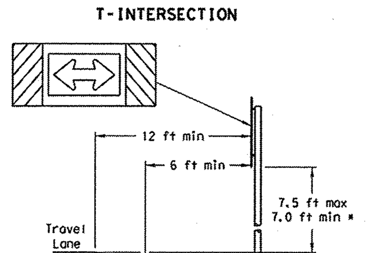
LESS THAN 6 FT. WIDE

When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.

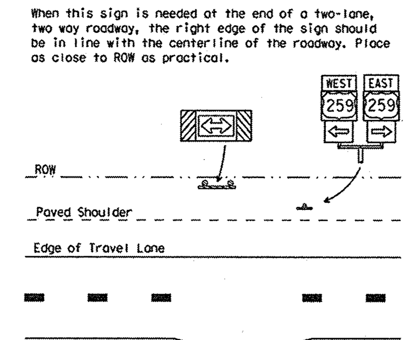
GREATER THAN 6 FT. WIDE

When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

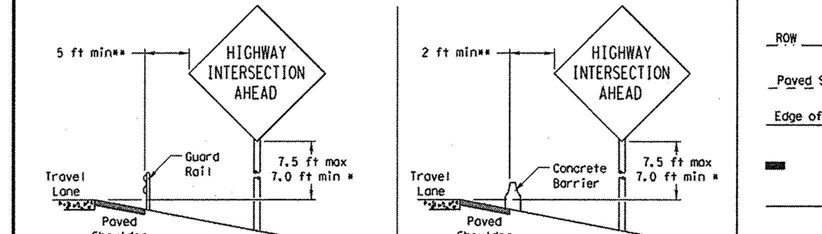
T-INTERSECTION



When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER



BEHIND GUARDRAIL **BEHIND CONCRETE BARRIER**

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

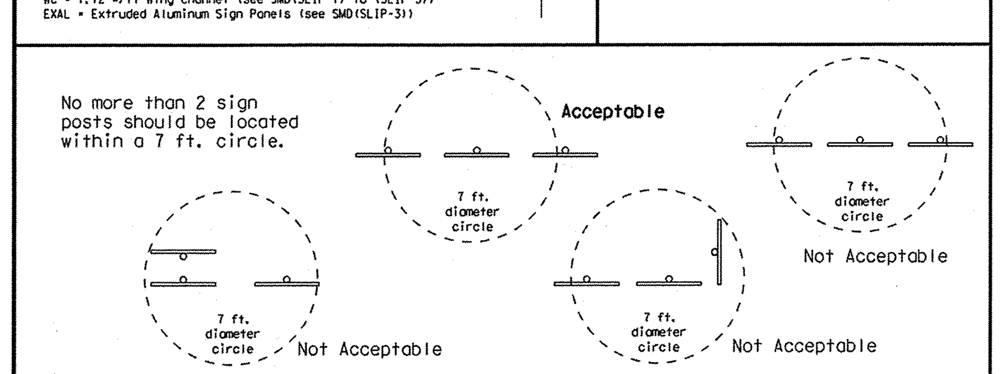
- * Signs shall be mounted using the following condition that results in the greatest sign elevation:
  - (1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or
  - (2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

The maximum values may be increased when directed by the Engineer.

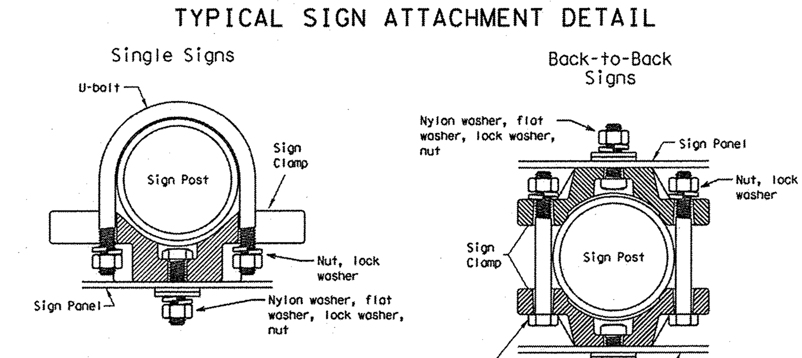
See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

The website address is:
http://www.txdot.gov/publications/traffic.htm

No more than 2 sign posts should be located within a 7 ft. circle.



TYPICAL SIGN ATTACHMENT DETAIL



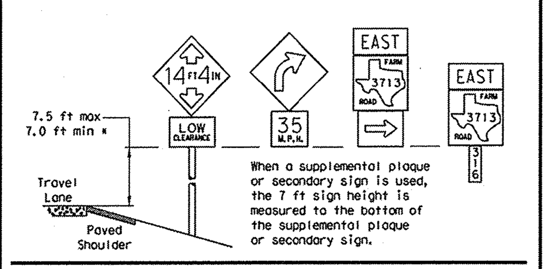
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

Sign clamps may be either the specific size clamp or the universal clamp.

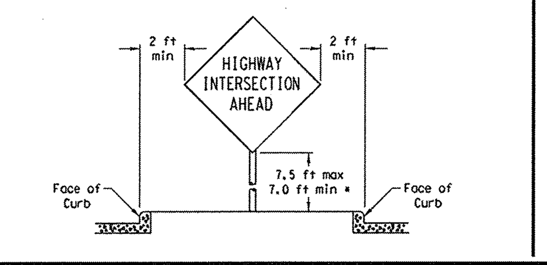
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



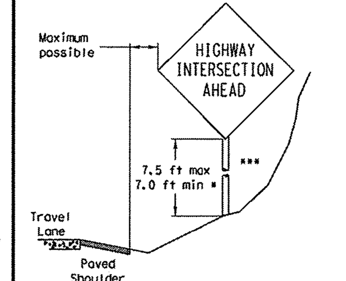
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

©TxDOT July 2002	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

26A

DATE:
FILE:

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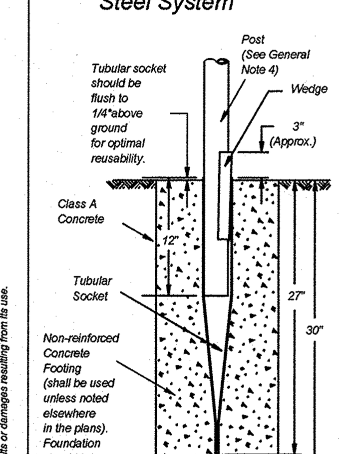
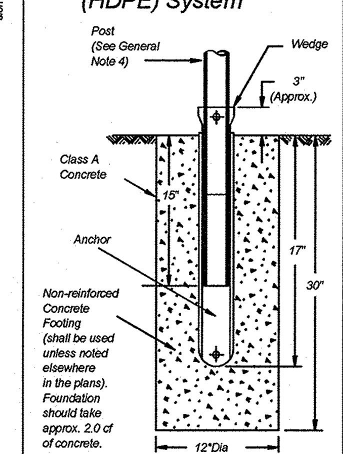
Wedge Anchor Steel System



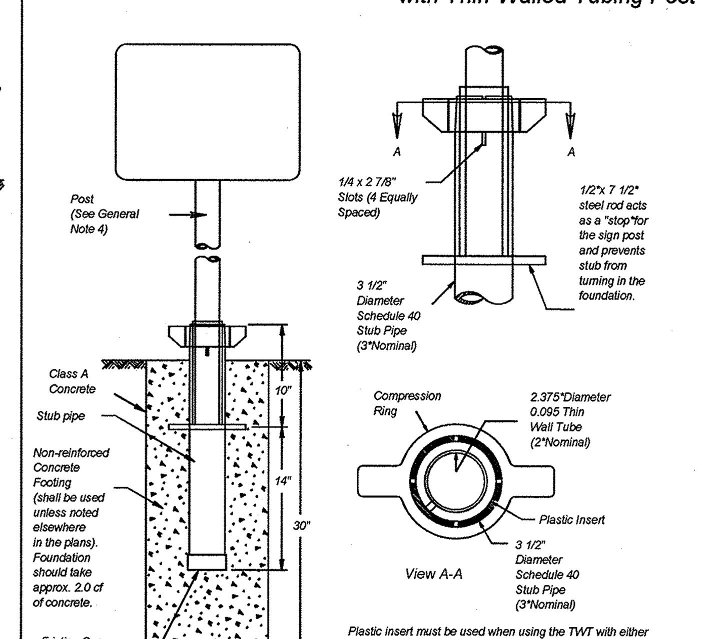
SM RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System



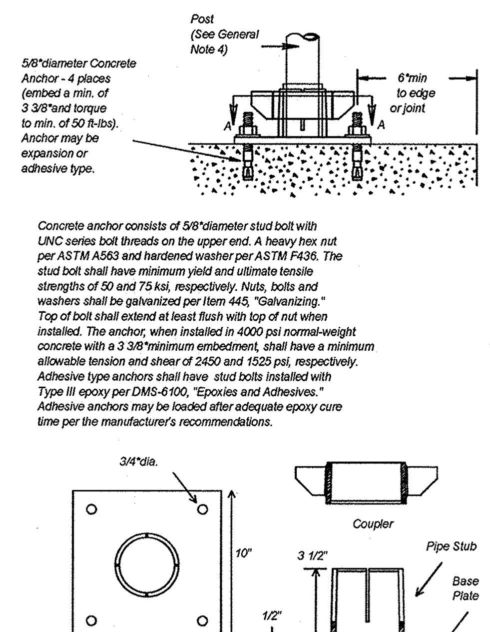
SMD RD SGN ASSM TY TWT(X)WP(X)

Universal Anchor System with Thin-Walled Tubing Post



SM RD SGN ASSM TY TWT(X)UA(P)

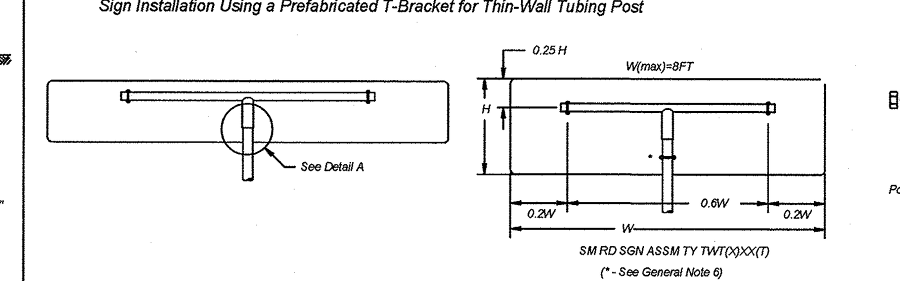
Plastic insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The insert should be approx. 10"long and cover the tubing from just above the top of the stub pipe to the bottom of the sign post when using the Universal Anchor System. The insert should be cut to approx. 4 1/2"when used with the Bolt Down Universal Anchor System.



Concrete anchor consists of 5/8"diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8"minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.

SM RD SGN ASSM TY TWT(X)UB(P)

Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post



SM RD SGN ASSM TY TWT(X)XX(T)
(* - See General Note 6)

NOTE

The devices shall be installed per manufacturer's recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
2. The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
3. Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer list.htm
4. Material used as post with this system shall conform to the following specifications:
   13 BWG Tubing (2.375"outside diameter) (TWT)
   0.095"nominal wall thickness
   Seamless or electric-resistance welded steel tubing
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the following:
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   18% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of .083"to .099"
   Outside diameter (uncoated) shall be within the range of 2.369"to 2.381"
   Galvanization per ASTM 123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
5. Sign blanks shall be the sizes and shapes shown on the plans.
6. Additional sign clamp required on the "T-bracket"post for 24"high signs. Place clamp at least 3"above bottom of sign when possible.
7. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: http://www.txdot.gov/publications/traffic.htm

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18"or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
3. Insert tubular socket into concrete until top of socket is approximaely 1/4 " above the concrete footing.
4. Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer..
5. Attach the sign to the sign post.
6. Insert the sign post into socket and align sign face with roadway.
7. Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18"or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. Insert base post in hole to depths shown and backfill hole with concrete.
3. Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
4. Attach the sign to the sign post.
5. Install plastic insert around bottom of post.
6. Insert sign post into base post. Lower until the post comes to rest on steel rod.
7. Seat compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
8. Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST

SMD(TWT)-08

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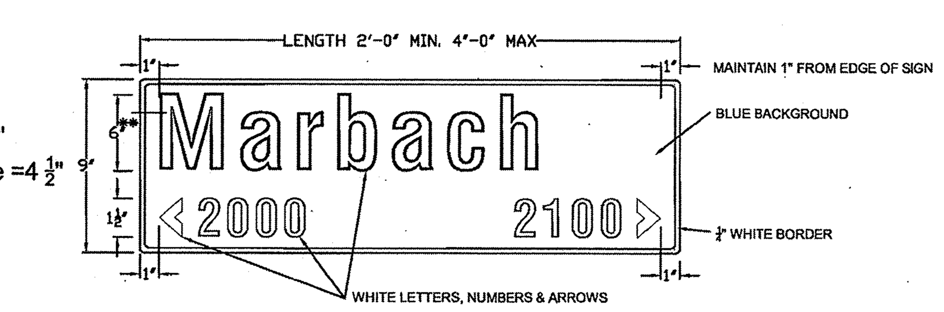
9-08 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

26E

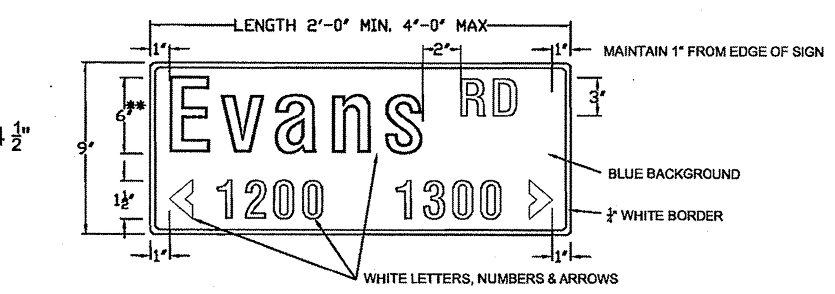
DATE:
FILE:

**Capital = 6"
Lower case =4 1/2"

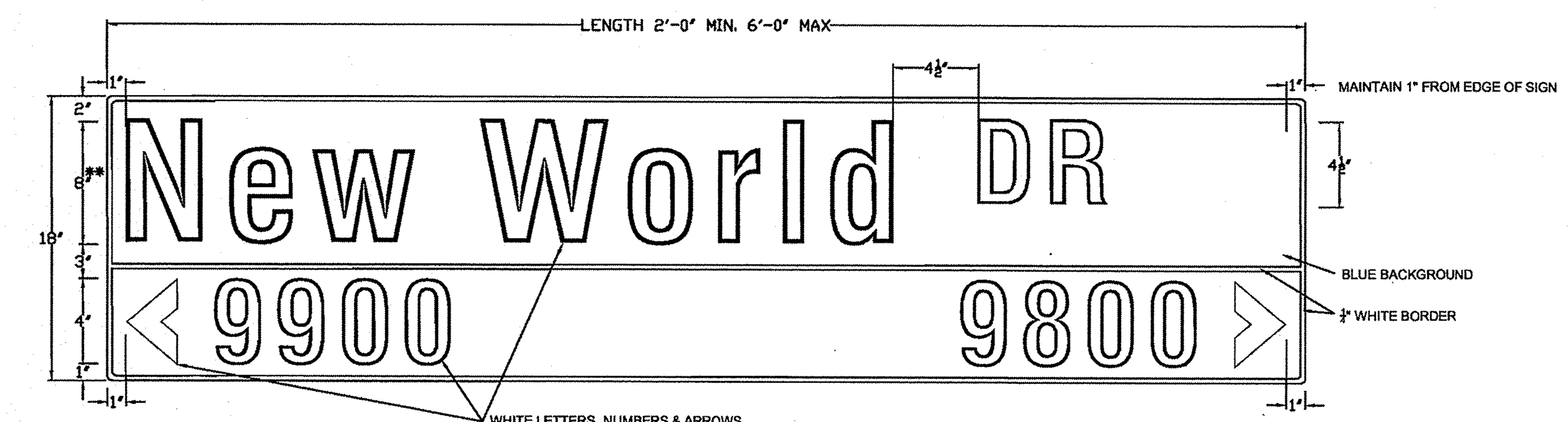


9" GROUND MOUNT STREET NAME SIGNS

**Capital = 6"
Lower case =4 1/2"



9" GROUND MOUNT STREET NAME SIGNS WITH STREET DESIGNATION

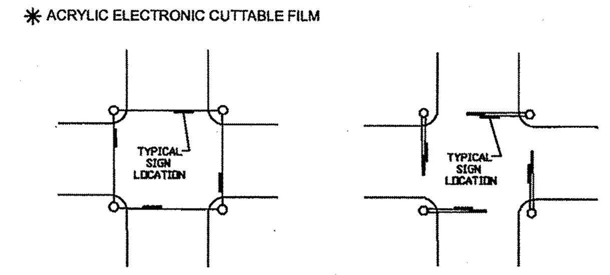


**Capital = 8"
Lower case =6"

18" OVERHEAD STREET NAME SIGNS

	18" OVERHEAD SIGN	9" GROUND MOUNT SIGNS
HEIGHT	18" (381 mm)	9" (228 mm)
LENGTH	48" (1200 mm) MIN. 72" (1800 mm) MAX. 1' (300mm) INCREMENTS OF LENGTH	24" (600 mm) MIN. 48" (1200 mm) MAX. 6" (150mm) INCREMENTS OF LENGTH
THICKNESS	0.125" (3 mm)	
SUBSTRATE	ALUMINUM ALLOY, 5052-H38 (ASTM B-209 GOLD CHROMATE FINISH	
SIGN FACE MATERIALS	BLUE FILM ✳ OVER DIAMOND GRADE - ASTM Type XI Non-Fluorescent	BLUE FILM ✳ OVER HIGH INTENSITY PRISMATIC- ASTM Type IV
LEGENDS AND SYMBOLS	SERIES D, B OR C IF NAME OTHERWISE EXCEEDS MAXIMUM SIGN LENGTH	
COLOR	WHITE LEGEND ON BLUE BACKGROUND	
LETTER TRACKING	17% (USUAL) 10% (MIN.)	10%

✳ ACRYLIC ELECTRONIC CUTTABLE FILM



SPAN WIRE INSTALLATION MAST ARM INSTALLATION

SIGN FACE MATERIALS SHALL CONFORM TO:

1. STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS & BRIDGES ON FEDERAL HIGHWAY PROJECTS - FP-03 U.S. CUSTOMARY UNITS SECTION 718
2. GENERAL SERVICES ADMINISTRATION FEDERAL SPECIFICATIONS L-S-300C
3. ASTM D 4956 - 09e1

STATE OF TEXAS — MARY FRANCES TENIENTE — 78902 — REGISTERED PROFESSIONAL ENGINEER
4-8-11

BEXAR COUNTY — INFRASTRUCTURE SERVICES DEPARTMENT — PUBLIC WORKS DIVISION

STREET NAME SIGNING DETAILS

REVISIONS:

DESIGN BY:	DRAWN BY:
MFT	MAC
CHECKED BY:	DATE:
MFT	04/08/11
FILE NO.: BCSN001.Dwg	
SHEET 1	

KFW
ENGINEERS + SURVEYING
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TBPE Firm #: 9513 • TBPLS Firm #: 10122300

ISSUE DATE

REVISIONS

STATE OF TEXAS — CLAYTON J. LINNEY — 111543 — LICENSED PROFESSIONAL ENGINEER
2/10/2022

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

TRAFFIC SIGNAGE DETAILS (SHEET 1 OF 2)

PLAT NO. 21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN:OM CHECKED:CL

SHEET NUMBER:

5.10

Date: Feb 10, 2022, 10:52am User ID: cgroff
File: P:\205\41\07\Design\Civil\STREETS\TSDT2054107.dwg

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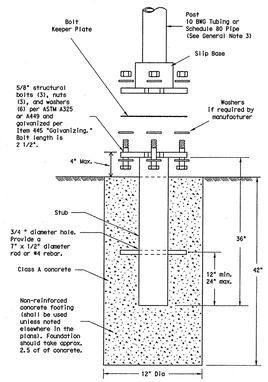
TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS

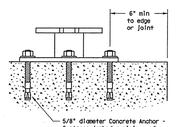
NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.



SM RD SGN ASSM TY XXXXX(3)SA(X-XXXX)

CONCRETE ANCHOR



SM RD SGN ASSM TY XXXXX(3)SB(X-XXXX)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

GENERAL NOTES:

1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   0.134" nominal wall thickness
   Seamless or electric-resistance welded steel tubing or pipe
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the followings
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   20% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   Galvanization per ASTM A123 or ASTM A653 G210. for precoated steel tubing (ASTM A653), rescoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
   Schedule 80 Pipe (2.875" outside diameter)
   0.276" nominal wall thickness
   Steel tubing per ASTM A500 Gr C
   Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the followings
   46,000 PSI minimum yield strength
   62,000 PSI minimum tensile strength
   215 minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: http://www.txdot.gov/publications/trafficfh.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the traveltay (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the traveltay. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

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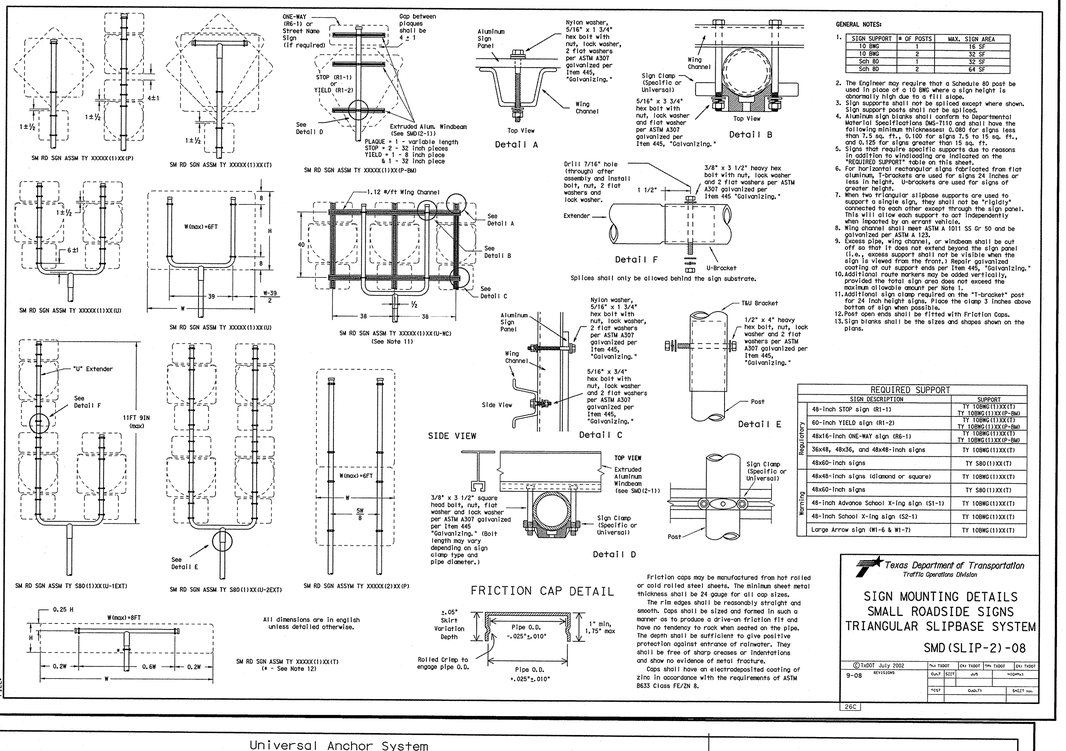

REQUIRED SUPPORT

	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(2)XX(T) TY 10BWG(2)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
Warning	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

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Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

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DATE: FILE:

GENERAL NOTES:
1.
SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF
2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Sign blanks shall be the sizes and shapes shown on the plans.
11. Additional slip clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.

REQUIRED SUPPORT

	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T)
	60-inch YIELD sign (R1-2)	TY 10BWG(2)XX(T)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
Warning	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

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DATE: FILE:

Universal Anchor System with Fiberglass Reinforced Plastic (FRP) Post

GENERAL NOTES:
1. FRP sign supports for a single type sign support may be used for signs up to and including 16 square feet. Dual post installation may be used for signs up to and including 32 square feet.
2. All nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing."
3. See the Traffic Operations Division website for detailed drawings of sign clamps. The website address is: http://www.txdot.gov/publications/trafficfh.htm

FRP POST REQUIREMENTS
1. Materials shall conform to the requirements of Departmental Material Specification DMS-4410 and will be furnished in a yellow or gray color as specified elsewhere in the plans.
2. Thickness of FRP sign support is 0.125" + 0.031", - 0.0".
3. FRP sign supports are prequalified by the Traffic Operations Division.
   Prequalification procedures are obtained by writing:
   Texas Department of Transportation
   Traffic Operations Division
   125 East 11th Street
   Austin, Texas 78701-2483

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURES
1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(SCN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Insert base post in foundation hole to depths shown and fill hole with concrete. Cut base post from bottom and ensure a minimum of 18" embedment if installed in solid rock.
4. Level and plumb the base post with coupler using a torpedo level and let concrete set a minimum of 4 days, unless otherwise directed by Engineer. Bottom of base post slots shall be above the concrete footing.
5. Attach sign to FRP post.
6. Insert sign post into base post. Lower until the post comes to rest on the steel rod.
7. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
8. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

BOLT DOWN SIGN SUPPORT
1. Position base plate with coupler on existing concrete.
2. Drill holes into concrete and insert the 5/8" diameter bolts with wedge anchors, and tighten nuts.
3. Attach sign to FRP post.
4. Insert bottom of sign post into pipe stub.
5. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
6. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

Typical Sign Mounting Detail for FRP Support with Single Sign

Typical Sign Mounting Detail for FRP Support with Back-to-Back Signs

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
UNIVERSAL ANCHOR SYSTEM
WITH FRP POST

SMD(FRP)-08

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STATE OF TEXAS
CLAYTON J. LINNEY
111549
LICENSED PROFESSIONAL ENGINEER
2/10/2022

MORGAN MEADOWS UNIT 1C
BEXAR COUNTY, TX
TRAFFIC SIGNAGE DETAILS (SHEET 1 OF 2)

PLAT NO. 21-11800502
JOB NO. 205-11-07
DATE: JULY 2021
DRAWN: OM CHECKED: CL
SHEET NUMBER: 5.11

Date: Feb 10, 2022, 10:52am User ID: cgroff
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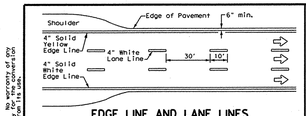
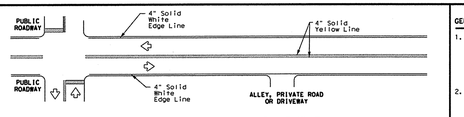
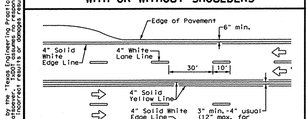


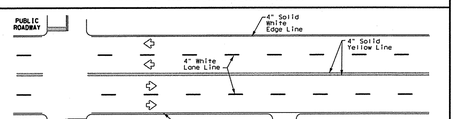
EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



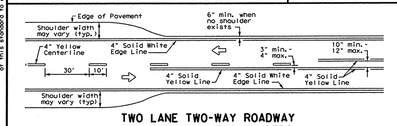
TYPICAL TWO-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



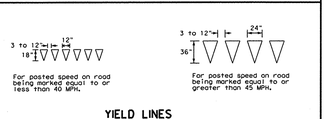
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



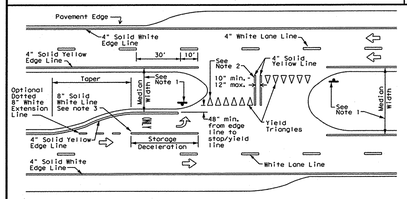
TYPICAL MULTI-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



YIELD LINES



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

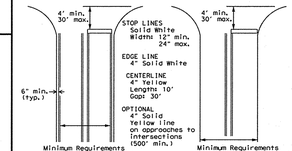
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs are optional as determined by the Engineer.
2. Install median striping (double yellow centerlines and stop bars/yield triangles) when a 50' or greater median centerline can be placed. Stop bars shall only be used with stop signs. Yield traingles shall only be used with yield signs.
3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

GENERAL NOTES

1. Edgeline striping shall be as shown in the plans or as directed by the Engineer. The edgeline should not be placed less less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edgelines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the inside of edgeline to the inside of edgeline of a two lane roadway.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Highways

Texas Department of Transportation | Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-20

FILE:	pm1-20.dgn	DN:	CK:	DW:	CK:
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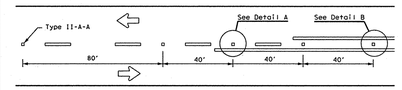
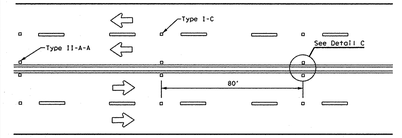
REVISIONS	8-95 3-98				
	5-00 2-12	DIST	COUNTY		SHEET NO.
	8-00 6-20				

ADC

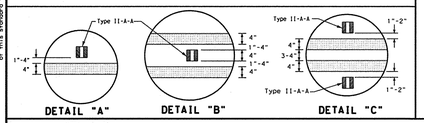
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

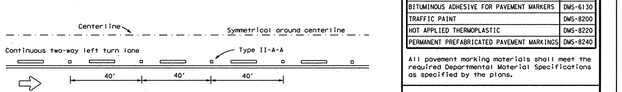


CENTERLINE FOR ALL TWO LANE ROADWAYS



CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY HIGHWAYS

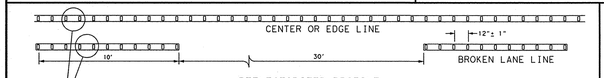




CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE

LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.



REFLECTORIZED PROFILE PATTERN DETAIL

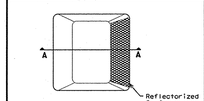
USING REFLECTIVE PROFILE PAVEMENT MARKINGS

NOTE

Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

1. All raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.



RAISED PAVEMENT MARKERS

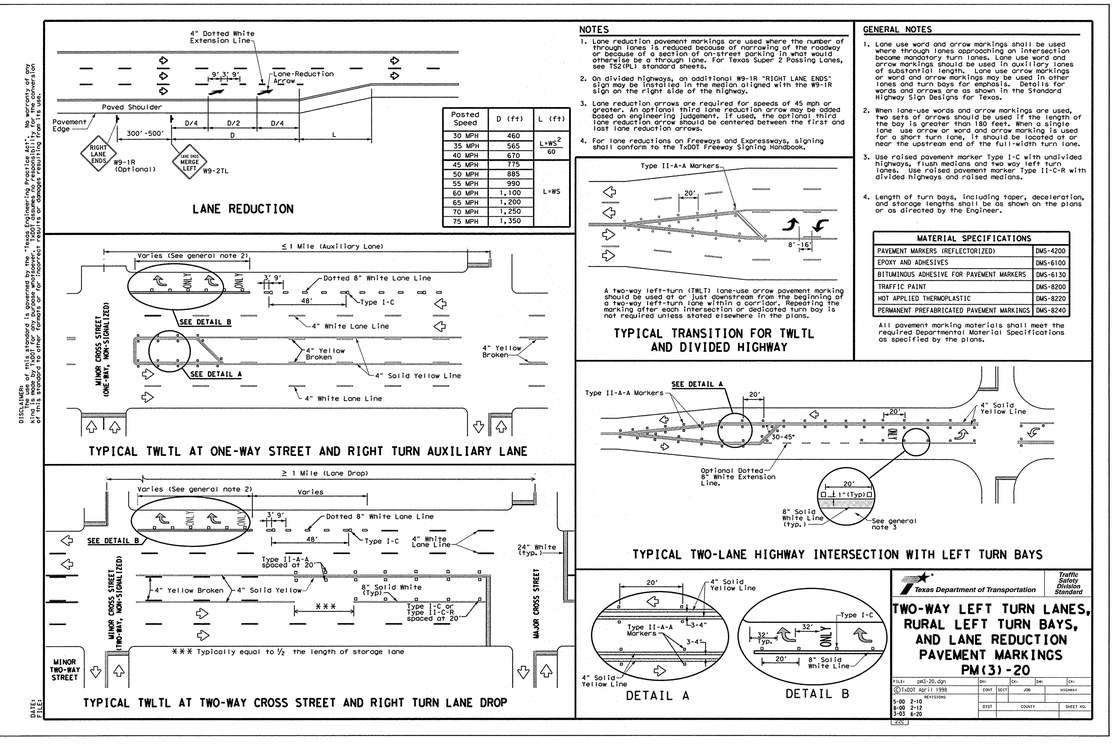
Texas Department of Transportation | Traffic Safety Division Standard

POSITION GUIDANCE USING RAISED MARKERS RELECTORIZED PROFILE MARKINGS

PM(2)-20

FILE:	pm2-20.dgn	DN:	CK:	DW:	CK:
©TxDOT	April 1977	CONT	SECT	JOB	HIGHWAY
REVISIONS	4-92 2-98				
	5-00 2-12	DIST	COUNTY		SHEET NO.
	8-00 6-20				

ADC



NOTES

1. Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
2. On divided highways, an additional W9-1R "RIGHT LANE ENDS" sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
3. Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
4. For lane reductions on freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

Posted Speed	D (ft)	L (ft)
30 MPH	460	L=WS²/60
35 MPH	565	
40 MPH	670	
45 MPH	775	
50 MPH	885	L=WS
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	

A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

GENERAL NOTES

1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas.
2. When lane-use words and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
3. Use raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.
4. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

Texas Department of Transportation | Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS

PM(3)-20

FILE:	pm3-20.dgn	DN:	CK:	DW:	CK:
©TxDOT	April 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	5-00 2-10				
	8-00 2-12	DIST	COUNTY		SHEET NO.
	3-03 6-20				

ADC

KFW ENGINEERS + SURVEYING
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(210) 979-8444 • FAX (210) 979-8441
TBPE Firm #: 1615 • TBPLS Firm #: 10122300

ISSUE DATE

REVISIONS

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED
PROFESSIONAL ENGINEER
4/26/2022

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

TRAFFIC SIGNAGE DETAILS (SHEET 3 OF 3)

PLAT NO. 21-11800502

JOB NO. 205-41-07

DATE: JULY 2021

DRAWN:OM CHECKED:CL

SHEET NUMBER:

5.12

Date: Mar 31, 2022, 9:49am User ID: beliseih
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MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

SANITARY SEWER IMPROVEMENTS

GENERAL SEWER NOTES (REVISED JULY 2017)

1. All materials and construction procedures within the scope of this contract shall be approved by the San Antonio Water System (SAWS) and comply with the Plans, Specifications, General Conditions and with the following as applicable:

   A. Current Texas Commission on Environmental Quality (TCEQ) "Design Criteria for Domestic Waste water System", Texas Administrative Code (TAC) Title 30 Part 1 Chapter 217 and "Public Drinking Water", TAC Title 30 Part 1 Chapter 290.
   B. Current TXDOT "Standard Specifications for Construction of Highways, Streets and Drainage".
   C. Current "San Antonio Water System Standard Specifications for Water and Sanitary Sewer Construction".
   D. Current City of San Antonio "Standard Specifications for Public Works Construction".
   E. Current City of San Antonio "Utility Excavation Criteria Manual" (UECM).

2. The contractor shall not proceed with any pipe installation work until they obtain a copy of the approved Counter Permit or General Construction Permit (GCP) from the consultant and has been notified by SAWS Construction I nspection Division to proceed with the work and has arranged a meeting with the inspector and consultant for the work requirements. Work completed by the contractor without an approved Counter Permit and/or a GCP will be subject to removal and replacement at the expense of the contractors and/or the developer.

3. The Contractor shall obtain the SAWS Standard Details from the SAWS website, http://www.saws.org/business_center/specs. Unless otherwise noted within the design plans.

4. The Contractor is to make arrangements with the SAWS Construction Inspection Division at (210) 233-2973, on notification procedures that will be used to notify affected home residents and/or property owners 48 hours prior to beginning any work.

5. Location and depth of existing utilities and service laterals shown on the plans are understood to be approximate. Actual locations and depths must be field verified by the Contractor at least 1 week prior to construction. It shall be the Contractor's responsibility to locate utility service lines as required for construction and to protect them during construction at no cost to SAWS.

6. The Contractor shall verify the exact location of underground utilities and drainage structures at least 1-2 weeks prior to construction whether shown on plans or not. Please allow up to 7 business days for locates requesting pipe location markers on SAWS facilities. The following contact information are supplied for verification purposes:

   SAWS Utility Locates: http://www.saws.org/Service/Locates
   COSA Drainage (210) 207-0724 or (210) 207-6026
   COSA Traffic Signal Operations (210) 206-8460
   COSA Traffic Signal Damages (210) 207-3951
   Texas State Wide One Call Locator 1-800-545-6005 or 811

7. The Contractor shall be responsible for restoring existing fences, curbs, streets, driveways, sidewalks, landscaping and structures to its original or better condition if damages are made as a result of the project's construction.

8. All work in Texas Department of Transportation (TxDOT) and/or Bexar County right-of-way shall be done in accordance with respective construction specifications and permit requirements.

9. The Contractor shall comply with City of San Antonio or other governing municipality's tree ordinances when excavating near trees.

10. The Contractor shall not place any waste materials in the 100-year Flood Plain without first obtaining an approved Flood Plain Permit.

11. Holiday Work: Contractors will not be allowed to perform SAWS work on SAWS recognized holidays. Request should be sent to constworkreq@saws.org. Weekend Work: Contractors are required to notify the SAWS Inspection Construction Department 48 hours in advance to request weekend work. Request should be sent to constworkreq@saws.org. Any and all SAWS utility work installed without holiday/weekend approval will be subject to be uncovered for proper inspection.

12. Compaction note ((Item 804): The contractor shall be responsible for meeting the compaction requirements on all trench backfill and for paying for the tests performed by a third party. Compaction tests will be done at one location point randomly selected, or as indicated by the SAWS Inspector and/or the test administrator, per each 12-inch loose lift per 400 linear feet at a minimum. This project will not be accepted and finalized by SAWS without this requirement being met and verified by providing all necessary documented test results.

13. A copy of all testing reports shall be forwarded to SAWS Construction Inspection Division.

Sewer Notes:

1. The Contractor is responsible for ensuring that no Sanitary Sewer Overflow (SSO) occurs as a result of their work. All contractor personnel responsible for SSO prevention and control shall be trained on proper response. Should an SSO occur, the contractor shall:

   A. Identify the soruce of the SSO and notify SAWS Emergency Operations Center (EOC) immediately at (210) 233-2014. Provide the address of the spill and an estimated volume or flow.
   B. Attempt to eliminate the source of the SSO
   C. Contain sewage from the SSO to the extent of preventing a possible contamination of waterways.
   D. Clean up spill site (return contained sewage to the collection system if possible) and properly dispose of contaminated soil/materials.
   E. Clean the affected sewer mains and remove any debris.
   F. Meet all post-SSO requirements as per the EPA Consent Decree, including line cleaning and televising the affected sewer mains (at SAWS direction) within 24 hours.

Should the Contractor fail to address an SSO immediately and to SAWS satisfaction, they will be responsible for all cost incurred by SAWS, including any fines from EPA, TCEQ and/or any other Federal, State or Local Agencies.

No separate measurement or payment shall be made for this work. All work shall be done according to guidelines set by TCEQ and SAWS.

2. If bypass pumping is required, the Contractor shall perform such work in accordance with SAWS Standard Specification for Water and Sanitary Sewer Construction, Item No. 864, "Bypass Pumping".

3. Prior to tie-ins, any shutdowns of existing force mains of any size must be coordinated with the SAWS Construction Inspection Division at (210) 233-2973 at least one week in advance of the shutdown. The Contractor must also provide a sequence of work as related to the tie-ins: this is at no additional cost to SAWS or the project and it is the responsibility of the Contractor sequence the work accordingly.

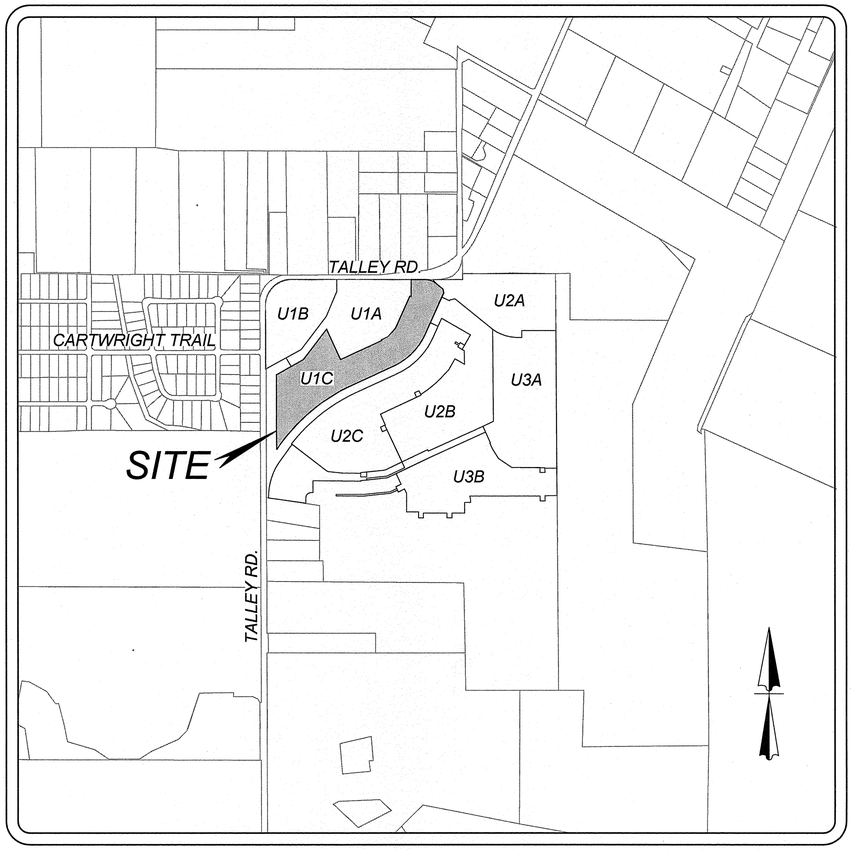
4. Sewer pipe where water line crosses shall be 160 psi and meet the requirements of ASTM D2241, TAC 217.53 and TCEQ 290.44(Ee)(4)(B). Contractor shall center a 20' joint of 160 psi pressure rated PVC at the proposed water crossing.

5. ELEVATIONS POSTED FOR TOP OF MANHOLES ARE FOR REFERENCE ONLY: It shall be the responsibility of the Contractor to make allowances and adjustments for top of manholes to match the finished grade of the project's improvements. (NSPI).

6. Spills, Overflows, or Discharges of Wastewater: All Spills, overflows, or discharges of wastewater, recycled water, petroleum products, or chemicals must be reported immediately to the SAWS Inspector assigned to the Counter Permit or GEneral Construction Permit (GCP). This requirement applies to every spill, overflow, or discharge regardless of size.

7. Manhole and all pipe testing (including the TV inspection) must be performed and passed prior to Final Field Acceptance by SAWS Construction Inspection Division, as per SAWS Specifications For Water and Sanitary Sewer Construction.

8. All PVC pipe over 14 feet of cover shall be extra strength with minimum pipe stiffness of 115 psi.



LOCATION MAP
NOT-TO-SCALE

SHEET INDEX

DESCRIPTION	SHEET NO.
SANITARY SEWER COVER SHEET	6.0
OVERALL SANITARY SEWER PLAN (SHEET 1 OF 2)	6.1
OVERALL SANITARY SEWER PLAN (SHEET 2 OF 2)	6.2
LINE "A" & "B" PLAN & PROFILE	6.3

OWNER INFORMATION
TALLEY EXTENSION REVITALIZATION INITIATIVE, LLC.
1202 W. BITTERS, BUILDING 1, SUITE 1200
SAN ANTONIO, TX 78216

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
12/28/2021

KFW
ENGINEERS + SURVEYING
3921 Paesanos Pkwy., Suite 200, San Antonio, TX 78232
Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm #: 9513 • TBPLS Firm #: 10122300

SEWER: MEDIO CREEK WATERSHED - FAR WEST SEWERSHED - MEDIO CREEK W.R.C.

DEVELOPER'S NAME: TALLEY EXTENSION REVITALIZATION INITIATIVE, LLC
DEVELOPER'S ADDRESS: 1202 W. BITTERS RD, BUILDING 1, SUITE 1200
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78258
PHONE#: FAX#: TOTAL ACREAGE: 18.75 AC.
SAWS BLOCK MAP#: 068602, 068604, 070604 TOTAL EDU'S: 76
TOTAL LINEAR FOOTAGE OF PIPE: 1069 L.F. ~ 8" SDR 26 PLAT NO.: 21-11800502
NUMBER OF LOTS: 76 SAWS JOB#: 21-1686

JOB NO.: 205-41-07

PLAT NO. 21-11800502 SHEET 6.0

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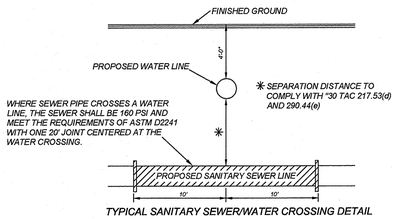

TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
N.T.S.

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

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NOTE:

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL BE IN ACCORDANCE WITH THE SAN ANTONIO WATER SYSTEM (S.A.W.S.) STANDARD SPECIFICATION.
2. SEWER PIPE WHERE WATER LINE CROSSES SHALL BE MEET THE REQUIREMENTS OF ASTM D2241. CONTRACTOR SHALL CENTER A 20 FOOT JOINT OF 160 P.S.I. PRESSURE RATED P.V.C. AT THE PROPOSED WATER CROSSING (NO SEPARATE PAY ITEM). REFERENCE THIS SHEET, SANITARY SEWER GENERAL NOTES, S.A.W.S. CRITERIA FOR SEWER MAIN CONSTRUCTION IN THE VICINITY OF WATER MAINS.
3. SEE THIS SHEET FOR BENCHMARK INFORMATION.
4. PIPE TYPE DESIGNATIONS ARE SDR 26.
5. SEE THIS SHEET FOR TYPICAL SANITARY SEWER / WATER CROSSING DETAIL.
6. ALL MANHOLES SHALL HAVE CONCRETE RING ENCASEMENT AND A WATER TIGHT RING AND COVER.

REFERENCE S.A.W.S. DETAILS

DD-804-01 SANITARY SEWER PIPE LAID IN TRENCH
DD-804-02 TRENCH COMPACTION DETAIL
DD-848-01 GO, NO GO DEFLECTION TESTING MANDREL
DD-852-01 STANDARD PRECAST MANHOLE
DD-852-02 VENTED MANHOLE RING AND COVER DETAIL (WHEN SPECIFIED)
DD-852-03 MANHOLE RING ENCASEMENT DETAIL
DD-854-ERZD HOUSE LATERAL DETAIL (IN THE E.A.R.Z.)
DD-858-01 TYPICAL CONCRETE ENCASEMENT DETAILS
DD-858-02 TYPICAL CONCRETE DETAILS
DD-860-01 TYPICAL VERTICAL STACK DETAILS
DD-852-06 PRECAST MANHOLE BASE 45° ANGLE
DD-852-08 DROP MANHOLE DETAIL
DD-852-07 MANHOLE RING AND COVER DETAIL

SEWER: MEDIO CREEK WATERSHED - FAR WEST SEWERSHED - MEDIO CREEK W.R.C.

DEVELOPER'S NAME: TALLEY EXTENSION REVITALIZATION INITIATIVE, LLC
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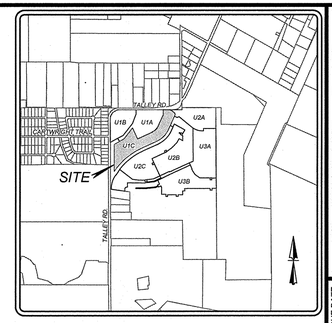
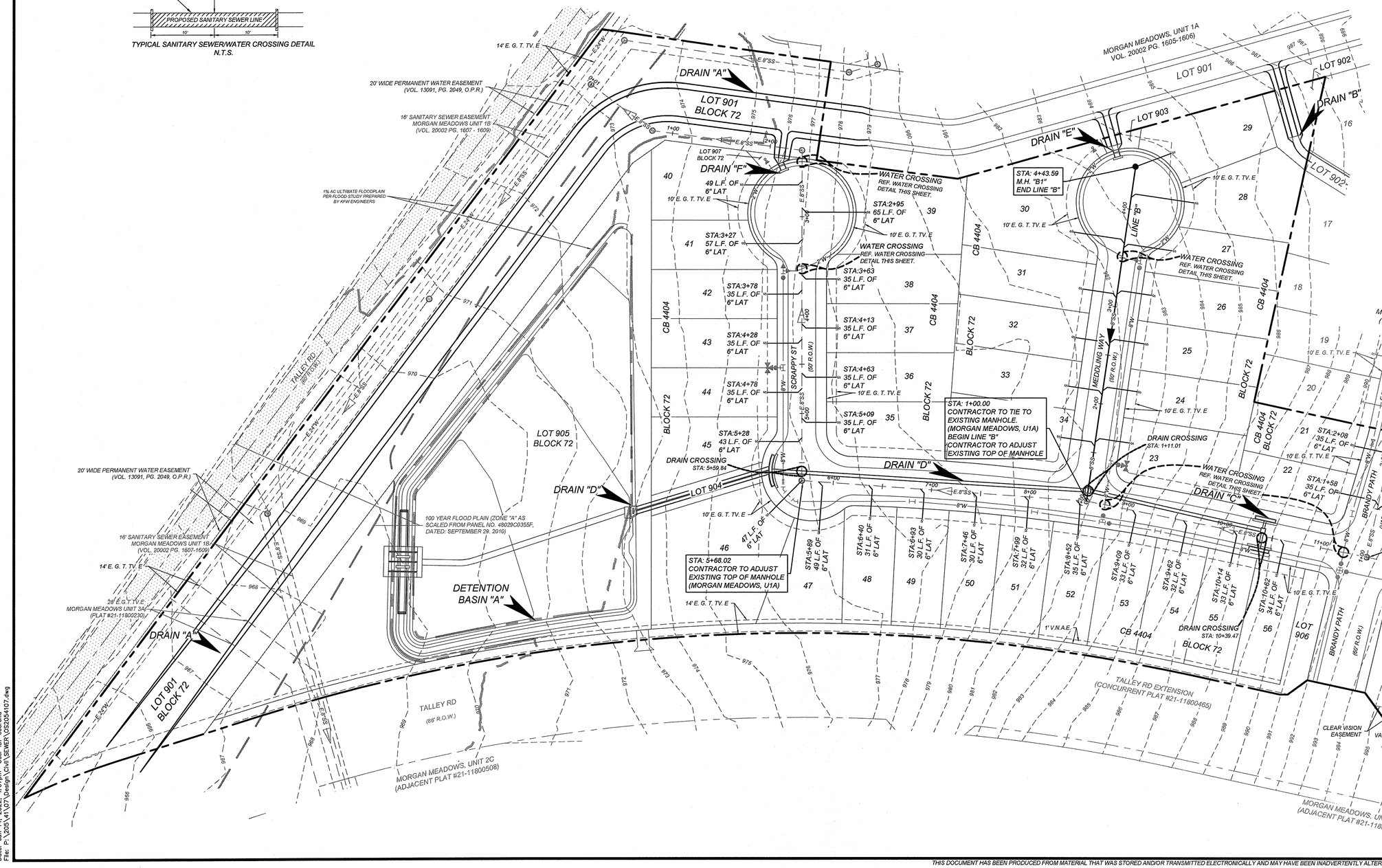


LOCATION MAP
NOT-TO-SCALE

LEGEND

PROPOSED WATER MAIN	=	W
PROPOSED WATER SERVICE & METER BOX	=	W
PROPOSED WATER 3/4" IRRIGATION SERVICE & METER BOX	=	W
PROPOSED FIRE HYDRANT	=	
PROPOSED WATER VALVE	=	
PROPOSED SANITARY SEWER MAIN	=	SS
PROPOSED SANITARY SEWER MANHOLE	=	
PROPOSED SANITARY SEWER LATERAL	=	
PROPOSED ELECTRIC, GAS, TELEPHONE, & CABLE TV EASEMENT	=	E. G. T. TV. E
EXISTING WATER MAIN	=	E.W
EXISTING FIRE HYDRANT	=	
EXISTING WATER VALVE	=	
EXISTING SANITARY SEWER MAIN	=	E.SS
EXISTING SANITARY SEWER MANHOLE	=	
EXISTING OVERHEAD ELECTRIC W/POWER POLE	=	OHE OHE
EXISTING GUY WIRE/OVERHEAD ELECTRIC	=	OHE



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ISSUE DATE

REVISIONS

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
6/15/2022

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

OVERALL SANITARY SEWER PLAN (SHEET 1 OF 2)

PLAT NO. 21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN: OM CHECKED: CL

SHEET NUMBER:
6.1

Date: Jun 14, 2022, 4:07pm User ID: ecorono
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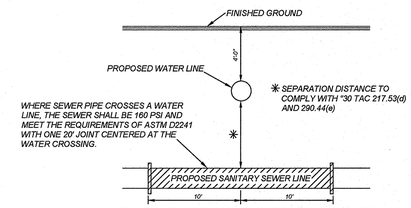
2. *SEWER PIPE WHERE WATER LINE CROSSES SHALL BE MEET THE REQUIREMENTS OF ASTM D2241. CONTRACTOR SHALL CENTER A 20 FOOT JOINT OF 160 P.S.I. PRESSURE RATED P.V.C. AT THE PROPOSED WATER CROSSING (NO SEPARATE PAY ITEM). REFERENCE THIS SHEET, SANITARY SEWER GENERAL NOTES, S.A.W.S. CRITERIA FOR SEWER MAIN CONSTRUCTION IN THE VICINITY OF WATER MAINS.*
3. *SEE THIS SHEET FOR BENCHMARK INFORMATION.*
4. *PIPE TYPE DESIGNATIONS ARE SDR 26.*
5. *SEE THIS SHEET FOR TYPICAL SANITARY SEWER / WATER CROSSING DETAIL.*
6. *ALL MANHOLES SHALL HAVE CONCRETE RING ENCASEMENT AND A WATER TIGHT RING AND COVER.*



TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
N.T.S.

REFERENCE S.A.W.S. DETAILS

DD-804-01 SANITARY SEWER PIPE LAID IN TRENCH
DD-804-02 TRENCH COMPACTION DETAIL
DD-848-01 GO, NO GO DEFLECTION TESTING MANDREL
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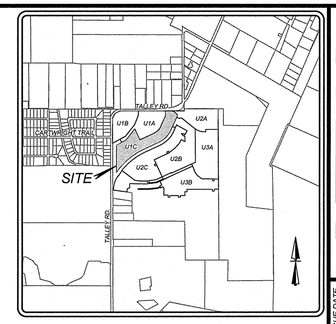
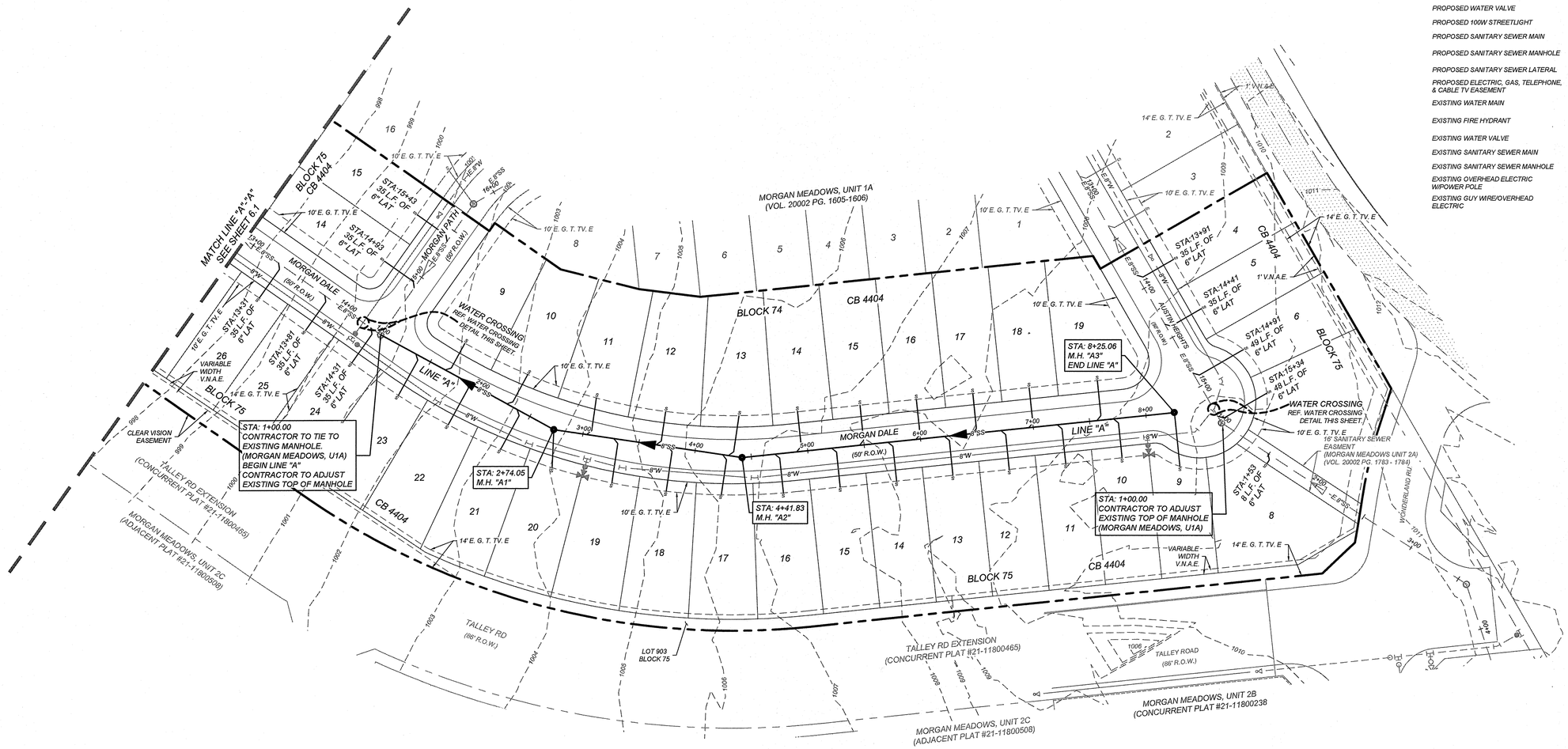


LOCATION MAP
NOT-TO-SCALE

LEGEND

PROPOSED WATER MAIN	=	W
PROPOSED WATER SERVICE & METER BOX	=	W
PROPOSED WATER 3/4" IRRIGATION SERVICE & METER BOX	=	Irrig
PROPOSED FIRE HYDRANT	=	
PROPOSED WATER VALVE	=	
PROPOSED 100W STREETLIGHT	=	
PROPOSED SANITARY SEWER MAIN	=	SS
PROPOSED SANITARY SEWER MANHOLE	=	
PROPOSED SANITARY SEWER LATERAL	=	ss
PROPOSED ELECTRIC, GAS, TELEPHONE, & CABLE TV EASEMENT	=	E. G. T. TV. E
EXISTING WATER MAIN	=	E.W
EXISTING FIRE HYDRANT	=	
EXISTING WATER VALVE	=	
EXISTING SANITARY SEWER MAIN	=	E.SS
EXISTING SANITARY SEWER MANHOLE	=	
EXISTING OVERHEAD ELECTRIC W/POWER POLE	=	OHE
EXISTING GUY WIRE/OVERHEAD ELECTRIC	=	OHE



SEWER: MEDIO CREEK WATERSHED - FAR WEST SEWERSHED - MEDIO CREEK W.R.C.

DEVELOPER'S NAME: TALLEY EXTENSION REVITALIZATION INITIATIVE, LLC		
DEVELOPER'S ADDRESS: 1202 W. BITTERS RD, BUILDING 1, SUITE 1200		
CITY: SAN ANTONIO	*STATE:* TEXAS	*ZIP:* 78258
PHONE#:	*FAX#:*	*TOTAL ACREAGE:* 18.75 AC.
SAWS BLOCK MAP#: 068602, 068604, 070604		*TOTAL EDU'S:* 76
TOTAL LINEAR FOOTAGE OF PIPE: 1069 L.F. ~ 8" SDR 26		*PLAT NO.:* 21-11800502
NUMBER OF LOTS: 76	*SAWS JOB#:* 21-1686	

KFW
ENGINEERS + SURVEYING
3421 Pleasanton Pkwy, Suite 200, San Antonio, TX 78231
Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm #: 9513 • TBPLS Firm #: 10122300

ISSUE DATE
REVISIONS

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
6/15/2022

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

OVERALL SANITARY SEWER PLAN (SHEET 2 OF 2)

PLAT NO. 21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN:OM CHECKED:CL

SHEET NUMBER:

6.2

Date: Jun 14, 2022, 4:08pm User ID: eosnora
File: P:\205\CV\07 Design\Civil\SEWER\CS205107.dwg

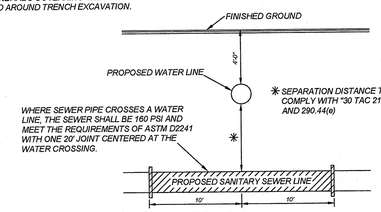
THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. RELY ONLY ON FINAL HARDCOPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL.

CAUTION!!: THE CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITED TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

MANHOLE NOTE:
ALL MANHOLES MUST BE WATERTIGHT, WITH WATERTIGHT RINGS AND COVERS. THESE MANHOLES MUST BE VENTED PER SAWS DETAIL DD852-02.

TRENCH EXCAVATION SAFETY PROTECTION
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

COMPACTION NOTE:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TESTS WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE SAWS INSPECTOR/TEST ADMINISTRATOR, PER EACH 12 INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. PERMITS AND/OR WILL NOT BE ACCEPTED AND FINALIZED BY SAWS WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.



TYPICAL SANITARY SEWER/WATER CROSSING DETAIL
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CITY: SAN ANTONIO STATE: TEXAS ZIP: 78258
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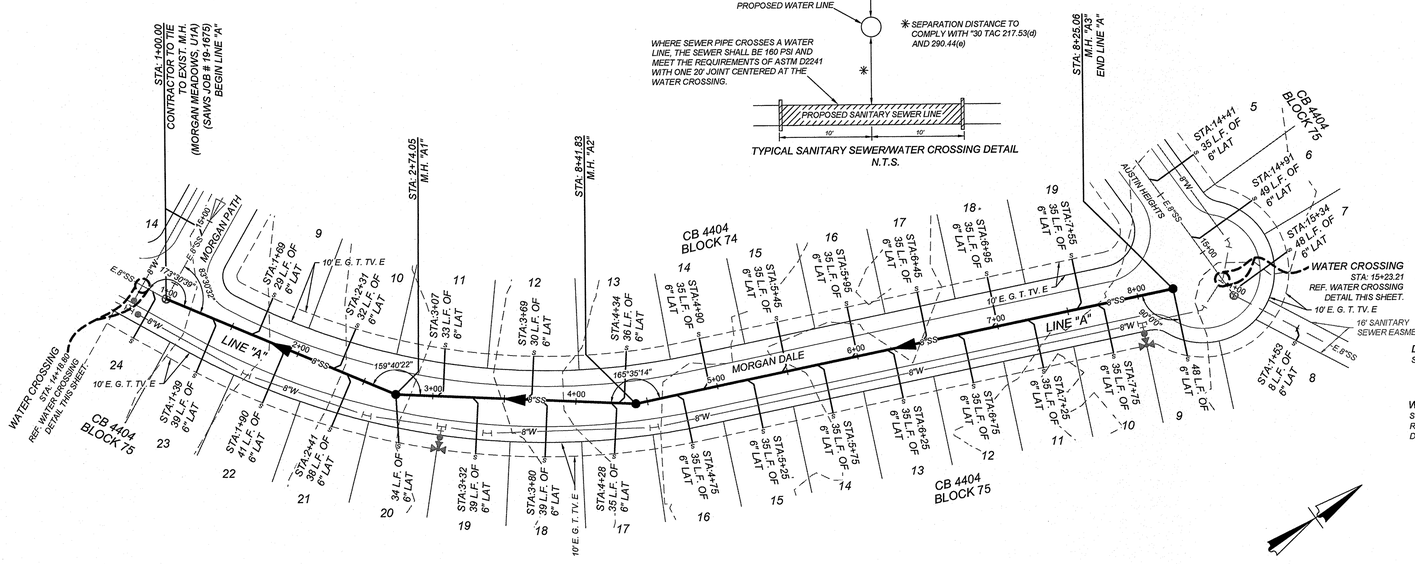
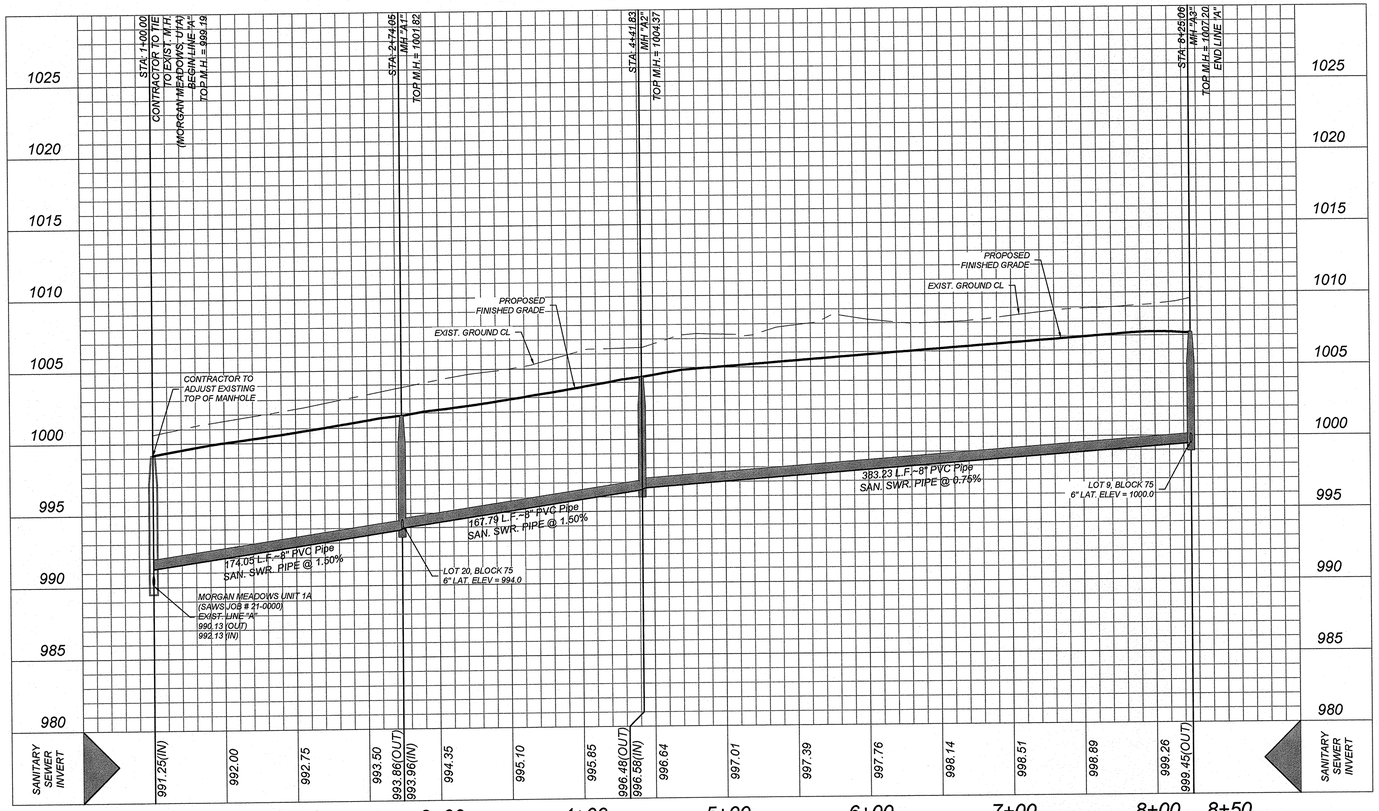
NUMBER OF LOTS: 76 SAWS JOB#: 21-1686



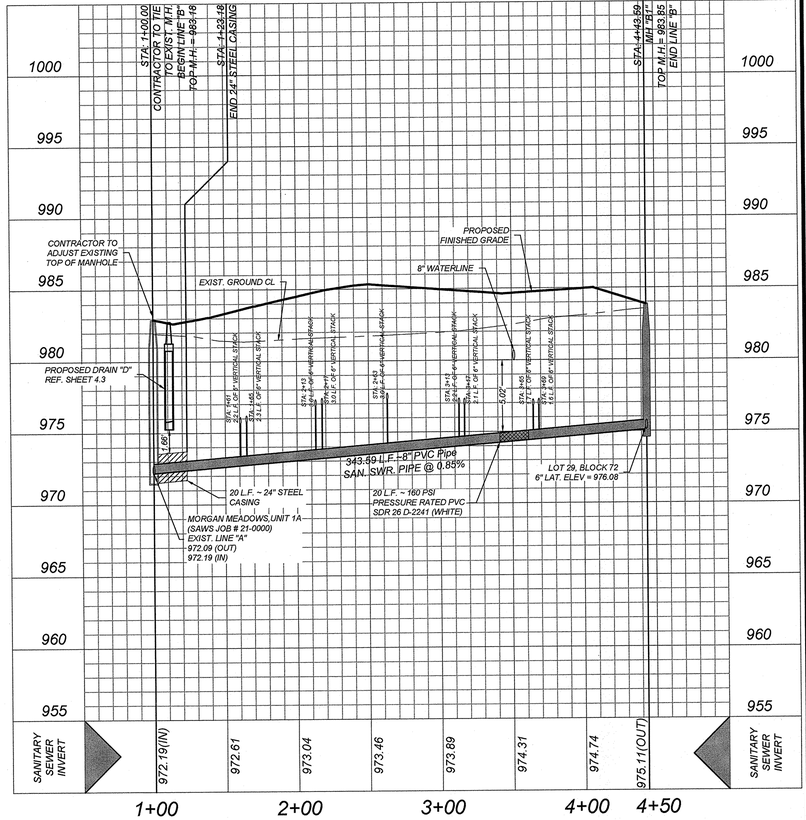
HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'

LINE "A" STA: 1+00.00 - END



HORZ SCALE: 1"=50'
VERT SCALE: 1"=5'

LINE "B" STA: 1+00.00 - END



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Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm #: 9513 • TBPLS Firm #: 10122300

ISSUE DATE

REVISIONS

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED
PROFESSIONAL ENGINEER
12/28/2021

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

LINE "A" & "B" PLAN & PROFILE

PLAT NO.
21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN: OM CHECKED: CL

SHEET NUMBER:
6.3

Date: Dec 28, 2021, 11:33am User ID: beliseth
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MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

WATER IMPROVEMENTS

GENERAL WATER NOTES (JULY 2017)

1. All materials and construction procedures within the scope of this contract shall be approved by the San Antonio Water System (SAWS) and comply with the Plans, Specifications, General Conditions and with the following as applicable:

   A. Current Texas Commission on Environmental Quality (TCEQ) "Design Criteria for Domestic Waste water System", Texas Administrative Code (TAC) Title 30 Part 1 Chapter 217 and "Public Drinking Water", TAC Title 30 Part 1 Chapter 290.
   B. Current TXDOT "Standard Specifications for Construction of Highways, Streets and Drainage".
   C. Current "San Antonio Water System Standard Specifications for Water and Sanitary Sewer Construction".
   D. Current City of San Antonio "Standard Specifications for Public Works Construction".
   E. Current City of San Antonio "Utility Excavation Criteria Manual" (UECM).

2. The contractor shall not proceed with any pipe installation work until they obtain a copy of the approved Counter Permit or General Construction Permit (GCP) from the consultant and has been notified by SAWS Construction I nspection Division to proceed with the work and has arranged a meeting with the inspector and consultant for the work requirements. Work completed by the contractor without an approved Counter Permit and/or a GCP will be subject to removal and replacement at the expense of the contractors and/or the developer.

3. The Contractor shall obtain the SAWS Standard Details from the SAWS website, http://www.saws.org/business_center/specs. Unless otherwise noted within the design plans.

4. The Contractor is to make arrangements with the SAWS Construction Inspection Division at (210) 233-2973, on notification procedures that will be used to notify affected home residents and/or property owners 48 hours prior to beginning any work.

5. Location and depth of existing utilities and service laterals shown on the plans are understood to be approximate. Actual locations and depths must be field verified by the Contractor at least 1 week prior to construction. It shall be the Contractor's responsibility to locate utility service lines as required for construction and to protect them during construction at no cost to SAWS.

6. The Contractor shall verify the exact location of underground utilities and drainage structures at least 1-2 weeks prior to construction whether shown on plans or not. Please allow up to 7 business days for locates requesting pipe location markers on SAWS facilities. The following contact information are supplied for verification purposes:

   SAWS Utility Locates: http://www.saws.org/Service/Locates
   COSA Drainage (210) 207-0724 or (210) 207-6026
   COSA Traffic Signal Operations (210) 206-8460
   COSA Traffic Signal Damages (210) 207-3951
   Texas State Wide One Call Locator 1-800-545-6005 or 811

7. The Contractor shall be responsible for restoring existing fences, curbs, streets, driveways, sidewalks, landscaping and structures to its original or better condition if damages are made as a result of the project's construction.

8. All work in Texas Department of Transportation (TxDOT) and/or Bexar County right-of-way shall be done in accordance with respective construction specifications and permit requirements.

9. The Contractor shall comply with City of San Antonio or other governing municipality's tree ordinances when excavating near trees.

10. The Contractor shall not place any waste materials in the 100-year Flood Plain without first obtaining an approved Flood Plain Permit.

11. Holiday Work: Contractors will not be allowed to perform SAWS work on SAWS recognized holidays. Request should be sent to constworkreq@saws.org. Weekend Work: Contractors are required to notify the SAWS Inspection Construction Department 48 hours in advance to request weekend work. Request should be sent to constworkreq@saws.org. Any and all SAWS utility work installed without holiday/weekend approval will be subject to be uncovered for proper inspection.

12. Compaction note (Item 804): The contractor shall be responsible for meeting the compaction requirements on all trench backfill and for paying for the tests performed by a third party. Compaction tests will be done at one location point randomly selected, or as indicated by the SAWS Inspector and/or the test administrator, per each 12-inch loose lift per 400 linear feet at a minimum. This project will not be accepted and finalized by SAWS without this requirement being met and verified by providing all necessary documented test results.

13. A copy of all testing reports shall be forwarded to SAWS Construction Inspection Division.

Water Section

1. Prior to tie-ins, any shutdowns of existing mains of any size must be coordinated with the SAWS Construction Inspection Division at least one week in advance of the shutdown. The Contractor must also provide a sequence of work as related to the tie-ins; this is at no additional cost to SAWS or the project and it is the responsibility of the Contractor to sequence the work accordingly.

   ■ For water mains 12" or higher: SAWS Emergency Operations Center (210) 233-2014

2. Asbestos Cement (AC) pipe, also known as transite pipe which is known to contain asbestos containing material (ACM), may be located within the project limits. Special waste management procedures and health and safety requirements will be applicable when removal and/or disturbance of this pipe occurs. Such work is to be made under Special Specification Item No. 3000, "Special Specification for Handling Asbestos Cement Pipe".

3. Valve removal: Where the contractor is to abandon a water main, the control valve located on the abandoning branch will be removed and replaced with a cap/plug. (NSPI)

4. Suitable anchorage/thrust blocking or joint restraint shall be provided at all of the following main locations: dead ends, plugs, caps, tees, crosses, valves, and bends, in accordance with the Standard Drawings DD-839 Series and Item No. 839, in the SAWS Standard Specifications for Construction.

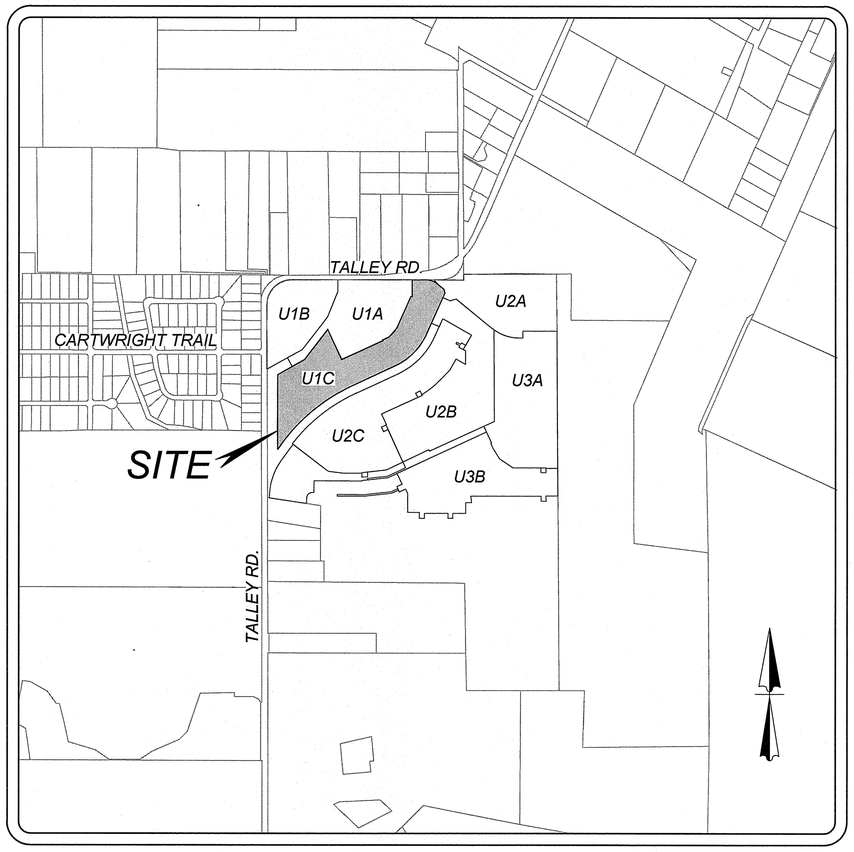
5. All valves shall read "open right".

6. PRVs Required: Contractor to verify that no portion of the tract is below ground elevation of 985 feet where the static pressure will normally exceed 80 PSI. At all such locations where the ground level is below 985 feet, the Developer or Builder shall install at each lot, on the customer's side of the meter, an approved type pressure regulator in conformance with the Plumbing Code of the City of San Antonio. No dual services allowed for any lot(s) if "PRV is/are required for such lot(s), only single service connections shall be allowed. "Note: A pressure regulator is also known as a pressure reducing valve (PRV).

7. Pipe Disinfection with Dry HTH for Projects less than 800 linear feet. (Item No. 847.3): Mains shall be disinfected with dry HTH where shown in the contract documents or as directed by the Inspector, and shall not exceed a total length of 800 feet. This method of disinfection will also be followed for main repairs. The Contractor shall utilize all appropriate safety measure to protect his personnel during disinfection operations.

8. Backflow Prevention Devices:
   ■ All irrigation services within residential areas are required to have backflow prevention devices.
   ■ All commercial backflow prevention devices must be approved by SAWS prior to installation.

9. Final connection to the existing water main shall not be made until the water main has been pressure tested, chlorinated, and SAWS has released the main for tie-in and use.



LOCATION MAP
NOT-TO-SCALE

SHEET INDEX

DESCRIPTION	SHEET NO.
WATER DISTRIBUTION PLAN COVER SHEET	7.0
WATER DISTRIBUTION PLAN (SHEET 1 OF 2)	7.1
WATER DISTRIBUTION PLAN (SHEET 2 OF 2)	7.2

OWNER INFORMATION:
TALLEY EXTENSION REVITALIZATION INITIATIVE, LLC.
1202 W. BITTERS RD, BUILDING 1, SUITE 1200
SAN ANTONIO, TX 78216

STATE OF TEXAS
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SERVICE AREA: 8

DEVELOPER'S NAME: TALLEY EXTENSION REVITALIZATION INITIATIVE, LLC
DEVELOPER'S ADDRESS: 1202 W. BITTERS RD, BUILDING 1, SUITE 1200
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78258
PHONE#: FAX#: TOTAL ACREAGE: 18.75 AC.
SAWS BLOCK MAP#: 068602, 068604, 070604 TOTAL EDU'S: 77.5
TOTAL LINEAR FOOTAGE OF PIPE: 2,723 L.F. - 8" PVC, 569 L.F. - 2" H.D.P.E. PIPE PLAT NO.: 21-11800502
NUMBER OF LOTS: 76 SAWS JOB#: 21-1221

JOB NO.: 205-41-07

PLAT NO. 21-11800502 SHEET 7.0

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TRENCH EXCAVATION SAFETY PROTECTION

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WATER PLAN NOTES:

1. *ALL PVC PIPE 8" TO BE A MINIMUM OF C-900 DR 18 CLASS 235.*
2. *FOR TYPICAL STREET SECTIONS SEE DETAIL THIS SHEET.*
3. *FOR ADDITIONAL WATER NOTES AND DETAILS SEE SHEET ?.*
4. *WATER METER BY LOCATIONS BY LOCATIONS ARE SHOWN SYMBOLICALLY TO SERVICE THE LOTS BUT SHALL BE LOCATED IN ACCORDANCE WITH THE STANDARD S.A.W.S. WATER DETAILS & SPECIFICATIONS.*
5. *WHERE WATER SERVICES AND LIGHT POLE FOUNDATIONS ARE PROPOSED TO BE AT THE SAME LOT CORNERS, SERVICE TAPS AND LEADS SHOULD BE AT LEAST 3 FEET FROM THE LIGHT POLE FOUNDATION.*
6. *ALL VALVES SHALL READ "OPEN RIGHT"*
7. *ALL PVC PIPE TO BE C-900 CLASS 150 (DR 18.)*
8. *FOR PRV DETAIL SEE S.A.W.S. STANDARD DETAIL DD-833-03.*

SAWS NOTE:

1. *"SAWS REQUIRES GCPs AND COUNTER PERMIT TO USE LEAD FREE (<0.25% LEAD) FIRE HYDRANTS."*
2. *ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL BE IN ACCORDANCE WITH THE SAN ANTONIO WATER SYSTEM (S.A.W.S.) STANDARD SPECIFICATIONS.*

SERVICE AREA: 8

DEVELOPER'S NAME: TALLEY EXTENSION REVITALIZATION INITIATIVE, LLC

DEVELOPER'S ADDRESS: 1202 W. BITTERS RD, BUILDING 1, SUITE 1200

CITY: SAN ANTONIO STATE: *TEXAS* ZIP: *78258*

PHONE#: FAX#: TOTAL ACREAGE: *18.75 AC.*

SAWS BLOCK MAP#: 068602, 068604, 070604 TOTAL EDU'S: *77.5*

TOTAL LINEAR FOOTAGE OF PIPE: *2,723 L.F. ~ 8" PVC*, *569 L.F. ~ 2" H.D.P.E. PIPE* PLAT NO.: *21-11800502*

NUMBER OF LOTS: *76* SAWS JOB#: *21-1221*

COMPACTION NOTE:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAVING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TESTS WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE SAWS INSPECTOR/TEST ADMINISTRATOR, PER EACH 12 INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. PERMITS AND/OR WILL NOT BE ACCEPTED AND FINALIZED BY SAWS WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.

FIRE FLOW NOTE:

IN AN EFFORT TO MEET THE CITY OF SAN ANTONIO'S FIRE FLOW REQUIREMENTS FOR THE PROPOSED RESIDENTIAL DEVELOPMENT, THE PUBLIC WATER MAIN SYSTEM HAS BEEN DESIGNED FOR A MINIMUM FIRE FLOW DEMAND OF 1,500 GPM AT 25 PSI RESIDUAL PRESSURE. THE FIRE FLOW REQUIREMENTS FOR INDIVIDUAL STRUCTURES WILL BE REVIEWED DURING THE BUILDING PERMIT PROCESS IN ACCORDANCE WITH THE PROCEDURES SET FORTH BY THE CITY OF SAN ANTONIO DIRECTOR OF DEVELOPMENT SERVICES DEPARTMENT AND THE SAN ANTONIO FIRE DEPARTMENT FIRE MARSHAL.

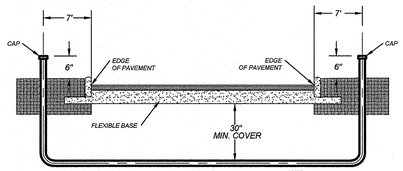
PRESSURE REDUCING VALVE (PRV) NOTE:

*CONTRACTOR TO VERIFY THAT NO PORTION OF THE TRACT IS BELOW GROUND ELEVATION OF 895 FEET WHERE THE STATIC PRESSURE WILL NORMALLY EXCEED 80 PSI. AT ALL SUCH LOCATIONS WHERE THE GROUND LEVEL IS BELOW 895 FEET, THE DEVELOPER OR BUILDER SHALL INSTALL AT EACH LOT, ON THE CUSTOMER'S SIDE OF THE METER, AN APPROVED TYPE PRESSURE REGULATOR IN CONFORMANCE WITH THE PLUMBING CODE OF THE CITY OF SAN ANTONIO. NO DUAL SERVICES ALLOWED FOR ANY LOT(S) IF *PRV IS / ARE REQUIRED FOR SUCH LOT(S), ONLY SINGLE SERVICE CONNECTIONS SHALL BE ALLOWED. WATER SERVICES WHERE PRV'S REQUIRED ARE DESIGNATED BY AN ASTERISK (*).*

**NOTE: A PRESSURE REGULATOR IS ALSO KNOWN AS A PRESSURE REDUCING VALVE(PRV)*

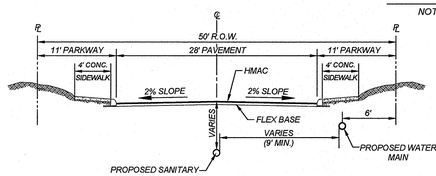
DRY UTILITY CONDUIT NOTE:

CONDUIT LOCATIONS SHOWN ON PLAN ARE FOR GEOGRAPHICAL PURPOSES ONLY AND ARE APPROXIMATE. CONTRACTOR TO INSTALL PROPOSED CONDUITS IN ACCORDANCE WITH DRY UTILITY PURVEYOR'S SPECIFICATIONS. CONTRACTOR TO VERIFY THE CONDUIT LOCATIONS AND SIZES BASED ON THE DRY UTILITY PURVEYOR'S PLAN.

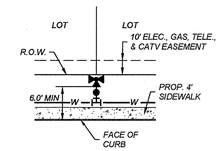


TYPICAL CONDUIT DETAIL
NOT-TO-SCALE

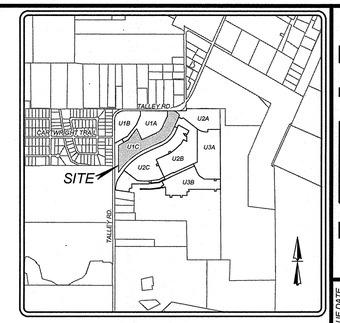
NOTE:
CONTRACTOR SHALL BE RESPONSIBLE FOR PLACING CONDUIT SLEEVES FOR EACH CPS FACILITY AT ALL STREETS AND DRAIN CROSSING IF BUILT AHEAD OF CPS CONSTRUCTION. SLEEVES MUST ALSO BE LOCATED FOR CPS CREWS DURING CONSTRUCTION. (SEPARATE ITEM) SEE THIS SHEET FOR CONDUIT CROSSING DETAIL AND SCHEDULE.



TYPICAL STREET SECTION
N.T.S.



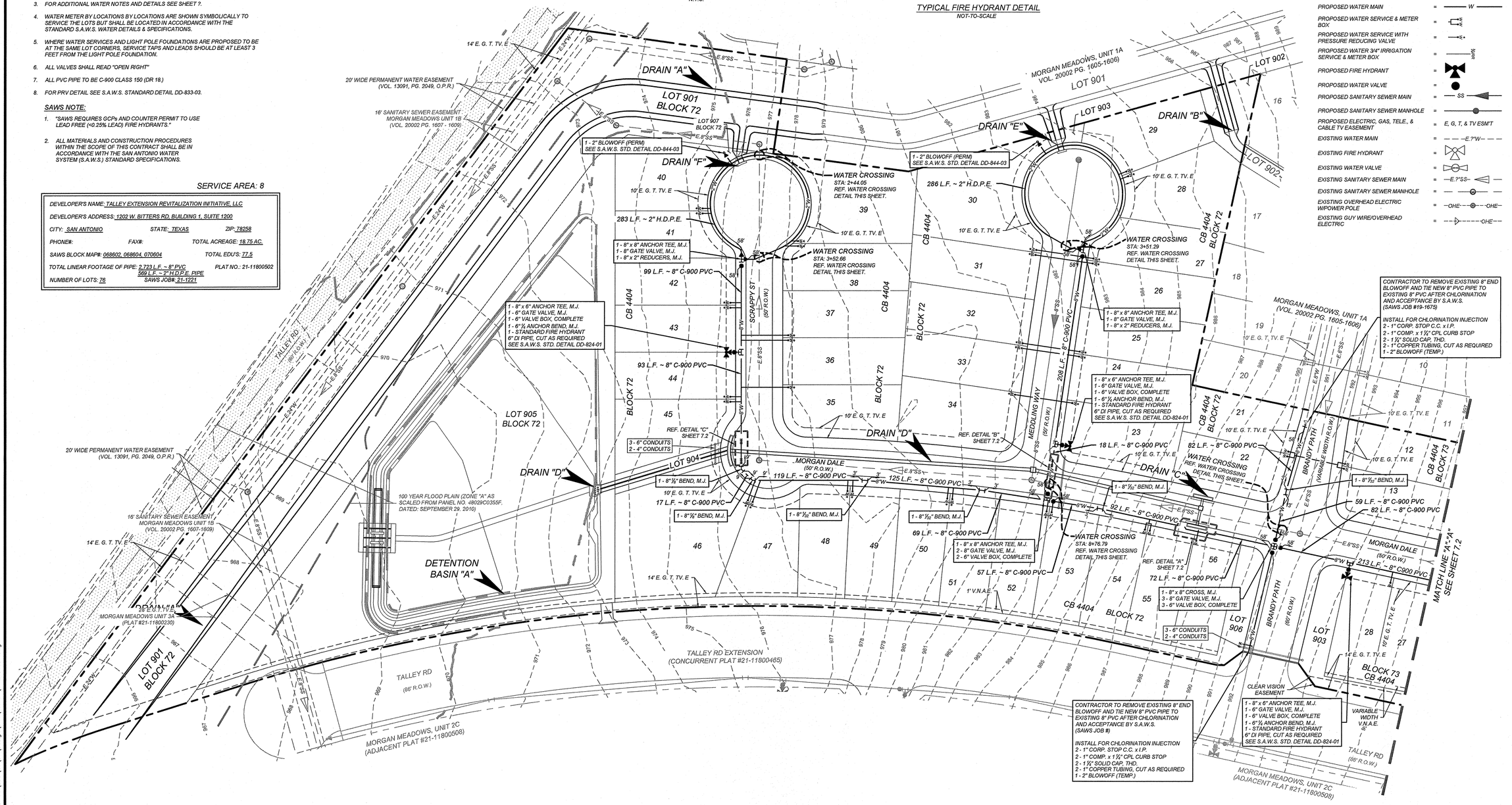
TYPICAL FIRE HYDRANT DETAIL
NOT-TO-SCALE



LOCATION MAP
NOT-TO-SCALE

LEGEND

PROPOSED WATER MAIN	=	W
PROPOSED WATER SERVICE & METER BOX	=	W
PROPOSED WATER SERVICE WITH PRESSURE REDUCING VALVE	=	W
PROPOSED WATER 3/4" IRRIGATION SERVICE & METER BOX	=	3/4"W
PROPOSED FIRE HYDRANT	=	
PROPOSED WATER VALVE	=	
PROPOSED SANITARY SEWER MAIN	=	SS
PROPOSED SANITARY SEWER MANHOLE	=	
PROPOSED ELECTRIC, GAS, TELE., & CABLE TV EASEMENT	=	E, G, T, & TV ESM'T
EXISTING WATER MAIN	=	E.?"W
EXISTING FIRE HYDRANT	=	
EXISTING WATER VALVE	=	
EXISTING SANITARY SEWER MAIN	=	E.?"SS
EXISTING SANITARY SEWER MANHOLE	=	
EXISTING OVERHEAD ELECTRIC W/POWER POLE	=	OHE OHE
EXISTING GUY WIRE/OVERHEAD ELECTRIC	=	OHE



KFW
ENGINEERS + SURVEYING
3421 Paesanos Pkwy, Suite 200, San Antonio, TX 78231
Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm #: 9513 • TBPLS Firm #: 10122300

ISSUE DATE

REVISIONS

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
6/15/2022

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

WATER DISTRIBUTION PLAN (SHEET 1 OF 2)

PLAT NO. 21-11800502

JOB NO. 205-41-07

DATE: JULY 2021

DRAWN: OM CHECKED: CL

SHEET NUMBER:

7.1

Date: Jun 14, 2022, 4:13pm User ID: ecorona
File: I:\205\Civil\07 Design\Civil\WATER\205-41-07.dwg

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TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

COMPACTION NOTE:

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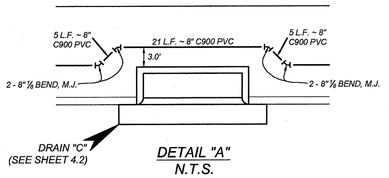
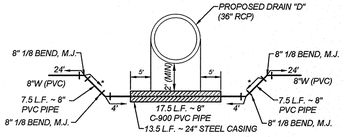
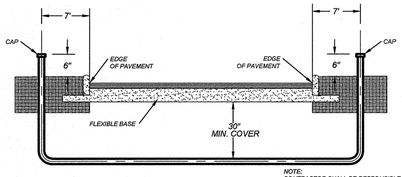


DETAIL "A"
N.T.S.



DETAIL "B"
VERTICAL OFFSET



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NOT-TO-SCALE

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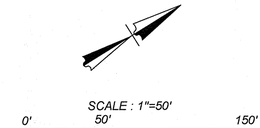
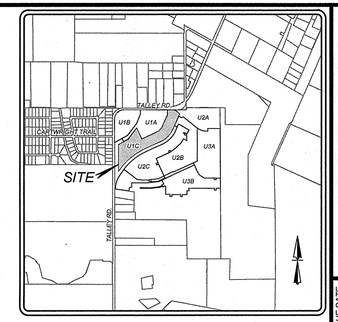
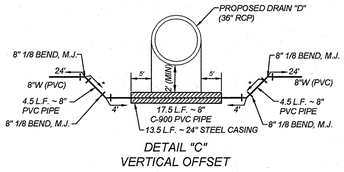
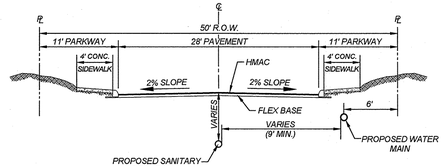




LOCATION MAP
NOT-TO-SCALE



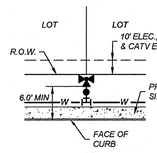
DETAIL "C"
VERTICAL OFFSET



TYPICAL STREET SECTION
N.T.S.

LEGEND

- PROPOSED WATER MAIN = W
- PROPOSED WATER SERVICE & METER BOX = W
- PROPOSED WATER SERVICE WITH PRESSURE REDUCING VALVE = W
- PROPOSED WATER 3/4" IRRIGATION SERVICE & METER BOX = IRR
- PROPOSED FIRE HYDRANT
- PROPOSED WATER VALVE
- PROPOSED 100W STREETLIGHT
- PROPOSED SANITARY SEWER MAIN = SS
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER LATERAL = SS
- PROPOSED ELECTRIC, GAS, TELEPHONE, & CABLE TV EASEMENT = E. G. T. TV. E
- EXISTING WATER MAIN = E.W
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING SANITARY SEWER MAIN = E.SS
- EXISTING SANITARY SEWER MANHOLE
- EXISTING OVERHEAD ELECTRIC W/POWER POLE = OHE
- EXISTING GUY WIRE/OVERHEAD ELECTRIC = OHE



TYPICAL FIRE HYDRANT DETAIL
NOT-TO-SCALE

SERVICE AREA: 8

DEVELOPER'S NAME: TALLEY EXTENSION REVITALIZATION INITIATIVE, LLC	
DEVELOPER'S ADDRESS: 1202 W. BITTERS RD, BUILDING 1, SUITE 1200	
CITY: SAN ANTONIO	STATE: TEXAS ZIP: 78258
PHONE#:	FAX#: TOTAL ACREAGE: 18.75 AC.
SAWS BLOCK MAP#: 068602, 068604, 070604	TOTAL EDU'S: 77.5
TOTAL LINEAR FOOTAGE OF PIPE: 2,723 L.F. ~ 8" PVC; 569 L.F. ~ 2" H.D.P.E. PIPE	PLAT NO.: 21-11800502
NUMBER OF LOTS: 76	SAWS JOB#: 21-1221

KFW ENGINEERS + SURVEYING
3421 Paesanos Pkwy, Suite 200, San Antonio, TX 78231
Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm #: 9513 • TBPLS Firm #: 10122300

ISSUE DATE

REVISIONS

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED
PROFESSIONAL ENGINEER
6/15/2022

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

WATER DISTRIBUTION PLAN (SHEET 2 OF 2)

PLAT NO. 21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN: OM CHECKED: CL

SHEET NUMBER: 7.2

Date: Jun 14, 2022, 4:14pm User ID: ecorona
File: P:\205\41\07\Design\Civil\WATER\DW205410702.dwg

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INSTALLATION:

1. ALL OPERATORS SHALL SUBMIT A NOTICE OF INTENT (NOI) AT LEAST 48 HOURS IN ADVANCE AND ALL BEST MANAGEMENT PRACTICES (BMP'S) SHALL BE IN PLACE PRIOR TO STARTING CONSTRUCTION ACTIVITIES.
2. CONTRACTOR TO ENSURE THAT STRUCTURAL BMP'S ARE INSTALLED WITHIN THE LIMITS OF THE SITE BOUNDARY.
3. CONTRACTOR MAY INSTALL THE BEST MANAGEMENT PRACTICES IN PHASES THAT COINCIDE WITH THE DISTURBANCE OF UP GRADIENT AREAS. THIS PHASING SHOULD BE NOTED WITHIN THE MODIFICATIONS SECTION WITH THE SIGNATURE AND DATE OF THE RESPONSIBLE PARTY.
4. CONTRACTOR TO VERIFY SUFFICIENT VEGETATION IN AREAS DENOTED AS VEGETATED FILTER STRIP. IF INSUFFICIENT VEGETATION EXISTS, CONTRACTOR SHALL IMPLEMENT A DIFFERENT BEST MANAGEMENT PRACTICE AND WILL SHOW IT ON THIS PLAN WITH NOTATION IN THE MODIFICATIONS SECTION WITH THE SIGNATURE AND DATE OF THE RESPONSIBLE PARTY.

MAINTENANCE AND INSPECTION:

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3. LOCATION OF CONSTRUCTION ENTRANCE/EXIT, CONCRETE WASHOUT PIT, AND EQUIPMENT AND STORAGE ARE TO BE FIELD DETERMINED. LOCATIONS SHALL BE UPDATED ON THIS PLAN.

COORDINATION NOTE:

1. CONTACT TIME WARNER TO COORDINATE CABLE TV SERVICE. (210) 244-0500
2. CONDUIT FOR ELECTRICAL SERVICE. CONFIRM REQUIREMENTS AND COORDINATE WITH CPS FOR INSPECTION. (210) 353-2246.
3. CONTACT AT&T TO COORDINATE TELEPHONE SERVICE. 1-800-449-7928.
4. CONTRACTOR TO COORDINATE WITH CPS PRIOR TO CONSTRUCTION TO PLAN ELECTRIC SERVICE.
5. CONTRACTOR TO COORDINATE WITH SAWS TO PLAN WATER AND SANITARY SEWER SERVICES (210) 704-7297
6. CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION.

PROJECT COMPLETION:

1. ALL DISTURBED AREAS ARES NOT COVERED BY IMPERVIOUS COVER ARE TO BE STABILIZED PER THE SWPPP AND PROJECT SPECIFICATIONS PRIOR TO REMOVAL OF ANY BMP'S AND/OR PRIOR TO FILING A NOTICE OF TERMINATION (NOT).
2. BEST MANAGEMENT PRACTICES MAY BE REMOVED IN PHASES IF ALL UPGRADIENT AREAS HAVE BEEN STABILIZED PER SWPPP AND PROJECT SPECIFICATIONS. THIS PHASING SHOULD BE NOTED WITHIN THE MODIFICATIONS SECTION WITH THE SIGNATURE AND DATE OF THE RESPONSIBLE PARTY.
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GENERAL:

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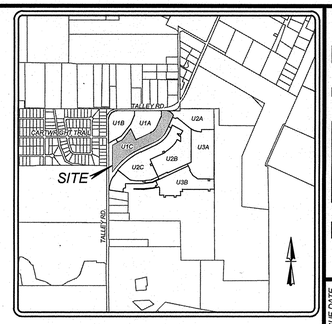
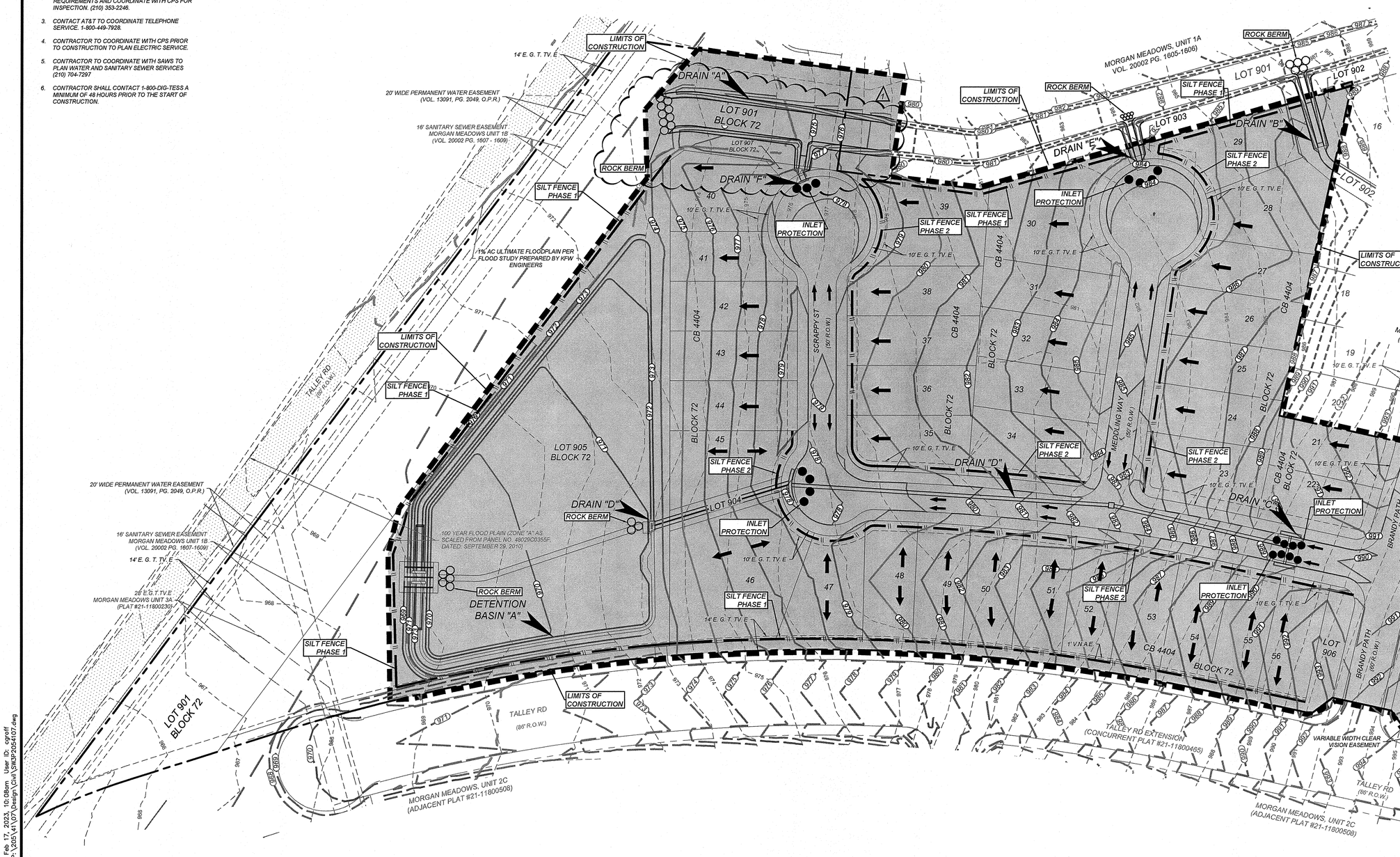
2. THE PURPOSE OF THE SIGNATURE AND SEAL OF THE ENGINEER ON THIS DOCUMENT IS TO DEMONSTRATE COMPLIANCE WITH THE TPDES STORMWATER POLLUTION PREVENTION PLAN REGULATIONS ONLY.
3. ALL OWNERS/OPERATORS ARE RESPONSIBLE FOR FAMILIARIZING THEMSELVES WITH THE STORMWATER POLLUTION PREVENTION PLAN AND COMPLYING WITH THE REGULATIONS CONTAINED WITHIN IT.

SW3P MODIFICATIONS

DATE	SIGNATURE	DESCRIPTION



LOCATION MAP
NOT-TO-SCALE



LEGEND

- LIMITS OF CONSTRUCTION
- 570 — EXISTING CONTOURS
- 1008 — PROPOSED CONTOURS
- FLOW ARROW
- STABILIZED CONSTRUCTION ENTRANCE/EXIT
- CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA.
- CONCRETE TRUCK WASHOUT PIT
- DISTURBED AREA
- ROCK BERM
- SILT FENCE (SILT FENCE ALONG THE FRONT OF LOTS TO BE INSTALLED AFTER PAVING)
- NATURAL VEGETATIVE BUFFER
- INLET WITH PROTECTION (GRAVEL FILTERS BAGS)

KFW
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3421 Paesanos Pkwy, Suite 200, San Antonio, TX 78231
Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm #: 9513 • TBPLS Firm #: 10122300

REVISIONS / ISSUE DATE

1. REVISED DRAIN "A" & DRAIN "F" GRADING, ROCK BERM LOCATION, & CN REVISED AREA — 2/2/2023

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
2/17/2023

MORGAN MEADOWS UNIT 1C

BEXAR COUNTY, TX

STORM WATER POLLUTION PREVENTION PLAN
(SHEET 1 OF 2)

PLAT NO. 21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN: OM CHECKED: CL

SHEET NUMBER:
8.0

Date: Feb 17, 2023, 10:08am User ID: cgroff
File: P:\205\41\07\Design\Civil\SW3P20541107.dwg

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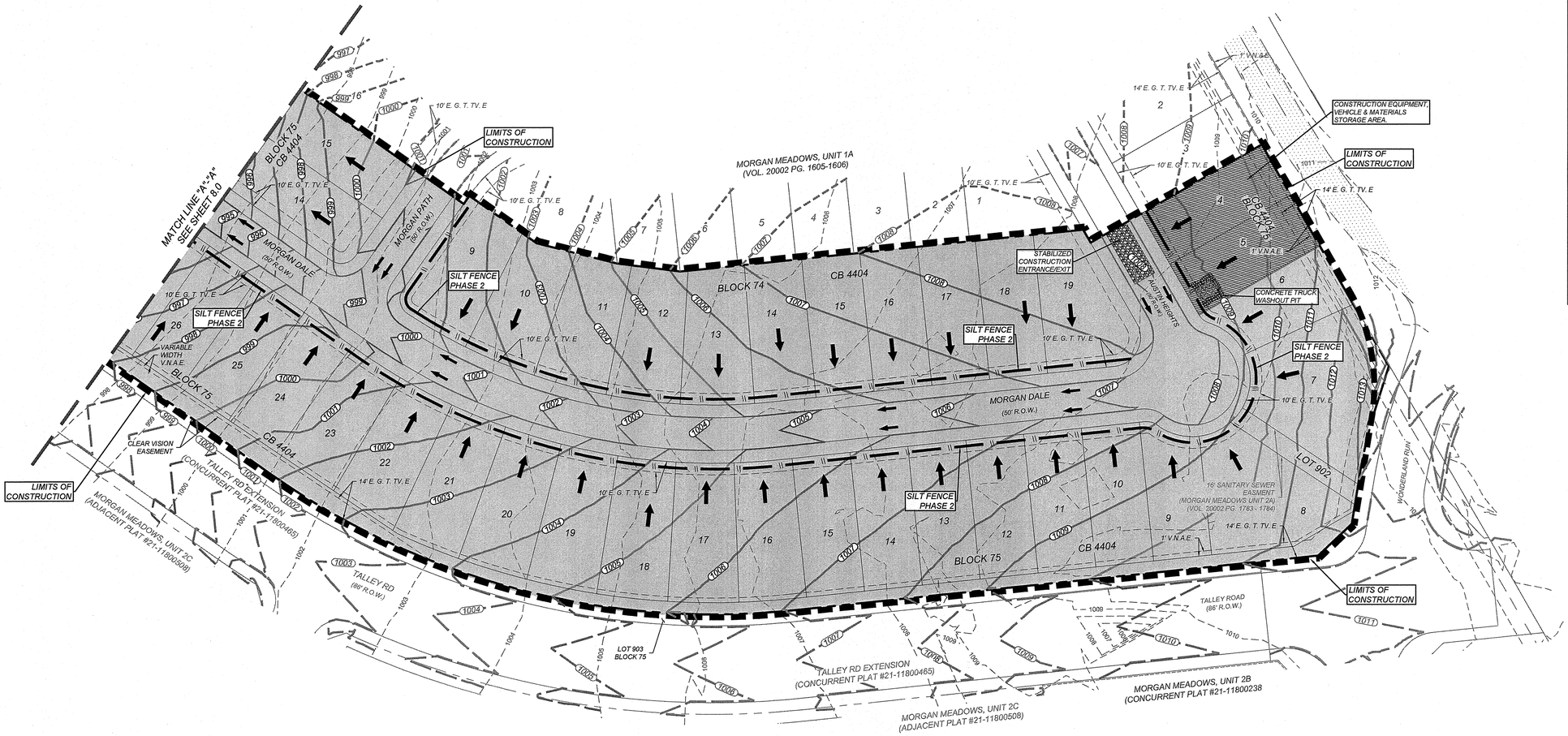
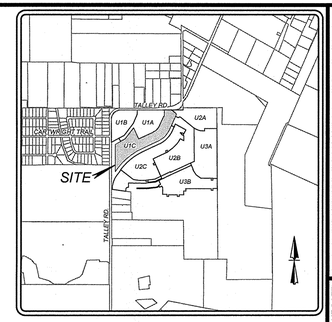
2. THE PURPOSE OF THE SIGNATURE AND SEAL OF THE ENGINEER ON THIS DOCUMENT IS TO DEMONSTRATE COMPLIANCE WITH THE TPDES STORMWATER POLLUTION PREVENTION PLAN REGULATIONS ONLY.
3. ALL OWNERS/OPERATORS ARE RESPONSIBLE FOR FAMILIARIZING THEMSELVES WITH THE STORMWATER POLLUTION PREVENTION PLAN AND COMPLYING WITH THE REGULATIONS CONTAINED WITHIN IT.





LOCATION MAP
NOT-TO-SCALE

LEGEND

- LIMITS OF CONSTRUCTION
- 570 — EXISTING CONTOURS
- 1008 — PROPOSED CONTOURS
- FLOW ARROW
- STABILIZED CONSTRUCTION ENTRANCE/EXIT
- CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA.
- CONCRETE TRUCK WASHOUT PIT
- DISTURBED AREA
- ROCK BERM
- SILT FENCE (SILT FENCE ALONG THE FRONT OF LOTS TO BE INSTALLED AFTER PAVING)
- NATURAL VEGETATIVE BUFFER
- INLET WITH PROTECTION (GRAVEL FILTERS BAGS)

COORDINATION NOTE:

1. CONTACT TIME WARNER TO COORDINATE CABLE TV SERVICE. (210) 244-0500
2. CONDUIT FOR ELECTRICAL SERVICE. CONFIRM REQUIREMENTS AND COORDINATE WITH CPS FOR INSPECTION. (210) 353-2246.
3. CONTACT AT&T TO COORDINATE TELEPHONE SERVICE. 1-800-449-7928.
4. CONTRACTOR TO COORDINATE WITH CPS PRIOR TO CONSTRUCTION TO PLAN ELECTRIC SERVICE.
5. CONTRACTOR TO COORDINATE WITH SAWS TO PLAN WATER AND SANITARY SEWER SERVICES (210) 704-7297
6. CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION.

SW3P MODIFICATIONS

DATE	SIGNATURE	DESCRIPTION

KFW ENGINEERS + SURVEYING
3421 Paesanos Pkwy, Suite 200, San Antonio, TX 78231
Main: (210) 979-8444 Fax: (210) 979-8441
TBPE Firm #: 9513 - TBPLS Firm #: 10122300

ISSUE DATE

REVISIONS

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
6/15/2022

MORGAN MEADOWS UNIT 1C
BEXAR COUNTY, TX
STORM WATER POLLUTION PREVENTION PLAN
(SHEET 2 OF 2)

PLAT NO. 21-11800502

JOB NO. 205-41-07
DATE: JULY 2021
DRAWN:OM CHECKED:CL

SHEET NUMBER:
8.1

Date: Jun 14, 2022, 4:21pm User ID: eoronoo
File: P:\205\41\07\Design\Civil\SW3P20541107.dwg

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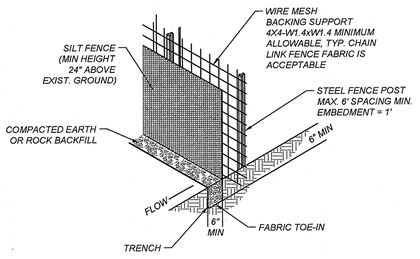


ISOMETRIC PLAN VIEW

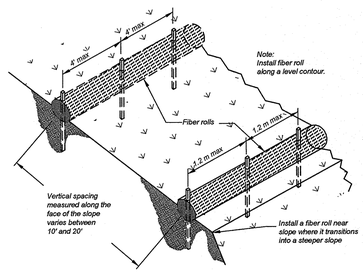
Materials:

(1) Silt fence material should be polypropylene, polyethylene or polyamide woven or nonwoven fabric. The fabric width should be 36 inches, with a minimum unit weight of 4.5 oz/yd, mullen burst strength exceeding 190 lb/in2, ultraviolet stability exceeding 70%, and minimum apparent opening size of U.S. Sieve No. 30.
(2) Fence posts should be made of hot rolled steel, at least 4 feet long with Tee or Ybar cross section, surface painted or galvanized, minimum nominal weight 1.25 lb/ft2, and Brindell hardness exceeding 140.
(3) Woven wire backing to support the fabric should be galvanized 2' x 4" welded wire, 12 gauge minimum.

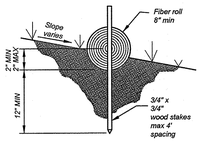
Installation:
(1) Steel posts, which support the silt fence, should be installed on a slight angle toward the anticipated runoff source. Post must be embedded a minimum of 1- foot deep and spaced not more than 8 feet on center. Where water concentrates, the maximum spacing should be 6 feet.
(2) Lay out fencing down-slope of disturbed area, following the contour as closely as possible. The fence should be sited so that the maximum drainage area is ¼ acre/ 00 feet of fence.
(3) The toe of the silt fence should be trenched in with a spade or mechanical trencher, so that the down- slope face of the trench is flat and perpendicular to the line of flow. Where fence cannot be trenched in (e.g., pavement or rock outcrop), weight fabric flap with 3 inches of pea gravel on uphill side to prevent flow from seeping under fence.
(4) The trench must be a minimum of 6 inches deep and 6 inches wide to allow for the silt fence fabric to be laid in the ground and backfilled with compacted material.
(5) Silt fence should be securely fastened to each steel support post or to woven wire, which is in turn attached to the steel fence post. There should be a 3-foot overlap, securely fastened where ends of fabric meet.
(6) Silt fence should be removed when the site is completely stabilized so as not to block or impede stone flow or drainage.

Inspection and Maintenance Guidelines:
(1) Inspect all fencing weekly, and after any rainfall.
(2) Remove sediment when buildup reaches 6 inches.
(3) Replace any torn fabric or install a second line of fencing parallel to the torn section.
(4) Replace or repair any sections crushed or collapsed in the course of construction activity. If a section of fence is obstructing vehicular access, consider relocating it to a spot where it will provide equal protection, but will not obstruct vehicles. A triangular filter dike may be preferable to a silt fence at common vehicle access points.
(5) When construction is complete, the sediment should be disposed of in a manner that will not cause additional siltation and the prior location of the silt fence should be revegetated. The fence itself should be disposed of in an approved landfill.

SILT FENCE



TYPICAL FIBER ROLL INSTALLATION
N.T.S.



ENTRENCHMENT DETAIL
N.T.S.

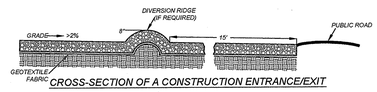
THE MATERIAL, INSTALLATION, INSPECTION, AND MAINTENANCE OF FIBER ROLLS WILL BE PER THE MANUFACTURE'S SPECIFICATIONS AND SHALL ALSO COMPLY WITH THE TEXAS COMMISSION OF ENVIRONMENTAL QUALITY CURRENT "TECHNICAL GUIDANCE ON BEST MANAGEMENT PRACTICES" AS NOTED BELOW.

Material:
(1) Core material: Core material should be biodegradable or recyclable. Material may be compost, mulch, aspen wood fibers, chipped site vegetation, agricultural rice or wheat straw, coconut fiber, 100% recyclable fibers, or similar materials.
(2) Containment Mesh: Containment mesh should be 100% biodegradable, photodegradable or recyclable such as burlap, twine, UV photodegradable plastic, polyester, or similar material. When the fiber role will remain in place as part of a vegetative system use biodegradable or photodegradable mesh. For temporary installation recyclable mesh is recommended.

Implementation:
(1) Locate fiber rolls on level contours spaced as follows:
Slope inclination of 4:1 (H:V) or flatter: Fiber rolls should be placed at a maximum interval of 20 ft.
Slope inclination between 4:1 and 2:1 (H:V): Fiber Rolls should be placed at a maximum interval of 15 ft. (a closer spacing is more effective).
Slope inclination 2:1 (H:V) or greater: Fiber Rolls should be placed at a maximum interval of 10 ft. (a closer spacing is more effective).
(2) Turn the ends of the fiber roll up slope to prevent runoff from going around the roll.
(3) Stake fiber rolls into a 2 to 4 in. deep trench with a width equal to the diameter of the fiber roll.
(4) Drive stakes at the end of each fiber roll and spaced 4 ft maximum on center.
(5) Use wood stakes with a nominal classification of 0.75 by 0.75 in. and minimum length of 24 in.
(6) If more than one fiber roll is placed in a row, the rolls should be overlapped, not abutted.

Inspection and Maintenance Guidelines:
(1) Inspect prior to forecast rain, daily during extended rain events, after rain events, and weekly.
(2) Repair or replace split, torn, unraveling, or slumping fiber rolls.
(3) If the fiber roll is used as a sediment capture device, or as an erosion control device to maintain sheet flows, sediment that accumulates behind the role must be periodically removed in order to maintain its effectiveness. Sediment should be removed when the accumulation reaches one-half the designated sediment storage depth, usually one-half the distance between the top of the fiber roll and the adjacent ground surface. Sediment removed during maintenance may be incorporated into earthwork on the site or disposed of at an appropriate location.

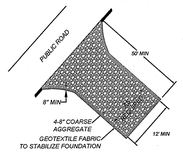
FIBER ROLL



CROSS-SECTION OF A CONSTRUCTION ENTRANCE/EXIT

Materials:

(1) The aggregate should consist of 4 to 8 inch washed stone over a stable foundation as specified in the plan.
(2) The aggregate should be placed with a minimum thickness of 8 inches.
(3) The geotextile fabric should be designed specifically for use as a soil filtration media with an approximate weight of 6 oz/yd2, a mullen burst rating of 140 lb/in2, and an equivalent opening size greater than a number 50 sieve.
(4) If a washing facility is required, a level area with a minimum of 4 inch diameter washed stone or commercial rack should be included in the plans. Divert wastewater to a sediment trap or basin.

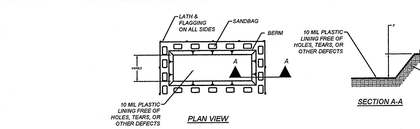


TEMPORARY CONSTRUCTION ENTRANCE/EXIT

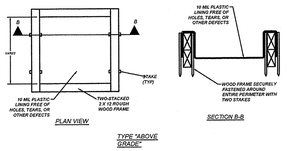
Installation: (North Carolina, 1993)
(1) Avoid curves on public roads and steep slopes. Remove vegetation and other objectionable material from the foundation area. Grade crown foundation for positive drainage.
(2) The minimum width of the entrance/exit should be 12 feet or the full width of exit roadway, whichever is greater.
(3) The construction entrance should be at least 50 feet long.
(4) If the slope toward the road exceeds 2%, construct a ridge, 6 to 8 inches high with 3:1 (H:V) side slopes, across the foundation approximately 15 feet from the entrance to divert runoff away from the public road.
(5) Place geotextile fabric and grade foundation to improve stability, especially where wet conditions are anticipated.
(6) Place stone to dimensions and grade shown on plans. Leave surface smooth and slope for drainage.
(7) Divert all surface runoff and drainage from the stone pad to a sediment trap or basin.
(8) Install pipe under pad as needed to maintain proper public road drainage.

Inspection and Maintenance Guidelines:
(1) The entrance should be maintained in a condition, which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment.
(2) All sediment spilled, dropped, washed or tracked onto public rights-of-way should be removed immediately by contractor.
(3) When necessary, wheels should be cleaned to remove sediment prior to entrance onto public right-of-way.
(4) When washing is required, it should be done on an area stabilized with crushed stone that drains into an approved sediment trap or sediment basin.
(5) All sediment should be prevented from entering any storm drain, ditch or water course by using approved methods.

STABILIZED CONSTRUCTION ENTRANCE / EXIT



TYPE "BELOW GRADE"

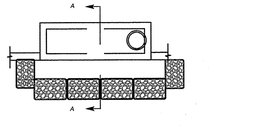


TYPE "ABOVE GRADE"

GENERAL NOTES:

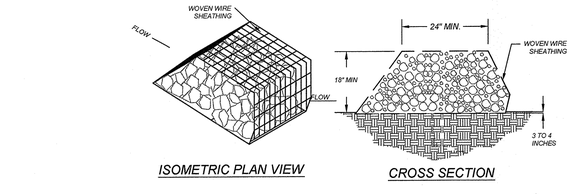
- *DETAIL ABOVE ILLUSTRATES MINIMUM DIMENSIONS. PIT CAN BE INCREASED IN SIZE DEPENDING ON EXPECTED FREQUENCY OF USE.*
- *WASHOUT PIT SHALL BE LOCATED IN AN AREA EASILY ACCESSIBLE TO CONSTRUCTION TRAFFIC.*
- *WASHOUT PIT SHALL NOT BE LOCATED IN AREAS SUBJECT TO INUNDATION FROM STORM WATER RUNOFF AND AT LEAST 50 FEET FROM SENSITIVE FEATURES, STORM DRAINS, OPEN DITCHES, STREETS, OR STREAMS.*

CONCRETE TRUCK WASHOUT PIT



- *CHANNEL TO BE STABILIZED WITH SOD PLACED IN A CHECKER BOARD PATTERN TON THE CHANNEL BOTTOM AND ON THE SIDES UP TO 1/3 THE DEPTH OF CHANNEL.*

CHANNEL LINING



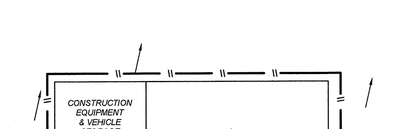
ISOMETRIC PLAN VIEW — CROSS SECTION

Materials:
(1) The berm structure should be. secured with a woven wire sheathing having maximum opening of 1 inch and a minimum wire diameter of 20 gauge galvanized and should be secured with shoat rings.
(2) Clean, open graded 3- to 5-inch diameter rock should be used, except in areas where high velocities or large volumes of flow are expected, where 5- to 8-inch diameter rocks may be used.

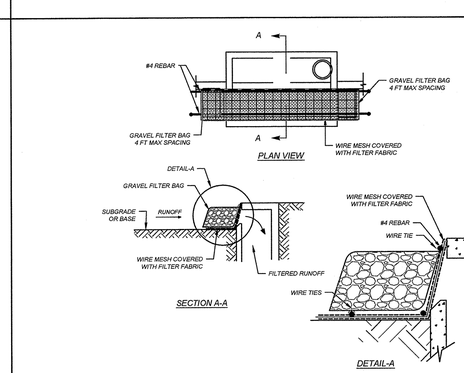
Installation:
(1) Lay out the woven wire sheathing perpendicular to the flow line. The sheathing should be 20 gauge woven wire mesh with 1 inch openings.
(2) Berm should have a top width of 2 feet minimum with side slopes being 2:1 (H:V) or flatter.
(3) Place the rock along the sheathing as shown in the diagram Figure 1-28), to a height not less than 18".
(4) Wrap the wire sheathing around the rock and secure with tie wire so that the ends of the sheathing overlap at least 2 inches, ait the berm retains its shape when walked upon.
(5) Berm should be built along the contour at zero percent grade or as near as possible.
(6) The ends of the berm should be tied into existing upslope grade and the berm should be buried in a trench approximately 3 to 4 inches deep to prevent failure of the control.

Inspection and Maintenance Guidelines:
(1) Inspection should be made weekly and after each rainfall by the responsible party. For installations in streambeds, additional daily inspections should be made.
(2) Remove sediment and other debris when buildup reaches 6 inches and dispose of the accumulated silt in an approved manner that will not cause any additional siltation.
(3) Repair any loose wire sheathing.
(4) The berm should be reshaped as needed during inspection.
(5) The berm should be replaced when the structure ceases to function as intended due to silt accumulation among the rocks, washout, construction traffic damage, etc.
(6) The rock berm should be left in place until all upstream areas are stabilized and accumulated silt removed.

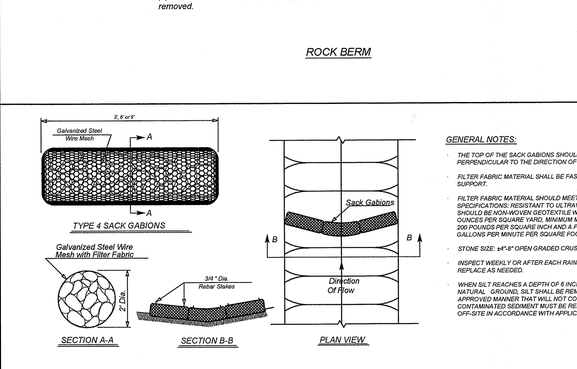
ROCK BERM



TYPICAL CONSTRUCTION STAGING AREA

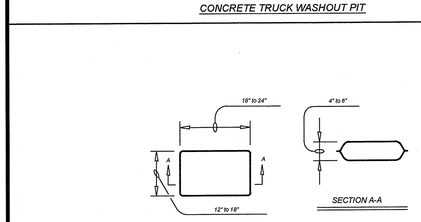


CURB INLET PROTECTION (ALTERNATE)



- *THE TOP OF THE SACK GABIONS SHOULD BE LEVEL AND ORIENTED PERPENDICULAR TO THE DIRECTION OF FLOW.*
- *FILTER FABRIC MATERIAL SHALL BE FASTENED TO WOVEN WIRE SUPPORT.*
- *FILTER FABRIC MATERIAL SHOULD MEET THE FOLLOWING SPECIFICATIONS: RESISTANT TO ULTRAVIOLET LIGHT, FABRIC SHOULD BE NON-WOVEN GEOTEXTILE WITH MINIMUM WEIGHT OF 3.5 OUNCES PER SQUARE YARD, MINIMUM MULLEN BURST STRENGTH OF 200 POUNDS PER SQUARE INCH AND A FLOW THRU RATE OF 120 GALLONS PER MINUTE PER SQUARE FOOT OF FRONTAL AREA.*
- *STONE SIZE: ±4"-8" OPEN GRADED CRUSHED LIMESTONE.*
- *INSPECT WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACE AS NEEDED.*
- *WHEN SILT REACHES A DEPTH OF 6 INCHES OR MORE ABOVE NATURAL GROUND, SILT SHALL BE REMOVED AND DISPOSED IN AN APPROVED MANNER THAT WILL NOT CONTRIBUTE TO RESLTATION. CONTAMINATED SEDIMENT MUST BE REMOVED AND DISPOSED OF OFF-SITE IN ACCORDANCE WITH APPLICABLE REGULATIONS.*

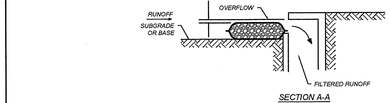
TYPE 4 SACK GABIONS



GENERAL NOTES:

- *THE FILTER BAG MATERIAL SHALL BE MADE OF POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN FABRIC, MIN UNIT WEIGHT OF 4 OUNCES/SY, MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70%.*
- *THE FILTER BAG SHALL BE FILLED WITH CLEAN, MEDIUM TO COARSE GRAVEL (0.31 TO 0.75 INCH DIAMETER).*

GRAVEL FILTER BAG DETAIL



GENERAL NOTES:

- *ALL STORM DRAINAGE SYSTEMS INLETS SHOULD FILTER RUNOFF BEFORE THE WATER IS DISCHARGED INTO STREAMS OR ONTO ADJACENT PROPERTIES, UNLESS TREATMENT IS PROVIDED ELSEWHERE.*
- *IF NO ADDITIONAL DOWNSTREAM TREATMENT EXISTS, THE MAXIMUM DRAINAGE AREA TRIBUTARY TO AN AREA DRAIN INSTALLED WITH A GRAVEL FILTER SHOULD BE ONE ACRE.*
- *ALL CURB INLET GRAVEL FILTERS SHOULD BE INSPECTED AND REPAIRED AFTER EACH RUNOFF EVENT. SEDIMENT SHOULD BE REMOVED WHEN MATERIAL IS WITHIN THREE INCHES OF THE TOP OF THE CONCRETE BLOCKS. PERIODICALLY, THE GRAVEL SHOULD BE RAKED TO INCREASE INFILTRATION AND FILTERING OF RUNOFF WATERS.*

CURB INLET PROTECTION GRAVEL FILTER BAGS

KFW
ENGINEERS + SURVEYING
3421 Paesanos Pkwy, Suite 200, San Antonio, TX 78231
Phone #: (210) 979-8444 • Fax #: (210) 979-8441
TBPE Firm #: 9513 • TBPLS Firm #: 10122300

ISSUE DATE

REVISIONS

STATE OF TEXAS
CLAYTON J. LINNEY
111543
LICENSED PROFESSIONAL ENGINEER
9/30/2021

MORGAN MEADOWS UNIT 1C
BEXAR COUNTY, TX
STORM WATER POLLUTION PREVENTION DETAILS

PLAT NO. 21-11800502
JOB NO. 205-41-07
DATE: JULY 2021
DRAWN:OM CHECKED:CL

SHEET NUMBER:
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Date: Sep 30, 2021, 11:20am User ID: emeiners
File: P:\205\41\07\Design\Civil\SWPPT\20541107.dwg

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